

# Mt. Murphy Road Bridge Project Phase 1B – Alternatives Development Summary – Revised September 1, 2014

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This memorandum summarizes bridge replacement alternatives developed for the Mt. Murphy Road Bridge Project. The process used to develop the alternative alignments is described as well as a description of each alternative.

On May 28, 2014, from 5:30 pm to 8:05 pm, El Dorado County hosted the second Stakeholder Advisory Committee (SAC) meeting for the Mt. Murphy Road Bridge Alternatives Analysis project. The SAC worked in small groups to develop and discuss proposed locations for alignments of a new crossing of the South Fork American River in Coloma within the Mt. Murphy Bridge Corridor (Highway 49/Lotus Road at the west end and to the bend in Highway 49 at the east end). Following the SAC #2 meeting, the County and CH2M HILL met to refine the alternative alignments suggested by the SAC. In addition to the alignment alternatives identified by the SAC, CH2M HILL and the County developed several additional alternatives.

Subsequently, State Parks, Caltrans, and El Dorado County Transportation Commission (EDCTC) were provided the alternatives and their descriptions for review and comment. The State Park provided comments on the proposed alternatives and offered a few additional alignment alternatives that have been added to the list. Caltrans and EDCTC did not suggest any additional alignment locations.

Following is an overview of each alternative that will be scored using screening criteria developed by the SAC and the PDT.

## Technical Design Criteria

There are Federal, State, and County technical design requirements that must be adhered to in development of these alternative. Table 1 summarizes the overall bridge and roadway widths considered for each alternative, based on an assumed ADT of 1,500.

Case	Design Element	Design Criteria
Maximum Width Bridge	Lane Width	12-feet
	Shoulder/Bike Lane Width	5-feet combined shoulder and bike lane for Class II bike lane
	Sidewalk Width	6-feet
	Number of Lanes	Minimum of 2
Minimum Width Bridge	Lane Width	10-feet
	Shoulder/Bike Lane Width	2' minimum shoulder required by AASHTO, Class III bike path shares lane with vehicles
	Sidewalk Width	4-feet min per AASHTO, 6-feet Caltrans Highway Design Manual
	Number of Lanes	Minimum of 2

**Table 1**

## Description of Alternatives

Below is a description of the conceptual layout for each alignment alternative shown in Exhibit 1. Table 2 summarizes the overall bridge and roadway width for each alternative, not including the barrier widths which can add up to 2 feet additional on each side of the bridge. The thickness of the lines on Exhibit 1 is drawn to reflect the actual width of the bridge and roadway so that the potential impacts along the proposed alignment can be more easily seen. The triangular cross-hatched areas on each side of the river are added to show the projected 2:1 fill slopes required at the beginnings and ends of bridges. Where these fill slopes have a significant negative impact, then the bridge length can be adjusted and/or earth retaining structures can be used to reduce impacts near the ends of the bridge.

### Alternative 1

Alternative 1 starts from Hwy 49 between the Grange and the State Park parking lot. This alignment would include a new intersection with Hwy 49 and would cross the river at a skew and connects to Mt. Murphy Road just past the entrance to Coloma Resort. The southern approach for this alternative would pass through the existing location of Sutter’s Mill, which is currently being reconstructed downstream and the existing mill will be removed. It is assumed that the relocation of the Mill would result in sufficient horizontal clearance on either side of the alignment to construct the bridge approaches using 2:1 fill slopes leading up to the bridge. This alignment would require acquisition of Park property. The existing bridge would be removed after construction of the new bridge unless local funding can be found to maintain the existing bridge for pedestrian use.

### Alternative 2A

Alternative 2A assumes replacement on the existing alignment of the Mt. Murphy Road Bridge, see Exhibit 2 below. This alignment would require widening and safety improvements to the existing Hwy 49 intersection. The

existing bridge would be removed once the temporary bridge is in place. This alternative requires removal of the Grange building and construction of a temporary bridge on the downstream side of the existing Mt. Murphy Road alignment to maintain traffic during construction to avoid a lengthy detour route. A replacement Grange building would be constructed elsewhere to be determined at a later date.

#### Alternative 2B

Alternative 2B alignment is a minimum width version of Alternative 2A and was generated based on standard minimum width lanes, shoulders, and sidewalks to minimize the bridge and roadway width and associated impacts to existing facilities. This alignment would require widening and safety improvements to the existing Hwy 49 intersection. The pedestrian walkways would be separated from the bridge at the southern approach and supported on smaller pedestrian bridges so as not to affect the Grange building or Bekeart's Gun Shop.

#### Alternative 3A

Alternative 3A involves replacement of the bridge on a downstream alignment immediately adjacent to existing alignment, see Exhibit 3 below. The alternative starts from Hwy 49 immediately adjacent to the east side of the existing Grange building and would attempt to maintain a minimum width parking lot driveway between Mt. Murphy Road and the Grange building using a combination of fill slopes and earth retaining structures. The alignment would require a slight shift and safety improvements to the existing Hwy 49 intersection. The bridge would cross the river parallel to the existing bridge and connect with Mt. Murphy Road at the entrance to Coloma Resort. The existing bridge would be removed and a replacement Grange building would be constructed elsewhere to be determined at a later date.

#### Alternative 3B

Alternative 3B is the minimum width version of Alternative 3A, see Table 2. This alternative would provide more space for the adjacent Grange building and Bekeart's Gun Shop than Alternative 3A.

