

# IMPROVEMENT OPTIONS UNDER CONSIDERATION

**FINAL**

## Maclay Bridge Planning Study



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# TABLE OF CONTENTS

**TABLE OF CONTENTS** ..... I

**ABBREVIATIONS / ACRONYMS**..... II

**1.0 PRELIMINARY IMPROVEMENT OPTIONS FOR MACLAY BRIDGE** ..... 1

1.1. OPTION 1: IMPROVE SAFETY AND OPERATIONS ON THE EXISTING BRIDGE ..... 1

    1.1.1. *OPTION 1A–Enhance Traffic Operations and Safety on and near the Existing Structure*.....2

    1.1.2. *OPTION 1B–Maintain Current Usage and Add Pedestrian/Bicyclist Facilities*.....2

    1.1.3. *OPTION 1C–Implement Additional Restrictions on Bridge Use*.....2

    1.1.4. *OPTION 1D–Close Bridge to Vehicles and Retain Use for Non-Motorized Travel Modes*.....2

    1.1.5. *OPTION 1E–Retain Existing Bridge and Provide New Bridge Elsewhere* .....3

    1.1.6. *OPTION 1F– New One-Lane Bridge at a New Location & Retain Existing Bridge for Non-Motorized Uses*3

    1.1.7. *OPTION 1G–New One-Lane Bridge at a New Location & Retain Existing Bridge for One-Way Travel* .....3

    1.1.8. *OPTION 1H–Close Bridge and Remove Structure* .....3

1.2. OPTION 2: REHABILITATE THE EXISTING BRIDGE ..... 4

    1.2.1. *OPTION 2A–Minor Rehabilitation*.....4

    1.2.2. *OPTION 2B–Major Rehabilitation*.....5

1.3. OPTION 3: BUILD NEW BRIDGE..... 5

    1.3.1. *OPTION 3A - AT NORTH AVENUE* .....6

    1.3.2. *OPTION 3B - AT A NEW LOCATION*.....8

1.4. OPTION 4: DO NOTHING ..... 18

    1.4.1. *OPTION 4A–Do Nothing*..... 18

## FIGURES

Figure 1: North Avenue Alignment Options ..... 7

Figure 2: Bridge Alignments Considered in 1994 EA ..... 8

Figure 3: South 3<sup>rd</sup> Street West Alignment ..... 9

Figure 4: Spurgin Road Alignment..... 10

Figure 5: Mount Avenue Alignment Options ..... 11

Figure 6: Edward Avenue Alignment Options ..... 13

Figure 7: South Avenue Alignment Options..... 14

Figure 8: Sundown Road Alignment Options..... 16

Figure 9: Humble Road-Blue Mountain Road Alignment..... 17

## TABLES

Table 1: North Avenue on Existing Alignment ..... 6

Table 2: North Avenue near Existing Alignment ..... 7

Table 3: South 3<sup>rd</sup> Street West Alignment..... 10

Table 4: Spurgin Road Alignment ..... 11

Table 5: Mount Avenue Alignments ..... 12

Table 6: Edward Avenue Alignments ..... 13

Table 7: South Avenue Alignments..... 15

Table 8: Sundown Road Alignment ..... 16

Table 9: Humble Road – Blue Mountain Road Alignment ..... 18

## **ABBREVIATIONS / ACRONYMS**

<b>AASHTO</b>	American Association of State Highway Transportation Officials
<b>CE</b>	Construction Engineering
<b>EA</b>	Environmental Assessment
<b>HS (15)</b>	Highway Semi (15 tons)
<b>MDT</b>	Montana Department of Transportation
<b>MEPA</b>	Montana Environmental Policy Act
<b>NEPA</b>	National Environmental Policy Act
<b>PE</b>	Preliminary Engineering
<b>RDM</b>	Road Design Manual
<b>US</b>	United States

# IMPROVEMENT OPTIONS

## 1.0 PRELIMINARY IMPROVEMENT OPTIONS FOR MACLAY BRIDGE

This section identifies preliminary improvement options for the Maclay Bridge. Subsequent to this, the next step will be to identify potential benefits and impacts of each option and undertake a first-level screening process to determine if an improvement option should be carried forward. If an improvement option recommendation is forwarded, more study may be needed to determine potential impacts to any of the physical or social conditions in the Study Area.

A full range of preliminary improvement options were developed for analysis based on the identified transportation issues, needs and objectives, and public input. A no-build case, including transportation system management (TSM) strategies, is being considered as an alternative option. The preliminary improvement options were developed to meet the Needs and Objectives, which were developed through an evaluation of the information contained in the Existing and Projected Conditions Report. Areas of concern were identified in the Existing and Projected Conditions Report based on field review, engineering analysis, crash data analysis, consultation with resource agencies and information provided by the public. The corridor Needs and Objectives take into account the current social, environmental and engineering conditions described in the Existing and Projected Conditions Report.

Planning level cost estimates for the improvement options will be developed in the future. These costs will be for construction costs only in year 2012 dollars. The planning level costs will not include right-of-way acquisition, utility relocation, preliminary engineering (PE) or construction engineering (CE).

Broad categories of improvement options have been identified below. Each broad category has various types of improvement options and is discussed in more detail:

- Option 1 – Improve Safety and Operations on the Existing Bridge
- Option 2 - Rehabilitate the Existing Bridge
- Option 3 - Build New Bridge
- Option 4 – Do Nothing

### 1.1. OPTION 1: IMPROVE SAFETY AND OPERATIONS ON THE EXISTING BRIDGE

There are a range of improvement options that could be implemented that would improve safety and operations at the Maclay Bridge. These options include enhancing traffic operations and safety on and near the existing bridge, and implementing new restrictions on the use of the bridge. These options would not change the alignment of the approaches to the existing structure or the roadways leading to the Maclay Bridge.

Under this option Missoula County would continue to perform routine maintenance activities on the existing bridge to keep the structure in service under its load limitation for use by local residents, school buses, and emergency service vehicles. Some sub-options exist where the bridge is removed, or left for non-motorized uses, and in those cases maintenance may not be required with the same frequency as if the bridge was left in service for vehicular traffic.

### **1.1.1. OPTION 1A–Enhance Traffic Operations and Safety on and near the Existing Structure**

This option would involve a variety of periodic maintenance activities to improve for use by local residents, school buses, and emergency vehicles. There would be no changes to the configuration or alignment of the approaches to the existing structure or roadways within the area beyond the safety improvements currently being implemented by the County and MDT.

