



Montana Department of Transportation

2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001

Jim Lynch, Director
Brian Schweitzer, Governor

June 10, 2011

RECEIVED

JUN 14 2011

ENVIRONMENTAL

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

MASTER FILE COPY

Subject: Programmatic Categorical Exclusion (PCE) Concurrence Request
STPU 5799(24)
Blvd Ave-16th W-W 11th St-Havre
Control Number: 6859000

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 draft Scope of Work Report 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).

Table with 4 columns: Yes, No, N/A, UNK. Rows include questions about environmental impact, unusual circumstances, and right-of-way/easements.

| | <u>Yes</u> | <u>No</u> | <u>N/A</u> | <u>UNK</u> |
|--|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| 5. Parks, recreational, or other properties acquired/improved under Section 6(f) of the 1965 National Land & Water Conservation Fund Act (16 USC 460L, <i>et seq.</i>) are on or adjacent to the proposed project area. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The use of such Section 6(f) sites would be documented and compensated with the appropriate agencies (MDFWP, local entities, etc.). | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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, <i>et seq.</i>) by the State Historic Preservation Office (SHPO) would be affected by this proposed project. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. The proposed project would not impact the site(s), so a 4(f) evaluation is not necessary. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. A de minimis finding has been secured for this project. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. Nationwide Programmatic Section 4(f) Evaluation forms for those sites are attached. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. This proposed project requires a full Section 4(f) Evaluation. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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"). | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. A 124SPA would be obtained from the MDFWP. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. A delineated floodplain exists in the proposed project area under FEMA's Floodplain Management criteria. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The water surface at the 100-year flood limit elevation would exceed floodplain management criteria due to an encroachment by the proposed project. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. A Tribal Water Permit would be required. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| | <u>Yes</u> | <u>No</u> | <u>N/A</u> | <u>UNK</u> |
|---|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| The designated National Wild and/or Scenic River systems in Montana are: | | | | |
| a. Middle Fork of the Flathead River (headwaters to South Fork confluence). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. North Fork of the Flathead River (Canadian Border to Middle Fork confluence). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c. South Fork of the Flathead River (headwaters to Hungry Horse Reservoir). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Missouri River (Fort Benton to Charles M. Russell National Wildlife Refuge). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1. If yes, are there potential noise impacts? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. A Noise Analysis would be completed. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. There would be compliance with the provisions of both 23 CFR 772 for FHWA's Noise Impact analyses and MDT's Noise Policy. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| D. Substantial changes in access control would be associated with the proposed project. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| If yes, would they result in extensive economic and/or social impacts on the affected locations? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Adverse effects to through-traffic dependant businesses would be avoided or minimized. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Interference to local events would be minimized to all possible extent. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Substantial controversy associated with this pending action would be avoided. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| | <u>Yes</u> | <u>No</u> | <u>N/A</u> | <u>UNK</u> |
|---|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| All reasonable measures would be taken to avoid and/or minimize substantial impacts from same. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G. The Stormwater Discharge conditions (ARM 17.30.1101-1117), including temporary erosion control features for construction would be met. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| H. Permanent desirable vegetation with an approved seeding mixture would be established on exposed areas. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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, <i>et seq.</i>). | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| K. Features for the Americans with Disabilities Act (PL 101 336) compliance would be included. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| L. A written Public Involvement Plan would be completed in accordance with MDT's Public Involvement Handbook. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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.). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| C. Is this proposed project in a "Class I Air Shed" under 40 CFR 52.1382(c)(3)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Federally listed Threatened or Endangered (T/E) Species: | | | | |
| A. Recorded occurrences, and/or critical habitat are in the vicinity of the proposed project. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

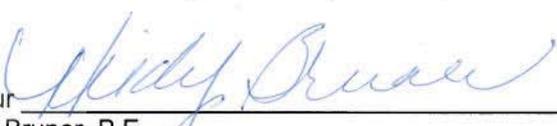
The proposed project would not induce significant land use changes, nor promote unplanned growth. No significant effects on access to adjacent property or to present traffic patterns would occur.

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
Environmental Services Bureau
Great Falls District Project Development Engineer
Date: 6/10/2011



Concur
Heidi Bruner, P.E.
Environmental Services Bureau
Engineering Section Supervisor
Date: 6/10/11



Concur
Federal Highway Administration
Date: 13 June 2011

Attachment

electronic copies without attachment:

- | | |
|--|--|
| Tom Martin, P.E. | Environmental Services Bureau Chief |
| Heidi 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 |
| 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 |
| Walt Scott | Right-of-Way Bureau Utilities Section |
| Montana Legislative Branch Environmental Quality Council (EQC) | |

copies with attachment:

- | | |
|------|-------------------------------|
| File | Environmental Services Bureau |
|------|-------------------------------|

MDT attempts to provide accommodation for any known disability that may interfere with a person participating in any service, program or activity of the Department. 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.



Memorandum

To: Distribution

From: Paul R. Ferry, P.E.
 Highways Engineer

Date:

Subject: STPU 5799(23)
 Blvd Av-16th W-W 11th St-Havre
 UPN 6859000
 Work Type 151 – Major Rehabilitation – w/o added capacity

The Scope of Work Report for this project has been released on _____. 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:

- | | |
|---|--|
| Michael Johnson, District Administrator | Lynn Zanto, Rail, Transit, & Planning Division Administrator |
| Tom Martin, Environmental Services Bureau Chief | Jake Goettle, Construction Engineering Services Bureau |
| Roy Peterson, Traffic and Safety Engineer | Matt Strizich, Materials Engineer |
| Robert Stapley, Right-of-Way Bureau Chief | Jon Swartz, Maintenance Administrator |
| Paul Ferry, Highways Engineer | |

cc:

- | | |
|--|-------------------------------------|
| Dawn Stratton, Fiscal Programming Section | Damian Krings, Road Design Engineer |
| Dustin Rouse, Project Design Manager, GF District | |
| Mayor Tim Solomon 520 4 th St. P.O. Box 231 Havre, MT. 59501 | |
| Dave Peterson (Public Works) 520 4 th St. P.O. Box 231 Havre, MT. 59501 | |

e-copies:

- | | |
|---|--|
| Jim Walther, Engineering, Preconstruction Engineer | Scott Bunton, Engineering Cost Analyst |
| Lesly Tribelhorn, Highways Design Engineer | Jake Goettle, Construction Bureau – VA Engineer |
| Mark Goodman, Hydraulics Engineer | Steve Prinzing, District Preconstruction |
| Kurt Marcoux, District Hydraulics Engineer | Christie McOmer, District Projects Engineer |
| Bonnie Gundrum, Env. Resources Section Supervisor | Stan Kuntz, District Materials Lab |
| Paul Sturm, District Biologist | Matt Ladenburg, Havre Maintenance Chief |
| Eric Thunstrom, District Project Development Engineer | Walt Scott, R/W Utilities Section Supervisor |
| Danielle Bolan, Traffic Engineer | David Hoerning, R/W Engineering Manager |
| Ivan Ulberg, District Traffic Project Engineer | Greg Pizzini, Acquisition Manager |
| Kraig McLeod, Safety Engineer | Joe Zody, R/W Access Management Section Manager |
| Daniel Hill, Pavement Analysis Engineer | Paul Johnson, Project Analysis Bureau |
| Lee Grosch, District Geotechnical Manager | Sue Sillick, Research Section Supervisor |
| Marty Beatty, Engineering Information Services | Alice Flesch, ADA Coordinator |
| Paul Grant, Public Involvement Officer | Mark Keeffe, Bicycle/Pedestrian Coordinator |
| Jean Riley, Planner | Doug Wilmot, G.F. District Construction Engineer |
| Alyce Fisher, Fiscal Programming | Dennis Ghekiere, District Utility Agent |
| Mary Gayle Padmos, Pavement Engineer | James Combs, District Traffic Engineer |
| Bryce Larsen, Supervisor, Photogrammetry & Survey | Linda Cline, District R/W Design |
| Jerilee Weibel, District R/W Supervisor | |

Scope of Work Report

STPU 5799(23): Blvd Av-16th W-W 11th St-Havre
Project Manager: Christie W. McOmber

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Scope of Work

The proposed project has been nominated to preserve, rehabilitate, and/or reconstruct segments of three roadways in the City of Havre. New sidewalks and ADA features will be included where needed.

U-5707 – West 11th Street

Reconstruction of this route from slightly west of 16th Avenue West to approximately 210' west of the junction with 1st Avenue (1.17 mi.) will include digouts and widening along with new curb, gutter, and sidewalk at selected locations. The scope of work includes grading, gravel, drainage features, plant mix surfacing, seal, cover, signing, and pavement markings.

U-5702 – Boulevard Avenue

This portion of the project consists of an overlay from just north of West 11th Street to West 9th Street (0.29 mi.). From West 9th Street to the intersection with Wilson Avenue (0.12 mi.), a reconstruct typical including curb and gutter will define the new roadway. For the remaining portion of this route, from the intersection with Wilson Avenue to slightly south of West 2nd Street (0.36 mi.), the proposed scope is to pulverize the existing surfacing and then place a new lift of crushed aggregate course and plant mix. Wider shoulders will be constructed throughout the pulverization segment. Seal & cover and new signing & pavement markings will conclude the activities along this roadway.

U-5714 – 16th Avenue West

A small section will be reconstructed just north of the intersection with West 11th Street (0.01 mi). An overlay will be placed north of the reconstruct section to approximately 250' north of the junction with West 10th Street (0.15 mi.). For the remainder of this route, pulverizing in place with an additional lift of new crushed aggregate and plant mix, just north of West 10th Street to West 2nd Street (0.53 mi.), is required. The existing gentle side slopes will be maintained along this part of the project, but wider shoulders will be added to meet standards. Seal & cover as well as signing and pavement markings will conclude the activities along this roadway.

Purpose and Need

Hill County and the City of Havre have submitted a request to use their Urban Funding for this project. Rehabilitation is necessary due to the age and condition of the plant mix. A reconstruction typical has been selected for portions of the project due to continuing deterioration, the need for digouts, and to improve constructability. Surfacing failures present include: potholes, alligator cracking, and narrow/wide longitudinal and transverse cracking, some of which have been overfilled.

Project Location and Limits

The project is located in Hill County, within the Havre urban limits. Each of the roadway segments traverse gently rolling hills and/or level terrain. Portions of the project are located within an urban setting, while the remainder travels through rural surroundings. The routes included in this project are as follows:

L-21-1577 & U-5707 – West 11th Street

Begin Connection to PTW: RP 2.047 on L-21-1577 (approximately 100' west of 16th Avenue West)

Beginning of Project: RP 2.056 on L-21-1577 (approximately 50' east of 16th Avenue West)

Note: End of L-21-1577 RP 2.067 = Beginning of U-5707 RP 0.000

End of Project: RP 1.164 on U-5707 (approximately 210' west of 1st Avenue)

End Connection to PTW: RP 1.224 on U-5707

Length: 1.174 mi.

