

INFORMATION HANDOUT

For Contract No. [10-0F2804](#)

At [Cal - 4 - 43.8/44.3](#)

Identified by

Project ID [1000000033](#)

PERMITS

California Department of Fish and Wildlife

United States Army Corps of Engineers

California Regional Water Quality Control Board

MATERIALS INFORMATION

[Geotechnical Design Report](#)

Water Source Information

[Alternative In-Line Terminal System](#)

[Alternative Flared Terminal System](#)



California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
916-358-2900
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director



APR 12 2016

Date

Javier Almaguer
California Department of Transportation
855 M Street, Suite 200
Fresno, CA 93721

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2015-0218-R2

Dear Mr. Almaguer:

Enclosed is the final Streambed Alteration Agreement (Agreement) for the Big Tree Creek Stormwater Compliance Project (Project). Before the California Department of Fish and Wildlife (Department) may issue an Agreement, it must comply with the California Environmental Quality Act (CEQA). In this case, the Department, acting as a responsible agency, filed a Notice of Determination (NOD) within five working days of signing the Agreement. The NOD was based on information contained in the Mitigated Negative Declaration prepared by the lead agency.

Under CEQA, the filing of an NOD triggers a 30-day statute of limitations period during which an interested party may challenge the filing agency's approval of the Project. You may begin the Project before the statute of limitations expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Juan Lopez Torres, Senior Environmental Scientist (Specialist) at (916) 358-2951 or Juan.Torres@wildlife.ca.gov.

Sincerely,

Tina Bartlett
Regional Manager

cc: Juan Lopez Torres, Senior Environmental Scientist (Specialist)



CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
NORTH CENTRAL REGION
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CA 95670



STREAMBED ALTERATION AGREEMENT
NOTIFICATION No. 1600-2015-0218-R2

CALIFORNIA DEPARTMENT OF TRANSPORTATION
BIG TREE CREEK STORMWATER COMPLIANCE PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (Department) and the California Department of Transportation (Permittee) as represented by Javier Almaguer.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified the Department on September 23, 2015, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, the Department 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 within 2 unnamed drainages tributary to Big Tree Creek, and Big Tree Creek on State Route (SR) 4, between post mile (PM) 43.8 and PM 44.2, in the County of Calaveras, State of California. The project is located on the Dorrington U.S. Geological Survey (USGS) 7.5-minute quadrangle, R15E, T5N, Section 22. Table 1 includes the latitude and longitude of each culvert location.

Exhibit A Figure 1 includes a map depicting the project location.

PROJECT DESCRIPTION

The project will widen the existing roadway on both sides to provide 8- foot paved shoulders, a 10-foot paved gutter on the left side of the highway and a 3- foot paved gutter on the right side of the highway to accommodate storage area for snow removal. The scope of work includes construction of approximately 1,000 linear feet of retaining walls and 2,300 linear feet of concrete barrier located on the south side of the highway within the riparian area of Big Tree Creek. Temporary reinforced silt fence along the

entire length of the project will be installed to avoid additional impacts to the Creek. The new embankment will be keyed into the existing slope and compacted in layers to ensure stability. The existing pavement will be overlaid with asphalt concrete.

Existing drainage facilities will be modified along with the addition of new drainage facilities. The drainage facilities will be constructed as traction sand traps. The traction sand traps will temporarily detain runoff and allow traction sand that was previously applied to snowy or icy roads to settle out. These traction sand traps are the storm water management plan approved permanent treatment best management plans for statewide application to address sand, which is the non-storm water discharge of concern. Overhead power and underground telephone facilities will require relocation. There are also sewer facilities in the area but relocation is not anticipated. The project will upgrade the existing 18 inch (in) diameter corrugated metal pipe (CMP) culverts at five locations. The existing culverts will be replaced with 24 in culverts at or close to the same locations. It is anticipated that the replacement culverts will be either corrugated steel pipe (CSP) or concrete. The existing drainage inlets located in the existing drainage ditch that parallels the highway on the north side will be removed and replaced with sand trap type drainage inlets in the new ditch line. Table 1 includes the list of all the culverts as depicted in Figure 1 and their impact area. Culverts labeled as existing will be replaced by the proposed culverts and backfilled.

Table 1. Culvert Locations and Project Impacts

DS #	Culvert Impact area					Location (NAD 83 Decimal. Degrees)	
	Existing/Proposed	Length (FT)	Width (IN)	Width (FT)	Area (SQFT)	Latitude	Longitude
1	Existing	61	18	1.5	91.5	38.27359587280	-120.31875607000
	Proposed	92	84	7	172.5	38.27359788440	-120.31873905600
2	Existing (to be removed)	33.8	18	1.5	50.7	38.27380421240	-120.31774148200
3	Proposed	75.9	84	7	143.85	38.27391427810	-120.31748988200
4	Existing	47.1	18	1.5	70.65	38.27445268140	-120.31466026200
	Proposed	79.2	24	2	158.4	38.27444930460	-120.31469242500
5	Existing	34.2	18	1.5	51.3	38.27450314130	-120.31402431300
	Proposed	84.3	144	12	231	38.27450314130	-120.31402431300
6	Proposed	79	84	7	151	38.27452570350	-120.31278406900
7	Existing (to be removed)	45.2	18	1.5	67.8	38.27450349760	-120.31240945100

The proposed project will result in 0.228 acres of permanent impacts a to Department jurisdictional areas consisting of riparian habitat within the 2 unnamed streams and Big Tree Creek.

Exhibit A Figure 2 includes the impact area and **Figure 3** includes the project plans.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: nesting birds and aquatic and terrestrial plant and wildlife species.

The adverse effects the project could have on the fish or wildlife resources identified above include: loss of natural bed or bank; change in contour of bed, channel or bank; degradation of channel; loss of bank stability during construction; increase of bank erosion during construction; restriction or increase in sediment transport; debris transport impedance (from culverts and bridges); short-term release of contaminants (e.g., incidental from construction); colonization by exotic plant or animal species; change to, or loss or decline of natural bed substrate; direct take of fish and other aquatic species; disruption to nesting birds and other wildlife: direct take of terrestrial species; disturbance from project activity; loss or impediment of terrestrial animal species travel routes due to temporary structures (e.g., survey tape, sandbags, erosion protection materials etc.); diversion of flow water from, or around, activity site; dewatering; impediment to migration of aquatic and terrestrial species during construction; and direct loss of resources for aquatic organisms.

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 Department 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 the Department 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, the Department shall contact Permittee to resolve any conflict.

- 1.4 Project Site Entry. Permittee agrees that Department personnel may, with notification to the Resident Engineer, enter the project site at any time to verify compliance with the Agreement.
- 1.5 Does Not Authorize "Take." This Agreement does not authorize "take" of any listed species. Take is defined as hunt, pursue, catch, capture or kill or attempt to hunt, pursue, catch, capture, or kill. If there is potential for take of any listed species to occur, the Permittee shall consult with the Department as outlined in FGC Section 2081 and shall obtain the required state and federal threatened and endangered species permits.

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 Period in Dry Weather Only. Work within the flowing water shall be restricted to periods of low stream flow and dry weather. Precipitation forecasts and potential increases in stream flow shall be considered when planning construction activities. Construction activities shall cease and all necessary erosion control measures shall be implemented prior to the onset of precipitation. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates a 20% or less chance of precipitation, provided low stream flow conditions are still present. If a construction phase may cause the introduction of sediments into the stream: 1) no phase of the project shall be started, unless all work for that phase and all associated erosion control measures are completed prior to the onset of precipitation; and 2) no phase of the project shall commence unless all equipment and materials are removed from the channel at least 12 hours prior to the onset of precipitation and all associated erosion control measures are in place prior to the onset of precipitation. No work shall occur during a dry-out period of 24 hours after the above referenced wet weather. Weather forecasts shall be documented and provided upon request by the Department.
- 2.2 Tree Roosting Bats. To avoid impacts to tree roosting bats removal of vegetation shall only occur outside the bat pupping season between July 1 to October 15.
- 2.3 Nesting Birds. To avoid impacts to nesting birds, both ground and canopy nesters, construction activities shall not take place during the active nesting season (approximately February 1 through August 31). If avoidance of the active nesting season is not feasible, construction activities may occur only if focused surveys for active bird nests are conducted by the designated biologist. The survey shall be conducted within a minimum ¼ mile radius of project activities. The results of the nest survey shall be submitted to the Department before the start of work. The results of the survey shall include the following information: name of biologist(s) conducting surveys, dates of survey, total field time of survey efforts, map of survey

routes, and the type of species nesting. If no active nests are found during the survey, no further consultation is required.

If the survey identifies an active nest, the designated biologist shall prepare and submit to the Department a Bird Management and Monitoring Plan (Plan) which includes survey results and establishes the necessary buffers to avoid take of a nest pursuant to FGC 3503 and 3503.5. The Plan design shall be based upon site conditions, project activities, and species present or likely to be present during all construction activities. The Department shall respond within ten (10) calendar days.

For active nests, a buffer or installation of appropriate barriers shall be established between the construction activities and the active nest so that nesting activities are not interrupted. The buffer shall be delineated and shall be in effect throughout construction or until the nest is no longer active. The buffer(s) shall be determined based upon the life history of the individual species, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.) and the various project-related activities necessary to implement the project.

If a lapse in project-related work of fifteen (15) calendar days or longer occurs, another focused survey and consultation with the Department shall be required before project work can be reinitiated.

- 2.4 Environmentally Sensitive Areas (ESAs). No more than five (5) calendar days prior to the start of project activities, the Permittee shall establish ESAs in the project area to prevent encroachment of construction personnel and equipment into areas of any known sensitive resources within or near the work area will be flagged to ensure that no activities are conducted in those areas. All potential sensitive habitats and native trees that can be reasonably avoided during construction activities shall be identified as ESAs. All construction personnel shall avoid ESAs. The Permittee shall avoid ESAs when siting all staging areas, spoils disposal areas, borrow pits, and construction equipment access routes. The ESAs will be identified on all engineering plans or construction specifications. The Permittee shall inspect the flagging before the start of each work day and the Permittee shall maintain the flagging until the completion of the project.
- 2.5 Onsite Designated Biologist. **At least thirty (30) days before initiating ground- or vegetation-disturbing activities**, Permittee shall submit to the Department in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). Permittee shall obtain the Department's written approval of the Designated Biologist prior to the commencement of project activities. The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of local fish and wildlife resources present at the project site. The Designated Biologist shall be present during all proposed work within Department jurisdictional areas and is responsible for monitoring all project

activities, including preparation, construction, restoration, and any ground- or vegetation-disturbing activities in areas subject to this Agreement.

- 2.6 On-site Biologist with Stopwork Authorization. Permittee shall have a qualified designated biologist on site daily during project activity to ensure that Agreement conditions are being met and minimize impacts to fish and wildlife habitat. The biologist shall be authorized to stop construction if necessary to protect fish and wildlife resources. If any sensitive, State-listed, Species of Special Concern, rare, or threatened or endangered species, are found the biologist shall inform the Department. If there is a threat of harm to any sensitive species, or other aquatic wildlife the biologist shall halt construction in coordination with the Resident Engineer and notify the Department (see Contact Information section below). Consultation with the Department is required before re-commencing work.
- 2.7 On-site Education. Permittee shall conduct an education program for all persons employed or otherwise working on the project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology of the habitats and species identified in this Agreement and present at this site. The Designated Biologist shall also include as part of the education program information about the distribution and habitat needs of any special status species that may be present, legal protections for those species, penalties for violations and project-specific protective measures included in this Agreement. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Permittee shall prepare and distribute wallet-sized cards or a fact sheet that contains this information for workers to carry on-site. Upon completion of the education program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and submitted as instructed in Contact Information section below. Email notification is preferred.
- 2.8 Foothill Yellow-legged Frog Surveys. Permittee shall perform protocol level surveys for foothill yellow-legged frog (*Rana boylei*) the same year that construction activities are expected to occur within the Department jurisdictional areas. Surveys shall be conducted by a Department-approved Qualified Biologist within all suitable habitat present within the project footprint and a 500 feet buffer upstream and downstream of the project limits. The results of the survey shall be submitted to the Department before the start of work.
- 2.9 Foothill Yellow-legged Frog Protection Plan. If foothill yellow-legged frog is detected during preconstruction surveys, **no later than 20 days prior to the initiation of any project activities in jurisdictional areas**, a foothill yellow-legged protection plan shall be submitted to the Department for consultation.
- 2.10 Habitat Mitigation and Monitoring Plan (HMMP). **No later than 60 days prior to commencing construction activities**, Permittee shall submit to the Department

for review and approval a HMMP for the off-site restoration/creation of no less of 0.70 acres of riparian habitat within Big Tree State Park. **The plan shall be approved by the Department prior to starting any construction activities within the Department jurisdictional areas.** At a minimum, the HMMP shall include the following information: (a) a description of the existing physical conditions of the proposed creation or restoration site, including water resources and habitat types, and a map that identifies the location of the site; (b) a plan for the preparation of the creation or restoration site, including the removal of nonnative plant species, non-wetland/riparian plant species, and grading; (c) a local California native plant palette; (d) a planting plan, including monitoring and maintenance measures and a timeline; (e) an irrigation plan; (f) procedures to ensure that nonnative plants are not introduced or allowed to sustain within the creation or restoration site and a nonnative plant removal plan; and (g) success standards with contingency measures. Monitoring and maintenance of the creation or restoration site shall be conducted annually for a minimum of five years, or until the Department determines the mitigation site is successful.

- 2.11 Water Diversion Plan. If flowing water is present or reasonably anticipated, the Permittee shall submit for approval a detailed water diversion and/or dewatering plan to the Department **no later than 10 days prior commencing construction activities.** Dewatering structures may include the use of sand bag, Port-a-dams, water bladder dams, K-rails or driven sheet metal coffer dams. The Department will review the proposed water diversion method, to approve the plan or provide the requirements for that approval. The Permittee may not commence the dewatering of the stream and/or the diversion of water without the explicit approval from the Department.
- 2.12 Maintain Water Quality. Permittee shall divert flow in a manner that prevents turbidity, siltation, or pollution and provides flows to downstream reaches. Flows to downstream reaches shall be provided during all times that the natural flow would have supported aquatic life. Said flows shall be sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion. Normal flow shall be restored to the affected stream immediately upon completion of work at that location.
- 2.13 Best Management Practices. Permittee shall actively implement best management practices (BMPs) to prevent erosion and the discharge of sediment in to streams and lakes during project activities. BMPs shall be monitored daily and repaired if necessary to ensure maximum erosion and sediment control. All fiber rolls, straw waddles, and/or hay bales utilized within and adjacent to the project site shall be free of nonnative plant materials. Fiber rolls or erosion control mesh shall be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute, or coconut (coir) fiber, or other products without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread.

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

2.14.1 Permittee shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter a lake, streambed, or flowing stream or be placed in locations that may be subjected to high storm flows.

2.14.2 Spoil sites shall not be located within a lake, streambed, or flowing stream or locations that may be subjected to high storm flows, where spoil shall be washed back into a lake, streambed, or flowing stream where it will impact streambed habitat and aquatic or riparian vegetation.

2.14.3 Raw cement/concrete or washings thereof, asphalt, paint, or other coating material, oil or other petroleum products, or any other substances which could be hazardous to fish and wildlife resources resulting from project related activities shall be prevented from contaminating the soil and/or entering the waters of the state. These materials, placed within or where they may enter a lake, streambed, or flowing stream by Permittee or any party working under contract or with the permission of Permittee, shall be removed immediately.

2.14.4 No broken concrete, cement, debris, soil, silt, sand, bark, slash, sawdust, rubbish, or washings thereof, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into or be 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 100 feet of the high water mark of any lake, streambed, or flowing stream.

2.14.5 No equipment maintenance or fueling shall be done within or near any lake, streambed, or flowing stream where petroleum products or other pollutants from the equipment may enter these areas under any flow.

2.15 Inspection of Project Equipment. Permittee shall inspect all vehicles, watercraft, tools, waders and boots, and other project-related equipment and remove all visible soil/mud, plant materials, and animal remnants prior to entering and exiting the project site.

2.16 Operating Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.

- 2.17 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.
- 2.18 Staging and Storage Areas. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than one hundred (100) feet from the stream channel and banks within the Department jurisdiction. All equipment and fuel stored on site shall be bermed to contain any spilled material and shall be protected from rain. Berms shall consist of plastic covered dirt or sand bags.
- 2.19 Invasive Species. Permittee shall conduct project activities in a manner that prevents the introduction, transfer, and spread of invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, bacteria, etc.), from one project site and/or waterbody to another. Prevention BMPs and guidelines for invasive plants can be found on the California Invasive Plant Council's website at: <http://www.cal-ipc.org/ip/prevention/index.php> and for invasive mussels and aquatic species can be found at the Stop Aquatic Hitchhikers website: <http://www.protectyourwaters.net/>.
- 2.20 Site Restoration. All exposed/disturbed areas and access points within the stream left barren of vegetation as a result of the construction activities, such as staging areas, shall be restored using locally native grass and/or forb seeds, locally native grass plugs and/or a mix of quick growing sterile non-native grass with locally native grass/forb seeds. Seeded areas shall be covered with broadcast straw and/or seeded erosion control blankets.

3. Compensatory Measures

- 3.1 **No later than 30 days after completion of the construction project**, Permittee shall restore/create 0.70 acres of riparian habitat within Big Tree State Park. This habitat restoration/creation shall occur within Big Tree State Park. The habitat creation/enhancement shall follow the HMMP stipulations and conditions listed in Section 2.10 of this Agreement.

4. Reporting Measures

Permittee shall meet each reporting requirement described below.

- 4.1 Notification of Project Initiation. The Permittee shall notify the Department two (2) working days prior to beginning work. Notification shall be submitted as instructed in Contact Information section below. Email notification is preferred.
- 4.2 Notification of Project Completion. Upon completion of the project activities described in this Agreement, the project activities within the watercourse work area

shall be digitally photographed. Photographs shall be submitted to the Department within fifteen (15) days of completion. Photographs and project commencement notification shall be submitted as instructed in Contact Information section below. Email submittal is preferred.

- 4.3 **Annual Monitoring.** Permittee shall submit an annual monitoring report to the Department for five (5) years after completion of the construction project. The report shall discuss the mitigation performance as it relates to the success criteria. The report shall include the success of natural revegetation establishment, survival, percent cover, and height of both tree and shrub species. The number by species of plants replaced (if applicable), an overview of the revegetation effort, and the method used to assess these parameters shall also be included. The report shall include photos from designated photo stations and other relevant information including: a summary of invasive species control, methods used to remove non-native plants, and a list of wildlife observed on site.

CONTACT INFORMATION

Any communication that Permittee or the Department 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 the Department specifies by written notice to the other.

To Permittee:

California Department of Transportation
Javier Almaguer
855 M Street, Suite 200
Fresno, CA 93721
Phone: 559-445-6456
Email: javier.almaguer@dot.ca.gov

Contact

Jared Paul
855 M Street, Suite 200
Fresno, CA 93721
Phone: 559-445-6468
Email: jared.paul@dot.ca.gov

To The Department:

Department of Fish and Wildlife
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670
Attn: Lake and Streambed Alteration Program
Notification #: 1600-2015-0218-R2
Phone: 916-358-2885
Fax: 916-358-2912
Email: R2LSA@wildlife.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 the Department'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

The Department 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 the Department 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 the Department 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 the Department to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes the Department 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 the Department'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

The Department may amend the Agreement at any time during its term if the Department 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 the Department and Permittee. To request an amendment, Permittee shall submit to the Department a completed Department "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in the Department'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 the Department 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 the Department a completed Department "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in the Department'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 the Department a completed Department "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in the Department's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). The Department 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 (FGC § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of the Department's signature, which shall be: 1) after Permittee's signature; 2) after the Department 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 <https://www.wildlife.ca.gov/Conservation/CEQA/Fees>.

TERM

This Agreement shall expire **October 16, 2018**, 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.

EXHIBITS

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

Exhibit A – Figure 1 Project Location
 Figure 2 Project Impact Area
 Figure 3 Project Plans

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.

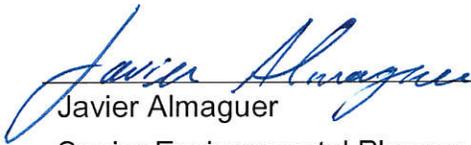
AUTHORIZATION

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 the Department in accordance with FGC section 1602.