To help manage traffic flows across the bridge, new metering devices would be installed along each approach to regulate traffic flows by direction and address vehicles having to back up so oncoming traffic can get off the bridge.

This option would include street lighting at the westerly approach to the bridge, with appropriate signage on both ends to warn of the change in roadway alignment.

Pedestrian and bicyclist travel through the area would continue to occur on the existing bridge and its adjoining roadways.

### **1.1.2. OPTION 1B–Maintain Current Usage and Add Pedestrian/Bicyclist Facilities**

This option would construct a separated pedestrian/bicyclist facilities in the vicinity of Maclay Bridge and make limited improvements for non-motorized users on the approaches to the bridge to enhance safety for non-motorized users. These limited improvements could consist of shoulder widening on River Pines Road, signing and striping on both sides of the bridge, and pavement markings. A new, separated non-motorized bridge would be necessary adjacent to the existing Maclay Bridge.

### **1.1.3. OPTION 1C–Implement Additional Restrictions on Bridge Use**

This option would involve placing additional operational restrictions on the use of the Maclay Bridge. These restrictions may include measures like:

- Restricting vehicle use of the structure to one travel direction (i.e. a one-way route);
- Further reducing travel speeds;
- Prohibition of use by all large trucks, school buses, and emergency vehicles; or
- Increased enforcement of parking ordinance (no tolerance policy)

There would be no changes to the alignment of the approaches or roadways within the area beyond the safety improvements currently being implemented by the County and MDT.

### **1.1.4. OPTION 1D–Close Bridge to Vehicles and Retain Use for Non-Motorized Travel Modes**

This option would close the Maclay Bridge to vehicular traffic but allow the structure to remain in service as a river crossing for pedestrians and bicyclists and other non-motorized transportation modes. Vehicle access across the Bitterroot River would be accommodated by other existing bridges and roadways in the area—Kona Ranch Bridge via Mullen Road or Blue Mountain Road via US Highway 93. Further investment by the County in active transportation facilities in the Maclay Bridge area would likely be necessary on River Pines Road and North Avenue to provide system continuity.

The permanent closure of the bridge would eliminate through traffic on North Avenue and River Pines Road and inconvenience local residents and visitors seeking recreational opportunities on nearby public lands.

### **1.1.5. OPTION 1E–Retain Existing Bridge and Provide New Bridge Elsewhere**

This option would involve keeping the existing bridge in service for vehicular traffic but providing another structure somewhere else in the area to help meet existing and projected travel demands.

### **1.1.6. OPTION 1F– New One-Lane Bridge at a New Location & Retain Existing Bridge for Non-Motorized Uses**

During public outreach the concept of a new one-lane bridge at a South Avenue Extension was put forth by the public. The function of this bridge was presumed to be similar to that of the existing bridge on North Avenue, that is, carries two-way vehicular traffic across a new one-lane bridge at South Avenue. The existing Maclay Bridge could remain as an exclusive non-motorized facility.

### **1.1.7. OPTION 1G–New One-Lane Bridge at a New Location & Retain Existing Bridge for One-Way Travel**

Building upon the concept described above in section 1.1.6, the concept of a “one-way” couplet of roadways was discussed. In this concept, the existing Maclay Bridge would remain, be rehabilitated, and used for one-way travel only (i.e. westbound or eastbound travel only). In addition, a new single lane bridge at the extension of South Avenue would also be used for one-way travel (in the opposite direction from that of the existing Maclay Bridge).

### **1.1.8. OPTION 1H–Close Bridge and Remove Structure**

This concept involves closing the Maclay Bridge and removing the structure. No replacement bridge would be provided in the area. With no access across the Bitterroot River in the vicinity of the Maclay Bridge, vehicles which currently use the bridge would be required to divert to Blue Mountain Road and US Highway 93 or to Mullan Road using the Kona Ranch Bridge. This would require roadway closures with barricades and the provision of adequate turnaround areas for vehicles near the ends of the existing bridge. Utilities installed on the bridge would need to be relocated. The river crossing would no longer be available to users of non-motorized transportation modes. Old easement area, particularly the area east of bridge, offers potential for providing parking area and enhancing river access.

Further investment by the County in active transportation facilities in the Maclay Bridge area would likely be necessary on River Pines Road and North Avenue to provide system continuity. The permanent closure of the bridge would eliminate through traffic on North Avenue and River Pines Road and inconvenience local residents and visitors seeking recreational opportunities on nearby public lands.

## 1.2. OPTION 2: REHABILITATE THE EXISTING BRIDGE

Rehabilitation options associated with the existing bridge focus exclusively on the structure. This option does nothing to address the approach roadways that tie-in to the bridge itself. This is due to the constraints of the two roadways, i.e. North Avenue and River Pines Road. These roadways cannot be reconstructed to fit within the constraints of the existing structure, so the rehabilitation option focuses solely on structure rehabilitation. This option also does not address the functionally obsolete or fracture critical status of the structure. For informational purposes only, it is noted that MDT guidelines for bridges suggest the following apply to truss rehabilitation:

- *Do not rehabilitate a truss that does not provide a roadway width of at least 16.0 feet.*
- *Widening a truss is seldom cost effective because it requires replacement of all floor beams and bracing. Do not consider widening a truss without specific approval from the Bridge Engineer.*
- *Do not rehabilitate a truss that cannot provide capacity for at least HS 15 loading when the work is complete.*
- *Do not rehabilitate a truss that cannot provide at least 14.0 feet vertical clearance.*
- *Historically significant structures require special consideration when determining whether to rehabilitate them.*

### 1.2.1. OPTION 2A–Minor Rehabilitation

The goal of a minor rehabilitation would be to extend the life of the bridge by performing minor upgrades and repairing deterioration and damage. Ongoing inspections and related maintenance activities would still be needed. Missoula County would continue to perform routine maintenance activities to keep the structure in service under its load limitation for use by local residents, school buses and emergency service vehicles. With repair and maintenance the bridge life could be extended depending on the rate of deterioration, aggressiveness of ongoing repair work, and barring major damage from flooding and/or vehicles. It would not eliminate inherent safety concerns. Maintenance and repair activities would probably increase over time. An engineering analysis may be appropriate to better understand the ability of the bridge to pass flood events. Minor rehabilitation would typically include rehabilitation work tasks such as follows:

- Tighten and/or replace loose bolts
- Spot painting of structural steel
- Upgrade bearings and expansion devices.
- Crack sealing of asphalt surfacing to prolong surface.
- Minor repairs and upgrades to the truss and floor system to increase load capacity
- Patch deteriorated or spalled concrete
- Safety improvements such as adding a pedestrian rail

Minor rehabilitation work is not a “one time only” application. Minor rehabilitation activities may be required on a frequency of every two-to-three years over the life of the bridge. Rehabilitation efforts on the existing bridge have been performed at least four times over the last 18 years (April, 1997 and during the summers of 2003, 2004 and 2005 – see *Existing and Projected Conditions Report*).

