MDT
Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001

Michael T. Tooley, Director
Steve Bullock, Governor

November 18, 2013

Kevin L. McLaury
Division Administrator
Federal Highway Administration
585 Shepard Way, Suite 2
Helena, MT 59601-9785

RECEIVED
NOV 25 2013
FHWA
MONTANA DIVISION

Attention: Gene Kaufman

Subject: Programmatic Categorical Exclusion (PCE) Concurrence Request
East of Thompson River - East
STPP 6-1(87)57
CN 4039001

Dear Kevin McLaury:

This submittal requests approval of the above-mentioned proposed project as a Categorical Exclusion under the provisions of 23 CFR 771.117(d) and the Programmatic Agreement as signed by the Montana Department of Transportation (MDT) and the Federal Highway Administration (FHWA) on April 12, 2001. This proposed action also qualifies as a Categorical Exclusion under ARM 18.2.261 (Sections 75-1-103 and 75-1-201, MCA).

The following form provides the documentation required to demonstrate that all of the conditions are satisfied to qualify for a PCE. A copy of the Alignment and Grade Report is attached. In the following form, "N/A" indicates not applicable; "UNK" indicates unknown.

NOTE: A response in a large box will require additional documentation for a Categorical Exclusion request in accordance with 23 CFR 771.117(d).

	YES	NO	N/A	UNK
1. This proposed project would have (a) significant environmental impact(s) as defined under 23 CFR 771.117(a).	☐	☒	☐	☐
2. This proposed project involves (an) unusual circumstance(s) as described under 23 CFR 771.117(b).	☐	☒	☐	☐
3. This proposed project involves one (or more) of the following situations where:				
A. Right-of-Way, easements, and/or construction permits would be required.	☒	☐	☐	☐

	YES	NO	N/A	UNK
1. The context or degree of the Right-of-Way action would have (a) substantial social, economic, or environmental effect(s).	☐	☒	☐	☐
2. There is a high rate of residential growth in this proposed project's area.	☐	☒	☐	☐
3. There is a high rate of commercial growth in this proposed project's area.	☐	☒	☐	☐
4. Work would be on and/or within approximately 1.6 kilometers (1± mile) of an Indian Reservation.	☐	☒	☐	☐
5. There are parks, recreational, or other properties acquired/improved under *Section 6(f)* of the *1965 National Land & Water Conservation Fund Act* (16 USC 460L, *et seq.*) on or adjacent to proposed the project area.	☐	☒	☐	☐
The use of such *Section 6(f)* sites would be documented and compensated with the appropriate agencies. (*e.g.*: MDFWP, local entities, etc.).	☐	☐	☒	☐
6. Are there any sites either on, or eligible for the National Register of Historic Places with concurrence in determination of eligibility or effect under *Section 106* of the *National Historic Preservation Act* (16 USC 470, *et seq.*) by the State Historic Preservation Office (SHPO), which would be affected by this proposed project.	☐	☒	☐	☐
7. There are parks, recreation sites, school grounds, wildlife refuges, historic sites, historic bridges, or irrigation that might be considered under *Section 4(f)* of the 1966 *US Department of Transportation Act* (49 USC 303) on or adjacent to the project area.	☐	☒	☐	☐
a. The proposed project would not impact the site(s), so a 4(f) evaluation is not necessary.	☐	☐	☒	☐
b. De minimis finding(s) is/are necessary for this project.	☐	☐	☒	☐
c. "Nationwide" Programmatic *Section 4(f)* Evaluation forms for these sites are attached.	☐	☐	☒	☐
d. This proposed project requires a full (*i.e.*: DRAFT & FINAL) *Section 4(f)* Evaluation.	☐	☐	☒	☐
B. The activity would involve work in a streambed, wetland, and/or other waterbody(ies) considered as "waters of the United States" or similar (*e.g.*, "state waters").	☒	☐	☐	☐

	YES	NO	N/A	UNK
1. Conditions set forth in *Section 10* of the *Rivers and Harbors Act* (33 USC 403) and/or *Section 404* under 33 CFR Parts 320-330 of the *Clean Water Act* (33 USC 1251-1376) would be met.	☒	☐	☐	☐
2. Impacts in wetlands, including but not limited to those referenced under Executive Order (E.O.) #11990, and their proposed mitigation would be coordinated with the US Army Corps of Engineers and other Resource Agencies (Federal, State and Tribal) as required for permitting	☒	☐	☐	☐
3. A 124SPA Stream Protection Authorization would be obtained from the MDFWP?	☐	☐	☒	☐
4. There is a delineated floodplain in the proposed project area under FEMA's Floodplain Management criteria.	☐	☒	☐	☐
The water surface at the 100-year flood limit elevation would exceed floodplain management criteria due to an encroachment by the proposed project.	☐	☐	☒	☐
5. Tribal Water Permit would be required.	☐	☐	☒	☐
6. Work would be required in, across, and/or adjacent to a river which is a component of, or proposed for inclusion in Montana's Wild and/or Scenic Rivers system as published by the US Department of Agriculture, or the US Department of the Interior.	☐	☒	☐	☐
The designated National Wild & Scenic River systems in Montana are:				
a. Middle Fork of the Flathead River (headwaters to South Fork confluence).	☐	☐	☒	☐
b. North Fork of the Flathead River (Canadian Border to Middle Fork confluence).	☐	☐	☒	☐
c. South Fork of the Flathead River (headwaters to Hungry Horse Reservoir).	☐	☐	☒	☐
d. Missouri River (Fort Benton to Charles M. Russell National Wildlife Refuge).	☐	☐	☒	☐
In accordance with *Section 7* of the *Wild and Scenic Rivers Act* (16 USC 1271 – 1287), this work would be coordinated and documented with either the Flathead National Forest (Flathead River), or US Bureau of Land Management (Missouri River).	☐	☐	☒	☐