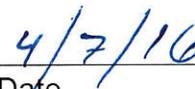
CONCURRENCE

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

FOR PERMITTEE



Javier Almaguer
Senior Environmental Planner



Date

FOR DEPARTMENT OF FISH AND WILDLIFE



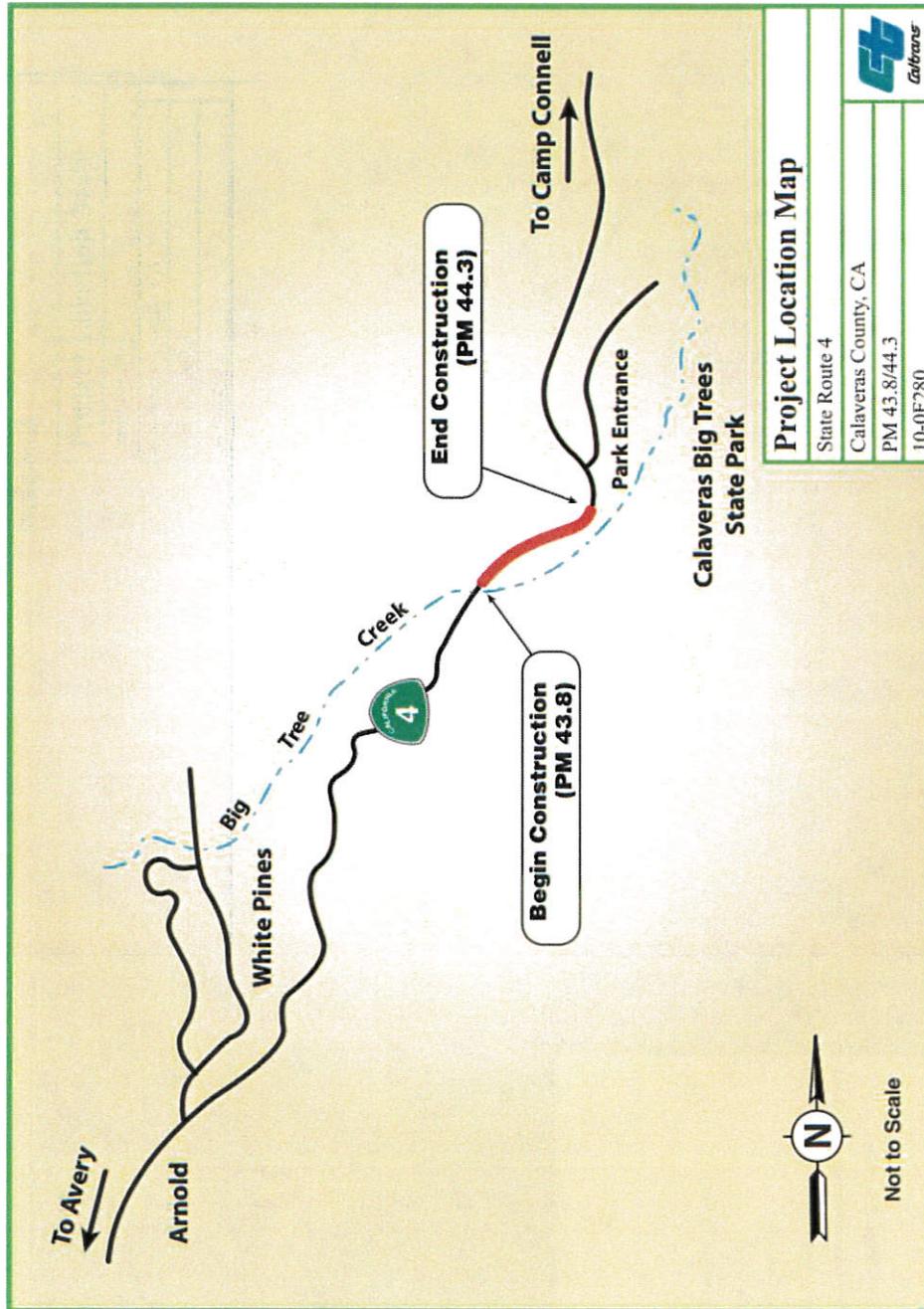
Tina Bartlett
Regional Manager



Date

Prepared by: Juan Torres
Senior Environmental Scientist (Specialist)

Exhibit A. Figure 1 – Project Location

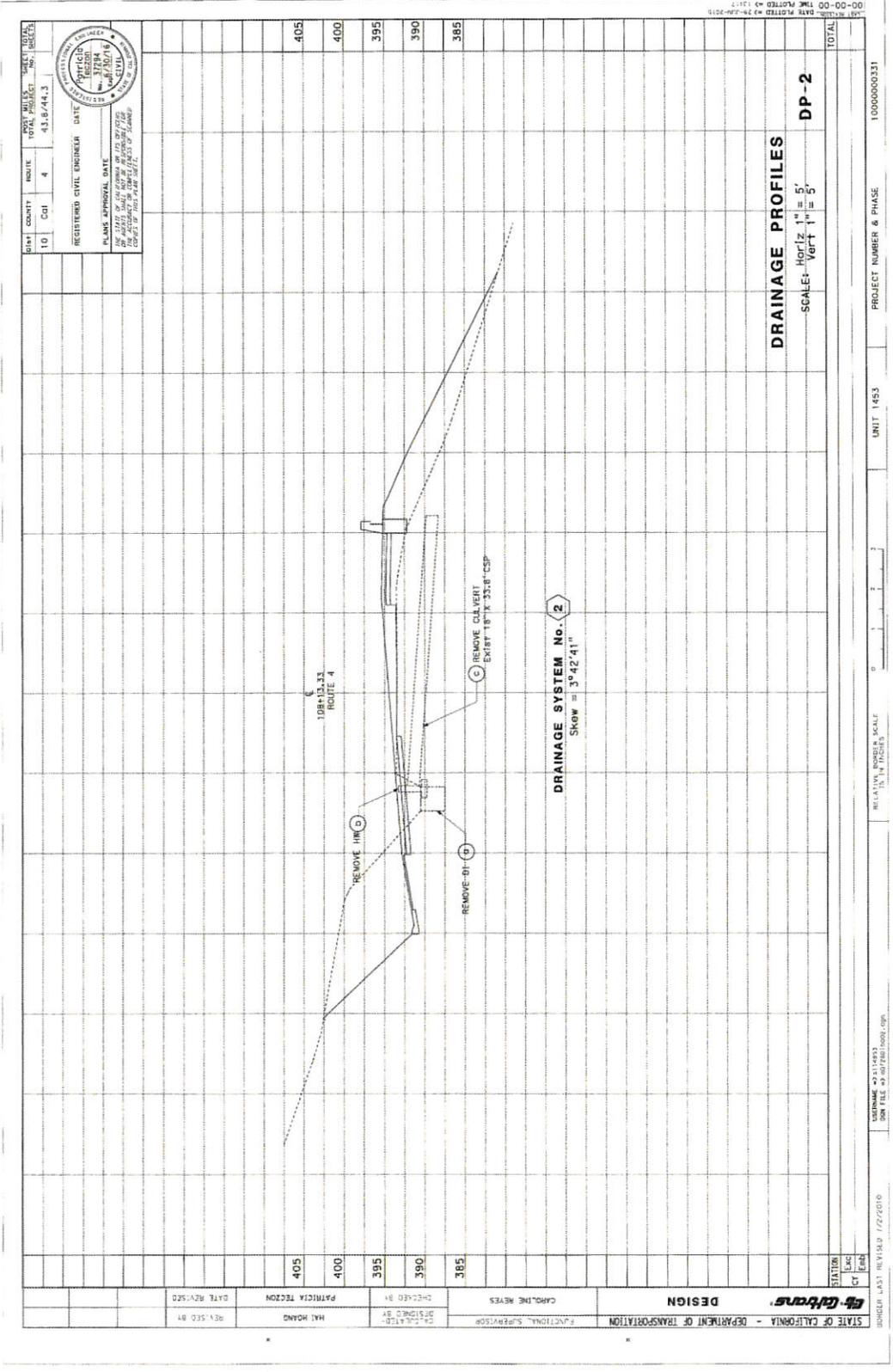


1600-2015-0218-R2

Figure 2 – Impact Area





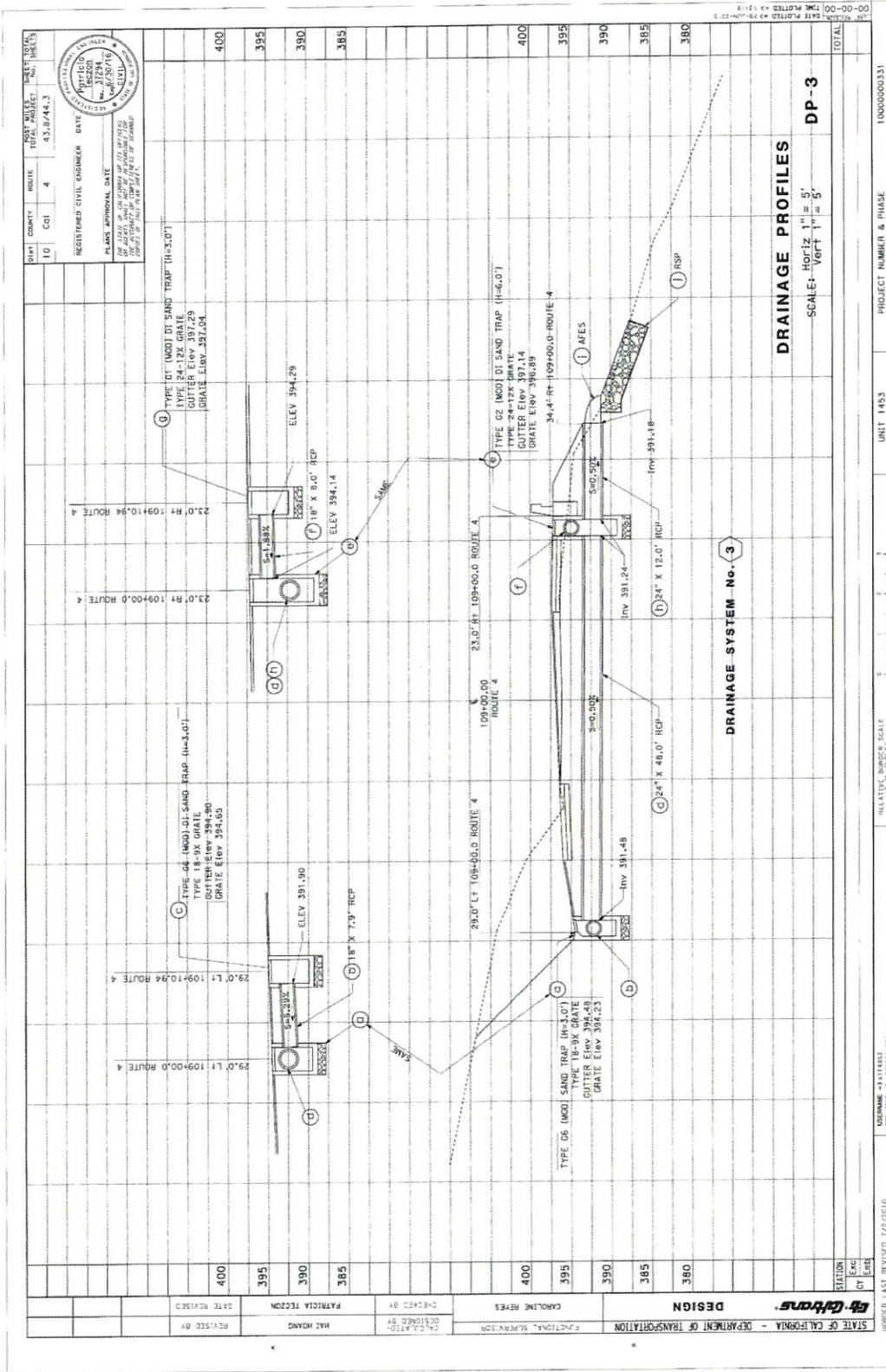


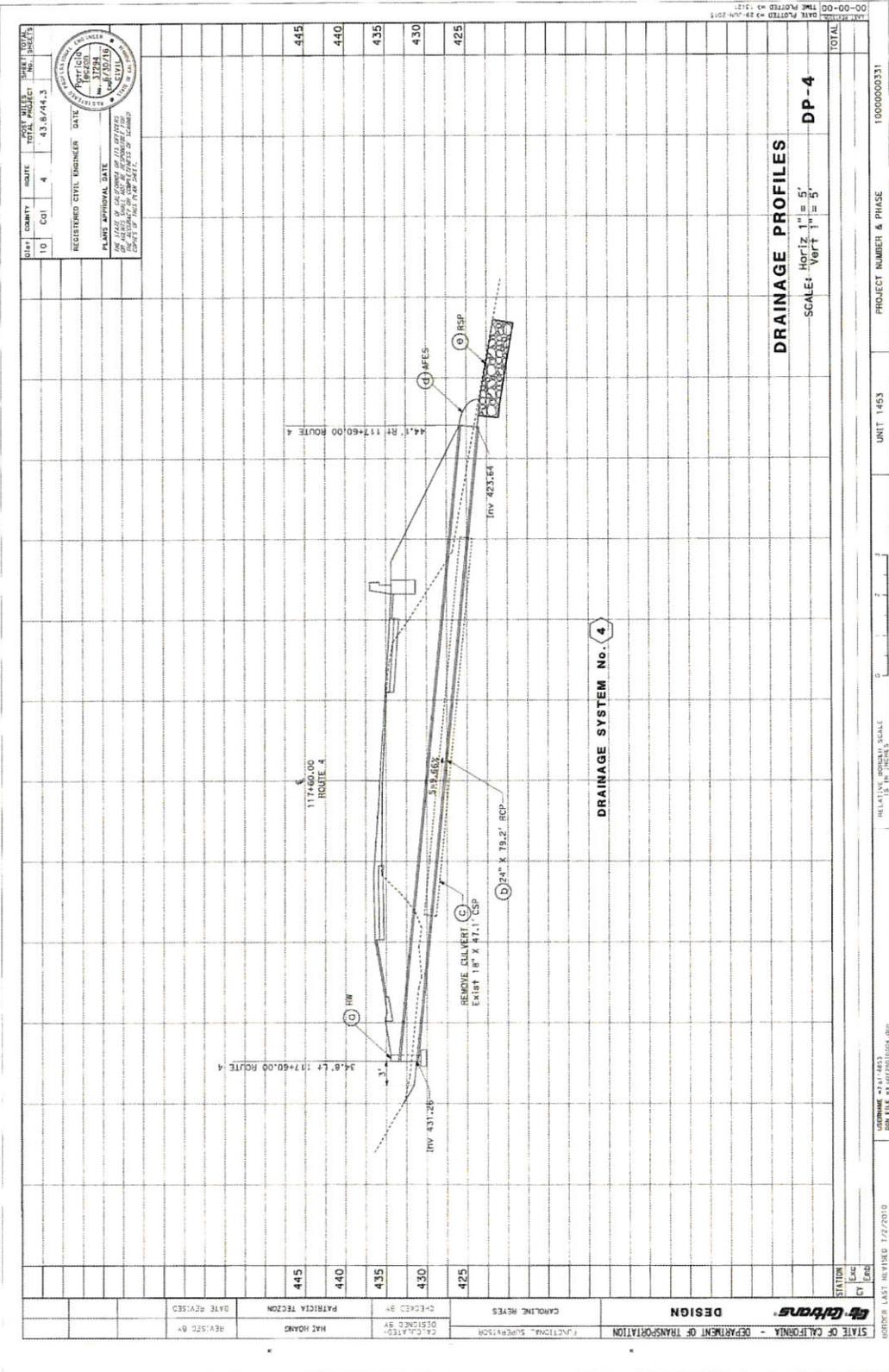
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 PROJECT NO. 4318/44.3
 DATE PLOTTED 07-24-2015
 TIME PLOTTED 4:12:17

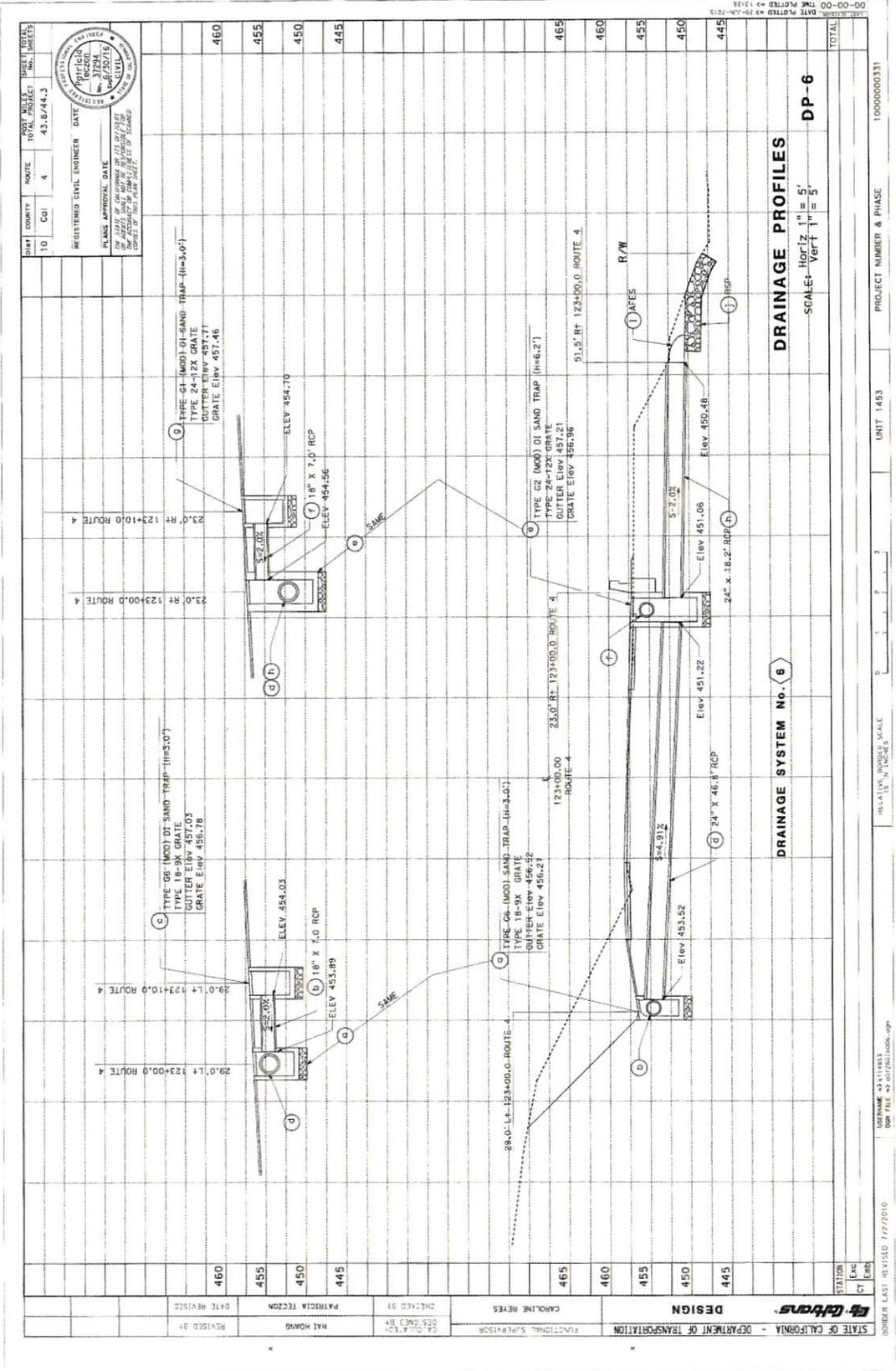
REGISTERED CIVIL ENGINEER
 DATE 06/16/15
 PLANS APPROVAL DATE 06/16/15
 REGISTERED PROFESSIONAL ENGINEER
 NO. 37284
 EXPIRES 06/16/18
 STATE OF CALIFORNIA
 DIVISION OF CONSTRUCTION SAFETY

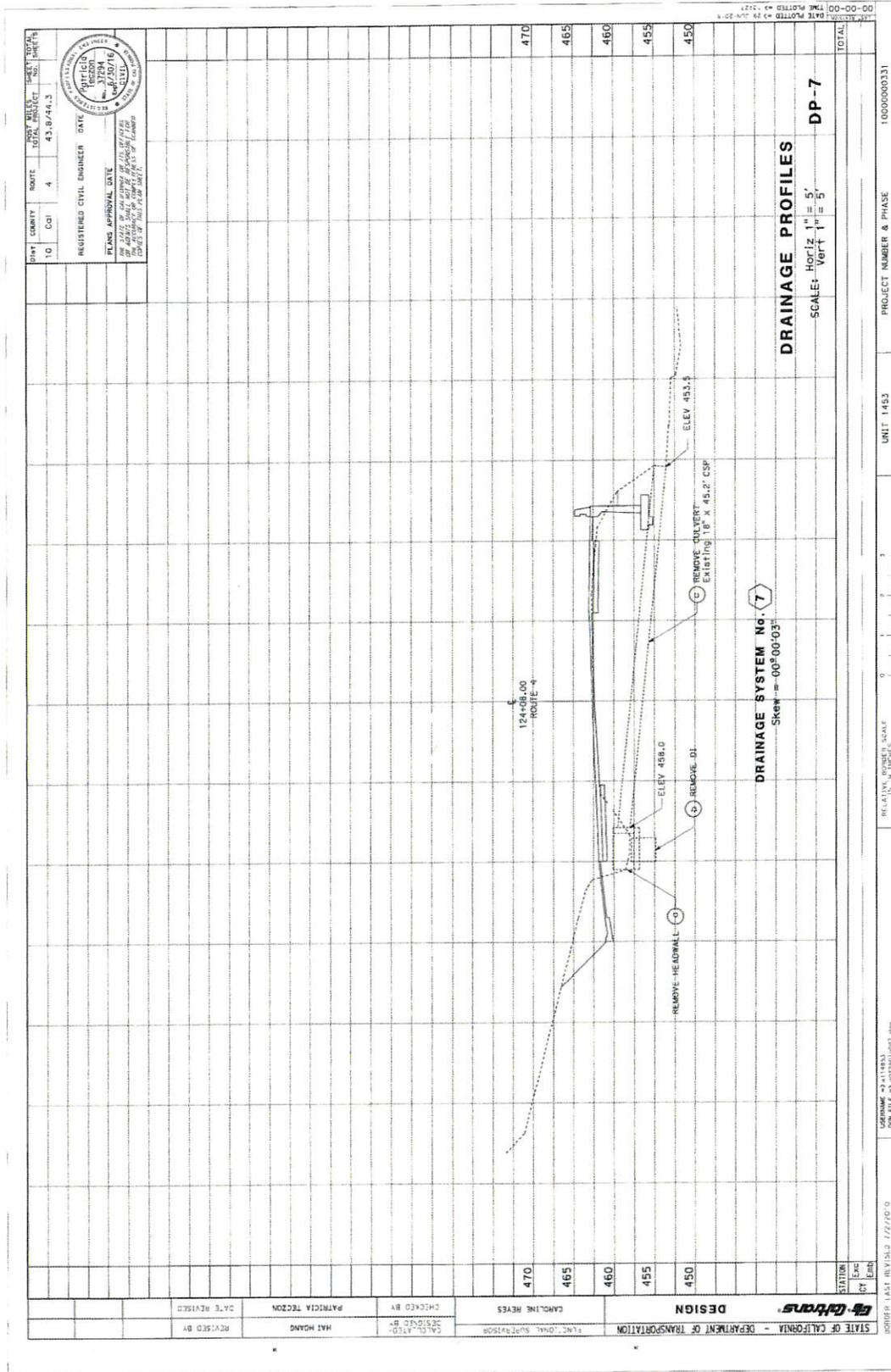
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 FUNCTIONAL SUPERVISOR CAROLINE REYES
 CHECKED BY PATRICIA TEZON
 DATE REVISED 06/16/15
 DESIGNER: JST, RY1487 / 7/27/2010

PROJECT NUMBER & PHASE: UNIT 1453, 10000000331
 RELATIVE BORDER SCALE: 15.14 INCHES
 USERNAME: jst, RY1487
 JOB FILE: 2017010002.dgn