Functional Classification: Urban – Minor Arterial

U-5702 – Boulevard Avenue

Beginning of Project: RP 0.257 (approximately 35' north of West 11th Street)

End of Project: RP 1.026 (approximately 88' south of West 2nd Street)

Scope of Work Report

STPU 5799(23): Blvd Av-16th W-W 11th St-Havre
Project Manager: Christie W. McOmber

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End Connection to PTW: RP 1.040 (approximately 13' south of West 2nd Street)
Length: 0.770 mi.
Functional Classification: Urban – Minor Arterial

U-5714 – 16th Avenue West

Beginning of Project: RP 0.010 (approximately 52' north of West 11th Street)
End of Project: 0.672 (approximately 130' south of West 2nd Street)
End Connection to PTW: RP 0.695 (approximately 11' south of West 2nd Street)
Length: 0.662 mi.
Functional Classification: Urban – Collector Street

Bridges

No bridges exist on these routes.

As-Built

There are no as-builts available for these routes.

Adjacent Projects

Federal Aid Project CM 5707(3), a plant mix overlay, seal, and cover on 10th Street from 1st to 5th Avenue was completed in 2004. During construction of this project, the City opted to extend the overlay limits around the S-Curve to an alley just west of the S-Curve with their own budget. U-5707 – West 11th Street will tie into this recent overlay, placing new curb and gutter outside of the project limits to connect new and existing concrete features.

Physical Characteristics

All routes are located within the Havre urban limits with the majority having generally level terrain. The eastern end of West 11th Street and the northern ends of both 16th Avenue West and Boulevard Avenue have generally rolling terrain.

Horizontal Alignment

The existing horizontal alignment varies along each of the routes within this project. Due to the fact that no as-builts are available for these roadways, exact as-built alignment information is not known; however, the existing horizontal alignment appears to meet the Geometric Design Criteria. Based on the proposed work for this project, the proposed alignment closely follows the existing alignment and is described in more detail in the Major Design Features section below.

Vertical Alignment

Because of the gently rolling hills / level terrain, the vertical alignment does not pose a problem with meeting Geometric Design Criteria on the majority of these routes. There are two locations where the grades exceed the Geometric Design Criteria's maximum grade of 8% for rolling terrain on Urban Minor Arterials. The maximum existing gradient located within the project limits is approximately 13%. Again, due to the limited scope of this project, the vertical alignment will generally follow the existing alignment and is described in more detail below. In order to avoid impacts to right of way, the steep grades will not be adjusted and an exception to standards was approved on November 19, 2010.

Existing Surfacing

The following information was taken from the preconstruction soil survey data submitted by the District Lab on April 10, 2008.

U-5707 – 11th Street:

The plant mix in this section has a minimum depth of 0.17' and a maximum depth of 0.65'. The gravel base ranges from no gravel base to a depth of 0.62'. Pavement width varies from 25.6' to 36.2'.

Scope of Work Report

U-5702 – Boulevard Avenue:

The surfacing consists of plant mix that ranges from 0.17' to 0.39' and a gravel base course that ranges from 0.40' to 1.85'. Pavement width varies from 25.8' to 32.6'.

U-5714 – 16th Avenue West:

The surfacing through this route contains plant mix that fluctuates from 0.11' to 0.26' with a gravel base course that ranges from 0.60' to 1.29'. Pavement width varies from 25.9' to 36.9'.

Pavement Management Report

The following information is from the Pavement Management Report with last inspection data from 2007.

U-5707 – 11th Street:

| <i>From</i> | <i>To</i> | <i>Pavement Surface and Evaluation Rating (PASER)</i> | <i>Recommended Treatment</i> |
|------------------------------|------------------------|---|------------------------------|
| 16 th Avenue West | Wilson Avenue | 6 (Good) | Single Chip Seal |
| Wilson Avenue | Washington Avenue | 3 (Poor) | Thin Overlay – 1.5" |
| Washington Avenue | McKinley Avenue | 4 (Fair) | Thin Overlay – 1.5" |
| McKinley Avenue | 1 st Avenue | 3 (Poor) | Thin Overlay – 1.5" |

U-5702 – Boulevard Avenue:

| <i>From</i> | <i>To</i> | <i>Pavement Surface and Evaluation Rating (PASER)</i> | <i>Recommended Treatment</i> |
|------------------------------|-----------------------------|---|------------------------------|
| 11 th Street West | Kober Drive | 5 (Fair) | Single Chip Seal |
| Kober Drive | 2 nd Street West | 3 (Poor) | Thin Overlay – 1.5" |

U-5714 – 16th Avenue West:

| <i>From</i> | <i>To</i> | <i>Pavement Surface and Evaluation Rating (PASER)</i> | <i>Recommended Treatment</i> |
|------------------------------|------------------------------|---|------------------------------|
| 11 th Street West | 10 th Street West | 5 (Fair) | Single Chip Seal |
| 10 th Street West | 2 nd Street West | 6 (Good) | Single Chip Seal |

Since the collection of this inspection data, further deterioration of the surfacing has occurred requiring even more inclusive treatment activities.

Curb and Gutter / Sidewalks / Parking Lots

The following information was taken from the Road Image Viewer with last images taken on 7/20/2006.

U-5707 – West 11th Street:

Curb and Gutter:

Curb and gutter exists from RP ±0.245 to RP ±0.742 on the right side of C/L. On the left side of C/L curb and gutter exists from RP ±0.215 to RP ±0.742. The remainder of this route has no curb and gutter.

Sidewalks / Parking Lots:

On the left side of C/L, sidewalk is adjacent to the curb and gutter from RP ±0.215 to RP ±0.742. From RP ±0.742 to RP ±1.074 on the left side of C/L, there is a boulevard with sidewalk roughly 10' away from the edge of pavement. There is a gravel shoulder with sidewalk approximately

Scope of Work Report

10' away from the edge of pavement from RP ± 1.160 to the end of the project limits on the left side of C/L.

Sidewalk is adjacent to the curb and gutter from RP ± 0.386 to RP ± 0.417 , from RP ± 0.497 to RP ± 0.527 , and from RP ± 0.601 to RP ± 0.705 on the right side of C/L. From RP ± 1.087 to the end of the project limits on the right side of C/L, there is a boulevard with sidewalk roughly 10' away from the edge of pavement.

U-5702 – Boulevard Avenue:

Curb and Gutter:

Curb and gutter exists from RP 0.250 to RP ± 0.551 on both sides of C/L. On the right side of C/L at approximately RP 0.568, there is curb and gutter that runs along Kober Drive, but it terminates at Boulevard Avenue. The remainder of this route has no curb and gutter.

Sidewalks / Parking Lots:

There is a boulevard with sidewalk roughly 10' away from the curb and gutter from RP 0.250 to RP ± 0.364 on both sides of C/L. The sidewalks in this section do not reach the curb and gutter in any location. From RP ± 0.5 to RP ± 0.551 on the right side of C/L, there is sidewalk and then an asphalt parking lot adjacent to the curb and gutter. From RP ± 1.021 to RP 1.035 on the left side of C/L, there is an asphalt parking lot adjacent to the roadway.

U-5714 – 16th Avenue West:

Curb and Gutter:

Curb and gutter exists from RP 0.0 to RP ± 0.17 on both sides of C/L. The remainder of this route has no curb and gutter.

Sidewalks / Parking Lots:

On the left side of C/L from RP 0.0 to RP ± 0.018 , there is an asphalt parking lot adjacent to the curb and gutter. Sidewalk is adjacent to the curb and gutter from RP ± 0.037 to RP ± 0.055 on the left side of C/L. From RP ± 0.075 to RP ± 0.105 on the left side of C/L, there is intermittent sidewalk that is adjacent to the curb and gutter. From RP ± 0.105 to RP ± 0.124 on the left side of C/L, there is sidewalk adjacent to the curb and gutter.

There are two small sections of sidewalk adjacent to the curb and gutter at approximately RP 0.056 and 0.115 on the right side of C/L.

Traffic Data

U-5707 – 11th Street:

2009 (Current) AADT = 4,390
2011 (Letting Year) AADT = 4,470
2031 (Design Year) AADT = 5,460
DHV = 600
Percent of Trucks = 2.0%
ESAL = 25
Basis of Projected Traffic Growth = 1.0%

U-5702 – Boulevard Avenue:

2009 (Current) AADT = 2,060
2011 (Letting Year) AADT = 2,120
2031 (Design Year) AADT = 2,740
DHV = 330
Percent of Trucks = 2.2%
ESAL = 15

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Basis of Projected Traffic Growth = 1.3%

U-5714 – 16th Avenue West:

2009 (Current) AADT = 2,260

2011 (Letting Year) AADT = 2,310

2031 (Design Year) AADT = 2,870

DHV = 320

Percent of Trucks = 1.2%

ESAL = 9

Basis of Projected Traffic Growth = 1.1%

Crash Analysis

The following engineering study evaluations were taken from January 1, 2004 to December 31, 2008:

U-5707 – 11th Street:

Total Recorded Crashes = 32

The types of crashes included: rear ends, sideswipes (in the same direction), left turn collisions (in the opposite direction), right turn collisions (in the same and opposite directions), along with other and unknown types of collisions.

Traffic variations from average occurrence were as follows:

- 15 of the 32 crashes cited icy road conditions.
- 11 of the 32 crashes cited snow as the weather condition.
- 9 of the 32 crashes cited dark light conditions.
- 12 of the 32 crashes cited left turn opposite direction as the type of collision.

| | N-P Routes through Urban Areas | Study Area |
|-----------------------|---|-------------------|
| Crash Rate | 5.66 | 3.43 |
| Severity Index | 1.67 | 1.25 |
| Severity Rate | 9.28 | 4.28 |

The crash rate for the study area was lower than the N and P routes, as well as the severity index and rate.

There have been no crash clusters or safety projects within this section during the past five years.

Remarks supplied by the Safety Management include:

N and P routes through urban areas with a population over 5,000 were used for comparison purposes, because there are no statewide average crash rates for urban routes.

- 23 crashes occurred in intersections or were intersection related.
- 6 of the crashes were single vehicle crashes.
- 22 drivers were under the age of 25.
- 1 crash stated a pedestrian jay walking was a contributing circumstance.
- 1 crash involved a bicycle.

Recommendations supplied by the Safety Management include:

- Bring sidewalks, curbs, and ramps up to current ADA compliance.
 - *New ADA features along this route will be addressed in the design of this project.*
- Upgrade signing and pavement markings. Check cross walks and “S” curves by RP 1.1 – 1.3.
 - *New signing and pavement markings will be provided with this project.*

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- *The “S” curves by RP 1.1 – 1.3 are located within the project connection as this section of the roadway was rehabilitated in 2004 by Federal Aid Project CM 5707(3) and will not be significantly altered.*
- Clear vegetation from sidewalks and branches from obstructing driver’s view of signs and roadway.
 - *Tree trimming is a city maintenance issue and will be addressed by the City of Havre as necessary.*
- Check the “Y” intersections through the “S” curves between RP 1.1 – 1.3.
 - *The “S” curves by RP 1.1 – 1.3 are no longer within the project limits as this section of the roadway was rehabilitated by Federal Aid Project CM 5707(3).*

U-5702 – Boulevard Avenue:

Total Recorded Crashes = 15

The types of crashes included: a rear end, a sideswipe (in the opposite direction), a left turn collision (in the opposite direction), right angle collisions, along with other and unknown types of collisions.

