MONTANA
Department of Transportation

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Memorandum

To: Distribution

From: Dave Holien, P.E. DTH
Acting Consultant Design Engineer

Date: April 22, 2022

Subject: IM 90-1(227)0
Taft - West
UPN 9487000
Work Type 140 - Reconstruction – without added capacity

The Scope of Work Report for this project has been released on April 28, 2022.
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:

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

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Jon Swartz, Maintenance Division Administrator
Tom Martin, Environmental Services Bureau Chief
Shane Pegram, Construction Bureau – VA Engineer

cc:
Located at the end of this document

Scope of Work

The proposed scope of work for this project is to reconstruct I-90 to meet current MDT design standards and replace the existing plant mix bituminous surface with PCCP from Reference Post (RP) 0.0 (Idaho State Line) to RP 5.7 (Taft Interchange). Pavement preservation, or mill and overlay, is included on the Lookout Pass Interchange ramps and Taft Interchange ramps. The project also includes drainage, environmental, traffic and safety improvements.

A location map is included at the end of the report for reference.

Purpose and Need

The purpose of this project is to remove the existing plant mix bituminous surface that is deteriorating due to the harsh weather environment in this area. The plant mix will be replaced with a more durable concrete surface. Additional improvements to drainage, signing and roadway lighting are also included.

Context Specific Criteria and Scope Specific Considerations

In accordance with MDT's Baseline Criteria Practitioner's Guide published March 25, 2021, the following Context Specific Criteria are anticipated for the project:

Spiral Curve Length: The spiral curve length on 15 horizontal curves extends longer than the superelevation runoff length to match existing conditions and reduce impacts to the surrounding mountainous terrain.

Curve	Station	Proposed Curve Data			
#	Proposed PI	Rc (ft)	e (%)	Ls In (ft)	Ls Out (ft)
A-1	108+19.91 - ITD	1,528	7.0%	200	350*
EQN	111+01.01 BK = 1+09.45 AH				
A-3	32+78.35	2,292	5.0%	225*	250*
A-4	53+91.87	2,330	5.0%	250*	250*
A-5	68+48.87	2,292	5.0%	250*	250*
A-6	84+38.15	3,820	3.0%	200*	200*
A-7	113+47.67	1,433	7.0%	400*	400*
A-8	130+23.37	1,348	7.0%	400*	400*
A-9	147+93.77	1,100	8.0%	500*	500*
A-10	166+31.13	1,200	7.0%	475*	400*
B-EB-1	191+13.16	1,638	6.0%	350*	350*
B-EB-2	220+70.57	3,820	3.0%	150*	-
B-WB-1	194+24.38	1,648	6.0%	350*	350*
B-WB-3	256+78.49	1,627	2%	350*	-
C-11	410+96.08	1,640	6.0%	350*	350*
EQN	405+85.34 BK = 257+58.03 AH				
C-12	298+97.75	1,146	8.0%	500*	500*

*Does not meet current design standards for Ls = Standard superelevation runoff length.

Vertical Alignment: The maximum grade for rural interstate in mountainous terrain is 6% for a design speed that is less than 65 mph. The proposed vertical alignment closely follows the existing terrain and maintains a 6% maximum slope from Sta. 7+20.00 to Sta. 123+50.00. Profile changes in this area of the project would require steep cut slopes and could impact the surrounding Lolo National Forest.

Ditch Width: The standard ditch width for a rural interstate is 10 feet. A maximum 4-ft wide ditch is proposed throughout the project limits to match existing conditions and reduce additional grading. By matching the existing conditions, right-of-way impacts to the neighboring Lolo National Forest will not be required.

Inside Shoulder Width: Existing median barrier is both standard concrete barrier and tall median barrier throughout the undivided interstate sections. The median concrete barrier will be replaced with new tall concrete barrier in these sections except in areas where emergency turnarounds are being perpetuated. The base width of the new tall concrete barrier is 2'-8" as compared to the standard concrete barrier width of 2-ft. The additional barrier width will result in an inside shoulder width of approximately 3.7-ft, which is less than the 4-ft standard for interstates. The installation of new tall median barrier will provide consistency throughout the undivided section and reduce headlight glare.

Horizontal Alignment Minimum Radius: The existing westbound exit ramp and eastbound entrance ramp at the Lookout Pass Interchange are approximately 70-ft, which does not meet the design criteria for 20 mph. Due to the additional cost associated with reconstructing the interchange ramps, the proposed improvements for the Lookout Pass Interchange are limited to a mill and overlay. Additional safety improvements including updated curve warning signs and new interchange lighting will be implemented as part of this project.

Ramp Deceleration Length: The existing westbound exit ramp at the Lookout Pass Interchange is a tapered configuration leading into a ramp curve with a radius of approximately 70-ft. The required deceleration length from 50 mph to 20 mph is 385-ft. The existing taper configuration provides 345-ft of deceleration length. The existing condition will be perpetuated due to the additional cost associated with reconstructing the interchange ramps. New interchange lighting and updated curve warning signs will be installed to help inform drivers of the changing ramp geometry as drivers approach the horizontal curve.