	YES	NO	N/A	UNK
C. This is a "Type I" action as defined under 23 CFR 772.5(h), which typically consists of highway construction on a new location or the physical alteration of an existing route which substantially changes its horizontal or vertical alignments or increases the number of through-traffic lanes.	☒	☐	☐	☐
1. If yes, are there potential noise impacts?	☐	☒	☐	☐
2. A Noise Analysis would be completed.	☐	☐	☒	☐
3. There would be compliance with the provisions of both 23 CFR 772 for FHWA's Noise Impact analyses and MDT's Noise Policy.	☒	☐	☐	☐
D. There would be substantial changes in access control involved with this proposed project.	☐	☒	☐	☐
If yes, would they result in extensive economic and/or social impacts on the affected locations?	☐	☐	☒	☐
E. The use of a temporary road, detour, or ramp closure having the following conditions when the action(s) associated with such facilities:				
1. Provisions would be made for access by local traffic, and be posted for same.	☒	☐	☐	☐
2. Adverse effects to through-traffic dependant businesses would be avoided or minimized.	☒	☐	☐	☐
3. Interference to local events (*e.g.* festivals) would be minimized to all possible extent.	☒	☐	☐	☐
4. Substantial controversy associated with this pending action would be avoided.	☒	☐	☐	☐
F. Hazardous wastes /substances, as defined by the US Environmental Protection Agency (EPA) and/or the Montana Department of Environmental Quality (MDEQ), and/or (a) listed "Superfund" (under *CERCLA* or *CECRA*) site(s) are currently on and/or adjacent to this proposed project.	☐	☒	☐	☐
All reasonable measures would be taken to avoid and/or minimize substantial impacts from same.	☐	☐	☒	☐
G. The Stormwater Discharge conditions (ARM 17.30.1101-1117), including temporary erosion control features for construction would be met.	☒	☐	☐	☐
H. Permanent desirable vegetation with an approved seeding mixture would be established on exposed areas.	☒	☐	☐	☐

	YES	NO	N/A	UNK
I. Documentation of an "invasive species" review to comply with both EO #13112 and the *County Noxious Weed Control Act* (7-22-2152, MCA), including directions as specified by the county(ies) wherein its intended work would be done.	☒	☐	☐	☐
J. There are "Prime" or "Prime if Irrigated" Farmlands designated by the Natural Resources Conservation Service on or adjacent to the proposed project area.	☒	☐	☐	☐
If the proposed work would affect Important Farmlands, then a CPA 106 Farmland Conversion Impact Rating form would be completed in accordance with the *Farmland Protection Policy Act* (7 USC 4201, *et seq.*).	☒	☐	☐	☐
K. Features for the *Americans with Disabilities Act* (PL 101-336) compliance would be included.	☐	☐	☒	☐
L. A written Public Involvement Plan would be completed in accordance with MDT's Public Involvement Handbook.	☒	☐	☐	☐
4. This proposed project complies with the *Clean Air Act*'s *Section 176(c)* (42 USC 7521(a), as amended) under the provisions of 40 CFR 81.327 as it's either in a Montana air quality:				
A. "Unclassifiable/Attainment" area. This proposed project is <u>not</u> covered under the EPA's September 15, 1997 Final Rule on air quality conformity.	☒	☐	☐	☐
and/or				
B. "Nonattainment" area. However, this type of proposed project is either exempted from the conformity determination requirements (under EPA's September 15, 1997 Final Rule), or a conformity determination would be documented in coordination with the responsible agencies (Metropolitan Planning Organizations, MDEQ's Air Resources Management Bureau, etc.).	☐	☐	☒	☐
C. Is this proposed project in a "Class I Air Shed" under 40 CFR 52.1382(c)(2-4) and 40 CFR 81.417? (Northern Cheyenne, Flathead, and Fort Peck Indian Reservations; Glacier and Yellowstone National Parks; Anaconda-Pintlar, Bob Marshall, Cabinet Mountains, Gates of the Mountains, Medicine Lake, Mission Mountain, Red Rock Lakes, Scapegoat, Selway-Bitterroot, and U.L. Bend Wilderness Areas)	☐	☒	☐	☐
5. Federally listed Threatened or Endangered (T/E) Species:				
A. There are recorded occurrences and/or critical habitat in this proposed project's vicinity.	☒	☐	☐	☐

	YES	NO	N/A	UNK
B. Would this proposed project result in a "jeopardy" opinion (under 50 CFR 402) from the Fish & Wildlife Service on any Federally listed T/E Species?	☐	☒	☐	☐

The proposed project would not induce significant land use changes, nor promote unplanned growth. There would be no significant effects on access to adjacent property, nor to present traffic patterns.

This proposed project would not create disproportionately high and/or adverse impacts on the health or environment of minority and/or low-income populations (EO #12898). It also complies with the provisions of *Title VI* of the *Civil Rights Act* of 1964 (42 USC 2000d) under the FHWA's regulations (23 CFR 200).

In accordance with the provisions of 23 CFR 771.117(a), this pending action would not cause any significant individual, secondary, or cumulative environmental impacts. Therefore, the FHWA's concurrence is requested that this proposed project is properly classified as a Categorical Exclusion.

