



Montana Department of Transportation

PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Distribution
From: for Damian Krings, P.E. WMS
Highways Engineer
Date: November 5, 2021
Subject: STPP 49-1(24)9
Stone Creek - North
UPN 7931000
Work Type 140 - Reconstruction – without added capacity

The Scope of Work Report for this project has been released on November 5, 2021.
We request that those on the distribution review this report and submit your concurrence within two weeks of the above date.

Your comments and recommendations are also requested if you do not concur or concur subject to certain conditions. When all the personnel on the distribution list have concurred, we will submit this report to the Preconstruction Engineer for approval.

I recommend approval:

Approved _____ Date _____

Distribution: (electronic only):

Bill Fogarty, Butte District Administrator
Stephanie Brandenberger, Bridge Engineer
Damian Krings, Highways Engineer
Gabe Priebe, Traffic and Safety Engineer
Jason Gilliam, Right-of-Way Bureau Chief

Robert Stapley, Rail, Transit, & Planning Division Admin
Jeff Jackson, Geotechnical and Pavement Bureau Chief
Jon Swartz, Maintenance Division Administrator
Tom Martin, Environmental Services Bureau Chief
Shane Pegram, Construction Bureau – VA Engineer

cc:

Tyrel Murfitt, EPS Project Manager, Butte District
Highways Master file
Local Government Officials

e-copies:

Located at the end of this document

Scope of Work Report

Scope of Work

The proposed scope of work is to reconstruct a section of Montana 41 to provide geometric improvements, shoulder widening, and structure replacements at Stone Creek and the Beaverhead River. The route was classified as a Rural Minor Arterial (State Primary System) when the project was nominated. MT 41 has since been reclassified as a Rural Principal Arterial (National Highway System).

The work will include clearing, grubbing, grading, drainage, structure replacement, gravel, plant mix surfacing, culverts, riprap, fencing, and other miscellaneous items. Extensive right-of-way and utility relocations will be required.

Purpose and Need

The purpose of this project is to reconstruct this location to address horizontal and vertical alignments as well as shoulder width. In addition, the project will include two bridge replacements over Stone Creek and Beaverhead River along Route N-49.

Context Specific Criteria and Scope Specific Considerations

This project currently has an approved design exception dated August 4th, 2017. This design exception granted under the previous standards are now context specific criteria. Reference the design exception report available in DMS for further information.

On the southern section (south of the Beaverhead River crossing) we anticipate spot locations where slopes may be steepened or otherwise altered to reduce impacts (R/W, irrigation, etc.). These locations will be identified in future milestones reports in accordance with current design standards.

Public Summary

The project will reconstruct Highway 41 north of Dillon starting at the bridge over Stone Creek and continuing north past the Beaverhead Rock to about 2 miles south of the Pointed Rocks Cemetery. The structures over Stone Creek and the Beaverhead River will be replaced with new structures. The reconstruction will reduce the current roller-coaster effect, improve sight distance, provide more passing opportunities, enhance safety with rumble strips on the wider shoulders, and flatter roadside slopes. The intersection of East Bench Road will be improved to provide more sight distance and a larger landing. Some of the new roadway north of the Beaverhead River bridge will be offset from the existing road to improve the alignment and minimize impacts and delays during construction.

Project Location and Limits

Some of the descriptions that may be used to briefly describe the project location include:

- a. Beaverhead County (RP 9+0.000 to 13+0.633)
- Madison County (RP 13+0.633 to 16+0.306)
- b. Between Dillon and Twin Bridges
 - c. N-49
 - d. Rural Principal Arterial
 - e. RP 9.000± to RP 16.306±
 - f. Length: 7.322± miles
 - g. crossing routes:
 - a. East Bench Rd.
 - b. Trout Creek Rd.
 - c. Diamond O Dr.
 - d. Beaverhead Rock Rd.
 - h. Begins 8.4± miles NE of Dillon and ends 10.7± miles SW of Twin Bridges.
 - i. as-built project number(s):
 - a. F-387(2) & (4)
 - b. F-387(5)
 - c. F HES 49-1(5)9
 - d. STPP 49-1(7)2
 - j. adjacent project number(s):
 - a. NH 49-2(12)16 – Beaverhead Rock - North
 - k. The project begins north of Dillon and proceeds northeast toward Twin Bridges. Stationing and Reference Posts proceed in the same direction.

Scope of Work Report

Description	Signed Route	Department Route	Corridor Route	Reference Post + Offset	Accumulated miles
Begin	MT 41	N-49	C0000049	9+0.000	8.619
Bridge			P00049009+00571	9+0.066	
Bridge			P00049014+06711	14+0.652	
End	MT 41	N-49	C0000049	16+0.306	15.957

Physical Characteristics

N-49 is functionally classified as a Rural Principal Arterial. It passes through rolling terrain transitioning to more level terrain north of the Beaverhead River. There are a moderate number of approaches intersecting N-49 within the project limits.