Traffic variations from average occurrence were as follows:

- 3 of the 15 collisions were on the outside shoulder.
- 2 of the 15 collisions were on the shoulder.
- 5 of the 15 collisions had snow, slush, or icy road conditions.

| | N-P Routes through Urban Areas | Study Area |
|-----------------------|---|-------------------|
| Crash Rate | 5.66 | 4.67 |
| Severity Index | 1.67 | 2.20 |
| Severity Rate | 9.28 | 10.27 |

There have been no crash clusters or safety projects within this section during the past five years.

The northern segment from RP 0.675 to 1.035 is where the majority of the crashes occurred on this route. Upgrading signing and pavement markings may be countermeasures necessary for this project.

Remarks supplied by the Safety Management include:

N and P routes through urban areas with a population over 5,000 were used for comparison purposes, because there are no statewide average crash rates for urban routes.

- 7 crashes occurred in intersection or were intersection related.
- 4 crashes stated a parked vehicle as a first or most harmful event.
- 3 crashes stated overturn as a first or most harmful event.
- 3 crashes cited drugs or alcohol as a contributing circumstance.

Recommendations supplied by the Safety Management include:

- Bring sidewalks, curbs, and ramps up to current ADA compliance.
 - *No new ADA features will be addressed on this route as the sidewalks do not continue to any specific location, nor do they tie into other sidewalks.*
- Clear vegetation from sidewalks and branches from obstructing driver’s view of signs and roadway.
 - *Tree trimming is a city maintenance issue and will be addressed by the City of Havre as necessary.*
- Upgrade signing and pavement markings. Check cross walks.
 - *The signing and pavement markings will be upgraded with this project.*
- At RP 0.7 increase the size of the double arrow sign and verify sign location.

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- *The signing will be reviewed and replaced as necessary with this project.*
- *Advanced warning will be added just south of this location to further alert traffic of the upcoming “T” intersection.*
- Check horizontal and vertical sight distances in the north end of the project.
 - *A major vertical curve issue will be improved with this project; however, completely correcting this vertical curve is not practical due to the developed residential properties adjacent to the roadway.*

U-5714 – 16th Avenue West:

Total Recorded Crashes = 7

The types of crashes included: rear ends, right angle collisions, a head on, along with some unknown types of collisions.

Traffic variations from average occurrence were as follows:

- 5 of the 7 crashes cited icy road conditions.
- 2 of the 7 crashes cited snow as the weather condition.

| | N-P Routes through Urban Areas | Study Area |
|-----------------------|---|-------------------|
| Crash Rate | 5.66 | 2.54 |
| Severity Index | 1.67 | 1.29 |
| Severity Rate | 9.28 | 3.26 |

The crash rate for the study area was lower than the N and P routes, as well as the severity index and rate.

The majority of the crashes occurred at RP 0.7 at the intersection with 2nd Street West. Under the safety program, a “Stop Ahead” sign and chevron barricade were installed in this location.

Remarks supplied by the Safety Management include:

N and P routes through urban areas with a population over 5,000 were used for comparison purposes, because there are no statewide average crash rates for urban routes.

- 5 crashes occurred in intersection or were intersection related.
- 2 of the crashes were single vehicle crashes.

Recommendations supplied by the Safety Management include:

- Bring sidewalks, curbs, and ramps up to current ADA compliance.
 - *ADA features will be added along this route to provide access from the school property to the residential areas located on either side of this route. Currently sidewalk does not exist in the residential areas; however, this will allow future connections to be possible.*
- Upgrade signing and pavement markings. Check cross walks.
 - *The signing and pavement markings will be upgraded with this project.*

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Major Design Features

Design Speed

U-5702 – Boulevard Avenue & U-5707 – West 11th Street:

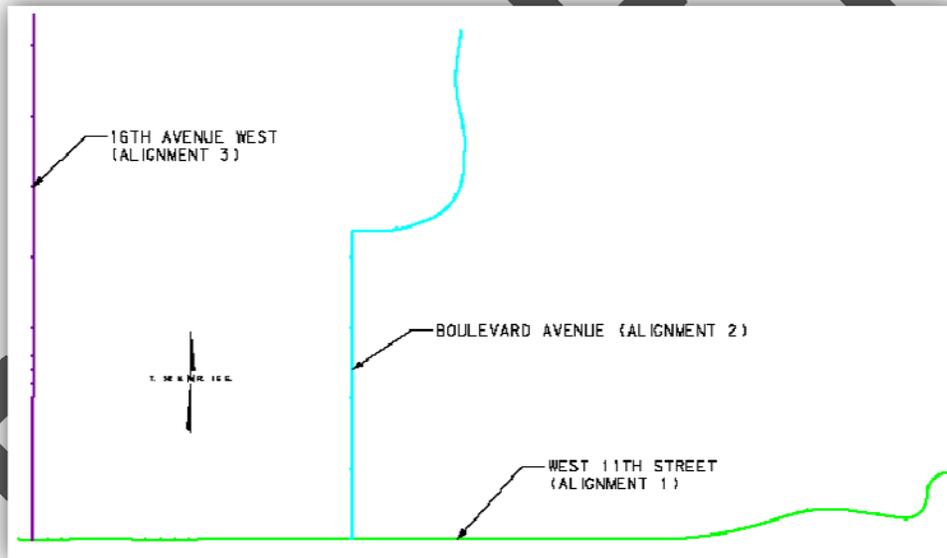
The Geometric Design Criteria for Urban Minor Arterials in the Road Design Manual calls for a design speed within the range of 30 to 50 mph. The posted speed limit for both of these routes is 25 mph. Due to the continuously changing setting, as well as the large number of approaches located along these two routes, a design speed of 30 mph will be used.

U-5714 – 16th Avenue West:

The posted speed limit from RP 0.0 to ± 0.25 is 25 mph. The remainder of this route has a posted speed limit of 35 mph. The Geometric Design Criteria for Urban Collector Streets in the Road Design Manual calls for a design speed of 30 mph; however, due to the majority of this route residing in a rural setting, a design speed of 35 mph will be used.

Horizontal Alignment

The proposed horizontal alignments along all three segments of this project closely follow the existing horizontal alignments. This project is located in an urban/rural setting with limited right-of-way in the City of Havre. Minor shifts to the existing alignments will be used in order to avoid significant earthwork and/or significant right-of-way purchase; however, these shifts do not affect the existing radii present along each route.



There are three separate alignments throughout this project: West 11th Street, Boulevard Avenue, and 16th Avenue West.

- 1) Along West 11th Street, there is a long tangent section followed by two horizontal curves with radii from 950' to 2,650'. Each of these curves do not require the use of superelevation; however, the 2,650' simple curve to the left will use 2% superelevation to match the existing bank along this roadway, providing minimal disturbance to the adjacent properties.
- 2) There is one angle point as well as four horizontal curves with radii varying from 385' to 950' along Boulevard Avenue. Spirals and superelevation will be used where required.

The only angle point within this segment is located at station 221+85.16. This angle point occurs at the controlled intersection with Wilson Avenue; therefore, the deflection angle is 90.39° to the right. Vehicles making the 90° turn are slowed down by a yield sign located at this intersection. No

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advanced warning exists for this intersection, but will be provided by the project. Also, there is a double arrow sign located at the T-Intersection, which will be replaced with this project.

Along the rural portion of Boulevard Avenue, slight adjustments to the existing horizontal alignment were used to avoid significant earthwork activities and/or right of way purchases. These adjustments were within the vicinity of \pm one foot left/right.

- 3) There are no horizontal curves along 16th Avenue West. The alignment consists of one tangent section that ties West 11th Street to West 2nd Street.

Vertical Alignment

Because of the gently rolling hills / level terrain, the vertical alignments do not pose a problem with meeting Geometric Design Criteria on the majority of these routes. The eastern end of West 11th Street and the northern ends of Boulevard Avenue and 16th Avenue West follow generally rolling terrain.

Again, there are three separate alignments throughout this project: West 11th Street, Boulevard Avenue, and 16th Avenue West.

- 1) Along West 11th Street, the proposed vertical alignment will follow the existing ground profile as closely as possible with the intent to reduce the amount of impacts to existing right-of-way and surrounding features. Existing curb, gutter, and sidewalk will be removed with the exception of the new curb, gutter, and sidewalk placed on the block prior to the residential area on the north (Station 109+57 to 111+50) and the existing separated sidewalk adjacent to the city park on the north side (Station 139+85 to 157+00).

Throughout the residential portion, the face of gutter profile along the northern curb & gutter was used to develop the centerline profile. A normal crown section was then developed with slight adjustments to the existing centerline profile. With the replacement of almost all curb & gutter along the northern and southern sides of this route, it was possible to meet geometric design criteria standards.

The profile will be lowered slightly along the east end of this route with the addition of curb and gutter. Lowering the profile along this portion of the project will avoid a large amount of earthwork that would otherwise be required.

West 11th Street includes six crest and three sag vertical curves, all of which provide the Stopping Sight Distance (SSD) for a 35 mph design speed. The maximum grade on this segment of the project is 6.512%

- 2) Along Boulevard Avenue the surfacing recommendations require the proposed vertical alignment to follow the existing ground profile as closely as possible.

In the urban overlay section the existing profile will be raised 0.15'. Based on the surfacing recommendations, the existing profile will be raised approximately 0.6' throughout the rural pulverization portion. Originally, the rural pulverization was to tie directly into the urban overlay section; however, due to complications connecting into side roads with the raised profile, a curb and gutter reconstruction section will be used to transition between the two typicals.

Minus the overlay section of this alignment, Boulevard Avenue includes three crest and five sag vertical curves, all of which provide the minimum SSD of 200'; however, the minimum Intersection Sight Distance (ISD) of 335' is not met near one of the crest curves. This crest vertical curve is being improved significantly with this project; however, it could not be further flattened without excessive impacts to adjacent residential developments.

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One vertical curve does not meet the geometric design criteria. This symmetrical sag curve's VPI is located at Station 221+34.37, which is used to tie into the controlled intersection with Wilson Avenue at Station 221+85.16, and has a length of 100 ft. The minimum length of curve between these two gradients should not be less than 228 ft. to meet the 30 mph design speed. The proposed curve meets a design speed of 20 mph, which correlates to the driver's expectancy while traveling through the yield controlled intersection. A design exception was approved November 19, 2010, for this substandard sag curve.

Two grades do not meet the geometric design criteria along this route. The 13.000% gradient is located between Station 220+83.21 and 220+84.37. Also, a gradient of 8.516% (**which was slightly steepened from the 8.348% grade documented in the design exception report to better fit the existing ground profile for pulverization**) is located between Station 228+06.12 and 228+70.45. Design exceptions were granted on November 19, 2010, for these substandard grades.

- 3) Along 16th Avenue West the proposed vertical alignment will follow the existing ground profile as closely as possible.

Comparable to the activities along Boulevard Avenue, the urban overlay section will raise the existing profile 0.15'. Based on the surfacing recommendations, the existing profile will be raised approximately 0.6' throughout the rural pulverization portion.

