

**Meeting of the Central Valley Flood Protection Board
July 27, 2012**

Staff Report

**California Department of Transportation, District 2
State Highway Route 99 bridge replacement at North Fork Mill Creek, Tehama
County**

1.0 – ITEM

Consider approval of Permit No. 18724 (Attachment B).

2.0 – APPLICANT

California Department of Transportation (Caltrans), District 2.

3.0 – LOCATION

The project is located in Tehama County, between Los Molinos and Dairyville along State Highway Route 99 crossing the North Fork of Mill Creek (see Attachment A).

4.0 – DESCRIPTION

Applicant proposes to replace the existing bridge on State Highway 99 over the North Fork of Mill Creek (Caltrans bridge number 08-0009) with a new bridge (Caltrans bridge number 08-0166). The proposed bridge will be a single-span structure, 65.0 feet long at the road centerline and 45 feet wide (see Attachment C). Construction is scheduled to take place during the summer months.

5.0 – PROJECT ANALYSIS

The overall design of the proposed project, described in Section 4.0, is described in Sections 5.1 and 5.2 below. The project will replace an old structure built in 1921 and widened in 1952 with a new structure that meets new structural standards. The bridge will be removed and replaced in two stages, with one side being removed and constructed first (Stage 1) followed by the other side (Stage 2), to allow traffic to flow

during construction. A temporary support structure may be needed to support the remaining portion of the bridge deck during Stage 1. At the end of the project, temporary culverts and any excess gravel and cobbles will be removed from the creek, leaving a thin layer of gravel and cobbles in the creek bottom to provide transition into the creekbed.

In an effort to minimize disturbance to the creek bank, and to protect the new abutments from future erosion, the existing abutments will be left in place and cut at ground level.

5.1 – Hydraulic Analysis

The model used for the one-dimensional hydraulic analysis was the Hydrologic Engineering Center's River Analysis System (HEC-RAS), version 4.0. The roughness coefficient of 0.04 was used for both existing and proposed conditions. The analysis included a scenario for a 100-yr event with a design flow of 3,000 cfs.

According to the modeling results, the water surface elevation (WSE) during a 100-yr flow will be 245 ft, with 0.8 feet of freeboard and velocity of 9.5 fps at the upstream of the bridge and 12.4 fps at the downstream end of the bridge (see Attachment D). Approximately 86 cubic yards of ½-ton boulders will be used on the banks below the bridge to stabilize the creek banks and protect it from water damage due to high water velocities during storm flows. Wingwalls were design to convey high velocity flows under the bridge (see Attachment C).

The new bridge soffit elevation is 245.8 feet, which is higher than the existing bridge soffit elevation, which makes the new structure comply with Title 23, Section 128(10)(B):

“When an existing bridge being widened does not meet the clearance requirement above the design flood plane, the bottom structural members of the added section may be no lower than the bottom structural members of the existing bridge, except as may be caused by the extension of existing sloped structural members.”

Due to the extensive floodplain between the South Branch and the North Branch bridges, high flow water will leave the system as sheet flooding before reaching the bridge. For the purpose of this analysis, all flow was assumed to reach the North Branch bridge, which does not reflect actual conditions.

5.2 – Geotechnical Analysis

All work to be completed will be done in a manner that does not pose a threat to the structural integrity of the channel, structures, or floodway. Earthwork will be completed in compliance with Permit No. 18724 (Attachment B) and Title 23 Standards.

The site is underlaid by recent stream channel deposits (Qsc) and recent alluvial fan deposits (Qf), which consist of sand, gravel, silt, and minor clay. “As-built” drawings indicate that the soils encountered were silt, coarse sand and gravel, and clay. The materials encountered in a 2010 investigation consisted of sand, silty sand, gravel with cobbles, and silt. Scouring is not critical.

Groundwater was measured at elevation 232.9 feet on August 19, 2010. A clear-water diversion consisting of drain pipe and clean, washed gravel will be constructed to convey any water that may be present through the construction area.