Ramp Acceleration Length: The existing eastbound entrance ramp at the Lookout Pass Interchange is a tapered configuration that follows a curve with a radius of approximately 70-ft. The required acceleration length from 20 mph to 50 mph is 610-ft. The existing taper configuration provides 480-ft of acceleration length. The existing condition will be perpetuated due to the additional cost associated with reconstructing the interchange ramps. New interchange lighting will be included in the project to help inform drivers of the changing ramp geometry as drivers depart the horizontal curve and merge onto the interstate.

Project Context Specific Criteria /Scope Specific Considerations				
Controlling Element	**Existing Condition**	**Baseline Value**	**Proposed Criteria**	**Location**
Spiral Curve	Spiral curve length does not equal superelevation runoff length	Spiral Curve Length = superelevation runoff length	Match Existing	All spiral curves. See horizontal curve table.
Maximum Grade	6.021%	6% for V < 65 mph	6.000%	7+20 to 123+50
Ditch Width	4-ft	10-ft	4-ft	Throughout project limits
Inside Shoulder Width	Varies - 3.7-ft minimum	4-ft minimum for rural interstate	Match Existing	Undivided interstate sections with Tall Concrete Barrier Rail
Horizontal Alignment - Min. Radius	70-ft (Design speed < 20 mph)	80-ft (Design speed = 20 mph)	Match Existing	Lookout Pass WB Exit Ramp & EB Entrance Ramp
Ramp Deceleration Length	345-ft	385-ft (Deceleration from 50 mph to 20 mph)	Match Existing	Lookout Pass WB Exit Ramp
Ramp Acceleration Length	480-ft	610-ft (Acceleration from 20 mph to 50 mph)	Match Existing	Lookout Pass EB Entrance Ramp

Public Summary

The Taft – West project will design proposed improvements of a nearly six-mile section of Interstate 90 (I-90) in the Lolo National Forest beginning on the Montana side of the Montana-Idaho border. The project

area is in rugged, mountainous, and heavily forested terrain and roughly parallels the upper reaches of the St. Regis River. The area is used for recreational activities during both summer and winter, and access is provided at two interchanges including Lookout Pass and Taft. The Dena Mora Rest Area is located near the eastern end of the project area.

The project will include replacing deteriorated pavement with new, more durable concrete pavement, and additional safety improvements including:

- Lookout Pass Interchange safety enhancements
- Evaluation of wildlife accommodation improvements
- Drainage improvements and culvert replacements

The proposed improvements will be maintained within the existing roadway width, so right-of-way impacts are not anticipated at this time.

The project is currently in the design phase and construction is anticipated to begin in the spring of 2024 and extend through 2025.

Project Location and Limits

The project is located on I-90 in Mineral County from RP 0.0, beginning at the Idaho – Montana border near Lookout Pass, to RP 5.7, east of the Taft Interchange bridge. I-90 is classified as a Rural Freeway (NHS – Interstate) in mountainous terrain within the project limits. The overall project length is 5.7 miles.

As-built drawings for Project IM 90-1(184)0, Taft – West (UPN 5830001) were completed in 2011-2012. The project included crack & seating the existing PCCP, overlay with 0.40-ft of plant mix surfacing and a full width seal & cover. The as-built station limits for this project are Sta. 1+09.45 at the Idaho-Montana border to Station 302+63.00, increasing from west to east, which follows the RP direction.

MDT completed a Value Analysis (VA) Study following the PFR. The final recommendations of the VA Study are documented in the VA Report dated February 2019. The primary goal of the VA Study was to reduce project costs. Several recommendations from the VA Study focused on utilizing a PCCP inlay instead of full interstate reconstruction. This option would keep the existing crack and seat concrete and 0.10-ft plant mix in place and overlay it with 0.83-ft of new concrete pavement. After further geotechnical analysis, the PCCP inlay was not recommended due to surface drainage concerns within the project limits including sand-clogged scuppers in the concrete barrier, clogged surface drains and sand-blocked culverts as documented in the Pavement Design Alternative Letter dated August 17, 2021. The PCCP inlay recommendation will not advance, and the 30-year pavement design will be utilized for the project. The VA Study also recommended evaluation of additional requirements to allow Stringless Paving and 3D Construction. This recommendation will be further evaluated as the design is developed. The final recommendation from the VA Study was to utilize similar traffic control and sequencing that was used for the 2011 Crack and Seat project to separate traffic by utilizing delineated traffic control devices and provide “Distressed Truck Exits” at regular intervals through the center median. Since the PCCP inlay options is not moving forward and the interstate surfacing section will be fully reconstructed, maintenance of traffic will consist of interstate crossovers in the undivided sections in order to completely reconstruction westbound or eastbound I-90 during a construction season.

Physical Characteristics

This section of I-90 is located within the Lolo National Forest in rugged, mountainous terrain. The project roughly parallels the upper reaches of the St. Regis River from RP 1.7 to RP 5.7. The adjacent terrain is heavily forested and sparsely populated. Local access is provided at two interchanges including Lookout Pass (RP 0.2) and Taft (RP 5.7). The Dena Mora Rest Area is located at RP 4.7.