With minor rehabilitation, the posted vehicle weight limit restriction could be increased from the current 11 tons to around 13 tons.

### 1.2.2. OPTION 2B–Major Rehabilitation

The goal of a major rehabilitation would be to extend the life of the bridge to something similar to that of a new bridge. The scope of the rehabilitation would require a more in-depth engineering study. Major rehabilitation work could allow the bridge to handle full legal loads so that there would be no need for a load posting. Like minor rehabilitation, ongoing inspections and related maintenance activities would still be needed. This option requires a long term commitment to the existing bridge due to the increase in life span. The ultimate life span of the bridge would be dependent on the rate of deterioration, aggressiveness of ongoing repair work, and barring major damage from flooding and/or vehicles. Furthermore, a major rehabilitation does not eliminate the necessity for periodic maintenance.

Since the extent of the needed rehabilitation is unknown, major rehabilitation work requires an engineering study of the truss, floor system, abutments, and piers. This typically requires more engineering and plan development time. The cost of a major rehabilitation can be similar to the cost of a new bridge. An objective in major bridge rehabilitation is to bring all structural elements back to a condition rating of at least 7 (Good Condition) out of 9 (Excellent Condition).

Major rehabilitation of the existing bridge to attain longer life and higher load ratings would likely consist of the following specific work features:

- Sand blast rusted steel members and re-paint as needed
- Replace steel stringers and floor beams as determined necessary
- Upgrade truss members as determined necessary
- Evaluate abutments and piers for repair versus replacement
- Replace bearing devices
- Replace the short span pony truss with a new one lane truss
- Rehabilitating the main truss will likely require removing the main truss from the river, rebuilding or repairing offsite and installation
- Possibly remove and replace abutments and piers

### 1.3. OPTION 3: BUILD NEW BRIDGE

Options for a new bridge and associated roadway at all 14 locations were drawn on an aerial image using Google Earth mapping. An estimate of the length of new construction was made. For bridge, no estimate of the number of spans was made. The tables contained within each option's description lists the possible new construction length.

Depending on funding source, different sets of design standards may be applicable to the Maclay Bridge in a "replacement" scenario. One set of standards are the Missoula County *Public Works Manual 2010* design standards that have previously been described in the *Existing and Projected Conditions Report*. A collector roadway built to Missoula County standards would have a surface width of 44 feet. Pertinent to the actual bridge features, Missoula County would default to AASHTO standards for guidance.

An additional set of design standards, and those that may be considered in design if Federal or State funds were used for any type of project identified through this planning effort, are the standards and guidelines found in MDT's *Road Design Manual (RDM)*. The RDM specifies general design principles and controls which determine the overall operational characteristics of the roadway and enhance the aesthetic appearance of the roadway. If the recommendation for a new bridge results from the study, either at its present location or an alternate location, it would connect to roadways currently classified as rural roads or streets. The RDM geometric design criteria would be reviewed in the context of the adjacent land use, topography, and function, and compared to existing Missoula County design criteria.

For most “off-system” locations such as the Maclay Bridge (i.e. not on a State-highway), local conditions and context to the surrounding land uses would be considered in developing geometric features – which includes roadway width, travel lane width, and potential traffic calming features.

**1.3.1. OPTION 3A - AT NORTH AVENUE**

Option 3A includes options to build a new structure at or near the existing North Avenue alignment. Any new bridge would need to meet current design standards in place and recognized by the participating agencies.

**1.3.1.1. OPTION 3A.1–BUILD ON EXISTING ALIGNMENT**

One option for a replacement bridge would be to rebuild a 2-lane bridge on the present alignment. This option would not change the alignment of the approaches to the existing structure or the roadways leading to the Maclay Bridge. This option only envisions the construction of a new bridge at the present location of the existing bridge, with minimal roadway work.

**Table 1: North Avenue on Existing Alignment**

<b>ALIGNMENT OPTION: <i>North Avenue on Existing Alignment</i></b>	
	<b><i>North Avenue on Existing Alignment</i></b>
<b>Overall Length</b>	450 feet
<b>Bridge Skew</b>	20 degrees
<b>Associated Infrastructure Improvements</b>	Assumes minimal approach work on each side of the new bridge to tie-in existing roadways to new structure.

**1.3.1.2. OPTION 3A.2–BUILD NEAR EXISTING ALIGNMENT**

**NORTH 1 ALIGNMENT**

This option provides a new bridge parallel to and just upstream from the existing Maclay Bridge. The alignment begins on North Avenue at its intersection with Edward Avenue. The alignment of River Pines Road west of the river would be improved to eliminate the 90-degree curve at the west end of the existing bridge. Approach work on the west side of the river would extend for about 1030 feet beyond the west end of the current bridge.

**NORTH 2 ALIGNMENT**

This alignment extends North Avenue due west from Edward Avenue to River Pines Road about 825’ southwest of the existing Maclay Bridge. The 0.25-mile-long alignment crosses the island in the Bitterroot River located upstream from the existing bridge.

These North Avenue alignments are shown on **Figure 1**.