The piles for the new bridge will be 2-foot diameter, hollow steel cases that would be set approximately 36 feet deep, 10 feet behind the existing abutment.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- Letter from the USACE stating that the agency has no comments or recommendations because the work does not affect a federally-constructed project. See Attachment E.

7.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA determination:

The Board has determined that the project is categorically exempt from CEQA under a Class 2 Categorical Exemption (CEQA Guidelines Section 15302) covering replacement or reconstruction where the new structure will be located on the same site as the structure replaced and will have substantially the purpose and capacity as the structure replaced.

8.0 – SECTION 8610.5 CONSIDERATIONS

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.

2. The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

The accepted industry standards for the work proposed under this permit as regulated by Title 23 have been applied to the review of this permit.

3. Effects of the decision on the entire State Plan of Flood Control:

This project does not have significant impacts on the State Plan of Flood Control, as the project does not impair the structural or hydraulic functions of the system.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

There are no foreseeable projected future events that would impact this project.

9.0 – STAFF RECOMMENDATION

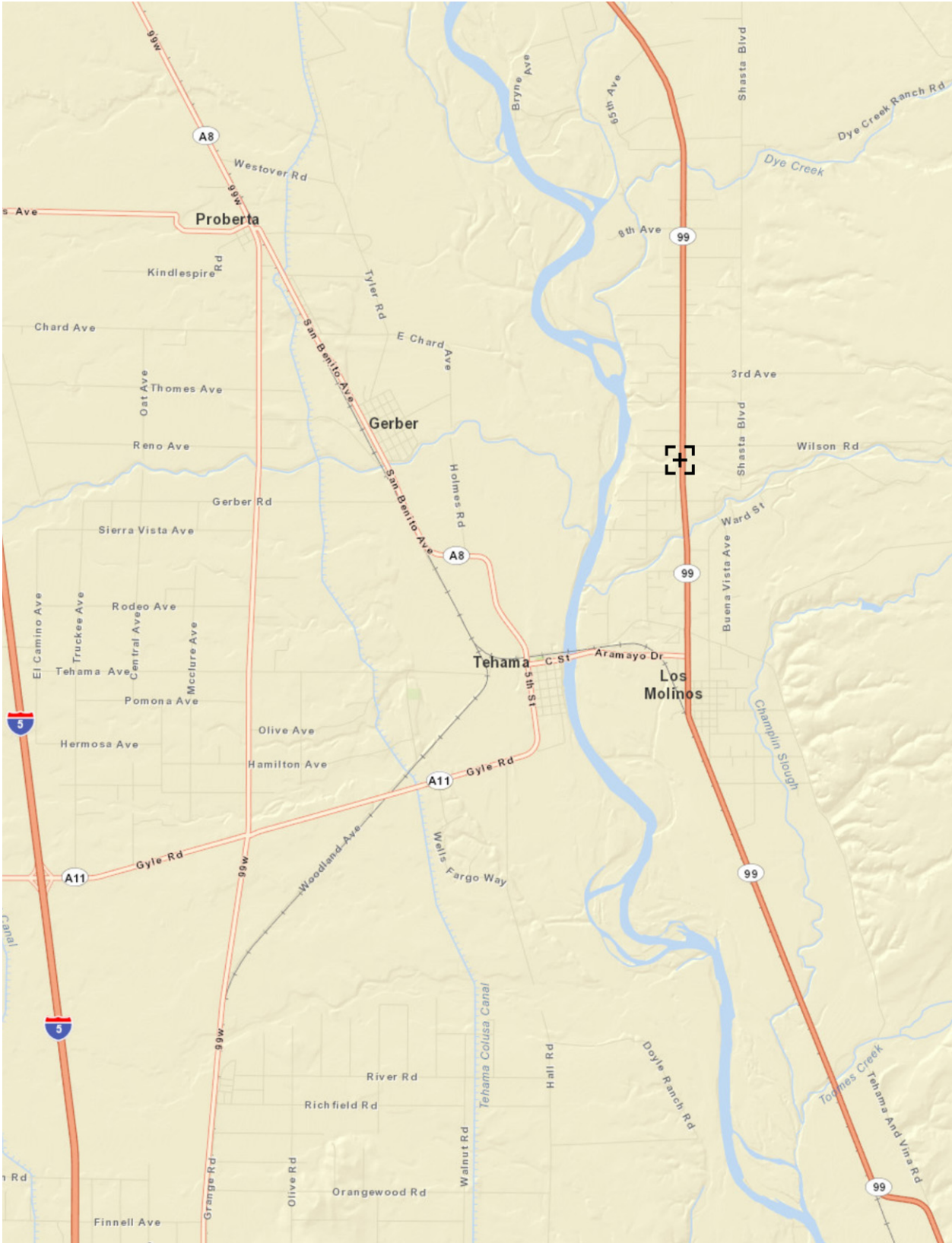
Staff recommends that the Board find the project exempt from CEQA, approve the existing bridge permit 18724, along with U.S. Army Corps of Engineers 208.10 comment letter which indicates no objection to the project, and direct staff to file a Notice of Exemption with the State Clearinghouse.