Beaverhead Rock State Park is located west of N49 between RP 14.6± and RP 15.1±.

As-built plan information shows original construction with F-387(2) & (4) and F-387(5) in 1947 and 1953, respectively. F HES 49-1(5)9 improved the roadway with slope flattening, shoulder widening and guardrail in 1988. The PTW connection for the beginning of the proposed project contains the end of project STPP 49-1(7)2 which reconstructed the previous 7 miles of the corridor in 1994 to widen shoulders to 4 ft. as well as providing the subgrade for future widening to a 40 ft. top width. STPP 49-1(7)2 processed a change order under construction and built the additional 4 ft. per side on the provided subgrade width.

<u>Reference Post (RP)</u>	<u>As-Built Stationing</u>	<u>Project Number</u>	<u>Year</u>
6.85 to 27.59	340+47.1 to 1434+96.1	F-387(2) & (4)	1947
16.21 to 26.51	833+08.6 to 1378+00±	F-387(5)	1953
8.90 to 16.20	448+79.5 to 832+31.5	F HES 49-1(5)9	1988
1.85 to 9.02	76+41.7 to 455+00±	STPP 49-1(7)2	1994

Due to variability in original surfacing and overlays conducted after; the pavement depths vary from 0.5 ft. to 1.0 ft. and base course depths from 0.4 ft. to 2.4 ft. Base course thicknesses were less than the 0.65 ft. minimum in 8 of the 26 road borings.

According to the TIS Roadlog the current roadway width is 32 ft. for the beginning of the project, 24 ft. for most of the project and 26 ft. for the end of the project. However, previous subgrade widening and subsequent overlay, or widening operations, are commensurate with the current roadway width of 40 ft. at the beginning of the project and 24-26 ft. for the remainder of the project. These reported widths were confirmed using survey data.

Existing fill slopes with a fill height of less than 5 ft. are 4:1 or flatter, fill slopes between 5 ft. and 10 ft. are 3:1 and over 10 ft. are 2:1.

Exiting ditch sections have 3:1 inslopes or flatter that extend 9 ft. beyond the ETW, and a 20:1 ditch bottom 6 to 8 ft. wide. Backslopes for cuts less than 5 ft. are 3:1, cuts over 5 ft. have 2:1 backslopes.

The proposed reconstruction is intended to address these geometric design criteria deficiencies.

The following bridges are within the project limits:

	Bridge ID	Mile Post	Location	Feature Crossed	Construction Year	Sufficiency Rating
*	P00049009+00571	9.05	9 M NE DILLON	STONE CREEK	1949	57.6
*	P00049014+06711	14.67	12 M SW TWIN BRIDGES	BEAVERHEAD RIVER	1949	59.9

Scope of Work Report

PvMS indices & recommended treatment for 2018:

<u>Section</u>	<u>Ride</u>	<u>Rut</u>	<u>ACI</u>	<u>MCI</u>	<u>Construction</u>	<u>Maintenance</u>
RP 9.01 to 16.19	69.5	68.4	97.7	93.7	Thin Overlay	Thin Overlay

Traffic Data

<u>2021</u>	AADT=	<u>2,370</u>	PRESENT
<u>2024</u>	AADT=	<u>2,480</u>	LETTING YEAR
<u>2044</u>	AADT=	<u>3,340</u>	DESIGN YEAR
	DHV=	<u>350</u>	
	D=	<u> </u>	
	T=	<u>14.0%</u>	
	ESAL=	<u>219</u>	
	AGR=	<u>1.5%</u>	

Crash Analysis

Reference the PFR report for the Crash Analysis from 2012: [7931000RDPFR001.DOCX](#).

An updated safety review was conducted by the Safety Engineering Section, no changes to the recommendations were made. From July of 2012 till July of 2021 there have been 48 additional crashes. Of these 48 crashes 1 was a fatal, 4 suspected serious injury crashes, 7 suspected minor injury crashes, 6 possible injury crashes, and 30 no apparent injury crashes.

Major Design Features

The project is being developed in accordance with the MDT Baseline Criteria for Rural Principal Arterials, as presented in the [Baseline Criteria Practitioner's Guide](#), except as noted in the approved design exception and context sensitive criterion. Additional guidance will be obtained from the Guidelines for Nomination and Development of Pavement Projects (Corrective Maintenance → Reconstruction), updated in December 2017.

:

- a. **Design Speed.** The design speed for this project is 60-mph for a principal arterial in rolling terrain.
- b. **Horizontal Alignment.** The project includes 9 horizontal curves with radii from 2,515 ft to 15,000 ft.; no spirals are needed for these horizontal curves. The proposed curves meet the 60-mph design criteria. Generally, the horizontal alignment is flattening curves and straightening the alignment. The alignment is offset from the PTW at the NE end where the alignment crosses a wetland complex. This offset alignment was developed to balance the aquatic resource impact, geothermal impact, geotechnical concerns, and R/W impacts.
- c. **Vertical Alignment.** The project includes 26 vertical curves evenly split between sag/crest curves. All curves meet the 60-mph design speed; the grades range from 0.170% to -4.000%. Generally, the vertical alignment is flattening the existing curvature, which tends to be rolling until station 750+00, where the new roadway generally has gentle grades (less than 1.5% absolute value). No truck climbing lanes are proposed.