Besides the overlay section of this alignment, 16th Avenue West includes four crest vertical curves and one sag vertical curve. The minimum SSD provided along the crest curves of this route is 382.1 ft., which corresponds to a design speed of 40 mph surpassing the design speed along this alignment. ISD is not met at this particular crest curve, as the minimum ISD at a design speed of 35 mph is 390 ft.; however, due to the surfacing recommendations along this segment of the roadway this will not be altered.

The grades vary between 0.530% and 10.000% along this segment of the project. Using the 2-Lane Urban Collector Street Geometric Design Criteria in a rolling terrain, the maximum grade with a design speed of 35 mph is 10%.

One vertical curve does not meet the geometric design criteria. This sag vertical curve's VPI is located at Station 335+28.75, which is used to tie into the controlled intersection with West 2nd Street at Station 336+69.00, and has a length of 110 ft. Based on the Geometric Design Criteria for Urban Collector Streets, the minimum length of curve between these two gradients should be 165 ft. in order to meet the 35 mph design speed. The proposed curve meets a design speed of 20 mph, which correlates to the driver's expectancy of stopping at this controlled intersection. An exception to the standards was approved November 19, 2010, for this sag vertical curve.

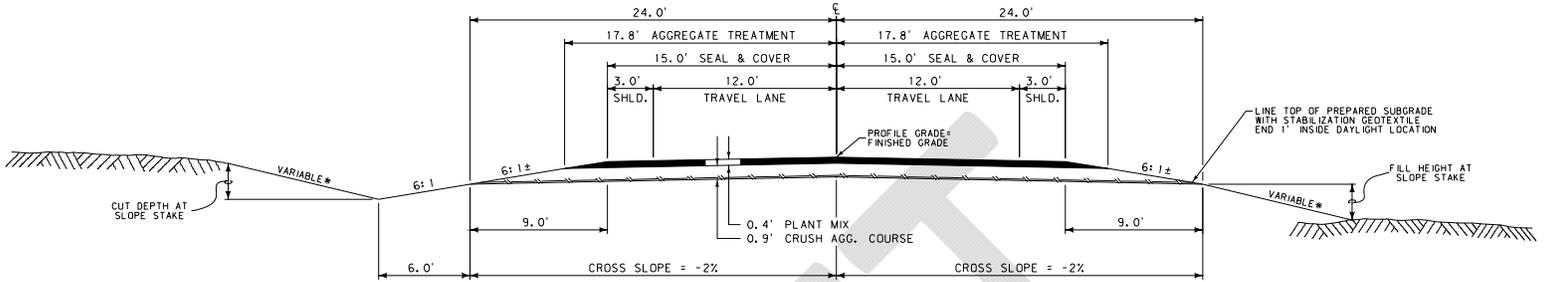
Scope of Work Report

Typical Sections

Typical section widths vary according to which alignment they are associated with, and the proposed scope of work in that area of the project. The typical sections for each alignment are detailed below.

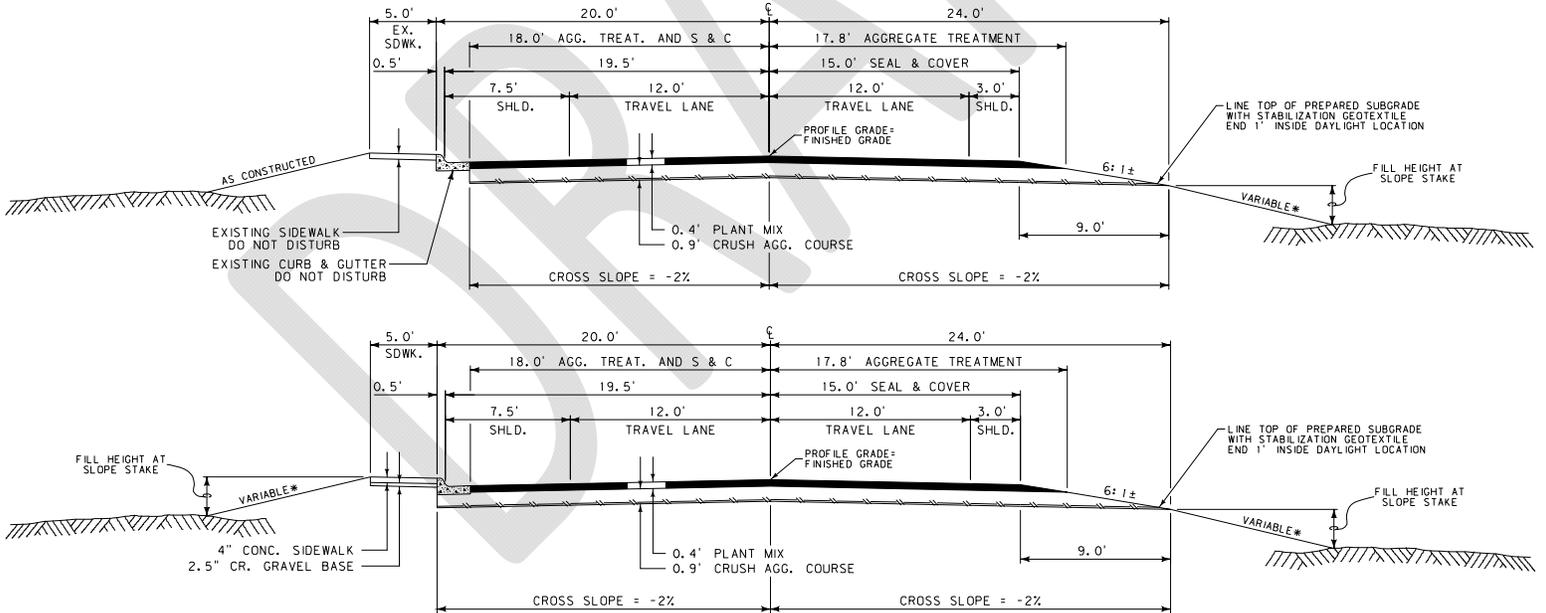
1) U-5707 – West 11th Street:

- a. From approximately Station 100+50 to 109+57, the typical will consist of two 12' travel lanes running east and west along with 3' shoulders.



- b. Approximately from Station 109+57 to 111+50, existing curb, gutter, and 5' sidewalk will be tied into left of centerline. From Station 111+50 to 112+50, new curb, gutter, and 5' sidewalk will be constructed left of centerline.

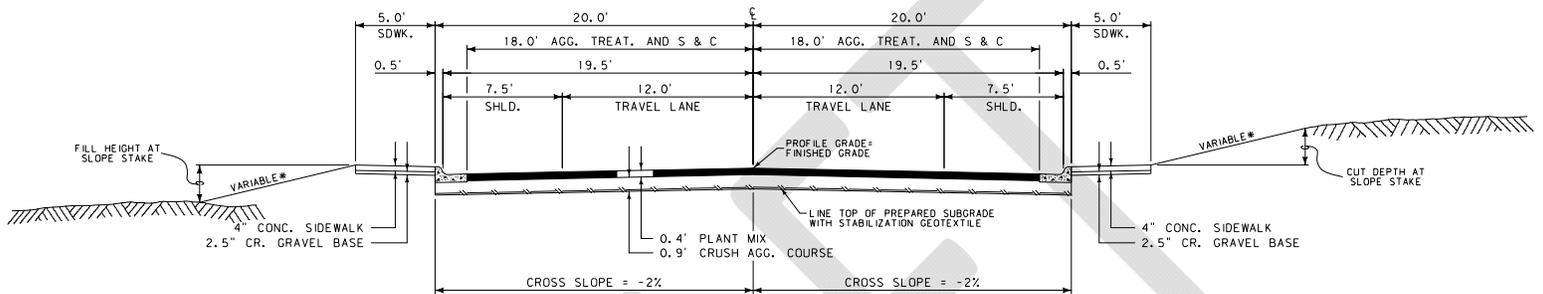
The typical section in this area will consist of two 12' travel lanes running east and west along with a 7.5' shoulder left of centerline and a 3' shoulder right of centerline.



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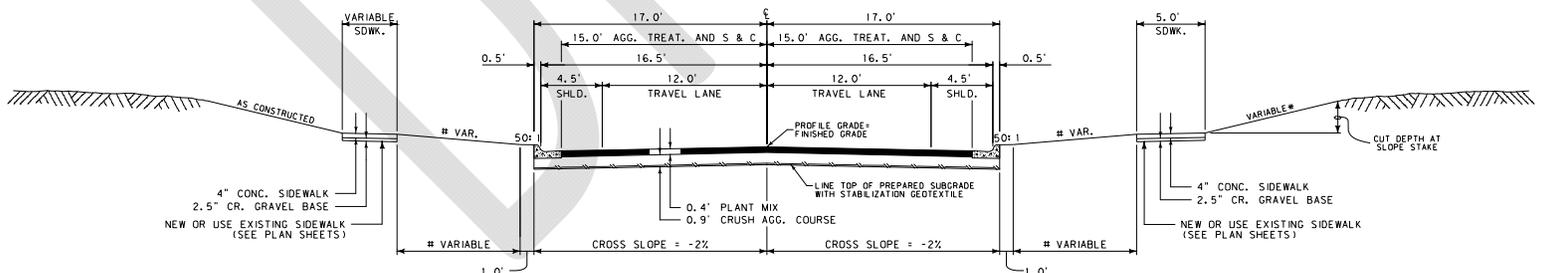
- c. New sidewalks accompanied by ADA features will be placed along both sides of West 11th Street, within the residential section of this route between Stations 113+43 (alleyway just west of Wilson Avenue) and 139+75 (Monroe Avenue). New curb and gutter will also be placed along this roadway due to the significant construction activities proposed adjacent to the existing concrete. Replacing most of the sidewalks within the residential area will also enable the sidewalks to be widened from 4' to 5', which will help to maintain current Public Rights Of Way Accessibility Guideline (PROWAG) standards when obstacles are located within the sidewalk. In locations where significant grading may be an issue in placing new ADA features, retaining walls will be used to avoid utility and R/W conflicts.

The typical section in this area will consist of two 12' travel lanes running east and west along with two 7.5' shoulders.



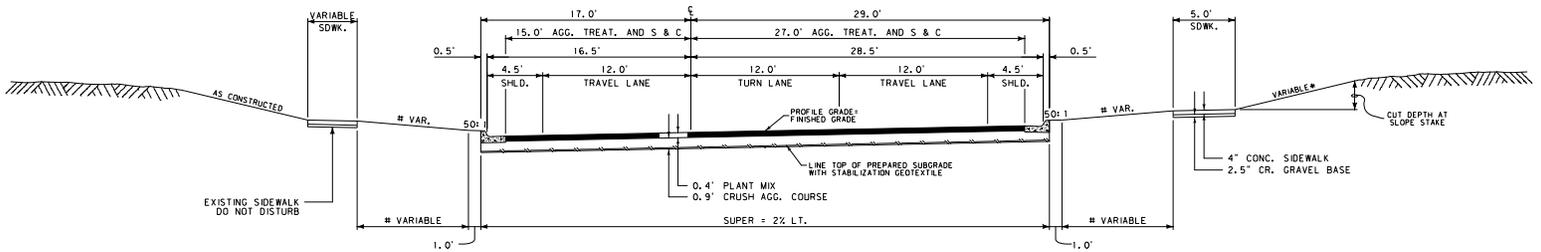
- d. New curb & gutter left and right of centerline will be added east of Monroe Avenue to address drainage flowing along the edge of pavement. Due to the lack of roadside ditches, this drainage is causing erosion adjacent to the pavement and infiltration into the base material. New sidewalk with ADA facilities along the south side of this portion of West 11th Street will also be implemented with this project. This will allow a clear path of travel along both sides of this project. Also, a section of new sidewalk will be added along the north side of this route between Monroe Avenue and Assiniboine Avenue to connect the two existing separated boulevard sidewalk segments that are currently in place.