10.0 – LIST OF ATTACHMENTS

- A. Location Map
- B. Draft Permit No. 18724
- C. Structure Plan and Profile, and Embankment Protection
- D. Hydraulic Summary Table
- E. Letter from USACE

Technical Review:	Sergio Guillen, P.E., Atkins
Staff Recommendations:	David R. Williams, P.E. – Senior Engineer, WR
Environmental Review:	James Herota, E.S.
Document Review:	David R. Williams, P.E. – Senior Engineer, WR
	Eric Butler, P.E. – Supervising Engineer, WR

ATTACHMENT A – LOCATION MAP



ATTACHMENT A – LOCATION MAP



DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18724 BD

This Permit is issued to:

Caltrans
1657 Riverside Drive
Redding, California 96001

Removal of an existing 2-lane bridge (08-0009) and replacing it with a longer, clear-span 2-lane bridge (08-0166). The project is located where State Route 99 crosses the North Branch of North Fork Mill Creek. It is approximately 11 miles south of the junction of State Routes 99 and 36 in Red Bluff. (Section , T , R , MDB&M, Mill Creek, Tehama County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____

Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15

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days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18724 BD

THIRTEEN: The permittee shall contact the Department of Water Resources, Inspection Branch by telephone, (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. The permittee shall also contact the Central Valley Flood Protection Board's Construction Supervisor at (916) 574-2646 for quality assurance inspection. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

FOURTEEN: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of The Central Valley Flood Protection Board.

FIFTEEN: Prior to commencement of work, the permittee shall create a photo record, including associated descriptions, of the project conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Central Valley Flood Protection Board within 30 days of beginning the project.

SIXTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SEVENTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively,

the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion

EIGHTEEN: No construction work of any kind shall be done during the flood season from November 1st to April 15th without prior approval of The Central Valley Flood Protection Board.

NINETEEN: The permittee agrees to incur all costs for compliance with local, State, and Federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations it administers and enforces.

TWENTY: The Central Valley Flood Protection Board, Department of Water Resources, and the Placer County Flood Control District shall not be held liable for damages to the permitted encroachment(s) resulting from releases of water from reservoirs, flood fight, operation, maintenance, inspection, or emergency repair.

TWENTY-ONE: The permittee shall be responsible for repair of any damages to the project levee and other flood control facilities due to construction, operation, or maintenance of the proposed project.

TWENTY-TWO: Except with respect to the activities expressly allowed under this permit, the work area shall be restored to the condition that existed prior to start of work.