After the AGR report was finalized, the vertical alignment was adjusted in one location. The profile was raised at the crossing over the Beaverhead River at station 753+50. Bridge Bureau requested and the design team agreed to change the structure from a two-span to a single span bridge. This was to remove the pier in the channel, by using a steel superstructure with deeper girders that allowed for the clear span of the channel. The resulting increase in girder depth was accounted for in a grade raise. This decision was made to maximize the clearance under the bridge for wildlife passage.

- d. **Typical Sections.** The project will provide a 40 ft. top that consists of two 12 ft. lanes with 8

Scope of Work Report

ft. shoulders. This proposal is commensurate with the Route Segment Plan.

From the beginning of the project, 454+00 to 757+00 standard 6:1 surfacing inslopes are proposed. From station 757+00 to the end of the project at station 840+57.93 4:1 inslopes are proposed., These changes are captured in a design exception report dated August 4, 2017: [7931000RDDER001.PDF](#)

- e. **Surfacing.** Recommended surfacing consists of three different designs, corresponding to the subgrade soils. In general, on the first half of the project the subgrade soils have a design R-Value of 16, this stretch corresponds to the “upper bench” where the project begins and generally parallels the Beaverhead River valley. After dropping down into the river bottom the design R-Value changes to 8 and the surfacing is increased. North of the bridge over the Beaverhead River the project traverses soft subgrade soils, with organics, and high groundwater. A special borrow surfacing section was selected as the most appropriate design with a corresponding R-Value of 30. Reference the stationing ranges with thicknesses for the project surfacing specifics.

Station 454+00.00 (bop) to 703+00.00
0.35' of PMS
1.10' of CAC

Station 750+90.52 to 811+25.19
0.35' of PMS
0.80' of CAC
2.00' of Special Borrow

Station 703+00.00 to 750+90.52 and 811+25.19 to 840+57.93 (eop)
0.35' of PMS
1.50' of CAC

All new mainline and public approaches with plant mix surfacing will receive a seal and cover. Private and farm field approach PMS will not be seal and covered.

- f. **Grading.** The greatest impact on the grading will be the embankment beginning when dropping into the Beaverhead valley which extends through the proposed structure and wetland WL-19. There are also significant embankments around sta. 540+00, sta. 606+00, sta. 655+00, sta. 681+00, sta. 700+00, and sta. 719+00. There are significant excavations around sta. 510+00, sta. 570+00, sta. 645+00, sta. 669+00, sta. 709+00, and sta. 730+00.

The roadway embankment north of station 750+00 will require importation of special borrow. Subgrade in the valley bottom is soft, contains varying levels of organics, and high ground water. Construction operations and specialized techniques will be required to address the challenges of constructing on soft subgrades in the Beaverhead valley floor.

- g. **Slope Design.** Generally, slopes are compliant with current design standards. The northern section of the project on the Beaverhead River floodplain has an approved design exception (prior to design standard updates in 2021) for 4:1 embankment slopes. Other areas have had embankment slopes flattened to minimize the installation of roadside barrier.
- h. **Geotechnical.** Standard Geotechnical information, including boring logs, geotechnical engineering analyses, seismic hazard evaluation and analysis, and a foundation report for the proposed structure over the Beaverhead River, will be required for the design of the project and the foundation elements for the proposed bridge structure.

General Roadway Alignment, Southern Section (BOP Station 454+00 to 754+17±):
Subsurface investigation has been performed for areas of new or widened embankments, larger cut slopes (greater than 10'), and replacement/extension of culverts, as appropriate. A Geotechnical Alignment report (Activity 464) was issued for this portion of the project on July 5, 2017. The report contains recommendations for design of embankment slopes and cut

Scope of Work Report

slopes, areas of embankment foundation treatment, culvert foundation treatment, special backfill for culverts, and special borrow. Modifications to these recommendations will be done, as necessary, as the design of the project progresses or as required.

General Roadway Alignment, Norther Section (Station 753+97± to EOP Station 832+00):

In addition to the bridge foundations, subsurface investigation has been performed for areas of new or widened embankments, larger cut slopes (greater than 10'), and replacement/extension of culverts, as appropriate. A Geotechnical Alignment Supplemental report (Activity 464) was issued for this portion of the project on July 29, 2019. The overlap in station ranges (753+97 to 754+17) reflects additional analysis work performed in this area of the proposed alignment relating to slope stability and liquefaction potential for the bridge approach embankments. The report also contains recommendations for design of embankment slopes and cut slopes, areas of embankment foundation treatment, culvert foundation treatment, special backfill for culverts, and special borrow. Based on the current embankment configurations north of the Beaverhead River, consideration should be given to constructing all the embankment with special borrow in locations where the total embankment height is 8 feet or less. Modifications to these recommendations will be done, as necessary, as the design of the project progresses or as required.

