MDT
Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001
Timothy W. Reardon, Director
Brian Schweitzer, Governor

September 6, 2011

Kevin McLaury
Division Administrator
Federal Highway Administration
585 Shepard Way
Helena MT 59601

Subject: **Programmatic Categorical Exclusion (PCE) Concurrence Request**
IM 15-5(121)287
Manchester to Vaughn
Control Number: 7448000

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 MDT and FHWA on April 12, 2001. This proposed action also qualifies as a Categorical Exclusion under ARM 18.2.261 (MCA 75-1-103 and MCA 75-1-201).

The following form provides documentation required to demonstrate that all of the conditions are satisfied to qualify for a Programmatic Categorical Exclusion. A copy of the Preliminary Field Review Report, dated May 2, 2011, and a project location map are 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.	☒	☐	☐	☐
1. The context or degree of the right-of-way action would have (a) substantial social, economic, or environmental effect(s).	☐	☒	☐	☐
2. A high rate of residential growth exists in the area of the proposed project.	☐	☒	☐	☐
3. A high rate of commercial growth exists in the area of the proposed project.	☐	☒	☐	☐
4. Work would be on and/or within approximately 1.6 kilometers (1± mile) of an Indian Reservation.	☐	☒	☐	☐

	Yes	No	N/A	UNK
5. 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.*) are on or adjacent to the proposed project area.	☐	☒	☐	☐
The use of such Section 6(f) sites would be documented and compensated with the appropriate agencies (MDFWP, local entities, etc.).	☐	☐	☒	☐
6. 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) would be affected by this proposed project.	☐	☒	☐	☐
7. 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) are 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. A de minimis finding has been secured for this project.	☐	☐	☒	☐
c. Nationwide Programmatic Section 4(f) Evaluation forms for those sites are attached.	☐	☐	☒	☐
d. This proposed project requires a full Section 4(f) Evaluation.	☐	☐	☒	☐
B. The activity would involve work in a streambed, wetland, and/or other water body (ies) considered as "waters of the United States" or similar (e.g., "state waters").	☒	☐	☐	☐
1. Conditions set forth in Section 10 of the Rivers and Harbors Act (33 USC 403) and/or Section 404 of the Clean Water Act (33 USC 1251-1376) codified at 33 CFR 320-330 would be met.	☒	☐	☐	☐
2. Impacts in wetlands, including but not limited to those referenced under Executive Order (EO) #11990, and 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 would be obtained from the MDFWP.	☐	☒	☐	☐
4. A delineated floodplain exists 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. A Tribal Water Permit would be required.	☐	☒	☐	☐
6. Work would be required in, across, and/or adjacent to a river that 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.	☐	☒	☐	☐

		Yes	No	N/A	UNK
	The designated National Wild and/or 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).	☐	☐	☒	☐
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.	Substantial changes in access control would be associated with the 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 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.	☐	☒	☐	☐

	Yes	No	N/A	UNK
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.	☒	☐	☐	☐
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 would be conducted.	☒	☐	☐	☐
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 an AD 1006 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 is either in a Montana air quality:				
A. "Unclassifiable"/attainment area. This proposed project is not 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 Air Quality Division, etc.).	☐	☐	☒	☐
C. Is this proposed project in a "Class I Air Shed" under 40 CFR 52.1382(c)(3)?	☐	☒	☐	☐
5. Federally listed Threatened or Endangered (T/E) Species:				
A. Recorded occurrences, and/or critical habitat are in the vicinity of the proposed project.	☐	☒	☐	☐
B. Would this proposed project result in a "jeopardy" opinion (under 50 CFR 402) from the Fish and Wildlife Service on any Federally listed T/E Species?	☐	☒	☐	☐

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

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). The project also complies with the provisions of Title VI of the Civil Rights Act of 1964 (42 USC 2000d) under FHWA regulations (23 CFR 200).