TWENTY-THREE: Temporary staging, formwork, stockpiled material, equipment, and temporary buildings shall not remain in the floodway during the flood season from November 1 to April 15.

TWENTY-FOUR: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

TWENTY-FIVE: The permitted encroachment(s) shall not interfere with operation and maintenance of the flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

TWENTY-SIX: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project under direction of the Central Valley Flood Protection Board and Department of Water Resources, at the permittee's or successor's cost and expense.

TWENTY-SEVEN: All debris generated by this project shall be disposed of outside the flood control project works.

TWENTY-EIGHT: All debris that may accumulate around the bridge piers and abutments within the floodway shall be completely removed from the floodway following each flood season.

TWENTY-NINE: The permittee shall comply with any conditions set forth by the Placer County Flood Control District if conditions are created.

THIRTY: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Central Valley Flood Protection Board and the Department of Water Resources, or any other agency responsible for maintenance.

THIRTY-ONE: Any lock on the gate must be accessible to maintenance and inspection personnel and must not be casehardened.

THIRTY-TWO: All fill material shall be imported impervious material with 20 percent or more passing the No. 200 sieve, a plasticity index of 8 or more, and a liquid limit of less than 50 and free of lumps or stones exceeding 3 inches in greatest dimension, vegetative matter, or other unsatisfactory material. Fill material shall be compacted in 4- to 6-inch layers to a minimum of 90 percent relative compaction as measured by ASTM Method D1557-91.

THIRTY-THREE: Drainage from the bridge or highway shall not be discharged onto the levee section or streambank.

THIRTY-FOUR: If erosion occurs adjacent to the permitted encroachment(s), the permittee shall repair the eroded areas and place adequate revetment on the affected areas to prevent further erosion.

THIRTY-FIVE: Trees, brush, sediment, and other debris shall be kept cleared from the bridge site and disposed of outside the floodway to maintain the design flow capacity and flowage area.

THIRTY-SIX: If the bridge is damaged to the extent that it may impair the channel or floodway capacity, it shall be repaired or removed prior to the next flood season.

THIRTY-SEVEN: If the permitted encroachment(s) result in any adverse hydraulic impact or if the flows being conveyed in an overland release result in scouring the permittee shall provide appropriate mitigation acceptable to the Central Valley Flood Protection Board.

THIRTY-EIGHT: The permittee shall submit an evacuation plan to the Central Valley Flood Protection Board that meets the requirements of Section 114 of California Code of Regulations, Title 23, Regulations of the Central Valley Flood Protection Board within 60 days of the date of this permit.

THIRTY-NINE: A copy of all geotechnical studies and tests used in the design and construction determination of the project shall be provided to and approved by the Central Valley Flood Protection Board prior to final construction.

FORTY: No further tree planting or work, other than that covered by this application, shall be performed in the area without prior approval of the Central Valley Flood Protection Board.

FORTY-ONE: Within 120 days of completion of the project, the permittee shall submit to the Central Valley Flood Protection Board a certification report, stamped and signed by a professional engineer

registered in the State of California, certifying the work was performed and inspected in accordance with the Central Valley Flood Protection Board permit conditions and submitted drawings and specifications.

FORTY-TWO: All addendums or other changes made to the submitted documents by the permittee after issuance of this permit are subject to submittal and review for approval by the Central Valley Flood Protection Board prior to incorporation into the permitted project. Upon review and approval of any new submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes. The Central Valley Flood Protection Board shall have up to 90 days after receipt of any documents, plans, drawings, and specifications for the review process. The Central Valley Flood Protection Board and/or the Department of Water Resources may extend this review period by written notification.

FORTY-THREE: This permit is not valid until the Central Valley Flood Protection Board has received written notification from the U.S. Army Corps of Engineers (Corps) that the Corps has no opposition to this project. The permittee shall comply with all conditions set forth in the letter from the Corps once it is received, which is attached to this permit as Exhibit A and incorporated by reference.

FORTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

FORTY-FIVE: This permit shall run with the land and all conditions are binding on permittee's successors and assigns.

FORTY-SIX: A civil engineer registered in the State of California representing the permittee shall provide periodic reports and records to the Department of Water Resources that are acceptable to the Central Valley Flood Protection Board which certifies that all work accomplished by contract to the permittee was thoroughly inspected and performed in accordance with submitted drawings, specifications, and permit conditions.

FORTY-SEVEN: The permittee shall provide supervision and inspection services acceptable to the Central Valley Flood Protection Board. A professional engineer registered in the State of California shall certify that all work was inspected and performed in accordance with submitted drawings, specifications, and permit conditions.

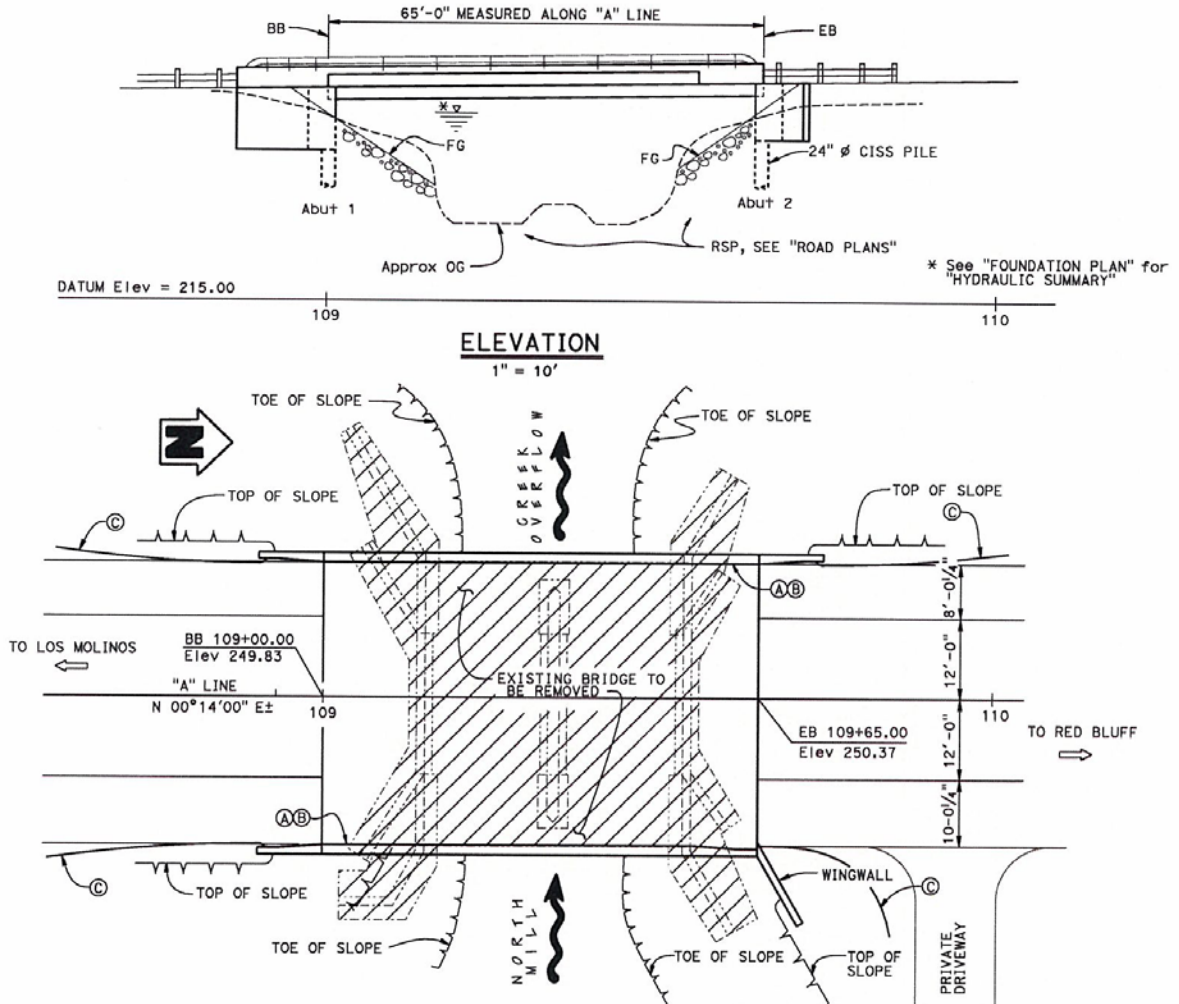
FORTY-EIGHT: The permittee shall submit as-built drawings to the Department of Water Resources' Flood Project Inspection Section, located at 3310 El Camino Ave, Room 256, Sacramento, California, 95821, upon completion of the project.