The first 3.4 miles of the project from RP 0.0 to RP 3.4 (Sta. 1+09 to 180+02) has an undivided four-lane interstate typical section consisting of 4 – 12-ft lanes, a 10-ft flush median, and 2 – 10-ft shoulders. For about 600 feet at the Lookout Pass Interchange the shoulders are 14-ft wide. The median has concrete barrier installed throughout the section and varies between tall and standard height. In addition to the Lookout Pass Interchange bridge crossing over I-90, this section has a bridge crossing over the old Northern Pacific railroad grade at RP 1.9 (Sta. 105+45) and crosses the St. Regis River twice using large culverts. There are ten horizontal curves and four vertical curves in the first section.

The section of Interstate from RP 3.4 to RP 4.8 (Sta. 180+02 to 257+85) is divided into two independent alignments, eastbound and westbound. The typical section for both the eastbound and westbound sides is 2 – 12-ft lanes, a 4-ft inside shoulder, and 10-ft outside shoulders. There is roughly a 200-ft wide median between the two alignments through most of this section. The median has a mixture of open grassy and forested areas with mature trees. There is one authorized-vehicle-only turnaround at RP 4.2 (Sta. 222+85). Chippy Creek runs in the median from RP 3.8 to RP 4.3 (213+69 to 227+98). This section also includes the Dena Mora Rest Area at RP 4.7 (Sta. 254+00). There is a westbound chain-up area from RP 3.5 to RP 3.9 (Sta. 191+68 to 200+00) and an eastbound chain removal area from RP 4.4 to RP 4.6 (Sta. 238+05 to 248+36). There are three horizontal curves for both eastbound and westbound. There are four vertical curves and one VPI for eastbound and five vertical curves for westbound. This divided section ends within the middle of a horizontal and vertical curve for both alignments.

The last section of I-90 from RP 4.8 to RP 5.7 (Sta. 257+85 to 300+38) is an undivided alignment with 4 – 12-ft lanes, a 10-ft flush median, and 2 – 10-ft outside shoulders. The median has concrete barrier installed throughout the section and varies from tall to standard height. This section ends at the Taft Interchange and has two bridges. One bridge crosses over the old Northern Pacific railroad grade at RP 5.1 (272+69) and the other bridge is the I-90 overpass at the Taft Interchange (Sta. 300+38).

Traffic Data

RP 0.0 to RP 5.7	
2020 AADT	7,500 – Present
2023 AADT	7,770 – Letting
2043 AADT	9,860 – Design
DHV	1,620
T	28.3%
EAL	1,886
AGR	1.2%

Crash Analysis

A safety analysis was completed on I-90 from RP 0.0 to RP 5.7 for the 5-year period from January 1, 2012, through December 31, 2016. The analysis evaluated the project from a corridor-wide perspective. The entire project limits were evaluated using the safety performance functions (SPFs) and Level of Service of Safety (LOSS) models developed for rural mountainous 4-lane divided freeways. Non-intersection/non-interchange related crashes were utilized for this analysis.

Montana Highway Patrol records show 104 total crashes along this section of roadway during this time frame. Of the total crashes, 102 were non-junction crashes, one crash was coded as an intersection related, and one crash was coded as an entrance/exit ramp crash. The non-junction crashes included one fatal crash, 12 incapacitating injury crashes, 10 non-incapacitating injury accidents, 12 possible injury crashes, 63 property-damage-only crashes, and four crashes were coded as “unknown” severity. The crash patterns observed include: injury accidents, two vehicles, on road, concrete barrier, fixed objects, snow sleet or hail, snowy road, and icy road. There is also a concentration of wild animal crashes in the vicinity of RP 4.0, which is the section of I-90 that is divided with a wide forested median and does not have median concrete barrier rail as in the undivided sections.

Recommendations:

Based on the scope of this project and the crash analysis, it is recommended that linear delineation be installed on the eastbound curve at RP 5.0 and upgraded for westbound traffic to address a higher severity crash trend through this curve. Additional linear delineation of the outside of curves should be considered throughout the project limits.

Major Design Features

a. **Design Speed.** A 50 mph design speed is recommended for Rural Freeway (NHS – Interstate) in mountainous terrain and will be utilized for the project. The existing posted speed is 55 mph from the beginning of the project at Sta. 1+09.45 to Sta. 7+26. The speed limit from Sta. 7+26 to the end of the project at the Taft Interchange is 70 mph and 65 mph for trucks.

b. **Horizontal Alignment.** The proposed horizontal alignment perpetuates the existing roadway geometry and footprint to the extent practicable and will tie into existing structures, which are to remain in place. The project includes 12 horizontal curves in the undivided sections with radii ranging from 1,100-ft to 5,730-ft, and 4 horizontal curves in the EB direction and 3 in the WB direction in the divided section with radii ranging from 1,627-ft to 11,460-ft. Superelevation will be adjusted at 17 of the 19 horizontal curves to meet current design standards. Existing spiral curve lengths do not equal superelevation runoff lengths per current MDT standards but are proposed to remain as-is to best-fit the existing roadway footprint. The horizontal alignments for the Lookout Pass Interchange and Taft Interchange ramps will match existing as these ramps are limited to a mill and overlay.

c. **Vertical Alignment.** The vertical alignment will perpetuate existing conditions to limit the roadway reconstruction footprint. Minor profile grading adjustments will be implemented to match existing grade at bridge tie-ins and to avoid slope grading issues observed at the proposed outside edge of pavement. The maximum grade on the project occurs from Sta. 62+80 to 123+50 at 6.021%, which matches the existing condition at this location. The vertical alignments for the Lookout Pass Interchange and Taft Interchange ramps will match existing as these ramps are limited to a mill and overlay.

d. **Typical Sections.** The proposed finished top width of I-90 will match existing and consist of 10-ft outside shoulders, 2 – 12-ft lanes, and a 10-ft flush median in the undivided sections, and 10-ft outside shoulders, 2 – 12-ft lanes, and 4-ft inside shoulders at the divided sections. Pullout, chain-up and chain removal areas will be perpetuated and will match existing conditions.

