Montana Department of Transportation
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Memorandum

To: Dave Holien, P.E.
Consultant Design Engineer (Acting)

From: Kelly Williams, P.E.
Consultant Plans Engineer KMW

Date: March 2, 2022

Subject: STPS 263-1(29)6
West of Missoula - NW
UPN 6141000
Work Type 140 - Reconstruction – without added capacity

Please Approve the Alignment and Grade Review for this project.

Please note: The Alignment and Grade Review (AGR) meeting was held on September 12, 2018. The project has effectively been on hold since then awaiting resolution on the issue of including a shared use path (SUP) in the project scope. This AGR Report has been updated to include current information concerning the SUP in the project design/plans.

Approved David T. Holien Date 3/7/2022
for Ryan Dahlke
Consultant Design Engineer

We are requesting comments from the below distribution. If no comments are received within two weeks of the release date, we will assume concurrence.

Distribution (electronic only):
Bob Vosen, Missoula District Administrator
Stephanie Brandenberger, Bridge Engineer
Damian Krings, Highways Engineer
Gabe Priebe, Traffic and Safety Engineer
Jason Gilliam, Right-of-Way Bureau Chief
Jake Goettle, Construction Engineer
Rob Stapley, Rail, Transit, & Planning Division Administrator
Jeff Jackson, Geotechnical and Pavement Bureau Chief
Tom Martin, Environmental Services Bureau Chief
Jon Swartz, Maintenance Division Administrator

cc:
Fred Bente EPS Project Manager, Missoula
Consultant Design Master file
Kelly Williams, Consultant Plans Engineer
Shane Stack, Missoula County

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Located at the end of this document

Introduction

An Alignment and Grade Review (AGR) meeting for the West of Missoula – NW project was held on September 12, 2018 at 1:00 pm at the MDT Missoula District Office. A field review was not conducted after the office review meeting. The following personnel were in attendance:

Ben Nunnallee – MDT Missoula District
Shane Stack – MDT Missoula District
Glen Cameron – MDT Missoula District
Fred Bente – MDT Consultant Design
Susan Kilcrease – MDT Environmental
Bill Durbin – MDT Consultant Design
Donny Pfeifer – MDT Missoula District
Lisa Fischer – HDR Deputy Project Manager
Josh Springer – HDR Bridge
Ben Fennelly – HDR Hydraulics
Jon Schick – HDR Environmental
Brittany Martishius – HDR Roadway
Riley Lubbers – HDR Traffic/Roadway

The following personnel were attending via conference call:

Chris Hardan – MDT Bridge
Shane Stack – MDT Missoula District
Ray Sacks – MDT Construction
Joe Weigand – MDT Environmental
Ben Schendel – MDT Hydraulics
Eddy McAnally – MDT Utilities
Wayne Noem – MDT Planning

After AGR, the project team evaluated the addition of a 10-foot wide shared use path (SUP) along the northeast side of Mullan Road within the project limits. A preliminary design was completed to establish potential conflicts and the Path AGR submittal was delivered to MDT for review on July 23, 2019. MDT and Missoula County signed an agreement to add the SUP to the project on March 8, 2021. Per the agreement, the path design will be included in the project. The permanent features of the trail including the path surfacing, pedestrian rail, and path striping/signing will be included as an optional additive alternative bid package in the construction plan set, to be funded by Missoula County (see notes under **Miscellaneous** section below.

Scope of Work

The proposed project has been nominated and programmed to improve the driving surface and safety by widening the roadway shoulders, flattening the side slopes, improving the horizontal and vertical alignments, and upgrading the clear zone to meet current MDT Design Standards for a Rural Collector (Secondary System). Guardrail, pavement markings, signing and fencing will also be improved and/or replaced as a part of this project. With the proposed alignment, irrigation facilities and structures will need to be relocated outside of MDT right-of-way. Per the Construction, Maintenance, and Funding Agreement executed in March 2021 between MDT and Missoula County, a 10-foot Shared-use Path (SUP) along the northeast side of Mullan Road will be included in the design.

Based on MDT's Route Segment Plan, Mullan Road has a recommended 8-foot shoulder width from RP 4.54 to RP 7.30. It was determined during the design coordination meeting with MDT and Missoula County on January 22, 2018, that the typical section for Mullan Road would include roadway reconstruction with 6-foot shoulders for the extents of the project limits. The proposed roadway will consist of two 12-foot travel lanes (one in each direction) with 6-foot shoulders for a total roadway width of 36-feet. The proposed alignment will be shifted from the existing alignment to allow for the additional width and reduce impacts. Irrigation facilities will need to be realigned in areas to allow for the wider roadway.

Intersection improvements at Pulp Mill Road and Deschamps Lane will be included as part of the project. Turn lanes are not required at these intersections. The widened shoulder section will be carried through the Pulp Mill Road intersection and tapered down to meet the existing lane configuration of two 12-foot lanes with no shoulder. Deschamps Lane will be realigned to intersect Mullan Road at a 90-degree angle to correct the existing skewed intersection to improve sight distance. The radius between Mullan Road and the existing Deschamps Lane will be designed to accommodate farm equipment from neighboring properties.