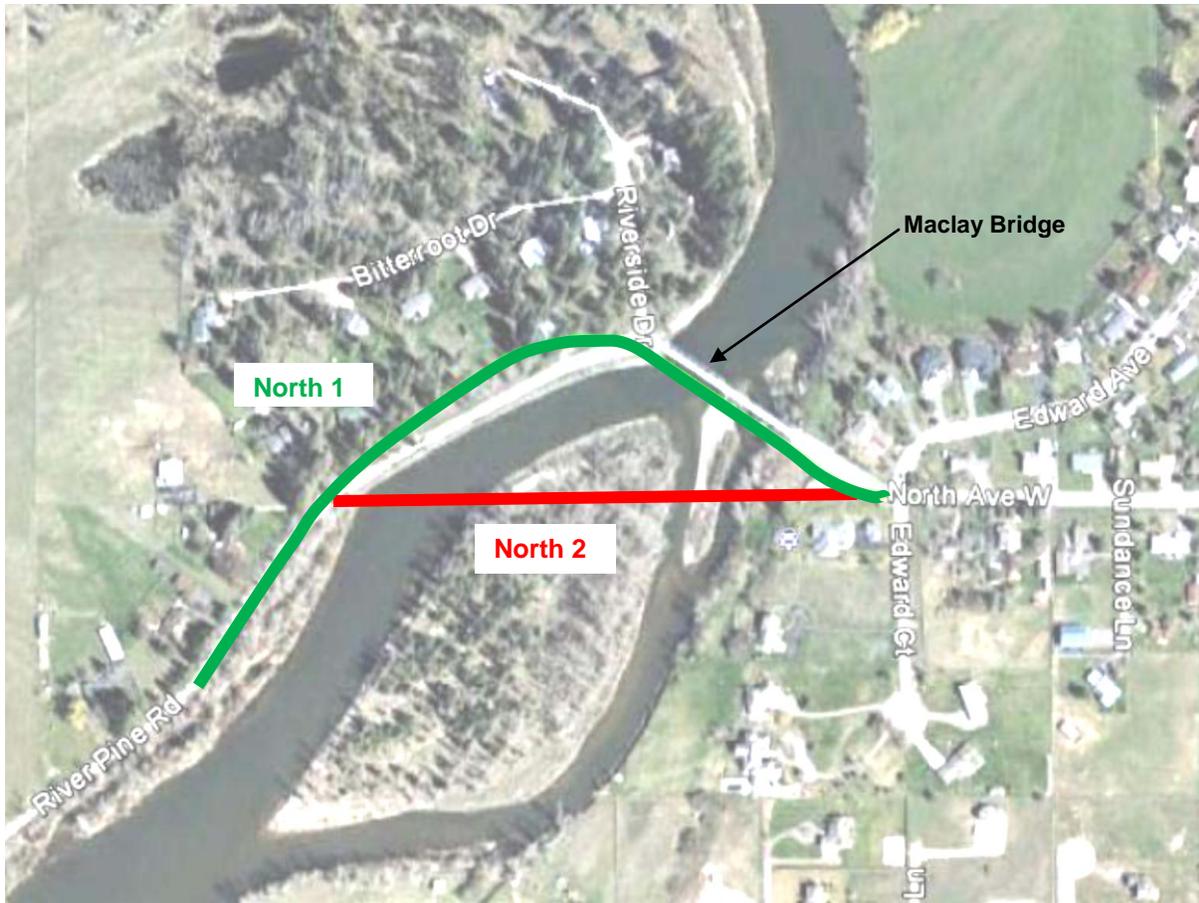


Figure 1: North Avenue Alignment Options

Table 2: North Avenue near Existing Alignment

ALIGNMENT OPTION: <i>North Avenue near Existing Alignment</i>		
	<i>North 1</i>	<i>North 2</i>
Overall Length	1,655 feet	1,300 feet
Bridge Skew	20 degrees	50 degrees
Associated Infrastructure Improvements	<ul style="list-style-type: none"> <li>▪ Reconstruction of River Pines Road.</li> <li>▪ Re-routing of utilities across the existing bridge.</li> <li>▪ Relocation of gas sub-station</li> <li>▪ Reconfiguration of North Avenue/Edward Court intersection.</li> </ul>	<ul style="list-style-type: none"> <li>▪ New intersection at River Pines Road.</li> <li>▪ Re-routing of utilities across the existing bridge.</li> <li>▪ Relocation of gas sub-station.</li> <li>▪ Reconfiguration of North Avenue/Edward Court intersection.</li> </ul>

### 1.3.2. OPTION 3B - AT A NEW LOCATION

A total of 16 alternatives were initially considered in the 1994 EA for the *Maclay Bridge Site Selection Study* including 13 locations for a bridge on a new alignment in the general area. The new bridge locations and associated alignments considered included:

- An alignment extending South 3rd Avenue across the river;
- An alignment extending Spurgin Road across the river;
- 2 alignments extending Mount Avenue across the river;
- 2 alignments extending Edwards Avenue across the river;
- 2 alignments along North Avenue near the existing bridge (described earlier in section 1.3.1.2);
- 2 alignments extending South Avenue across the river;
- 2 alignments extending Sundown Road across the river; and
- An alignment extending Humble Road across the river to Blue Mountain Road.

Figure 2 shows the locations of the alignments considered in the 1994 EA.



Figure 2: Bridge Alignments Considered in 1994 EA

The graphics from the 1994 EA illustrating these potential alignments were schematic in nature and were intended to illustrate the location concepts for a new bridge and roadway connections. With the exception of the Preferred Alternative identified in the EA, preliminary design drawings of the proposed roadway alignments showing associated bridge lengths and right-of-way needs are not available for the potential alignments. Therefore, each alignment was drafted on recent aerial photographs to better show its possible location and current setting. These graphics were used to help describe the overall location of the alignments.

The bridge alignments described in the 1994 EA are discussed in the following sections.

### 1.3.2.1. OPTION 3B.1—BUILD BRIDGE ON NORTHERN ALIGNMENT

#### **SOUTH 3RD STREET WEST EXTENSION**

This potential alignment extends from the intersection of South 3rd Street West and Clements Road west towards the Clark Fork River and continues southwesterly along the Clark Fork before turning to the south near the intersection of South 7th Street West and Humble Road. From this point, the alignment continues southwesterly across Spurgin Road and follows a tangent (straight) alignment across the Bitterroot River to end at the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection. This alignment is about 1.93 miles (10,190 feet) in length. **Figure 3** illustrates the South 3rd Street West alignment concept.