Susan Kilcrease, Date: 11/18/13
Susan Kilcrease - Missoula District Project Development Engineer
MDT Environmental Services Bureau

Concur Heidy Bruner, Date: 11/21/13
Heidy Bruner, P.E. - Engineering Section Supervisor
MDT Environmental Services Bureau

Concur [illegible], Date: 11/25/13
Federal Highway Administration

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

Attachment: Alignment and Grade Report (February 7, 2012)

Copy (w/o attach.):		
	Ed Toavs	Missoula District Administrator
	Paul Ferry, P.E.	Highways Engineer
	Tom S. Martin, P.E.	Environmental Services Bureau Chief
	Heidy Bruner, P.E.	Environmental Services Bureau
	Suzy Price	Contract Plans Bureau Chief
	Lisa Hurley	Fiscal Programming Section Supervisor
	Tom Erving	Fiscal Programming Section
	Robert Stapley	Right-of-Way Bureau Chief
	Susan Kilcrease	Environmental Services Bureau
	File	Environmental Services Bureau
	Montana Legislative Branch Environmental Quality Council (EQC)	

MASTER FILE COPY

Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Paul Ferry, P.E.
Highways Engineer

From: Damian Krings, P.E. DMK
Road Design Engineer

Date: February 7, 2012

Subject: STPP 6-1(87)57
East of Thompson River - East
UPN 4039001
Work Type 140/151 – Reconstruction and Major Rehabilitation w/o added capacity

Please Approve the Alignment and Grade Review for this project.

Approved _____ Date 2/9/12
Paul Ferry, P.E.
Highways 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:

Ed Toavs, District Administrator
Kent Barnes, Bridge Engineer
Tom Martin, Environmental Services Bureau Chief
Roy Peterson, Traffic and Safety Engineer
Paul Ferry, Highways Engineer
Lynn Zanto, Rail, Transit, & Planning Division Administrator
Jake Goettle, Construction Engineering Services Bureau
Matt Strizich, Materials Engineer
Robert Stapley, Right-of-Way Bureau Chief

cc:

Dawn Stratton, Fiscal Programming Section
Bill Squires, Project Design Manager, Missoula District
Damian Krings, Road Design Engineer

e-copies:

Jim Walther, Engineering, Preconstruction Engineer
Lesly Tribelhorn, Highways Design Engineer
Mark Goodman, Hydraulics Engineer
KC Yahvah, District Hydraulics Engineer
Bonnie Gundrum, Env. Resources Section Supervisor
Pat Basting, District Biologist
Susan Kilcrease, District Project Development Engineer
Danielle Bolan, Traffic Engineer
Ivan Ulberg, District Traffic Project Engineer
Kraig McLeod, Safety Management Engineer
Nigel Mends, Bridge Area Engineer, Missoula District
Matt Strizich, Materials Engineer
Dan Hill, Pavement Analysis Engineer
Bret Boundy, District Geotechnical Manager
Bryce Larsen, Supervisor, Photogrammetry & Survey
Marty Beatty, Engineering Information Services
Shane Stack, District Preconstruction Engineer
Scott Bunton, Engineering Cost Analyst
Jake Goettle, Construction Bureau – VA Engineer
Ben Nunnallee, District Projects Engineer
Darin Reynolds, District Materials Lab
Jack May, District Maintenance Chief
Philip Inman, R/W Utilities Section Supervisor
David Hoerning, R/W Engineering Manager
Greg Pizzini, Acquisition Manager
Joe Zody, R/W Access Management Section Manager
Paul Johnson, Project Analysis Bureau
Sue Sillick, Research Section Supervisor
Mark Keeffe, Bicycle/Pedestrian Coordinator
Alyce Fischer, Fiscal Programming
Dawn Stratton, Fiscal Programming
Paul Grant, Public Involvement Officer
Jean Riley, Planner
Bruce Sterling, MDFWP

Introduction

This project, East of Thompson River – East was originally within project STPP 6-1(87)56, Thompson River – East. That project was split into two separate projects in April 2009: Thompson River East – Bridge and Approaches [4039] and East of Thompson River – East [4039001]. The project was split to obtain funding for the bridge and adjacent road approaches sooner than if we had to wait to fund the entire project as a whole.

The Alignment and Grade office review was held on February 22, 2011 in Helena and in Missoula via Polycom. The field portion of the review was held on March 9, 2011. The following personnel attended the reviews:

Name	Title	MDT Office
Bill Squires	Missoula Area Engineer	Helena
David Holien	CE Specialist IV, Missoula Road Design	Helena
KC Yahvah	Missoula District Hydraulics Engineer	Helena
Tyrel Murfitt	Missoula District Geotechnical Engineer	Helena
Ben Nunnallee	District Projects Engineer	Missoula
Dean Jones	Operations Engineer	Missoula
John Benda	Engineering Project Manager	Missoula
*Shane Stack	District Preconstruction Engineer	Missoula
**Jeremy Terry	Lead Designer, Missoula Road Design	Helena
**Pat Basting	Biologist	Missoula
**Ray Sacks	Construction Reviewer	Missoula

*Attended office review only
**Attended field review only

Scope of Work

The proposed scope of work for this 2.2 mile long project is to pulverize and widen the first 0.85 miles of road and reconstruct the remaining 1.35 miles. The work will include grading, pulverization, retaining wall, slope stabilization, wildlife crossing, gravel, plant mix, drainage, guardrail, topsoil and seeding, striping and signing along with proper delineation.

There will be right-of-way acquisition, construction permits, and utility relocation required. A comprehensive railroad agreement will also be required between MDT and MRL.

The proposed finished top width is 32-ft. The design speed for the project is 55 mph, appropriate for a rural minor arterial in rolling terrain.