The typical section from station 140+45 to 144+15 and from station 150+29 to 161+50 is comprised of two 12' travel lanes running east and west along with two 4.5' shoulders.



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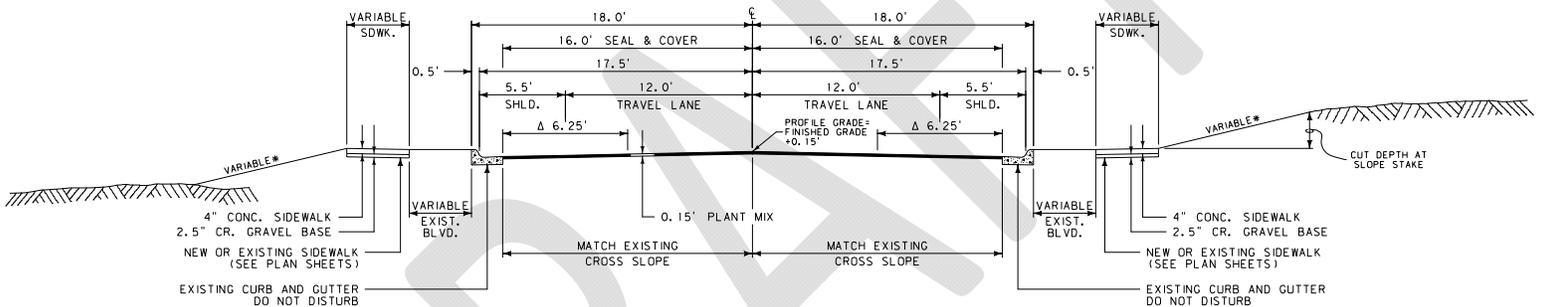
- e. From Station 147+00 to 148+15, the typical section is comprised of two 12' travel lanes running east and west with two 4.5' shoulders separated by a 12' turning lane.



2) U-5702 – Boulevard Avenue:

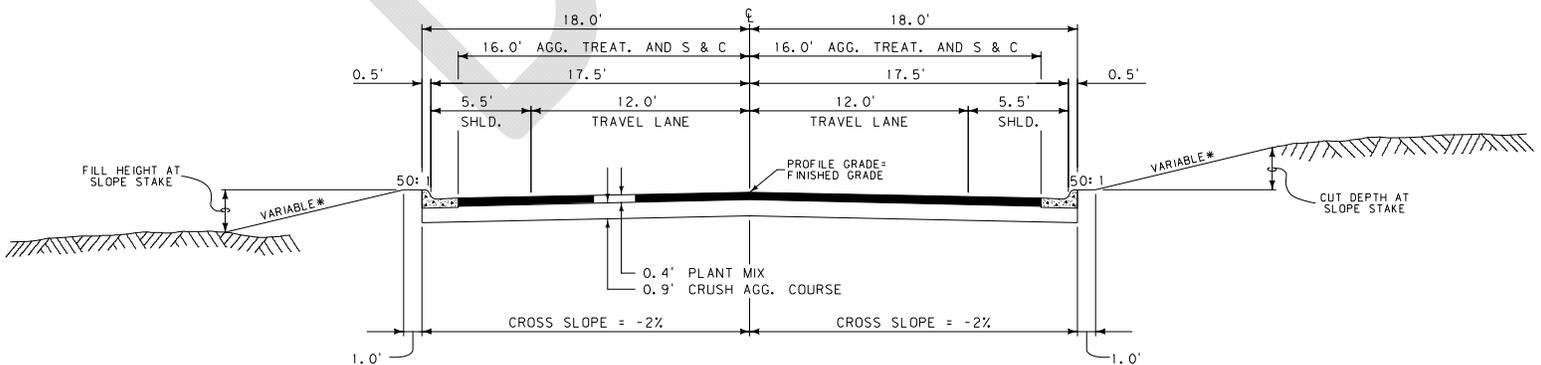
Sidewalks on the south end of this route will be added to connect the existing boulevard sidewalks located approximately 10' from the edge of pavement to the sidewalks on the north side of West 11th Street. New ADA features will be addressed on this route at the intersections of 9th and 10th Streets. Curb and gutter along this route is in good condition and will remain as is.

- a. From approximately Station 200+35 to 215+75, the typical section consists of two 12' travel lanes running north and south with two 5.5' shoulders.



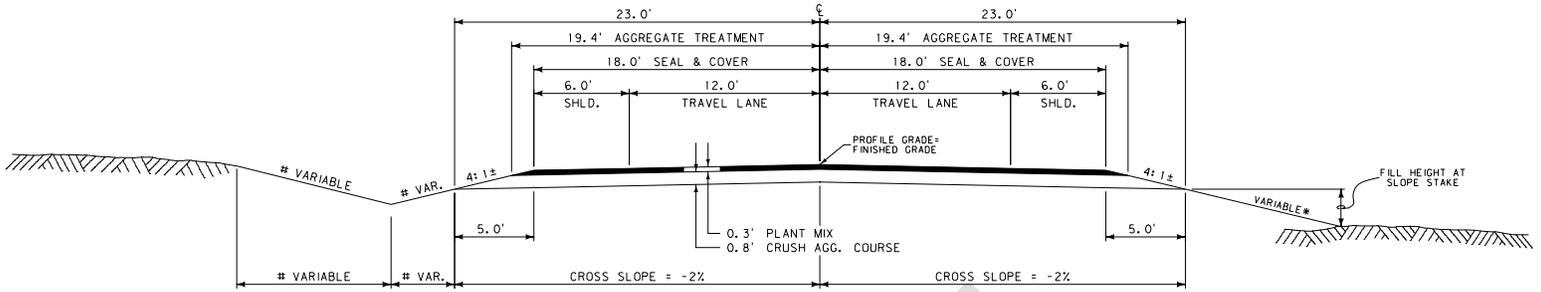
- b. In order to address drainage flowing along the edge of pavement, which is causing erosion and infiltration into the base material, and to improve the SSD, new curb & gutter will be added to the left and right side of the roadway in the reconstruction section between Station 215+75 to 221+85.

Just like the typical section described above, two 12' travel lanes along with two 5.5' shoulders produce the typical section in this area.

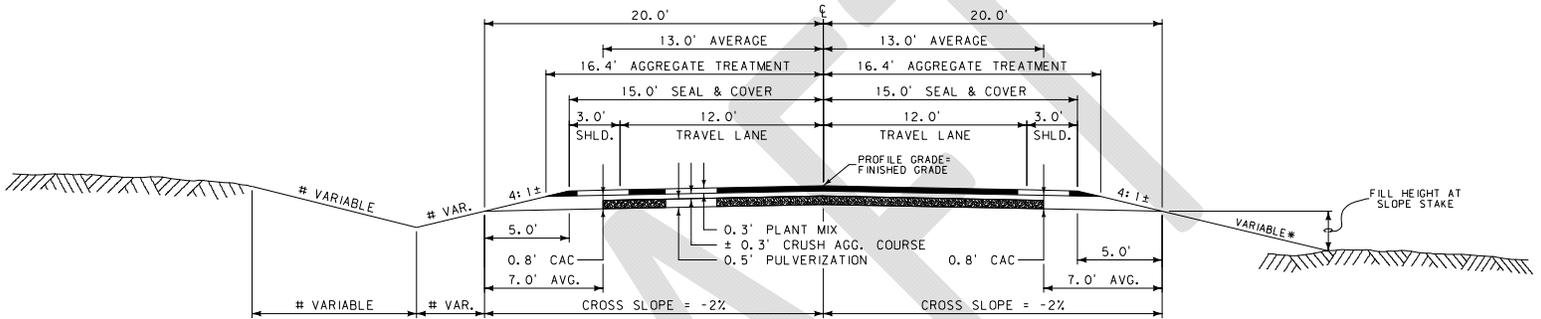


Scope of Work Report

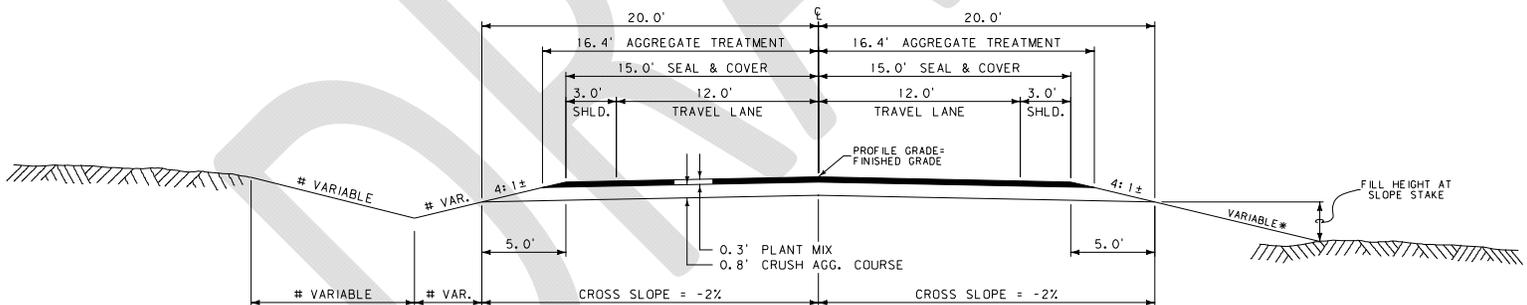
- c. A short reconstruct typical section comprised of two 12' travel lanes and 6' shoulders tie the curb and gutter section to the intersection at Wilson Ave.



- d. From Station 223+00 to 238+23, a pulverization typical section with two 12' travel lanes and 3' shoulders will be used on this segment of the project.



- e. Finally, a short reconstruct typical section comprised of two 12' travel lanes and 3' shoulders tie the pulverization section to the existing roadway.