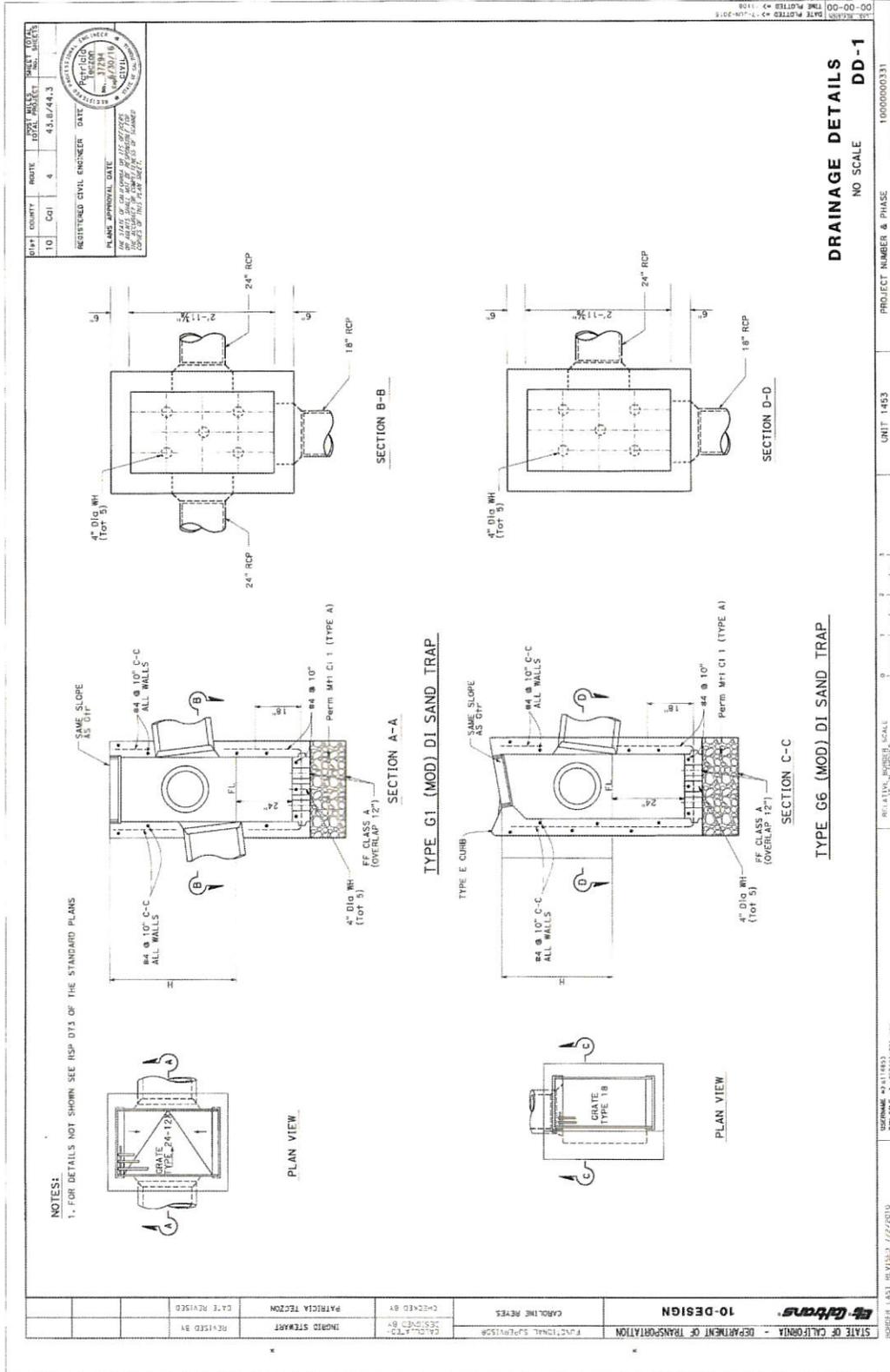






SHEET NO. 4
 COUNTY: Col
 ROUTE: 4
 TOTAL SHEETS: 43, 8/4/13
 REGISTERED CIVIL ENGINEER DATE: 9/15/10
 LICENSE NO.: 37284
 PROJECT NO.: 15111
 SHEET NO.: 26
 PLANS APPROVAL DATE: 03/07/15
 THE ABOVE STATEMENT OF APPROVAL IS VALID ONLY IF THE PROJECT IS COMPLETED BY THE DATE OF THIS PLAN SHEET.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN	CAMPLINE HEVES	DATE REVISION	REVISIONS
PROJECT: 1453, REVISED 1/22/10	DATE: 03/22/15	BY: HAI HOANG	BY: PATRICIA TECSON	BY: HAI HOANG
DESIGNED BY: HAI HOANG	CHECKED BY: PATRICIA TECSON	DATE: 03/22/15	DATE: 03/22/15	DATE: 03/22/15
STATION	Exc	Exc	Exc	Exc
470				
465				
460				
455				
450				
TOTAL				



REGISTERED CIVIL ENGINEER DATE: 4/18/2015
 NAME: PATRICIA TEJON
 NO. 27394
 STATE OF CALIFORNIA
 BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

PROJECT NO. 16000000331
 SHEET NO. DD-1

DATE PLOTTED: 7/22/2010
 TIME PLOTTED: 1:08

PROJECT NUMBER & PHASE: UNIT 1453

NO SCALE

DD-1

16000000331

RELATIVE NUMBER SCALE

0 1 2 3 4

10-DESIGN

FUNCTIONAL SUPERVISOR

CADLINE REVES

CHECKED BY: PATRICIA TEJON

DESIGNED BY: INGRID STEWART

DATE REVISED: DATE REVISED

REVISIONS

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

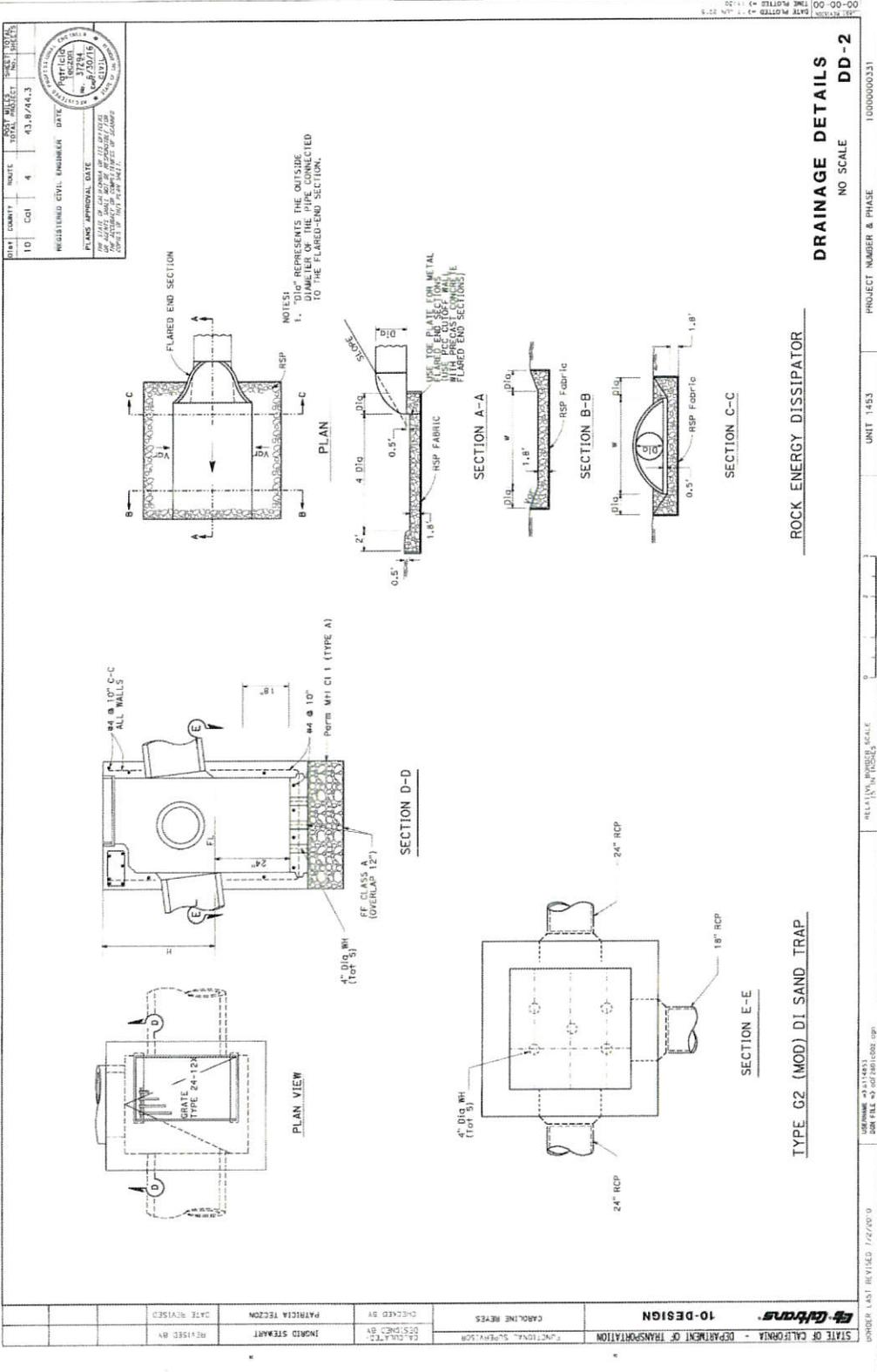
10-DESIGN

16000000331

DD-1

7/22/2010

1:08



DATE	11/11/15	DATE PLOTTED	11/11/15
TIME	10:22	PROJECT	1600-2015-0218-R2
NO.	00	DATE	11/11/15
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REGISTERED CIVIL ENGINEER	DATE	PROJECT	1600-2015-0218-R2
37424	11/11/15	NO.	00
11/11/15	11/11/15	DATE	11/11/15
11/11/15	11/11/15	DATE	11/11/15

DRAINAGE DETAILS
 NO SCALE
DD-2

ROCK ENERGY DISSIPATOR

TYPE G2 (MOD) DI SAND TRAP

PROJECT NUMBER & PHASE: 1600-2015-0218-R2 UNIT 1453 RELATIVE HORIZONTAL SCALE: 0:1 VERTICAL SCALE: 1/8"=1'-0" SHEET LAST REVISED: 7/27/09

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CAROLINE REYES	CHECKED BY	PATRICIA TEJON	DATE REVISED	11/11/15
10-DESIGN	DESIGNED BY	INGRID STEARAT	REVISOR	DATE REVISED	11/11/15	11/11/15



U S Army Corps of
Engineers
Sacramento District

Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide
Permits – March 19, 2012

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

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

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

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

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

A. Regional Conditions

1. Regional Conditions for California, excluding the Tahoe Basin

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/nwp/2012_nwps/2012-NWP-RC-CA.pdf

2. Regional Conditions for Nevada, including the Tahoe Basin

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/nwp/2012_nwps/2012-NWP-RC-NV.pdf

3. Regional Conditions for Utah

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/nwp/2012_nwps/2012-NWP-RC-UT.pdf

4. Regional Conditions for Colorado.

http://www.spk.usace.army.mil/Portals/12/documents/regulatory/nwp/2012_nwps/2012-NWP-RC-CO.pdf

B. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, 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. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

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,

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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. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.
- 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 NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.
- 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 and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.
- 15. **Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.
- 16. **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 responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).
- 17. **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.
- 18. **Endangered Species.**
 - (a) No activity is authorized under any NWP which is likely to directly or indirectly 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 directly or indirectly 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. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to 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 might be affected by the proposed work or that utilize the designated critical habitat that might 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. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(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 NWP.

(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, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) 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/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for obtaining any “take” permits required under the U.S. Fish and Wildlife Service’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such “take” permits are required for a particular activity.

20. **Historic Properties.**

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

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified

historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

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

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

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or

ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWP 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

- (3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).
- (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.
- (5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.
- (d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.
- (e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.
- (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.
- (g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.
- (h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.
- 24. Safety of Impoundment Structures.** To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.
- 25. Water Quality.** Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.
- 26. Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.
- 27. Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

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

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

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

- (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
- (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
- (c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification.

(a) **Timing.** Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification

(PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

- (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
- (2) 45 calendar days have passed from the district engineer’s receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is “no effect” on listed species or “no potential to cause effects” on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee’s right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2)..

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

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed project;

- (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);
- (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;
- (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
- (6) 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, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and
- (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property

may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

- (c) Form of Pre-Construction Notification: he standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.
- (d) Agency Coordination:
 - (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.
 - (2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where

there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

C. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10- acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining

whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

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

D. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWP's do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWP's do not grant any property rights or exclusive privileges.
4. NWP's do not authorize any injury to the property or rights of others.
5. NWP's do not authorize interference with any existing or proposed Federal project.

E. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in

which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

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

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

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

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

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

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

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

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

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

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

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

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

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

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

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

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWP, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of “waterbodies” include streams, rivers, lakes, ponds, and wetlands.

Final Sacramento District Nationwide Permit
Regional Conditions for California, excluding the Lake Tahoe Basin
(Effective March 19, 2012 until March 18, 2017)

1.* When pre-construction notification (PCN) is required, the permittee shall notify the U.S. Army Corps of Engineers, Sacramento District (Corps) in accordance with General Condition 31 using either the South Pacific Division Preconstruction Notification (PCN) Checklist or a signed application form (ENG Form 4345) with an attachment providing information on compliance with all of the General and Regional Conditions. In addition, the PCN shall include:

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

b. Drawings, including plan and cross-section views, clearly depicting the location, size and dimensions of the proposed activity, as well as the location of delineated waters of the U.S. on the site. The drawings shall contain a title block, legend and scale, amount (in cubic yards) and area (in acres) of fill in Corps jurisdiction, including both permanent and temporary fills/structures. The ordinary high water mark or, if tidal waters, the mean high water mark and high tide line, should be shown (in feet), based on National Geodetic Vertical Datum (NGVD) or other appropriate referenced elevation. All drawings for activities located within the boundaries of the Los Angeles District shall comply with the September 15, 2010 Special Public Notice: *Map and Drawing Standards for the Los Angeles District Regulatory Division*, (available on the Los Angeles District Regulatory Division website at: www.spl.usace.army.mil/regulatory/); and

c. Numbered and dated pre-project color photographs showing a representative sample of waters proposed to be impacted on the site, and all waters of the U.S. proposed to be avoided on and immediately adjacent to the project site. The compass angle and position of each photograph shall be identified on the plan-view drawing(s) required in subpart b of this Regional Condition.

2. For all Nationwide Permits (NWP), the permittee shall submit a PCN in accordance with General Condition 31 and Regional Condition 1, in the following circumstances:

a. For all activities that would result in the discharge of fill material into any vernal pool;

b. For any activity in the Primary and Secondary Zones of the Legal Delta, the Sacramento River, the San Joaquin River, and the immediate tributaries of these waters;

c. For all crossings of perennial waters and intermittent waters;

d. For all activities proposed within 100 feet of the point of discharge of a known natural spring source, which is any location where ground water emanates from a point in the ground excluding seeps or other discharges which lack a defined channel; and

e.* For all activities located in areas designated as Essential Fish Habitat (EFH) by the Pacific Fishery Management Council (i.e., all tidally influenced areas - Federal Register dated March 12, 2007 (72 FR 11092)), in which case the PCN shall include an EFH assessment and extent of proposed impacts to EFH. Examples of EFH habitat assessments can be found at: <http://www.swr.noaa.gov/efh.htm>.

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

* Regional Condition developed jointly between Sacramento District, Los Angeles District, and San Francisco District.

4. For all waters of the U.S. proposed to be avoided on a site, unless determined to be impracticable by the Corps, the permittee shall:

a. Establish and maintain, in perpetuity, a preserve containing all avoided waters of the U.S. to ensure that the functions of the aquatic environment are protected;

b. Place all avoided waters of the U.S. and any upland buffers into a separate parcel prior to discharging dredge or fill material into waters of the U.S., and

c. Establish permanent legal protection for all preserve parcels, following Corps approval of the legal instrument;

If the Corps determines that it is impracticable to require permanent preservation of the avoided waters, additional mitigation may be required in order to compensate for indirect impacts to the waters of the U.S.

5. For all temporary fills, the PCN shall include a description of the proposed temporary fill, including the type and amount of material to be placed, the area proposed to be impacted, and the proposed plan for restoration of the temporary fill area to pre-project contours and conditions, including a plan for the re-vegetation of the temporary fill area, if necessary. In addition, the PCN shall include the reason(s) why avoidance of temporary impacts is not practicable.

In addition, for all activities resulting in temporary fill within waters of the U.S., the permittee shall:

a. Utilize material consisting of clean and washed gravel. For temporary fills within waters of the U.S. supporting anadromous fisheries, spawning quality gravel shall be used, where practicable, as determined by the Corps, after consultation with appropriate Federal and state fish and wildlife agencies;

b. Place a horizontal marker (e.g. fabric, certified weed free straw, etc.) to delineate the existing ground elevation of the waters temporarily filled during construction; and

c. Remove all temporary fill within 30 days following completion of construction activities.

6. In addition to the requirements of General Condition 2, unless determined to be impracticable by the Corps, the following criteria shall apply to all road crossings:

a.* For all activities in waters of the U.S. that are suitable habitat for Federally-listed fish species, the permittee shall design all road crossings to ensure that the passage and/or spawning of fish is not hindered. In these areas, the permittee shall employ bridge designs that span the stream or river, including pier- or pile-supported spans, or designs that use a bottomless arch culvert with a natural stream bed;

b. Road crossings shall be designed to ensure that no more than minor impacts would occur to fish and wildlife passage or expected high flows, following the criteria listed in Regional Condition 6(a). Culverted crossings that do not utilize a bottomless arch culvert with a natural stream bed may be authorized for waters that do not contain suitable habitat for Federally listed fish species, if it can be demonstrated and is specifically determined by the Corps, that such crossing will result in no more than minor impacts to fish and wildlife passage or expected high flows;

c. No construction activities shall occur within standing or flowing waters. For ephemeral or intermittent streams, this may be accomplished through construction during the dry season. In perennial streams, this may be accomplished through dewatering of the work area. Any proposed dewatering plans must be approved, in writing, by the Corps prior to commencement of construction activities; and

* Regional Condition developed jointly between Sacramento District, Los Angeles District, and San Francisco District.

d. All bank stabilization activities associated with a road crossing shall comply with Regional Condition 19.

In no case shall stream crossings result in a reduction in the pre-construction bankfull width or depth of perennial streams or negatively alter the flood control capacity of perennial streams.

7.* For activities in which the Corps designates another Federal agency as the lead for compliance with Section 7 of the Endangered Species Act (ESA) of 1973 as amended, pursuant to 50 CFR Part 402.07, Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (EFH), pursuant to 50 CFR 600.920(b) and/or Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, pursuant to 36 CFR 800.2(a)(2), the lead Federal agency shall provide all relevant documentation to the Corps demonstrating any previous consultation efforts, as it pertains to the Corps Regulatory permit area (for Section 7 and EFH compliance) and the Corps Regulatory area of potential effect (APE) (for Section 106 compliance). For activities requiring a PCN, this information shall be submitted with the PCN. If the Corps does not designate another Federal agency as the lead for ESA, EFH and/or NHPA, the Corps will initiate consultation for compliance, as appropriate.

8. For all NWP's which require a PCN, the permittee shall submit the following additional information with the compliance certificate required under General Condition 30:

a. As-built drawings of the work conducted on the project site and any on-site and/or off-site compensatory mitigation, preservation, and/or avoidance area(s). The as-builts shall include a plan-view drawing of the location of the authorized work footprint (as shown on the permit drawings), with an overlay of the work as constructed in the same scale as the permit drawings. The drawing shall show all areas of ground disturbance, wetland impacts, structures, and the boundaries of any on-site and/or off-site mitigation or avoidance areas. Please note that any deviations from the work as authorized, which result in additional impacts to waters of the U.S., must be coordinated with the appropriate Corps office prior to impacts; and

b. Numbered and dated post-construction color photographs of the work conducted within a representative sample of the impacted waters of the U.S., and within all avoided waters of the U.S. on and immediately adjacent to the proposed project area. The compass angle and position of all photographs shall be similar to the pre-construction color photographs required in Regional Condition 1(c) and shall be identified on the plan-view drawing(s) required in subpart a of this Regional Condition.

9. For all activities requiring permittee responsible mitigation, the permittee shall develop and submit to the Corps for review and approval, a final comprehensive mitigation and monitoring plan for all permittee responsible mitigation prior to commencement of construction activities within waters of the U.S. The plan shall include the mitigation location and design drawings, vegetation plans, including target species to be planted, and final success criteria, presented in the format of the *Sacramento District's Habitat Mitigation and Monitoring Proposal Guidelines*, dated December 30, 2004, and in compliance with the requirements of 33 CFR 332.

10.* The permittee shall complete the construction of any compensatory mitigation required by special condition(s) of the NWP verification before or concurrent with commencement of construction of the authorized activity, except when specifically determined to be impracticable by the Corps. When mitigation involves use of a mitigation bank or in-lieu fee program, the permittee shall submit proof of payment to the Corps prior to commencement of construction of the authorized activity.

11. The permittee is responsible for all authorized work and ensuring that all contractors and workers are made aware and adhere to the terms and conditions of the permit authorization. The permittee shall ensure

that a copy of the permit authorization and associated drawings are available and visible for quick reference at the site until all construction activities are completed.

12. The permittee shall clearly identify the limits of disturbance in the field with highly visible markers (e.g. construction fencing, flagging, silt barriers, etc.) prior to commencement of construction activities within waters of the U.S. The permittee shall maintain such identification properly until construction is completed and the soils have been stabilized. The permittee is prohibited from any activity (e.g. equipment usage or materials storage) that impacts waters of the U.S. outside of the permit limits (as shown on the permit drawings).

13. For all activities in which a PCN is required, the permittee shall notify the appropriate district office of the start date for the authorized work within 10 days prior to initiation of construction activities.

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

15. For all activities located in the Mather Core Recovery Area in Sacramento County, as identified in the U.S. Fish and Wildlife Service's *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* dated December 15, 2005, NWPs 14, 18, 23, 29, 39, 40, 42, 43 and 44 are revoked from use in vernal pools that may contain habitat for Federally-listed threatened and/or endangered vernal pool species.

16. For activities located in the Primary or Secondary Zone of the Legal Delta, NWPs 29 and 39 are revoked.

17. For all activities within the Secondary Zone of the Legal Delta, the permittee shall conduct compensatory mitigation for unavoidable impacts within the Secondary Zone of the Legal Delta.

18. For NWP 12: Permittees shall ensure the construction of utility lines does not result in the draining of any water of the U.S., including wetlands. This may be accomplished through the use of clay blocks, bentonite, or other suitable material (as approved by the Corps) to seal the trench. For utility line trenches, during construction, the permittee shall remove and stockpile, separately, the top 6 – 12 inches of topsoil. Following installation of the utility line(s), the permittee shall replace the stockpiled topsoil on top and seed the area with native vegetation. The permittee shall submit a PCN for utility line activities in the following circumstances:

a. The utility line crossing would result in a discharge of dredged and/or fill material into perennial waters, intermittent waters, wetlands, mudflats, vegetated shallows, riffle and pool complexes, sanctuaries and refuges or coral reefs;

b. The utility line activity would result in a discharge of dredged and/or fill material into greater than 100 linear feet of ephemeral waters of the U.S.;

c. The utility line installation would include the construction of a temporary or permanent access road, substation or foundation within waters of the U.S.; or

d. The proposed activity would not involve the restoration of all utility line trenches to pre-project contours and conditions within 30 days following completion of construction activities.

19. For NWP 13 and 14: All bank stabilization activities shall involve either the sole use of native vegetation or other bioengineered design techniques (e.g. willow plantings, root wads, large woody debris, etc.), or a combination of hard-armoring (e.g. rip-rap) and native vegetation or bioengineered design

techniques, unless specifically determined to be impracticable by the Corps. The permittee shall submit a PCN for any bank stabilization activity that involves hard-armoring or the placement of any non-vegetated or non-bioengineered technique below the ordinary high water mark or, if tidal waters, the high tide line of waters of the U.S. The request to utilize non-vegetated techniques must include information on why the sole use of vegetated techniques is not practicable.

20. For NWP 23: The permittee shall submit a PCN for all activities proposed for this NWP, in accordance with General Condition 31 and Regional Condition 1. The PCN shall include a copy of the signed Categorical Exclusion document and final agency determinations regarding compliance with ESA, EFH and NHPA, in accordance with General Conditions 18 and 20 and Regional Condition 7.

21. For NWP 27: The permittee shall submit a PCN for aquatic habitat restoration, establishment, and enhancement activities in the following circumstances:

a. The restoration, establishment or enhancement activity would result in a discharge of dredged and/or fill material into perennial waters, intermittent waters, wetlands, mudflats, vegetated shallows, riffle and pool complexes, sanctuaries and refuges or coral reefs; or

b. The restoration, establishment or enhancement activity would result in a discharge of dredged and/or fill material into greater than 100 linear feet of ephemeral waters of the U.S.