Project Location and Limits

The project is located on P-6 (MT 200) in Sanders County approximately 7 miles east of the city of Thompson Falls. MT 200 is classified as a rural minor arterial. The project starts at RP 56.9± and extends easterly 2.166 miles to RP 59.1± (Station 53+81.86 to 168+17.10).

The project connects to BR-STPP 6-1(87)56, Thompson River East – Bridge and Approaches [4039] on the west end. [4039] has a proposed letting date in February 2014. The road to the east of [4039001] was widened in 1999 under ER 6-1(78)59, MT 200 Road Repairs [3334]. That segment (RP 59.0± to 62.6±) is scheduled for a microsurfacing pavement treatment in 2014 under STPP 6-1(131)59, Eddy's Flat [7650000] in 2014.

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). An extensive Traffic Operations (TO) component and an extensive Public Information (PI) component to address wide load detours and temporary road closures will also be included in the plan package. These issues are discussed in more detail under the Traffic Control and Public Involvement sections.

Physical Characteristics

This section of road was built under two separate Forest Highway projects. The section from RP 56.2 to 57.8 was constructed under FHP 6 L in 1936. The section from RP 57.8 to 62.0 was built in 1936 under FHP 6 K.

Both projects were constructed to a 24-ft top paved width with 2" to 4" of plant mix surfacing over 5" to 8" of gravel base course. In 1949, both sections were overlaid with plant mix surfacing. Since then, the road has been maintained by Maintenance overlays and chip seals.

The terrain in this portion of the Clark Fork River valley varies from level to mountainous. The highway is constrained between high, steep talus slopes and some rock cuts to the north and the Montana Rail Link (MRL) tracks to the south from RP 58.0 to the end of the project. From RP 58.1 to RP 58.7 the distance between the centerline of the highway and the centerline of the tracks is 35-ft. And, the edge of the highway to the edge of the tracks is as close as 21 ft.

The existing horizontal alignment exceeds the criteria for a 55 mph design speed; the sharpest curve has a radius of 1,909-ft. There is one sag vertical curve that doesn't provide minimum desirable stopping sight distance. The sag is at RP 57.4 and provides SSD at 44 mph. The rest of the vertical alignment meets the design criteria for 55 mph. The maximum grade is a -6.00% grade at RP 57.8 and it is 1975-ft long.

TIS Roadlog indicates that the existing surfacing section consists of 0.17' of plant mix surfacing atop of 0.42' of gravel surfacing. The actual depth of existing plant mix mostly varies from about 0.30' to 0.40', with a few short isolated segments up to 0.60 deep'. The existing roadway is 24 feet wide, with 11-ft lanes and 1-ft. shoulders.

Horizontal Alignment

The proposed alignment described below surpasses the criteria for a 60 mph design speed, although we propose a 55 mph design speed:

From (Sta.)	To (Sta.)	Alignment Feature (radius)	Remarks
P.O.T. 53+81.86	S.T. 112+09.87	4,519' tangent; 2000'spiral curve RT	Follows PTW centerline along pulverization section (that ends at 98+49) and first curve of reconstruction section.
S.T 112+09.87	T.S. 121+82.61	tangent	Transitions from the PTW centerline to 2' RT of it.
T.S. 121+82.61	S.T 126+83.00	2,000'spiral curve LT	Transitions from 2' RT of PTW back to the PTW centerline.
S.T 126+83.00	P.C. 137+67.87	1,085' tangent	Transitions from PTW centerline to 4.5' left of it.
P.C 137+67.87	P.T. 144+92.54	6,500' simple curve RT	Transitions from 4.5' LT of PTW centerline back to the PTW centerline.
P.T. 144+92.54	P.T. 168+17.10	338-ft. tangent, 4,000' simple curve RT; 25-ft. tangent, 6,627' simple curve RT	Follows PTW centerline and connects to it at the end of project.

Vertical Alignment

The alignment described below meets the criteria for a 55 mph design speed except for nine consecutive grades ranging from -4.01% to -6.320% with a total effective length of about 2,360 feet:

From (Sta.)	To (Sta.)	Alignment Feature	Remarks
53+81.86	103+40.00	Multiple grades varying from +0.910% to -6.320%. VC's vary from 50' to 300'	Min. of 0.55' above and nominally parallel to existing profile along pulverization section (that ends at 98+49) and first vertical curve of reconstruction section.
103+40.00	108+40.00	500' sag VC, V=55mph, K=126	Transitions from near existing grade to a 1' grade raise and back to near existing grade
108+40.00	118+00.00	-1.984%	Slightly above existing grade
118+00.00	123+00.00	500' sag VC, V=75mph, K=210	Retaining wall begins at 122+82.61. Grade transitions from near existing to 2.6' above grade.
123+00.00	130+50.00	0.400%	Retaining wall section. Transition 2.6' to 5.4' grade raise
130+50.00	135+50.00	500' sag VC, V=75mph, K=220	Retaining wall section. Approx. 5.5' grade raise.
135+50.00	139+90.00	2.669%	Retaining wall section. Transitions from 5.5' to 1.4' grade raise.
139+90.00	147+90.00	800' crest VC, V=60mph, K=172	Transitions from 1.4' grade raise, to 0.8' cut, to near existing grade at the end of the vertical curve.
147+90.00	152+25.00	-1.979%	Transitions from near existing grade to 0.5'cut
152+25.00	153+25.00	100' sag VC, V=80mph, K=246	Transitions from a 0.5'cut to near existing grade
153+25.00	162+75.00	-1.572%	Closely follows existing ground. Approx. 1' lower than existing grade from 158+00 to 160+00
162+75.00	166+75.00	800' sag VC, V=80mph, K=292	Slightly above existing grade
166+75.00	168+17.10	-0.202%	Slightly above existing grade. Ties in with the existing grade at 168+17.10

Surfacing and Typical Section

Surfacing recommends 0.30' plant mix surfacing and 0.90' crushed aggregate course for the preliminary reconstruction surfacing section. For the pulverization surfacing section the preliminary recommendation is to place 0.25' of crushed aggregate course atop the existing pavement, pulverize to a depth of 0.75', and then place 0.30' plant mix surfacing. A seal and cover will be placed on all plant mix surfaces.