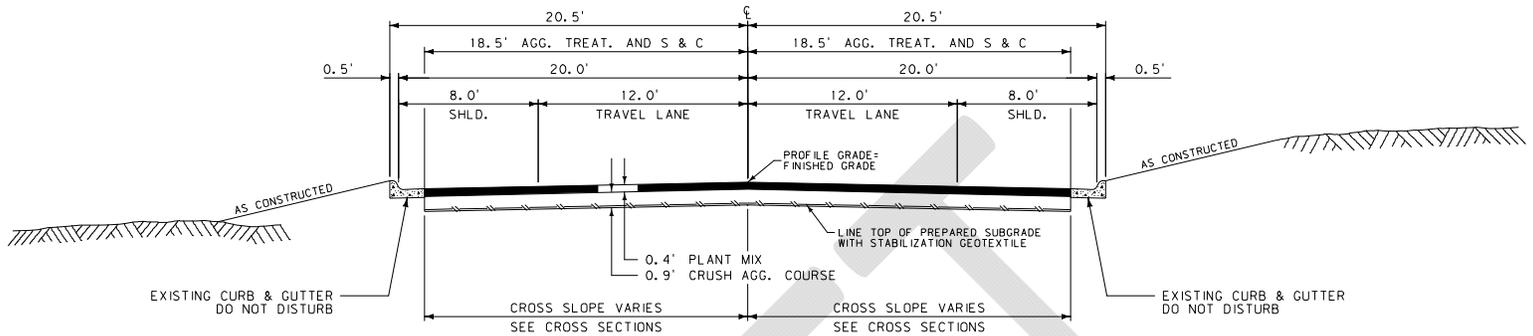


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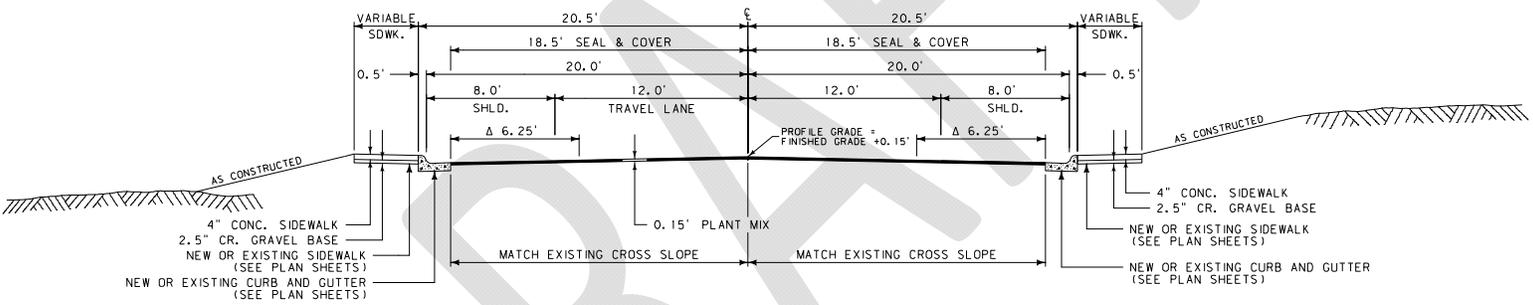
3) U-5714 – 16th Avenue West:

ADA features will be constructed on this route to connect school property with residential areas. Curb and gutter along this route is in good condition and will remain as is.

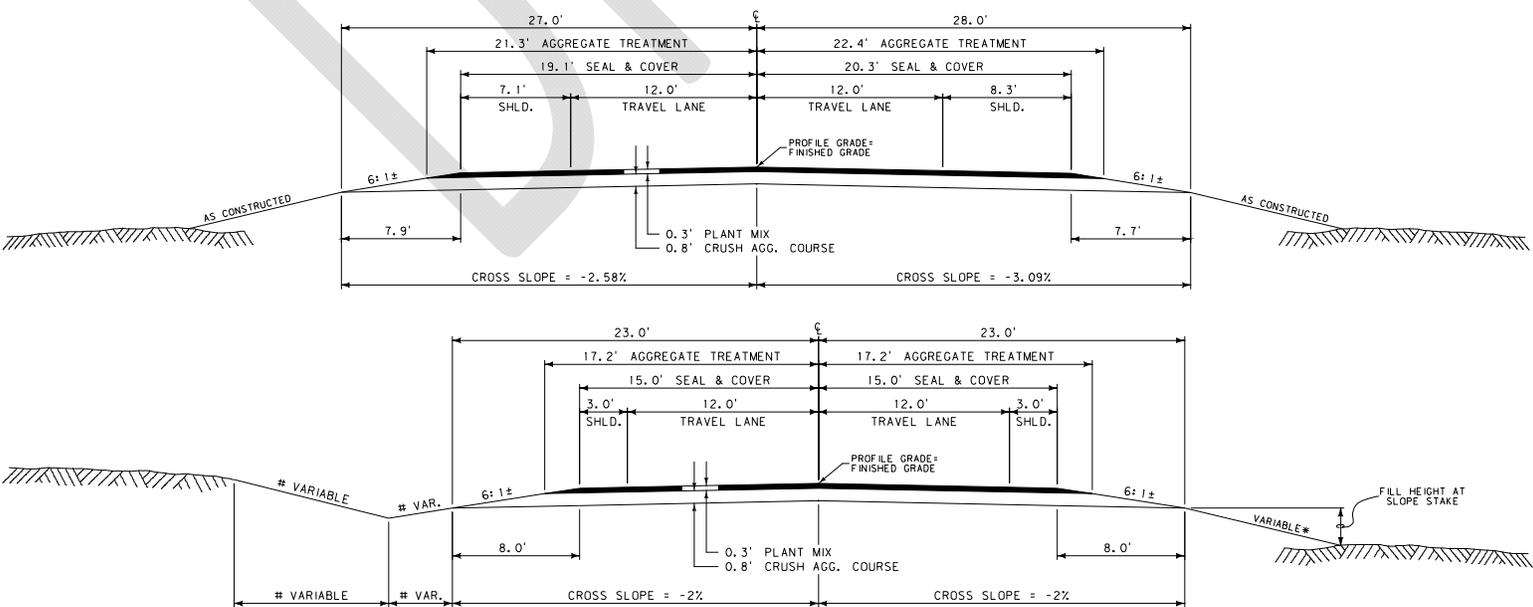
- a. From Station 300+52 to 301+25, a short reconstruct typical section comprised of two 12' travel lanes and 8' shoulders will tie the intersection with West 11th Street to the overlay section.



- b. From approximately Station 301+25 to 309+23, the typical section consists of two 12' travel lanes running north and south with two 8' shoulders.

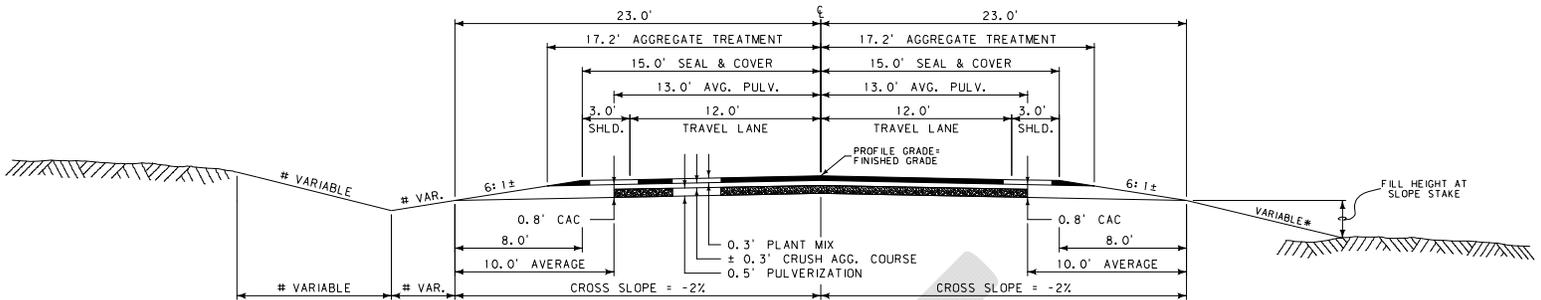


- c. From Station 309+23 to 310+50, a reconstruct section with two 12' travel lanes and shoulders transitioning from 7-8' to 3' will tie the overlay section to the pulverization section.

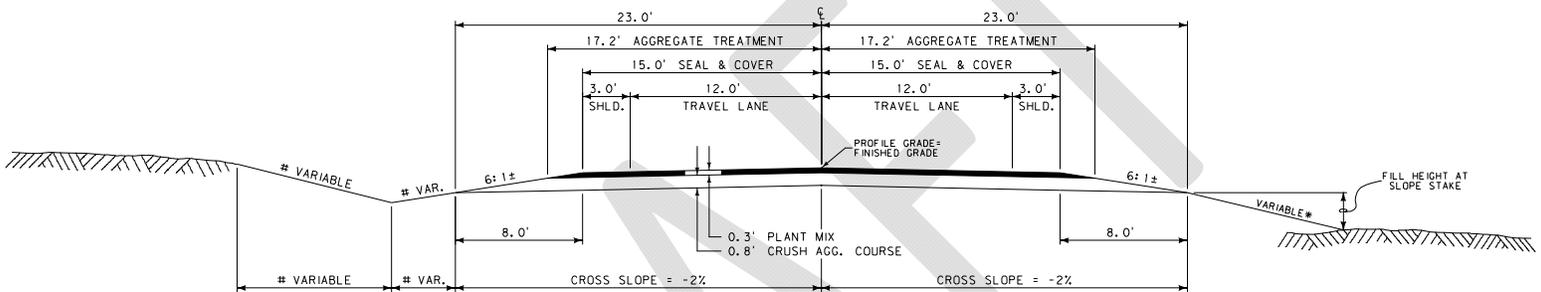


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- d. From Station 310+50 to 334+00, a pulverization typical section with two 12' travel lanes and 3' shoulders will be used on this segment of the project.



- e. Finally, a short reconstruct typical section comprised of two 12' travel lanes and 3' shoulders tie the pulverization section to the existing roadway.



Surfacing Design

The preliminary surfacing design recommendations are as follows:

- Recommended PG binder is 64-28.
- Grade "S" plant mix surfacing with 3/4" nominal maximum aggregate size is recommended.
- Binder and PMS grade were selected according to 4/7/05 Surfacing Design Guidelines.
- Soil R-values were used to determine surfacing thicknesses.

Subgrade and/or foundation soils located within the project limits are sensitive to changes in moisture content, and may cause construction difficulties when soil moisture contents exceed the Plastic Limit. Special provisions will be included into the plans package.

1) U-5707 – West 11th Street:

Surfacing designs are based on the maximum loading of 25 ESALs. Design life is 20 years in accordance with MDT and AASHTO design procedures. Surfacing section's recommendations following the PFR are detailed below:

Surfacing Section No. 1 – Overlay from Station 100+00.00 to 113+25.00 (West 11th Street)

0.15' Plant Mix Surfacing

Design R-value = 12

Surfacing Section No. 2 – Reconstruct from Station 113+25.00 to 161+40.00 (West 11th Street)

0.40' Plant Mix Surfacing

0.90' Crushed Aggregate Course

1.30'

Design R-value = 5

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However, following the geotechnical review of this route and further deterioration of the existing surface, Surfacing Section No. 2 has been selected for this entire part of the project – Station 99+50.00 to 161+50.00.

In addition to using the Reconstruct Section, Geotechnical Engineering Supplemental Report No. 1 distributed April 28, 2010, provided a couple of recommendations along this alignment (these recommendations are described in more detail under the Geotechnical Section of this report):

- Place an underdrain system from 146+00 to 159+00 left.
- The underdrain system will connect to the storm drain systems in the vicinity of 159+00.
- Digouts may be beneficial along this alignment. Geotech suggests using a calculated volume of Unclassified Excavation and Special Backfill equal to 15-25% of the street length, and an approximate depth of 2 feet.
- Place geotextile atop a prepared subgrade for the entire length of the reconstruction.