It was noted during the field review, and confirmed during the subsurface investigations, that soft soils with significant organic content and near surface groundwater are prevalent in the areas adjacent to and north of the Beaverhead River. Construction of embankments in this area will likely involve specialty construction techniques and materials such as embankment foundation treatment and staged construction methods. Special provisions and other contract documents will be developed to address this during project development.

Subsurface Water Conditions Investigation:

Near Beaverhead Rock, a northwest trending fault zone bisects the basin, with the Madison Limestone on the upthrown block forming the prominent limestone bluff (Beaverhead Rock). This bluff has constricted the floodplain to less than a quarter-mile wide and has created a hydrologic "pinch point," which has resulted in elevated groundwater levels and surface water expression.

Soft highly organic and compressible embankment foundation soils and elevated groundwater will be encountered in the proposed offset alignment (Station 753+97± to Station 807+00±), with many of these areas identified as wetland or fen. Areas have also been identified where warm springs surface both east and west of the roadway, with the majority concentrated on the eastern portion.

Groundwater levels in this portion of the alignment will likely rise and fall seasonally due to surface water fluctuations in nearby Beaverhead River as well as adjacent irrigation operations. An extensive study of the groundwater around the Beaverhead Rock has been performed by Pioneer Technical Services for MDT Geotechnical. At this time, it is planned to continue monitoring and data collection with the installed instrumentation through, and perhaps a short period beyond, project construction.

Structures:

A subsurface investigation has been performed for the project and the results have been distributed. When the location of the new structure and proposed foundation elements are determined, MDT Geotechnical will provide a Geotechnical engineering analysis report (including any load test requirements) for the foundation elements based on final loading information to be provided by the Bridge Bureau. Approach embankment and abutment slopes for the bridges should be designed no steeper than 2:1 for general stability, erosion mitigation, and vegetation establishment. The use of a 30-year bridge end, following the design details for low/moderate traffic (<500 ESALS), should be incorporated into the design of the bridge approaches.

- i. **Hydraulics.** Hydraulics has provided the Location Hydraulic Study Report and Recommendations for the bridge replacements on Stone Creek and the Beaverhead River.

Scope of Work Report

Currently, a double cell box culvert will replace the Stone Creek Bridge. The Beaverhead River Bridge will be replaced with a single span structure.

Since the start of the project, a detailed floodplain study has been completed on the Beaverhead River with maps currently in the preliminary phase. The floodplain maps cover the Beaverhead River crossing, and floodplain permitting will be required for the replacement bridge. Floodplain permitting will require a "no-rise" analysis and, potentially, a Letter of Map Revision (LOMR) at the conclusion of construction.

There are 6 unnamed drainage crossings that will be replaced. Five of the crossings are RCP and one is a 90" stock pass that also functions for drainage.

Several irrigation features exist that will require replacement. The Mailey Ditch crossing and two 54" CMP irrigation crossing will be replaced with RCP irrigation culverts. Additionally, the Warm Springs Ditch will need to be realigned and replaced with a crossing structure provided at approximately Station 800+00.

- j. **Permanent Erosion and Sediment Control (PESC) Features.** Riprap armoring of the bridge in-slopes over the Beaverhead River will use PESC features. In addition to new riprap additional stabilization measures will include bioengineered bank treatments and revegetation. New riprap at other PESC locations, include the inlet and outlet ends of the culvert over Stone Creek near the beginning of the project and a riprap revetement on the southern approach embankment to the bridge over the Beaverhead River.

It is anticipated that riprap chutes will be necessary to convey drainage down some of the steeper fill slopes. As the plans are finalized locations for these PESC features and others will be finalized and included in the contract documents.

- k. **Bridges.** The existing structure over Stone Creek (05889) is being replaced by a reinforced concrete box culvert. The structure over the Beaverhead River (05890) will be replaced on an offset alignment that was shifted away from PTW to avoid unsuitable subgrade adjacent to the existing bridge. The new structure will be a single span bridge that clear spans the active channel as well as a fair amount of the floodplain. Riprap will be installed along the north bank to preserve the floodplain bench under the bridge near the north abutment. Riprap will also be installed around both abutments, but the key will be set to the ground elevation rather than the thalweg elevation. No sidewalks are being included on the structure; however, the 40-foot width will provide for 8-foot shoulders on either side of the travel lanes.

Salvage of the existing structures is anticipated to become the property of the Contractor and will be disposed of.

A USGS gaging station is located on the northeast corner of the existing bridge over the Beaverhead River. Coordination with USGS will be forthcoming during the right-of-way phase to facilitate an alternate location and detail if it will be moved prior to or during construction.