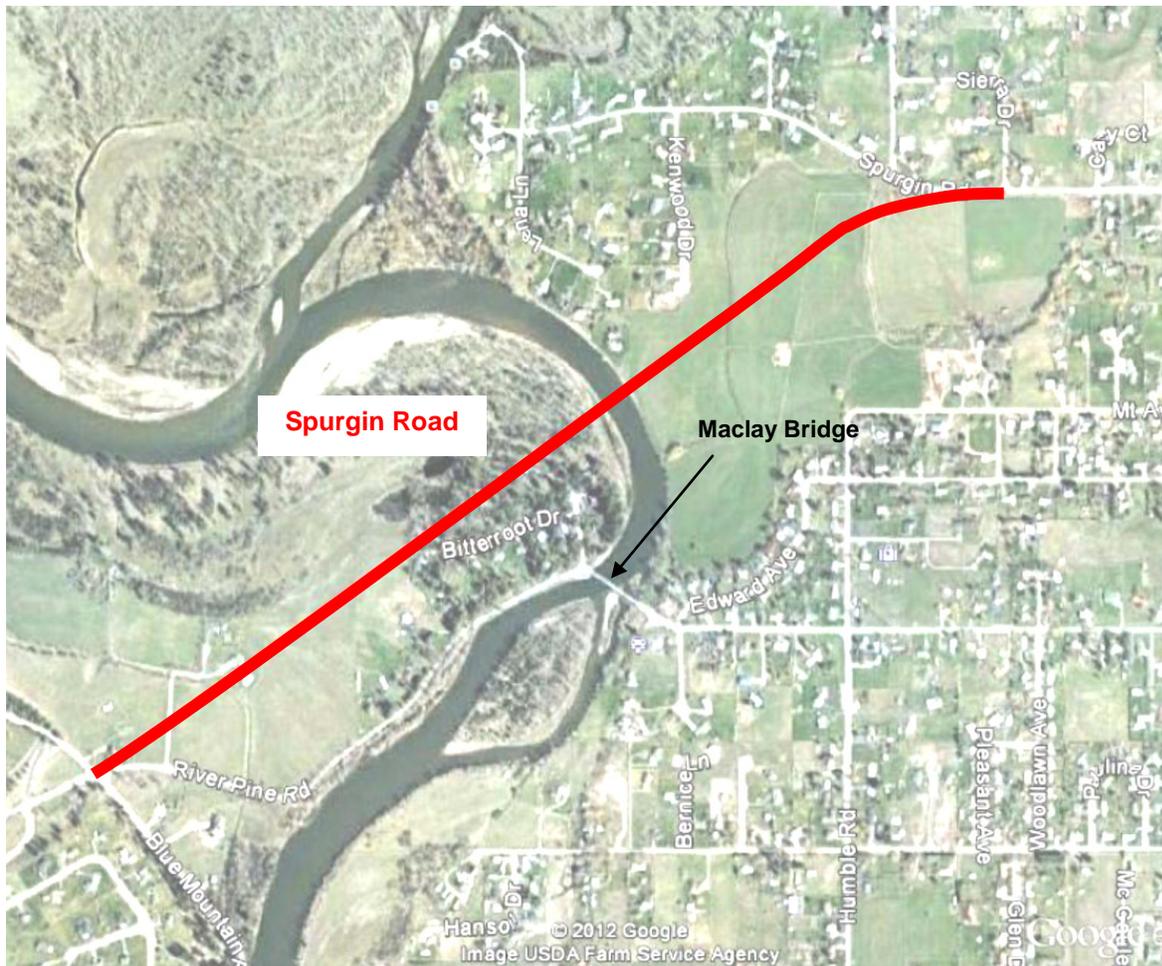
Figure 3: South 3<sup>rd</sup> Street West Alignment

**Table 3: South 3<sup>rd</sup> Street West Alignment**

<b>ALIGNMENT OPTION: South 3rd Street West Alignment</b>	
Overall Length	1.93 miles
Bridge Skew	0 degrees
Associated Infrastructure Improvements	<ul style="list-style-type: none"> <li>Intersection improvements at S 3rd/Clements, Spurgin Rd. and at River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road.</li> </ul>

**SPURGIN ROAD EXTENSION**

This 1.25 mile long alignment begins near the intersection of Spurgin Road and Sierra Drive. After a long horizontal curve, the alignment continues southwesterly through agricultural lands before crossing the Bitterroot River on a tangent (straight) alignment that ends at the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection. This option would follow the same alignment as the South 3rd Street West alignment at the river crossing and west of river. **Figure 4** shows this potential alignment.



**Figure 4: Spurgin Road Alignment**

**Table 4: Spurgin Road Alignment**

<b>ALIGNMENT OPTION: <i>Spurgin Road Alignment</i></b>	
Overall Length	1.25 miles
Bridge Skew	0 degrees
Associated Infrastructure Improvements	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Spurgin Road &amp; Sierra Drive.</li> <li>▪ Intersection improvements at River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road.</li> </ul>

**1.3.2.2. OPTION 3B.2–BUILD BRIDGE ON MOUNT AVENUE ALIGNMENT**

**MOUNT 1**

This 1-mile long alignment begins near the intersection of Mount Avenue and Humble Road and continues west across the Bitterroot River. After crossing the river, this option follows a tangent alignment and ends at the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection.

**MOUNT 2**

This 0.38-mile long alignment begins at the same location as the Mount 1 alignment. However, the proposed alignment immediately proceeds in a southwesterly direction alternative across the Bitterroot River and joins River Pines Road at the west end of the existing Maclay Bridge.

Figure 5 shows both of the Mount Avenue alignment options.