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

Eric Thunstrom Date: 9/5/2011
Eric Thunstrom
Environmental Services Bureau
Great Falls District Project Development Engineer

Concur Heidy Bruner Date: 9/6/11
Heidy Bruner, P.E.
Environmental Services Bureau
Engineering Section Supervisor

Concur Date: 7SEP 2011
Federal Highway Administration

Attachment

electronic copies without attachment:

Tom Martin, P.E.	Environmental Services Bureau Chief
Heidy Bruner, P.E.	Environmental Services Bureau Engineering Section Supervisor
Michael P. Johnson	Great Falls District Administrator
Kent Barnes, P.E.	Bridge Engineer
Paul Ferry, P.E.	Highways Engineer
Rob Stapley	Right-of-Way Bureau Chief
Dawn Stratton	Fiscal Programming Section
Alyce Fisher	Fiscal Programming Section
Brad Burns	Budget and Planning Bureau
Nicole Pallister	Helena Purchasing
Christie McOmber, P.E.	Great Falls District Projects Engineer
Suzy Price	Contract Plans Bureau Chief
Steve Prinzing, P.E.	Great Falls District Engineering Services Supervisor
Stacy Hill, P.E.	Great Falls District Environmental Engineering Specialist
Montana Legislative Branch	Environmental Quality Council (EQC)

copies with attachment:

File	Environmental Services Bureau

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

Memorandum

To: Paul R. Ferry, PE
Highways Engineer

From: Christie W. McOmber, PE
District Projects Engineer CWM

Date: May 2, 2011

Subject: IM 15-5(121)287
Manchester to Vaughn
UPN 7448000
Work Type 151 – Major Rehabilitation – w/o added capacity

Please approve the attached Preliminary Field Review Report.

Approved *Signed by Lesly Tribelhorn for Paul Ferry* Date *May 3, 2011*

Paul R. Ferry
Highways Engineer

We are requesting comments from those on the distribution list. We will assume their concurrence if we receive no comments within two weeks of the approval date.

Distribution:

Michael Johnson, District Administrator
Kent Barnes, Bridge Engineer
Tom Martin, Environmental Services Bureau Chief
Duane Williams, Traffic and Safety Engineer
Robert Stapley, Right-of-Way Bureau Chief
Paul Ferry, Highways Engineer
Lynn Zanto, Rail, Transit, & Planning Division Administrator
Jake Goettle, Construction Engineering Services Bureau
Matt Strizich, Materials Engineer
Jon Swartz, Maintenance Administrator
Alan Woodmansey, FHWA - Operations Engineer

cc:

Dawn Stratton, Fiscal Programming Section
Dustin Rouse, Project Design Manager
Damian Krings, Road Design Engineer

e-copies:

Jim Walther, Engineering, Preconstruction Engineer
Lesly Tribelhorn, Highways Design Engineer
Mark Goodman, Hydraulics Engineer
Kurt Marcoux, District Hydraulics Engineer
Bonnie Gundrum, Env. Res. Section Supervisor
Paul Sturm, District Biologist
Eric Thunstrom, District Project Development Engineer
Danielle Bolan, Traffic Engineer
Ivan Ulberg, District Traffic Project Engineer
Kraig McLeod, Safety Engineer
Stephanie Brandenberger, Bridge Area Eng., G.F. District
Mary Gayle Padmos, PvMS Engineer
Daniel Hill, Pavement Analysis Engineer
Lee Grosch, District Geotechnical Manager
Bryce Larsen, Supervisor, Photogrammetry & Survey
Marty Beatty, Engineering Information Services
Paul Grant, Public Involvement Officer
Jean Riley, Planner
Duane Williams, MCS Division Administrator
Jason Sorenson, Engineering Cost Analyst
Jake Goettle, Construction Bureau – VA Engineer
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Dave Hand, Great Falls District Maintenance Chief
Walt Scott, R/W Utilities Section Supervisor
David Hoerning, R/W Engineering Manager
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Joe Zody, R/W Access Management Section Manager
Paul Johnson, Project Analysis Bureau
Sue Sillick, Research Section Supervisor
Doug Wilmot, G.F. District Construction Engineer
Jerilee Weibel, District R/W Supervisor
James Combs, District Traffic Engineer
Dennis Ghekiere, District Utility Agent
Linda Cline, District R/W Design
Alyce Fisher, Fiscal Programming
Becky Duke, Traffic Data Collection Section Supervisor

Introduction

This report was derived from information taken from the Preliminary Field Review conducted on April 26, 2011 with the following individuals in attendance:

Mick Johnson	District Administrator	MDT - Great Falls
Steve Prinzing	District Preconstruction Engineer	MDT - Great Falls
Doug Wilmot	District Construction Engineer	MDT - Great Falls
Dave Hand	Great Falls Maintenance Chief	MDT - Great Falls
Christie McOmber	District Projects Engineer	MDT - Great Falls
Jeania Cereck	District Design Supervisor	MDT - Great Falls
Bryce Hove	Road Design Engineer	MDT - Great Falls
William Lay	Bridge EPM	MDT - Great Falls
Stephanie Brandenberger	Bridge Area Engineer, Great Falls District	MDT - Helena
Scott Bunton	Road Design Engineer	MDT - Helena
Gretchen Hedrick	Hydraulic Engineer	MDT - Helena
John Sharkey	Geotechnical Specialist	MDT - Helena
Steve McEvoy	Surfacing Design	MDT - Helena
Paul Sturm	District Biologist	MDT - Helena
Jeffrey McKim	Traffic and Safety	MDT - Helena

Proposed Scope of Work

The proposed project has been nominated to provide major rehabilitation to the existing surfacing of the Northbound and Southbound lanes of I-15.

- Milling and pulverization of existing surfacing materials followed by new plant mix surfacing, seal, and cover is the anticipated scope for the mainline of this project. Digout locations will be identified as design progresses.
- The ramps, cross roads, and weigh station turnouts within the project limits will be milled, if deemed necessary, and receive new plant mix, seal, and cover.
- Bridges within the project limits will receive minor rehabilitation as well.
- Mainline, ramps, cross roads, and weigh station turnouts will receive new pavement markings, signage, and delineation.
- With the proposed scope, minor changes will be made to the vertical alignment to correct irregularities with the alignment; however, the existing horizontal alignment will be used throughout the project.
- Minor grading will be completed to address slope instability in select areas and to improve nonstandard slopes, if reasonable alterations can be completed with the scope of this project.
- Fences will be replaced throughout the project limits.
- Existing guardrail will be replaced; all guardrail within the project limits will be upgraded to allow for two-way traffic at any time.

Purpose and Need

Rehabilitating the surface is necessary due to the age and condition of the plant mix. The subgrade appears to be stable. Surfacing failures present include: longitudinal and transverse cracking as well as minor heaves and sags in the vertical alignment.

Project Location and Limits

This project is located in Cascade County on Interstate 15 beginning at RP 285.9, just south of the Manchester Interchange, and proceeds northwesterly for approximately 5.4 miles to RP 291.3, just north of the Vaughn Interchange. Note that the beginning of project (BOP) was extended further south than the nominated project limit to encompass an area in need of a digout.

Begin: RP 285.930, Section 26, T. 21 N., R. 2 E., Cascade County
End: RP 291.333, Section 13, T. 21 N., R. 1 E., Cascade County
Length – 5.403 miles
Functional Classification – Principal Arterial (Freeway)

The project includes north and southbound lanes, weigh station turnouts for north and southbound lanes, ramps, and cross roads at Manchester and Vaughn Interchanges (including bridges at these locations).

- The weigh stations are no longer in place and the turnouts are now being utilized by the traveling public as truck turnouts; however, MCS has emphasized that they would like concrete pads placed at these sites so they can be used in the future. The correct striping will have to be restored to these sites as well.

The following table identifies original as-built project location and year built:

Original As-Built Project ID	From	To	Year Built
	As-Built Stationing	As-Built Stationing	
I 15-5(9)275	810+00.0	1250+00.0	1961

The following table identifies improvement as-built project locations and year built:

Improvement As-Built Project ID	From	To	Year Built
	As-Built Stationing	As-Built Stationing	
IR 15-5(77)283	726+21.9	1250+00.0	1987
STPI 15-5(94)283 *	726+21.9	1250+00.0	1999
N/A * #	785+36.0	1250+00.0	2003
IM 15-5(112)282 *	706+69.3	1250+00.0	2006

* Denotes as-builts that could not be located.
# Maintenance crack seal project.

Work Zone Safety and Mobility

At this time, Level 2 construction zone impacts are anticipated for this project as defined in the Work Zone Safety and Mobility (WZSM) guidance. The plans package will include a Transportation Management Plan (TMP) consisting mainly of a Traffic Control Plan (TCP). A limited Transportation Operations (TO) component and a 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.