Surfacing design was based on 2006 traffic data projecting 178 ESALs and a subgrade with an R value of 30. Recommendation design life is 20 years in accordance with AASHTO design procedures.

Along the retaining wall section (Sta. 121+83± to 139+00 Rt) we are considering an 8" Portland cement concrete pavement (PCCP) atop 0.53' of crushed aggregate course instead of the standard plant mix/gravel section. The non-deflecting concrete barrier rail required at the edge of the retaining wall could be integrated into the PCCP, similar to a bridge deck. This would eliminate the need for a moment slab (see discussion under Bridge).

The construction cost estimates for the PCCP option vs. plant mix/moment slab option are similar, if work zone mobility and traffic control costs are not considered. However, with the moment slab option, two-way traffic could be provided along the westbound side of the subgrade while the moment slab and

concrete barrier rail are constructed along the eastbound lane. With the PCCP option, there would not be room to provide a 22' roadway (between temporary barriers) along the westbound subgrade while the PCCP was placed to the right of centerline.

We will evaluate the traffic control impacts and work zone mobility issues of the two surfacing options along this segment, and document our decision in the scope of work report.

Paul Ferry has granted an exemption for this project from the Roadway Decision Width Process. We pursued the exemption mainly because we just recently put the Eddy-East project [UPN 2014001] through the process and the decision for that project was to stay with the S.T.P. Route Segment Plan width of 32-ft. The Eddy-East project is of similar nature, on the same route, in proximity to this project, has similar traffic volumes, and has similar constraints. We feel that a 32-ft width is appropriate to maintain route continuity.

We propose to install lay-down curb and gutter along the westbound lane within the retaining wall section (Sta. 121+83± to 139+00). The curb-and-gutter section is needed to provide enough width to maintain a 32-ft. roadway through this constrained section.

Grading

The grading bid item will be unclassified excavation with a small amount of drill and blast rock excavation. There will be approximately 99,100 cubic yards (unadjusted), of unclassified excavation, and about 59,200 cubic yards of embankment (as compacted), leaving almost 40,000 cubic yards of excess. There appear to be limited opportunities to place the excess excavation within the proposed right-of-way.

The normal dirt excavation along most of the project is estimated to shrink 30% when placed in the embankments. The rock excavation (about 3,800 cubic yards) from Station 123+00± to 126+00± is estimated to swell 10% when placed in the embankments (a lower swell factor was used because we assume some shot rock will have to be wasted because it is too large to place in the embankment).

The preliminary earthwork run shows there will be balance points at Station 55+70± and Station 83+35±.

Hydraulics

There are a few cross drains on this project that we will either extend and reuse or replace depending on the Pipe Conditions Report. The District has requested we include one or more large wildlife crossings. We may need Hydraulic input on requirements of large culverts for the wildlife crossing structures. Hydraulic involvement may be needed to ensure that drainage does not adversely affect the railroad.

We'll need Hydraulic input on the drainage design for the drop inlets and drainage pipes for the laydown curb and gutter section between 122+82.61 to 138+50 left.

Bridges

We are considering the use of a moment slab with a concrete barrier rail on top of the retaining wall. Other states have successfully used this system in conjunction with walls as a way to provide a non-deflecting barrier on the edge of a wall.

We have some preliminary designs from other states, but we'll need Bridge involved to design the moment slab with the concrete barrier rail because it is a structural item. We'll be in contact with Bridge throughout the design of the moment slab with the concrete barrier rail.

We may require minor Bridge involvement if we opt for a full width PCCP roadway along the retaining wall section. We would specify a concrete barrier rail with details for reinforcement and connection to the road slab similar to the details used to connect CBR to a bridge deck.

Traffic
We will perpetuate access to the existing private property and MRL property, and provide two new accesses to State Lands property along the north side. Either a private approach or a farm-field approach will be built for each access. Some of the farm-field approaches will require grades as steep as 10%. There are no designated public road intersections within the project limits.

Intelligent Transportation Systems (ITS) Features
See discussion under Experimental Features.

Geotechnical Issues
The Geotechnical Section is heavily involved in investigating the existing somewhat complex geology along the project and in developing recommendations for the shrink and swell factors, retaining walls, pre-splitting, rockfall mitigation measures, backfill requirements, foundation design, and constructability issues.

The retaining wall will extend about 1,717' from Station 121+83 to 139+00 Right, and will be up to about 5.5-ft high. The retaining wall will be bid as a design and construct item. Geotech will provide the basic requirements for the wall system. Their preliminary findings indicate the facing will be a modular concrete gravity wall, with a drainage system behind it. The embankment behind the gravity wall may include a zone of a geosynthetically confined soil (GCS) composed of special backfill about 6 feet wide. Ideally, the zone of GCS will not be too wide to preclude two-way traffic along the westbound portion of the subgrade during GCS construction.

Geotech has already provided recommendations for locations and slope of a pre-splitting section from 123+00 to 126+60 Left which was critical for designing the current alignment. We'll have a ¼:1 pre-split slope from 123+00 to 124+40 and then transition to vertical pre-split at 124+90 to 126+60 Left. The ditch through this pre-split section varies from a 26-ft ditch for the ¼:1 pre-split to a 6-ft ditch for the vertical pre-split section.