2) U-5702 – Boulevard Avenue:

Surfacing designs are based on the maximum loading of 15 ESALs. Design life is 20 years in accordance with MDT and AASHTO design procedures. The surfacing section's recommendations are detailed below:

Surfacing Section No. 1 – Overlay from Station 200+00.00 to 215+75.00 (Blvd. Ave.)

0.15' Plant Mix Surfacing

Design R-value = 12

Surfacing Section No. 2 – Rural Pulverization from Station 215+75.00 to 241+75.00 (Blvd. Ave.)

0.30' Plant Mix Surfacing

0.30' Crushed Aggregate Course

0.60'

Design R-value = 12

Pulverize through 0.50', and then place Crushed Aggregate Course before surfacing.

Originally, the rural pulverization was to tie into the urban overlay section; however, due to complications tying into side roads with the raised profile, a curb and gutter reconstruction section will be used between approximate Station 215+75 to 221+85 and again to tie into the existing road toward the end of this project from Station 238+23 to 241+00. This reconstruct section will consist of:

0.30' Plant Mix Surfacing

0.80' Crushed Aggregate Course

1.10'

3) U-5714 – 16th Avenue West:

Surfacing designs are based on the maximum loading of 15 ESALs. Design life is 20 years in accordance with MDT and AASHTO design procedures. The surfacing section's recommendations are detailed below:

Surfacing Section No. 1 – Overlay from Station 300+00.00 to 309+25.00 (16th Avenue West)

0.15' Plant Mix Surfacing

Design R-value = 12

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Surfacing Section No. 2 – Rural Pulverization from Station 309+25.00 to 336+66.50 (16th Ave. West)

0.30' Plant Mix Surfacing

0.30' Crushed Aggregate Course

0.60'

Design R-value = 12

Pulverize through 0.50', and then place Crushed Aggregate Course before surfacing.

Similarly to Boulevard Ave., a reconstruct section will be used to transition the overlay section and/or existing features to the rural pulverization section. This will take place from approximately Station 309+23 to 310+50 and from Station 334+00 to 335+50. Again this reconstruct section will consist of:

0.30' Plant Mix Surfacing

0.80' Crushed Aggregate Course

1.10'

In addition to these reconstruct transitions, reconstruction of the beginning of this route was deemed necessary after extensive deterioration due to the harsh winter. This section is located from approximately Station 300+52 to 301+25. This reconstruct section will consist of:

0.40' Plant Mix Surfacing

0.90' Crushed Aggregate Course

1.30'

Grading

Due to the reconstruct activities through a large portion of West 11th Street, preliminary earthwork runs provide figures in excess of 18,000 cubic yards of excavation and 3,000 cubic yards of fill. Therefore, grading on this project will be paid for as street excavation.

Slope Design

For West 11th Street and Boulevard Avenue the Geometric Design Criteria for Urban Minor Arterials calls for 6:1 fill slopes, a 10' wide ditch at 20:1, and variable back slopes. However, 4:1 fill slopes are allowed and a "V" ditch may be used if necessary, as long as it is traversable or the hinge point is located outside of the clear zone. Traversable "V" ditches will be used where practical along each of these routes and/or the hinge point will be located outside of the clear zone. Curb, gutter, and sidewalk are also used along large portions of these routes. In these cases, cut and fill slopes meeting geometric design criteria will be used unless sidewalk is present allowing the use of retaining walls or slightly steeper fill slopes to tie into existing features. These substandard slopes will be used to reduce impacts to developed surroundings.

For 16th Avenue West, the Geometric Design Criteria for Urban Collector Streets calls for 4:1 fill slopes, a 10' wide ditch at 20:1, and variable back slopes. "V" ditches are also allowed on this roadway if they are traversable or the hinge point is located outside of the clear zone. A traversable "V" ditch configuration will also be used along this route as necessary.

The pulverization typical section throughout the northern segment of Boulevard Avenue from Station 221+85 to the end of this project at Station 241+00 contains varying ditch characteristics. The existing pavement width is slightly wider than 25'. In order to meet the 30' pavement width required for Urban Minor Arterials (which provides additional width requested by local officials to accommodate bicycle and pedestrian use) and minimize large earthwork activities along this segment of the project, modifications to standard slope designs are necessary.

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During preliminary nomination of this roadway, the City of Havre emphasized the desire to obtain a wider roadway through this section. However, it was noted during the Preliminary Field Review that the hills adjacent to this part of the roadway should not be disturbed, due to the instability of the slopes if exposed. Currently the existing back slopes appear to be stable and partially vegetated. The high clay content of these slopes makes revegetation difficult and if at all possible it was suggested to leave them alone.

In order to balance the increased pavement width and maintain minimal disturbance to surrounding back slopes, steeper surfacing inslopes and nonstandard slope design is required:

- 1) A 6:1 surfacing inslope for the proposed typical calls for a difference of 8' between half width of the finished grade and half width of the subgrade. A 4:1 surfacing inslope only requires a difference of 5'. This width savings either prevents disturbance to the adjacent slopes or enables the use of flatter back slopes to tie into the existing slopes.
- 2) Two basic concepts were used to provide minimal disturbance to the existing ditches:
 - a. Whenever possible, 50:1 slopes which day light to the existing foreslopes or 6:1 fill slopes were used. This maintains drainage away from the surfacing inslope, while not disturbing the existing "V" ditches. The vertical grade is adequate to drain the ditches.
 - b. In cases where a new "V" ditch is required, 4:1 ditch foreslopes with variable back slopes tying into the existing hills are proposed.

In either scenario the hinge point of the "V" ditches, whether it be an existing or proposed ditch, falls within the clear zone at numerous locations. The clear zone is 16 feet for a 4:1 slope at this design speed and traffic volume. The proposed/existing back slopes vary between 6:1's (in an attempt to provide traversable "V" ditches) and 1:1's. Similar "V" ditches exist along this alignment as well as steep back slopes that are not correctable without significant impacts to the surrounding area.

Every effort was made to flatten the back slopes as much as practical, while maintaining the flow line of the "V" ditches below the surfacing courses. The use of turf reinforcement mats will be called out along the bottoms of these "V" ditches to provide additional erosion control measures while revegetation along this roadway takes place.

Increasing the surfacing width by approximately 5' partially mitigates concerns with steeper inslopes and ditches. This width will also satisfy pedestrian and bicycle needs along the corridor. A design exception has been granted for the 4:1 surfacing inslopes and modifications to standard slope design on November 19, 2010.

Geotechnical

The following information was taken from the preconstruction soil survey data submitted by the District Lab on April 10, 2008.

U-5707 – West 11th Street:

A-4's and A-6's are located along this route's subgrade, and they have low to medium swell tendencies.

U-5702 – Boulevard Avenue:

The subgrade consists of a variety of soils ranging from A-4's to A-6's. These soils have swell tendencies that range from none to medium.

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U-5714 – 16th Avenue West:

Finally, this segment contains similar A-4 and A-6 subgrade material. Swell tendencies vary from low to medium as well.

Geotechnical Engineering Supplemental Report No. 1 distributed April 28, 2010, provided a couple of recommendations along West 11th Street:

- Geotech recommended the installation for an underdrain system from 146+00 to 159+00 left. The underdrain system will connect to the storm drain systems in the vicinity of 159+00.
- Next, the report stated that there is a strong possibility for the discovery of areas of soft subgrade during the reconstruction of West 11th Street. Geotech believes that the areas most likely to encounter soft subgrade are the eastern- and western-thirds of West 11th Street. The need and suitable depth for a digout within any specific area can be determined by the Project Manager. For the purpose of establishing a bid item in the project contract, Geotech suggests using a calculated volume of Unclassified Excavation and Special Backfill equal to 15-25% of the street length, and an approximate depth of 2 feet.
- Finally, they recommend the placement of geotextile atop a prepared subgrade to separate the new base course from the finer material beneath for the entire length of the reconstruction.

The stations and limits provided above may be revised as the design progresses, and special provisions will be included into the plans package to clarify the activities as necessary.

Even though similar soil characteristics are found throughout the entire project, digouts are not anticipated along the other two routes due to the pulverization activities proposed. Likewise, geotextile atop a prepared subgrade will not be used.

Hydraulics

The original scope of this project was to provide only pavement preservation activities to these routes. As design progressed, major rehabilitation and reconstruction activities were added through certain segments of the project. There has not been a Location Hydraulics Study Report for this project; however, various hydraulic activities are now a part of this project:

- A. Modifications to the approach pipe under 16th Avenue West are required to realign the existing inlet pipe connecting to the drop inlet at Station 100+26. This pipe will be rotated so that it is in line with the proposed ditch bottom along West 11th Street. The drop inlet, concrete drainage chute, and drainage capacity of the storm drain facility located on the Havre Middle School property will not be altered with this project.
- B. A new approach pipe will be required at Station 104+27 to line up with the proposed ditch bottom alignment. Minimal cover will exist at this location, so an arch pipe or another alternative will be used at this location.
- C. Due to the nearly flat grade along the western end of West 11th Street, a plant mix swale approach will be constructed from Station 107+36 to 109+57. This will carry water traveling back on station from the end of the curb and gutter section. A drop inlet will be placed at Station 107+36, which will collect this water and send it to a storm drain pipe with an outlet at approximately Station 106+25.
- D. Existing drop inlets throughout the residential area of West 11th Street will be adjusted, relocated, or replaced to match the proposed flow line of the new curb & gutter and avoid conflict with the new ADA facilities.

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- E.** New curb & gutter is also proposed along the eastern end of West 11th Street, where none currently exists. This change to the existing roadway will require the addition of new drop inlets prior to the proposed super transition at approximately station 143+15. A new storm drain outfall pipe will be required north of station 144+00 to connect the proposed drop inlets to the storm water detention pond in the First Bank Park. An agreement for maintenance will be completed with the City of Havre.
- F.** As stated before, the rural pulverization was to tie into the urban overlay section along Boulevard Avenue; however, due to complications tying into side roads and providing drainage from a rural typical to a curb and gutter typical along with the raised profile, a curb and gutter reconstruction section will be used from approximately Station 215+75 to 221+85. A riprap trapezoidal ditch will carry the water from the end of this curb and gutter to the existing ditch bottom near the approach pipe, which will not be disturbed, at approximately Station 221+20.
- G.** A grade raise with the pulverization activity will require the addition of a new approach pipe (Station 230+58 Rt.) along the northern end of Boulevard Avenue. In the past, drainage simply crossed the existing roadway at this approach as the mainline curved through this area with a superelevation, and very little ditch existed to carry any amounts of drainage.
- H.** Drainage around the recently constructed Border Patrol Station along 16th Avenue West will be addressed with this project. New culverts added by this new construction will be evaluated for proper sizing. A new sprinkler system was also added by the Border Patrol and will require relocation with the widening of this route – special provisions will be added to the contract as deemed necessary.

Bridges

No bridges exist within the project limits. No bridge issues will be addressed with this project.

Safety Enhancements

The largest safety enhancement that will be provided by this project is due to a substantially longer asymmetrical vertical curve that is being proposed in conjunction with the 13% gradient to provide adequate SSD, which is currently not provided along Boulevard Avenue. Due to the increased vertical curve length, the 13% tangent is also significantly reduced in length.