- l. **Safety Enhancements.** Safety is being enhanced as recommended in the crash analysis by upgrading this stretch of highway to current design standards. The centerline rumble strips will be perpetuated, and new rumble strips will be included on the 8-ft. shoulders.
- m. **Context Sensitive Design.** An informal fishing access site is located on the northwestern side of the existing structure over the Beaverhead River, this site will be perpetuated and accessed via the new alignment to the east.
- n. **Traffic.** Access to existing public road approaches will be perpetuated with 75' landings. Private and farm field approaches will receive 25' landings. Due to existing terrain and proposed improvements to the vertical profile some approaches may require grades as steep as 10%. Review of approaches modeled by Road Design will be required to finalize any public approaches. In general, approaches meet current guidance.

Scope of Work Report

Signing, and pavement marking quantities will also need to be developed. The flashing curve signs from RP 14.1 to 14.9 will be reviewed to see if the new curve will necessitate similar or the same warning signs.

- o. **Miscellaneous Features.** Mailboxes will be perpetuated and adjusted in coordination with the local Postmaster. Additional widening of the 8-ft. shoulders to provide mailbox turnouts 10 feet wide is not proposed.
- p. **Pedestrian/Bicycle/ADA.** There are no dedicated pedestrian/bicycle/ADA facilities, and none are proposed.

Design Exceptions and Baseline Variances

An approved Design Exception has already been distributed for this project, in addition the design standards have changed which will be used to address impacts and help fit the project with the topography and the project's purpose and need. Reference the linked design exception report under the "Typicals" section of this report.

Right-of-Way

Right-of-way acquisition and new limited Access Control are required for this project. Along the upper bench new right-of-way acquisition will be minimized, corridor acquisition is not intended for these short length impacts. Reference the discussion on the design exceptions, variances, Context Specific Criteria, and Scope Specific Considerations.

Upon crossing the Beaverhead River headed north the off-alignment design will require new right-of-way acquisition of more than 20 acres. The existing alignment may be traded for new right-of-way depending on negotiations and permit conditions from the individual Clean Water Act 404 permit.

Right-of-way is currently estimated at \$750,000 and appears to be adequate to address the necessary acquisition. The budget will be monitored and reviewed as the project begins right-of-way negotiations.

It is expected to program R/W in Early FFY 2022, the PE 10-year expiration date is July 30, 2022. If R/W is not programmed by this date a PE extension will be necessary. Once R/W negotiation have been authorized it is expected that the timeframe for R/W acquisition is extensive.

Access Control

Access control will be pursued with this project. The projects from Dillon north currently have limited access control resolutions in place and it is MDT's plan to extend the access control with this project.

Utilities/Railroads

Utility relocations are expected with the widening and adjusted alignment. Effort is being made to minimize the impacts to irrigation facilities adjacent to the existing right-of-way. It is not anticipated that irrigation pivots will be in conflict. After PIH is complete utility identification and follow-on agreements/relocations will be required.

Railroads are not within the project limits and railroad involvement will not be necessary.

IC is currently estimated at \$200,000 and appears to be adequate to address the expected impacts.

Maintenance Items

Wildlife barrier fencing and cattle guards will be maintained by the local section.

Environmental Considerations

The environmental document, a Categorical Exclusion (c), was signed by FHWA on June 24, 2019. It is anticipated that a re-evaluation of the environmental document will be needed based on the project's schedule.

A thermal spring exists outside the project limits near RP 15.2. The proposed project design has avoided direct impacts to the thermal spring feature. A wetland complex with fens has been delineated around the
REV 4/29/2021

Scope of Work Report

Beaverhead River crossing and the area to the north of the structure. Wetland and fen impacts are anticipated in association with structure replacements and roadway realignment. The siting and design of the Beaverhead River Bridge has considered the meander pattern and profile of the river at the road crossing.

This project will result in unavoidable permanent impacts to aquatic resources and has triggered the need for a CWA 404 individual permit from the United States Army Corps of Engineers (USACE). A Least Environmentally Damaging Practicable Alternative (LEDPA) analysis is required to be included in the permit application. The LEDPA documents the evaluation of potential alignments (including the no-build option and the preferred alignment), proposed avoidance and minimization measures, and provides rationale for unavoidable impacts encountered during the design process. Compensatory mitigation requirements for unavoidable impacts to wetland and fen will be coordinated with the USACE. Mitigation may require some on-site and in-kind reclamation/restoration. Also needed for the project will be a SPA 124. Contract special provisions and details regarding environmental conditions of permits will be included in the contract as the conditions are identified after permits are obtained.

The Wildlife Accommodation Recommendation Memo ([WARM](#)) dated April 12, 2021 recommends that wildlife accommodations be included in this project. A summary of the recommendations follows:

- Wildlife friendly fencing to be negotiated with the adjacent landowners from BOP to just south of the bridge over the Beaverhead River (RP 14.3). If wildlife friendly fencing is not acceptable, the replacement fencing should be no more restrictive than the existing fence.
- Wildlife barrier fencing with jumpouts is recommended in the vicinity of East Bench Road to Beaverhead Rock Road. Additional length to the north past Beaverhead Rock Road would be beneficial. The fencing configuration and treatment of intersecting approaches will need to be determined.
- Electrified mats to be installed at the end of the wildlife barrier fencing to prevent end runs into the fenced section, especially if there isn't a topographical barrier for the exclusion fencing to be terminated at.
- A combination of static and flashing signage for wildlife warning.
- Excavate a wildlife path beneath the bridge over the Beaverhead River to increase the headroom for wildlife passage on the southern side of the crossing.
- Provide a path for wildlife and pedestrians on the northern side of the crossing over the Beaverhead River.

