

## MONTANA DIVISION

### "NATIONWIDE" PROGRAMMATIC SECTION 4(f) EVALUATION FOR HISTORIC BRIDGES

<b>PROJECT #:</b> BR 9032(65); CN 6296000	<b>DATE:</b> August 30, 2019
<b>PROJECT NAME:</b> Bitterroot River – W of Missoula (South Avenue Bridge Project)	<b>LOCATION:</b> Maclay Bridge, Missoula County; Latitude 46°51'11", Longitude 114°05'52"

The information and format contained in this form have been adapted by the Montana Department of Transportation from the Federal Highway Administration Nationwide Section 4(f) Programmatic Evaluation entitled *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges*.

This statement sets forth the basis for a programmatic Section 4(f) approval that there are no feasible and prudent alternatives to the use of certain historic bridge structures to be replaced or rehabilitated with Federal funds and that the projects include all possible planning to minimize harm resulting from such use. This approval is made Pursuant to Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 303, and Section 18(a) of the Federal-Aid Highway Act of 1968 23 U.S.C. 138.

#### USE

The historic bridges covered by this programmatic Section 4(f) evaluation are unique because they are historic, yet also part of either a Federal-aid highway system or a state or local highway system that has continued to evolve over the years. Even though these structures are on or eligible for inclusion on the National Register of Historic Places (NRHP), they must perform as an integral part of a modern transportation system. When they do not or cannot, they must be rehabilitated or replaced in order to assure public safety while maintaining system continuity and integrity. For the purpose of this programmatic Section 4(f) evaluation, a proposed action will "use" a bridge that is on or eligible for inclusion on the NRHP when the action will impair the historic integrity of the bridge either by rehabilitation or demolition. Rehabilitation that does not impair the historic integrity of the bridge as determined by procedures implementing the national Historic Preservation Act of 1966, as amended (FHWA), is not subject to Section 4(f).

#### PROJECT DESCRIPTION AND BACKGROUND:

Missoula County, in cooperation with the Montana Department of Transportation (MDT) and Federal Highway Administration (FHWA), is proposing to construct a new bridge across the Bitterroot River at the western terminus of South Avenue to connect with River Pines Road immediately west of the river. The proposed South Avenue Bridge project (Project) will involve construction of a new two-lane, two-way bridge that provides for bicycle/pedestrian accommodations separated from vehicular traffic. The bridge design currently being evaluated is a four span welded plate girder design approximately 746 feet long. The Project also includes roadway reconstruction at the new bridge approaches on River Pines Road and South Avenue. The Project limits extend between the intersection of River Pines Road and Blue Heron Road to the west and South Avenue and Hanson Drive to the east. A segment of River Pines Road will be realigned to a T-intersection on the north side of the west approach. New right-of-way acquisition and temporary construction permits will be required for the

## Project.

The Project includes removal of the existing single-lane Maclay Bridge on North Avenue located approximately 0.4 mile downstream of the proposed bridge. A location map of this proposed bridge replacement project and representative photos are included as Attachment A. The removal of Maclay Bridge constitutes a “use” of a Section 4(f) resource as defined in 23 CFR 774.17.

The purpose of the Project is to enhance the operational characteristics, increase safety, and improve physical conditions of a Bitterroot River crossing for the traveling public over the foreseeable future. To accomplish this purpose, the proposed project would include:

- Incorporating physical changes to the river crossing, road approaches, and adjoining roadway environment so the transportation facility meets the minimum requirements for a Minor Collector road per the Missoula County Public Works Manual (2010), including provision of bicycle and pedestrian facilities that meet these standards;
- Incorporating physical changes to the river crossing to meet the American Association of State Highway Transportation Officials (AASHTO) and MDT bridge design standards; and,
- Providing a transportation facility that meets current and future demands by increasing capacity of the bridge to match the capacity of the two-way, two-lane roadways connecting to the bridge.

Maclay Bridge was determined by the Montana SHPO to be eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion C on April 23, 2012 and was listed on the NRHP on December 20, 2016. Removal of Maclay Bridge results in an Adverse Effect to the NRHP-listed bridge as described in 36 CFR 800.5 of the National Historic Preservation Act. The SHPO concurred with MDT’s adverse effect determination on October 31, 2016.

The adverse effect to Maclay Bridge will be mitigated through the terms and stipulations as specified by *Programmatic Agreement Among the FHWA, MDT, the Advisory Council on Historic Preservation, and the Montana SHPO Regarding Historic Roads and Bridges Affected by MDT Undertakings in Montana*. Per the Programmatic Agreement (PA), MDT has completed documenting Maclay Bridge according to the National Park Service’s Historic American Engineering Record (HAER) standards (Stipulation 3.C.2). Additionally, Maclay Bridge would be offered for adoption according to Stipulation 3.E. If a third party owner is identified to take ownership of and relocate Maclay Bridge, the cost of demolition would be made available to the third party as reimbursement for relocating the bridge.

The Maclay Bridge Alliance (MBA), a citizen group advocating for the preservation and rehabilitation of the historic Maclay Bridge, and the Historic Bridge Alliance have been approved by FHWA as a consulting parties in the Section 106 process. As a consulting party, the MBA was sent the Determination of Effect on November 12, 2016 and was provided a 30-day period to comment on the proposed undertaking. The MBA provided a response on December 23, 2016.