22. For NWPs 29 and 39: The channelization or relocation of intermittent or perennial drainages is not authorized, except when, as determined by the Corps, the relocation would result in a net increase in functions of the aquatic ecosystem within the watershed.

23.* Any requests to waive the 300 linear foot limitation for intermittent and ephemeral streams for NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51 and 52, or to waive the 500 linear foot limitation along the bank for NWP 13, must include the following:

a. A narrative description of the stream. This should include known information on: volume and duration of flow; the approximate length, width, and depth of the waterbody and characteristics observed associated with an Ordinary High Water Mark (e.g. bed and bank, wrack line or scour marks); a description of the adjacent vegetation community and a statement regarding the wetland status of the adjacent areas (i.e. wetland, non-wetland); surrounding land use; water quality; issues related to cumulative impacts in the watershed, and; any other relevant information;

b. An analysis of the proposed impacts to the waterbody, in accordance with General Condition 31 and Regional Condition 1;

c. Measures taken to avoid and minimize losses to waters of the U.S., including other methods of constructing the proposed activity(s); and

d. A compensatory mitigation plan describing how the unavoidable losses are proposed to be offset, in accordance with 33 CFR 332.

24. For NWPs 29, 39, 40, 42, and 43: The permittee shall establish and maintain upland vegetated buffers in perpetuity, unless specifically determined to be impracticable by the Corps, next to all preserved open waters, streams and wetlands including created, restored, enhanced or preserved waters of the U.S., consistent with General Condition 23(f). Except in unusual circumstances, as determined by the Corps, vegetated buffers shall be at least 50 feet in width.

25. For NWP 46: The discharge shall not cause the loss of greater than 0.5 acres of waters of the United States or the loss of more than 300 linear feet of ditch, unless specifically waived in writing by the Corps.

26. All NWPs except 3, 6, 20, 27, 32, and 38 are revoked for activities in histosols, fens, bogs and peatlands and in wetlands contiguous with fens. Fens are defined as slope wetlands with a histic epipedon that are hydrologically supported by groundwater. Fens are normally saturated throughout the growing season, although they may not be during drought conditions. For NWPs 3, 6, 20, 27, 32, and 38, the permittee shall submit a PCN to the Corps in accordance with General Condition 31 and Regional Condition 1. This condition does not apply to NWPs 1, 2, 8, 9, 10, 11, 24, 28, 35 or 36, as these NWPs either apply to Section 10 only activities or do not authorize impacts to special aquatic sites.

Central Valley Regional Water Quality Control Board

29 March 2016

Javier Almaguer
California Department of Transportation
855 M Street, Suite 200
Fresno, CA 93721

**CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY
CERTIFICATION AMENDED; CALIFORNIA DEPARTMENT OF TRANSPORTATION, BIG
TREE CREEK STORMWATER COMPLIANCE PROJECT, (WDID #5B05CR00066A),
CALAVERAS 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 Order serves as a Water Quality Certification (Certification) action that 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 the California Code of Regulations (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 § 3855(b) of the California Code of Regulations, 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 § 3833 of the California Code of Regulations.
4. This Certification is no longer valid if the project (as described) is modified, or coverage under § 404 of the Clean Water Act has expired. The California Department of

Transportation shall notify the Central Valley Water Board within 7 days of the project completion.

5. All reports, notices, or other documents required by this Certification or requested by the Central Valley Water Board shall be signed by a person described below or by a duly authorized representative of that person.
 - a. For a corporation: by a responsible corporate officer such as (1) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; (2) any other person who performs similar policy or decision-making functions for the corporation; or (3) the manager of one or more manufacturing, production, or operating facilities if *authority* to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
 - c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official.
6. Any person signing a document under Standard Condition No. 5 shall make the following certification, whether written or implied:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

TECHNICAL CERTIFICATION CONDITIONS:

In addition to the above standard conditions, The California Department of Transportation shall satisfy the following:

1. The California Department of Transportation shall notify the Central Valley Regional Water Quality Control Board (Central Valley Water Board) in writing at least **seven (7) days** in advance of the start of any work within waters of the United States. The notification shall include the name of the project and the WDID number, and shall be sent to the Central Valley Water Board Contact indicated in this Certification.
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. The California Department of Transportation shall maintain a copy of this Certification and supporting documentation (Project Information Sheet) 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.

4. The California Department of Transportation shall perform surface water sampling:
 - a) when performing any in-water work;
 - b) in the event that project activities result in any materials reaching surface waters; or
 - c) when any activities result in the creation of a visible plume in surface waters.

The monitoring requirements in Table 1 shall be conducted upstream out of the influence of the Project, and approximately 300 feet downstream of the work area. The sampling frequency may be modified for certain projects with written approval from Central Valley Water Board staff.

Table 1:

Parameter	Unit	Type of Sample	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTU	Grab ⁽¹⁾	Every 4 hours during in-water work	(4)
Settleable Material	mL/L	Grab ⁽¹⁾	Every 4 hours during in-water work	(2)
Visible construction related pollutants ⁽³⁾	Observations	Visual Inspections	Continuous throughout the construction period	—

⁽¹⁾ Grab samples shall be taken at mid-depth and be collected at the same time each day to get a complete representation of variations in the receiving water.

⁽²⁾ Pollutants shall be analyzed using the analytical methods described in 40 Code of Federal Regulations Part 136; where no methods are specified for a given pollutant.

⁽³⁾ Visible construction-related pollutants include oil, grease, foam, fuel, petroleum products, and construction-related, excavated, organic or earthen materials.

⁽⁴⁾ A hand-held field meter may be used, provided that the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Certification shall be maintained at the Project site.

As appropriate, surface water monitoring shall occur at mid-depth. A surface water monitoring report shall be submitted to the Central Valley Water Board Contact indicated in this Certification within two weeks of initiation of sampling and every two weeks thereafter. In reporting the monitoring data, the California Department of Transportation shall arrange the data in tabular form so that the sampling locations, date, constituents, and concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the Project complies with Certification requirements. The report shall include surface water sampling results, visual observations, and identification of the turbidity increase in the receiving water applicable to the natural turbidity conditions specified in the turbidity criteria below.

If no monitoring is conducted, the California Department of Transportation shall submit a written statement to the Central Valley Water Board Contact indicated in the Certification stating, "No monitoring was required" with the Notice of Completion.

5. The Central Valley Water Board adopted a *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised June 2015 (Basin Plan) or *Water Quality Control Plan for the Tulare Lake Basin, 2nd Edition* (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Turbidity and settleable matter limits are based on water quality objectives contained in the Basin Plan and are part of this Certification as follows:

- a) Activities shall not cause turbidity increases in surface water to exceed:
 - i. where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTU;
 - ii. where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
 - iii. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
 - iv. where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
 - v. 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 NTUs over background turbidity. 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 used with prior approval of the Central Valley Water Board staff.

- b) Activities shall not cause settleable matter to exceed 0.1 mL/L in surface waters as measured in surface waters within approximately 300 feet downstream of the Project.
6. The California Department of Transportation shall notify the Central Valley Water Board immediately if the above criteria for turbidity, settleable matter or other water quality objectives are exceeded.
 7. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement of absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The California Department of Transportation must perform frequent

inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.

8. The California Department of Transportation shall develop and maintain onsite a project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the Project. The Plan must detail the Project elements, construction equipment types and location, access and staging and construction sequence. The Plan must also address the potential of responding to a spill or prevention of spills occurring within the Project site.
9. Asphalt, drilling fluids, lubricants, paints, coating material, oil, petroleum products, or any other substances which could be hazardous to fish and wildlife resulting from or disturbed by project-related activities, shall be prevented from contaminating the soil and/or entering surface waters. Concrete must completely be cured before coming into contact with surface waters. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility, which is authorized to accept concrete wastes.
10. Creosote-treated wood products or any other treated wood products that are highly flammable and/or toxic to aquatic life shall not be installed in surface waters. A method of containment must be used below the bridge(s), boardwalk(s), and/or temporary crossing(s) to prevent debris from falling into the water body as feasible.
11. An effective combination of erosion and sediment control Best Management Practices (BMPs) shall be implemented and adequately working during all phases of construction.
12. All areas disturbed by Project activities shall be protected from washout or erosion.
13. All temporarily affected areas shall be restored to pre-construction contours and conditions upon completion of construction activities.
14. This Certification does not allow permanent water diversion of flow from the receiving water. This Certification is invalid if any water is permanently diverted as a part of the Project.
15. Any temporary dam or other artificial obstruction constructed shall only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel which will cause little or no siltation. Stream flow shall be temporarily diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.
16. 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 receiving water. The California Department of Transportation shall notify the Central Valley Water Board as soon as practicable of any spill of petroleum products or other organic or earthen materials with written follow up within 5 days.

17. The California Department of Transportation shall submit a copy of the final, signed and dated Lake or Streambed Alteration Agreement issued by the California Department of Fish and Wildlife within 14 days of issuance to the Central Valley Water Board Contact indicated in this Certification.
The California Department of Transportation shall comply with all California Department of Fish and Wildlife requirements, including but not limited to those requirements described in the Lake or Streambed Alteration Agreement.
18. The California Department of Transportation shall obtain coverage under an NPDES permit for dewatering activities that result in discharges into surface water and/or shall obtain Waste Discharge Requirements (WDRs) for dewatering activities that result in discharges to land from the Central Valley Water Board.
19. The Conditions in this water quality certification are based on the information contained in the California Department of Transportation's application and in the attached "Project Information Sheet." If the Project, as described in the application and the attached Project Information Sheet, is modified or changed, this Certification is no longer valid until amended by the Central Valley Water Board.
20. The California Department of Transportation shall implement each of the mitigation measures specified in the approved Negative Declaration for the Project, as they pertain to biology, hydrology and water quality impacts as required by § 21081.6 of the Public Resource Code and § 15097 of the California Code of Regulations.
21. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under the applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with water quality standards and other pertinent requirements incorporated into this certification.
 - a) If The California Department of Transportation 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 California Department of Transportation is subject to civil monetary liabilities, for each day of violation, or criminal liability.
 - b) In response to a suspected violation of any condition of this certification, Central Valley Water Board may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the Central Valley Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports (Water Code, § 1051, 13165, 13267 and 13383). In response to any violation of the conditions of this certification,

the Central Valley Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

- c) The California Department of Transportation shall allow the staff of the Central Valley Water Board, or an authorized representative(s), upon the presentation of credentials and other documents, as may be required by law, 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.
22. The California Department of Transportation shall provide evidence of all on-site and off-site compensatory mitigation requirements, including, but not limited to, the purchase of mitigation credits or payment of in-lieu fees or any combination as required by the United States Army Corps of Engineer prior to commencing construction to the Central Valley Water Board.

Compensatory mitigation must comply with the effective policy at the time of Certification, which ensures no overall net loss of wetlands for impacts to waters of the State.

Evidence of compliance with compensatory mitigation requirements includes providing a letter from the approved compensatory mitigation bank or in-lieu fee recipient. The letter must: (a) be on the compensatory mitigation bank's or in-lieu fee recipient's letterhead; (b) be signed by an authorized representative of the compensatory mitigation bank or in-lieu fee recipient; (c) indicate the United States Army Corps of Engineers' SPK number; (d) describe the Project name and location; and (e) detail the type of compensatory mitigation credits purchased or in-lieu fees paid for the Project's impacts.

23. Staff of the Central Valley Water Board has prepared total maximum daily load (TMDL) allocations that, once approved, would limit methylmercury in storm water discharges to the Sacramento-San Joaquin Delta. The Central Valley Water Board has scheduled these proposed allocations to be considered for adoption. When the Central Valley Water Board adopts the TMDL and once approved by the Environmental Protection Agency, the discharge of methylmercury may be limited from the proposed project. The purpose of this condition is to provide notice to the California Department of Transportation that methylmercury discharge limitations and monitoring requirements may apply to this project in the future and also to provide notice of the Central Valley Water Board's TMDL process and that elements of the planned construction may be subject to a TMDL allocation.

STORM WATER QUALITY CONDITIONS:

The California Department of Transportation shall also satisfy the following additional storm water quality conditions:

1. The California Department of Transportation shall comply with their Construction General NPDES Permit Order No 2009-0009-DWQ (NPDES No. CAS 000002) issued by the State Water Resources Control Board

2. During the construction phase, the California Department of Transportation must employ strategies to minimize erosion and the introduction of pollutants into storm water runoff. These strategies must include the following:
 - a) A Storm Water Pollution Prevention Plan (SWPPP) must be prepared during the project planning and design phases and before construction;
 - b) An effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working prior to the rainy season and during all phases of construction.
3. The California Department of Transportation must minimize the short and long-term impacts on receiving water quality from the Project by implementing the following post-construction storm water management practices:
 - a) minimize the amount of impervious surface;
 - b) reduce peak runoff flows;
 - c) provide treatment BMPs to reduce pollutants in runoff;
 - d) ensure existing waters of the State (e.g., wetlands, vernal pools, or creeks) are not used as pollutant source controls and/or treatment controls;
 - e) preserve and, where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones;
 - f) limit disturbances of natural water bodies and natural drainage systems caused by development (including development of roads, highways, and bridges);
 - g) use existing drainage master plans or studies to estimate increases in pollutant loads and flows resulting from projected future development and require incorporation of structural and non-structural BMPs to mitigate the projected pollutant load increases in surface water runoff;
 - h) identify and avoid development in areas that are particularly susceptible to erosion and sediment loss, or establish development guidance that protects areas from erosion/ sediment loss;
 - i) control post-development peak storm water run-off discharge rates and velocities to prevent or reduce downstream erosion, and to protect stream habitat.
4. The California Department of Transportation shall provide the Central Valley Water Board Contact indicated in this Certification a Notice of Completion (NOC) no later than 30 days after the Project completion. The NOC shall demonstrate that the project has been carried out in accordance with the project description in the Certification and in any amendments approved. The NOC shall include a map of the project location(s), including final boundaries of any on-site restoration area(s), if appropriate, 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:

George Day, Senior Water Resource Control Engineer, Central Valley Regional Water Quality Control Board, 364 Knollcrest Drive, Suite 205, Redding, California 96002,
gday@waterboards.ca.gov, (530) 224-4859

WATER QUALITY CERTIFICATION:

I hereby issue an Order certifying that any discharge from the California Department of Transportation, Big Tree Creek Stormwater Compliance Program (WDID# 5B05CR00066) 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 compliance with conditions of this Certification, The California Department of Transportation's application package, 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 Basins*, Fourth Edition, revised June 2015 (Basin Plan).

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



(for) Pamela C. Creedon
Executive Officer

DLW:reb:sjs

Enclosure: Water Quality Order No. 2003-0017-DWQ

cc w/o

enclosures: Ms. Mary Pakenham-Walsh, U.S. Army Corp of Engineers, Sacramento
Department of Fish and Wildlife, Region 2, Rancho Cordova
U.S. Fish and Wildlife Service, Sacramento
Mr. Bill Jennings, CALSPA, Stockton

cc w/o

enclosures

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

PROJECT INFORMATION

Application Date: 18 September 2015

Application Deemed Complete: 1 January 2016

Application Amended: 29 March 2016

Applicant: California Department of Transportation
855 M Street, Suite 200
Fresno, CA 93721

Project Name: Big Tree Creek Stormwater Compliance Program

Application Number: WDID No. 5B05CR00066A

U.S. Army Corps File Number:

Type of Project: Culvert Upgrade

Project Location: Section 22, Township 5 North, Range 15 East
Latitude: 38.274° and Longitude: -120.316°

County: Calaveras County

Receiving Water(s) (hydrologic unit): Unnamed tributaries to Big Trees Creek, which is tributary to the Stanislaus River. Stanislaus River Hydrologic Unit No.534.50 – North Fork Stanislaus HA

Water Body Type: Streambed

Designated Beneficial Uses: The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised June 2015 (Basin Plan) has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include, but are not limited to: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Hydropower Generation (POW); Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); and Wildlife Habitat (WILD). A comprehensive and specific list of the beneficial uses applicable for the project area can be found at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml.

Project Description (purpose/goal): The Big Tree Creek Stormwater Compliance Program Project is located at approximately a half mile southwest of Big Trees State Park in Calaveras County. The project proposes to upgrade the existing 18 inch (in) diameter corrugated metal pipe (CMP) culverts at five locations. The existing culverts will be replaced with 24 in culverts at or close to the same locations. The replacement culverts will be reinforced concrete pipe (RCP). The existing drainage inlets located in the existing drainage ditch that parallels the highway on the north side will be removed and replaced with sand trap type drainage inlets. Culvert replacement will be a permanent impact; no temporary impacts are anticipated. All

construction related activities will take place within the constructed area. The project will permanently impact 0.2 acre(s)/123 linear feet of waters of the United States.

Preliminary Water Quality Concerns: Construction activities including soil disturbance, excavation, cutting/filling, and grading activities could result in increased erosion and sedimentation and may impact surface waters with increased turbidity and/or settleable matter.

Proposed Mitigation to Address Concerns: The California Department of Transportation will implement Best Management Practices (BMPs) to control sedimentation and erosion. All temporary affected areas will be restored to pre-construction contours and conditions upon completion of construction activities. The California Department of Transportation 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: Approximately 437.3 cubic yards of concrete and rock slope protection will be placed into 0.2 acres of waters of the United States.

Dredge Volume: N/A

California Integrated Water Quality System Impact Data: The Project will permanently impact 0.2 acre/123 linear feet of riparian vegetation from fill activities.

Table 1: Impacts from Fill and/or Excavation Activities

Fill Type	Permanent			Temporary		
	Acres	Linear Feet	Cubic Yards	Acres	Linear Feet	Cubic Yards
Riparian Area						
Riparian Area Total	0.2	123	437.3			
Total Impacts	0.2	123	437.3			

Notes
 NA Not Applicable

United States Army Corps of Engineers Permit Type: Nationwide Permit #14 and #43.

Department of Fish and Wildlife Lake or Streambed Alteration Agreement: The California Department of Transportation applied for a Lake or Streambed Alteration Agreement on 18 September 2015.

Possible Listed Species: Federal and California Department of Fish & Wildlife (CDFW) species of special concern: yellow-legged frog (*Rana boylei*).

Status of CEQA Compliance: California Department of Transportation is the Lead Agency responsible for compliance with the California Environmental Quality Act for the Big Tree Creek Stormwater compliance Project pursuant to § 21000 et seq. of the Public Resources Code. The California Department of Transportation approved the Negative Declaration on 15 January 2015 (State Clearinghouse Number 2014081040).

Compensatory Mitigation: The Central Valley Water Board is not requesting compensatory mitigation for the Big Tree Creek Stormwater Compliance Project.

Application Fee Provided: An application fee of \$600.00 was submitted on 9 November 2015 and an additional fee of \$1,061.00 was submitted on 6 January 2016. A total fee of \$1,661.00 has been submitted to the Central Valley Water Board as required by § 3833(b)(3)(A) and § 2200(a)(3) of the California Code of Regulations.

Memorandum

*Flex your power!
Be energy efficient!*

To: MS. PATRICIA L. TECZON
Project Design Engineer
Office of Design IV, Branch H

Date: April 17, 2014

File: 10-Cal-4 PM 43.8/44.2
10-0F2801
Retaining Walls

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

Subject: Geotechnical Design Report

Introduction

As requested, the Office of Geotechnical Design North (OGDN) is providing a Geotechnical Design Report (GDR) for the proposed Route 4 sediment control project located in Calaveras County near the entrance to Big Trees State Park. The scope of work includes widening both sides of the highway by constructing standard plan retaining walls along the north and south sides of the roadway in order to provide sand traps for sediment control. The drainage will be modified to upgrade drainage inlets to sand traps, extending or replacing culvers and adding culverts as necessary.

Pertinent Reports and Investigations

In preparing of this report, following documents were reviewed:

1. Western Regional Climate Center for 1989-2007
2. Topographic Map of the Mocassin Quadrangle, United States Geological Survey, 1987
3. Morgan, B.A., 1976, Geologic Map of the Chinese Camp and Moccasin quadrangles, Tuolumne County, California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-840, scale 1:24000

Existing Facilities and Proposed Improvements

All postmiles refer to those stated on the CalTrans DHIPP viewer. The proposed project lies along Route 4 in Calaveras County and extends from the postmle 43.8 (near the crossing of Big Trees Creek) at the southerly end of the project to postmile 44.3 (near the entrance to Big Trees State Park). The entire length is comprised of two 12-foot lanes and one-foot to four-foot wide paved shoulders. The length of roadway was entirely constructed on a cut/fill. According to the As-built plans and the site reconnaissance, the cut slopes were graded between 0.25:1 to 1.5:1

(H:V) with cut slope heights up to about 10-feet. The fill slopes were graded at about 1:1 to 2:1 with heights up to about 15-feet.

The retaining wall on the north side of the highway is anticipated to be constructed between Stations 105+29 to 116+50 and Stations 118+00 to 127+47. The retaining walls on the south side of the highway are anticipated to be constructed between Stations 104+25 to 118+40, Stations 120+50 to 122+25 and Stations 123+75 to 124+50.

Physical Setting

The physical setting of the project site and the surrounding area was reviewed to provide climate, topography and drainage, man-made and natural features, geology characteristics to aid in project design and construction planning. The following is a discussion of the review:

Climate

According to the Western Regional Climate Center for the time period between 1948-2001, the average annual precipitation at Calaveras Big Trees State Park (Station No. 041277) is about 54.08 inches (1374 mm). The majority of this precipitation (over 60 percent) falls between November and March. The average annual snowfall is about 128.5 inches (3264 mm). The average annual snow depth is three-inches (76.2 mm) with an average of 10 inches (254 mm) in February. The average annual air temperature is approximately 50.2° F (10.1° C) with the highest average daily maximum of 83.2° F (28.4° C) in July and the lowest average daily minimum of 27.6° F (- 2.4° C) in January. Freezing temperatures and snowfall are common in the winter months.

Topography and Drainage

Based on the USGS topographic map of the Dorrington quadrangle, the site area lies in an area of moderate to steep topographic relief. Elevations range from approximately 6400 feet to about 6800 feet above mean sea level in the immediate vicinity of the project site. The topographic map indicates the project site is located within Calaveras Big Trees State Park boundary.

Big Trees Creek trends nearly parallel to and south of Highway 4 in this area. Surficial drainage for the highway appeared to be managed by a system of side swales, drop inlets and culverts.

Regional and Site Geology

The site is situated in the Sierra Nevada Geomorphic Province of California. The province is approximately 400 miles in length and about 100 miles in width and comprises the central and southern Sierra Nevada Mountain Range. The rocks are typically Mesozoic Granitic and

metasedimentary rocks overlain to the west by volcanic mudflows, pyroclastic and alluvial deposits.

According to the Geology of Calaveras Big Trees State Park, Calaveras and Tuolumne Counties, California (CDMG, 1983), the rocks comprising the entire project area consist of Jurassic Granitic rocks (Jgr). The composition of the rock ranges from granite to diorite, and according to the text, migmatite and gneiss (metasedimentary rocks) may also be present.

