



INTERSTATE
15 **GORE HILL to EMERSON JUNCTION**
Corridor Planning Study



Prepared for:
Montana Department of Transportation
Helena, MT

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Abbreviations/Acronyms

ADA	Americans with Disabilities Act
AADT	Average Annual Daily Traffic
ARM	Associated Rules of Montana
CAPS	Crucial Area Planning System
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality
CO	Carbon Monoxide
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FWP	Fish, Wildlife, and Parks
GIS	Geographic Information System
GO	General Obligation Bonds
HSIP	Highway Safety Improvement Program
HSSR	Highway State Special Revenue
I-15	Interstate 15
I-315	Interstate 315
IM	Interstate Maintenance
LMP	Limited Maintenance Plan
LOS	Level of Service
L RTP	Long Range Transportation Plan
LUST	Leaking Underground Storage Tank
MACI	Montana Air and Congestion Initiative
MAP-21	Moving Ahead for Progress in the 21st Century Act
MCA	Montana Code Annotated
MDT	Montana Department of Transportation
MEPA	Montana Environmental Policy Act
MFISH	Montana Fisheries Information System
mph	Miles per Hour

MPO	Metropolitan Planning Organization
MS4	Municipal Separate Storm Sewer System
MSAT	Mobile Source Air Toxics
NEPA	National Environmental Policy Act
NHPB	National Highway Performance Bridge
NHPP	National Highway Performance Program
NHS	National Highway System
NRCS	Natural Resource Conservation Service (U.S. Department of Agriculture)
NRIS	Natural Resource Information System (State of Montana)
OPI	Overall Performance Index
PAIP	Public and Agency Involvement Plan
PM	Particulate Matter
PvMS	Pavement Management System
REMI	Regional Economic Models, Inc.
RP	Reference Point
Section 4(f)	Section 4(f) of the 1966 Department of Transportation Act
Section 6(f)	Section 6(f) of the 1964 National Land and Water Conservation Fund Act
SID	Special Improvement District
SOC	Species of Concern (Montana)
STIP	Surface Transportation Improvement Program
STP	Surface Transportation Program
STPU	Surface Transportation Program Urban
TA	Transportation Alternatives (Program)
TIF	Tax Increment Financing
TMDL	Total Maximum Daily Load
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VMS	Variable Message Signs
vpd	Vehicles per Day
WQA	Water Quality Act

Executive Summary

The Montana Department of Transportation (MDT) initiated the *I-15 Corridor Planning Study* in partnership with the Federal Highway Administration (FHWA) and in coordination with the Great Falls Metropolitan Planning Organization. The 2014 Great Falls Area Long Range Transportation Plan (LRTP) identified the need to evaluate the Interstate System through Great Falls. The LRTP states that, “*due to the need for improvements to both Emerson Junction and Gore Hill interchanges and other identified needs for added lanes and operational improvements on I-15 and I-315, an Interstate Corridor Study for the Great Falls area is recommended.*”¹

The purpose of the study is to determine potential improvement options to address safety and operational concerns within the study corridor based on needs and objectives identified by the public, the study partners, and resource agencies. The study examined geometric characteristics, crash history, land uses, physical constraints, environmental resources, and existing and projected operational characteristics with the study area. A package of feasible recommendations was developed to address the transportation needs of the corridor over the next 20 years. These recommendations would help the study partners target the most critical needs and allocation of resources.

The study area includes Interstate 15 (I-15) through Great Falls, beginning southwest of the Gore Hill Interchange (Exit 277) near Reference Point (RP) 277 and ending northwest of Emerson Junction (Exit 282) near RP 282. Additionally, the study area includes Interstate 315 (I-315) and 10th Avenue S, west of the Missouri River (RP 95). The study area includes a 300-foot buffer on either side of the roadway.

The study is a corridor planning document and not a design or construction project. MDT, Great Falls, and FHWA used a collaborative process to develop the study, as well as conducting focused outreach efforts to the public, key stakeholders, and resource agencies. Known and publically available resource information was also evaluated. Activities completed for development of the study include the following:

- Research and analysis of existing roadway conditions
- Research and synthesis of known environmental resources and applicable regulations in the study area
- Identification and documentation of projected conditions
- Identification of corridor issues and areas of concern
- Consultation and coordination with local officials, stakeholders, resource agencies, and the public
- Identification of corridor needs and objectives
- Development of corridor improvement options with consideration of costs, available funding, feasibility, public input, and known environmental resource constraints
- Documentation of potential funding mechanisms for improvement options

ES.1. CORRIDOR AREAS OF CONCERN

Assessment of existing conditions within the study area and public and stakeholder input resulted in the identification of roadway issues and areas of concern. The issues identified include existing roadway

elements, traffic operations, safety, and environmental considerations. The identified areas of concern are listed below.

TRANSPORTATION SYSTEM

- Seven bridges along the Interstate have deck conditions that indicate the need for rehabilitation.
- I-315 has poor to fair surfacing conditions.
- I-15 mainline has two substandard vertical curves, one substandard horizontal curve, and one location where the vertical grade does not meet current standards.
- Seven of eight interchange on-ramps do not meet current standards for length.
- Three of seven interchange off-ramps do not meet current standards for length.
- Spacing between the 10th Avenue S and 14th Street SW Interchanges does not meet current standards.
- Six of the twelve intersections evaluated currently experience poor traffic operations during the peak hour(s).
- A trend of fixed-object collisions was noted along I-15.

ENVIRONMENTAL CONSIDERATIONS

- Areas of prime farmland if irrigated and farmlands of statewide importance exist within the study area.
- There are signs of instability and past landslides near the Gore Hill area.
- Most of the study area is located within the Great Falls Municipal Separate Storm Sewer System area.
- I-15 crosses over the Sun River.
- Two 4(f) resources are located within the study area.
- The Missouri River/Warden Bridge is listed as an historic property.

ES.2. CORRIDOR NEEDS AND OBJECTIVES

The following needs and objectives were established based on the analysis of existing and projected conditions, local plans, and input from resource agencies, stakeholders, and the public. These needs and objectives were used to develop improvement options for the corridor.

NEED 1: IMPROVE THE SAFETY OF THE CORRIDOR

Objectives (To the Extent Practicable)

- Reduce the frequency and severity of crashes.
- Improve roadway elements to meet current design criteria to address identified safety concerns.
- Reduce conflicts between vehicles of varying types and speeds.
- Address identified crash trends and clusters.

NEED 2: ACCOMMODATE EXISTING AND FUTURE CAPACITY DEMANDS

Objectives (To the Extent Practicable)

- Maintain level of service (LOS) standards for mainline segments and interchange ramps.
- Improve operations and maintain LOS standards for intersections.

NEED 3: PROVIDE FOR THE MOBILITY OF PEOPLE AND FREIGHT

Objectives (To the Extent Practicable)

- Provide for the movement and transfer of people and goods.
- Maintain the roadway for effective and prompt emergency response.

OTHER CONSIDERATIONS

- Environmental resource impacts of improvement options
- Local and regional planning efforts
- Funding availability
- Construction feasibility and impacts
- Security of the transportation system

ES.3. RECOMMENDED IMPROVEMENT OPTIONS

Improvement options were identified to address corridor issues and areas of concern. The improvements are intended to satisfy the needs and objectives defined for the corridor. The recommended improvement options are intended to offer a range of potential mitigation strategies for corridor issues and areas of concern. Small-scale improvement options identified may be as simple as modifying signing and striping. Larger, more complex, reconstruction improvements were also envisioned. Strategies to mitigate potential impacts would be more fully explored during project development activities.

Planning-level cost estimates were developed for each improvement option. The costs include estimates for right-of-way, preliminary engineering, construction engineering, construction, and indirect costs. In addition, an inflationary factor of 3 percent per year was applied to the planning-level costs to account for estimated year of expenditure. Cost ranges are provided in some cases, indicating unknown factors at the particular planning-level stage. All costs are listed in 2015 dollars. **Appendix 5** contains planning-level cost estimates, including all assumptions. **Table E.1** contains a summary of the potential improvements, along with planning-level cost estimates, potential funding sources, and agency responsibility.

