

August 24, 2004

Weber Creek Budget Level Estimate .doc

Jerry Barton
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El Dorado County Transportation Commission
550 Main Street
Suite C
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**RE: Weber Creek Bridge – Conversion to Trail Use
Budget Level Estimate**

Dear Mr. Barton:

I was pleased to be able to join you, Ms. Fry (50 Corridor TMA) and Mr. Konopka (City of Folsom) on a site visit of the abandoned Weber Creek railroad bridge on the Sacramento-Placerville Transportation Corridor Joint Powers Authority (SPTC-JPA) corridor (formerly the Southern Pacific Railway Corporation) on July 8, 2004. This letter includes a brief description of the existing bridge, its general condition and suitability for re-use, descriptions of four retrofit schemes, and budget level estimates for each.

Description of Existing Bridge

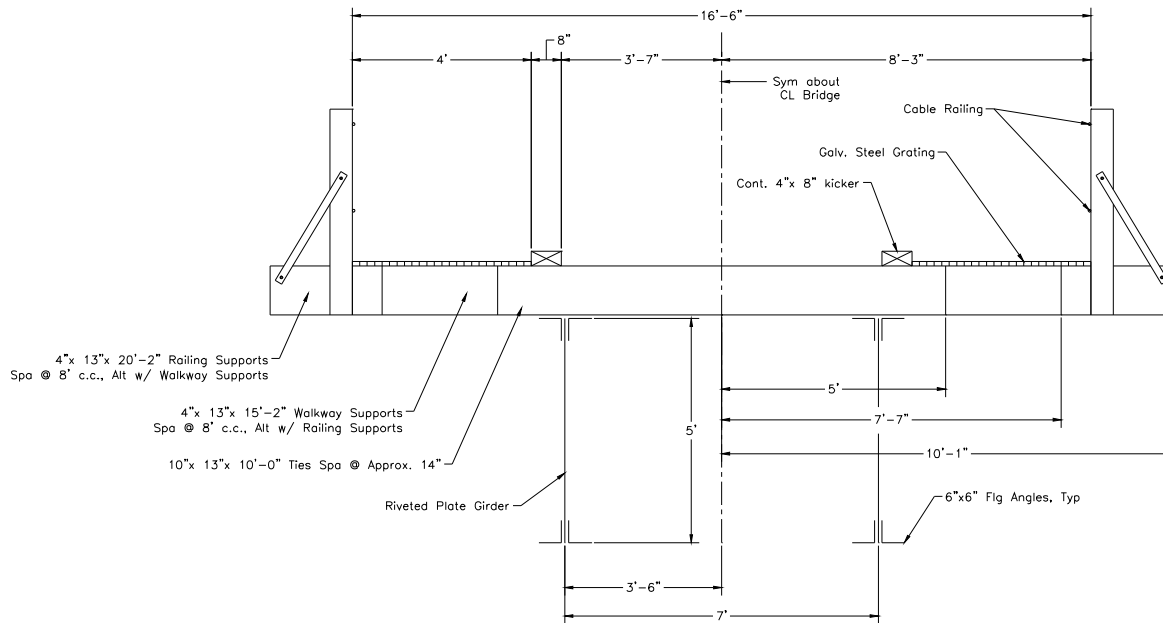
The date of construction of the existing bridge is unknown, but structural details are consistent with railroad structure built during the first half of the 20th century. The bridge superstructure, shown in Fig. 1, consists of two built-up, riveted steel plate girders with spans of approximately 30 feet supporting a timber deck. The plate girders are supported on steel trestle piers matching the girder spans. The abutments appear



to be constructed from reinforced concrete with cut stone seats and wingwall caps. Pier foundations were not accessible. Rails were attached directly to 10-foot long, 10-inch wide by 13-inch deep ties spaced at approximately 1-ft 1-inch, but have been removed. Four-foot wide walkways on either side are supported by 3-inch wide by 13-inch deep timber beams spaced at approximately 4-ft that also support timber railing posts spaced at 8 feet. The walkways consist of galvanized steel grating. The railing consists of two cables attached to the railing posts.

Condition of Existing Bridge

The following qualitative evaluation of the existing bridge is based on the cursory visual inspection of the existing bridge performed on July 8, 2004. Prior to proceeding with final design, a more detailed condition evaluation will be required. The existing concrete and stone abutments appear to be in good condition, although some of the backfill has been removed to prevent vehicular access.



Weber Creek Bridge
 As-built Typical Section

Fig. 1. Existing Weber Creek Bridge Superstructure.

The steel piers and plate girder superstructure members appear to be in good condition, although only the westerly spans have paint remaining. The paint condition, where it exists, varies from good to poor, with significant areas of peeling paint. The majority of timber ties appear to be in good condition and would likely not have to be replaced. Similarly, the 3-inch by 13-inch walkway/railing supports appear to be in generally good condition. All of the railing posts, however, most likely would require replacement. Prior to a decision to re-use any of the existing timber members, we would recommend physical testing of a representative sample, and, at minimum, a visual examination of each timber member. The galvanized steel grating is in good condition, and appears to have been added at a relatively recent date.