The MBA has brought forward five options to rehabilitate or preserve the existing Maclay Bridge, which were presented to the public on September 20, 2016. The options did not capture the full design requirements necessary to rehabilitate the bridge to meet current standards (i.e. approach roads, floodplain/freeboard requirements, etc.) or consider the potential impacts to the historic bridge. Missoula County and MDT retained a bridge consultant to provide an independent analysis on the rehabilitation alternatives as presented

by the MBA. The resulting *Maclay Bridge Preservation Options Analysis* (HDR, January 2019) examined in greater detail the feasibility and cost of the options brought forward by MBA that meet the Project purpose and need.

An amended Determination of Effect was sent to the SHPO on *[insert date when available]* that addressed the five rehabilitation options originally proposed by the MBA and each option’s respective effect on the historic integrity of Maclay Bridge. The SHPO concurred with MDT’s Determination of Effect on May 14, 2019. More information on the rehabilitation options is provided in the analysis sections below. The MBA was sent the amended Determination of Effect on *[insert date when available]* and provided a 30-day review period. The MBA provided a response on *[insert date when available]*.

## APPLICABILITY

This programmatic Section 4(f) evaluation may be applied by the FHWA to projects which meet the following criteria:

		YES	NO
1.	The bridge is to be replaced or rehabilitated with Federal funds.  The Project includes replacing the existing Maclay Bridge with the new South Avenue Bridge at a new location. The Project would be largely funded through the Surface Transportation Program Off-System Bridge Program (86.58%). The Project would also receive State funding through the Highway State Special Revenue Account (13.42%). Missoula County has been certified by MDT to administer this federal-aid project directly under the Local Agency Guidelines, or LAG, process.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	The project will require the use of a historic bridge structure which is on or is eligible for listing on the National Register of Historic Places.  Maclay Bridge was determined eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion C on April 23, 2012 by the Montana SHPO and was listed on the NRHP on December 20, 2016.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	The bridge is not a NATIONAL HISTORIC LANDMARK.  Maclay Bridge is not a designated National Historic Landmark.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	The FHWA Division Administrator determines that the facts of the project match those set forth in the sections of this document labeled Alternatives, Findings, and Mitigation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	Agreement among the FHWA, the State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) has been reached through procedures pursuant to Section 106 of the NHPA.  <i>The Programmatic Agreement Among the Federal Highway Administration, the Montana Department of Transportation, the Advisory Council on Historic Preservation and the Montana State Historic Preservation Office Regarding Historic Roads and Bridges Affected by Montana Department of</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	YES	NO
<i>Transportation Undertakings in Montana</i> (effective February 01, 2007) is being followed to mitigate for the adverse effect to the NRHP-listed Maclay Bridge. The programmatic agreement (PA) outlines the stipulations that must be followed to satisfy FHWA Section 106 responsibility for the Project.		

## ALTERNATIVES

The following alternatives avoid any use of the historic bridge:

1. Do nothing.
2. Build a new structure at a different location without affecting the historic integrity of the old bridge, as determined by procedures implementing the NHPA.
3. Rehabilitate the historic bridge without affecting the historic integrity of the structure, as determined by procedures implementing the NHPA.

This list is intended to be **all-inclusive**. The programmatic Section 4(f) evaluation does not apply if a reasonable alternative is identified that is not discussed in this document. The project record must clearly demonstrate that each of the above alternatives was fully evaluated and it must further demonstrate that all applicability criteria listed above were met before the FHWA Division Administrator concluded that the programmatic Section 4(f) evaluation applied to the project.

## FINDINGS

In order for this programmatic Section 4(f) evaluation to be applied to a project, each of the following findings must be supported by the circumstances, studies, and consultations on the project:

	YES	NO
<p><b>1. Do Nothing.</b> The do nothing alternative has been studied. The do nothing alternative ignores the basic transportation need.</p> <p>Currently the basic transportation needs of the community are not met by the existing bridge. The existing Maclay Bridge is categorized by the MDT Bridge Management System as functionally obsolete due to the single-lane width of the bridge being sub-standard for the current traffic volumes, and the sub-standard curves on both approaches to the bridge. Current and projected traffic volumes on Maclay Bridge substantially exceed the recommended capacity of a one-lane structure. The single-lane 14-foot-wide bridge does not meet current American Association of State Highway Transportation Officials (AASHTO), Missoula County, or MDT standards for width based on current and projected traffic volumes. AASHTO standards specify single-lane bridges are appropriate on roads with average annual daily traffic (AADT) volumes less than 100 vehicles per day. Maclay Bridge (North Avenue) has a current</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	YES	NO
<p>AADT (in 2018) of 2,028 (MDT Montana Traffic Data, 2019) and a projected AADT of approximately 1,500 in 2045 (Missoula MPO, 2019).</p> <p>The Do Nothing Alternative was initially examined in the 2013 <i>Maclay Bridge Planning Study</i> and was subsequently rejected from further analysis because it failed to improve safety on the bridge and its approaches.</p> <p>The posted load limit was reduced in 2011 from 14 tons to 11 tons based on analysis by MDT engineers. The two primary vehicles impacted by this reduction were school buses and fire trucks. School buses are generally within the 11 ton limit; fully loaded school buses are near or at the 11 ton limit. School buses are allowed across the bridge, as long as they do not exceed the posted 15 mph speed limit. An agreement exists that allows the local rural fire department to operate their Type I fire engines (i.e., overweight vehicles) across the bridge, as long as they straddle the centerline of the bridge and travel no more than 5 mph.</p>		
<p>For the following reasons this alternative is not feasible and prudent:</p>		
<p>a. <b>Maintenance.</b> The do nothing alternative does not correct the situation that causes the bridge to be considered structurally deficient or deteriorated. These deficiencies can lead to sudden collapse and potential injury or loss of life. Normal maintenance is not considered adequate to cope with the situation.</p> <p>The Maclay Bridge is classified as fracture critical, meaning if one part of the truss should fail, the entire bridge span may fail, which requires special fracture critical inspections to reduce chance of failure. The Do Nothing Alternative does not correct Maclay Bridge’s “fracture critical” status. Special fracture critical inspections are currently conducted to ensure the safety of the bridge and reduce chance of failure.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>b. <b>Safety.</b> The do nothing alternative does not correct the situation that causes the bridge to be considered deficient.</p> <p>Maclay Bridge’s “functionally obsolete” status is due to the single-lane width being substandard for the current traffic volumes and the substandard curves on both approaches. The Do Nothing Alternative would fail to correct these safety concerns. Additionally, the Do Nothing Alternative would fail to correct the load limitation of 11 tons that currently limits emergency vehicle access and lengthens response times west of the Bitterroot River.</p> <p>Sub-standard horizontal curves at the approaches to Maclay Bridge limit driver sight distances and have inadequate clear zones, which has contributed to numerous crashes in these locations. Maclay Bridge has no dedicated bicycle or pedestrian facilities and non-motorized users are required to share the 14-foot travel lane with vehicles.</p> <p>Missoula County floodplain regulations require the low chord of any new bridge to be a minimum of 2 feet above the 100-year flood elevation to ensure there is adequate area to convey ice flows, the 100-year flood, and any debris associated with such a flood. Maclay Bridge currently does not meet this low</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