Table E.1: Recommended Improvement Options

Improvement Option	Location	Description	Estimated Implementation Timeframe	Potential Funding Source*	Agency Responsibility	Cost Estimate
INTERSTATE 15						
1.0	Southbound Auxiliary Lane	RP 278.1 to 278.5	Construct auxiliary lane between Gore Hill and 10th Ave S interchanges in southbound direction.	Mid-term	NHPP HSIP	MDT \$1.9M
2(a)	Roadway Illumination	RP 282.3 to 283.0	Install additional illumination along the Interstate.	Mid-term	NHPP HSIP	MDT \$500k
2(b)	Reconstruction of Roadway	RP 282.3 to 283.0	Reconstruct roadway and bridge structures to meet current design standards.	Long-term	NHPP HSIP	MDT \$24.0M
INTERSTATE 315						
3.0	Pavement Rehabilitation	RP 0.0 to 1.4	Resurface both directions of I-315.	Mid-term	NHPP	MDT \$1.0M
4.0	Bridge Deck Treatment	<ul style="list-style-type: none"> I-15 Overpass (RP 0.01) 14th St SW Overpass (EB) 14th St SW Overpass (WB) 	Rehabilitate bridge decks.	Mid-term	NHPP	MDT \$600k
5.0	Diagrammatic Guide Signing	10th Ave S to 14th St SW	Install overhead diagrammatic guide signage for eastbound traffic.	Short-term	NHPP HSIP	MDT \$200k
6.0	Westbound Auxiliary Lane	14th St SW to I-15	Reconstruct I-315 westbound and the I-15 on-ramp to provide an auxiliary travel lane.	Mid-term	NHPP HSIP	MDT \$2.0M
7.0	Westbound Auxiliary Lane	Fox Farm Rd to 14th St SW	Reconstruct I-315 westbound and the Fox Farm Road intersection to provide an auxiliary travel lane.	Mid-term	NHPP HSIP CMAQ	MDT \$1.2M
INTERCHANGES						
8.0	Lengthen Southbound Off-ramp	10th Ave S Interchange	Lengthen southbound off-ramp.	Mid-term	NHPP HSIP	MDT \$260k
9.0	Modify Lane Merge	Central Ave west of Interchange	Modify signing and striping.	Short-term	STPU Local	Local \$20k
10.0	Feasibility Analysis	Emerson Junction	Secure a local project sponsor to fund an operational analysis/feasibility study of the Emerson Junction Interchange.	Mid-term	Local Private	Local \$250k
INTERSECTIONS						
11.0	Intersection Improvements	Gore Hill Interchange	Install additional traffic control such as roundabouts or traffic signals.	Mid-term	NHPP HSIP CMAQ	MDT \$5.2M to \$9.0M
12.0	Intersection Improvements	Central Ave Interchange	Install additional traffic control such as roundabouts or traffic signals.	Long-term	NHPP HSIP CMAQ STPU	MDT \$8.1M to \$10.6M
13.0	Intersection Improvements	Fox Farm Intersection	Install dual eastbound left-turn lanes.	Mid-term	NHPP CMAQ STPU	MDT \$100k

* Refer to **Section 6** for more information on funding sources.

ES.4. CONCLUSION

The ability to develop and implement any of the recommended improvement options ultimately depends on availability of funding, right-of-way needs, and other project priorities. At this time, there is no funding identified to complete any of the recommended improvement options contained in this study. Federal funding allocations for the MDT Great Falls District and the MDT Traffic Safety Section are committed through Federal Fiscal Year 2019, with numerous unfunded projects beyond 2019. There may be opportunity, however, to develop smaller, lower cost improvements through alternative funding sources.

To continue with the development of a project (or projects) the following steps are needed:

- Identify and secure a funding source(s).
- Ensure improvement projects are consistent with long-range planning within the Great Falls MPO and incorporated into the fiscally constrained TIP.
- For MDT-led projects, follow MDT processes for project nomination and development, including a public involvement process and environmental documentation.
- For projects that are developed by others and that may impact MDT routes, coordinate with MDT via the System Impact Action Process.

Should this corridor planning study lead to a project or projects, compliance with NEPA (if federal funding is used) and MEPA (if a state action) would be required. The purpose and need statement for any future project should be consistent with the needs and objectives contained in this study. Further, this corridor planning study would be used as the basis for determining the impacts and subsequent mitigation for the improvement options in future NEPA/MEPA documentation. Any project developed would have to comply with CFR Title 23 Part 771 and ARM 18, sub-chapter 2, which sets forth the requirements for documenting environmental impacts on highway projects.

Chapter 1

Introduction

The Montana Department of Transportation (MDT), in partnership with the Federal Highway Administration (FHWA) and in coordination with the Great Falls Metropolitan Planning Organization (MPO), initiated the *I-15 Corridor Planning Study* to assess the Interstate System through the Great Falls area. The 2014 Great Falls Area Long Range Transportation Plan (LRTP) identified the need for an Interstate Corridor Study. The LRTP states that, “*due to the need for improvements to both Emerson Junction and Gore Hill interchanges and other identified needs for added lanes and operational improvements on I-15 and I-315, an Interstate Corridor Study for the Great Falls area is recommended.*”¹

The purpose of the study is to determine potential improvement options to address safety and operational concerns within the study corridor based on needs and objectives identified by the public, the study partners, and resource agencies. The study corridor includes Interstate 15 (I-15) through Great Falls, beginning southwest of the Gore Hill Interchange (Exit 277) near Reference Point (RP) 277 and ending northwest of Emerson Junction (Exit 282) near RP 282. The study area also includes Interstate 315 (I-315) and 10th Avenue S west of the Missouri River (RP 95). **Figure 1.1** provides a map of the study area and corridor.

1.1. PROCESS

The *I-15 Corridor Planning Study* is a pre-National Environmental Policy Act (NEPA) and Montana Environmental Policy Act (MEPA) study that allows for early planning-level coordination with the public, stakeholders, environmental resource agencies, and other interested parties. The NEPA/MEPA environmental review process is an approach to balance transportation decision-making that takes into account the need for safe and efficient transportation and the impacts on the human and natural environment.

The study does not replace the NEPA/MEPA process. The results of the study may be used to help determine the level and scope of environmental review required should a project be forwarded into a subsequent NEPA/MEPA process. The study would assist in facilitating a smooth and efficient transition from transportation planning to future project development/environmental review, if a project is moved forward. This study identifies both known technical issues and environmental conditions within the corridor, and it identifies reasonable and feasible improvements to increase safety and efficiency for the traveling public. Additionally, it defines potential impacts on the surrounding environment resulting from various improvement options. The pre-NEPA/MEPA process discloses potential environmental impacts and technical constraints, identifies potential mitigation measures that can be implemented, and documents the information for the public and decision-makers before decisions are made and carried forward. This study is a planning-level study to determine various improvement options within the study area. It is not a design or construction project.