Retrofit Strategies

Based on the limited evaluation performed during the site visit, and the significantly lower live load capacity required for a trail bridge than for a railroad bridge, we believe that it would be feasible to re-use the majority of structural elements of this bridge for a multi-use trail. As noted above, a more detailed condition evaluation would be required prior to proceeding with final design. Following are four potential retrofit schemes and budget level estimates for each.

Common Features

Work likely to be required for any of the four schemes would include the following:

- Replace existing cable railing, posts and braces with new, 54-inch high timber railing meeting Uniform Building Code requirements and utilizing the existing railing support beams,
- Perform minor repairs to abutments, replace backfill and re-pave approaches,
- Remove and salvage galvanized grating,
- Remove 4-inch by 8-inch runners,
- Replace up to 25 percent of railing support beams.

Total cost for these items is estimated to be approximately \$55,000, including 35 percent contingency and 10 percent mobilization. This cost is included in the total for each of the four schemes below, unless otherwise noted.

Scheme 1 – 10' Trail On New Deck Supported By Existing Ties

This scheme, shown in Fig. 2, would consist adding a 10-foot wide timber deck on top of the existing ties. The transverse timber decking would be either 3-inch by 6-inch sawn lumber or comparable gluelam and supported by three continuous longitudinal runners (2-inch by 6-inch).

Estimated cost for Scheme 1 is \$300,000.

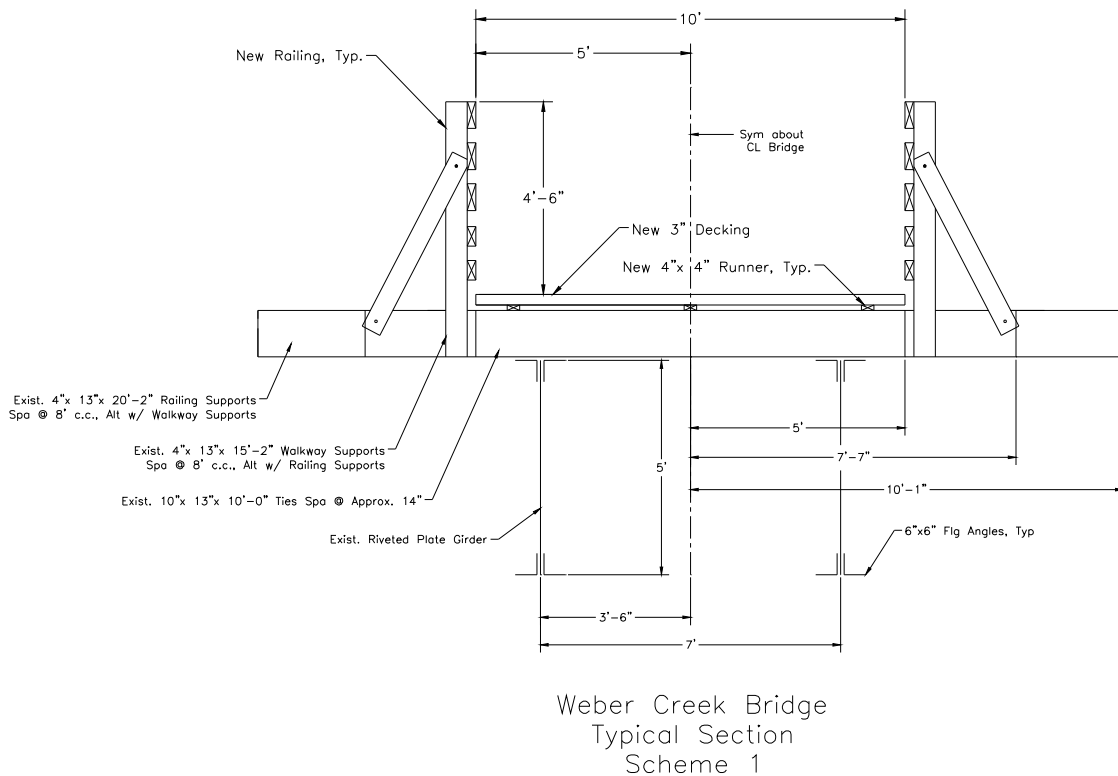


Fig. 2. Typical Section, Scheme 1 Improvements

Scheme 2 – 16’-6” Trail On New Deck Supported By Existing Ties And Walkway Supports

This scheme, shown in Fig. 3, would consist adding a 16-foot 6-inch wide timber deck on top of the existing ties. The transverse timber decking would be either 3-inch by 6-inch sawn lumber or comparable gluelam and supported by five continuous longitudinal runners (4-“x 4”).