Project Location and Limits

The project is located along Mullan Road (Secondary Route 263) in Missoula County, west of the city limits of Missoula, MT, between Missoula and Frenchtown, MT. The project begins approximately 200 feet northwest of the Pulp Mill Road (County Route 12) intersection and extends approximately 550 feet southeast of the Deschamps Lane intersection.

The functional classification of Mullan Road within the project limits is Major Collector as part of the Secondary highway system. The project is located in a rural setting.

The project length is 4.9 miles beginning at RP 10.6 and ending at RP 5.7. The direction of the project is from west to east (opposite of the reference posts).

The roadway was last reconstructed in 1939 from RP 10.6 to RP 9.3 based on as-builts FAS 10 B(1). A small reversing curve project built in conjunction with the construction of a substation in 1985 STPHS 263 1(10)9 provides geometry information from RP 9.18 to RP 9.41. No as-builts can be found from RP 9.18 to RP 5.7.

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). These issues are discussed in more detail under the Traffic Control and Public Involvement sections.

Physical Characteristics

Mullan Road is mostly rural, with considerations of an urban typical section being developed from Pulp Mill Road to the at-grade railroad crossing to allow for reduced impacts and a slower speed to allow for additional safety where large trucks will be entering the roadway. The general terrain is level. The existing roadway consists of two 12-foot travel lanes (one in each direction) with no shoulders. Seven of the existing horizontal curves fall below the minimum radius requirements.

Existing fill and cut slopes are generally steep v-ditches with guardrail intermittingly throughout the project limits.

There is an at-grade railroad crossing approximately 2500-feet from the beginning of the project where the proposed roadway grade will closely match existing.

There is an existing 23-foot long, 28-foot wide steel span bridge between Primrose Lane and Primrose Drive (approximately 1.5 miles from the end of the project) to convey water for an irrigation canal (Primrose Irrigation Canal) that will be replaced with the project. The bridge structure number is S00263008+00001.

Context Specific Criteria and Scope Specific Considerations

The following context specific criteria are anticipated based on MDT's Baseline Criteria Practitioner's Guide.

Lane and Shoulder Width: Based on MDT's Baseline Criteria Practitioner's Guide, the recommended lane width for a Rural Major Collector in level terrain is 11-feet. Based on MDT's Route Segment Plan, Mullan Road has a recommended road width of 40-feet comprised of two 12-foot travel lanes and 8-foot shoulders from RP 4.54 to RP 7.30. The recommended roadway width from RP 7.30 to 10.52 is 36-ft, or two 12-foot travel lanes and 6-foot shoulders. It was determined during a design coordination meeting with MDT and Missoula County on January 22, 2018, that the typical section for Mullan Road would include roadway reconstruction with 6-foot shoulders for the extents of the project limits. The proposed roadway will consist of two 12-foot travel lanes (one in each direction) to match current conditions and maintain corridor consistency and 6-foot shoulders for a total roadway width of 36-feet. The proposed lane width also follows the recommendations from MDT's Route Segment Plan and the Preliminary Field Report (PFR) dated October 25, 2017.

Ditch Width and Configuration: The standard ditch width for a Rural Major Collector is 10-feet, sloped back at 20:1, beginning 10-feet from the toe of the pavement section. The proposed ditch is a 2-foot flat bottom ditch, beginning 6-feet from the toe of the pavement section to reduce impacts to the surrounding parcels.

Surfacing Inslope: The standard surfacing inslope is 6:1, which is reflected in the AGR design. During the AGR review meeting, it was discussed that a 4:1 surfacing inslope should be evaluated to determine if it reduced the overall footprint of the improvements and reduced private property impacts. The alternative will be evaluated and documented in the Scope of Work report.

Minimum Horizontal Curve Length: Per Section 3.2.5 of the MDT Road Design Manual, the minimum length of curve in rural conditions should be:

a) The minimum radius that results in a normal crown
b) *15V* where *V* is the design speed in mph, or 900-feet for this project
c) A 500-foot length curve for a 5-degree deflection, add 100-feet for each 1-degree decrease in the central angle.

The minimum curve length was not met for 10 of the horizontal curves due to surrounding environmental, irrigation and/or property constraints. Horizontal curve length is not listed as controlling criteria in MDT's Baseline Criteria. Minimum radius requirements were met throughout the project limits and horizontal curve lengths have been adjusted to the extent practicable to match existing conditions. The proposed curve lengths improve the existing conditions while balancing impacts to the surrounding areas. A summary of the horizontal curves not meeting minimum curve length is provided below.