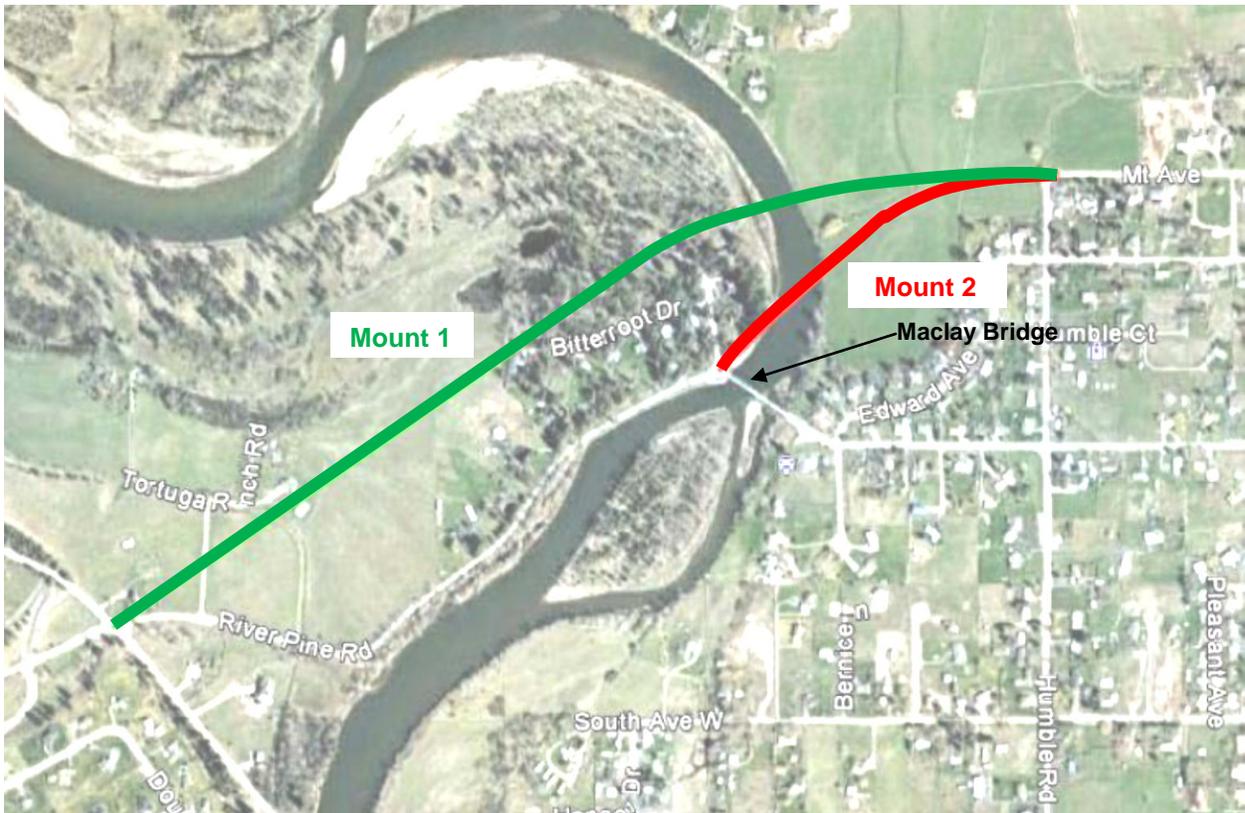


Figure 5: Mount Avenue Alignment Options

**Table 5: Mount Avenue Alignments**

<b>ALIGNMENT OPTION: <i>Mount Avenue Alignments</i></b>		
	<b><i>Mount 1</i></b>	<b><i>Mount 2</i></b>
<b>Overall Length</b>	1.00 miles	0.38 miles
<b>Bridge Skew</b>	8 degrees	45 degrees
<b>Associated Infrastructure Improvements</b>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Spurgin Road and Mount Drive.</li> <li>▪ Intersection improvements at new alignment and Riverside Drive.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Spurgin Road and Mount Drive.</li> <li>▪ Intersection improvements at River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road.</li> </ul>

**1.3.2.3. OPTION 3B.3–BUILD BRIDGE ON EDWARD AVENUE ALIGNMENT**

**EDWARD 1**

This alignment option begins near the intersection of Edwards Avenue and Humble Road and proceeds westerly across the Bitterroot River before turning southwesterly and continuing to the intersection of River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road. This alignment is about 0.95 miles in length.

**EDWARD 2**

This 0.33-mile-long alignment starts near the intersection of Edwards Avenue and Humble Road. After proceeding westerly for a short distance along an extension of Edwards Avenue, the alignment quickly transitions to a southwesterly direction across the Bitterroot River and joins River Pines Road at the west end of the existing Maclay Bridge.

The Edwards Avenue alignments are presented in **Figure 6**.

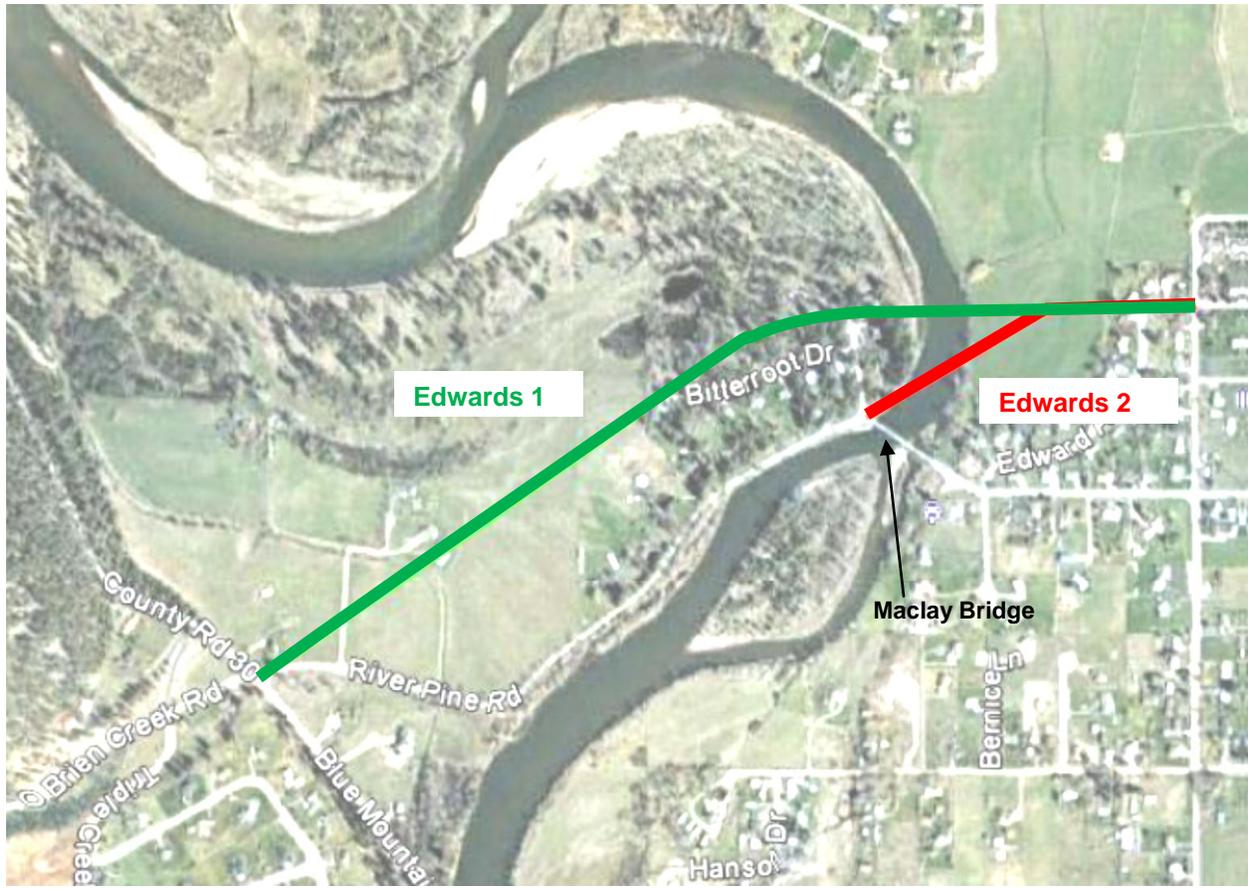


Figure 6: Edward Avenue Alignment Options

Table 6: Edward Avenue Alignments

ALIGNMENT OPTION: <i>Edward Avenue Alignments</i>		
	<i>Edward 1</i>	<i>Edward 2</i>
Overall Length	0.95 miles	0.33 miles
Bridge Skew	14 degrees	40 degrees
Associated Infrastructure Improvements	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Edwards Avenue and Humble Road.</li> <li>▪ Intersection improvements at River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Edwards Avenue and Humble Road.</li> <li>▪ Intersection improvements at new alignment and Riverside Drive.</li> </ul>

### 1.3.2.4. OPTION 3B.4–BUILD BRIDGE ON SOUTH AVENUE ALIGNMENT

#### **SOUTH 1**

This alignment involves extending South Avenue northwesterly direction across the Bitterroot River to join with River Pines Road. This 0.25 mile-long alignment begins on South Avenue west of Hanson Drive (the current terminus) and continues northwesterly to join River Pines Road about 0.2 miles east of the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection.