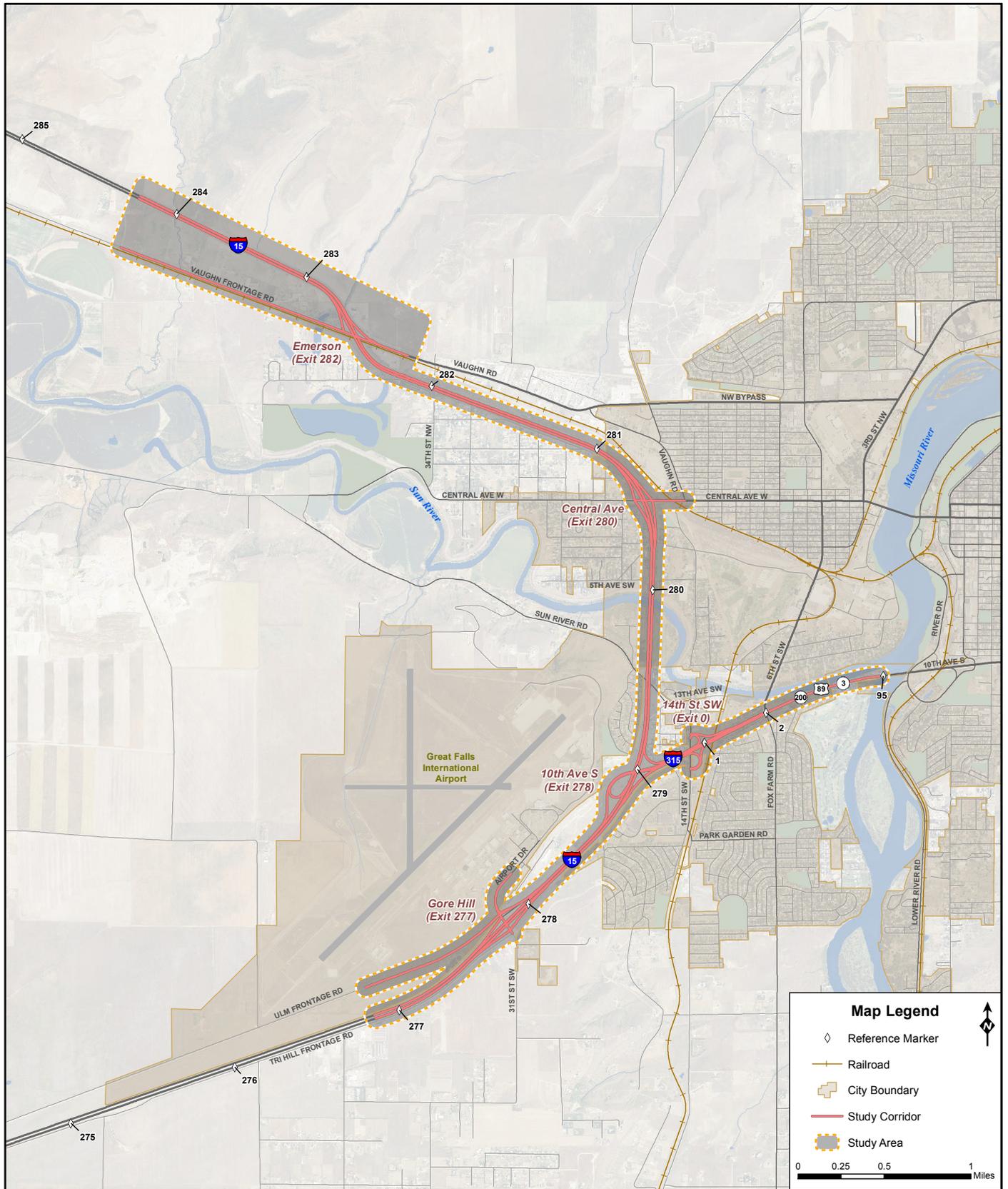


Figure 1.1: Study Area

Chapter 2

Public and Stakeholder Outreach

An important aspect of the planning study process is to provide opportunities for ongoing and meaningful public involvement. Education and public outreach are essential parts of achieving this goal. A *Public and Agency Involvement Plan* (PAIP) was developed to identify public involvement activities needed to gain insights on and to seek consensus about existing and future transportation needs. The purpose of the PAIP was to ensure a proactive public involvement process that provided opportunities for the public to be involved in all phases of the planning study process. Specific public outreach measures are noted in this chapter. Meeting content, such as press releases, advertisements, agendas, presentations, minutes, etc., are provided for all of the described activities in **Appendix 2**.

2.1. PUBLIC INVOLVEMENT

Two public informational meetings were scheduled over the course of the study process. Press releases were distributed to area media outlets, and meeting announcements were advertised in the local newspaper (*Great Falls Tribune*) twice (at 1-week and 3-week intervals) before the public meetings. The ads announced the meeting location, time and date, purpose of the meeting, and the locations where documents could be reviewed. Meeting minutes and materials are provided in **Appendix 2**.

2.1.1. INFORMATIONAL MEETING ONE

The first informational meeting was held on October 29, 2014, in the Gibson Room at the Great Falls Civic Center. Thirteen people signed the attendance sheet at the meeting. Approximately 5 others were present, but did not sign in, bringing the estimated total attendance to 18 individuals.

The meeting was held to inform interested parties about the scope and purpose of the corridor planning study, to present the findings of the existing conditions analysis, and to solicit input on the existing conditions and concerns within the study area that might be relevant to the corridor planning effort. The meeting began with a presentation that included the study process, purpose, and existing conditions. The presentation was followed by a question-and-answer period. The following comments were made during the meeting:

- A new connection across the river is needed.
- A full movement interchange at Emerson Junction is important for the Great Falls Community.
- It is difficult to maneuver large trucks at the Gore Hill Interchange.
- There are limited sight distances at the Central Avenue Interchange.
- The channelization at the Central Avenue Interchange can be confusing.

2.1.2. INFORMATIONAL MEETING TWO

The second informational meeting was held on May 28, 2015, following completion of the draft *I-15 Corridor Study* report. The purpose of the meeting was to present the draft report and to discuss the

recommended improvement options. Twenty people signed the attendance sheet at the meeting, with approximately six additional people present who did not sign in.

Comments were received at the informational meeting and subsequent to the meeting through email and written comments. The following summarizes the public comments received:

- A noise analysis report was completed in 2003 for 10th Avenue S which resulted in several recommendations which have not been completed.
- Emerson Junction was not built as it was intended. The intent was to build a full-movement interchange.
- A full movement interchange is needed at Emerson Junction to accommodate large trucks and to provide access to industrial and manufacturing areas.
- Pedestrian accommodations should be included with any improvements to the Gore Hill Interchange.
- Consideration should be given to relocating the Gore Hill Interchange further to the southwest.
- There was mixed reception of the roundabout concepts for Gore Hill.

2.1.3. OTHER PUBLIC INVOLVEMENT EFFORTS

A website (www.mdt.mt.gov/pubinvolve/i15) was developed to provide up-to-date information regarding the study, as well as an opportunity to provide comments. Draft documents were posted for public review and comment during the study process. Informational announcements were posted on the website to encourage public involvement in the study.

Two newsletters were distributed that described the work in progress, results achieved, preliminary improvement options, and other topics. These newsletters were made available at the informational meetings, and they were posted to the study website.

2.2. RESOURCE AGENCY WORKSHOP

A resource agency workshop was conducted on November 13, 2014, to provide an overview of the study and process and to confirm content and accuracy of the *Environmental Scan* document (see **Appendix 3**). Each agency invited to participate in the workshop was sent a draft *Environmental Scan* for review. The following agencies were invited to participate, and those noted in bold attended the workshop:

- BNSF Railway Company
- Cascade County Floodplain Administrator
- City of Great Falls Floodplain Administrator
- **Montana Department of Environmental Quality**
- **Montana Department of Transportation**
- **Montana Fish, Wildlife and Parks**
- Montana State Historic Preservation Office
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

An open discussion was held on various resource areas that the agencies thought should be further identified, supplemented, or considered, as well the purpose of the study in general. Meeting minutes are provided in **Appendix 2**.

2.3. ADVISORY COMMITTEE

A study planning team was established with representatives from the Great Falls MPO, Great Falls City Commission, Malmstrom Air Force Base, Great Falls International Airport, MDT, and FHWA. The team met regularly (approximately monthly) during the 12-month study to discuss study progress, analysis methodologies and results, draft technical memorandums and reports, and other issues and concerns. The planning team served in an advisory role and reviewed study documentation before publication.

2.4. PUBLIC AND AGENCY REVIEW PERIOD

The public and agency comment period for the draft planning study report extended from May 22, 2015, to June 21, 2015. Three written comments were received during the comment period, with one additional comment received after June 21st. Comments and responses are presented in **Appendix 1**.

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Chapter 3

Existing and Projected Conditions

This chapter presents the existing and projected roadway conditions and social, economic, and environmental factors that influence the Great Falls Interstate System. These conditions were used in the planning analysis to identify known issues and areas of concern. The analysis is based on existing and historic traffic data, field measurements and observations, roadway as-built plans, aerial imagery, Geographic Information System (GIS), and publically available environmental information and demographics. If an improvement option is forwarded from this study to project development, this general information may be used to support future, detailed, project-level analyses.