Station Limits	Proposed Length	Minimum Length per 3.2.5
92+92.37 to 100+33.92	741.55	(c) 849.75
136+36.18 to 137+67.27	131.09	(c) 625.89
164+63.99 to 165+62.85	98.86	(c) 500
171+19.46 to 172+19	99.54	(c) 500
200+06.21 to 206+51.42	645.21	(c) 778.28
209+79.33 to 212+46.29	266.96	(c) 659.31
216+97.00 to 218+97.01	200.01	(b) 900
228+37.66 to 229+93.57	155.91	(c) 744.44
277+33.39 to 286+19.60	886.21	(b) 900
352+05.46 to 353+06.58	101.12	(c) 500

Project Context Specific Criteria /Scope Specific Considerations				
Controlling Element	**Existing Condition**	**Baseline Value**	**Proposed Criteria**	**Location**
Lane Width	12-feet	11-feet	12-feet	Entire project limits
Shoulder Width	None	8-feet	6-feet	Entire project limits
Ditch Width and Configuration	Varies	10-feet	2-foot flat bottom	Entire project limits
Surfacing Inslope	Varies	6:1	4:1	Entire project limits
Minimum Horizontal Curve Length	Varies	MDT Road Design Manual Section 3.2.5	Varies – See previous table	Entire project limits

Design Speed

The design speed for the project is 60 mph. The existing posted speed limit is 35 mph from Pulp Mill Road to the at-grade railroad tracks (near RP 10.2), then increases to 45 mph from the railroad tracks for approximately 800-feet, then increases to 55 mph for the remainder of the project. Although the posted speed is lower than the design speed at the beginning of the project, the design speed will still be used to set the horizontal and vertical alignments. A speed study is not included in the scope of the project and the posted speed limit will remain as-is.

As the project progresses, an urban section will be evaluated from Pulp Mill Road to the at-grade railroad tracks, to decrease impacts through the developed area and to increase safety for trucks entering the roadway.

Horizontal Alignment

The proposed alignment differs from the existing alignment to bring the roadway up to current design standards and improve safety. Tangents have been shifted to reduce impacts to major structures, utilities, irrigation facilities and large trees where possible. The horizontal curves were flattened to meet the minimum radius requirements and superelevation transitions. The minimum curve length was not met for 10 of the horizonal curves due to the surrounding environmental, irrigation and/or property constraints. As noted above, horizontal curve length is not listed as controlling criteria in MDT's Baseline Criteria. The proposed curve lengths improve the existing conditions while balancing impacts to surrounding areas.

The alignment begins just north of the intersection with Pulp Mill Road, matching the existing alignment, then shifts west to reduce impacts to transmission lines on the east and flattening the curve to meet minimum requirements. The "S" curve near station 165+00 will be reconstructed to flatten the curves while shifting west to minimize impacts to the substation. The alignment then shifts west to avoid major impacts to structures on the east, requiring the realignment of the irrigation facility on the west. From Station 205+00 to 240+00 the alignment is shifted east to avoid impacts to parcels and reduce impacts to the irrigation facility. The alignment then generally follows existing until station 280+00 where the alignment shifts east to minimize impacts to the parcels on the west, including the Section 4(f)/6(f) parcel (Council Grove State Park). The proposed alignment then shifts east to reduce impacts along the west before transitioning back into the existing alignment near station 340+00. The alignment then closely follows the existing until the project ends approximately 550 feet south of the Deschamps Lane intersection. A clear zone distance of 26 feet is proposed for the project per Exhibit 9-1 in the MDT Design manual and referencing a 60 mph design speed, a 2390 design AADT and standard 6:1 fill slopes.

The table below provides an overview of the horizontal curve data:

Approx. Station Limits (Proposed)	Proposed Curve Radii	Proposed Curve Length	Proposed Superelevation	Clear Zone Distance (outside)
STA 92+92 to 100+34	5,000'	741.55'	4%	26
STA 136+36 to 137+67	1,200' spiral	131.09'	8%	39*
STA 164+64 to 165+63	1,200' spiral	98.86'	8%	39*
STA 171+19 to 172+19	1,200' spiral	99.54'	8%	39*
STA 200+06 to 206+51	4,750'	645.21'	4%	26
STA 209+79 to 212+46	2,320'	266.96'	6%	31.2*
STA 216+97 to 218+97	1,200' spiral	200.01'	8%	39*
STA 228+38 to 229+94	1,200' spiral	155.91,	8%	39*
STA 234+53 to 243+95	11,500'	941.32'	NC	26
STA 251+78 to 257+05	18,000'	526.82'	NC	26
STA 265+32 to 268+97	11,500'	364.86'	NC	26
STA 277+33 to 286+20	3,900'	886.21'	4%	26
STA 306+29 to 317+68	8,000'	1138.54	3%	26
STA 336+43 to 347+11	1,820' spiral	1068.04	7%	33.8*
STA 352+05 to 353+07	1,200' spiral	101.12'	8%	39*

* Clear zone adjusted for horizontal curve per Section 8.2.2.1 of the MDT Road Design Manual.

The Deschamps Lane road approach will be realigned to improve safety, reducing the large skew and improving sight distance.

Vertical Alignment

The proposed vertical alignment is generally raised slightly above the existing profile throughout the project limits in order to accommodate a thicker pavement section. The proposed vertical alignment follows the existing alignment through controlling areas such as the at-grade railroad crossing and within the floodplain area. The existing bridge will be replaced with the project and the grade will be set based on the hydraulic requirements of the irrigation canal.