Physical Characteristics

The PTW traverses level terrain and is classified as National Highway System – Interstate. The rural setting of the land adjacent to the project primarily consists of farm and range properties with a few private homes and businesses.

Existing Surfacing

The I 15-5(9)275 as-builts show that the existing surfacing placed for both lanes in 1961 consists of 1.75' crushed base course, 0.15' crushed top surfacing, and 0.35' plant mix surfacing.

The IR 15-5(77)283 as-builts show that a 0.25' plant mix overlay (0.10' in some locations) with an Open Graded Friction Course (O.G.F.C.) was placed in 1987.

Per the PFR/SOW report on the pavement preservation project IM 15-5(112)282, the O.G.F.C. was removed in 1999 under project STPI 15-5(94)283. This project milled to a depth of 0.15' and overlaid with 0.15' of plant mix surfacing (Grade D).

Pavement Analysis indicated that a maintenance crack seal project was completed in 2003, and finally a seal and cover project IM 15-5(112)282 was completed in 2006.

Typical Sections
Both north and southbound lanes were originally constructed with 4' inside shoulders, two 12' travel lanes, and 10' outside shoulders.

Since original construction, there have been numerous pavement preservation projects. The last seal and cover project described north and southbound lanes with 3.8' inside shoulders, two 12' travel lanes, and 9.6' outside shoulders.

The ramps for the interchanges vary from roughly 24.0' to 28.4' wide. The crossroad at the Manchester Interchange is approximately 24.0' wide.

Slopes
The surfacing inslopes along the inside and outside shoulders were originally built at 5:1's and flatter throughout the entire project; however, pavement preservation projects have steepened up the inslopes along the inside shoulder to 4:1's.

The existing cut and fill slopes vary throughout the proposed project limits. According to the original as-builts, the depressed median was built with two – 7' 5:1's projected from both north and southbound lanes, which created a 14' "V" ditch. The cut sections outside of the travel lanes were built with an 8' inslope and back slopes that ranged from 5:1's to 2:1's depending on cut depth. The fill sections also varied from 5:1's to 2:1's depending on fill depth.

Horizontal Alignment
The existing horizontal alignment meets current design standard for a 70 mph design speed.

There are two horizontal curves within the project limits. The minimum radius within the project is 5,730 feet, which meets the minimum radius of 1,820 feet for the Geometric Design Criteria on Freeways.

Vertical Alignment
The existing vertical alignment also meets current design standards.

The maximum grade of 1.44% meets the Geometric Design Criteria for Freeways of 3% for level terrain.

PVMS Data
The survey year 2010 and run year 2011 indices for the roadway are listed from the PVMS database:

RP 282.20 to RP 286.60 (North and Southbound Lanes)
Recommended Treatment for Construction:
2011 – C_AC Crack Seal & Cover
2013 – C_AC Crack Seal & Cover

PVMS INDICES		
	Left Lane	***Right Lane***
Ride	79.0 (Fair)	80.3 (Good)
Rut	64.2 (Good)	65.2 (Good)
Alligator Cracking	84.3 (Good)	84.6 (Good)
Miscellaneous Cracking	98.1 (Good)	97.9 (Good)

RP 286.60 to RP 290.70
Recommended Treatment for:
2011 – C_AC Thin O'lay_Engineered
2013 – C_AC Thin O'lay_Engineered

PVMS INDICES		
	Left Lane	***Right Lane***
Ride	78.7 (Fair)	79.4 (Fair)
Rut	64.5 (Good)	61.2 (Good)
Alligator Cracking	73.0 (Fair)	78.0 (Fair)
Miscellaneous Cracking	97.3 (Good)	98.3 (Good)

Bridges
The following table identifies the structures within the project limits, according to the Bridge Logs:

Intersecting Features	Location (RP / Sta.)	Deck Width (feet)	Length (feet)	Year Built	Structure Status	Direction of Traffic along Structure
Manchester Interchange	286.57 / 998+56	38	110	1960	Pre-Stressed Concrete Beam	Northbound Traffic
Manchester Interchange	286.57 / 998+56	38	110	1960	Pre-Stressed Concrete Beam	Southbound Traffic
Junior Grade Separation	289.34 / 1145+00	126	18	1960 Reconstructed in 1974	Concrete	North and Southbound Traffic
Vaughn Jct. Interchange	0.01 1197+80 (Along P-3, US 89)	28	222	1960	Steel Multi Beam	North and Southbound Traffic

Traffic Data
The following engineering study evaluation from RP 285.930 to 291.332 was determined using weigh-in-motion (WIM) sites and reflects a five-year average:

2011 (Current) AADT = 8,280
2012 (Letting Year) AADT = 8,390
2032 (Design Year) AADT = 10,840
DHV = 1,160
Percent of Trucks = 11.8 %
ESAL = 534
Basis of Projected Traffic Growth = 1.3 %

Crash Analysis

The following engineering study evaluation from RP 285.930 to 291.332 was taken from January 1, 2001 to December 31, 2010:

Total Recorded Crashes = 106

Truck Crashes = 5

The types of two vehicle crashes included: rear ends, sideswipes (in the same direction), right angle collisions, along with other and unknown types of collisions.

Traffic variations from average occurrence were as follows:

- 32.1% of the crashes involved a wild animal for the first harmful event vs. 23.6% statewide average for Interstate Routes.

	Statewide Average for Rural Interstate Routes	Study Area
All Vehicles Crash Rate	0.94	0.67
All Vehicles Severity Index	1.88	1.92
All Vehicles Severity Rate	1.76	1.29
Truck Crash Rate	0.58	0.25
Truck Severity Index	1.88	3.20
Truck Severity Rate	1.10	0.80

There have been no crash clusters or safety projects within this section during the study period.

Remarks & Recommendations

The following is a summary of crash information:

- 90 of the 106 reported crashes were single vehicle crashes.
- 12 of the 106 reported crashes cited guardrail face or end as the 1st harmful or most harmful event.
- 28 of the 106 crashes were single-vehicle run-off-the-road crashes with the vehicle overturning.

The main crash trend identified is single-vehicle run-off-the-road crashes (55 crashes). As previously noted the majority of these crashes resulted in vehicles overturning or impacting a guardrail face or end. A secondary crash trend identified is crashes involving a wild animal. Thirty-four of the 106 reported crashes were identified as a wild animal being the first harmful or most harmful event (32.1% of the crashes).

There were 17 crashes related to the Vaughn Interchange (RP 290.680). The majority of these crashes (11) occurred on the northbound exit ramp. All of these crashes were the result of vehicles losing control on the exit ramp and either overturning or striking the guardrail and or bridge rail. The remaining crashes occurred at the following location(s): three on the southbound on-ramps, two on the southbound exit ramps and one on the northbound on-ramp.

Truck crashes accounted for five (5) of the total crashes. Two of these crashes occurred on the Vaughn Interchange (RP 290.680). One crash resulted in a rear-end collision on the southbound on-ramp and a sideswipe same direction collision on the northbound exit ramp. The remaining truck crashes were non-junction related crashes resulting in a fatal (1 fatality) rear-end collision, a tractor-trailer combination jackknifing on the roadway and a right angle collision with a tow-truck rendering aid to a motorist involved in a previous crash.

The Traffic Safety Section has no recommendations for consideration during project development.

Due to the significant number of crashes located on the northbound exit ramp, modifications will be considered during design to improve its geometry.

Major Design Features

Design Speed

The design speed for this project will be 70 mph according to the Geometric Design Criteria for Freeways in level terrain.

Horizontal Alignment

Because this is a rehabilitation project, the existing horizontal alignment will be used. The existing horizontal alignment exceeds the Geometric Design Criteria and will not be modified.

Due to the number of crashes located on the northbound exit ramp at the Vaughn Interchange, slight horizontal alignment improvements may be incorporated with this project.

Vertical Alignment

The existing vertical alignment exceeds the Geometric Design Criteria and does not need to be altered with this project. Minor shifts will be made to the vertical alignment to correct irregularities with the alignment.

Modifications to the vertical alignment of the underpass at the Manchester Interchange will be used to increase the clearance underneath the northbound structure. Bridge will supply recommendations to ensure proper footing cover is maintained. Cores will be taken at this location to help develop possible surfacing adjustments in order to increase the clearance.