3.1. PLANNING WITHIN THE CORRIDOR

A number of documents exist that help guide planning activities for lands within the study area. Planning is primarily the responsibility of the Great Falls MPO. The planning documents listed below were reviewed to provide context for the study.

- Great Falls Area Long Range Transportation Plan – 2014
- Cascade County Growth Policy Update (2014)
- City of Great Falls Growth Policy Update (2013)
- Great Falls International Airport Master Plan (Ongoing)
- Great Falls Transit Development Plan (2010)
- Interstate System Access Informational Guide (2010)

The *Existing and Projected Conditions Report* contains more information from these planning documents and considerations that may be important in the development of improvement options for the study area (**Appendix 4**). Additionally, federal regulations would have to be followed should changes occur to the Interstate System.

3.1.1. PLANNED PROJECTS

The Montana 2014-2018 *Final Surface Transportation Improvement Program* (STIP) is a federally required publication that shows funding obligations over the next five years. This program identifies projects intended to preserve and improve Montana's transportation system. The Montana 2014-2018 Final STIP² identifies the following future projects within the study area:

- **Emerson Junction to Manchester:** This project will be a major rehabilitation of I-15 beginning at RP 282.2 and ending at RP 285.9. The letting date for this project is estimated to be in 2017.
- **Bridge Preservation, Great Falls IM:** This project is bridge deck preservation on I-15 between RP 209.1 and 247.2 (outside of the study limits) and I-315 at RP 1.06. The letting date for this project is estimated to be in 2016.

3.2. TRANSPORTATION SYSTEM

I-15 is functionally classified as a principal arterial freeway on the Interstate Highway System. The Interstate serves as one of the main north-south corridors through Montana, and it connects Canada to the southern border of California. The roadway was constructed or improved at various times, beginning in 1939 and extending to 2009. I-15 is part of the Canamex Trade Corridor, which Congress designated as a “High Priority Corridor” in the *National Highway Systems Designation Act of 1995*.³ The corridor’s main objective is to facilitate trade and strengthen the corridor’s position in the global economy.

I-315 begins at the 10th Avenue S junction with I-15 (RP 279). It was opened to traffic in late 1967. The corridor is currently signed as Business Loop 15, US 89, and MT 200. I-315 is one of the shortest Interstate highways in the country at 0.828 mile, and it terminates at the intersection of Fox Farm Road and 6th Street Southwest.

Primary users of the corridors are all types, including local residents, commuters, travelers, and freight operators. Interstate highways are considered part of the principal arterial freeway system. Freeways are characterized by having fully controlled access, high design speeds, and a high level of driver comfort and safety. For these reasons, freeways have separate geometric design criteria than those of standard principal arterial highways.

3.2.1. PHYSICAL FEATURES AND CHARACTERISTICS

This section discusses the physical features and characteristics of the study corridor. Information was gathered using publically available sources, field observations, GIS data, and MDT as-built drawings.

3.2.1.1. Hydraulics

I-15 crosses the Sun River at RP 279.35, between the 10th Avenue S and the Central Avenue West interchanges. The crossing consists of a concrete bridge structure. Additionally, a steel culvert is located along I-15 at RP 283.4 for drainage conveyance.

3.2.1.2. Structures

There are 17 bridges within the study area. **Table 3.1** shows the bridge locations and condition ratings. All 17 bridges have a structure condition of “good,” which indicates that they are candidates for continued preservation. The bridge deck ratings include “good” (possible candidate for sealing), “fair-1” (candidate for healer/sealer), and “fair-2” (candidate for resurfacing).

Table 3.1 also lists the width of each bridge within the study area. According to the MDT *Bridge Design Standards*,⁴ a bridge on the Interstate System is recommended to consist of 12-foot travel lanes, 4-foot inside shoulder, and 10-foot outside shoulder. This recommendation results in a total bridge width of 50 feet for three travel lanes, 38 feet for two travel lanes, and 26 feet for one travel lane. A number of bridges on the Interstate System within the study area have widths narrower than the recommended standards, as noted in the table. However, the recommended standards are for new bridges on the Interstate System. Bridges to remain in place that do not meet the recommended width may be considered for additional signing or widening, depending on further engineering analysis.

Table 3.1: Bridge Locations and Conditions

	Location	Feature Crossed	Year Built	Width (ft)	Length (ft)	Structure Condition	Deck Condition
I-15	RP 279.98 (NB)	Sun River	1966	28*	485	Good	Good
	RP 279.98 (SB)	Sun River	1966	28*	485	Good	Good
	RP 280.09 (NB)	5th Ave SW	1967	37*	125	Good	Good
	RP 280.09 (SB)	5th Ave SW	1967	37*	125	Good	Good
	RP 282.55 (NB)	Vaughn Rd / BNSF RR	1967	28*	354	Good	Fair-1
	RP 282.55 (SB)	Vaughn Rd / BNSF RR	1967	28*	359	Good	Fair-1
I-315	RP 0.01	I-15	1967	45*	294	Good	Fair-1
	RP 0.34 (EB)	14th St SW	1967	36*	150	Good	Fair-2
	RP 0.34 (WB)	14th St SW	1967	45*	145	Good	Fair-1
	RP 0.34 (EB Off)	14th St SW	1997	23*	136	Good	Good
	RP 1.06 (EB)	BNSF RR	1946	45*	178	Good	Fair-2
	RP 1.06 (WB)	BNSF RR	1967	37*	208	Good	Fair-2
	RP 1.06 (WB Off)	BNSF RR	1996	23*	186	Good	Good
Central Ave	RP 0.16 (EB)	BNSF RR	1967	27	551	Good	Fair-1
	RP 0.16 (WB)	BNSF RR	1967	27	551	Good	Fair-1
10th Ave S	RP 94.61 (EB)	Missouri River	1983	40	2,122	Good	Fair-1
	RP 94.61 (WB)	Missouri River	1951	28	2,093	Good	Good

Source: MDT Bridge Management System, 2014.

* Interstate bridge width does not meet existing standards for new construction.

3.2.1.3. Operations

The Interstate System within the study area is considered a Level I route for winter maintenance according to the MDT *Maintenance Operations and Procedures Manual*.⁵ A Level I roadway receives the highest level of maintenance and attention during inclement weather events. Level I routes are eligible to receive up to 24-hour-per-day coverage during storms. The primary objective is to keep at least one travel lane in each direction open to traffic and to provide intermittently bare pavement as soon as possible. Additional operation controls exist within the study area that are aimed at improving the function of the transportation system.

- **Snow Fence:** There are multiple locations with snow fences at and near the 10th Avenue S Interchange. The snow fence is intended to trap and prevent snow from blowing across the roadway.
- **Variable Message Sign (VMS):** To address vehicle operations related to adverse weather conditions, portable VMSs are used to alert motorists of changes in weather conditions. The VMSs are commonly deployed near the Gore Hill Interchange during high wind events.
- **Bridges:** Bridge decks typically freeze faster than the normal roadway surface, causing operational issues for motorists. Signing alerting motorists to watch for ice on the bridges is used during the winter months.
- **Detours:** Concerns have been noted about not having a viable detour route for the Gore Hill area. Incidents occurring near Gore Hill have resulted in closed lanes on the Interstate, as well as increases in vehicle delay and queuing.

3.2.1.4. Pavement Condition

MDT annually measures pavement condition in the corridor. The collected data are analyzed within MDT's Pavement Management System (PvMS). To evaluate the level of distress in the pavement, indices are calculated to identify the degree of cracking, rutting, and road smoothness (ride). MDT uses the PvMS to identify timing and types of treatments needed to extend pavement life. The pavement condition indices reported are based on a 0-to-100 scale, where 100 represents "in new" condition.

The most important performance measure is the overall performance index (OPI), as this index is a combination of all performance indices. An OPI of 80 to 100 is considered "good," 60 to 79.9 is "fair," and 0 to 59.9 is "poor." The various pavement condition performance measures generally indicate good performance for I-15. Between RP 282.2 and RP 286.6 on I-15, however, the OPI indicates poor overall performance. A resurfacing project is planned for I-15 between RP 282.2 and RP 285.9. Information for OPI on I-315 indicates a poor to fair pavement condition.