The maximum proposed grade along the corridor is 1.09% which matches the existing grade to tie into existing at the end of the project. There is no major steepening or flattening of the existing grade proposed, however a minimum grade of 0.1% is proposed near the O'Keefe Creek crossing to maintain the proper conveyance of water. A maximum grade of 5% is allowable for Rural Major Collectors.

A minimum curve length of three times the design speed, 180-feet, is maintained throughout with vertical curves of greater length where necessary to meet minimum stopping and passing sight distances. For Sag curves, a minimum K-Value of 136 for 60 mph is met. For crest curves, a minimum K-Value of 151 for stopping sight distance and 357 for passing sight distance is met throughout the project limits.

At the time of this report additional subgrade excavations have not been identified. Additional geotechnical field investigation and testing will be completed as design progresses to identify areas where additional excavation will be necessary.

The proposed vertical alignment and horizontal alignment were set to avoid ponding and all superelevation transitions do not fall within a high point or low point.

The roadway profile was set to maintain a no-rise condition as part of the floodplain modeling, while trying to minimize wetland impacts. This will be further evaluated with the addition of the new SUP as the design progresses.

Surfacing

The geotechnical report recommends 0.30' of plant mix bituminous surface over 1.35' of crushed aggregate course. The report also recommends a 2-foot subgrade cap alternative be used. The surfacing section will be re-evaluated after AGR when the alignment has been set. Additional geotechnical borings will be taken along the proposed alignment to determine if existing subgrade material is suitable.

For preliminary design, the SUP will consist of 0.20-feet of plant mix bituminous surface over 0.50' of crushed aggregate course. Additional borings were taken in 2021 to evaluate soil conditions and finalize surfacing recommendations for the SUP and the roadway.

Typical Section

Based on comments received at AGR, an urban typical section will be evaluated from the Pulp Mill Road intersection to the at-grade railroad crossing. This typical section will include a 36-foot paved width consisting of two 12-foot travel lanes and 6-foot shoulders and curb and gutter will be proposed.

The remainder of the project will consist of two 12-foot lanes and 6-foot shoulders, totaling 36-foot paved width as documented in the shoulder width memo dated July 18, 2019.

The standard cross slope of 2% will be maintained in tangent sections and the standard superelevation transitions will be used for the curves.

Grading

The project will consist of unclassified excavation and will likely be a waste project. The excavation will include removing the existing roadway and building up the wider roadway footprint. Balancing earthwork with the addition of the SUP will continue to be evaluated as the design progresses.

At this time there are no known special soil considerations that may require shifting the alignment. Additional geotechnical investigation will be performed as the project progresses to identify the proper considerations. It is unlikely that an alignment shift is possible and if poor soils are encountered, the pavement section and subgrade work will need to accommodate the soil constraints.

It is not recommended to reclaim the existing asphalt and base layer since there is a varying percentage of silt and clay fines, making it not suitable as part of the 2-foot subgrade cap recommended in the Preliminary Geotechnical Report.

Geotechnical Considerations

Several options were considered to re-use existing materials, including reclaiming the existing asphalt and base layer in place, stockpiling, then re-using for all or part of the 2-foot cap layer or ripping or reclaiming the existing asphalt and base layer in place then grading into the widening fill areas. Given the variability of the base and gravel fill layer with varying percentage of silt and clay fines it is not particularly suited as a 2-foot cap layer. Trying to reuse the existing base layer would not be cost efficient due to the need to process or handle the material up to three times to get it back into place for use as subbase or the subgrade cap. It would be most economical to reclaim or rip the existing asphalt layer in place, then grade or haul the reclaimed layer into the fill areas. This method would save the cost to break up and haul the existing asphalt off site.

Additional geotechnical analysis will be completed after AGR and include recommendations for foundations for the bridge and large culverts, fill and cut slopes, potential wall designs if

necessary, and subgrade solutions. The pavement section will also be re-evaluated based on additional borings to develop the appropriate design.

Hydraulics

There are significant irrigation ditches and structures paralleling and crossing the alignment. Consideration was made to balance the impacts between irrigation facilities and adjacent parcels to minimize realignment of the irrigation ditches.

A culvert and bridge option were considered where Primrose Canal crosses the roadway. A precast concrete bridge is recommended because it meets the hydraulic criteria, the opening will completely span the canal for the design flow, and canal operations are not impacted. A mega box will also be examined as an option as the design progresses. There are portions of the irrigation facilities that will need to be relocated. Cut/fill slopes will be evaluated where the irrigation facilities are adjacent to the proposed SUP and AASHTO guidance will be utilized to identify the need for handrail based on slope height.

Due to the increased widening of the roadway shoulder and the addition of the SUP, impacts on adjacent streams are certain. In addition to the design of hydraulic structures to compensate for the additional roadway width, approximately 260 feet of LaValle Creek on the west side of the road will need to be shifted to accommodate the proposed roadway and SUP.