		YES	NO
	chord elevation specification, and it is not required to because it is an existing structure. However, during extreme flood events, Maclay Bridge is susceptible to damage or being washed out, thus creating an unacceptable safety hazard to the public and unacceptable risk to Missoula County as its owner.		
	<p>Because of these deficiencies the bridge poses serious and unacceptable safety hazards to the traveling public or places intolerable restriction on transport and travel.</p> <p>Additional maintenance work on the bridge will neither address the structural deficiencies nor will it bring the bridge up to MDT's or Missoula County's current transportation standards. A copy of the 2017 MDT Bridge Bureau Inspection Report is provided as Attachment B.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>2.</b>	<p><b>Build on New Location Without Using the Old Bridge.</b> Investigations have been conducted to construct a bridge on a new location or parallel to the old bridge (allowing for a one- way couplet), but, for one or more of the following reasons, this alternative is not feasible and prudent:</p> <p>The Project involves constructing a new bridge at a new location. The preferred site and alignment proposed for the new bridge is approximately 0.4 miles upstream from the existing Maclay Bridge at an extension of South Avenue connecting to River Pines Road on the west side of the Bitterroot River.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>a. <b>Terrain.</b> The present bridge structure has already been located at the only feasible and prudent site, i.e., a gap in the land form, the narrowest point of the river canyon, etc. To build a new bridge at another site will result in extraordinary bridge and approach engineering and construction difficulty or costs or extraordinary disruption to established traffic patterns.</p> <p>This section is not applicable.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>b. <b>Adverse Social, Economic, or Environmental Effects.</b> Building a new bridge away from the present site would result in social, economic, or environmental impact of extraordinary magnitude. Such impacts as extensive severing of productive farmlands, displacement of a significant number of families or businesses, serious disruption of established travel patterns, and access and damage to wetlands may individually or cumulatively weigh heavily against relocation to a new site.</p> <p>This section is not applicable.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<p>c. <b>Engineering and Economy.</b> Where difficulty associated with the new location is less extreme than those encountered above, a new site would not be feasible and prudent where cost and engineering difficulties reach extraordinary magnitude. Factors supporting this conclusion include significantly increased roadway and structure costs, serious foundation problems, or extreme difficulty in reaching the new</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	YES	NO
<p>site with construction equipment. Additional design and safety factors to be considered include an ability to achieve minimum design standards or to meet requirements of various permitting agencies such as those involved with navigation, pollution, and the environment.</p> <p>This section is not applicable.</p>		
<p><b>d. Preservation of Old Bridge.</b> It is not feasible and prudent to preserve the existing bridge, even if a new bridge were to be built at a new location. This could occur when the historic bridge is beyond rehabilitation for a transportation or an alternative use, when no responsible party can be located to maintain and preserve the bridge, or when a permitting authority, such as the Coast Guard requires removal or demolition of the old bridge.</p> <p>Due to deteriorating condition, deficient safety features, and escalating risk of operating the bridge, Missoula County’s has elected to remove Maclay Bridge and construct a new bridge crossing at a new location that meets current design standards, removes load restrictions, and is constructed in accordance to local floodplain regulation. Through extensive studies, as summarized below, MDT and Missoula County have determined that it is not feasible or prudent to rehabilitate or preserve in place the existing Maclay Bridge.</p> <p>As described in the 2013 <i>Maclay Bridge Planning Study</i>, simply rehabilitating the bridge will not meet current design standards or correct the deficient load capacity and safety features need to serve the long term intended use of the facility. Major and minor rehabilitation options for Maclay Bridge were initially examined in the planning study and none of the rehabilitation options were advanced by MDT and Missoula County because they did not meet current bridge design standards and safety features needed to serve the long term intended use of the facility.</p> <p>The MBA brought forward several options to rehabilitate and preserve the existing Maclay Bridge that were presented to the public on September 20, 2016.</p> <p>A summary of the five rehabilitation options as presented by the MBA are as follows:</p> <ol style="list-style-type: none"> <li>1. <u>Option 1:</u> Rehabilitate the main span Parker through truss with arches for 36-ton load capacity. Replace the pony truss and concrete approach spans with a new single span. Add a pedestrian/bikeway on outside of truss span.</li> <li>2. <u>Option 2:</u> Widen the trusses to 2 lanes and upgrade load capacity. Replace pony and concrete spans with single span to allow for removal of a pier.</li> <li>3. <u>Option 3:</u> A new one-lane Parker truss bridge parallel to the rehabilitated existing Parker truss bridge.</li> <li>4. <u>Option 4:</u> Construct a new two-lane concrete or steel beam bridge parallel to the existing Parker through truss bridge rehabilitated for bike/pedestrian access.</li> </ol>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	YES	NO
<p>5. <u>Option 5</u>: Replace the existing Parker through truss bridge with a new, similar, wider two-lane Parker through truss bridge.</p> <p>These options focused on the structure alone and did not address roadway deficiencies associated with the approaches and they did not address the potential effects a rehabilitation may have on the historic structure. To examine these options in greater detail, an engineering analysis of the rehabilitation options was conducted in 2018. The resulting <i>Maclay Bridge Preservation Options Analysis</i> (HDR, 2019) examined the feasibility and cost in greater detail for rehabilitation alternatives that meet the Project’s purpose and need. The analysis identified that a major rehabilitation that would bring Maclay Bridge up to current design standards would result in severe disruption to established communities because it would result in between 5 and 6 residential relocations in order to construct the bridge approaches to meet current design standards. Rehabilitation options were further identified as infeasible because they resulted in a reduced service life (as compared to a new structure) since many of the existing structure components would be reused. Moreover, rehabilitation options would result in additional costs for right-of-way acquisition, residential relocations, and impacts on the 100-year floodplain are anticipated to be greater as compared to a new bridge.</p> <p>The <i>Maclay Bridge Preservation Options Analysis</i> estimated total costs for rehabilitation Options 2 and 3 at approximately \$12.6M and \$14.1M, respectively, as compared to the proposed South Avenue bridge estimated cost of \$12.8M. Although rehabilitation appears to result in a slightly lower construction cost for Option 2, the estimated cost does not include right-of-way acquisition or residential relocation costs and, as such, rehabilitation does not appear to be cost-effective or practical based on the impacts and additional considerations outlined in the report.</p> <p>Option 4 was evaluated in the <i>Maclay Bridge Preservation Options Analysis</i>, which includes preserving the existing Maclay Bridge in place as a bicycle/pedestrian structure. To fulfill the Project purpose and need, this option would require the construction of a new 2-lane bridge at South Avenue as opposed to constructing a new two-lane bridge immediately adjacent to Maclay Bridge. This option was determined not feasible and prudent for the following reasons:</p> <ol style="list-style-type: none"> <li>1. The existing Maclay Bridge does not provide adequate freeboard over the river and is at risk during a flood event. The intermediate piers are misaligned with the direction of flow. The as-constructed details and condition of the existing bridge foundations below water are uncertain and could be vulnerable to scour.</li> <li>2. Missoula County does not desire to continue to have maintenance responsibility over Maclay Bridge. Access, safety, and liability issues would persist if the bridge is converted into a bicycle/pedestrian structure.</li> <li>3. The costs to mitigate floodplain or scour risk due to leaving Maclay Bridge in place could be substantial.</li> </ol> <p>Because of the analysis results presented above, the rehabilitation options have therefore been determined neither feasible nor prudent because they</p>		