3.2.1.5. Alternative Transportation Modes

There currently are no dedicated bicycle or pedestrian facilities along the study corridor. The *Great Falls Area LRTP* identifies a recommendation for a multi-use path adjacent to the study area near the junction of 6th Street Southwest and I-315. Spot improvements to the Central Avenue crossing of I-15 and the railroad are also recommended in the *LRTP* to accommodate bike lanes.⁶

3.2.1.6. Railroad

A service line for BNSF Railway runs within the study area. The Interstate crosses over the railroad at two locations within the study area: along I-15 Emerson Junction and along I-315 just east of 14th Street SW. Additionally, Central Avenue crosses over the railroad just west of Vaughn Road within the study area.

3.2.1.7. Air Service

The Great Falls International Airport is adjacent to the study area. Access to the airport is provided by Airport Drive, which connects to the Gore Hill Interchange. While it has been categorized as a "primary commercial service" airport in the National Plan of Integrated Airport Systems, it also has a military component. The airport is home to the Great Falls Air National Guard Base and the Montana Air National Guard's 120th Air Lift Wing, an Air National Guard unit employed in air defense. The airport also offers substantial infrastructure for the air cargo industry. FedEx operates a warehouse as a sorting and distribution hub for Montana. The US Customs Border Patrol operates an office at the airport, which facilitates international travel.

3.2.1.8. Utilities

I-15 in the study area includes overhead power and telephone crossings. Longitudinal occupancy of an Interstate right-of-way is not permitted. Electric power and natural gas utilities are provided by Northwestern Energy. CenturyLink provides telecommunication services to the study area.

3.2.2. GEOMETRIC CONDITIONS

Existing roadway geometrics were evaluated and compared to current MDT standards. Available as-built drawings were reviewed for the freeway system within the study area. Field reviews of the study corridor

took place in July 2014 to confirm and supplement information contained in the as-built drawings, as well as to identify additional areas of concern within the study area.

3.2.2.1. Mainline Interstate

The mainline Interstate is characterized as a controlled access, four-lane, divided highway with high travel speeds. The key purpose of the Interstate is to carry traffic over large distances quickly. The following subsections provide the analysis of the current geometric conditions along the Interstate within the study area. The evaluation compares the existing geometrics to current design standards, but design standards change over time. Locations that do not meet current design standards may have met standards in place during the time of construction. Additionally, design exceptions may have been used during the initial design process.

DESIGN CRITERIA

The MDT *Road Design Manual* specifies general design principles and controls that determine the overall operational characteristics of the roadway. The geometric design criteria for the study corridor are based on the current MDT design standards for freeway (NHS-Interstate) routes. The freeway design criteria depend on terrain and area context (i.e., urban or rural). Based on the definitions provided in MDT's *Road Design Manual*,⁷ most of I-15 within the study area appears to be of rural context with level terrain (70-miles-per-hour [mph] design speed) with some areas of rolling terrain (60-mph design speed). I-315 appears to be of urban context (50-mph design speed). For the purposes of this report, areas along I-15 that do not meet 70-mph design standards and areas along I-315 that do not meet 50-mph design standards were noted as being areas of concern. A final determination of design speed would ultimately be made during project development.

HORIZONTAL ALIGNMENT

There are five existing horizontal curves along I-15 within the study area and two horizontal curves along I-315. Four of the five curves along I-15 meet the minimum standards for horizontal curvature based on a 70-mph design speed (level terrain). The substandard curve at RP 282.4 does not meet the minimum radius requirements at a 70-mph design speed; however, the curve does meet the radius requirements for a 60-mph design speed (rolling terrain). Along I-315, one horizontal curve does not meet urban freeway standards (50-mph speed) based on curve radius. All horizontal curves were found to have adequate stopping sight distance.

VERTICAL ALIGNMENT

Within the study area, there are 19 vertical curves along I-15 and 2 vertical curves on I-315. Both vertical curves along I-315 meet urban freeway standards. Of the 19 vertical curves along I-15, 15 meet existing standards for a 70-mph design speed (level terrain). Two curves have maximum grades that do not meet level terrain standards; however, they do meet standards for mountainous terrain. Two additional curves do not meet curvature standards for level terrain.

3.2.2.2. Interchanges

The purpose of an interchange is to allow traffic to enter or exit the Interstate with minimal disturbance to its traffic stream. This is accomplished by using grade-separated intersections connected by ramps. There are four interchanges along I-15 and one interchange along I-315 within the study area. This section discusses the geometric conditions of the five interchanges.

STANDARDS

The five interchanges within the study area were evaluated based on a variety of standards. The MDT *Road Design Manual* provides general geometric standards for horizontal and vertical curvature for interchange ramps, while the MDT *Traffic Engineering Manual*⁸ provides guidance for ramp lengths to allow for vehicle acceleration and deceleration. Ensuring adequate ramp lengths and proper geometrics is necessary to provide for safe vehicle interaction at Interstate entrance and exit points. Additionally, the spacing between interchange ramps affects vehicle interactions and can influence traffic flow and safety.

HORIZONTAL ALIGNMENT

The horizontal alignment of a ramp is controlled by the radius of any curve on the ramp, super elevation, taper angle, taper length, gap acceptance length, and deceleration/acceleration lengths. The limiting values for these characteristics are functions of the design speed for a given ramp. For this analysis, the minimum design speed was determined based on the super elevation and radius for each given curve.

Table 3.2 presents the substandard horizontal design elements for the interchange ramps. Of the 20 interchange ramps in the study area with horizontal curves, 11 have substandard horizontal design elements.

Table 3.2: Substandard Interchange Horizontal Design Elements

Location		Substandard Element
Interchange	Ramp	
Gore Hill	Southbound On	Acceleration length
	Northbound On	Acceleration length
	Northbound Off	Deceleration length
10th Avenue S	Southbound Off	Deceleration length
	Northbound On	Acceleration length
Central Avenue	Northbound On	Acceleration length
	Southbound On	Acceleration length
	Southbound Off	Taper rate
Emerson Junction	Northbound On	Acceleration length
	Southbound Off	Deceleration length
14th Street SW	Westbound On	Acceleration length and gap acceptance length

VERTICAL ALIGNMENT

The vertical alignment of a ramp is expressed in terms of the rate of curvature and vertical grade. The vertical alignment on the interchange ramps was evaluated based on a 50-mph design speed. **Table 3.3** presents the substandard vertical design elements for the interchange ramps. Of the 19 interchange ramps with vertical curves, 13 fail to meet existing design standards based on a 50-mph design speed. A lower design speed may, however, result in acceptable curvature values.

Table 3.3: Substandard Interchange Vertical Design Elements

Location		Substandard Element
Interchange	Ramp	
Gore Hill	Southbound On	Rate of curvature
	Southbound Off	Grade
	Northbound On	Rate of curvature
	Northbound Off	Rate of curvature
10th Avenue S	Southbound On	Grade
	Southbound Off	Rate of curvature and grade
Central Avenue	Northbound Off	Rate of curvature
	Northbound On	Rate of curvature
Emerson Junction	Northbound On	Rate of curvature
	Southbound Off	Rate of curvature
14th Street SW	Eastbound Shared	Rate of curvature
	Westbound On	Grade
	Westbound Off	Rate of curvature

INTERCHANGE SPACING

Providing for proper interchange spacing is necessary to accommodate vehicular maneuvers, for all signing, and to achieve optimal capacity. In urban areas such as Great Falls, interchanges are more likely to be spaced closer together than in rural areas. The recommended spacing from an exit ramp to an entrance ramp is 500 feet. Conversely, 2,000-foot spacing is recommended between an entrance ramp and an exit ramp. Further traffic analysis may have to be conducted according to procedures outlined in the *Highway Capacity Manual*⁹ to determine appropriate spacing. For locations where recommended spacing lengths are unachievable, auxiliary lanes may be used to accommodate weaving and merging/diverging traffic characteristics. Auxiliary lanes should be provided where the distance between entrance and exit ramps is less than 1,500 feet. No auxiliary lanes are currently provided within the study area.