The project resides in a FEMA regulated Approximate Zone A floodplain. Based on the roadway design presented at AGR, the proposed hydraulic crossings along the impacted reaches of LaValle Creek and O'Keefe Creek have been designed to not increase the 100-year water surface elevation greater than 0.5 foot or increase the 100-year flood risk on an insurable structure. Due to the encroachment of the roadway on the south side of the LaValle Creek floodplain, the maximum increase in the floodplain elevation is less than 0.2 feet. This is below the acceptable 0.5 foot maximum allowed for an Approximate Zone A in MT. Additional evaluation will be required to identify potential floodplain impacts due to the addition of the SUP.

Irrigation ditches will be replaced in-kind with relocated sections matching the conveyance and operation of existing facilities. Ditch realignments are anticipated to require Section 404 permitting. The permit application will quantify and provide dimensions for irrigation ditch impacts separately from other waters of the U.S. Due to local soil conditions, relocated/new ditch segments may require lining to limit infiltration. A ditch liner was shown on the as-builts for the existing irrigation canal; however, no liner was found during the field review. Due to the proposed ditch being constructed mostly above ground and with fill material, a ditch liner will be included as an alternative as part of the proposed improvements, pending the Frenchtown Irrigation District's approval.

At the time the Preliminary Hydraulic Report was submitted, the SUP was not included in the design. Additional hydraulics analysis will need to be performed as the design progresses to incorporate the SUP.

Permanent Erosion and Sediment Control (PESC) Features

No known permanent erosion and sediment control features are necessary at this time. As design continues, the outfall of culverts and ditches sections will be evaluated to identify erosion potential and PESC features will be proposed, if necessary.

As stated in the previous section, a ditch liner will be included as an alternative as part of the proposed irrigation ditch improvements, pending the Irrigation Owner's approval.

Bridges

One bridge exists within the project limits and will need to be fully replaced to accommodate the increased roadway width and SUP.

There is an existing 23-foot long, 28-foot wide steel span bridge between Primrose Lane and Primrose Drive (approximately 1.5 miles from the end of the project) to convey water for an irrigation canal (Primrose Irrigation Canal). The bridge structure number is S00263008+00001.

The bridge will be fully replaced to accommodate the increased roadway width and SUP. The bridge is on a tangent and is near public approaches. Guardrail termini will likely require special designs to accommodate the approaches. Both a culvert and bridge option were considered and a precast concrete bridge is recommended because it meets the hydraulic criteria, the opening will completely span the canal for the design flow and canal operations are not impacted. A mega box will also be examined as an option as the design progresses.

Traffic
The Deschamps Lane intersection is at a severe skew angle causing poor sight distances for traffic turning from Deschamps Lane onto Mullan Road. Deschamps Lane will be realigned to correct the skew and allow for a more perpendicular intersection. The radius used to tie back into the existing Deschamps Lane alignment will be flattened in order to accommodate farm equipment for the neighboring agricultural parcels. Missoula County is planning to pave this route in the future due to the increased traffic on Deschamps Lane. The design team will continue to coordinate with the County for additional work at this intersection.

Intelligent Transportation Systems (ITS) Features
There are currently no ITS features proposed for the project.

Miscellaneous
Fencing will be replaced, as appropriate, throughout the project due to the need to acquire additional right-of-way.

According to the Construction, Maintenance & Funding Agreement between MDT and Missoula County a SUP is proposed for the project. Per the agreement, two bid packages will be prepared for the project including the SUP surfacing and pedestrian rail items as an alternate bid package. MDT has agreed to perform the grading, right-of-way acquisition, utility relocation, and culvert installation/extension as required to accommodate the SUP. Missoula County will be responsible to fund the surfacing and pedestrian rail components. Refer to the executed agreement for further details and clarification.

Design Exceptions
Specific Design Exceptions have not been identified at this time. However, the presence of several cultural sites adjacent to the existing roadway may require alignment adjustment or possibly design exceptions to avoid/minimize 4(f) impacts. This will be further evaluated as the project design progresses and, if design exceptions are determined necessary, a Design Exception Request will be prepared and submitted.

Right-of-Way
Right-of-way acquisition will be necessary from most of the parcels along the corridor to accommodate the additional footprint of the widened roadway and SUP. A 10-foot clearance from the construction limits to the proposed right-of-way was used to provide room to relocate utilities within the new right-of-way and remain outside the roadway clear zone. Right-of-way impacts will include residential relocation and the removal of abandoned structures. These impacts will be documented as the design progresses. Separate easements will be needed for the irrigation relocations. Coordination with the Frenchtown Irrigation District and Bureau of

Reclamation will include a combined effort between the Missoula District and HDR for easement preparation. There is one Section 4(f)/6(f) property along the corridor which is Council Grove State Park. No right-of-way is required from this parcel. Approach improvements for Council Grove will be completed as part of a construction permit if needed.