   The Lookout Pass Interchange, Dena Mora Rest Area and Taft Interchange ramps will match existing and consist of 6-ft outside shoulders, 15-ft lane (Dena Mora Rest Area and Taft Interchange) or 16-ft lane (Lookout Pass Interchange) and 4-ft inside shoulders.

e. **Surfacing.** The Preliminary Geotechnical Investigation and Pavement Assessment evaluated the existing pavement and subgrade in December 2020. Investigation borings obtained in the summer of 2020 indicate that the existing roadway subgrade generally consists of competent sand and gravel fill with good density. The subgrade properties of the soils encountered were predominantly A-1-a and A-1-b type soils, with a corresponding resilient modulus of about 22,000 psi, which are used in the proposed PCCP pavement section design models. Preliminary PCCP pavement design was performed according to MDT's Pavement Design Manual for New and Reconstructed Rigid Pavement for both 30-year and 40-year design life.

   The proposed reconstruction pavement section consists of 0.83-ft of PCCP over 0.5-ft crushed aggregate course. The existing chain-up and removal areas will be reconstructed utilizing the recommended PCCP pavement section. The existing pullout areas along I-90 will include a 0.20-ft mill and overlay and tie into the roadway reconstruction at the edge of the new PCCP, outside the 10-ft shoulder. The surfacing wedge outside the PCCP limits will be shoulder gravel. Where new concrete barrier is recommended on the outside shoulder, the surfacing below the barrier will consist of 4-in concrete over 1-ft of crushed aggregate course. The ramps at Lookout Pass and Taft Interchanges will receive a 0.20-ft mill and overlay.

f. **Grading.** Grading along the project will consist of removing the existing plant mix surfacing and crack and seated PCCP pavement section down to the subgrade to construct the new PCCP pavement section. Additional excavation will be required to construct the proposed storm drain system and accommodate culvert replacements. Additional information on the drainage items are included in the Hydraulics Section.

g. **Slope Design.** The proposed slope design for the project is to match existing conditions and provide a 4-ft wide ditch in cut sections. Fill slopes will tie into existing slopes in an effort to reduce the construction footprint for the project. Slope stabilization and major excavation are not included.

h. **Geotechnical.** The Preliminary Geotechnical investigation evaluated the geotechnical characteristics of subsurface soils near existing culverts and proposed stormwater detention locations to aid in the design of potential improvements. Five boring locations were identified based on culvert size and location and three borings were taken near stormwater detention areas. Boring logs were provided as part of the Preliminary Geotechnical Culvert Investigation Report as well as corrosion test results.

Additional geotechnical investigation will be completed as the design progresses in order to finalize roadway drainage requirements such as edge drains. Rockfall hazard mitigation will not be evaluated at this time.

i. **Hydraulics.** The project includes mainline culvert crossings, storm drain infrastructure, and floodplains. The area is subject to significant snowfall (typically exceeds 400 inches annually at Lookout Pass) which contributes to drainage challenges.

The project includes minor drainage culverts (42 inches and smaller) and major drainage culverts (48 inches and larger), with multiple mainline culvert crossings located in deep fill locations (greater than 15 feet of fill). The design of culvert replacements in deep fill locations will reference MDT's updated Hydraulics Manual. Where possible, culverts located under the Frontage Road will not be included in the project. All mainline culvert crossings, except for major culvert crossings in deep fill locations, will be replaced with minimum 30-inch culverts. Due to the corrosive nature of the site and heavy salt operations, all proposed crossings installed using an open-cut method will consist of reinforced concrete pipe (RCP). Where mainline culvert crossings outfall to steep slopes, spillway assemblies with down drains will convey flow to the toe of the slope. Alternative pipe materials determined in accordance with MDT's updated hydraulics manual will be considered for down drains to facilitate installation on steep slopes. Culvert outlet protection and/or velocity dissipation devices will be incorporated at the outfall of down drains. Multiple 30-inch mainline culvert crossings have end treatments located within the clear zone. The incorporation of safety end sections will be considered while taking into consideration a potential increase in maintenance and corrosion due to salt. Five major culvert crossings are located in deep fill locations as follows:

- Station 29+24: 48-inch CMP (unnamed drainage)
- Station 70+62: 48-inch CMP (unnamed drainage)
- Station 93+82: 180-inch SSPP (St. Regis River crossing)
- Station 157+90: Double barrel 108-inch SSPP (St. Regis River crossing)
- Station 280+43: 48-inch CMP (unnamed drainage)

The three 48-inch culvert crossings are proposed to be rehabilitated (e.g., slip lining or cured-in-place pipe (CIPP) liners), rather than replaced due to the deep fills and extra conveyance capacity exhibited at these locations. D-meter readings will be completed as part of PIH development to determine final recommendations. For the two St. Regis River crossings, both are located within a FEMA regulatory floodplain associated with the St. Regis River and will be rehabilitated in place, with current considerations consisting of slip lining and an in-place installation of a concrete invert. No stream channel impacts are proposed for the two St. Regis River crossings.