#### **SOUTH 2**

This 0.36 mile long alignment would extend from South Avenue west of Hanson Drive (the current terminus) due west across the Bitterroot River to meet Blue Mountain Road at a location about 600 feet southeast of the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection.

Figure 7 shows both of the South Avenue alignments.

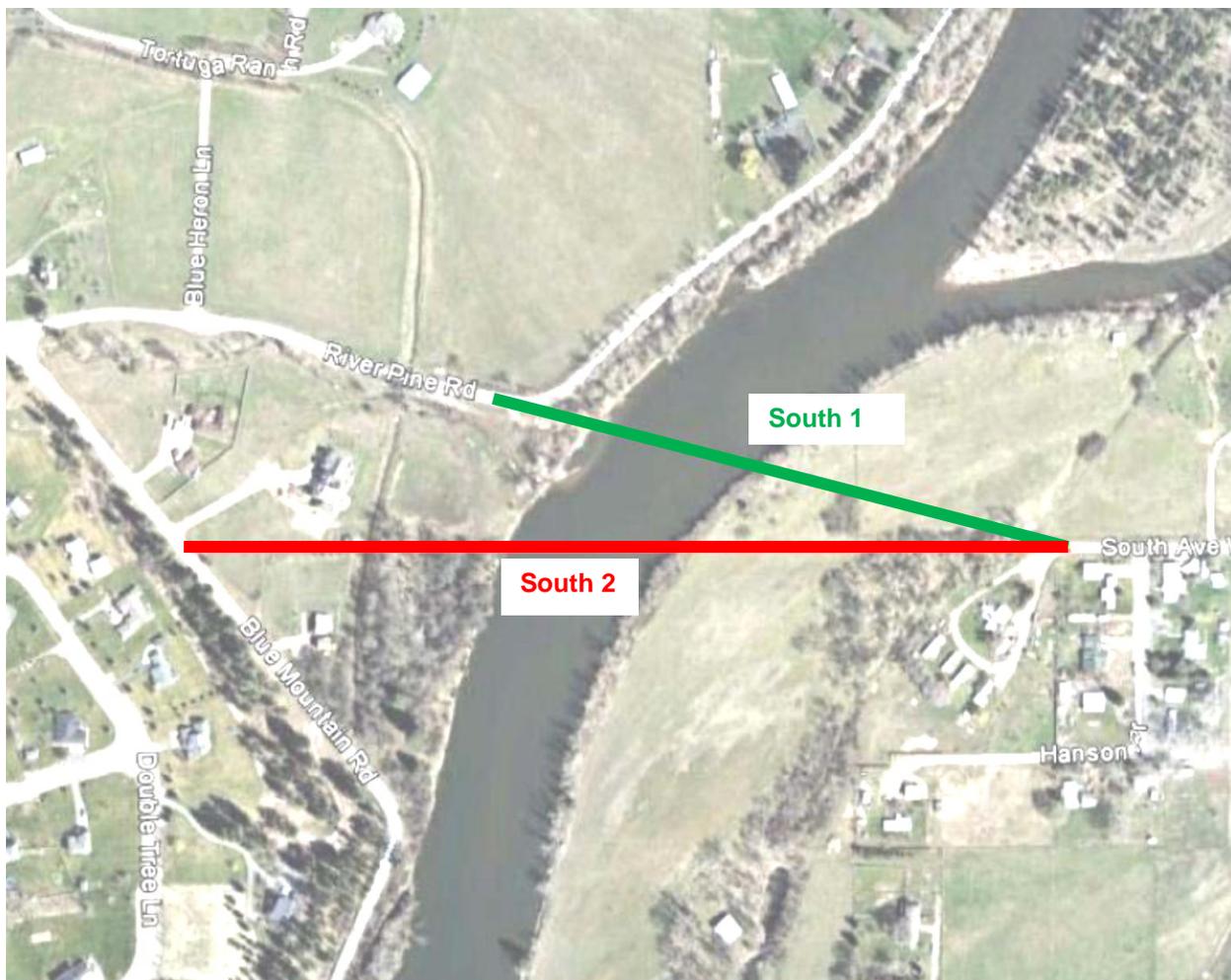


Figure 7: South Avenue Alignment Options

**Table 7: South Avenue Alignments**

<b>ALIGNMENT OPTION: <i>South Avenue Alignments</i></b>		
	<b><i>South 1</i></b>	<b><i>South 2</i></b>
<b>Overall Length</b>	1,320 feet	1,900 feet
<b>Bridge Skew</b>	30 degrees	37 degrees
<b>Associated Infrastructure Improvements</b>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at South Avenue and new alignment (east of river).</li> <li>▪ Intersection improvements at new alignment and River Pines Road (west of river).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at South Avenue and new alignment (east of river).</li> <li>▪ Intersection improvements at new alignment and Blue Mountain Road.</li> </ul>

**1.3.2.5. OPTION 3B.5—BUILD BRIDGE ON SUNDOWN ROAD ALIGNMENT**

**SUNDOWN 1**

This alignment begins at the existing western terminus of Sundown Road and extends northwesterly across the Bitterroot River to join Blue Mountain Road at the sharp curve located about 0.25 miles southeast of the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection. The total length of this alignment option is 0.26 miles.

**SUNDOWN 2**

This 0.30-mile-long alignment begins at the existing western terminus of Sundown Road and extends due west across the river to meet Blue Mountain Road at a location about 0.43 miles south of the River Pines Road/O'Brien Creek Road/Big Flat Road/Blue Mountain Road intersection.

The Sundown Road alignments are shown in **Figure 8**.