Utilities/Railroads

A Phase I SUE was completed and extensive utility relocations are needed to complete the project. Overhead power, underground power, underground fiber and gas lines will be relocated. Overhead power lines parallel the roadway throughout most of the project limits with existing power poles located within the clear zone. Coordination with utility companies has occurred prior to AGR. Coordination between MDT Utilities and HDR will continue as the design progresses to keep owners informed of the need for relocations and the anticipated project schedule. Utility owners have requested a 6-month lead time to relocate.

A Phase II SUE may be required if subgrade excavation is necessary and at culvert crossing locations.

An at-grade railroad crossing exists within the project limits and will require coordination with the owner.

Environmental Considerations

Based on the current design and understanding of preliminary impacts, it is anticipated that the project meets the criteria for a categorical exclusion under 23 CFR 771.117(d)(13), which includes actions described in paragraphs (c)(26), (c)(27), and (c)(28) of this section that do not meet the constraints in 23 CFR 771.117(e). Per 23 CFR 771.117(e)(1). This particular categorical exclusion appears warranted because the project is anticipated to involve an acquisition of more than a minor amount of right-of-way or that would result in a residential relocation. Substantial acquisition is necessary to construct the project and the relocation of one residence is anticipated. (See discussion under Right-of-Way)

A cultural resource report was completed for this project in October 2021. The study updated the site forms for three sites (24MO0295, 24MO0713, and 24MO0789) that were previously been determined eligible for the National Register of Historic Places (NRHP). The study also recorded and evaluated ten unrecorded historic properties within the Area of Potential Effect (APE). Three of the ten properties (24MO01801, 24MO01797, and 24MO01795) are eligible for the NRHP. The State Historic Preservation Office (SHPO) concurred with the MDT's Determination of Eligibility on December 14, 2021. MDT is developing the Determination of Effect, it will be submitted to SHIPO when completed. The results of the consultation will be included in the environmental document.

The proposed project is anticipated to result in unavoidable impacts to streams, irrigation canals, and wetlands due to the widening of the roadway footprint and SUP. Preliminary estimated wetland impacts total 0.9 acre and impacts to waters of the U.S. have not been quantified. It is conservatively estimated that the project may require Section 404 authorization through an Individual Permit; however, additional coordination with the USACE will be necessary to determine the appropriate 404 permit (i.e., Nationwide Permit No. 23 may be applicable). Once final design is complete and construction limits established, impacts on aquatic resources would be quantified and described in greater detail in the Aquatic Resources Finding Report (AFR) and the Section 404 permit application. Considerations will be made to further minimize impacts on wetlands as design progresses.

An updated addendum has been developed for the June 2018 Biological Resource Report/Preliminary Biological Assessment that updates the Endangered Species Act (ESA)-

listed species potentially occurring in the project vicinity and validating previous effect determination. The project will have no effect on ESA-listed species. The June 2018 report did not identify any wildlife accommodation needs and a Wildlife Accommodation Recommendation Memo (WARM) has not been deemed necessary for the project.

The removal of many trees and shrubs will be required to complete the project. The Environmental Specifications special provision will be included in the final construction bid documents and include Migratory Bird Treaty Act Compliance – Vegetation Removal Subsection 208.03.4A(1) to avoid and minimize potential impacts on migratory birds resulting from vegetation removal and Migratory Bird Treaty Act Compliance – Structures Subsection 208.03.4A(2) to avoid and minimize potential impacts on migratory birds resulting from bridge work that may directly impact active nests.

The former Smurfit-Stone mill site located at the northwest end of the project area contains contaminated soils and potentially contaminated groundwater. On December 12, 2013, the Smurfit-Stone Mill site was proposed to be added to the National Priorities List (NPL). Available information and correspondence with DEQ suggests that known contamination would likely not be impacted by the proposed project. Contaminated surface soils were identified a minimum of approximately 200-ft. from the proposed project and are likely beyond any area of potential ground disturbance from this project. Groundwater in the vicinity of the project is approximately 20-30 feet below ground surface and not likely to be an issue. In addition, the project involves a bridge demolition, and an asbestos inspection is required (see ISA Form for more information).

Council Grove State Park has been identified as a Section 4(f)/6(f) property. The park entrance abuts the project area; however, the alignment has been shifted to the north in this area and no impact on this property is anticipated. (See discussion under Right-of-Way)

Experimental Features and Proprietary Products

There are no experimental features for the project at this time.

Traffic Control

It is anticipated that the project will be let in December or January in order for the irrigation improvements to be completed before the irrigation water is turned on. Construction is scheduled to be completed within one season. Section breakouts and/or staging will be determined by the contractor. Traffic issues that will require special consideration include:

- A temporary detour route will be necessary if the structure over the Primrose Canal is replaced with a new bridge. If a box culvert is preferred after further evaluation, a detour may not be required.
- Maintenance of private property access throughout construction.

A Transportation Management Plan (TMP) consisting of a Traffic Control Plan (TCP) and a limited Public Information (PI) component is anticipated for 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.

MDT and the design team have met with eight property owners since AGR development to discuss potential property impacts. An open house public meeting will be conducted in the near future to present the current scope of improvements included in the project. Additional stakeholder outreach is anticipated between AGR and PIH development.