Subsurface Investigation

Eight rotary borings were performed along the project layout and ranged in depth from 20-feet to 42 feet below ground surface. Plates 5 and 6 show the locations of the borings. The subsurface materials consists of silty SAND with COBBLES ranging from a depth of about 5-feet in boring RC-10-005 to a maximum depth of approximately 14-feet below ground surface as encountered in boring RC-10-006, near Station 116+80. The material ranged from light to dark-brown was dry to moist and had varying amounts of FINES, SAND and COBBLES. Below the artificial fill was granitic and dioritic bedrock that was light gray to black, fresh to highly weathered, moderately to highly fractured and weak to moderately strong. Fracturing tended to dip from 20 to 45 degrees with few locations, particularly in the diorite, dipping near vertical. The granitic rocks also crops out in the cutslope to the north of the highway.

Local and Global Stability

The cut and fill slopes within the project limits appeared to be performing well with minor rilling observed in both the cut and fill slopes. No global instabilities were observed.

Seismicity

Based on the subsurface investigation, a V_{S30} of 760 m/s is considered to be applicable for the foundations materials at the project location.

The deterministic spectrum from the Caltrans ARS Online Tool (version 2.3.06) is based on the nearest active fault which controls ground motion. This fault is the Carson Range (Genoa) (ID No. 83) with a MMax of 7.2. The fault is located northeast of the proposed project site and the closet distance from the site to the fault rupture plane is approximately 39 miles. The fault is a normal fault with a dip angle of 50 degrees toward the east.

Based on the “Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012”, the governing design Acceleration Response Spectrum (ARS) curves are obtained by any or a combination of the following three methods for the proposed walls:

1. Statewide minimum deterministic spectrum with MMax of 6.5, vertical strike-slip event with a rupture distance of 75 miles.
2. Deterministic Seismic Hazard spectrum from the Caltrans ARS Online Tool (version 2.3.06).
3. The USGS Interactive Deaggregation procedure with a 5% Probability of Exceedance in 50 years (975 years return period).

For the proposed walls, the recommended ARS curve is an envelope of methods 1 and 3. The peak ground acceleration is 0.2g.

Geotechnical Recommendations

The recommendations are based on cross section and layout sheets provided by the District.

Rippability

After examination of the existing conditions and performing borings along the alignment, much of the rock on the south appears to be rippable. Due to the limited number of borings versus the amount of excavation that will be performed to construct the widening, it is possible that 30% of the material may not be rippable and other techniques such as blasting or hoe ramming may be needed. These areas are between Stations 105+00 to 108+00, and Sta 115+00 to 116+00.

The majority of the rock materials on the north side are not anticipated to be rippable and blasting will be needed. The 2010 Caltrans Standard Specifications 19-4, rock excavation should be utilized.

Retaining Walls

Standard plan retaining walls are anticipated for both the north and south sides of the highway. A concrete barrier is proposed to be placed atop the retaining wall on the southerly (eastbound) side of the highway. Due to the presence of a barrier placed on top of the wall, the optional footing key should be utilized. We feel that a standard plan cantilever retaining wall is feasible due to the presence of bedrock and the toe pressure sufficient for Loading Case I.

Due to the location of the walls on the eastbound side being adjacent to Big Trees Creek, scour protection at the base of the walls may be prudent. District Hydraulics should be contacted to determine the flood elevations of the creek to estimate scour potential. If scour is a concern, rock slope protection (RSP) may be placed at the base of the walls.

The bearing capacity of the soil/rock and lateral earth pressures can be provided once a final wall design is chosen.

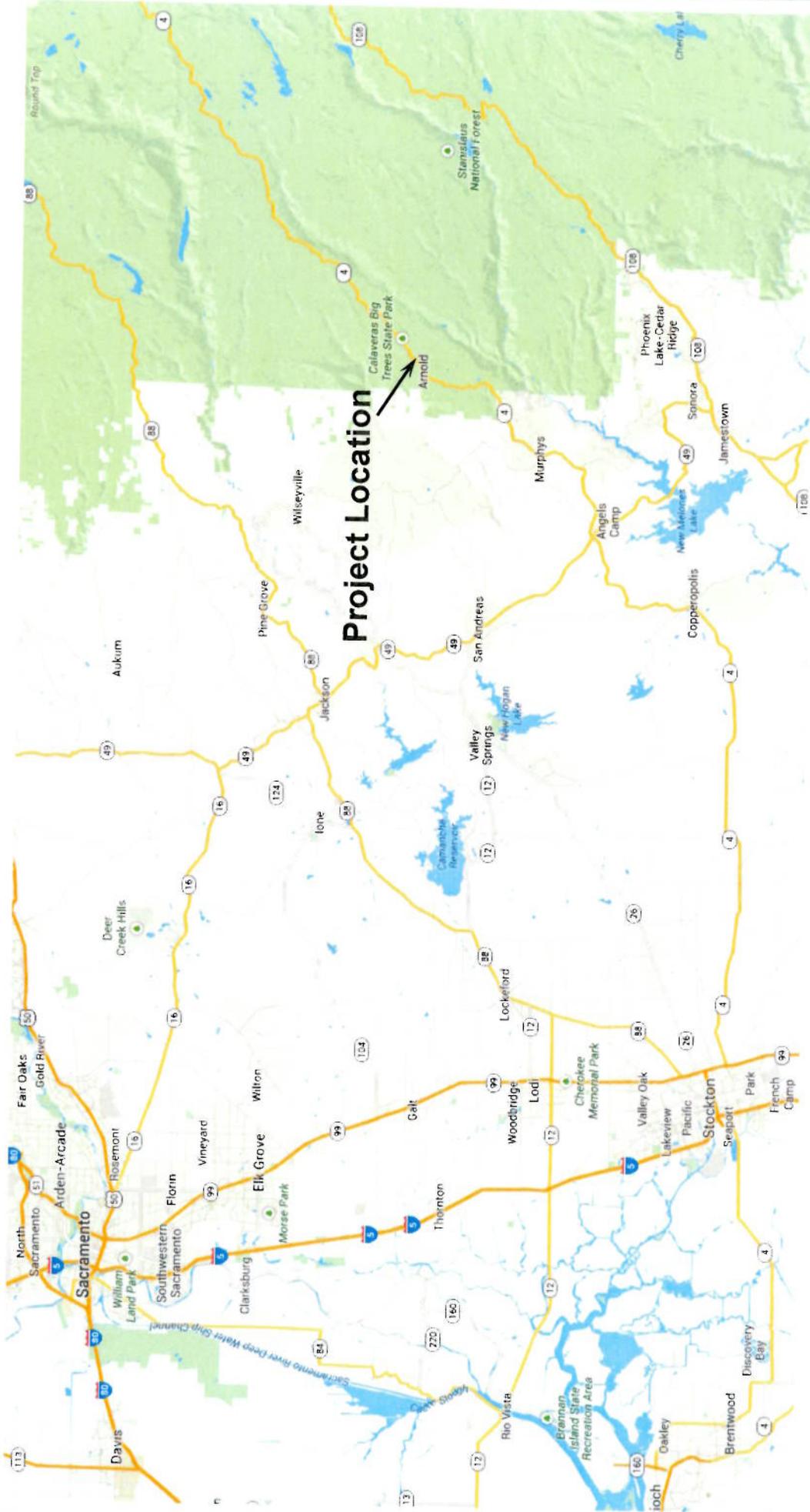
Construction Considerations

The spread footing may be difficult to excavate due to the presence of hard granitic boulders in the existing embankment fill as well as the rock outcrops in the cut slope. The presence of boulders may also cause the footing excavation to be irregular in shape. A leveling course of compacted Class 2 A.B. or lean concrete may be used.

If you have any questions or comments, please call me at (916) 227-1046.



BRANDON BADEKER, CEG
Engineering Geologist
Office of Geotechnical Design – North
Branch E



Project Location

Map adapted from Google Maps, 2013



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

EA: 10-0F2801

Date: April, 2013

Vicinity Map

10-Cal-4 PM 43.8/R44.3
Retaining Walls



Map adapted from Google Maps, 2013



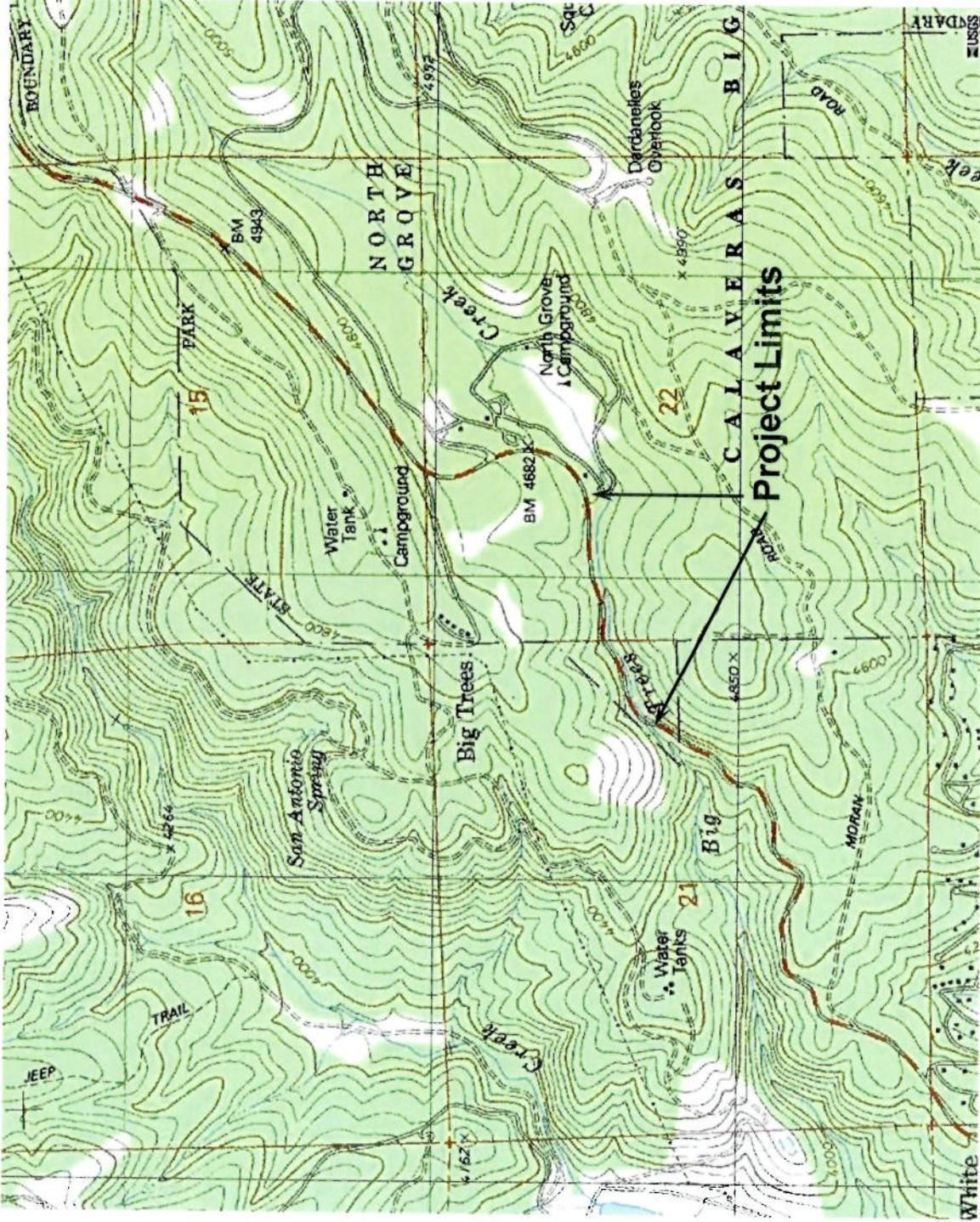
Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

EA: 10-0F2801

Date: April, 2014

Oblique Imagery

10-Cal-4 PM 43.8/R44.3
 Retaining Walls



Map adapted from the Topographic Map of the Dorrington quadrangle, USGS, 2001



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

EA: 10-0F2801

Date: April, 2014

TOPOGRAPHIC MAP

10-Cal-4 PM 43.8/R44.3
 Retaining Walls

LOGGED BY Brandon Badeker	BEGIN DATE 6/8/2010	COMPLETION DATE 6/8/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2736/-120.3188 WGS 84	HOLE ID R-10-001
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 104+47		SURFACE ELEVATION 368 m	
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)		BOREHOLE DIAMETER 3.8 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%	
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		Sandy SILT with GRAVEL (ML); brown to dark brown, soft, damp, little sand, few fine gravel, few coarse gravel to 2-inches, micaceous, non-cemented		C01			40					X		
1	1				C02			50							
2	2														
3	3														
4	4														
5	5		IGNEOUS ROCK (GRANITE); orange and gray, highly weathered, moderately to highly fractured, weak to moderately strong moderately fractured, fresh to slightly weathered, orange silt infilling 2' quartz vein (17-19' bgs)		C03			80	11				X		
6	6				C04			97	67						
7	7														
8	8														
9	9														
10	10				C05			78	51				X		
11	11														
12	12														
13	13														
14	14														
15	15														
16	16														
17	17														
18	18														
19	19														
20	20														
21	21														
22	22														
23	23														
24	24														
25	25														

(continued)



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

REPORT TITLE BORING RECORD				HOLE ID R-10-001
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2800
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/8/2010	COMPLETION DATE 6/8/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2736/-120.3188 WGS 84	HOLE ID R-10-001
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 104+47	SURFACE ELEVATION 368 m
DRILLING METHOD Rotary Core			DRILL RIG CS 2000 (3175082)	BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core			SPT HAMMER TYPE Automatic	HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill			GROUNDWATER DURING DRILLING READINGS Not encountered	AFTER DRILLING (DATE) Not encountered
				TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			Bottom of borehole at 25.0 feet												
26			Boring terminated at planned depth												
27															
28															
29			The Boring Record was prepared in accordance with the												
30			Caltrans Soil & Rock Logging, Classification, and												
31			Presentation manual (2010)												
32															
33															
34															
35															
36															
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



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

REPORT TITLE BORING RECORD				HOLE ID R-10-001
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2800
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/8/2010	COMPLETION DATE 6/8/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2739/-120.3173 WGS 84	HOLE ID R-10-002
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 105+12			SURFACE ELEVATION 398 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 20 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0			Gravelly elastic SILT with COBBLES (MH); gray and brown, soft, damp, little sand, some fine gravel, some coarse gravel to 2-inches, granitic cobbles to 4-inches, micaceous, non-cemented		C01			33							
1															
2						C02			50						
3															
4			IGNEOUS ROCK (GRANITE); orange and gray, fresh to slightly weathered, moderately fractured, hard to very hard												
5															
6						C03			88	83					
7															
8															
9															
10					C04			100	87						
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21			Bottom of borehole at 20.0 feet												
22			Boring terminated at planned depth												
23			The Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation manual (2010)												
24															
25															

(continued)

 <p>Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North</p>	REPORT TITLE BORING RECORD				HOLE ID R-10-002	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A		PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 1 of 1

LOGGED BY Brandon Badeker	BEGIN DATE 6/9/2010	COMPLETION DATE 6/9/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2742/-120.3168 WGS 84	HOLE ID R-10-003
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 111+00			SURFACE ELEVATION 400 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, damp, little fine to coarse gravel, few fines, some fine sand, cobbles to 4", micaceous, non-cemented		C01			42	0						Switched to core due to large cobble
1	1				X S01	4	23								
2	2														
3	3														
4	4														
5	5		IGNEOUS ROCK (GRANITE); orange, white and black, slightly weathered, highly fractured, weak to moderately strong		C02			0	0						
6	6														
7	7														
8	8														
9	9														
10	10		moderately fractured, fresh to slightly weathered, orange silt infilling		X S02	21	71								
11	11														
12	12														
13	13														
14	14														
15	15		fresh to slightly weathered, highly fractured, moderately hard		C03			53	0						
16	16														
17	17														
18	18														
19	19														
20	20		fresh, slightly fractured, hard		C04			67	20						
21	21														
22	22														
23	23														
24	24														
25	25				C05			83	64						

(continued)

	Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North				REPORT TITLE BORING RECORD	HOLE ID R-10-003
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/9/2010	COMPLETION DATE 6/9/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2742/-120.3168 WGS 84			HOLE ID R-10-003
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 111+00			SURFACE ELEVATION 400 m
DRILLING METHOD Rotary Core			DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core			SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill			GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			Bottom of borehole at 25.0 feet												
26			Boring terminated at planned depth												
27															
28															
29			The Boring Record was prepared in accordance with the												
30			Caltrans Soil & Rock Logging, Classification, and												
31			Presentation manual (2010)												
32															
33															
34															
35															
36															
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD				HOLE ID R-10-003
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10

LOGGED BY Brandon Badeker	BEGIN DATE 6/10/2010	COMPLETION DATE 6/10/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2741/-120.3161 WGS 84	HOLE ID R-10-004
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 112+10			SURFACE ELEVATION 410 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks		
0	0		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, loose to moderately dense, damp, little fine sand, little fine to coarse gravel, few fines, cobbles to 3", micaceous, non-cemented		C01			5									
1	1																
2	2																
3	3																
4	4																
5	5																
6	6			X	S01	2	8										
7	7					3											
8	8					5											
9	9				C02			22									
10	10																
11	11			X	S02	7	72										
12	12		IGNEOUS ROCK (DIORITE); orange and black, highly weathered, moderately to highly fractured, weak to moderately strong			22											
13	13																
14	14																
15	15																
16	16																
17	17																
18	18																
19	19																
20	20																
21	21																
22	22																
23	23																
24	24																
25	25																

(continued)

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD			HOLE ID R-10-004	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/10/2010	COMPLETION DATE 6/10/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2741/-120.3161 WGS 84	HOLE ID R-10-004
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 112+10			SURFACE ELEVATION 410 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	ROD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			highly fractured		C06			77	21						
26															
27															
28															
29															
30			Bottom of borehole at 30.0 feet												
31			Boring terminated due to water shortage												
32															
33															
34			The Boring Record was prepared in accordance with the												
35			Caltrans Soil & Rock Logging, Classification, and												
36			Presentation manual (2010)												
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



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

REPORT TITLE BORING RECORD				HOLE ID R-10-004
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2744/-120.3149 WGS 84	HOLE ID R-10-005
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 115+70			SURFACE ELEVATION 428 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core		SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill		GROUNDWATER DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
0	0		sandy SILT(ML); dark brown, loose, soft, damp, little fine to medium sand, micaceous, non-cemented		C01			5								
1	1															
2	2		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, loose, damp, little fine sand, little fine to coarse gravel, few fines, cobbles to 3", micaceous, non-cemented													
3	3															
4	4															
5	5		IGNEOUS ROCK (GRANITE); orange and black, fresh to highly weathered, moderately to highly fractured, moderately hard to hard		S01	50/1"										
6	6				C02			83	56							
7	7															
8	8															
9	9															
10	10		highly weathered fracture		C03			55	64							
11	11															
12	12															
13	13		fresh to moderately weathered, moderately to highly fractured, moderately hard to hard													
14	14				C04			70	33							
15	15															
16	16															
17	17		slightly to moderately weathered		C05			67	18							
18	18															
19	19															
20	20															
21	21															
22	22															
23	23															
24	24															
25	25															

(continued)

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD				HOLE ID R-10-005	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2744/-120.3149 WGS 84		HOLE ID R-10-005
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 115+70		SURFACE ELEVATION 428 m
DRILLING METHOD Rotary Core			DRILL RIG CS 2000 (3175082)		BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core			SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill			GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered
					TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			moderately fractured		C06			67	60						
26															
27															
28															
29															
30			Bottom of borehole at 30.0 feet												
31			Boring terminated as planned												
32															
33															
34			The Boring Record was prepared in accordance with the												
35			Caltrans Soil & Rock Logging, Classification, and												
36			Presentation manual (2010)												
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															

 <p>Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North</p>	REPORT TITLE BORING RECORD				HOLE ID R-10-005	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2745/-120.3147 WGS 84	HOLE ID R-10-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 116+80			SURFACE ELEVATION 430 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 42.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks		
0	0		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, loose, damp, little fine to coarse sand, little fine to coarse gravel, few fines, some cobbles to 10", micaceous, non-cemented		C01			30									
1	1																
2	2																
3	3																
4	4																
5	5																
6	6				S01	5 1 6	7										
7	7																
8	8				C02			33									
9	9																
10	10																
11	11				S02	2 2 2	4										
12	12																
13	13				C03			40									
14	14		IGNEOUS ROCK (GRANITE); orange and black, highly to intensely weathered, moderately to highly fractured, moderately soft														
15	15																
16	16				C04			80	10								
17	17																
18	18																
19	19																
20	20																
21	21				C05			17	0								
22	22																
23	23																
24	24																
25	25		moderately weathered														

(continued)



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

REPORT TITLE BORING RECORD				HOLE ID R-10-006
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2745/-120.3147 WGS 84	HOLE ID R-10-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 115+70			SURFACE ELEVATION 430 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 42.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			moderately to highly fractured, slightly to moderately weathered, moderately hard to hard, fractures are clean rough and tight		C06			7	0						
26															
27															
28															
29															
30															
31						C07			93	57					
32															
33															
34															
35															
36					C08			97	41						
37															
38															
39															
40															
41					C09			58	64						
42															
43			Bottom of borehole at 42.0 feet												
44			Boring terminated as planned												
45			The Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation manual (2010)												
46															
47															
48															
49															
50															



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

REPORT TITLE BORING RECORD				HOLE ID R-10-006
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/16/2010	COMPLETION DATE 6/16/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2745/-120.3132 WGS 84	HOLE ID R-10-007
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 120+70			SURFACE ELEVATION 446 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 20 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	1	[Pattern]	silty SAND with GRAVEL (SM); gray and brown, soft, damp, little sand, few fine gravel, few coars gravel to 2-inches, micaceous, non-cemented	[Pattern]	C01			22					[Pattern]		
2															
3															
4															
5	6	[Pattern]	IGNEOUS ROCK (GRANITE); orange and gray, slightly to moderately weathered, moderately to highly fractured, hard to very hard, strong	[Pattern]	S01	50/5"							[Pattern]		
6															
7															
8															
9	10	[Pattern]	fresh to slightly weathered	[Pattern]	C03			80	42			[Pattern]			
10															
11															
12															
13	14	[Pattern]	Bottom of borehole at 20.0 feet	[Pattern]	C04			62	36			[Pattern]			
14															
15															
16															
17	18	[Pattern]	Boring terminated early due to running out of water	[Pattern]								[Pattern]			
18															
19															
20															
21	22	[Pattern]	The Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation manual (2010)	[Pattern]								[Pattern]			
22															
23															
24															
25															

(continued)



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

REPORT TITLE BORING RECORD				HOLE ID R-10-007
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 1

LOGGED BY Brandon Badeker	BEGIN DATE 6/16/2010	COMPLETION DATE 6/16/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38..2736/-120.3188 WGS 84	HOLE ID R-10-008
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 124+20			SURFACE ELEVATION 460 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core		SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill		GROUNDWATER DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		silty SAND with GRAVEL and COBBLES (SM); orange brown, soft, moist, little sand, few fines, few fine gravel, few coarse gravel to 2.5-inches, few cobbles to 6", micaceous, non-cemented		C01			22							
1	1					C02			33	20					
2	2		IGNEOUS ROCK (GRANITE); orange and gray, highly weathered, moderately to highly fractured, weak to moderately strong					85	24						
3	3					C03									
4	4					C04			88	13					
5	5		moderately to highly fractured					87	37						
6	6					C05									
7	7														
8	8														
9	9														
10	10														
11	11														
12	12														
13	13														
14	14														
15	15														
16	16														
17	17														
18	18														
19	19														
20	20														
21	21														
22	22														
23	23														
24	24														
25	25														

(continued)



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

REPORT TITLE BORING RECORD				HOLE ID R-10-008
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2800
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/16/2010	COMPLETION DATE 6/16/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2736/-120.3188 WGS 84	HOLE ID R-10-008
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 124+20			SURFACE ELEVATION 460 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			moderately to highly fractured		C06			90	30						
26															
27															
28															
29															
30			Bottom of borehole at 30.0 feet												
31			Boring terminated due to water shortage												
32															
33															
34			The Boring Record was prepared in accordance with the												
35			Caltrans Soil & Rock Logging, Classification, and												
36			Presentation manual (2010)												
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



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

REPORT TITLE BORING RECORD				HOLE ID R-10-008	
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
BRIDGE NUMBER N/A		PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 2 of 2

Memorandum

*Serious Drought.
Help Save Water!*

To: PATRICIA L. TECZON
Project Design Engineer
D06 Project Development
Office of Design 4, Branch H

Date: November 16, 2015
File: 10-CAL-4-43.8/44.3
10-0F2801
10000000331
Big Trees
Sediment Walls

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

Subject: Addendum to Geotechnical Design Report (GDR)

A Geotechnical Design Report dated April 17, 2014 was prepared for the above referenced project by this office. We have reviewed this report in conjunction with an evaluation of the most recent cross-sections, layouts and retaining wall plans dated June/July 2015. The recommendations contained in that GDR remain valid at this date with the following additional recommendations and considerations taking into account changes in the plans which occurred after the exploratory drilling took place in 2010:

The native rock material encountered under the existing artificial fill in the proposed retaining wall areas may be marginally non-rippable from STA 104+50 to 124+55.