Estimated cost for Scheme 2 is \$440,000.

Scheme 3 – 10’ Trail Created By Filling Gaps Between Ties and Grinding Deck

This scheme (no figure) would consist of adding 10-foot long, 3-inch by 13-inch transverse timbers between the existing ties to provide a continuous riding surface. This scheme would require grinding the riding surface to eliminate unevenness between the adjacent ties and support beams.

Estimated cost for Scheme 3 is \$470,000.

Scheme 4 – Replace Entire Deck with a New 15’ Wide Glulam Panel Deck

This scheme (no figure) would consist of removing all existing timber ties, walkway and railing support beams and railings, and replacing them with a new 15-foot wide timber deck consisting of transverse glulam panels supported directly on the top flange of the steel plate girders (or on timber runners for leveling purposes) and cantilevering 4 feet beyond the steel plate girders.

Estimated cost for Scheme 4 is \$460,000.

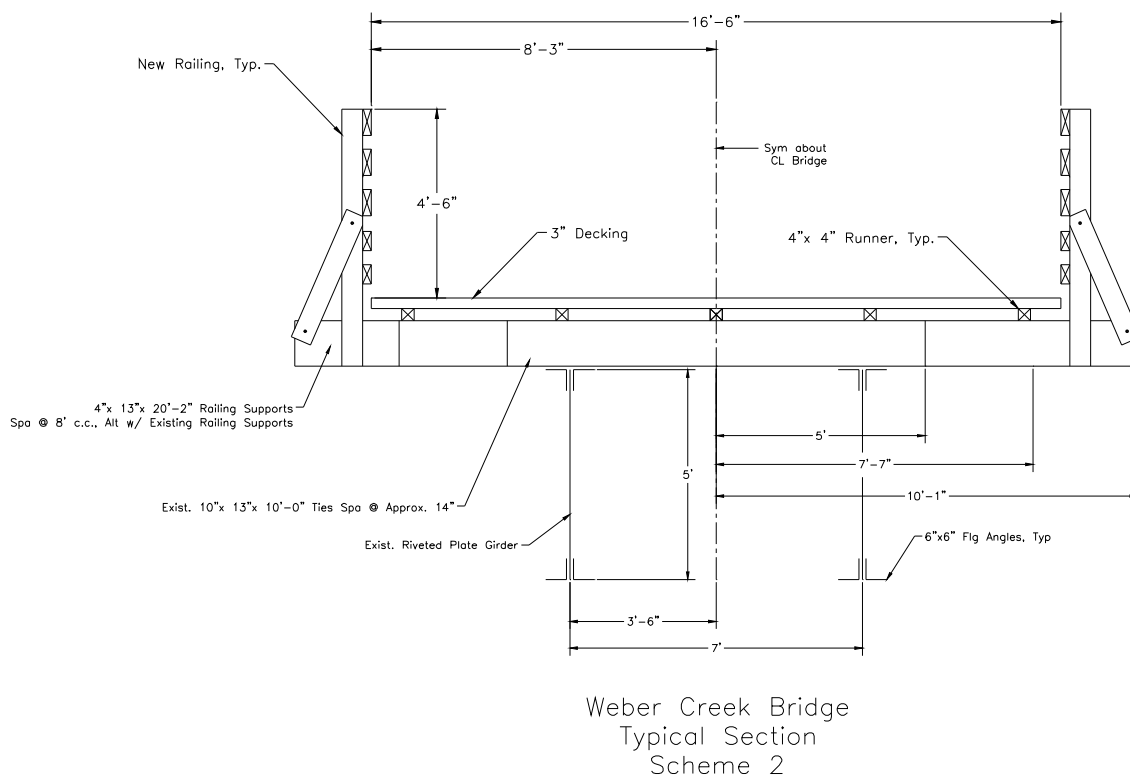


Fig. 3. Typical Section, Scheme 2 Improvements

Assumptions:

The following assumptions, in addition to those listed in the Common Features section above, were made for all four schemes:

- Estimates are based on typical current costs per square foot for timber pedestrian bridges and costs per lineal foot of similar timber constructions, and are subject to escalation,

- All estimates include a contingency of 35 percent and 10 percent mobilization,
- Estimates do not include design engineering, environmental work, field engineering or construction management,
- No retrofit will be required for the foundations, abutments (except as noted), steel substructure elements or steel superstructure elements, including painting or seismic retrofit,
- Existing ties will be re-used,
- New railings will meet UBC requirements (4-inch maximum opening) with horizontal rails, posts spaced at approximately 8-feet, and all members fabricated from glulam lumber,
- All timber would be treated

We hope this information will be useful in setting your budget. Please do not hesitate to call if we can be of further assistance.

Very Truly Yours,

Anthony C. Powers, P.E.

ACP/acp

cc: File