Preliminary Construction Cost Estimate

The previous cost estimate (from the October 25, 2017 PFR Report) was $6,387,000 (for Project Total CN+CE-w/o INF +IDC).

That estimate did not include the shared use path which would be a locally funded additive alternative to the contract plans package.

	Estimated cost	Inflation (INF) (from PPMS)	TOTAL costs w/INF + IDC (from PPMS)
STPS CN	**$8,900,000**	**$1,900,000**	**$ 12,000,000**
HSIP CN	**$0.00**	**$0.00**	**$ 0.00**
(Local) CN	**$1,700,000**	**$370,000**	**$ 2,300,000**
TOTAL CN	**$11,000,000**	**$2,200,000**	**14,000,000**
CE (11.5%)	**$1,000,000**	**$210,000**	**$ 1,400,000**

Project TOTAL from all of the funding types above:

Project TOTAL CN+CE	**$12,000,000**	**$2,400,000**	**$ 15,000,000**

The estimate above includes $340,000 for traffic control, 20% allowance for contingency, 8% for mobilization, and *1.5% of CN for CE PI services.

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 2021.

Preliminary Engineering

The percent PE expended is 57%. 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 at this time.

Ready Date

The current Ready Date is shown in the Project Management System is May 1. 2025. The project does not currently have a tentative letting date in the Tentative Construction Plan. The noted Ready Date would allow for a potential target letting date of September 2025.

A review of the EPS schedule shows the project to be generally on schedule. The potential risk on this project is likely to be the R/W acquisition process, since there are a lot of parcels involved. Design issues are not expected to affect the design timeline. The current PE End Date is 10/31/2023. A review of the remaining EPS schedule, critical path activates, and target letting date indicates that a modification to the PE End Date is needed. A PE End Date modification request will be prepared.

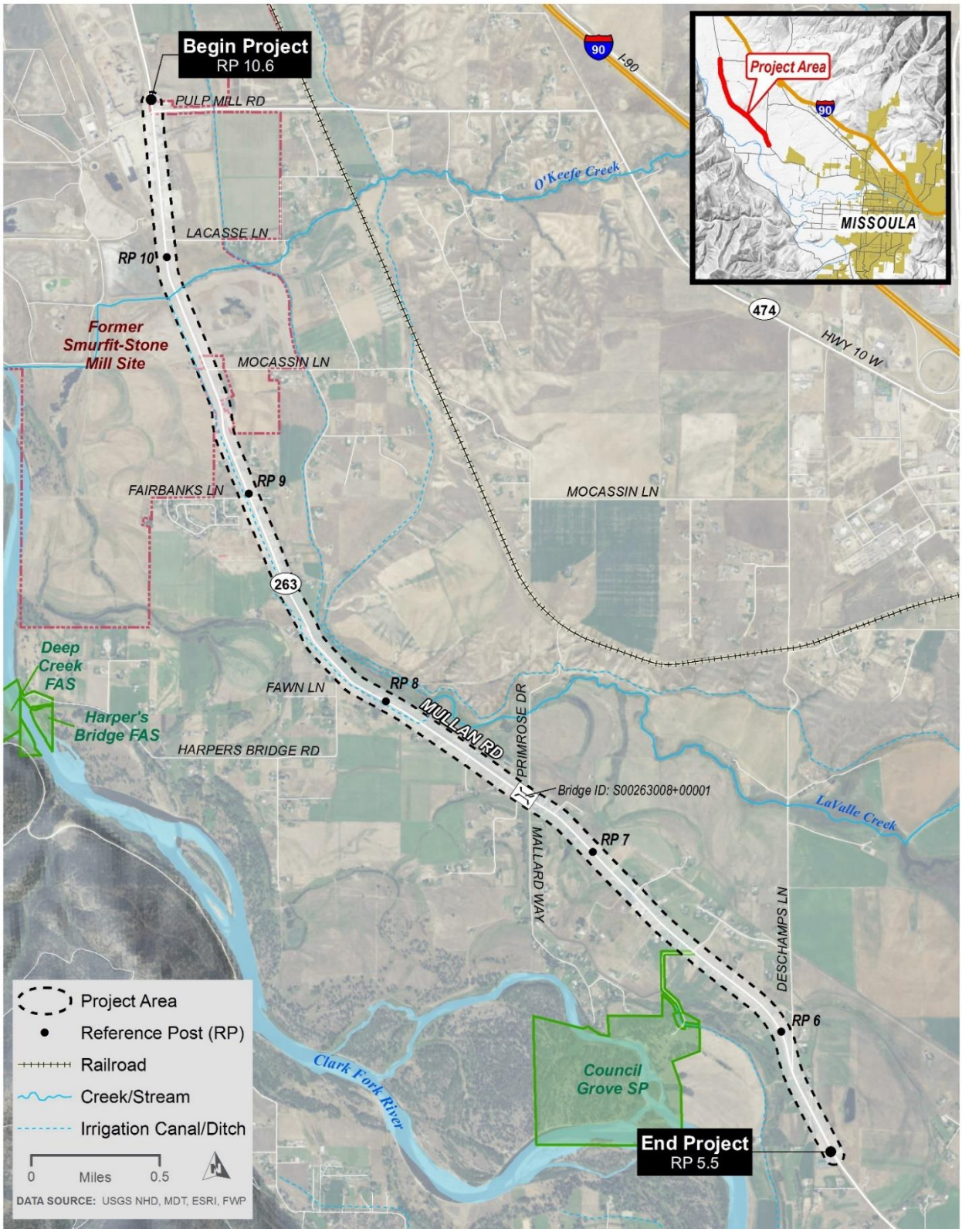
e-copies:

Headquarters

Ryan Dahlke, Preconstruction Engineer (acting)
Jacob Brotzler, Highways Design Engineer (acting)
Dave Hedstrom, Hydraulics Engineer
Bill Weber, Supervisor, Photogrammetry & Survey
Stanton Brelin, Traffic Operations Engineer
Ivan Ulberg, Traffic Design Engineer
Patricia Burke, Safety Engineer
Brett Harris, Engineering Cost Analyst
John Pirre, Engineering Information Services
Megan Redmond, Communications Assistant
Vacant, Public Relations Specialist
Rebecca Ridenour, Research Section Supervisor
Chad DeAustin, Experimental Project Manager
Lisa Hurley, Fiscal Programming Section
David Phillips, Engineering Division
Ed Cohlhepp, Engineering Division
Andy White, Secondary Roads Engineer
Sheila Ludlow, Bicycle/Pedestrian Coordinator (acting)
Joe Radonich, Remediation and Assessment
Shane Pegram, Construction Bureau – VA Engineer
Nathan Haddick, Bridge Design Engineer
Darin Reynolds, Engr. Const. Contracting Bureau Chief
Steve Giard, Utilities Engineering Manager
David Hoerning, Lands Section Supervisor
Bob Heiser, Acquisition Section Supervisor
Jon Burnett, R/W Access Management Section Manager
Jim Davies, Materials Bureau Chief
DJ Berg, Pavement Analysis Engineer
Miles Yerger, Surfacing Design Supervisor
Scott Helm, Geotechnical Operations Manager
Paul Johnson, Project Analysis Bureau
Jean Riley, Planner
Tom Gocksch, ESB, Engineering Section Supervisor
Erin Murphy, Fiscal Programming Section
Amanda Jackson, Eng. Manager, Bridge Management System
Jeremy Terry, Road Design Engineer
Becky Duke, Traffic Data Collection Section Supervisor (WIM)
Doug McBroom, Maintenance Division Operations Mgr (RWIS)
Matt Maze, ADA Coordinator
Bill Semmens, Environmental Resources Section Supervisor
Jon Axline, Historian
Darcy Goodson, Reclamation Specialist

Missoula

Steve Felix, Maintenance Chief (Missoula)
Justun Juelfs, Maintenance Chief (Kalispell)
Darrell Williams, Construction Ops Engineer
Andy Cullison, Bridge Area Engineer
Bret Boundy, Geotechnical Manager
Rebecca Ridenour, Project Development Engineer
Pat Metzger, District MCS Captain
Tim Hufford, Surfacing Design
Gregg Wood, District Utility Agent (Missoula)
Josh Dold, Road Design Area Engineer
Michael Ivanoff, Environmental Engineer
Glen Cameron, Traffic Engineer - Missoula
Rebecca Franke, Traffic Engineer - Kalispell
Jacquelyn Smith, Preconstruction Engineer
Mike Dodge, Materials Lab Supervisor
Johnathon Schmidt, Construction Engineer
Maureen Walsh, Right of Way Supervisor
Johnathan Rainwater, Hydraulics Engineer
Dan Cunningham, Traffic Project Engineer
Joe Weigand, Biologist
Benjamin Nunnallee, Projects Engineer
Peter Thelen, District Utility Agent (Kalispell)
Joe Green, Constructability Reviewer
Nick Tholt, Signing Designer Supervisor
Jim Turner, Registered Land Surveyor


Begin Project
RP 10.6
PULP MILL RD
LACASSE LN
RP 10
Former Smurfit-Stone Mill Site
MOCASSIN LN
FAIRBANKS LN
RP 9
MOCASSIN LN
263
Deep Creek FAS
Harper's Bridge FAS
FAWN LN
RP 8
MULLAN RD
PRIMROSE DR
HARPERS BRIDGE RD
Bridge ID: S00263008+00001
LaValle Creek
RP 7
MALLARD WAY
DESCHAMPS LN
RP 6
Council Grove SP
Clark Fork River
End Project
RP 5.5
O'Keefe Creek
I-90
90
474
HWY 10 W
Project Area
MISSOULA
Project Area
Reference Post (RP)
Railroad
Creek/Stream
Irrigation Canal/Ditch
0
Miles
0.5
DATA SOURCE: USGS NHD, MDT, ESRI, FWP