FORTY-NINE: Upon completion of the project, the permittee shall submit a final completion letter to: The Central Valley Flood Protection Board, 3310 El Camino Avenue, Suite 162, Sacramento, California 95821 and the Department of Water Resources, Flood Project Inspection Section, 3310 El Camino Avenue, Suite 256, Sacramento, California 95821.

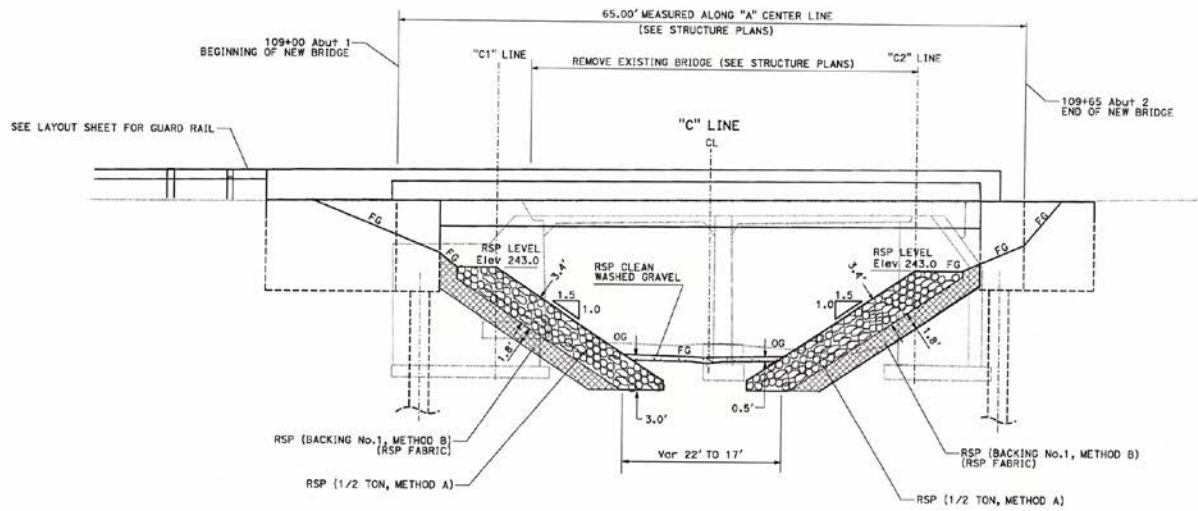
FIFTY: The mitigation measures approved by the CEQA lead agency and the permittee are found in its Mitigation and Monitoring Reporting Program (MMRP) adopted by the CEQA lead agency. The

permittee shall implement all such mitigation measures.