The Wildlife Accommodation Decision Report (WADR) addresses the wildlife accommodations for the project and the in-depth discussion of the recommendations are linked but is also available in DMS ([7931000RDMEMWDR](#)). The summary of the accepted or accepted/modified accommodations are as follows:

- *Modified:* Wildlife friendly fencing as negotiated with the Landowners for the length of the project unless barrier fence is installed.
- *Modified:* Exclusion fencing from south of the bridge over the Beaverhead River and terminates at a point yet to be determined by the design team. It will extend at least to the Beaverhead Rock Road. The design team will identify a logical stopping point and strive to tie into a natural feature that impedes wildlife movement or terminate at or near the end of the project. This fencing will include jumpouts and wildlife guards at approaches.
- Excavation of a path beneath the bridge over the Beaverhead River to increase the headroom for wildlife passage. This path is located between the south bridge abutment and the southern riverbank. This crossing is the location the barrier fence will funnel wildlife to.
- Static and flashing signage as appropriate for the proposed wildlife accommodations.

The remaining recommendations were not advanced for several reasons, they are summarized below:

- Electrified mats at the end of the barrier fencing, reference the discussion in the WADR for more information.
- A path on the northern side of the riverbank beneath the structure over the Beaverhead River. As the proposed riprap, bank, and structure configuration generally develops a "path" but a dedicated design will not be included.

Scope of Work Report

An initial site assessment identified lead concentrations in the paint of the structure over the Beaverhead River (P0049009+00571). Treated structural timbers are present at the structure over Stone Creek that the Contractor will have to dispose of in a Class II landfill.

A detailed noise analysis was not required for this project.

A cultural resource survey was conducted, and the two bridges are historic but will be handled under MDT's programmatic agreement for Historic Roads and Bridges. Within the project boundaries, historic features include the Mailey Ditch (near RP 143, and East Bench Road), and the Washington Nyhart Ranch (near RP 16.3 on the west side of HWY 41).

Energy Savings/Eco-Friendly Considerations

The off-alignment part of the project's footprint has been reduced to lower impacts to the aquatic resources and minimize the necessary right-of-way acquisition.

Experimental Features and Proprietary Products

No experimental features have been identified to be included in the project.

Work Zone Safety and Mobility

At this time, Level 2 construction zone impacts are anticipated for this project as defined in the Work Zone Safety and Mobility (WZSM) guidance. The plans package will include a [Transportation Management Plan (TMP) consisting mainly of a Traffic Control Plan (TCP). A limited Transportation Operations (TO) component and a Public Information (PI) component to address wide load detours will be included in the plan package.] These issues are discussed in more detail under the Traffic Control and Public Involvement sections.

Other Projects

There is an adjacent project called Beaverhead Rock – North, a pavement preservation scope, that is expected to be let prior to Stone Creek – North. If the lettings align the projects are good candidates for being tied.

Traffic Control

Section 618 appears to be adequate to address the traffic control operations as the project is developed if the need arises to address specific sequencing unrelated to geotechnical design requirements, project provisions will be developed and included in the contract.

Wide loads are expected to be re-routed as the route will have wide load restrictions implemented during construction.

Over a mile of project can be constructed without extensive traffic control.

Intelligent Transportation Systems (ITS) Features

There are no ITS features identified to be included in the project.

Public Involvement

The project Level of Impact (LOI) has been determined to be Moderate and level of public involvement C, as defined by MDT's Public Involvement Plan.

Some of the strategies already employed and planned for future use include:

- News release explaining the project and including a department point of contact. (completed)
- Public meeting information the public of the project and getting their input (ongoing)
- Personal contacts with local government officials, and interest groups.
- Personal contacts with adjacent landowners explaining final design.
- Hiring a PI firm for the Right of Way and Construction phase. A tentative scope includes:
 - Open House meeting(s)
 - Flyers
 - Project website
 - Radio/News updates

Scope of Work Report

- Email and Social Media information distribution
- Construction coordination and notification

A Public Involvement firm will be hired for this project. However, based on the projects timeline and ready date hiring of the PI firm may need to be phased or even separate contracts/assignments as this project is slated for 2024. The PI firm would be hired ideally at the time when they could transition from design to construction without extensive negotiations or assignment extensions.