The structure located at the Vaughn Interchange is anticipated to receive an overlay. The slight grade raise due to this overlay will be matched by the overlay planned for this interchange.

Typical Sections and Surfacing

The intent of this project is to provide pavement rehabilitation throughout the project limits. Milling and then pulverization of existing surfacing materials followed by new plant mix surfacing will be utilized to complete this task.

After milling off a portion of the existing pavement, the remainder will be rehabilitated and incorporated into the base. According to the as-builts, existing pavement depth is 0.6’; however, cores taken by the District Materials Lab present a wide range of surfacing thicknesses. Overall, surfacing thickness ranges from 0.56’ to 0.87’ in the northbound lanes and 0.38’ to 0.90’ in the southbound lanes. In addition to these measurements, borings taken in possible digout locations indicate oil mat surfacing ranging from 0.55’ to 1.20’.

Surfacing recommendations will provide more insight to the actual work to be completed with this project as design progresses.

In addition to the work proposed on the mainline, the ramps, crossroads, and weigh station turnouts will be milled, if deemed necessary, and receive new plant mix, seal, and cover. Again, these items of work will be further detailed based on Surfacing recommendations.

Geotechnical Considerations

The following information was taken from the preconstruction soil survey data submitted by the District Lab on February 25, 2011. The locations sampled were identified as possible digout locations.

- The oil mat encountered varied from 0.55' to 1.20' deep.
- Gravel base course ranged from 1.60' to 2.60' deep.
- The subgrade consists of a variety of soils ranging from A-6's to A-7's, with the majority being A-7's. These soils have medium to high swell tendencies. Note that almost all borings with A-7 subgrade material exceeded optimum moisture at the time of sampling.

The possible digout locations identified by the District are as follows:

Northbound

- 285.93 to 286.00
- 286.56 (Southern Bridge App.)
- 286.58 (Northern Bridge App.)
- 287.6
- 288.24 to 288.28
- 288.83
- 289.7 to 289.8

Southbound

- 286.56 (Southern Bridge App.)
- 286.58 (Northern Bridge App.)
- 288.22
- 288.28 to 288.35
- 288.6
- 289.6
- 289.85

A project-level Falling Weight Deflectometer (FWD) study of the corridor will be completed in conjunction with additional borings to further identify digout locations. Geotechnical recommendations will be required to assess these locations and to determine the appropriate corrective action.

There are some areas on back slopes and fill slopes that appear to be sluffing. Locations identified in the field review were as follows:

- Fill slopes behind all four wing walls of the Junior Grade separation at RP 289.34 – left and right of centerline,
- Fill slope southeast of the Junior Grade separation at RP 289.34 – left of centerline,
- Back slope at approximately RP 287.25 – left of centerline, and
- Back slope at approximately RP 286.25 – right of centerline.

Geotechnical recommendations will be used to add possible mitigation strategies at these locations if deemed necessary.

Hydraulics

Existing hydraulic elements will be evaluated with this project. A pipe condition report was requested with the original survey request for this project.

The culverts greater than 84 inches were taken from the Bridge Logs (information provided is according to as-builts):

Culvert Description	Location (RP / Sta.)	Size (feet)	Length (feet)	Year Built	Structure Status
Drainage	288.81 / 1117+43	13	220	1960	SPPC (10 Ga.)

Inspection data indicated the following:

- Field measurements show an actual size of 12'-2"(S) x 14'-4"(R).
- Rusty areas with pitting on the invert plates.
- Near mid-span of the pipe, several sections are lapped incorrectly and are leaking.
- Surface corrosion with rust blisters in the worst area.
- No cracking or bulging observed along the pipe's bolted splices.

The culvert listed above is to be rehabilitated by IM 15-5(117)284; D3 Culvert Rehab I-15; CN 6179002.

Bridges

Three bridges are located within the project limits. Existing surfacing appears to be in poor condition, so minor bridge rehabilitation will be completed with this project.

In addition to resurfacing the Manchester Interchange structures, clearance under the northbound structure appears to be an issue. The lowest beam has superficial damage from hits to the structure. Due to relatively shallow cover above the footings, minor modifications may be made to the cross road in order to lower the grade slightly.