		YES	NO
	<p>compromise the Project to a degree that it is unreasonable to proceed with the Project in light of its stated purpose and need, which includes enhancing the operational characteristics, increasing safety, and improving the physical conditions of a Bitterroot River crossing for the traveling public over the foreseeable future.</p> <p>Missoula County, MDT, and FHWA have therefore concluded that a rehabilitation option for Maclay Bridge is neither feasible nor prudent because rehabilitating the bridge would not meet current design standards or correct the deficient load capacity and safety features needed to serve the long term intended use of the facility.</p>		
3.	<p><b>Rehabilitation Without Affecting the Historic Integrity of the Bridge.</b> Studies have been conducted of rehabilitation measures, but, for one or more of the following reasons, this alternative is not feasible and prudent:</p> <p>The <i>Maclay Bridge Preservation Options Analysis</i> detailed the structural modifications required to rehabilitate the existing Maclay Bridge to meet the Project's purpose and need (i.e., widened to include two traffic lanes) and remove the load limit posting. See Sections 3.a. and 3.b for more information.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<p>a. The bridge is so structurally deficient that it cannot be rehabilitated to meet minimum acceptable load requirements without affecting the historic integrity of the bridge.</p> <p>MDT has evaluated the potential effects that rehabilitation may have on the historic integrity of Maclay Bridge. Of the five rehabilitation options presented by the MBA, all but Option 4 have been determined to have an Adverse Effect to the Maclay Bridge under the Criteria of Adverse Effect as defined by 36 CFR 800.5(a). Option 4, which involves preserving Maclay Bridge in place and constructing a new two-lane bridge immediately adjacent to it, was determined to have a No Adverse Effect. In a letter dated May 14, 2019, the SHPO concurred with MDT's determination.</p> <p>Although Option 4 has been identified as resulting in No Adverse Effect, this option was determined not feasible and prudent due to the reasons described in Section 2.d. above, as well as due to the residential relocations that would be necessary to construct a new bridge and approaches immediately adjacent to the existing Maclay Bridge.</p> <p>The MBA Option 1 involves rehabilitating the main span Parker through truss with arches for 36-ton load capacity, replacing the pony truss and concrete approach spans with a new single span, and adding a pedestrian/bikeway on outside of truss span. Under Option 1, Maclay Bridge would remain a single lane structure, which is not a prudent option because it fails to meet the Project purpose and need. Option 1 was determined by MDT to result in an Adverse Effect to the Maclay Bridge due to the removal of the pony truss and concrete approach spans. Option 3 similarly requires structural modifications to the existing Maclay Bridge to remove weight restrictions. Option 3 was determined by MDT to result in an Adverse Effect to the Maclay Bridge.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	YES	NO
<p>b. The bridge is seriously deficient geometrically and cannot be widened to meet the minimum required capacity of the highway system on which it is located without affecting the historic integrity of the bridge. Flexibility in the application of the American Association of State Highway and Transportation Officials geometric standards should be exercised as permitted in 23 CFR Part 625 during the analysis of this alternative.</p> <p>The MBA Option 2 involves widening the existing Parker through truss to two lanes by nearly doubling the truss width from the existing 17-ft to 33-ft, with a 28-ft roadway width, upgrading the load capacity, and replacing the pony truss and concrete spans with a single span. Option 2 would meet three of the Criteria of Adverse Effect under 36 CFR 800.5(2). Option 5 involves removing Maclay Bridge and replacing it with a new, wider two-lane Parker through truss bridge. Option 5 was determined by MDT to result in an Adverse Effect to the Maclay Bridge.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## MEASURES TO MINIMIZE HARM