Just to the north of this crest vertical curve is a “T” intersection with no advanced warning; however, advance warning will be provided by this project. Signing and pavement markings throughout the project will be evaluated and replaced as necessary.

Context Sensitive Design Issues

There are no major context sensitive design issues being addressed with this project. The addition of sidewalks and bike paths, where feasible, will be an added benefit.

Traffic

Pavement markings will be provided with this project. Because the entire project is within the Havre urban area, these routes will be striped as no passing zones. Shoulder stripping will be placed in locations deemed necessary by the Traffic Bureau. One turning lane situated on the east end of West 11th Street will also be restriped.

There are no school zones within the limits of this project, but there are numerous cross walks that need new pavement markings. School crosswalk signs along with all other signs throughout this project will be replaced if considered necessary by the age of the existing signs.

New signage at dead end intersections will be addressed with this project per the safety review report.

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Advanced warning will be added along Boulevard Avenue to warn northbound traffic of the intersection located at Station 221+85.16.

Traffic control will be addressed through the special provisions. Signed detours will be identified as the design progresses.

All intersecting approaches appear to intersect in a desirable fashion. There will be no major revisions to any intersections.

Signing plans will be completed and distributed with the plans package for this project.

Miscellaneous

Minor fencing issues will be addressed with this project. Relocation of a small amount of existing fence is required for new sidewalk placement.

The existing sprinkler system near the edge of the road will need to be re-set on 16th Avenue West near the Border Patrol Station. Additional sprinkler systems may also need to be re-set throughout the project limits. Special provisions will be added to address these issues.

Sod and or lawn seed will be called out in the topsoil and seeding frame based on recommendations from the District Botanist.

Pedestrian/Bicycle/ADA

A sidewalk along the south side of West 11th Street from Monroe Avenue towards the MSU-Northern campus will be addressed with this project. Also, a sidewalk to connect an existing separated pathway located on the north side of West 11th Street in this same area will be completed with this project.

Existing sidewalks are located within this project. None of the intersections on any of these routes with sidewalks have ADA ramps. New curb ramps will be constructed on all intersections with existing sidewalks as well as new sidewalks being placed along West 11th Street.

Boulevard Avenue will receive a 30' top (which meets the geometric design criteria), providing 3' shoulders to enhance the northern segment of this route for pedestrian travel.

Design Exceptions

For the most part, the horizontal and vertical alignments meet Geometric Design Criteria. A separate design exception report was approved for this project November 19, 2010.

Items included in the design exception report are as follows:

- Two vertical curves that do not meet design criteria
- Grades of 8.348 and 13.000%
 - **Per surfacing comments to slightly modify the profile and better fit the existing ground for pulverization, the 8.348% grade has been steepened to 8.516% .**
- Surfacing inslopes & nonstandard slope design

Reconstructing two vertical curves that tie into controlled intersections, flattening two grades that do not meet geometric design criteria, and constructing standard 6:1 inslopes with a traversable "V" ditch, along a short portion of Boulevard Avenue, would not provide a safety benefit commensurate with the significant cost increases necessary to construct them. All three of these routes have deteriorated significantly, and improvements are essential. Increases in cost due to right-of-way acquisition, earthwork activities, and excessive impacts to adjacent residential developments would considerably delay the construction of this project.

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Implementing the requested design exceptions provides a highway meeting the expectations of the public and adequately addresses the safety of drivers without excessive cost. The majority of these requested design exceptions are to minimize impacts to existing facilities and to allow the use of pulverization per the original intent of this rehabilitation project. As the crash data indicated above, no crash clusters were identified and these are not considered dangerous roadways.

Right-of-Way

Limited new right of way and construction permits are currently expected for the construction of this project. Existing right of way will be plotted and acquisitions will be obtained if necessary. Cadastral survey has been requested along 16th Avenue West, portions of Boulevard Avenue, and West 11th Street.

Access control will not be addressed with this project.

Cold-In-Place Recycle

Originally, these projects were thought to be good candidates for cold in-place recycle (CIR); nevertheless, CIR isn't a viable option for several reasons:

- 1) Plant mix thicknesses are variable, and overall are too thin to provide for the CIR process/lift and some existing plant mix on which to run equipment.
- 2) Plant mix composition doesn't appear consistent. The project has numerous patches and areas of heavily sealed plant mix in varying conditions. There are also a few other areas like the eastern portion of West 11th Street where a base course is missing.

For these reasons, and to minimize mobilization costs and maximize constructability advantages, surfacing recommendations will involve pulverization as well as overlays in areas as discussed in the surfacing section.

Utilities/Railroads

In most cases, the utilities along these routes are simple crossings and do not follow the entire length of the route. The City of Havre has planned to replace water crossings along West 11th Street during the summer of 2011.

A Phase I SUE survey was requested on March 26, 2010, and completed September 7, 2010. A Phase II SUE survey was requested on March 23, 2011, and completed May 19, 2011.

The anticipated utility conflicts with this project are as follows:

- Adjusting manhole covers for the sanitary sewer, storm drain facilities, and other manholes in conflict with the new road surfacing
- Adjusting water valves and fire hydrants
- Adjusting, moving, or adding drop inlets
- Adjusting luminaires and power poles

Clearances for overhead utilities and depths for underground facilities will be checked. The Phase II SUE survey will be utilized to determine the depths of underground facilities – especially in areas of new storm drain installation and adjustments. Other utility agreements may also be required, but no major utility involvement is projected.

The nearest railroad to the vicinity of this project is approximately 0.25 mi. to the north of Boulevard and 16th Avenue. There are no railroad crossings within the boundaries of this project.

Environmental Considerations

The proposed project meets the criteria for a Programmatic Categorical Exclusion in accordance with 23 CFR 771.117(d). It appears that there are no wetlands within the limits of this project. Section 4(f) and Section 6(f) involvement is necessary. First Bank Park is considered a Section 4(f) and Section 6(f)

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property. The Environmental Services Bureau has undergone the necessary coordination with the city of Havre regarding impacts to First Bank Park. The Havre Middle School property located at the intersection of 11th Street and 16th Avenue has the potential to be considered a Section 4(f) property. The Environmental Services Bureau has undergone the necessary coordination with the Havre Public School Superintendent regarding impacts to the Havre Middle School property. 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.

Providing an overlay along portions of these routes is providing Eco-Friendly Considerations. Also, using the existing surfacing through pulverization activities has enabled us to use fewer virgin materials in the design along other portions of this project.

Experimental Features

No experimental features will be included with the scope of this 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 routes affected in this project all have fairly low AADT. Single lane detours or road closures with alternative detour routes can be established. The plans package will include a Transportation Management Plan (TMP) consisting mainly of a Traffic Control Plan (TCP). These issues are discussed in more detail under the Traffic Control and Public Involvement sections.

Other Projects

There are no proposed or existing projects that may interfere with the construction of this project. NH 1-6(76)384, Havre-East Phase 2, a reconstruct project on the east end of Havre may be let for construction around the same time as the subject project depending on funding.

Traffic Control

Because this project is located within the Havre Urban Area, numerous alternate routes exist within close proximity to this project. Detour routes will be identified as the design progresses.

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.

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.

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 intersection closures to off-peak hours or to night time.
- Set up signs for alternate routes during major construction activities.

Intelligent Transportation Systems (ITS) Features

There are no ITS features that will be considered as part of this project.

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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 was released to the local media on February 22, 2010.

As design progresses, right of way personnel will contact the appropriate landowners to receive written permission for various construction activities.

Cost Estimate

Each of the routes included in this project were originally nominated as separate projects at the following costs:

U-5707 – West 11th Street

| | <i>w/out IDC</i> | <i>w/ IDC</i> <i>14.06%</i> |
|----------------------|------------------|--------------------------------|
| Total CN | \$1,348,761 | \$1,538,397 |
| Total CN + CE | \$1,416,199 | \$1,615,317 |

The construction cost was approximately \$1,155,751 per mile.

U-5702 – Boulevard Avenue

| | <i>w/out IDC</i> | <i>w/ IDC</i> <i>14.06%</i> |
|----------------------|------------------|--------------------------------|
| Total CN | \$551,618 | \$629,175 |
| Total CN + CE | \$579,199 | \$660,634 |

The construction cost was approximately \$669,136 per mile.

U-5714 – 16th Avenue West

| | <i>w/out IDC</i> | <i>w/ IDC</i> <i>14.06%</i> |
|----------------------|------------------|--------------------------------|
| Total CN | \$587,619 | \$670,238 |
| Total CN + CE | \$617,000 | \$703,750 |

The construction cost was approximately \$839,456 per mile.

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The Alignment and Grade Cost Estimate was adjusted by using more detailed grading and surfacing quantities. Also, all three routes were compiled into one estimate. The change in road work was due to the following: 1) the determination of insufficient base material located along West 11th Street, which caused the addition of reconstruction activities along these routes; 2) widening activities along rural portions of each route necessary to meet geometric design criteria; and 3) the increase in new sidewalk and curb and gutter along West 11th Street.

| | | Estimated Cost | Inflation (INF) (from PPMS) | TOTAL costs w/INF + IDC (from PPMS) |
|--------------------|-------|--|--------------------------------|---|
| Road Work | | \$1,623,584 | | |
| Traffic Control | | \$150,000 | | |
| Subtotal | | \$1,773,584 | | |
| Mobilization | (10%) | \$177,358 | | |
| Subtotal | | \$1,950,942 | | |
| Contingencies | (25%) | \$487,736 | | |
| Total CN | | \$2,438,678 | \$580,405 | \$3,019,083 |
| CE | (10%) | \$243,868 | \$58,041 | \$301,908 |
| TOTAL CN+CE | | \$2,682,546 | \$638,446 | \$3,320,992 |
| | | Inflation Factor (PPMS) = 0.238000000000 | | |

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 17.48% as of FY 2010.

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The Scope of Work Cost Estimate has been adjusted with more accurate design quantities. Increases in project cost are due to safety enhancements along Boulevard Avenue, which increased earthwork quantities slightly, and choosing to include various sidewalk options that were not included in previous cost estimates.

| | | Estimated Cost | Inflation (INF) (from PPMS) | TOTAL costs w/INF + IDC (from PPMS) |
|---|-------|--------------------|--------------------------------|---|
| Road Work | | \$1,831,624 | | |
| Traffic Control | | \$94,500 | | |
| Subtotal | | \$1,926,124 | | |
| Mobilization | (15%) | \$288,919 | | |
| Subtotal | | \$2,215,043 | | |
| Contingencies | (10%) | \$221,504 | | |
| Total CN | | \$2,436,547 | \$579,898 | \$3,016,445 |
| CE | (15%) | \$365,482 | \$86,985 | \$452,467 |
| TOTAL CN+CE | | \$2,802,029 | \$666,883 | \$3,468,912 |
| Inflation Factor (PPMS) = 0.238000000000 | | | | |
| 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. | | | | |

Project Management

Christie W. McOmber, P.E., Great Falls District Projects Engineer.

This project is not under full FHWA oversight.

Ready Date

The current OPX2 ready date is November of 2011. This project is slightly behind schedule with its projected finish date in OPX2 at February 2012. The target letting date has been set as February 25, 2012.