The majority of the existing storm drain infrastructure within the project limits will be removed and replaced with a new storm drain system. Where possible, existing infrastructure will be left in place. New storm drain infrastructure will include drop inlets, median inlets, and storm drain piping. Where storm drain pipes outfall to steep slopes, spillway assemblies with down drains will be used (see above for details). Sediment basins will be incorporated where practicable along the Project to limit sediment transport offsite. Pavement edge drains are proposed along the Project to assist with the removal of water from the pavement section and promote pavement longevity. Edge drains will be integrated into the storm drain system facilities as design progresses.

Four bridges are located within the Project limits as described below. New embankment protectors are proposed for the Lookout Pass Interchange Structure. For the eastbound travelled way for the 5M E Lookout Pass Structure, if allowable spread requirements across the bridge cannot be met along the inside shoulder, a new bridge scupper may be added.

Near Lookout Pass, an existing CMP flume is present on the north side of I-90. The flume extends into Idaho, and collects runoff from the hillside, which also includes springs, and conveys runoff to a 48-inch mainline (broken-back) culvert crossing under I-90, which is likely to be replaced in-kind as part of the project. The flume is in poor condition and options to rehabilitate or replace the flume will be evaluated as design proceeds.

j. Permanent Erosion and Sediment Control (PESC) Features. Disturbed areas will be replanted with native grasses. Recommended PESC features for the project include ditch blocks, embankment protectors (both for mainline culvert crossings, spillway down drains, and bridge drainage), drainage chutes, sediment basins, and culvert outlet protection and velocity dissipation devices. Additional PESC features anticipated to be incorporated as design progresses include check dams and ditch linings. As design continues, required PESC features will be further evaluated and proposed, as necessary.

k. **Bridges.** There are four bridges within the project limits:

Structure Name	Identification No.	Length	Width	Remarks
Lookout Pass Interchange	L31174000+02001	274.9’	40.2’	Over I-90, Min. Clearance 17.41’
1.9M E Lookout Pass	I00090001-09821	157.6’	88.3’	
5M E Lookout Pass	I000900005+01481	304.4’	83.9’	68% Skew
Taft Interchange	I000900005+06861	133.0’	82.0’	

Bridge work will be limited to deck sealing at all four structures and possibly the addition of a new bridge scupper for the 5M E Lookout Pass Structure. Horizontal and vertical alignments will tie into the existing bridge approaches.

l. **Safety Enhancements.** Roadway lighting will be upgraded to meet current MDT Highway Lighting Design Standards the chain-up/removal areas. Additional signing will also be installed along the chain-up/removal areas to help inform drivers of the length of the pullout area. By adding chain-up/removal length, it will help increase the utilization of the full paved area. Roadway lighting will also be upgraded at the Lookout Pass Interchange to increase safety and awareness for drivers accessing the ramp and merging onto the interstate.

Curve warning signs and chevrons will be updated to meet current MDT standards at the curve near RP 5.0 to help address crash trends that have been identified at this location. New lineal delineation will also be placed where concrete barrier is proposed on both the inside and outside of the curve to help guide drivers through the horizontal curve. Wildlife crossing signs will also be considered between RP 3.3 and 5.1 to address the wildlife-vehicle collision crashes along this stretch divided interstate.

m. **Context Sensitive Design.** No specific context sensitive design issues are anticipated. The project will be designed with the intent of minimizing impacts as much as practicable in order to replace the asphalt pavement with a new concrete roadway. Refer to the Environmental section of the report for other context sensitive design considerations including wildlife accommodations.

n. **Traffic.** The existing pavement marking layout will be perpetuated and signing and delineation will be upgraded to meet current design standards. The conduit and wiring to the existing Variable Message Sign (VMS) at the Lookout Pass Interchange will be replaced due to the excavation required for the reconstruction of the eastbound lanes. New roadway lighting is also proposed on the Lookout Pass Interchange ramps to improve sight distance and overall safety of the interchange. Roadway lighting along the chain-up and removal areas

will also be upgraded with new conduit and LED fixtures.

o. **Miscellaneous Features.**
Rumble Strips: Shoulder rumble strips will be installed with this project.

Guardrail: Guardrail will be placed where warranted due to steep fill slopes and obstructions within the clear zone. The existing guardrail will be updated to the new MASH standards.

Concrete Barrier Rail: New concrete barrier rail will be place where warranted. The existing 2-loop CBR will be replaced with 3-loop CBR throughout the project limits. The existing median concrete barrier will be replaced with new tall concrete barrier in the undivided interstate sections except in areas where emergency turnarounds are being perpetuated. Standard concrete barrier will be used adjacent to the emergency turnarounds in order to maintain sight distance for vehicles utilizing the turnaround. The base width of the new tall concrete barrier is 2'-8" as compared to the standard concrete barrier width of 2-ft. The additional barrier width will result in an inside shoulder width of approximately 3.7-ft, which is less than the 4-ft standard for interstates. Drainage patterns will be evaluated as part of the concrete barrier placement and the standard scupper will be eliminated in order to convey surface drainage to the new inlets.