This programmatic Section 4(f) evaluation and approval may be used only for projects where the FHWA Division Administrator, in accordance with this evaluation, ensures that the proposed action includes all possible planning to minimize harm. This has occurred when:

	YES	NO
<p>1. For bridges that are to be rehabilitated, the historic integrity of the bridge is preserved, to the greatest extent possible, consistent with unavoidable transportation needs, safety, and load requirements;</p> <p>As discussed in Sections 2.d., 3.a., and 3.b. above, the Maclay Bridge cannot be rehabilitated to meet FHWA, MDT, Missoula County, and AASHTO standards without impacting the historic integrity of the bridge. Option 4 was determined to have No Adverse Effect; however, this option is not a feasible and prudent alternative for the reasons described in 2.d. and 3.a. above. Thus, this item is not applicable for the Project.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>2. For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished, the FHWA ensures that, in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means developed through consultation, fully adequate records are made of the bridge;</p> <p>In accordance with Stipulation 3.C.2 in the PA, MDT has consulted with the National Park Service’s Historic American Engineering Record (HAER) to determine the level of documentation necessary and appropriate for recording Maclay Bridge. MDT has completed documenting Maclay Bridge according to the National Park Service’s HAER standards.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<p><b>3.</b></p>	<p>For bridges that are to be replaced, the existing bridge is made available for an alternative use, provided a responsible party agrees to maintain and preserve the bridge; and</p> <p>In accordance with Stipulation 3.E of the PA, MDT, in coordination with Missoula County, will offer Maclay Bridge for adoption through their Adopt-A-Bridge program to determine if a new owner can be identified and subsequently find a new use or location for Maclay Bridge. The bridge will be advertised for adoption in the local newspapers, radio public service announcements, and on MDT’s website. MDT will advertise Maclay Bridge for adoption in a later phase of project development.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p><b>4.</b></p>	<p>For bridges that are adversely affected, agreement among the SHPO, ACHP, and FHWA is reached through the Section 106 process of the NHPA on measures to minimize harm and those measures are incorporated into the project. This programmatic Section 4(f) evaluation does not apply to projects where such an agreement cannot be reached.</p> <p><i>The Programmatic Agreement Among the Federal Highway Administration, the Montana Department of Transportation, the Advisory Council on Historic Preservation and the Montana State Historic Preservation Office Regarding Historic Roads and Bridges Affected by Montana Department of Transportation Undertakings in Montana (effective February 01, 2007) is being followed to mitigate for the adverse effect to the NRHP-listed Maclay Bridge. The programmatic agreement (PA) outlines the stipulations that must be followed to satisfy FHWA’s Section 106 responsibility for the Project. Because the SHPO is a party to the PA, their input has been received.</i></p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## PROCEDURES

This programmatic Section 4(f) evaluation applies only when the FHWA Division Administrator:

1. Determines that the project meets the applicability criteria set forth above;
2. Determines that all of the alternatives set forth in the Findings section have been fully evaluated;
3. Determines that use of the findings in this document that there are no feasible and prudent alternatives to the use of the historic bridge is clearly applicable;
4. Determines that the project complies with the Measures to Minimize Harm section of this document;
5. Assures that implementation of the measures to minimize harm is completed; and
6. Documents in the project file that the programmatic Section 4(f) evaluation applies to the project on which it is to be used.

## COORDINATION

There has been additional **COORDINATION** with the following agencies regarding this proposed project (other than those listed previously):

City/County government: Missoula County, City of Missoula

Local historical society: N/A

Adjacent property owners: Coordination through public informational meetings

Others: The Maclay Bridge Alliance, Bitterroot Bridges Coalition, Confederated Salish and Kootenai Tribes

This proposed project is also documented as a Categorical Exclusion under the requirements of the *National Environmental Policy Act (42 U.S.C. 4321, et seq.)*. Refer to the Categorical Exclusion document, Coordination section for more information on project-specific public outreach activities and agency coordination.