There are some high and steep cut sections up to about a 1:1 cut slope from Station 144+50 to 148+00 Left that require Geotech investigation and recommendations.

Geotech will also provide recommendations and specifications for the mesh and rock bolts to be installed on the vertical pre-split rock cut and for the rockfall barrier system to be installed above the entire pre-split area.

We'll also need to coordinate with Geotech on the design of the wildlife underpass at Station93+76. The preliminary underpass size and type is a 20'7" x 13'2" x 90' SSPPA. However, a precast concrete arch or box should also be considered. In past projects we've given the contractor the option of what type of structure to use. We could use that approach for this wildlife underpass too. We'll need Geotech input on foundation requirements of the underpass.

Miscellaneous
We propose to include mailbox turnouts for the 3 approaches with mailboxes at Stations 63+07 LT, 70+78 RT, and 164+70 LT.

A turnout is proposed for bighorn sheep viewing at 74+75 LT. The preliminary turnout design is 350-ft long and 21-ft wide which is based on the design of a similar bighorn sheep viewing turnout that was built at RP 59.5 with the MT 200 Road Repairs project, ER 6-1(78)59, [UPN 3334].

We plan to perpetuate the two well used turnouts that are located at RP 58.2 LT and RP 58.8 LT, Station 120+00 and 152+00, respectively.

New metal guardrail is proposed where warranted at various locations throughout the project to shield obstacles. Preliminary calculations indicate we'll have 3 runs of guardrail totaling about 3,000-ft. We'll also have about 1,900' of either rockrail or concrete barrier rail on the left side through the retaining wall section. The rockrail/concrete barrier rail would be a barrier for the toe of the ditch slope which is in the clear zone, 14-ft from the ETW. Also, it would stop smaller sized rock debris from the talus slope above from rolling onto the road.

MRL has requested that a snow barrier fence be placed atop the concrete barrier rail along the right side for the entire length of the retaining wall (Station 121+83 to 139+00) to prevent snow and debris from being cast onto the railroad tracks. The original Weeksville – West plans (before the project split) included a detail for a snow barrier fence 3.5 feet high atop the CBR. The frame and fence fabric appear to be similar to standard chain-link fence.

We will evaluate a design that would essentially be a curtain suspended above and behind the CBR. We envision this design would deflect the snow and debris straight down after it goes over the CBR.

Design Exceptions

We will pursue a design exception for the series of grades ranging from 4.0% to 6.3% between Station 80+15 and 105+90. Maximum grade for a rural minor arterial in rolling terrain is 4%. Most of this segment is in the pulverize and widen section, where major profile revisions are not possible.

We will also pursue design exceptions along intermittent segments for v-ditches and fill slopes steeper than standard. Most of the exceptions will be pursued to avoid costly utility relocation, excavation of potentially unstable talus slopes, or impacts to the ditch adjacent to the railroad.

Right-of-Way

We have an easement from MRL railroad from approximately Station 104+00to the end of the project at 168+17.10. We will need to acquire additional easement from MRL on both sides of the road, except between about Station 121+00 to 141+00 LT where the highway easement equals the railroad R/W 200' left of the railroad.

The preliminary right-of-way plans indication acquisition will also be needed from three private parcels, one Forest Service parcel, and one State Lands parcel.

No access control is proposed.

Utilities

Utilities are present throughout the length of the project. There is underground fiber optic on the north side of the road that will need relocation. There are overhead transmission lines that cross at 85+22 and 87+85 that will not be affected.

The Yellowstone Pipeline, which is not currently being used, crosses under the highway at Station 82+29 about 6.7 feet below the proposed centerline, according to the SUE survey. We will have about a 3.7' cut at 82+29 to build the widening and ditch sections. With our current standard ditch design, we'll have 3.22' and 3.14' of cover over the pipe on the left and right, respectively after the new ditches are cut. The minimum clearance over the pipeline at this crossing is currently 6.0 feet.

There is an overhead fiber optic line on the left side of the roadway from approximately 97+00 to the end of the project at 168+19.06. We may need to move some of the power poles due to our widening and cut slopes. We'll be able to avoid some poles by steeping cut slopes. The power poles that we may need to move are at : 84+18 LT, 83+66 LT, 88+54 RT, 88+48 RT, 88+76 LT, 90+22 LT, 89+79 RT, 90+82 LT, 90+99 RT.

Railroads
The BN&SF Railway (operated by Montana Rail Link) nominally parallels south side of the highway, sometimes closely, from Station 111+00± to the end of the project at Station 168+17±. The railway is confined by the Clark Fork River on the other side.

The development of an alignment and grade acceptable to MRL has been an iterative process. Since the Alignment and Grade review in February and March of 2011, we've revised the alignment twice from approximately Station 110+00 to 140+00 (through the area confined by the railroad on the right and the talus slope on the left). Our original alignment kept the retaining wall 20' from the railroad, but it also included a high risk pre-split slope potentially cutting into the talus slope, and the 20' high MSE wall posed constructability challenges for maintaining traffic while constructing the MSE wall reinforcement and backfill.

The first re-design of the alignment eliminated the risky cut of the rock and talus slope, lowered the wall to 12' high, but was only 14' from the railroad centerline. Montana Rail Link (MRL) was opposed to a wall 14-ft from the railroad tracks and said 16' would be the closest they'd consider.