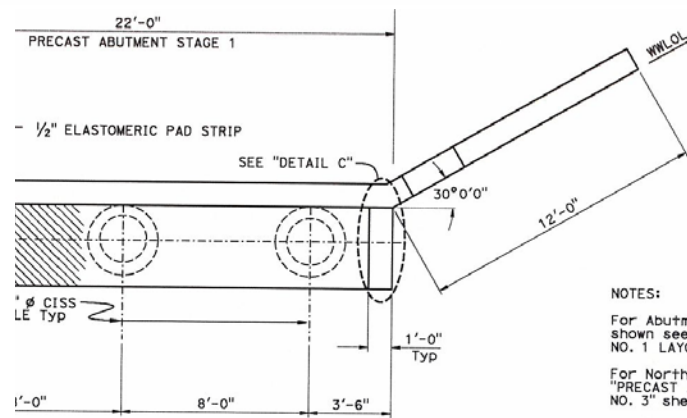
ATTACHMENT C – PROJECT'S PLAN AND PROFILE



ATTACHMENT C – PROJECT'S PLAN AND PROFILE



SECTION A-A
(SEE SHEET L-1)



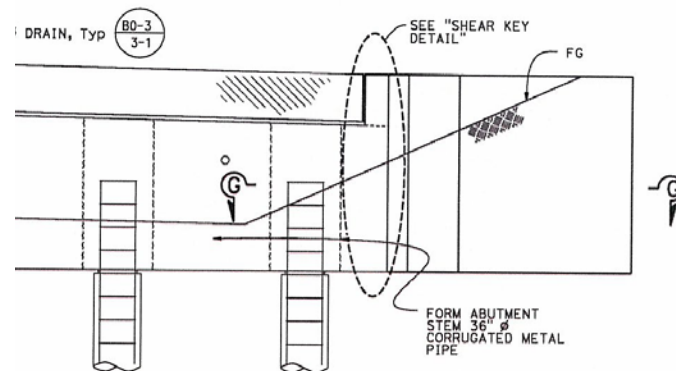
NOTES:

For Abutment Details not shown see "PRECAST ABUTMENT NO. 1 LAYOUT" sheet

For Northeast Wingwall see "PRECAST ABUTMENT DETAILS NO. 3" sheet

For "SHEAR KEY DETAIL" & "DETAIL C" See "PRECAST ABUTMENT DETAILS NO. 4" sheet

For "SECTION G-G" see ABUTMENT DETAILS NO. 3" sheet



Summary Information

Below is a summary of the updated velocity and water surface elevations based on the final grading plan:

Minimum Soffit Elevation	245.8
Average Velocity	varies
Peak Velocity	varies

<i>HYDROLOGIC AND HYDRAULIC SUMMARY</i>			
Drainage Area: See “Basin” paragraphs			
	Design Flood	Base Flood	
Frequency	50-year	100-year	
Discharge	2000 cfs	3000 cfs	
Water Surface Elevation at Bridge	242.8 ft	245 ft	
Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.			

ALL CALCULATED ELEVATIONS IN THIS REPORT ARE BASED ON THE VERTICAL DATUM NAVD88.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

Flood Protection and Navigation Section (18724)

APR 5 2012

Mr. Jay Punia, Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

Dear Mr. Punia:

We have reviewed a permit application by Caltrans District 2 (application number 18724). This project includes the replacement of an existing Highway 99 2-lane bridge (08-0009) with a longer, clear-span 2-lane bridge (08-0166) over the north branch of North Fork Mill Creek. The project is located approximately 11 miles south of the junction of State Routes 99 and 36 in Red Bluff, CA, at 40.0530°N 122.1007°W NAD83, Tehama County, California.

The District Engineer has no comments or recommendations regarding flood control because the proposed work does not affect a federally constructed project.

A file (2010-01088) has been opened because a Section 10 and/or Section 404 permit may be required. Please advise the applicant to contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Division, Room 1350, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250).

A copy of this letter is being furnished to Mr. Don Rasmussen, Chief, Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite LL30, Sacramento, CA 95821.

Sincerely,

A handwritten signature in black ink, reading "Meegan G. Nagy", is written over the typed name.

Meegan G. Nagy, P.E.
Chief, Flood Protection and Navigation Section