All of the rock materials exposed on the left (south facing upslope) side, in the proposed 1:1 cut areas are expected to be non-rippable.

We estimate that the total extent of non-rippable materials will be 30% of the project excavation volumes and will require excavation using explosives or other hard rock excavation methods such as hydraulic splitters, hoe-rams and chemical expanders. Blasting is typically the most cost effective and efficient method to complete hard rock excavation.

Based on the geotechnical borings and surface exposures within the project we estimate that the extent of easily-ripped to moderately difficult rippable materials will be 70% of the project excavation volumes and will be removable using conventional roadway excavation equipment.

The key trench for the Type 80 modified barriers to be constructed in the new engineered fill areas should be designed using the following soil parameters:

Phi angle	30°
Cohesion	200 lb/ft ²
Unit weight	120 lb/ft ³

PATRICIA TECZON
November 16, 2015
GDR Addendum

Big Trees Sediment Walls
10-CAL-4-43.8/44.2
10000000331

The plans indicate that the new engineered fills are not properly keyed and benched. In order to be considered stable, these new fills must be keyed and benched per Caltrans Standard 19-6.03A and all earthwork must conform to Section 19.

Settlement of the new fills is expected to be immediate, secondary settlement will be negligible to none.

The maximum height of the standard retaining walls shall be limited to **14 feet** based on the strength estimates of the geotechnical materials underlying the proposed wall locations and the required minimum strength parameters shown on the Standard plans.

In the retaining wall footing excavation areas, large boulder sized-clasts are to be expected. Boulder reduction may be required if these are to be placed in the new fills. The largest diameter of these boulders placed in the new fills should be limited to 12 inches.

There is no rockfall presently occurring at the project site and none is expected to occur after construction of the new cuts, retaining wall and engineered fills.

Groundwater

A search was conducted for California Department of Water Resources well records in the area and none are existing. No springs or seeps were observed in the existing rock cut and fill slopes or roadway during our site visits.

Groundwater is not expected to be a factor for design or for construction.

Additional Construction Considerations

This is a rock site. Contractors should be aware that we have made our best attempt, based on field mapping and exploratory drilling to determine if any marginally to non-rippable rock will be encountered. The volume estimates presented in this report were obtained by drilling, sampling and observing the exposed rock materials at discrete points and may not be an exact interpretation of the rippability conditions of the granitic rock at all depths and project stationing points.

All earthwork should conform to the 2010 Caltrans Standard Specifications, Section 19.

If you have any questions or comments, please call Christopher Koepke (916) 227-1040.

PATRICIA TECZON
November 16, 2015
GDR Addendum

Big Trees Sediment Walls
10-CAL-4-43.8/44.2
1000000331

Respectfully submitted by:




CHRISTOPHER KOEPKE, C.E.G.
Engineering Geologist
Geotechnical Design North, D




REZA MAHALLATI, P.E.
Senior Materials & Research Engineer
Geotechnical Design North, D

Attachment: 2014 Geotechnical Design Report

cc : Reza Mahalatti, GeoDoc archive system

Memorandum

*Flex your power!
Be energy efficient!*

To: MS. PATRICIA L. TECZON
Project Design Engineer
Office of Design IV, Branch H

Date: April 17, 2014

File: 10-Cal-4 PM 43.8/44.2
10-0F2801
Retaining Walls

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

Subject: Geotechnical Design Report

Introduction

As requested, the Office of Geotechnical Design North (OGDN) is providing a Geotechnical Design Report (GDR) for the proposed Route 4 sediment control project located in Calaveras County near the entrance to Big Trees State Park. The scope of work includes widening both sides of the highway by constructing standard plan retaining walls along the north and south sides of the roadway in order to provide sand traps for sediment control. The drainage will be modified to upgrade drainage inlets to sand traps, extending or replacing culvers and adding culverts as necessary.

Pertinent Reports and Investigations

In preparing of this report, following documents were reviewed:

1. Western Regional Climate Center for 1989-2007
2. Topographic Map of the Mocassin Quadrangle, United States Geological Survey, 1987
3. Morgan, B.A., 1976, Geologic Map of the Chinese Camp and Moccasin quadrangles, Tuolumne County, California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-840, scale 1:24000

Existing Facilities and Proposed Improvements

All postmiles refer to those stated on the CalTrans DHIPP viewer. The proposed project lies along Route 4 in Calaveras County and extends from the postmle 43.8 (near the crossing of Big Trees Creek) at the southerly end of the project to postmile 44.3 (near the entrance to Big Trees State Park). The entire length is comprised of two 12-foot lanes and one-foot to four-foot wide paved shoulders. The length of roadway was entirely constructed on a cut/fill. According to the As-built plans and the site reconnaissance, the cut slopes were graded between 0.25:1 to 1.5:1

(H:V) with cut slope heights up to about 10-feet. The fill slopes were graded at about 1:1 to 2:1 with heights up to about 15-feet.

The retaining wall on the north side of the highway is anticipated to be constructed between Stations 105+29 to 116+50 and Stations 118+00 to 127+47. The retaining walls on the south side of the highway are anticipated to be constructed between Stations 104+25 to 118+40, Stations 120+50 to 122+25 and Stations 123+75 to 124+50.

Physical Setting

The physical setting of the project site and the surrounding area was reviewed to provide climate, topography and drainage, man-made and natural features, geology characteristics to aid in project design and construction planning. The following is a discussion of the review:

Climate

According to the Western Regional Climate Center for the time period between 1948-2001, the average annual precipitation at Calaveras Big Trees State Park (Station No. 041277) is about 54.08 inches (1374 mm). The majority of this precipitation (over 60 percent) falls between November and March. The average annual snowfall is about 128.5 inches (3264 mm). The average annual snow depth is three-inches (76.2 mm) with an average of 10 inches (254 mm) in February. The average annual air temperature is approximately 50.2° F (10.1° C) with the highest average daily maximum of 83.2° F (28.4° C) in July and the lowest average daily minimum of 27.6° F (- 2.4° C) in January. Freezing temperatures and snowfall are common in the winter months.

Topography and Drainage

Based on the USGS topographic map of the Dorrington quadrangle, the site area lies in an area of moderate to steep topographic relief. Elevations range from approximately 6400 feet to about 6800 feet above mean sea level in the immediate vicinity of the project site. The topographic map indicates the project site is located within Calaveras Big Trees State Park boundary.

Big Trees Creek trends nearly parallel to and south of Highway 4 in this area. Surficial drainage for the highway appeared to be managed by a system of side swales, drop inlets and culverts.

Regional and Site Geology

The site is situated in the Sierra Nevada Geomorphic Province of California. The province is approximately 400 miles in length and about 100 miles in width and comprises the central and southern Sierra Nevada Mountain Range. The rocks are typically Mesozoic Granitic and

metasedimentary rocks overlain to the west by volcanic mudflows, pyroclastic and alluvial deposits.

According to the Geology of Calaveras Big Trees State Park, Calaveras and Tuolumne Counties, California (CDMG, 1983), the rocks comprising the entire project area consist of Jurassic Granitic rocks (Jgr). The composition of the rock ranges from granite to diorite, and according to the text, migmatite and gneiss (metasedimentary rocks) may also be present.

Subsurface Investigation

Eight rotary borings were performed along the project layout and ranged in depth from 20-feet to 42 feet below ground surface. Plates 5 and 6 show the locations of the borings. The subsurface materials consists of silty SAND with COBBLES ranging from a depth of about 5-feet in boring RC-10-005 to a maximum depth of approximately 14-feet below ground surface as encountered in boring RC-10-006, near Station 116+80. The material ranged from light to dark-brown was dry to moist and had varying amounts of FINES, SAND and COBBLES. Below the artificial fill was granitic and dioritic bedrock that was light gray to black, fresh to highly weathered, moderately to highly fractured and weak to moderately strong. Fracturing tended to dip from 20 to 45 degrees with few locations, particularly in the diorite, dipping near vertical. The granitic rocks also crops out in the cutslope to the north of the highway.

Local and Global Stability

The cut and fill slopes within the project limits appeared to be performing well with minor rilling observed in both the cut and fill slopes. No global instabilities were observed.

Seismicity

Based on the subsurface investigation, a V_{S30} of 760 m/s is considered to be applicable for the foundations materials at the project location.

The deterministic spectrum from the Caltrans ARS Online Tool (version 2.3.06) is based on the nearest active fault which controls ground motion. This fault is the Carson Range (Genoa) (ID No. 83) with a MMax of 7.2. The fault is located northeast of the proposed project site and the closet distance from the site to the fault rupture plane is approximately 39 miles. The fault is a normal fault with a dip angle of 50 degrees toward the east.

Based on the "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012", the governing design Acceleration Response Spectrum (ARS) curves are obtained by any or a combination of the following three methods for the proposed walls:

1. Statewide minimum deterministic spectrum with MMax of 6.5, vertical strike-slip event with a rupture distance of 75 miles.
2. Deterministic Seismic Hazard spectrum from the Caltrans ARS Online Tool (version 2.3.06).
3. The USGS Interactive Deaggregation procedure with a 5% Probability of Exceedance in 50 years (975 years return period).

For the proposed walls, the recommended ARS curve is an envelope of methods 1 and 3. The peak ground acceleration is 0.2g.

Geotechnical Recommendations

The recommendations are based on cross section and layout sheets provided by the District.

Rippability

After examination of the existing conditions and performing borings along the alignment, much of the rock on the south appears to be rippable. Due to the limited number of borings versus the amount of excavation that will be performed to construct the widening, it is possible that 30% of the material may not be rippable and other techniques such as blasting or hoe ramming may be needed. These areas are between Stations 105+00 to 108+00, and Sta 115+00 to 116+00.

The majority of the rock materials on the north side are not anticipated to be rippable and blasting will be needed. The 2010 Caltrans Standard Specifications 19-4, rock excavation should be utilized.

Retaining Walls

Standard plan retaining walls are anticipated for both the north and south sides of the highway. A concrete barrier is proposed to be placed atop the retaining wall on the southerly (eastbound) side of the highway. Due to the presence of a barrier placed on top of the wall, the optional footing key should be utilized. We feel that a standard plan cantilever retaining wall is feasible due to the presence of bedrock and the toe pressure sufficient for Loading Case I.

Due to the location of the walls on the eastbound side being adjacent to Big Trees Creek, scour protection at the base of the walls may be prudent. District Hydraulics should be contacted to determine the flood elevations of the creek to estimate scour potential. If scour is a concern, rock slope protection (RSP) may be placed at the base of the walls.

The bearing capacity of the soil/rock and lateral earth pressures can be provided once a final wall design is chosen.

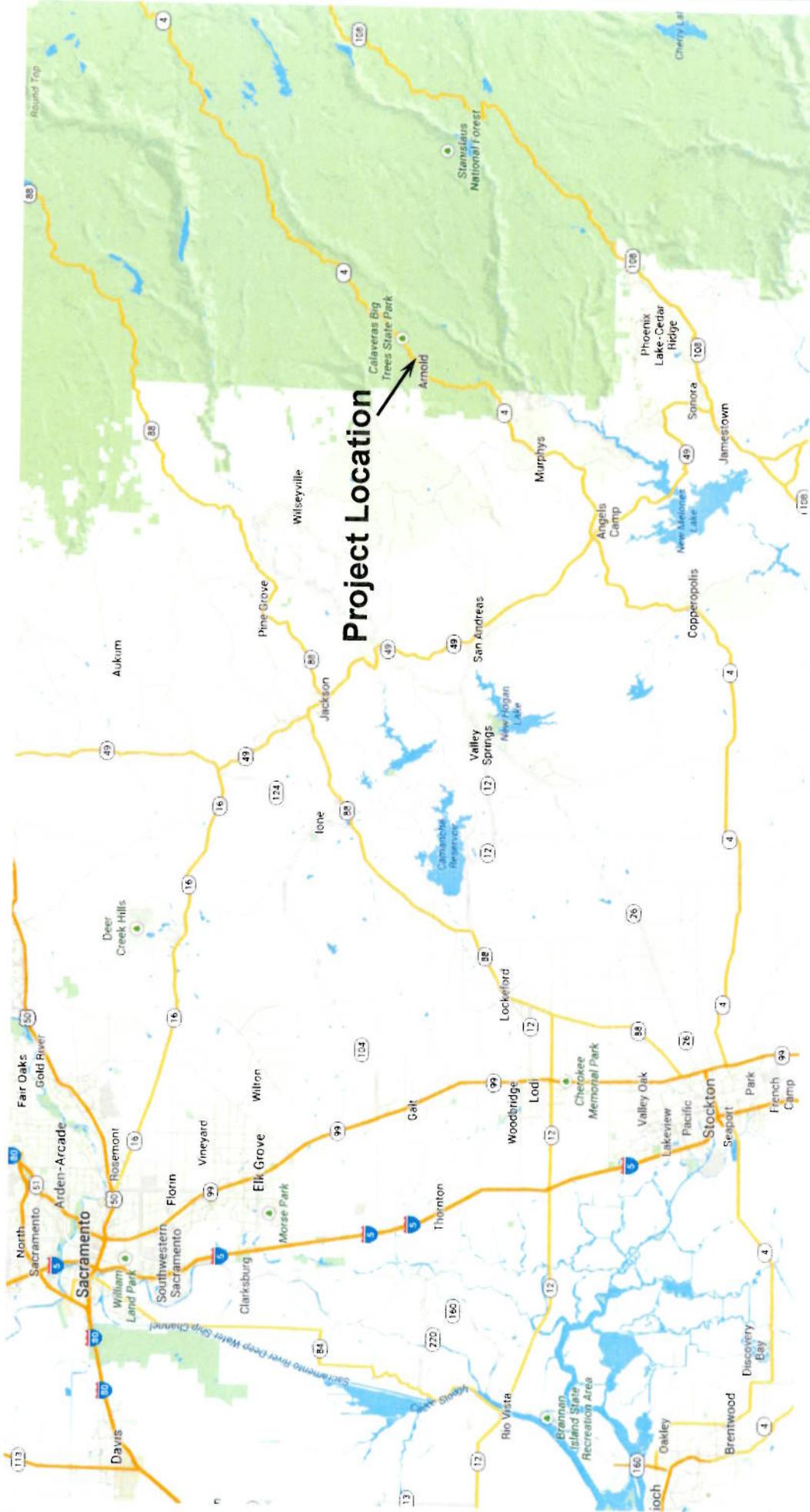
Construction Considerations

The spread footing may be difficult to excavate due to the presence of hard granitic boulders in the existing embankment fill as well as the rock outcrops in the cut slope. The presence of boulders may also cause the footing excavation to be irregular in shape. A leveling course of compacted Class 2 A.B. or lean concrete may be used.

If you have any questions or comments, please call me at (916) 227-1046.



BRANDON BADEKER, CEG
Engineering Geologist
Office of Geotechnical Design – North
Branch E



Project Location

Map adapted from Google Maps, 2013



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 Geotechnical Services
 Office of Geotechnical Design - North

EA: 10-0F2801
 Date: April, 2013

Vicinity Map
 10-Cal-4 PM 43.8/R44.3
 Retaining Walls



Project Limits

Map adapted from Google Maps, 2013



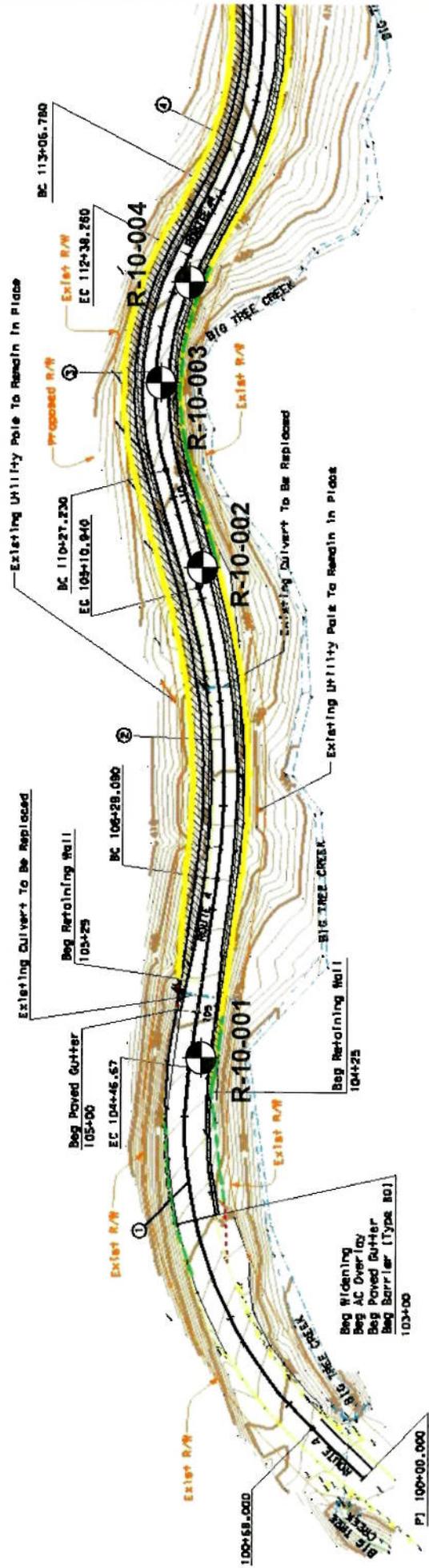
Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

EA: 10-0F2801

Date: April, 2014

Oblique Imagery

10-Cal-4 PM 43.8/R44.3
 Retaining Walls



Boring Locations
Scale 1" = 150'

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

EA: 10-0F2801
Date: April, 2014

BORING LAYOUT 1

10-Cal-4 PM 43.8/R44.3
Retaining Walls



LOGGED BY Brandon Badeker	BEGIN DATE 6/8/2010	COMPLETION DATE 6/8/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2736/-120.3188 WGS 84	HOLE ID R-10-001
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 104+47		SURFACE ELEVATION 368 m	
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)		BOREHOLE DIAMETER 3.8 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%	
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		Sandy SILT with GRAVEL (ML); brown to dark brown, soft, damp, little sand, few fine gravel, few coarse gravel to 2-inches, micaceous, non-cemented		C01			40							
1	1														
2	2														
3	3														
4	4														
5	5		IGNEOUS ROCK (GRANITE); orange and gray, highly weathered, moderately to highly fractured, weak to moderately strong moderately fractured, fresh to slightly weathered, orange silt infilling 2' quartz vein (17-19' bgs)		C02			50							
6	6														
7	7														
8	8														
9	9														
10	10				C03			80	11						
11	11														
12	12														
13	13														
14	14														
15	15														
16	16				C04			97	67						
17	17														
18	18														
19	19														
20	20														
21	21				C05			78	51						
22	22														
23	23														
24	24														
25	25														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID R-10-001
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2800
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/8/2010	COMPLETION DATE 6/8/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2736/-120.3188 WGS 84	HOLE ID R-10-001
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 104+47	SURFACE ELEVATION 368 m
DRILLING METHOD Rotary Core			DRILL RIG CS 2000 (3175082)	BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core			SPT HAMMER TYPE Automatic	HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill			GROUNDWATER DURING DRILLING READINGS Not encountered	AFTER DRILLING (DATE) Not encountered
				TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			Bottom of borehole at 25.0 feet												
26			Boring terminated at planned depth												
27															
28															
29			The Boring Record was prepared in accordance with the												
30			Caltrans Soil & Rock Logging, Classification, and												
31			Presentation manual (2010)												
32															
33															
34															
35															
36															
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



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 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-001
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2800
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/8/2010	COMPLETION DATE 6/8/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2739/-120.3173 WGS 84	HOLE ID R-10-002
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 105+12			SURFACE ELEVATION 398 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 20 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0			Gravelly elastic SILT with COBBLES (MH); gray and brown, soft, damp, little sand, some fine gravel, some coarse gravel to 2-inches, granitic cobbles to 4-inches, micaceous, non-cemented		C01			33							
1															
2						C02			50						
3															
4			IGNEOUS ROCK (GRANITE); orange and gray, fresh to slightly weathered, moderately fractured, hard to very hard												
5															
6						C03			88	83					
7															
8															
9															
10					C04			100	87						
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21			Bottom of borehole at 20.0 feet												
22			Boring terminated at planned depth												
23			The Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation manual (2010)												
24															
25															

(continued)

 <p>Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North</p>	REPORT TITLE BORING RECORD				HOLE ID R-10-002	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A		PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 1 of 1

LOGGED BY Brandon Badeker	BEGIN DATE 6/9/2010	COMPLETION DATE 6/9/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2742/-120.3168 WGS 84	HOLE ID R-10-003
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 111+00			SURFACE ELEVATION 400 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
1	1		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, damp, little fine to coarse gravel, few fines, some fine sand, cobbles to 4", micaceous, non-cemented		C01			42	0						Switched to core due to large cobble
2	2														
3	3														
4	4				X	S01	4	23							
5	5						8								
6	6				C02			0	0						
7	7														
8	8														
9	9														
10	10														
11	11			X	S02	21	71								
12	12														
13	13				C03			53	0						
14	14		IGNEOUS ROCK (GRANITE); orange, white and black, slightly weathered, highly fractured, weak to moderately strong												
15	15														
16	16				C04			67	20						
17	17		moderately fractured, fresh to slightly weathered, orange silt infilling												
18	18														
19	19														
20	20		fresh to slightly weathered, highly fractured, moderately hard												
21	21				C05			83	64						
22	22														
23	23														
24	24		fresh, slightly fractured, hard												
25	25														

(continued)