Design team members from Geotech and Road Design made a site visit in September to make a detailed investigation of the rock outcropping from approximately 123+00 to 127+00, left. We were able to determine that the rock could be presplit 4-ft back from its current position to create additional space. Ultimately, with the second re-design we were able to lower the wall height to a 5.5-ft maximum height, maintain 16-ft clearance from the wall to the railroad, and pre-split the rock on the left to provide enough room for a 6-ft ditch between the pre-split cut and the barrier.

The proposed retaining wall will be adjacent to the railroad from Station 121+83± to 139+00±. The clearance between the wall and the tracks is at least 16' from the railroad centerline. We'll provide a crash-worthy facing on the wall wherever the wall is less than 25 feet from the railroad centerline (Station 121+83 to 136+50±). We'll ensure drainage is designed to not adversely affect the railroad.

The Utilities Section will work closely with Road Design, Geotech, and District Construction to develop a Construction and Maintenance Agreement with MRL. The major items we expect it will cover include the approval of the crash wall design, snow fence design, trigger fence relocation (the fence is in conflict from Sta. 115+50 to 120+00 Rt), protective planking at track locations adjacent to any blast site, complete railroad flagging protection, and penalties for train delays. MRL may also have input on the proposed rockfall mitigation measures.

MRL is also concerned about dust and fine particles settling on and in the ballast, and may require the installation of engineering fabric over the ballast, in all areas next to construction.

Environmental Considerations
The District has requested that several wildlife crossing structures be included in this project. The following are preliminary locations and descriptions of the crossings:

Station	Description	Size
93+67	Wildlife Underpass	20'7" x 13'2" x 90' SSPPA
168+17	Small Mammal Crossing	24" x 84' CSP (dry culvert)

Wildlife fencing will be used in conjunction with the wildlife underpass to direct wildlife to the crossing. We located the wildlife underpass at Station 93+67 because it is directly adjacent to a drainage on the left which will help to naturally funnel animals to the underpass and it will also perpetuate the natural drainage pattern under the road. On the field review, we noticed a small herd of Bighorn sheep in this area. Also, Pat Basting held a meeting with a group of locals who are on a wildlife advisory committee

and FWP officials on Thursday March 10, 2011 and they also agreed on the location of the crossing.

The District has also requested we provide a wildlife viewing turnout located in Dykstra's field. Bighorn sheep frequent the area and people have been known to stop in the middle of the driving lane to look at the sheep. A wildlife viewing turnout would allow vehicles a safe location off the roadway to view the sheep.

The preliminary location of the wildlife viewing turnout is at 74+75 LT and is 350-ft long and 21-ft wide. This design is consistent with the wildlife viewing turnout that was built at RP 59.5 LT with the project MT 200 Road Repairs, ER 6-1(78)59, [UPN 3334]. The wildlife viewing turnout surfacing section will be consistent with the adjacent typical section.

We anticipate a programmatic categorical exclusion will provide the appropriate level of environmental evaluation and documentation. We do not expect a 404 permit or an SPA 124 permit will be required.

Experimental Features

We will consider teaming up with the Research Bureau to develop an experimental project that would install a proprietary animal detection/deterrent system at either end of the wall section (Station 121+83± to 139+00). The feature envisioned could include an animal detection and the installation of 'electromats" embedded in the pavement.

The purpose of the electromats would be to discourage animals (particularly Bighorn sheep) from entering the wall section and getting trapped on the roadway bordered by high guardrail adjacent to the high rock cuts on the north and by the 5-ft. high retaining wall shielded with concrete barrier rail on the south side.

We proposed to install a similar system on the Eddy –East project [2014001] to address similar issues in similar terrain. At that time, Eddy-East was scheduled to be let before [4039001]. Our strategy was that we would evaluate the effectiveness of the detection/deterrent system on the Eddy-East project before deciding whether to use it on East of Thompson River – East.

There are varying levels of sophistication available for the animal detection system. We will evaluate our needs and the costs to select a system that is appropriate. The system will be included only if it can be funded as an experimental feature. We will document the decision to the include the system or not in the scope of work report.

Traffic Control

We'll be able to maintain traffic throughout the project except during the blasting. We'll strive to maintain two-way-two-lane traffic, but there will be times where only single lane traffic will be possible as the road is constructed, especially through the retaining wall portion of the project.

Public Involvement

A public meeting was held several years ago for the original Thompson River – East project but there wasn't much public interest at that time. We distributed an updated news release in 2010 stating that the project has been split and the bridge portion of the project will be built in 2012, but we've received no public comments or concerns since then. We can consider another public meeting if we think it is necessary as the design progresses because the retaining wall section of the project may cause significant impact to the traveling public. We could do another news release specifically about this project and based on the comments we receive we'll decide if a public meeting is necessary. The remaining public involvement plan will consist of:

a) Adjacent landowners along the project will be contacted at the time of right of entry and preliminary

right-of-way report. Landowner concerns and local knowledge will be gathered.

b) Local government officials and interest groups will be contacted as needed.

c) When the design is well along and plans are available, right-of-way agents will contact and visit the adjacent landowners to explain the work to be performed and the overall design of the project.

d) Construction notification and information will be distributed during construction. We propose to implement the public notification procedures developed by John Benda and his staff during the construction of Weeksville – West. They developed an extensive road closure notification list (via phone and email) of representatives from Sanders County Dispatch, the local schools, local businesses, MRL, the contractor, MDT Maintenance, and MDT Construction.

A detailed protocol of who will be notified at what time prior to and immediately after a road closure (usually for blasting) will also be included. Message boards with information on expected road closure times will be placed well in advance of the closure area to give travelers ample time to decide if they wanted to wait at the flagger station, or seek an alternate route.