RWIS: An existing Roadway Weather Information System (RWIS) with cameras is located at RP 0.2. The RWIS sensors will be removed and replaced as part of the project.

Chain-up/removal areas: The chain-up area is located along the outside westbound shoulder from Sta. 191+68 to 206+99 and the chain removal area is located along the outside eastbound shoulder from Sta. 238+00 to 248+36. These areas have an existing surfacing section that consists of 0.65-ft of PMS and 0.42-ft of crushed aggregate course with an average 15-ft of additional finished top width beyond the outside paved shoulder. The chain-up/removal areas will be reconstructed with PCCP as part of this project.

Pullouts: The pullout areas are located from Sta. 31+41 to 35+39 (EB), Sta. 87+96 to 89+87 (WB) and Sta. 125+58 to 128+78 (EB). The existing surfacing is made up of 0.20-ft of PMS over 1-ft of crushed aggregate course. These three areas will remain in place and receive a 0.2-ft mill and overlay as part of this project.

Dena Mora Rest Area: The rest area facilities are located on both sides of the interstate. The rest area was rebuilt, and the parking areas expanded in 2003 as part of the IM 90-1(138)5 project [UPN 3206]. The asphalt surface ramps and parking areas were last chip sealed in 2015. No further improvements will be made with this project.

p. **Pedestrian/Bicycle/ADA**. There are no dedicated pedestrian or bicycle facilities within the project. The 10-ft outside shoulders can accommodate bicycle traffic. Due to the nature of this reconstruction project, no new accommodations will be added.

Design Exceptions and Baseline Variances
No design exceptions or baseline variances are identified at this time. Context Specific Criteria has been documented in previous sections of the report.

Right-of-Way
No new right-of-way acquisition, easement or construction permits are anticipated. The existing right-of-way limits will be reproduced based on as-built plans and provided for information only on the plans.

Currently no funds are programed for right-of-way. Modification to this amount is unnecessary at this time.

Access Control
The interstate is a full access-controlled facility. Potential access from the Frontage Road near the Dena Mora Rest Area will be evaluated and access control fence will be added as necessary.

Utilities/Railroads
There are no railroads in the vicinity of the project and no railroad involvement is anticipated.

Existing utilities include fiber optic cable and overhead transmission power lines near the Idaho border. Underground power also exists along the roadway. The VMS at Lookout Pass has power supplied to it under the eastbound lanes. The Dena Mora Rest Area also has underground power and sanitary sewer located under I-90 connecting the two facilities. The existing luminaires along the chain-up and removal area also have underground power that will be replaced as part of this project.

Currently no funds are programed for IC. IC funds will need to be programmed once utility conflicts have been identified.

Maintenance Items
At this time, it is not anticipated that specific work will be required by MDT Maintenance forces as part of the project. Maintenance will receive the salvaged barrier rail and millings that are not being used for this project.

The project team met with MDT Maintenance staff in July 2021 to discuss challenges along this stretch of I-90. Due to the mountainous terrain, snow removal is prevalent in this area. Sediment accumulation due to standard snow removal practices causes drainage issues by clogging scuppers, culverts, and other inlet structures. The proposed drainage and roadside barrier systems will take this into consideration as the design progresses.

Environmental Considerations
The proposed project was approved by MDT and FHWA as a categorical exclusion on March 16 and 18, 2022, respectively, under the provisions of 23 CFR 771.117(c)(26) and significant impacts were not identified.

Authorization under Section 404 of the Clean Water Act is anticipated due to in-stream work required for culvert replacements and likely unavoidable wetland impacts. An SPA 124 Notification through MT Fish, Wildlife, and Parks (FWP) is anticipated to be required for the project based on proposed improvements to the culverts carrying the St. Regis River, Chippy Creek, and Mephisto Creek. Stream mitigation requirements are not anticipated for the project. Unavoidable wetland impacts are anticipated due to the proximity of wetlands immediately adjacent to the highway where potential grading may occur. The final design process will avoid and minimization wetland impacts to the extent possible. Requirement for compensatory mitigation will be determined during final design and the permitting phase for the project. Additional permits are anticipated to be required (i.e., 318 Authorization, MPDES) by the contractor

The Preliminary Biological Assessment rendered a "May Affect" determination for Canada lynx and grizzly bear. Based on the "May Affect" determination for these two species, a Biological Assessment will be prepared, and a final determination of effect will be made at a later phase in project development in coordination/consultation with the USFWS. Formal consultation with the USFWS is anticipated. The approved environmental document will be reevaluated following completion of consultation with the USFWS.

No new right-of-way is required to construct the project. No impact on any Section 4(f)/6(f) resource or historic/archaeological resource is anticipated to occur.

