

**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**

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**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