Cost Estimate

Here is the cost estimate reported to PPMS in August 2011:

	Estimated cost
Road Work	$ 4,890,000
Traffic Control	$ 480,000
Subtotal	**$ 5,370,000**
Mobilization (10%)	$ 537,000
Subtotal	**$ 5,907,000**
Contingencies (12%)	$ 709,000
Total CN	**$ 6,16,000**
CE (10%)	**$ 662,000**
TOTAL CN+CE	**$ 7,278,000**

AGR Cost Estimate (assumes 8" PCCP for retaining wall section): The cost reduction is due primarily to the overall lower cost for the retaining wall section due to the redesign noted above.

	Estimated cost	Inflation (INF) (from PPMS)	TOTAL costs w/INF + IDC (from PPMS)
Road Work	$ 4,086,000		
Traffic Control	$ 430,000		
Subtotal	**$ 4,516,000**		
Mobilization (10%)	$ 452,000		
Subtotal	$ 4,968,000		
Contingencies (11%)	$ 546,000		
Total CN	**$ 5,514,000**	**$ 637,785**	**$ 6,744,817**
CE (10%)	**$ 551,000**	**$ 63,732**	**$ 673,992**
TOTAL CN+CE	**$ 6,065,000**	**$ 701,517**	**$ 7,418,809**

Note: Inflation is calculated in PPMS to the letting date plus one year to estimate mid-point of

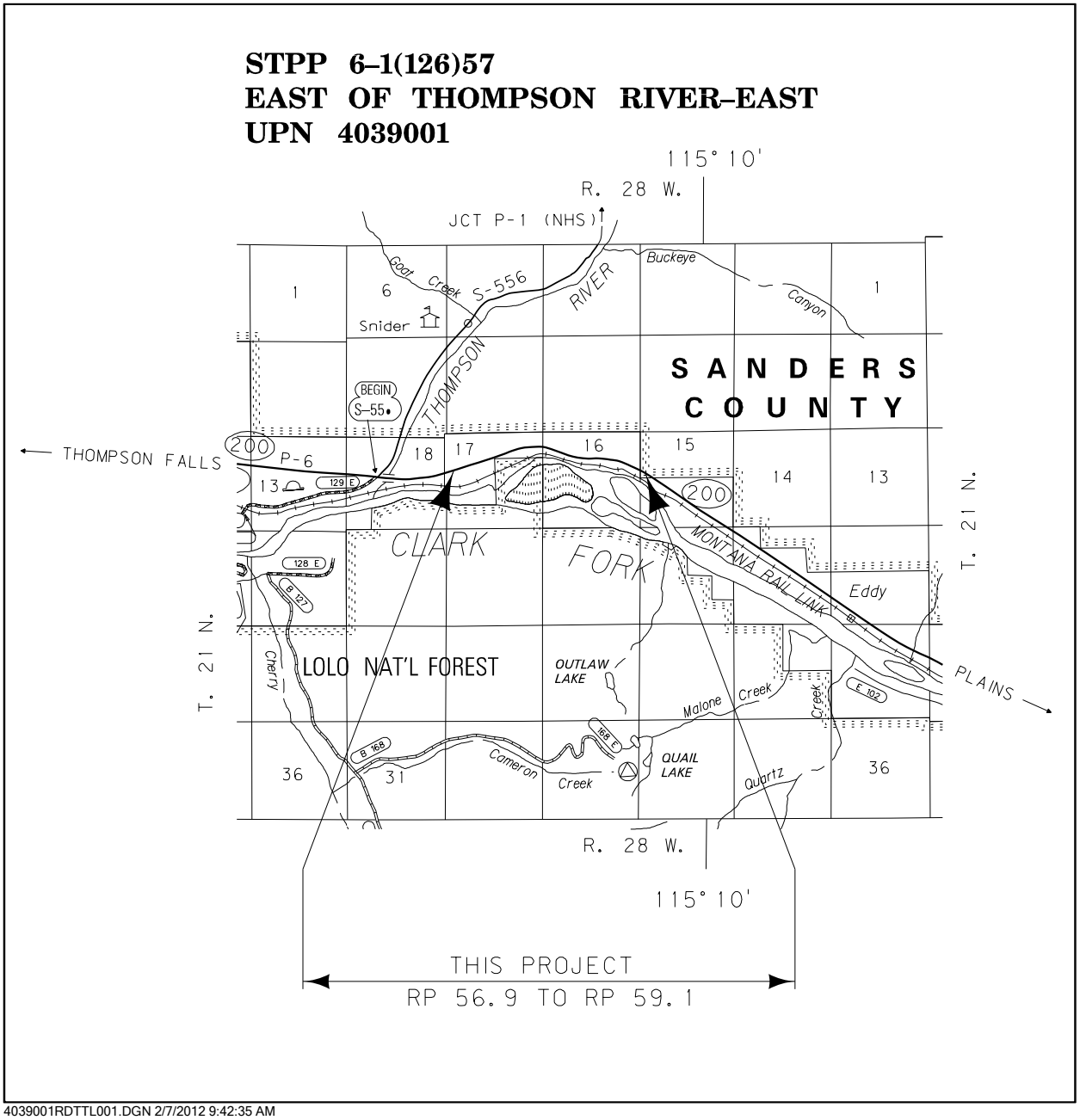
construction. If there is no letting date, the project is assumed to be inside the current TCP and is given a maximum of 5 years until letting. IDC is calculated at 9.64% as of FY 2011.

Ready Date

The ready date is July 1, 2013. The finish date is about two weeks behind schedule according to OPX2. The project schedule could run into delays with retaining wall design issues and coordinating with MRL in the development of the railroad agreement and obtaining additional easement from MRL.

The planned letting date is January 25, 2015

Location Map



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