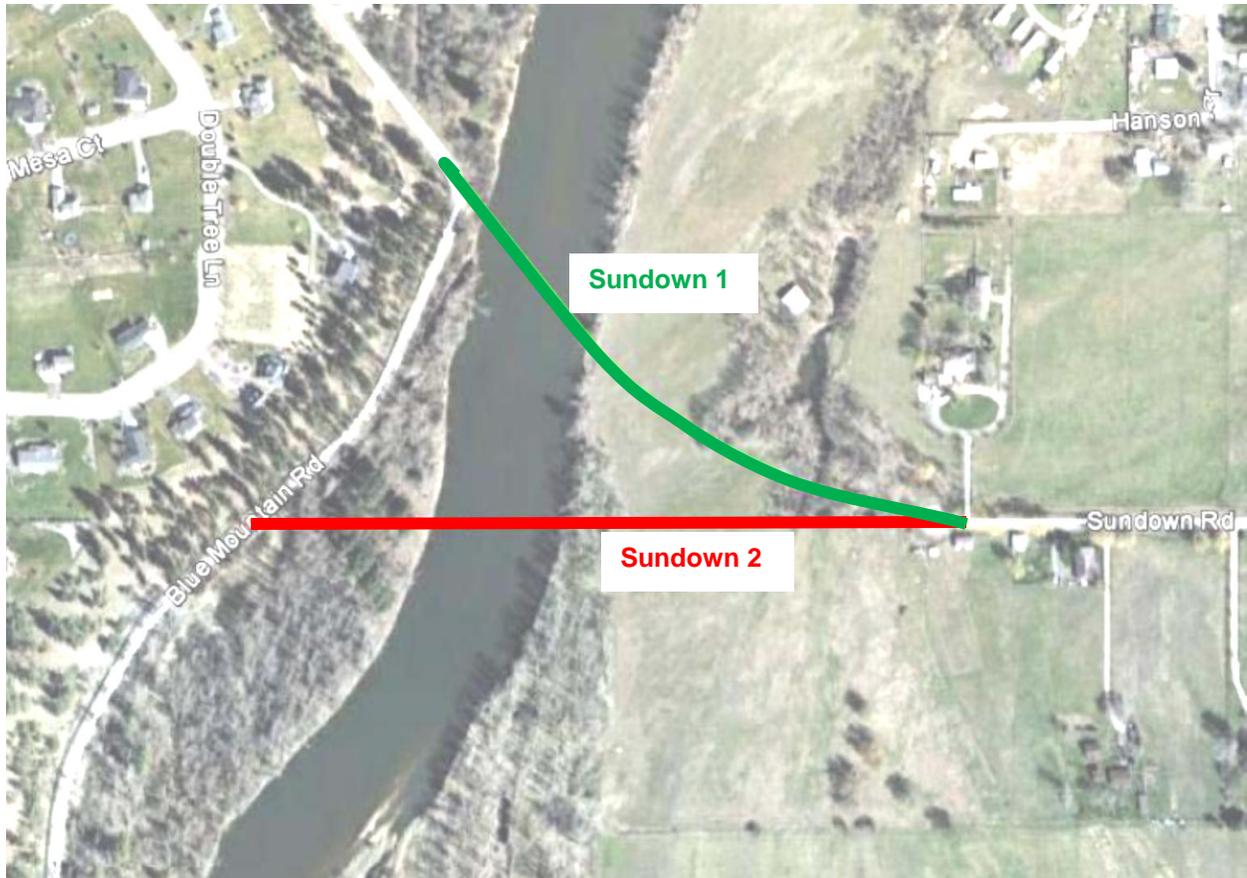


Figure 8: Sundown Road Alignment Options

Table 8: Sundown Road Alignment

ALIGNMENT OPTION: <i>Sundown Road Alignments</i>		
	<i>Sundown 1</i>	<i>Sundown 2</i>
Overall Length	1,375 feet	1,580 feet
Bridge Skew	37 degrees	15 degrees
Associated Infrastructure Improvements	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Sundown Road and new alignment (east of river).</li> <li>▪ Intersection improvements at new alignment and Blue Mountain Road.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Sundown Road and new alignment (east of river).</li> <li>▪ Intersection improvements at new alignment and Blue Mountain Road.</li> </ul>

### 1.3.2.6. OPTION 3B.6–BUILD BRIDGE ON SOUTHERN ALIGNMENT

#### **HUMBLE ROAD-BLUE MOUNTAIN ROAD**

This 1.03 mile-long alignment option begins at the current western terminus of Humble Road and continues west and south to cross the Bitterroot River to Maclay Flats. From that point, the alignment extends southeasterly across Maclay Flats before turning south to join a north-south section of Blue Mountain Road. The southern end of the alignment is located about 0.78 miles from the intersection of Blue Mountain Road and US Highway 93.

Figure 9 shows the potential Humble Road -Blue Mountain Road alignment option.



Figure 9: Humble Road-Blue Mountain Road Alignment

**Table 9: Humble Road – Blue Mountain Road Alignment**

<b>ALIGNMENT OPTION: <i>Humble Road- Blue Mountain Road Alignment</i></b>	
<b>Overall Length</b>	1.03 miles
<b>Bridge Skew</b>	0 degrees
<b>Associated Infrastructure Improvements</b>	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Humble Road and new alignment (north of river).</li> <li>▪ Intersection improvements at new alignment and Blue Mountain Road.</li> </ul>

**1.3.2.7. OPTION 3B.7– NEW BRIDGE AT A NEW LOCATION NOT IDENTIFIED IN THE 1994 EA**

The study area was examined to determine if another, more suitable location could be identified for a new bridge crossing at a location other than those identified in the 1994 EA. It was concluded that no such location existed, and that those alignments identified in the original 1994 EA represented the complete array of possible new bridge locations. The alignments in the 1994 EA were determined to represent the complete array of possible locations for a new bridge crossing.

**1.4. OPTION 4: DO NOTHING**

**1.4.1. OPTION 4A–Do Nothing**

This option represents the current situation for the Maclay Bridge and its surroundings. The existing bridge is considered to be functionally obsolete and eligible for replacement based on MDT’s bridge condition surveys. Missoula County would continue to perform routine maintenance activities to keep the structure in service under its load limitation, but would not complete many of the items proposed under Option 2A (Minor Rehabilitation). There would be no changes to the configuration or alignment of the approaches to the existing structure or roadways within the area beyond the safety improvements currently being implemented by the County and MDT. The bridge would remain in its present configuration and traffic operations at and near the Maclay Bridge would be unchanged. Pedestrian and bicyclist travel through the area would continue to occur on the existing roadway or other facilities in the Maclay Bridge area.