## SUMMARY & APPROVAL

The proposed action meets all criteria regarding the required **Alternatives, Findings, and Measures to Minimize Harm**, which will be incorporated into this proposed project. This proposed project therefore complies with the July 5, 1983 Programmatic Section 4(f) Evaluation by the U.S. DEPARTMENT OF TRANSPORTATION's Federal Highway Administration. This document is submitted pursuant to **49 U.S.C. 303** and in accordance with the provisions of **16 U.S.C. 470f**.

\_\_\_\_\_ Date: \_\_\_\_\_  
[insert signatory]  
Environmental Services Bureau

Approved: \_\_\_\_\_ Date: \_\_\_\_\_  
Federal Highway Administration

MDT attempts to provide accommodation for any known disability that may interfere with a person participating in any service, program or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information, call 406-444-7228 or TTY (800-335-7592), or call Montana Relay at 711.

### Attachments

- |     |                               |  |
|-----|-------------------------------|--|
| cc: | Bob Vosen, P.E.               | Missoula District Administrator - Acting |
|     | James A. Combs, P.E.          | Highways Engineer                        |
|     | Stephanie Brandenberger, P.E. | Bridge Engineer                          |
|     | Jake Goettle, P.E.            | Construction Contracting Bureau Chief    |
|     | Ryan Dahlke, P.E.             | Consultant Design Engineer               |

Terry Voeller, P.E.	TA Project Engineer
Robert Stapley	Right-of-Way Bureau Chief
Lisa Hurley	Supervisor - Fiscal Programming Section
Dawn Stratton	Fiscal Programming Section
Tom Martin	Bureau Chief - Environmental Services
Susan Kilcrease	Environmental Services
Montana Legislative Branch	Environmental Quality Council
Environmental Services Bureau File	

## **ATTACHMENT A: Proposed Project and Location Map and Representative Photos**





Photo 1: Maclay Bridge and the west approach and abutment area, view from the Bitterroot River



Photo 2: Maclay Bridge and the west approach and abutment area, view from the shoulder of River Pines Road



Photo 3: Maclay Bridge and east concrete approach span



Photo 4: Maclay Bridge and the pony truss segment

## **ATTACHMENT B: 2017 MDT Bridge Bureau Inspection Report**

# INSPECTION UNDERWATER T1 REPORT

Structure # 03719  
W MISSOULA - BITTERROOT RIVER 010

## Bridge Inventory Information

Bridge Inspection Date: 08-08-2017



General Location Data	
(6A) Feature Intersected	BITTERROOT RIVER 010
(9) Location	W MISSOULA
(22) Owner	02 County Hwy Agency
(8) NBI Structure Number	L32101000+01001
(SR) Sufficiency Rating	30.073516034629964281 4811670759229380203
(MDT076) Deck Condition	Fair-1
(MDT077) Structure Condition	Fair
(MDT058) Structurally Deficient Functionally Obsolete	2 Functionally Obsolete

A- Location Data	
(2) MDT Inspection District	01 MISSOULA
(3) County Code	063 MISSOULA
(4) Place Code	00000 Rural Area
(7) Facility Carried by Structure	NORTH AVE W
(MDT020) MDT Maintenance Division	11 MISSOULA
(21) Maintenance Responsibility	02 County Hwy Agency
(MDT027) On Off System	0 Off System
(MDT078) MDT Maintenance Section	none Not a State Maintained Bridge
(112) Nbis Bridge Length	Y Long Enough
(MDT114) MPO	Missoula MPO Planning
(MDT115) MDT Administrative District	1 Missoula
(MDT116) MDT Financial District	1 Missoula
(MDT117) Border Bridge - Neighboring County Code	000 NONE
(MDT120) Environment	

B- Construction Data	
(MDT017) MDT Original Construction Project Number	-1
(MDT018) MDT Original Construction Station	+0
(MDT019) MDT Original Drawing Number	RECORDSE
(MDT021) MDT UPN	
(27) Year Built	1935



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(MDT097) Plans in SMS?	
(MDT098) Shop Drawings in SMS	
(MDT099) MDT Rehab Project Numbers	
(MDT100) MDT Rehab Stations	
(MDT101) MDT Rehab UPNs	
(MDT102) Years Rehabilitated	
(MDT103) MDT Rehab Drawing Numbers	
(106) Year Reconstructed	1964
(MDT119) Date Bridge Opened Re-Opened to Traffic	

C- Improvement Cost Data	
(75A) Type of Work Proposed	31 31 Repl-Load Capacity
(75B) Work to be Completed by	1 1 Contract
(76) Length Of Structure Improvement	377.2
(94) Bridge Improvement Cost	481000
(95) Roadway Improvement Cost	240500
(96) Total Project Cost	721500
(97) Year Of Improvement Cost Estimate	2009

D- Border State Data	
(98A-2) Border Bridge - Neighboring FHWA Region Code	
(98A-1) Border Bridge-Neighboring State Code	
(98B) Border Bridge-Percent Responsibility	
(99) Border Bridge Structure Number	

E- Historical Structure Data	
(37) Historical Significance	4 4 Hist sign not determin

F - Bridge Location	
(16) Latitude (DMS)	465111.28
(17) Longitude (DMS)	1140552.44

G - Span and Dimensional Data	
(33) Bridge Median	0 0 No median
(34) Skew	0
(35) Structure Flared	0 0 No flare
(42A) Type of Service on Bridge	1 Highway
(48) Length Of Maximum Span	180
(49) Structure Length	345.9

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(53) Min Vert Clear Over Bridge Roadway	14.16
(101) Parallel Structure Designation	N No parallel structure exists
(103) Temporary Structure Designation	
(116) Minimum Navigation Vertical Clearance	

H - Main Span	
(43A) Main Span Material	3 Steel
(43B) Main Span Design Type	10 Truss - Thru
(45) Number Of Spans In Main Unit	2