The 10th Avenue S and 14th Street SW Interchanges along I-315 are spaced closer together than 1,500 feet. This location has weaving and merging/diverging characteristics that result in reduced capacity and operational concerns.

ACCESS

The FHWA *Interstate System Access Informational Guide*¹⁰ provides technical and policy support for evaluating new or modified access to the Interstate System. The *Guide* provides information and methods for analyzing Interstate access to support planning, design, and safety analysis. Included in the *Guide* are eight policy requirements that must be addressed when requesting access to the Interstate. One of the policy requirements states that new or revised access points should provide for all traffic movements, but the Emerson Junction is currently configured as a partial interchange. According to current policy, FHWA does not support new construction of partial interchanges, except in extreme circumstances.

3.2.2.3. Intersections

The placement of intersections at the termini of ramps can affect the operation of the Interstate and the crossing roadway. If the intersections are placed too close to each other, they could generate queuing

issues that could back up onto the Interstate mainline. Queuing can also affect operation of the crossroad by creating unnecessary delay. As such, intersection locations must be carefully considered to allow enough space for the necessary turn bays needed to alleviate possible queuing issues. The geometric design of an intersection can also cause unnecessary delay if large vehicles cannot make left- or right-hand turns without interfering with traffic.

GORE HILL INTERCHANGE

Four intersections exist within the immediate vicinity of the Gore Hill Interchange. The southbound off-ramp terminates at a four-legged, two-way, stop-controlled intersection with Airport Drive and I-15 Frontage Road. Traffic turning from the off-ramp to Airport Drive has a free-flowing dedicated right-turn lane. One concern at this intersection is the possibility that drivers traveling northbound on I-15 Frontage Road may travel straight and enter the southbound off-ramp traveling in the wrong direction. Another concern is the proximity of this intersection to the intersection of Airport Drive and the southbound on-ramp, a distance of approximately 60 feet. Vehicles attempting to make a left turn onto the southbound on-ramp have to contend with any oncoming traffic leaving the southbound off-ramp intersection.

The intersection of Airport Drive and the northbound on- and off-ramps is a typical two-way, stop-controlled intersection. This intersection is located approximately 80 feet from the intersection of Airport Drive and Tri-Hill Frontage Road. Traffic performing a left-hand turn onto Tri-Hill Frontage Road has to contend with traffic making a right turn off of the northbound off-ramp, in addition to the traffic traveling southeast across the interchange. The distance between the southbound on-ramp and the northbound ramps is approximately 370 feet.

14TH STREET SW INTERCHANGE

The intersections at the ramp termini at 14th Street SW are both four-legged signalized intersections. They are approximately 925 feet apart, and they appear to meet geometric spacing standards. Left-turn bays are provided at both intersections. The intersection of 14th Street SW and the westbound ramps has a high volume of left-turning vehicles along the east leg. During the PM peak-hour, left-turn volume exceeds the range of recommended turn bay lengths provided by MDT. Vehicle queuing was noted along the interchange ramp approaching the mainline Interstate.

FOX FARM ROAD

The intersection of Fox Farm and 10th Avenue S is a four-legged, signalized intersection. This intersection is at the terminus of I-315. A single left-turn bay is provided along the eastbound leg, and dual left-turn lanes are provided along the westbound leg. The left-turn bay along the eastbound leg does not appear to meet existing length standards. During the on-site evaluation, observers noted that the queue length from the eastbound left-turn lane often exceeded available storage during the PM peak hour.

CENTRAL AVENUE INTERCHANGE

The Central Avenue Interchange is a diamond interchange with stop-controlled intersections at the ramp terminals and raised medians to provide protected turn-bays. The intersections are spaced approximately 450 feet apart, and they appear to meet geometric design standards. Both on-ramps include channelized right-turn lanes, which require vehicles to merge on the entrance to the ramps.

The intersection along the northbound ramps includes an eastbound left-turn bay that appears to meet minimum length standards. The southbound ramp intersection has a dedicated westbound left-turn lane for vehicles accessing the Interstate. The existing turn-bay length does not appear to meet existing standards; however, minimal vehicle queuing was shown by the traffic analysis.

The southbound off-ramp has a channelized right-turn lane and a dedicated receiving lane along Central Avenue. However, a stop sign requires vehicles to stop before entering Central Avenue. At the intersection of the southbound off-ramp and Central Avenue, three westbound lanes merge to a single lane within approximately 300 feet. There does not appear to be proper signage and/or markings indicating the dropping of two travel lanes.

EMERSON JUNCTION

The intersections located at Emerson Junction are both three-legged, unsignalized intersections and are spaced approximately 750 feet apart. The northbound on-ramp intersection with Vaughn Road has a right-turn slip lane for traffic traveling westbound on Vaughn Road. Eastbound traffic has a 40-foot, left-turn storage area between Vaughn Road and the northbound on-ramp. The southbound off-ramp has a single lane serving both left- and right-turning traffic. The southbound off-ramp intersection is scheduled for reconstruction, which will result in a shift to the northwest to provide a more standard "T" intersection.

3.2.3. TRAFFIC CHARACTERISTICS

An evaluation of traffic characteristics was completed using available data MDT provided, as well as field-collected data. Peak-hour, turning-movement counts were conducted at 12 intersections within the study area. Mainline traffic volume counts were also completed at nine locations along the Interstate. Additional traffic information for vehicle speeds, driving patterns, and lane-changing interactions was also documented at various locations along the corridor. The following sections provide details about the existing and projected traffic characteristics of the corridor.

PROJECTED TRAFFIC CONDITIONS

Projected transportation conditions were analyzed to estimate how traffic patterns and characteristics may change compared to existing conditions. The analysis was based on known existing conditions and anticipated land development expected to occur out to 2035. The travel demand model developed by MDT for the *Great Falls Area LRTP – 2014* was used to estimate growth rates for the study area. The growth rates from the travel demand model were used to evaluate projected conditions for the corridor.

MAINLINE OPERATION

MDT administers annual traffic count data at 12 locations within the study area. The average annual daily traffic (AADT) on I-15 ranges from 5,950 vehicles per day (vpd) north of Central Avenue, to as high as 14,670 vpd north of Gore Hill. Volumes on I-315 approach 25,000 vpd west of Fox Farm Road. The AADT on the non-Interstate roads ranges from 4,555 vpd on the Vaughn Frontage Road to 29,800 vpd on 10th Avenue S. The existing AADT volumes were projected to approximate 2035 volumes, as defined by the travel demand model. The existing and projected AADT volumes are shown in **Table 3.4**.

Table 3.4: Existing and Projected Traffic Volumes

Location		Existing 2013 AADT	Projected 2035 AADT
I-15	S of Gore Hill	6,370	7,681
I-15	N of Gore Hill	14,670	22,358
I-15	N of 10th Ave	10,550	16,693
I-15	N of Central Ave	5,950	6,804
I-15	N of Emerson	9,090	10,998
I-315	W of 14th St SW	15,140	17,979
I-315	W of Fox Farm	24,680	28,546
31st St SW	S of Interchange	8,360	13,678
Airport Dr	N of Interchange	3,640	9,887
10th Ave S	Warden Bridge	29,800	34,630
Central Ave	E of Interchange	12,514	21,270
Central Ave	W of Interchange	7,746	7,974
Vaughn Rd	E of Interchange	6,530	8,835

The operational condition of a mainline Interstate is often characterized by the level of service (LOS). LOS is a qualitative description of a driver's experience on a highway or facility. LOS of a mainline freeway segment is affected by geometric and traffic characteristics. LOS can range from A to F, with A representing free flow conditions and F representing heavily congested conditions. The MDT *Traffic Engineering Manual* states that an LOS of B or better is recommended for both urban and rural freeways.

Operational analysis of the Interstate mainlines was conducted under existing and projected conditions during the AM and PM peak hours. The analysis resulted in an LOS of B or better for all Interstate segments in the study area under existing and projected conditions.

Vehicle Speeds

Vehicle speed data were collected along the I-15 southbound mainline between the 10th Avenue S and Gore Hill Interchanges. This location has a steep upgrade, and speed differentials have been observed between the left and right travel lanes in the southbound direction. The existing speed limit at this location is 65 mph.