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD				HOLE ID R-10-003	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/9/2010	COMPLETION DATE 6/9/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2742/-120.3168 WGS 84			HOLE ID R-10-003
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 111+00			SURFACE ELEVATION 400 m
DRILLING METHOD Rotary Core			DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core			SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill			GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 25 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			Bottom of borehole at 25.0 feet												
26			Boring terminated at planned depth												
27															
28															
29			The Boring Record was prepared in accordance with the												
30			Caltrans Soil & Rock Logging, Classification, and												
31			Presentation manual (2010)												
32															
33															
34															
35															
36															
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD				HOLE ID R-10-003	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/10/2010	COMPLETION DATE 6/10/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2741/-120.3161 WGS 84	HOLE ID R-10-004
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 112+10			SURFACE ELEVATION 410 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks		
0	0		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, loose to moderately dense, damp, little fine sand, little fine to coarse gravel, few fines, cobbles to 3", micaceous, non-cemented		C01			5									
1	1																
2	2																
3	3																
4	4																
5	5																
6	6				S01	2	8										
7	7					3											
8	8					5											
9	9				C02			22									
10	10																
11	11				S02	7	72										
12	12		IGNEOUS ROCK (DIORITE); orange and black, highly weathered, moderately to highly fractured, weak to moderately strong			22											
13	13																
14	14																
15	15																
16	16																
17	17																
18	18																
19	19																
20	20																
21	21																
22	22																
23	23																
24	24																
25	25																

(continued)

 <p>Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North</p>	REPORT TITLE BORING RECORD			HOLE ID R-10-004
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls			
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker		DATE 10/15/10
				SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/10/2010	COMPLETION DATE 6/10/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2741/-120.3161 WGS 84	HOLE ID R-10-004
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 112+10			SURFACE ELEVATION 410 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	ROD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			highly fractured		C06			77	21						
26															
27															
28															
29															
30			Bottom of borehole at 30.0 feet												
31			Boring terminated due to water shortage												
32															
33															
34			The Boring Record was prepared in accordance with the												
35			Caltrans Soil & Rock Logging, Classification, and												
36			Presentation manual (2010)												
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



Department of Transportation
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REPORT TITLE BORING RECORD				HOLE ID R-10-004
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2744/-120.3149 WGS 84	HOLE ID R-10-005
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 115+70			SURFACE ELEVATION 428 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core		SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill		GROUNDWATER DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		sandy SILT(ML); dark brown, loose, soft, damp, little fine to medium sand, micaceous, non-cemented		C01			5							
1	1														
2	2		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, loose, damp, little fine sand, little fine to coarse gravel, few fines, cobbles to 3", micaceous, non-cemented												
3	3														
4	4														
5	5		IGNEOUS ROCK (GRANITE); orange and black, fresh to highly weathered, moderately to highly fractured, moderately hard to hard		S01	50/1"									
6	6				C02			83	56						
7	7														
8	8														
9	9														
10	10		highly weathered fracture		C03			55	64						
11	11														
12	12														
13	13		fresh to moderately weathered, moderately to highly fractured, moderately hard to hard												
14	14				C04			70	33						
15	15														
16	16														
17	17		slightly to moderately weathered		C05			67	18						
18	18														
19	19														
20	20														
21	21														
22	22														
23	23														
24	24														
25	25														

(continued)

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD				HOLE ID R-10-005	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2744/-120.3149 WGS 84		HOLE ID R-10-005
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 115+70		SURFACE ELEVATION 428 m
DRILLING METHOD Rotary Core			DRILL RIG CS 2000 (3175082)		BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core			SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill			GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered
					TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			moderately fractured		C06			67	60						
26															
27															
28															
29															
30			Bottom of borehole at 30.0 feet												
31			Boring terminated as planned												
32															
33															
34			The Boring Record was prepared in accordance with the												
35			Caltrans Soil & Rock Logging, Classification, and												
36			Presentation manual (2010)												
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



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

REPORT TITLE BORING RECORD				HOLE ID R-10-005
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2745/-120.3147 WGS 84	HOLE ID R-10-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 116+80			SURFACE ELEVATION 430 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 42.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks		
0	0		silty SAND with GRAVEL and COBBLES (ML); orange brown to dark brown, loose, damp, little fine to coarse sand, little fine to coarse gravel, few fines, some cobbles to 10", micaceous, non-cemented		C01			30									
1	1																
2	2																
3	3																
4	4																
5	5																
6	6					S01	5 1 6	7									
7	7																
8	8					C02			33								
9	9																
10	10																
11	11					S02	2 2 2	4									
12	12																
13	13					C03			40								
14	14		IGNEOUS ROCK (GRANITE); orange and black, highly to intensely weathered, moderately to highly fractured, moderately soft														
15	15																
16	16					C04			80	10							
17	17																
18	18																
19	19																
20	20																
21	21				C05			17	0								
22	22																
23	23																
24	24																
25	25		moderately weathered														

(continued)

	Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North				REPORT TITLE BORING RECORD	HOLE ID R-10-006
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/15/2010	COMPLETION DATE 6/15/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2745/-120.3147 WGS 84	HOLE ID R-10-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 115+70			SURFACE ELEVATION 430 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 42.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			moderately to highly fractured, slightly to moderately weathered, moderately hard to hard, fractures are clean rough and tight		C06			7	0						
26															
27															
28															
29															
30															
31						C07			93	57					
32															
33															
34															
35															
36					C08			97	41						
37															
38															
39															
40															
41					C09			58	64						
42															
43			Bottom of borehole at 42.0 feet												
44			Boring terminated as planned												
45			The Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation manual (2010)												
46															
47															
48															
49															
50															

 Department of Transportation Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	REPORT TITLE BORING RECORD				HOLE ID R-10-006	
	DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
	PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
	BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10	SHEET 2 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/16/2010	COMPLETION DATE 6/16/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2745/-120.3132 WGS 84	HOLE ID R-10-007
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 7' Rt Sta 120+70			SURFACE ELEVATION 446 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 20 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		silty SAND with GRAVEL (SM); gray and brown, soft, damp, little sand, few fine gravel, few coars gravel to 2-inches, micaceous, non-cemented		C01			22							
1	1														
2	2														
3	3														
4	4														
5	5														
6	6				S01	50/5"									
7	7				C02			22	46						
8	8		IGNEOUS ROCK (GRANITE); orange and gray, slightly to moderately weathered, moderately to highly fractured, hard to very hard, strong												
9	9														
10	10					C03			80	42					
11	11														
12	12														
13	13														
14	14														
15	15														
16	16				C04			62	36						
17	17														
18	18		fresh to slightly weathered												
19	19														
20	20		Bottom of borehole at 20.0 feet												
21	21		Boring terminated early due to running out of water												
22	22														
23	23		The Boring Record was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation manual (2010)												
24	24														
25	25														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID R-10-007
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 1

LOGGED BY Brandon Badeker	BEGIN DATE 6/16/2010	COMPLETION DATE 6/16/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38..2736/-120.3188 WGS 84	HOLE ID R-10-008
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 124+20			SURFACE ELEVATION 460 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core		SPT HAMMER TYPE Automatic		HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill		GROUNDWATER DURING DRILLING READINGS	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		silty SAND with GRAVEL and COBBLES (SM); orange brown, soft, moist, little sand, few fines, few fine gravel, few coarse gravel to 2.5-inches, few cobbles to 6", micaceous, non-cemented		C01			22							
1	1					C02			33	20					
2	2		IGNEOUS ROCK (GRANITE); orange and gray, highly weathered, moderately to highly fractured, weak to moderately strong												
3	3					C03			85	24					
4	4					C04			88	13					
5	5		moderately to highly fractured												
6	6					C05			87	37					
7	7														
8	8														
9	9														
10	10														
11	11														
12	12														
13	13														
14	14														
15	15														
16	16														
17	17														
18	18														
19	19														
20	20														
21	21														
22	22														
23	23														
24	24														
25	25														

(continued)



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REPORT TITLE BORING RECORD				HOLE ID R-10-008
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2800
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls				
BRIDGE NUMBER N/A	PREPARED BY Brandon Badeker			DATE 10/15/10
				SHEET 1 of 2

LOGGED BY Brandon Badeker	BEGIN DATE 6/16/2010	COMPLETION DATE 6/16/2010	BOREHOLE LOCATION (Lat/Long or North/East and DATUM) 38.2736/-120.3188 WGS 84	HOLE ID R-10-008
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 8' Rt Sta 124+20			SURFACE ELEVATION 460 m
DRILLING METHOD Rotary Core	DRILL RIG CS 2000 (3175082)			BOREHOLE DIAMETER 3.8 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), CalMod (2"), HQ Core	SPT HAMMER TYPE Automatic			HAMMER EFFICIENCY, Eri 90%
BOREHOLE BACKFILL AND COMPLETION Neat cement grout backfill	GROUNDWATER READINGS	DURING DRILLING Not encountered	AFTER DRILLING (DATE) Not encountered	TOTAL DEPTH OF DRILLING 30 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
25			moderately to highly fractured		C06			90	30						
26															
27															
28															
29															
30			Bottom of borehole at 30.0 feet												
31			Boring terminated due to water shortage												
32															
33															
34			The Boring Record was prepared in accordance with the												
35			Caltrans Soil & Rock Logging, Classification, and												
36			Presentation manual (2010)												
37															
38															
39															
40															
41															
42															
43															
44															
45															
46															
47															
48															
49															
50															



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REPORT TITLE BORING RECORD				HOLE ID R-10-008	
DIST. 10	COUNTY Cal	ROUTE 4	POSTMILE 43.8/R44.3	EA 10-0f2801	
PROJECT OR BRIDGE NAME Calaveras Big Trees Retaining Walls					
BRIDGE NUMBER N/A		PREPARED BY Brandon Badeker		DATE 10/15/10	SHEET 2 of 2

Won, Randall@DOT

From: Reyes, Caroline M@DOT
Sent: Friday, April 08, 2016 12:54 PM
To: Reyes, Caroline M@DOT
Subject: Confirmation of Water Source

From: Lawrence, Steve A@DOT
Sent: Tuesday, April 05, 2016 11:50 AM
To: Reyes, Caroline M@DOT
Subject: FW: Potential water source for 10-0F2801

Hello Caroline,

From: Eric Hall [<mailto:ehall@tuolumneutilities.com>]
Sent: Tuesday, April 05, 2016 10:47 AM
To: Lawrence, Steve A@DOT <steve.lawrence@dot.ca.gov>
Subject: Re: Potential water source for 10-0F2801

You can have water if you need it.

Sent from my iPhone

On Apr 5, 2016, at 9:07 AM, Lawrence, Steve A@DOT <steve.lawrence@dot.ca.gov> wrote:

Hello Eric,

Any word yet?

Thanks,

Steve Lawrence

1976 Martin Luther King Jr BLVD

Stockton, CA, 95201-2048

Phone # (209)948-7960

Fax # (209)948-7036

Won, Randall@DOT

From: Reyes, Caroline M@DOT
Sent: Friday, April 08, 2016 12:56 PM
To: Reyes, Caroline M@DOT
Subject: Request for potential water source

From: Lawrence, Steve A@DOT
Sent: Tuesday, April 05, 2016 1:33 PM
To: Won, Randall@DOT <randall.won@dot.ca.gov>
Subject: RE: Potential water source for 10-0F2801

Here is the history of the email request. Here is the attachment that I also sent.

Steve,

The water request is going thru upper management, I should have an answer for you Monday afternoon or Tuesday.

Eric Hall, Water Master
Tuolumne Utilities District
Ph: 209-532-5536 ext. 531
Cell: 209-770-1577
www.tudwater.com
ehall@tuolumneutilities.com

From: Lawrence, Steve A@DOT [<mailto:steve.lawrence@dot.ca.gov>]
Sent: Wednesday, March 30, 2016 8:48 AM
To: Eric Hall
Subject: Potential Water Source for 10-0F2801

Hello Eric,

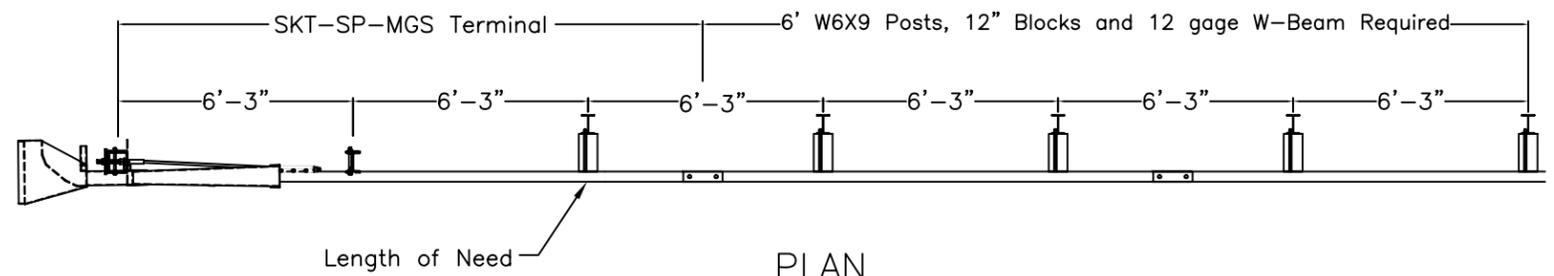
Caltrans is looking for a potential water source for protect 10-0F2801 on Highway 4 by Big Trees State Park. The water can be non-potable or potable. The project will start around October 2016.

All I need is an email saying that TUD could be a potential water source. If you have any questions please give me a call.

Thanks,

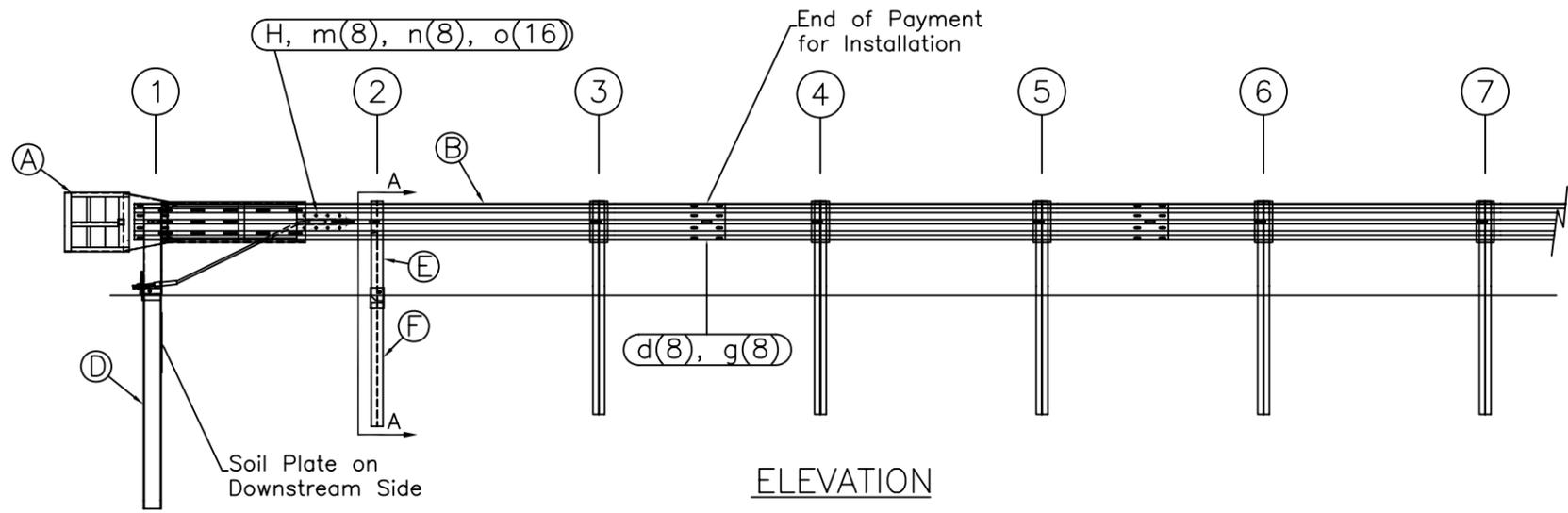
Steve Lawrence

*1976 Martin Luther King Jr BLVD
Stockton, CA, 95201-2048
Phone # (209)948-7960
Fax # (209)948-7036*

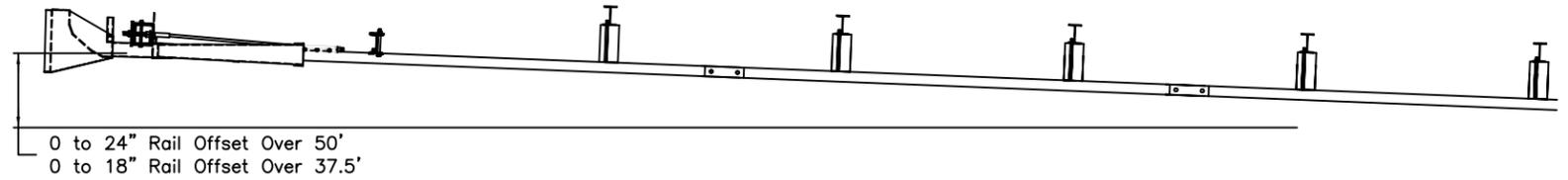


PLAN

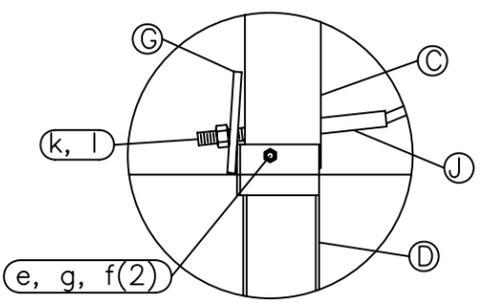
TRAFFIC →



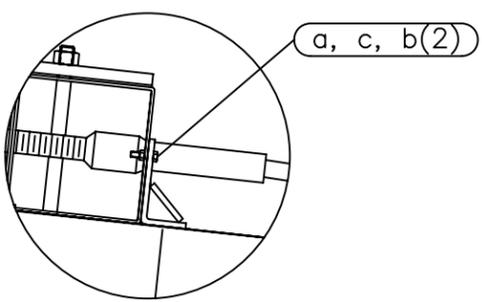
ELEVATION



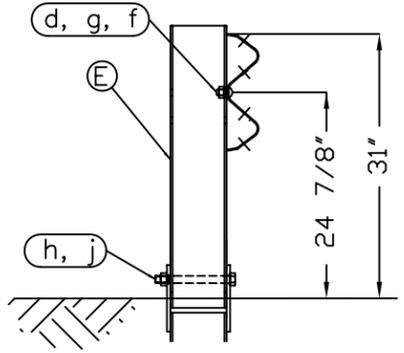
OPTIONAL FLARED INSTALLATION
25:1 maximum flare rate



Post #1 Connection Detail



Impact Head Connection Detail



SECTION A-A
Post #2

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	S3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	MGS-SF1303
C	1	FIRST POST TOP (6X6X $\frac{1}{2}$ " Tube)	TPHP1A
D	1	FIRST POST BOTTOM (6' W6X15)	TPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP3B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770

HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	9	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	1	5/8 Dia. x 9 HEX BOLT GRD 5	B580904A
f	3	5/8 WASHER	W050
g	10	5/8 Dia. H.G.R NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	CABLE ANCHOR BOX SHOULDER BOLT	SB58A
n	8	1/2 A325 STRUCTURAL NUT	N055A
o	16	1 1/16 OD x 9/16 ID A325 STR. WASHER	W050A

GENERAL NOTES:

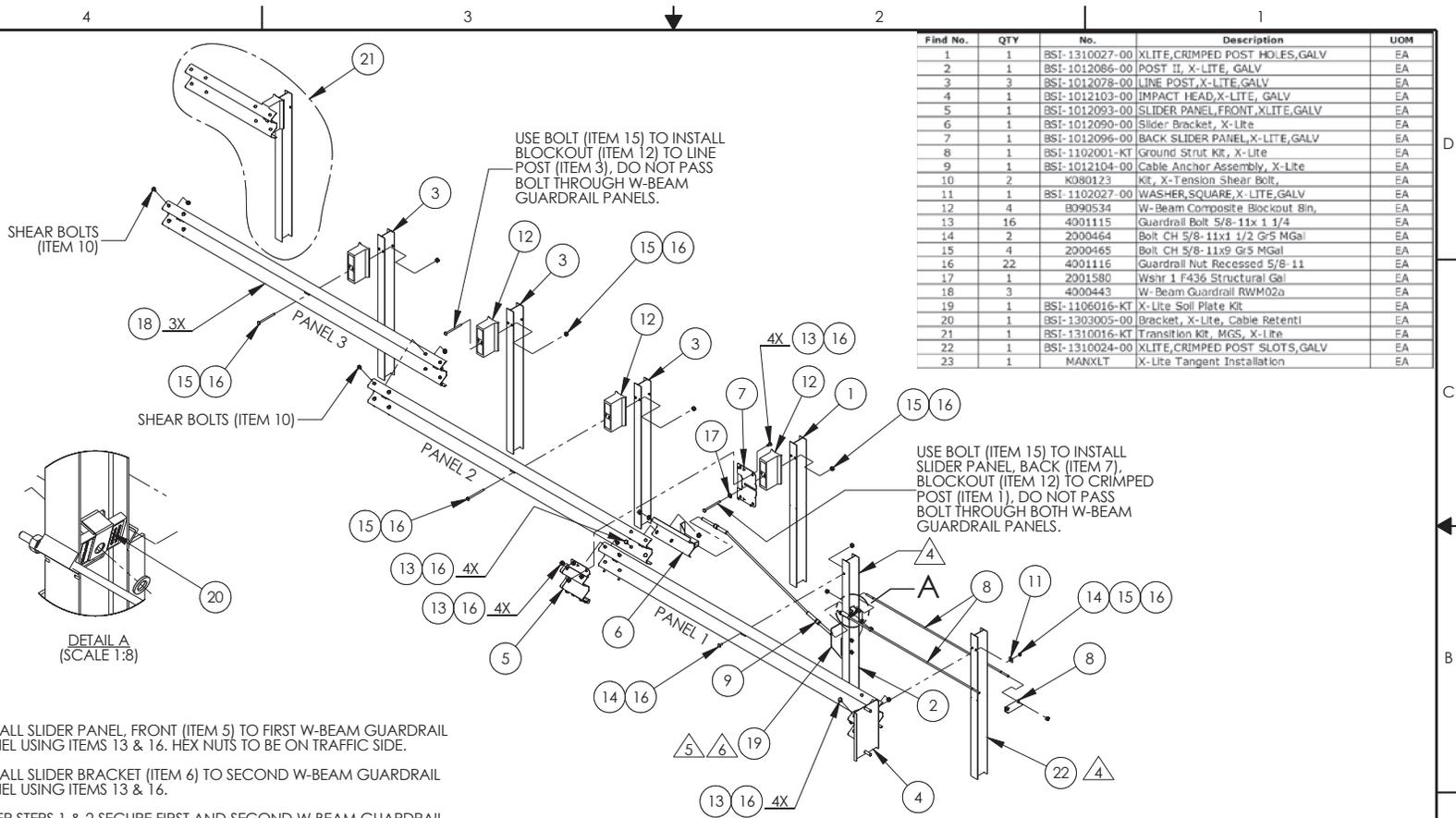
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The lower sections of the Posts 1&2 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
- The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
- When competent rock is encountered, a 12" \varnothing post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for post 1. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
- A site evaluation should be considered if there is less than 25' between the outlet side of the terminal and any adjacent driving lane.
- The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.