Standard Environmental Specifications and Special Provisions will be required for this project. They include:

1. Work In Bear Habitat Standard Specification (Subsection 208.03.4E)
2. Migratory Bird Treaty Act Compliance - Vegetation Removal Standard Specification (Subsection 208.03.4A(1))
3. Storm Water Permitting Requirements Under Montana Pollutant Discharge Elimination System (MPDES) - 208-6

A Wildlife Accommodation Recommendation Memo (WARM) was prepared for the project. A Wildlife Accommodation Decision Report (WADR) will be developed during final design. Recommendations

provided in the WARM are summarized below:

- **Wildlife Guide Fence**. Location includes approximately one-half mile each side of existing bridges at RP 1.9 and 5.2. The existing highway corridor is currently unfenced and coordination with the USFS will be important moving forward. MDT has standard design details available (Section 607) for wildlife guide fence and no additional research is warranted. Wildlife fence presents challenges with regard to installation and maintenance that would need to be discussed with MDT maintenance crews.
- **Wildlife Crossing Signs**. For this recommendation, a single wildlife crossing sign with yellow flashing lights would be installed for eastbound traffic near RP 3.3 and for westbound traffic near RP 5.1. Coordination with local biologists from the USFS and FWP as well as coordination with MDT maintenance staff would be required to dial in the best specific location for the proposed signs on both ends of the divided corridor. Power supply for flashing yellow lights would be a critical design and maintenance consideration moving forward with solar power being the anticipated power source. MDT has standard design details available (Section 619) for wildlife crossing signs and no additional research is warranted.
- **Upsized Culverts**. Location varies over the length of the project. The project corridor contains numerous cross drains and drainage culverts of various size (24” to 48”) that will be replaced or rehabilitated in place as part of the proposed project. An opportunity may exist to increase the size of one or more of these culverts within the project limits to accommodate the movement of wildlife up to the size of an adult deer (84” to 108”). If a larger size diameter is not feasible, upsizing to a 54” culvert would allow for passage of smaller animals. However, opportunities for this accommodation are severely limited by a multitude of constructability challenges. MDT has standard design details available (Section 603) for all culvert types and sizes and no additional research is warranted. Further coordination with the USFS and FWP is encouraged and will help determine the level of support from the agencies for this type of accommodation. Additional design team coordination is necessary to identify specific locations where this accommodation is feasible. If no locations are identified, the accommodation will be dropped from consideration and documented in the WADR.

Energy Savings/Eco-Friendly Considerations

MDT will salvage the millings and any removed concrete barrier rail from this project for future maintenance activities.

Experimental Features and Proprietary Products

There are no experimental features or proprietary products identified for this project.

Work Zone Safety and Mobility

At this time, Level 1 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 Transportation Operations (TO) component and a limited Public Information (PI) component to address interchange ramp closures and wide load detours will also be included in the plan package. These issues are discussed in more detail under the Traffic Control and Public Involvement sections.

Other Projects

There are two other projects planned in the Lookout Pass to Taft area.

- UPN 9432000, Dena Mora Rest Area Evaluation, I-90 RP 4.4 to 4.8, Wastewater Study (Const. Date TBD)
- UPN 9366000, SF 169 – Mineral Cnty Sfty Imprv, I-90, RP 4.7 to 4.8, Curve Signing (Const. Date TBD)

There are several other projects planned along the interstate in Mineral County. These projects will be evaluated in order to identify construction traffic impacts along the corridor and opportunities to tie projects when the schedule is more definite.

Traffic Control

Traffic will be maintained during construction of the project with appropriate crossover detours and signing in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and MDT Standard Detailed Drawings. The work zone will require traffic to be merged into one travel lane in each direction and all traffic will be detoured onto one half of I-90 to allow for the other half to be constructed. The traffic

will then be switched over and detoured on the newly constructed side to allow for room to construct the other half of the project.

Four crossover locations have been identified for the project:

- Crossover 1: RP 73.80 (ITD) Closed Median Crossover (west of Lookout Pass Interchange)
- Crossover 2: RP 3.40 Closed Median Crossover
- Crossover 3: RP 4.90 Closed Median Crossover
- Crossover 4: RP 5.8 Closed Median Crossover (East of Taft Interchange)

Coordination with Idaho Transportation Department (ITD) will be required to finalize the crossover location on the Idaho side of Lookout Pass to obtain permission to construct and remove the detour.

Wide loads will be staged or piloted through the project construction site at specific times throughout the week. Additional coordination on wide loads will be necessary as the project develops. An on-call or standby tow truck may also be considered at the Lookout Pass Interchange during construction to aid in moving disabled vehicles and restore traffic operations.

Intelligent Transportation Systems (ITS) Features

There is an existing overhead Variable Message Sign (VMS) located at the top of Lookout Pass at RP 0.03 for eastbound traffic. The sign pole is located within the median concrete barrier rail. The pole will need to be removed and replaced as part of the project.

Additional ITS solutions are being considered at the chain-up and removal areas to help inform drivers of the extents of the pullout area to reduce lane blockage on the interstate. This will likely consist of flashing lights at the end of the pullout area or lighted overhead signs documenting the remaining length of the pullout.

Public Involvement

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

A Public Involvement Plan (PIP) has been completed for the project. A project website has also been created and includes a project logo, map, fact sheet, project photo and web content.

Individual stakeholder meetings will be held between AGR and PIH to inform and educate the public about the project. Stakeholders include United States Forest Service, ITD, Mineral and Shoshone (ID) counties, emergency officials, heavy truck traffic, and recreational users and local interest groups. No open house public meetings are scheduled for the project as this time.

Updates during construction will be important in order to identify lane closures and detours for users. The project team will continue to coordinate with ITD and other key stakeholders to identify any events or recreational access in the area that may be impacted during construction. Crashes or disabled vehicles along I-90 will require quick attention in order to keep traffic moving when traffic is limited to one lane in each direction.