#### Alternative 4

Alternative 4 is an upstream alignment starting from the bend in Hwy 49 and connecting at the intersection of Bayne Road and Mt. Murphy Road. This alignment would attempt to create a four-way intersection at Hwy 49 and would impact multiple parcels on both sides of the river as well as the Coloma Resort property. A curved alignment to stay out of the Park boundary in combination with fill slopes and earth retaining structures would be required to mitigate impacts to property access and use. The existing bridge would be removed after construction of the new bridge unless local funding can be found to maintain the existing bridge for pedestrian use.

#### Alternative 5

Alternative 5 is a downstream alignment starting from Hwy 49 and would include a new intersection with Hwy 49 adjacent to the parking lot for the new Sutter Mill. The new bridge would cross the river and turn north in order to tie into the intersection at Carvers Road and Mt. Murphy Road. This alternative would require re-alignment of the adjacent river trail to allow for construction of a new roadway along the north side of the river as well as construction of a new roadway along the north side of the river and parallel to Mt. Murphy Road before connecting at the intersection of Carvers Road and Mt. Murphy Road. Right-of-way takes from the State Park would be required on both sides of the river. This alternative would avoid physical impacts to the new Sutter Mill. The existing bridge would be removed after construction of the new bridge unless local funding can be found to maintain the existing bridge for pedestrian use.

### Alternative 6

Alternative 6 is a downstream alignment starting from Hwy 49 adjacent to North Beach. This alignment would include a new intersection with Hwy 49, cross the river and the Levee Trail before Connecting to Carvers Road. A stretch of Carvers Road from where the bridge connects on the north side of the river to the intersection with Mt. Murphy Road would require significant geometric improvements. This alternative would be laid out to avoid physical impacts to the North Beach river access and picnic areas, but would require parcel takes from the State Park south of the river and multiple parcel takes on the north side of the river. The existing bridge would be removed after construction of the new bridge unless local funding can be found to maintain the existing bridge for pedestrian use.

### Alternative 7

Alternative 7 consists of bridge replacement on existing alignment and assumes a staged construction approach to maintaining traffic, see Exhibit 4 below. This alternative would require widening and safety improvements to the existing Hwy 49 intersection. The existing bridge would carry traffic during construction of a portion of the new bridge in Stage 1. In Stage 2, traffic would be shifted from the existing bridge to the portion of new bridge constructed in Stage 1 prior to removal of the existing bridge and construction of the remaining portion of new bridge. This alternative would encroach on the existing driveway for the Grange and a new driveway on the opposite side of the Grange would need to be provided.

### Alternative 8

Alternative 8 is a downstream alternative that is completely outside of the Park boundary. This alternative extends Carvers Road west before turning south, crossing perpendicular to the river, and connects to Hwy 49. The purpose of this alternative is to provide a river crossing downstream of the North Beach river access and picnic areas and outside the Park boundary. The existing bridge would be removed after construction of the new bridge unless local funding can be found to maintain the existing bridge for pedestrian use.

### Alternative 9

Alternative 9 is a no bridge replacement alternative. This alternative involves connecting Carvers Road and Scott Road in addition to significant improvements of existing Carvers Road and Scott Road. This option was investigated during bridge replacement feasibility study phase of the project as an option to avoid replacement of the existing Mt. Murphy Road Bridge. The existing bridge would be removed after construction of Scott Road extension unless local funding can be found to maintain the existing bridge for pedestrian use.

## Bridge and Roadway Width Summary<sup>2</sup>

Alternative	Alignment Location	Two Lanes (feet)	Two Shoulders (feet)	Two Sidewalks (feet)	Bike Facility Class	Total Width <sup>5</sup>
1 <sup>5</sup>	Downstream	24	10	12	2	46'-0"
2A <sup>4</sup>	On Existing	24	10	12	2	46'-0"

<b>2B<sup>1,3,4</sup></b>	On Existing	20	4	8 <sup>1</sup>	3	32'-0"
<b>3A<sup>4</sup></b>	Downstream Adjacent	24	10	12	2	46'-0"
<b>3B<sup>1,4</sup></b>	Downstream Adjacent	20	4	8 <sup>1</sup>	3	32'-0"
<b>4<sup>5</sup></b>	Upstream	24	10	12	2	46'-0"
<b>5<sup>5</sup></b>	Downstream	24	10	12	2	46'-0"
<b>6<sup>5</sup></b>	Downstream	24	10	12	2	46'-0"
<b>7<sup>4</sup></b>	On Existing	24	10	12	2	46'-0"
<b>8<sup>5</sup></b>	Downstream	24	10	12	2	46'-0"

**Table 2**

<sup>1</sup> Requires design exception for sidewalk less than 6'-foot minimum width

<sup>2</sup> Alternatives includes traffic calming features

<sup>3</sup> Southern approach includes separated pedestrian bridges to mitigate impacts to existing structures

<sup>4</sup> Requires removal of the existing bridge

<sup>5</sup> Requires removal of the existing bridge unless sources of funding, other than HBP funding, can be found to repair and maintain the existing bridge.

## Next Steps

The PDT will meet to discuss these alternatives and whether there are any that are fatally flawed. Those alternatives that pass non-negotiable criteria will be scored using the "Mt. Murphy Road Bridge – Screening Criteria" to identify a smaller number of viable alternatives to present at the SAC #3 meeting and carry forward into the PA/ED phase of the project.

# **Exhibit 1: Mt. Murphy Bridge Replacement Alternatives**

# **Exhibit 2: Close-up View of Alternative 2A and 2B**

# **Exhibit 3: Close-up View of Alternative 3A and 3B**



# **Exhibit 4: Close-up View of Alternative 8**