The junior grade separation listed in the physical characteristics section is not long enough to actually be considered a bridge; however, it has concrete abutment walls and a concrete deck with plant mix surfacing above it. The wing walls associated with this structure appear to be rotating away from the abutment walls.

Recommendations will be provided by the Bridge Bureau as the project design progresses.

Traffic

Pavement markings will be provided with this project as well as all new signage and delineation. Rumble strips will be also be provided.

Singing Plans will be required.

Traffic control will be addressed through the special provisions.

No major revisions are anticipated for the interchanges; however, modifications to the geometry of the northbound exit ramp at the Vaughn Interchange may be incorporated with this project, in order to address a high volume of accidents on this ramp. Geometric recommendations will be required to address possible curve revisions.

Pedestrian/Bicycle/ADA

Due to the rural setting of this project, no new ADA features are anticipated for this project. The outside shoulder width is adequate for bicycle use throughout the project, even with the use of rumble strips.

Miscellaneous Features
The weigh stations currently being used as truck turnouts will be updated for use by MCS. Concrete pads will be placed at these sites so they can be used in the future. The correct striping will have to be restored to these sites as well.

Fencing will be replaced throughout the project limits. A cattle guard will be added at the Manchester Interchange.

Existing guardrail will be replaced; all guardrail within the project limits will be upgraded to allow for two-way traffic at any time.
Lighting near the Vaughn Interchange is to remain in place. Traffic will be notified of any conflicts as design progresses.

Rumble strips will be placed with this project.

Crossovers will be left as permanent fixtures to facilitate future use.

Context Sensitive Design Issues
Because of the high possibility of extra millings being available from this project, two pullouts on the old railroad bed located near Sun Prairie Village could be resurfaced, so trucks can pull off of the frontage road to park.

In addition to resurfacing these approaches with millings, recycled asphalt may be viable material for use in base courses (including digouts) as well as plant mix. These options will be evaluated and included in Surfacing recommendations.

Other Projects
IM 15-5(117)284; D3 Culvert Rehab I-15; CN 6179002 is a structure safety project slatted for construction in 2013 and will address large culvert issues located within the project limits.

Location Hydraulics Study Report
A Location Hydraulics Study Report has been prepared by the Hydraulics Section for the D3 Culvert Rehab I-15 project. An additional report will not be required for this project unless deemed necessary by Hydraulics.

Design Exceptions
Minor grading work is anticipated with this project. Previous construction activities left 4:1 or flatter inslopes throughout the project; Geometric Design Criteria calls for 6:1 inslopes. As design progresses, there may be minor areas where the existing inslopes and/or back slopes exceed Geometric Design Criteria. Design exceptions will be requested if adjacent features prohibit the improvement of these slopes.

Right-of-Way
No new-right-of way is currently expected for the construction of this project. Existing right of way will be plotted and construction permits will be obtained if necessary.

The right-of-way widths vary throughout the project limits. For the majority of the project, right-of-way widths vary from 135’ to 155’ on the left and right of centerline. The following locations identify increased right-of-way:

- Manchester Interchange (RP 286.6) – right-of-way increased to 300’ on the left and 280’ on the right.
- Old weigh station (RP 287.9) – right-of-way increased to 180’ left and right.

- Vaughn Interchange (RP 289.3) – right-of-way increased to approximately 1250' on the left and 525' on the right.

At this time cadastral survey will not be required.

Cold-In-Place Recycle
Although the top surfacing layers exhibit adequate properties for cold milling, pavement originally placed in 1961 with the original construction of the project is in poor condition. Cold milling practices would not incorporate adequate rehabilitation of this portion of the surfacing like the pulverization activities that are proposed for this project.

Access Control
The existing access control falls under Full Access Control. There will be no modifications to the existing access control.

Intelligent Transportation Systems (ITS) Features
An Automatic Traffic Recorder (ATR) is located within the limits of this project. A-9 is located at RP 287.043. The roadway sensors will be impacted with this project and will require consideration during the construction phase of this project.

Experimental Features
No experimental features are anticipated with this project.