I - Approach Span	
(44A) Approach Span Material	5 Prestressed Concrete
(44B) Approach Span Design Type	04 Tee Beam
(46) Number Of Approach Spans	2

J - Deck Data	
(MDT006) Deck Area	5532
(50A) Left Curb Sidewalk Width	0
(50B) Right Curb Sidewalk Width	0
(52) Out-to-Out Deck Width	16
(MDT104) Bridge Deck Seal	
(MDT105) Polymer Overlay	
(MDT106) Mill and Overlay	
(MDT107) New Bridge Deck	
(107) Deck Structure Type	6 Corrugated Steel
(108A) Type of Wearing Surface	6 Bituminous
(108B) Type of Membrane	0 None
(108C) Deck Protection	0 None
(MDT108) Experimental Deck	

K - Under Bridge Service	
(28B) Lanes Under the Structure	0
(42B) Type of Service under	5 Waterway
(54A) Minimum Vertical Underclearance-Reference Feature	N Feature not a highway or railroad
(54B) Minimum Vertical Underclearance	0
(55A) Min Lateral Underclear On Right-Reference Feature	N Feature not a highway or railroad
(55B) Minimum Lateral Underclearance on Right	0
(56) Min Lateral Underclear On Left	0



# INSPECTION UNDERWATER T1 REPORT

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(69) Underclear, Vertical and Horizontal	N Not applicable
(111) Pier abutment Protection	
(113) Scour Critical Status	7 Countermeasures installed to correct a previously existing probm. with scour. No longer scour crtcl
(116) Minimum Navigation Vertical Clearance	

L - Load and Rating Data	
(MDT016) Load Rating Date	2012-01-20
(MDT022) Name of Load Rater	AKJ
(31) Design load - Live load for which the structure was designed	0 Unknown
(MDT036) SU4 Truck Inventory Rating	
(MDT037) SU4 Truck Operating Rating	
(MDT039) SU5 Truck Inventory Rating	
(MDT040) SU5 Truck Operating Rating	
(MDT042) SU6 Truck Inventory Rating	
(MDT043) SU6 Truck Operating Rating	
(MDT045) SU7 Truck Inventory Rating	
(MDT046) SU7 Truck Operating Rating	
(63) Method Used to Determine Operating Rating	1 Load Factor (LF)
(64) Operating Rating	23
(65) Method Used To Determine Inventory Rating	1 Load Factor (LF)
(66) Inventory Rating	14
(70) Legal Load Status	4 0.1-9.9% below

M - General Facility Data	
(5A) Inventory Route-Record Type	1 Route carried `on` the structure
(5B) Route Signing Prefix	4 County highway
(5C) Designated Level of Service	1 Mainline
(5D) Route Number	32101
(5E) Directional Suffix	3 South
(MDT009) Detour Speed	-1
(11) Accumulated Miles	0
(12) Base Highway Network	0 Not on Base Network
(13A) LRS Number	C032101N
(13B) Inventory Route, Subroute Number-Subroute Number	00
(19) Bypass Detour Length	11
(MDT030) Posted speed limit (MPH)	35



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(MDT075) Roadway System	
(MDT087) Decimal Mile Post	.099
(104) NHS Indicator	0 Not on the NHS
(MDT113) Mile Post	0+0.099

N - Base Network Data	
(28A) Lanes on the Structure	1
(28B) Lanes Under the Structure	0
(32) Approach Roadway Width	20
(51) Bridge Roadway Width Curb-To-Curb	14
(72) Approach Roadway Alignment	3 Intolerable - Correct

O - Other NetWork Data	
(20) Toll	3 On Free Road
(MDT048) School Bus Route	1 On School Bus Route
(100) STRAHNET Highway Designation	0 Not a STRAHNET route
(105) Federal Lands Highways	0 Not applicable
(110) National Truck Network	0 Not part of National Truck Network

P - Roadway Size and Clearance Data	
(MDT007) Departmental Route	L32101
(10) Minimum Vertical Clearance	14.16
(47) Total Horizontal Clearance	14
(102) Direction of Traffic	3 One lane bridge for 2-way traffic

Q - Traffic Data	
(26) Functional Classification	08 Rural, Minor Collector
(29) Average Daily Traffic	1946
(30) Year of Average Daily Traffic	2017
(MDT060) Traffic Volume Class	03
(109) Average Daily Truck Traffic (%)	
(114) Future Average Daily Traffic	2043
(115) Year Of Future Avg Daily Traffic	2037

**General Bridge Notes**

-1type 1\cross section done because (113 is a 7) no other reason- should consider having consultant complete in future when doing there climbing\inspection.



# INSPECTION UNDERWATER T1 REPORT

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## Inspection Information

Responsible Person	Name	Signature
Inspector	Kurt Maart	
QC	James Shaw	

User	Begin	End	Comments
James Shaw	01-29-2019 12:00 pm	01-29-2019 02:30 pm	On-site. type 1\cross section done because (113 is a 7)
Kurt Maart	01-29-2019 12:00 pm	01-29-2019 02:30 pm	On-site. type 1\cross section done because (113 is a 7)
Darrel Reich	01-29-2019 12:00 pm	01-29-2019 02:30 pm	On-site. type 1\cross section done because (113 is a 7)

Day	Weather	Temperature	Comments
01-29-2019 12:00 - 02:30	Sunny	25	type 1\cross section done because (113 is a 7)