Based on the speed data, it appears that vehicles generally travel at higher speeds in the left lane than in the right lane. In addition, the data showed a large distribution of vehicle speeds. Due to the steep upgrade and the mix of vehicle types, there are often slow-moving vehicles mixed with faster ones at this location. The variation in vehicle speeds is likely a result of a mixture of slower moving heavy truck traffic combined with faster moving passenger vehicles. High numbers of vehicles were also observed entering the Interstate at 10th Avenue S and immediately exiting at Gore Hill.

INTERCHANGE RAMPS

Connection between the mainline Interstate highway and local roads is provided by a dedicated ramp road. Similar to the Interstate mainline, the performance of the interchange ramps can be evaluated for LOS. As with traditional roadways, interchange ramps are impacted by the amount of traffic congestion present. For on-ramps, the capacity of the ramp roadway is rarely an issue due to generally free-flowing

conditions with no traffic control. For off-ramps, however, congestion on the ramp can cause queuing that may result in failure at the ramp-to-freeway junction.

As with the Interstate mainline, an LOS of B or better is recommended for the interchange ramps. Each of the ramps within the study area is shown to function at LOS B or better under existing and projected conditions.

INTERSECTIONS

An LOS analysis was performed at 12 intersections within the study area. The LOS analysis was completed under existing and projected conditions during the AM and PM peak hours. For intersections, LOS is based on vehicle delay, which is influenced by the number of stops, available gaps, and impediments caused by other vehicles. An LOS of A represents little to no delay, while an LOS of F represents substantial delay. An LOS of C or better is recommended. The results of the intersection LOS analysis are shown in **Table 3.5**.

Table 3.5: Intersection Operational Analysis

Intersection	Control Type	2013		2035	
		AM	PM	AM	PM
Tri Hill and Frontage Airport Dr	Two-way stop	B	B	D	E
I-15 NB and Airport Dr	Two-way stop	C	F	E	F
I-15 SB On and Airport Dr	Two-way stop	A	B	B	C
I-15 SB Off and Airport Dr	Two-way stop	B	E	F	F
14th St SW and I-315 EB	Signalized	B	B	B	B
14th St SW and I-315 WB	Signalized	C	B	C	B
Fox Farm and I-315	Signalized	D	D	D	D
Central Ave and I-15 SB	Two-way stop	D	E	F	F
Central Ave and I-15 NB	Two-way stop	C	D	F	F
Central Ave and Vaughn Rd	Two-way stop	D	F	F	F
Vaughn Rd and I-15 SB	Two-way stop	B	B	B	B
Vaughn Rd and I-15 NB	Two-way stop	A	A	A	A

Many of the poor-performing intersections are two-way, stop-controlled intersections. All intersections on Central Avenue are projected to operate at an LOS of F if no changes are made. At Gore Hill, all but the southbound on-ramp intersections are expected to operate at a failing LOS. The three signalized intersections are projected to continue operating at levels similar to their current performance.

3.2.4. SAFETY

The MDT Traffic and Safety Bureau provided crash data for all of Cascade County from January 1, 2009, to December 31, 2013. Records show 525 crashes occurring within the study area during the crash analysis period. Four crashes resulted in fatalities, eight crashes resulted in incapacitating injuries, forty-one crashes produced non-incapacitating evident injuries, and seventy-one crashes resulted in possible injuries. An incapacitating injury is defined as an injury, other than a fatality, which prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before injury. **Figure 3.1** presents the spatial distribution of the crash data for the five-year analysis period.

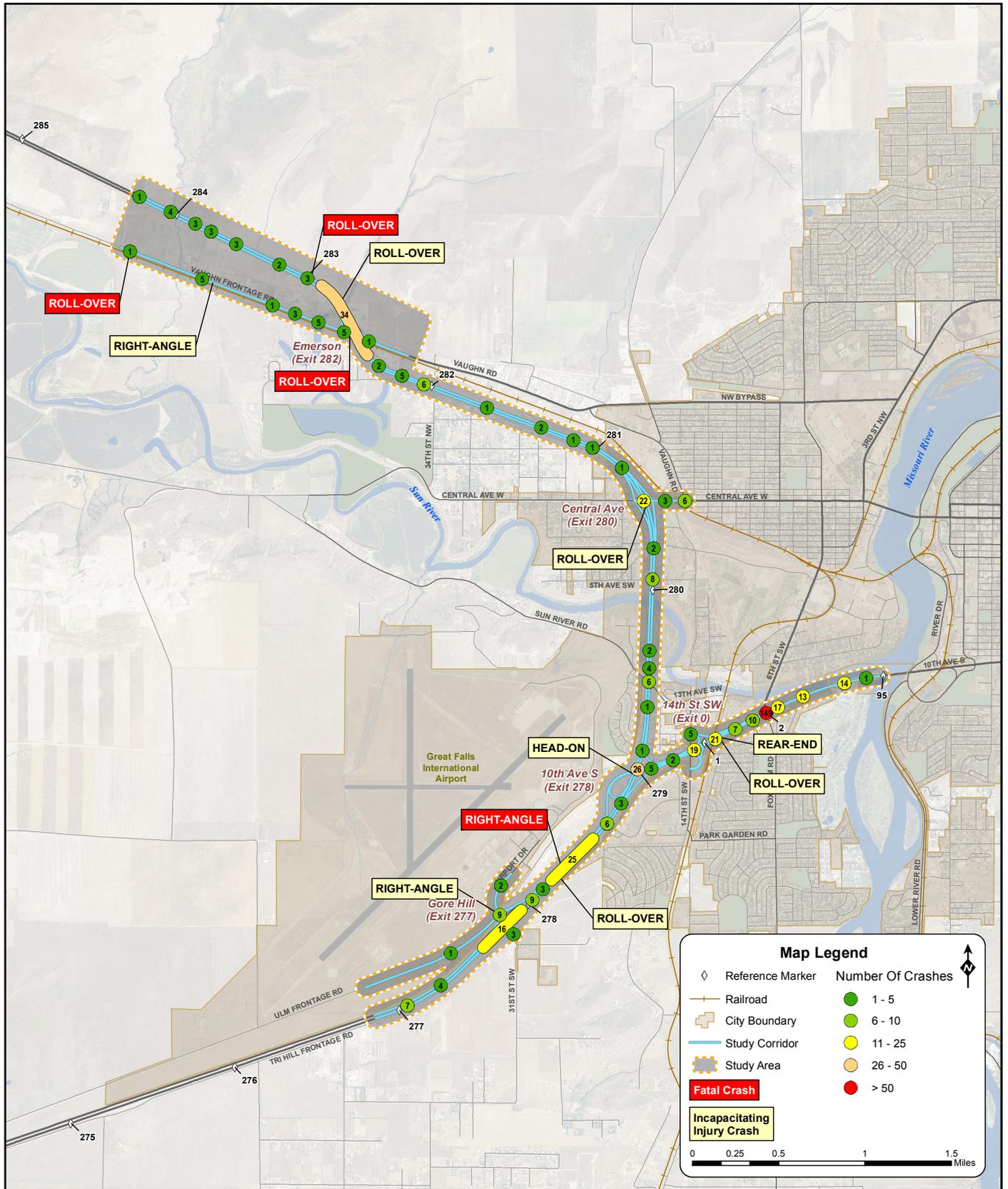


Figure 3.1: Crash Locations

Table 3.6 provides a comparison of the crash rate, crash severity index, and crash severity rate within the study area. The crash data presented in the table are based on crashes occurring from calendar years 2009 through 2013. Crash rates are defined as the number of crashes per million vehicle miles of travel. The crash severity index is the ratio of the sum of the level of crash degree to the total number of crashes. Crash severity rate is determined by multiplying the crash rate by the crash severity index.