Construction Cost Estimate

A preliminary cost estimate was prepared for the project at PFR. The project total CN + CE was $37,261,688 including INF + IDC. The increase in construction cost is due to a concrete overlay-type scope which has been modified to a full reconstruction scope. An increased traffic control estimate, unit price for earthwork and concrete pavement, and overall higher percentage estimates for CE and mobilization were also a factor. The AGR project total CN + CE was $58,853,8708 including INF + IDC. The increase in the SOW estimate is due to splitting of CN funds from IM to IM and NHFP.

	Estimated cost	Inflation (INF) (from PPMS)	TOTAL costs w/INF + IDC (from PPMS)
NHFP CN	**$11,861,000**	**$1,926,707**	**$ 14,356,986**
IM CN	**$36,069,000**	**$3,824,548**	**$ 43,659,234**
TOTAL CN	**$47,930,000**	**$5,751,255**	**$ 58,503,519**
CE (10%)	**$4,793,000**	**$575,125**	**$ 5,850,351**
Project TOTAL from all of the funding types above:			
Project TOTAL CN+CE	**$52,723,000**	**$6,326,380**	**$ 64,353,870**

The estimate above includes $*2,000,000* for traffic control, 20% allowance for contingency, and 10% 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
HDR is completing Preliminary Engineering activities. Scoping of phase two is currently taking place and PE will be evaluated at that point. At this time 50% of current PE has been expended.

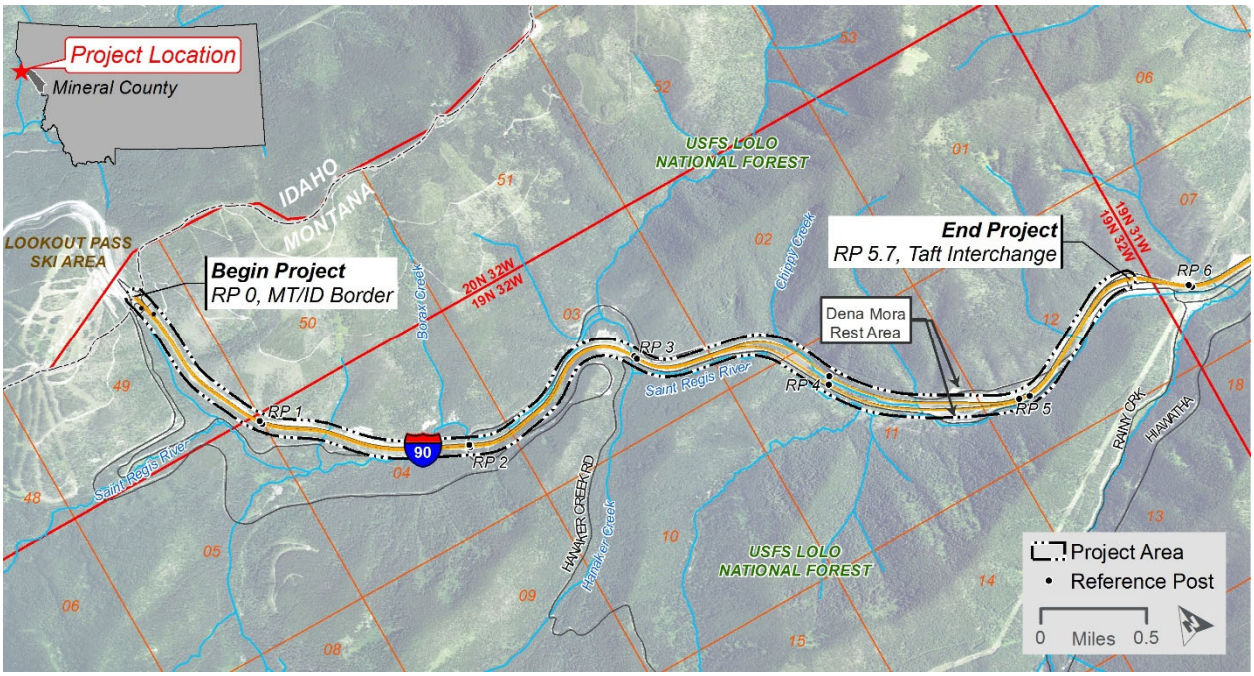
Project and Risk Management
The project is being designed by the consultant HDR. The Consultant Design Project Manager is Ben Schendel. This project is not considered a Project of Division Interest (PoDI) by FHWA.

Risk to this project include a tight design schedule with an importance to the District for project delivery based on funding available.

Ready Date
The current ready date is October 18, 2023. The project has a letting date of March 01, 2024 and plans to use 2024 and 2025 funds for the construction costs. At this time, design issues that may delay the design timeline are not anticipated.

The current PE End Date is 05/31/2025 as listed in the PE Obligation and Expenditures Report. A review of the remaining EPS schedule, critical path activates, and target letting date indicates that a modification to the PE End Date isn't needed.

Site Map
A project site map is attached.



cc:

Headquarters

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Dave Hedstrom, Hydraulics Engineer
Bill Weber, Supervisor, Photogrammetry & Survey
Stanton Brelin, Traffic Operations Engineer
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