Utilities/Railroads
Utilities
Power and telephone utilities are located along the project. There are utility crossings at various locations throughout the project, including two military communication lines. No utility moves are anticipated.

Railroads
Railroad right-of-way borders the frontage road right-of-way west of the mainline. The rails are located approximately 75' from the centerline of the frontage road within this area. There are no railroad crossings within the boundaries of this project and the tracks are located in excess of 50' from the proposed scope of work; therefore, no involvement with the railroad is anticipated.

Survey
A survey request for a data collector survey and strip map was sent out on November 18, 2010. A pipe condition report as well as utility location was included in this request. This survey is currently in progress.

Preconstruction soil survey data was provided by the District Lab on February 25, 2011. An additional soil survey request has been submitted as well.

Public Involvement
Level A public involvement will be required for this project. A news release explaining the project and including a department point of contact will be sent out.

Environmental Considerations
This project meets the criteria for the Statewide Programmatic Categorical Exclusion. No significant environmental issues have been identified.

Energy Savings/Eco-Friendly Considerations

Due to the nature of this project, extending the useful life of the pavement is aimed directly at minimizing the footprint on the environment. This is accomplished by postponing reconstruction projects through routine maintenance. With this project, existing surfacing materials are planned to be reused through pulverization and recycled plant mix, which will increase the amount of sound base material underneath the flexible pavement and reduce haul costs which would have been required to remove this material from the project site.

Traffic Control

Crossovers to shift traffic from the lanes under construction to two-lane two-way traffic in the opposing lanes will be used for the duration of the project and left as permanent fixtures. This will help minimize impacts to the traveling public and maintain maximum separation from the work zone.

During rehabilitation of the Vaughn Interchange structure, westbound MT 200 and northbound US 89 traffic will be detoured to the frontage road at the Manchester Interchange. Northbound I-15 traffic traveling from MT 200 will be detoured along the frontage road to the Gordon Interchange as well during this structure rehabilitation.

A Transportation Management Plan (TMP) consisting of a Traffic Control Plan (TCP), a limited Transportation Operations (TO) component and a limited Public Information (PI) component is appropriate for this project.

Traffic issues that will require special consideration are as follows:

- Local access will be maintained at all times.
- Barricaded crossovers will be left in place for future use.
- Guardrail improvements to enable two-lane two-way traffic during construction will be left permanently for future use.

Limited TO and PI components will be included to mitigate these impacts to the traveling public. Strategies that will be considered are:

- Limit work requiring interchange ramp closures to off-peak hours or to night time.
- Oversized loads will be detoured around the project limits when necessary.

During all activities of the project, traffic will be maintained through the use of appropriate signing, flagging, lane closing/traffic shifting, etc. All signing will be in accordance with the Manual on Uniform Traffic Control Devices.

Project Management

The Great Falls District will be responsible for the development of the plans. Christie W. McOmber, P.E., is the Great Falls District Projects Engineer.

Currently this project is not an FHWA full oversight project; however, the option is open to become one in the future.

Preliminary Cost Estimate

The project was programmed at the following costs:

		Estimated Cost	Inflation (INF) (from PPMS)	TOTAL costs w/INF + IDC (from PPMS)
Road Work		$4,494,909		
Structure Work		$500,000		
Traffic Control		$200,000		
Subtotal		**$5,194,909**		
Mobilization	(10%)	$519,491		
Subtotal		**$5,714,400**		
Contingencies	(25%)	$1,428,600		
Total CN		**$7,143,000**	**$1,274,561**	**$8,417,561**
CE	(10%)	**$714,300**	**$127,456**	**$841,756**
TOTAL CN+CE		**$7,857,300**	**$1,402,017**	**$9,259,317**
	Inflation Factor (PPMS) =		0.178435000000	

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 13.35% as of FY 2011.

The construction cost for this section is approximately $1,322,043 per mile.

Ready Date

A ready date will be established following the override process. The target letting date has been set as March 1, 2012 in order to utilize available funding. This project will be completed under an accelerated schedule.

Site Map

The project site map is attached.

MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT IM 15-5(121)287
DIGOUT, PULVERIZE, RAP, PLANT MIX, SEAL AND COVER
MANCHESTER TO VAUGHN
CASCADE COUNTY

LENGTH 5.4 MILES