SKT-SP-MGS Terminal Midwest Guardrail System 31" Top of Rail		Sheet:	1
		Date:	02/24/10
Drawing Name: SKT-SP-S-MGS		By:	JRR
		Scale:	None
		Rev:	0

Appendix A - System Configuration, 37' 6" MGS

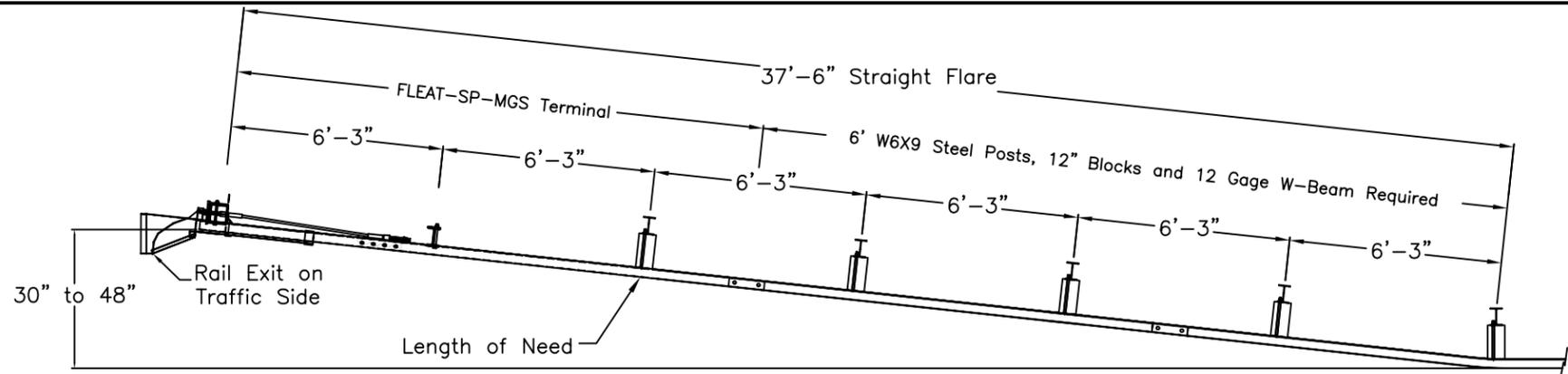
Find No.	QTY	No.	Description	UOM
1	1	BSI-1310027-00	XLITE, CRIMPED POST HOLES, GALV	EA
2	1	BSI-1012066-00	POST II, X-LITE, GALV	EA
3	3	BSI-1012078-00	LINE POST, X-LITE, GALV	EA
4	1	BSI-1012103-00	IMPACT HEAD, X-LITE, GALV	EA
5	1	BSI-1012093-00	SLIDER PANEL, FRONT, X-LITE, GALV	EA
6	1	BSI-1012090-00	Slider Bracket, X-Lite	EA
7	1	BSI-1012096-00	BACK SLIDER PANEL, X-LITE, GALV	EA
8	1	BSI-1102001-KT	Ground Strut Kit, X-Lite	EA
9	1	BSI-1012104-00	Cable Anchor Assembly, X-Lite	EA
10	2	KD80123	Kit, X-Tension Shear Bolt,	EA
11	1	BSI-1102027-00	WASHER, SQUARE, X-LITE, GALV	EA
12	4	B090534	W-Beam Composite Blockout Bin,	EA
13	16	4001115	Guardrail Bolt 5/8-11x 1 1/4	EA
14	2	2000464	Bolt CH 5/8-11x1 1/2 Gr5 MGal	EA
15	4	2000465	Bolt CH 5/8-11x9 Gr5 MGal	EA
16	22	4001116	Guardrail Nut Recessed 5/8-11	EA
17	1	2001580	Wshr 1 F436 Structural Gal	EA
18	3	4000443	W-Beam Guardrail RWM02a	EA
19	1	BSI-1106016-KT	X-Lite Soil Plate Kit	EA
20	1	BSI-1303005-00	Bracket, X-Lite, Cable Retenti	EA
21	1	BSI-1310016-KT	Transition Kit, MGS, X-Lite	EA
22	1	BSI-1310024-00	XLITE, CRIMPED POST SLOTS, GALV	EA
23	1	MANXLT	X-Lite Tangent Installation	EA



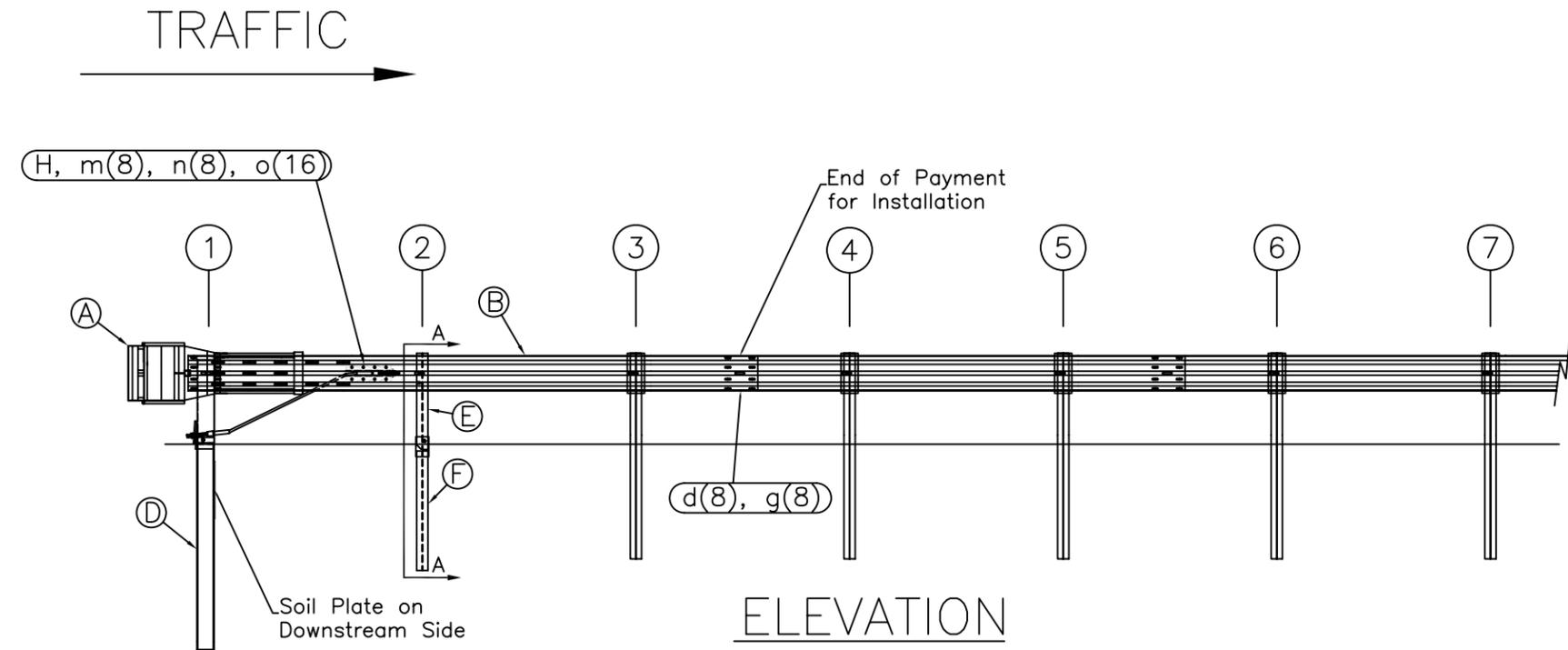
1. INSTALL SLIDER PANEL, FRONT (ITEM 5) TO FIRST W-BEAM GUARDRAIL PANEL USING ITEMS 13 & 16. HEX NUTS TO BE ON TRAFFIC SIDE.
2. INSTALL SLIDER BRACKET (ITEM 6) TO SECOND W-BEAM GUARDRAIL PANEL USING ITEMS 13 & 16.
3. AFTER STEPS 1 & 2 SECURE FIRST AND SECOND W-BEAM GUARDRAIL PANEL USING ITEMS 7, 13 & 16. HEX NUTS TO BE ON TRAFFIC SIDE.
4. SLOT ON POSTS 1 AND 2 TO FACE GUARDRAIL PANEL.
5. IF ROCK OR STIFF SOIL IS ENCOUNTERED, THE POST AND SOIL PLATE MAY BE INSTALLED BY AUGERING AND BACKFILLING THE HOLE. EXTRA CARE MUST BE TAKEN TO PREVENT SETTLEMENT OR LATERAL DISPLACEMENT OF THE POST. BACKFILL MATERIAL SHALL BE COMPACTED TO OPTIMUM COMPACTION.
6. IF ROCK IS ENCOUNTERED, THE SOIL PLATE MAY BE MODIFIED IF APPROVED BY THE PROJECT ENGINEER.

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APPROVALS DRAWN BY: JMT DRAWN DATE: 10/09/2013 APPRD BY: GAD APPRD DATE: 10/09/13		INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-1994 THIRD ANGLE PROJECTION DO NOT SCALE DRAWING		TITLE: X-LITE SYSTEM ASSEMBLY, TANGENT, TRANSITION TO MGS SIZE: B DWG NO.: XLTSUS-MGS SCALE: 1:40 SHEET: 1 OF 2	
				REV: B	

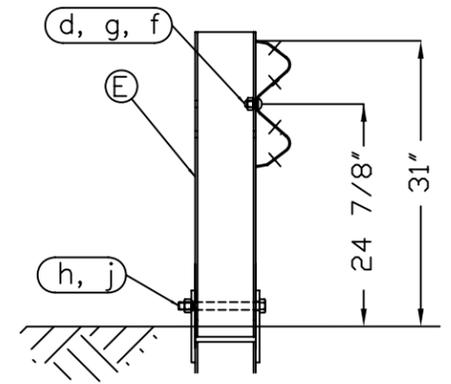
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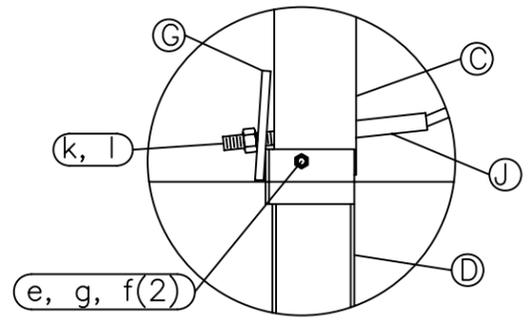
PLAN



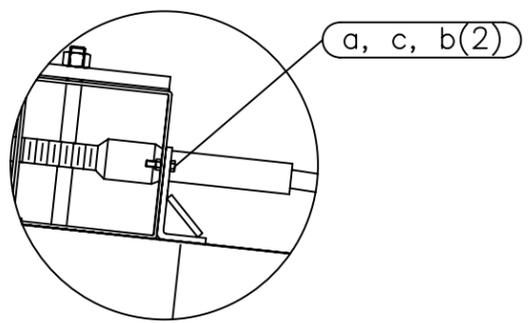
ELEVATION



SECTION A-A
Post #2



Post #1 Connection Detail



Impact Head Connection Detail

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	F3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	MGS-SF1303
C	1	FIRST POST TOP (6X6X $\frac{1}{8}$ " Tube)	TPHP1A
D	1	FIRST POST BOTTOM (6' W6X15)	TPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP3B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770

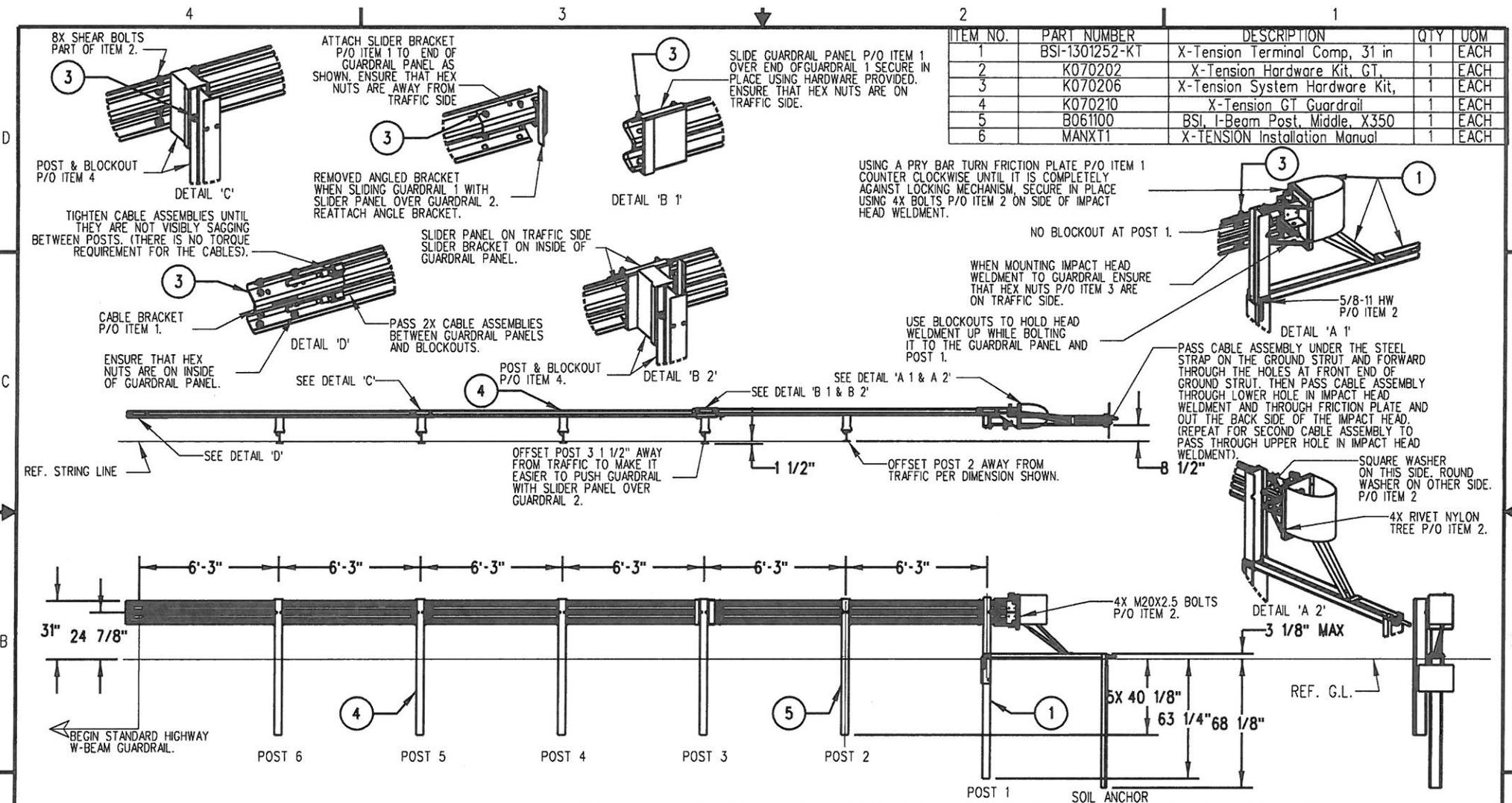
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	9	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	1	5/8 Dia. x 9 HEX BOLT GRD 5	B580904A
f	3	5/8 WASHER	W050
g	10	5/8 Dia. H.G.R NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	CABLE ANCHOR BOX SHOULDER BOLT	SB58A
n	8	1/2 A325 STRUCTURAL NUT	N055A
o	16	1 1/16 OD x 9/16 ID A325 STR. WASHER	W050A

GENERAL NOTES:

- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The lower sections of the Posts 1&2 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
- The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
- When competent rock is encountered, a 12" Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for post 1. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
- The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

Big Spring, TX
Phone: 432-263-2435
or Phone: 330-346-0721

FLEAT-SP-MGS Terminal Midwest Guardrail System 31" Top of Rail		Sheet:	1
		Date:	02/24/10
Drawing Name: FLT-SP-S-MGS		By:	JRR
		Scale:	None
		Rev:	0



ITEM NO.	PART NUMBER	DESCRIPTION	QTY	UOM
1	BSI-1301252-KT	X-Tension Terminal Comp, 31 in	1	EACH
2	K070202	X-Tension Hardware Kit, GT.	1	EACH
3	K070206	X-Tension System Hardware Kit,	1	EACH
4	K070210	X-Tension GT Guardrail	1	EACH
5	B061100	BSL I-Beam Post, Middle, X350	1	EACH
6	MANXT1	X-TENSION Installation Manual	1	EACH

- NOTES: UNLESS OTHERWISE SPECIFIED.
- SYSTEM TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
 - ONLY TIGHTEN THE CABLE ASSEMBLIES USING THE NUTS AT THE CABLE BRACKET (SEE DETAIL 'D'). DO NOT TIGHTEN THE CABLES AT THE FRONT OF THE GROUND ANCHOR.
 - WHEN DRIVING STEEL POST, ENSURE THAT A DRIVING CAP WITH TIMBER OR PLASTIC INSERT IS USED TO PREVENT DAMAGE TO THE GALVANIZING TO THE TOP OF THE POST.

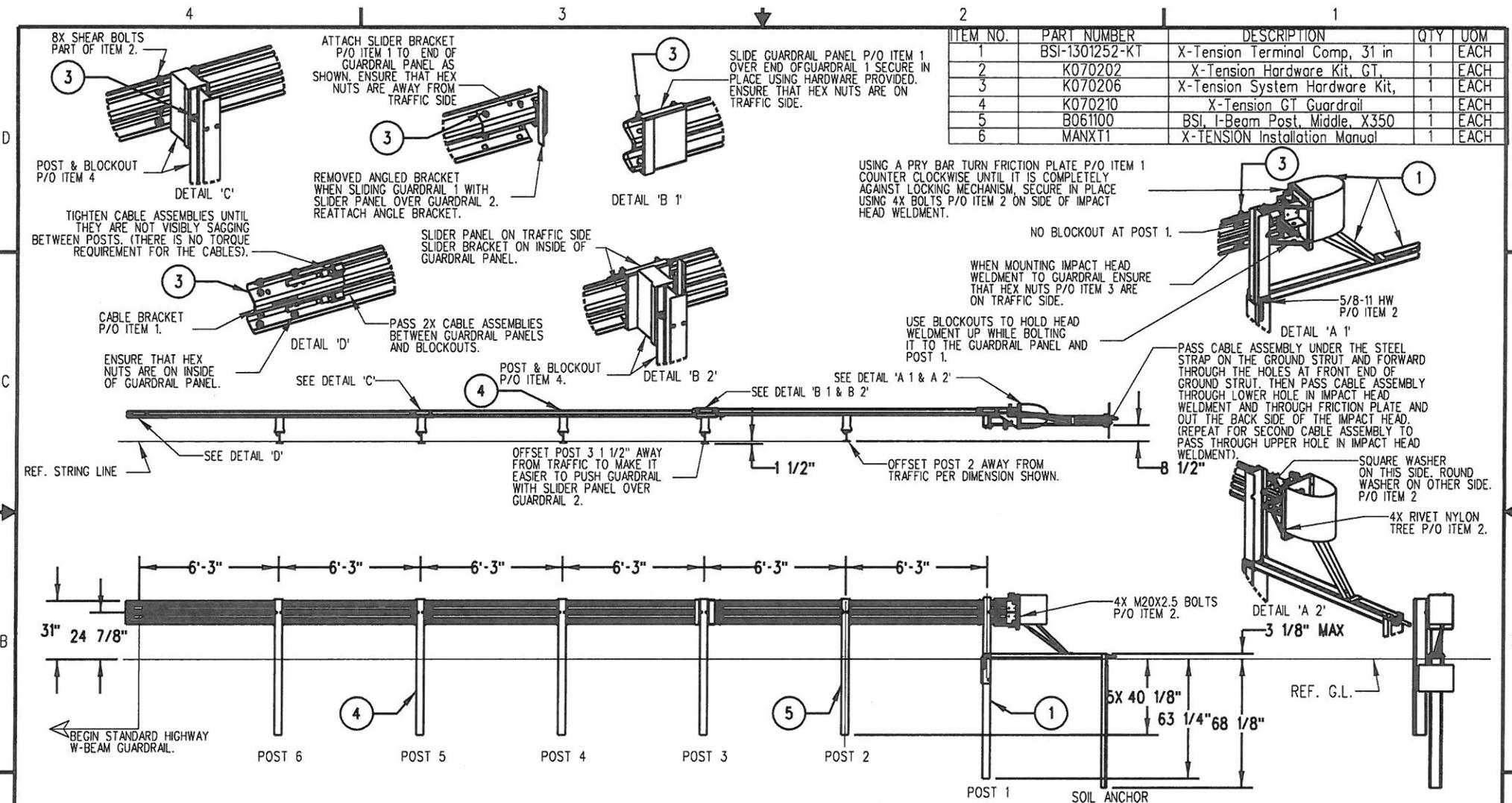
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APPROVALS DRAWN BY: NMV DRAWN DATE: 2/08/13 APPR'D BY: JMT APPR'D DATE: 2/08/13		<small>THIRD ANGLE PROJECTION</small>  <small>INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-1994</small> <small>DO NOT SCALE DRAWING</small>	
REV	ECN*	DATE	SCALE
B	2067	03/02/13	B
A	2022	2/08/13	B

LINDSAY
TRANSPORTATION SOLUTIONS

BARRIER SYSTEMS INC.
3333 Voco Valley Parkway, Ste 800
Vacoala, CA 95688
Tel: 800-800-5691
www.barriersystemsinc.com

TITLE: X-TENSION GUARDRAIL TERMINAL SYSTEM
STEEL POST WITH COMPOSITE BLOCKOUT
31" RAIL HEIGHT

SIZE: B
DWG NO.: XTGTSS5
SCALE: 1:50
SHEET: 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY	UOM
1	BSI-1301252-KT	X-Tension Terminal Comp, 31 in	1	EACH
2	K070202	X-Tension Hardware Kit, GT.	1	EACH
3	K070206	X-Tension System Hardware Kit,	1	EACH
4	K070210	X-Tension GT Guardrail	1	EACH
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- NOTES: UNLESS OTHERWISE SPECIFIED.
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 - WHEN DRIVING STEEL POST, ENSURE THAT A DRIVING CAP WITH TIMBER OR PLASTIC INSERT IS USED TO PREVENT DAMAGE TO THE GALVANIZING TO THE TOP OF THE POST.

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APPROVALS				TITLE X-TENSION GUARDRAIL TERMINAL SYSTEM STEEL POST WITH COMPOSITE BLOCKOUT 31" RAIL HEIGHT			
<small>DRAWN BY:</small> NMV <small>DRAWN DATE:</small> 2/08/13 <small>APPR'D BY:</small> JMT <small>APPR'D DATE:</small> 2/08/13	<small>THIRD ANGLE PROJECTION</small> 	<small>REV</small> 2067 <small>DATE</small> 03/02/13 <small>REV</small> 2022 <small>DATE</small> 2/08/13	<small>SIZE</small> B <small>SCALE</small> 1:50	<small>DWG NO.</small> XTGTSS5	<small>REV.</small> B	<small>SHEET</small> 1 OF 1	