Construction Cost Estimate

The base cost estimate (CN&CE) presented in the AGR Report dated May 22, 2019, was \$14,930,000. The current estimated displayed below is about 25% higher, primarily due to about \$665,000 in wildlife accommodation costs, more realistic traffic control, and mobilization costs, and a general increase in the cost of major bid items in the last two years,

	Estimated cost	Inflation (INF) (from PPMS)	TOTAL costs w/INF + IDC (from PPMS)
NH CN	\$16,750,000	\$1,545,000	\$ 20,063,000
CE (11%)	\$1,860,000	\$172,000	\$ 2,227,000
Project TOTAL CN+CE	\$18,610,000	\$1,717,000	\$ 22,290,000

The estimate above includes \$750,000 for traffic control, 20% allowance for contingency, and 15% for mobilization.

Note: Inflation is calculated in PPMS to the letting date. If there is no letting date, the project is assumed to be inside the current TCP and is given a maximum of 5 years until letting. IDC is calculated at 9.66%% for FY 2022.

Preliminary Engineering

The percent PE expended is 78%. A review of the expended preliminary engineering and hours used compared to the anticipated amounts required for completing the project design indicates that a modification isn't needed. The PE expiration date (10-yr limit) for this project is July 30th, 2022, an extension of the PE program will be required if not advanced to another phase by this time. Our goal is to finalize construction limits and authorize R/W plans and obligate the R/W phase by this date, as R/W negotiation and acquisition is anticipated take significant time.

Project and Risk Management

Helena Road Design – Butte Crew are responsible for developing the plans, Tyrel Murfitt is the Design Project Manager. This project is not considered a Project of Division Interest (PoDI) by FHWA.

Extensive design and investigation have been conducted over the last several years to mitigate the risks associated with aquatic resources and special aquatic features. In general, the risks to the design have been retired and the design is moving forward. However, additional identified risks are:

- Environmental Permitting (LEDPA, 404 conditions, and mitigation conditions)
- Right-of-Way acquisition
- PE exp. date of July 2022
- Project Costs

Environmental Permitting has already begun with pre-permitting discussions with the Corps of Engineers (USACE). The timing of the permit application is part of the overall strategy to deliver this project and be successful, time limits related to permitting, wetland delineation, PE exp. date, and ROW acquisition are crucial to successfully have this project ready for the 2024 letting. Currently effort is being expended to advance the project to PIH to submit permits and authorize ROW prior to the July 2022 PE expiration date.

Ready Date

The project ready date is January of 2024, with a letting date of July of the same year. The project is currently on schedule but will require continued attention and management of the project schedule and

Scope of Work Report

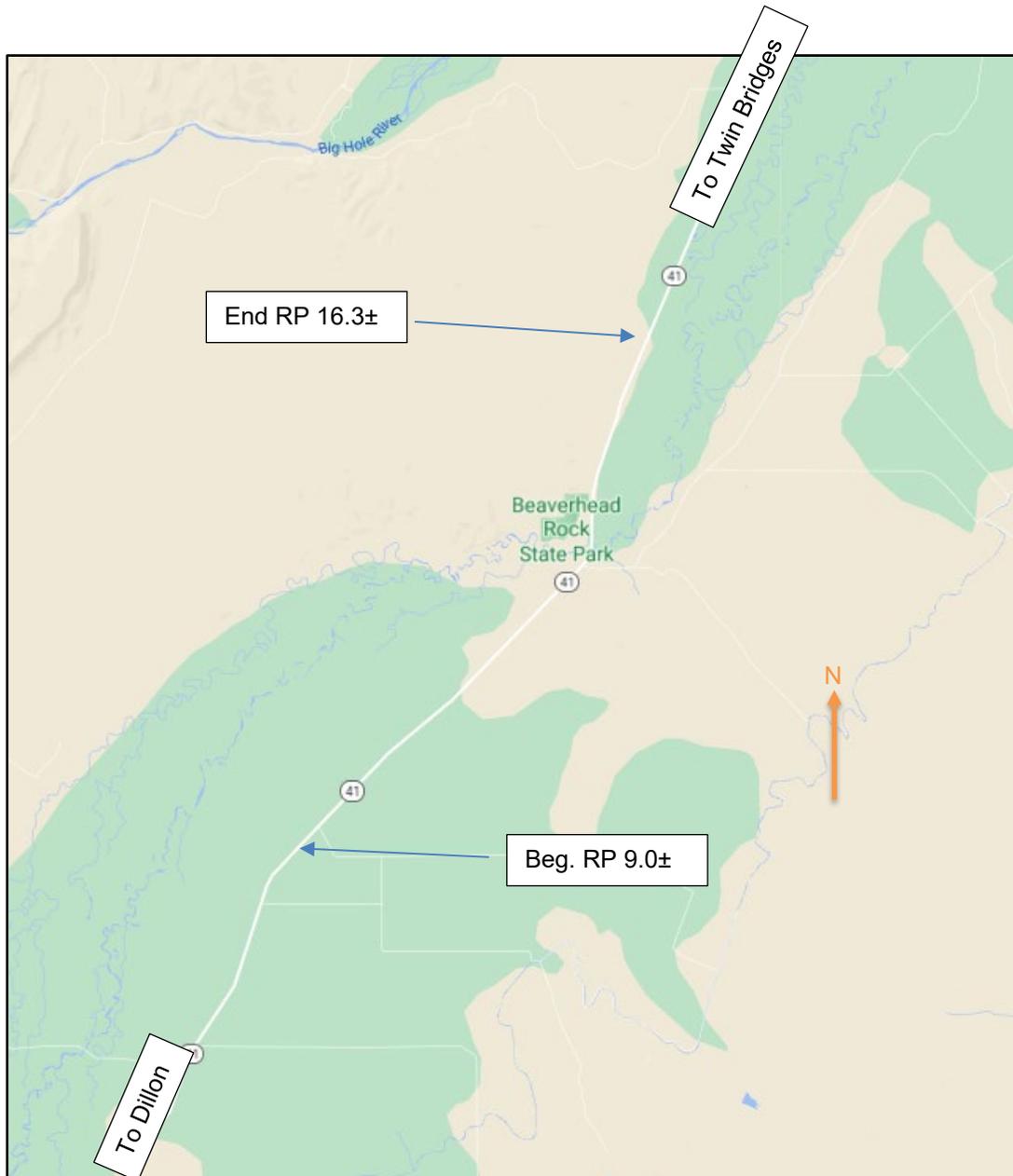
STPP 49-1(24)9, Stone Creek - North, 7931000
EPS Project Manager Tyrel Murfitt