R- Inspection	Current Value	Previous Value
(36A) Traffic Safety Features - Bridge Railings	0	0
(36B) Traffic Safety Features - Transitions	0	N
(36C) Traffic Safety Features - Approach guardrail	N	0
(36D) Traffic Safety Features - Approach guardrail Ends	0	0
(41) Structure Open, Posted, or Closed to Traffic	P	P
(58) Deck Rating	6	6
(59) Superstructure	5	6
(60) Substructure	5	5
(MDT061) Type 1 Underwater Inspection Required	Y	
(61) Channel	7	7
(62) Culvert	N	N
(67) Structural Evaluation	4	4
(68) Deck Geometry	2	2
(71) Waterway Adequacy	8	8
(MDT090) Climbing Inspection Required	Group B	Y
(MDT118) Type 2 Underwater Consultant		
(MDT121) Functional Needs		

Inspection Hours and Dates	Current Value	Previous Values
(90) Inspection Date	2017-08-08	2017-8-10



# INSPECTION UNDERWATER T1 REPORT

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(91) Regular Inspection Frequency (Months)	24	24.00
(92A-1) FC Inspection Required	Y	Y24
(92A-2) FC Inspection Frequency (Months)	24	
(92B-1) Type 2 Underwater Inspection Required	N	N
(92C-1a) Other Inspection Required	N	N
(93A) FC Inspection Date	2017-08-08	2017-8-10
(MDT005) Date Last QA	2000-01-01	
(MDT010) FC Inspection Details	D	
(MDT011) FC Next Inspection Date	2019-6-15	2019-08-08
(MDT016) Load Rating Date	2012-01-20	
(MDT023) Next Inspection Date	2019-06-15	2019-08-08
(MDT028) Other Inspection Details	none	
(MDT034) Request Review of Load rating	1	
(MDT050) Snooper Required	N	
(MDT061) Type 1 Underwater Inspection Required	Y	
(MDT062) Type 1 Underwater Inspection Date	2019-01-29	2019-01-29
(MDT063) Type 1 Underwater Inspection Frequency (months)	48	
(MDT064) Type 1 Underwater Inspection Next Date	2023-1-29	
(MDT074) Underwater Inspection Details	1	N
Other Inspection Frequency (Months)		
Other Inspection Next Date		
Special Inspection Date		
Special Inspection Frequency (months)		
Special Inspection Next Date		
Special Inspection Required		
Type 2 Underwater Inspection Frequency (Months)		
Type 2 Underwater Next Inspection Date		

### General Inspection Notes

type 1\cross section done because (113 is a 7) no other reason- should consider having consultant complete in future when doing there climbing\inspection.

MDT Item	Value
Amount of channel constriction	3 < 50%
Angle of attack	0 0-10 degrees
Bed Material	2 Gravel

## INSPECTION UNDERWATER T1 REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

Bridge located near a stream confluence	0 No
Bridge location at stream bend	0 No
Constriction due to channel vegetation	0 None
Flow impinging on abutment or wingwall	0 No
Number of piers	3
Pier nose Shape	1 Pointed
Pier width	1 3 ft to 4 ft
Potential for debris\ice accumulation	2 Medium
Comments	type 1\cross section done because (113 is a 7) no other reason- should consider having consultant complete in future when doing there climbing\inspection.

# INSPECTION UNDERWATER T1 REPORT

Structure # 03719

W MISSOULA - BITTERROOT RIVER 010

**Repair Suggestions:**

Repair ID	Date Requested	Repair Type	Status	Priority

**Element Inspection Data**

Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
205		Reinforced Concrete Column (EA)	Each	3	0.0	0.0	0.0	0.0

**Previous Inspection Notes:**

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**Current Inspection Notes:**

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# INSPECTION UNDERWATER T1 REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
210		Reinforced Concrete Pier Wall (LF) Bent 2	Length	13	0.0	0.0	0.0	0.0
210		Reinforced Concrete Pier Wall (LF) Bent 3	Length	13	0.0	0.0	0.0	0.0

**Previous Inspection Notes:**

**Current Inspection Notes:**

# INSPECTION UNDERWATER T1 REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
215		Reinforced Concrete Abutment (LF) A1	Length	23	0.0	0.0	0.0	0.0
215		Reinforced Concrete Abutment (LF) A5	Length	23	0.0	0.0	0.0	0.0

**Previous Inspection Notes:**

**Current Inspection Notes:**



# INSPECTION UNDERWATER T1 REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
900		Scour	Each	1	0.0	0.0	0.0	0.0

**Previous Inspection Notes:**

**Current Inspection Notes:**



# INSPECTION UNDERWATER T1 REPORT

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Element #	Parent Element	Name	Unit	Quantity	%CS 1	%CS 2	%CS 3	%CS 4
901		Scour Countermeasures	Each	1	0.0	0.0	0.0	0.0

**Previous Inspection Notes:**

**Current Inspection Notes:**

**Underwater Measurements Points Table**

Measure #	Line Depth	Line Distance
1	0	-6.7000000000000002
2	11	-14.8000000000000010
3	30	-20.8000000000000010
4	65	-20.8000000000000010
5	92	-22.1000000000000010
6	106	-22.3000000000000010
7	119	-16.50
8	128	-16.1999999999999990
9	154	-17
10	160	-17
11	164	-19.3999999999999990
12	176	-21.6000000000000010
13	200	-25.6000000000000010
14	230	-32.1000000000000010
15	250	-34.7999999999999970
16	275	-35.50
17	300	-29.8000000000000010
18	325	-20.50
19	336	-16.6999999999999990
20	343	-5

# INSPECTION UNDERWATER T1 REPORT

Structure # 03719

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