Page 11 of 12

activities to meet the identified ready date. It should be noted that this project is scheduled for FFY 2024 and constitutes a large part of Butte District NH funding for that year. Impacts to the project schedule will be difficult to adjust for in the TCP and could have repercussions that may require MDT to re-evaluate acquired permits with several resource agencies if permit expiration dates are exceeded.

The current PE End Date is October of 2024. A review of the remaining EPS schedule, critical path activities, and target letting date indicates that a modification to the PE End Date *isn't* needed.

Site Map



Scope of Work Report

STPP 49-1(24)9, Stone Creek - North, 7931000
EPS Project Manager Tyrel Murfitt

Page 12 of 12

e-copies:

Ryan Dahlke, Preconstruction Engineer (acting)	Steve Giard, Utilities Engineering Manager
William Squires, Highways Design Engineer (acting)	David Hoerning, Lands Section Supervisor
Dave Hedstrom, Hydraulics Engineer	Jerilee Weibel, Acquisition Section Supervisor
Bill Weber, Supervisor, Photogrammetry & Survey	Jon Burnett, R/W Access Management Section Manager
Stanton Brelin, Traffic Operations Engineer	Jim Davies, Materials Bureau Chief
Ivan Ulberg, Traffic Design Engineer	DJ Berg, Pavement Analysis Engineer
Patricia Burke, Safety Engineer	Miles Yerger, Surfacing Design Supervisor
Vacant, Engineering Cost Analyst	Scott Helm, Geotechnical Operations Manager
John Pirre, Engineering Information Services	Paul Johnson, Project Analysis Bureau
Megan Redmond, Communications Assistant	Jean Riley, Planner
John Mueller, Public Relations Specialist	Tom Gocksch, ESB, Engineering Section Supervisor
Sue Sillick, Research Section Supervisor	Erin Murphy, Fiscal Programming Section
Lisa Hurley, Fiscal Programming Section	Amanda Jackson, Eng. Manager, Bridge Management System
David Phillips, Engineering Division	Jeremy Terry, Road Design Engineer
Vacant, Engineering Division	Becky Duke, Traffic Data Collection Section Supervisor (WIM)
Sheila Ludlow, Bicycle/Pedestrian Coordinator (acting)	Doug McBroom, Maintenance Division Operations Mgr (RWIS)
Joe Radonich, Remediation and Assessment	Bill Semmens, Environmental Resources Section Supervisor
Shane Pegram, Construction Bureau – VA Engineer	Jon Axline, Historian
Nathan Haddick, Bridge Design Engineer	Darcy Goodson, Reclamation Specialist
Darin Reynolds, Engr. Const. Contracting Bureau Chief	
Dave Gates, Preconstruction Engineer	Jim Pesanti, Maintenance Chief
Mike Walsh, Materials Lab	Justin Crow, Right of Way Design Supervisor
Therese Iwaniak, Right of Way Supervisor	Dave Cunningham, Construction Ops Engineer
Geno Liva, Construction Engineer	Tyler Steffan, Bridge Area Engineer
Jen Johnson, Hydraulics Engineer	Pat McCann, Geotechnical Manager
Mike Grover, Traffic Project Engineer	Suzanne Ryan, Project Development Engineer
Deborah Wambach, Biologist	Mike Poole, District MCS Captain
Joe Walsh, Projects Engineer	Greg Zeihen, Surfacing Design
Tyrel Murfitt, Road Design Area Engineer	Janet Black, District Utility Agent
Lee Alt, District Traffic Engineer	John MacMillan, Constructability Reviewer