Table 3.6: Crash Statistics

Segment		# Fatal	# Incap.	Total Crashes	AADT 3-year Average	Crash Rate	Severity Index	Severity Rate
I-15	Southwest of Gore Hill	0	0	18	6,360	1.55	1.00	1.55
	Northeast of Gore Hill	1	2	70	13,474	2.85	1.16	3.29
	10th Ave South to Central Ave	0	1	32	9,786	1.79	1.06	1.90
	Central Ave to Emerson Junction	0	0	48	6,486	4.06	1.00	4.06
	North of Emerson Junction	2	1	43	9,470	2.49	1.37	3.41
Statewide Average for Rural Interstates*						0.90	1.83	1.65
I-315	I-15 to 14th St Southwest	0	0	13	15,890	0.45	1.00	0.45
	14th St Southwest to Fox Farm	0	2	114	25,870	2.41	1.04	2.50
	East of Fox Farm	0	0	137	30,890	2.43	1.00	2.43
Statewide Average for Urban Interstates*						1.21	1.72	2.08

*Statewide average between 2008 and 2012

3.2.4.1. Safety Trends, Contributing Factors, and Crash Clusters

On average, approximately 105 crashes occurred each year during the crash analysis period. Multi-vehicle crashes accounted for nearly 53 percent of crashes, with approximately 62 percent of all crashes occurring in dry conditions. Furthermore, 61 percent of crashes occurred during daylight.

Approximately 38 percent of crashes during the analysis period happened when roads were icy, snowy, or wet. These crashes appeared to be clustered between the Gore Hill and 10th Avenue S Interchanges (12 crashes), I-15 underpass of Sun River Road (6 crashes), Emerson Junction Interchange (19 crashes), and I-315 between 14th Street SW Interchange and Fox Farm (60 crashes).

The primary contributing factors listed in crashes during the analysis period included careless driving (32 percent of crashes), driving too fast for conditions (21 percent of crashes), disregarding traffic markings/signs/signals (16 percent of crashes), and driving under the influence of alcohol/drugs (14 percent of crashes).

Of the vehicles involved in a crash, 92 percent were passenger vehicles (automobiles, pickups, SUVs, etc.). Records show 15 crashes involving motorcycles, 38 crashes involving heavy trucks with trailers, and 2 crashes involving buses.

The main observed crash trends were rear-end collisions (34 percent), followed by fixed-object collisions (26 percent). Of the fixed-object collisions, 65 percent of the collisions listed contact with guardrails, median barriers, bridge rails, or impact attenuators as the first harmful event. Rear-end collisions were clustered on I-315 and 10th Avenue S. Clusters of fixed-object collisions were present between the Gore Hill and 10th Avenue S Interchanges (11 crashes), I-15 underpass of Sun River Road (7 crashes), I-15

bridge over the Sun River (5 crashes), Central Avenue Interchange (7 crashes), Emerson Junction Interchange (15 crashes), and I-315 from RP 0 to RP 1 (21 crashes).

Approximately 8 percent of reported crashes resulted in rollovers (44 crashes). Two clusters were identified between the Gore Hill and 10th Avenue S Interchanges (7 crashes) and at Emerson Junction (10 crashes). Each of the seven rollover crashes between the Gore Hill and the 10th Avenue S Interchanges occurred with dry road conditions.

3.3. ENVIRONMENTAL SETTING

This section provides a summary of the *Environmental Scan* developed by MDT. The primary objective of the *Environmental Scan* is to determine potential constraints and opportunities within the study area. As a planning-level scan, the information is obtained from various publicly available reports, websites, and other documentation, as well as a “windshield survey” conducted by MDT staff. The scan is not a detailed environmental investigation. Refer to **Appendix 3** for more detailed information.

3.3.1. PHYSICAL ENVIRONMENT

SOIL RESOURCES AND PRIME FARMLAND

Information obtained on soils is used to determine the presence of prime and unique farmland in the study area to demonstrate compliance with the Farmland Protection Policy Act. Farmland includes prime farmland, some prime if irrigated farmland, unique farmland, and farmland (other than prime or unique farmland) that is of statewide or local importance. Soil surveys of the study area show that prime if irrigated farmlands and farmlands of statewide importance are present in this corridor.

If a federally funded improvement option forwarded from the study would require acquisition of lands from these areas, MDT would have to complete a CPA-106 Farmland Conversion Impact Rating Form for Linear Projects and coordinate with Natural Resource Conservation Service (NRCS). NRCS would use information from that form to keep an inventory of the prime and important farmlands within the state. Some areas designated as prime farmland have previously been developed. Previously developed land designated as prime farmland is no longer subject to the Farmland Protection Policy Act and should not impact future improvement options.

GEOLOGIC RESOURCES

Hillside slopes between the uplands and valley floor appear to be marginally stable at a maximum approximate slope of 2H:1V. There are numerous visible signs of instability, but most are relatively small and presently inactive. MDT exerted considerable effort to stabilize the cuts through Gore Hill in the 1980s; several landslides required re-grading, and a substantial network of pipes and drains was installed. Appropriate cut slope and drainage design would minimize the risk of destabilizing these hillside slopes again.

Settlement of embankment fills on valley floor deposits poses some risk through the proposed corridor. This risk may be mitigated by using a combination of methods, which include preloading embankments, lowering fill heights, and using wick drains to speed settlement.

Improvements brought forward from the study would be subject to a more detailed analysis of the above-mentioned geotechnical risk factors. Part of this detailed analysis may involve taking advance borings to evaluate soil characteristics at exact project locations.

SURFACE WATERS

The Sun River is the main surface water in the corridor. Additionally, various surface waters, including streams, natural drainages, and wetlands, are also present in the area, but in small numbers. Impacts on these surface waters may occur from project improvements such as culverts under the roadway or rip rap armoring of banks. Effects on those water bodies would have to be identified and coordinated with applicable agencies during any future project design.

Much of the study area is also located within the Great Falls Municipal Separate Storm Sewer System (MS4) area. MS4 issues, including potential applicability of low-impact development requirements, would have to be further evaluated during any future project design.

Total Maximum Daily Load Information

The 2014 Integrated 303(d)/305(b) Water Quality Report for Montana by the Department of Environmental Quality (DEQ) lists the Sun River watershed as impaired. The water bodies within the Sun River watershed that are located in the study area are designated as Category 4A. Category 4A water bodies are waters where one or more applicable beneficial uses are impaired, threatened, or not supported, and a total maximum daily load (TMDL) has been completed and approved to address the factors causing the impairment or threat. Any construction practices would have to comply with the requirements set forth in the TMDL plan.

Wild and Scenic Rivers

There are no waterways designated as wild and scenic within the study area.

GROUNDWATER

There are currently 6,105 wells on record in Cascade County, some of which are located within the study area. There are also 3 State Monitoring Network wells and 28 public water supply wells in Cascade County. The wells in Cascade County have many different applications, the most common being domestic use. The typical setback for a public water supply well is a 100-foot isolation zone, inside of which there should be no source of pollutant, making a public well an item of avoidance. If either a private or a public well is to be impacted, standard right-of-way procedures would have to be followed. Impacts on existing wells should be considered if a project is forwarded from this study.

WETLANDS

Formal wetland delineations would have to be conducted during the project development process. Additionally, impacts on wetlands would have to be avoided and minimized to the greatest extent possible through conscientious project design. Documentation of avoidance and minimization measures would have to be included in the project development.

FLOODPLAINS AND FLOODWAYS

Federal Emergency Management Agency flood maps for Cascade County indicate that the Zone AE 100-year flood with base flood elevations exists along only two small portions of the study area. The remainder of the study area is Zone X, which is the 500-year flood, or is not within a floodplain.

Forwarding of improvement options from the study that would result in the placement of fill within the regulatory floodplain would require identifying and evaluating impacts on the floodplains. Project development could require coordination with Cascade County and the city of Great Falls to minimize floodplain impacts and obtain necessary floodplain permits for project construction.

IRRIGATION

Irrigated grazing land exists within the study area. Depending on the improvement option(s) proposed, there is a potential to impact irrigation facilities. Project development may require redesigning, modifying existing, and/or constructing new irrigation canals, ditches, or pressurized systems in consultation with the owners to minimize impacts on agricultural operations. Additional expenses may occur if projects are developed that create impacts on irrigation facilities.

AIR QUALITY

Great Falls was designated non-attainment for carbon monoxide (CO) in 1980. Eventually, the limits of the non-attainment area were mapped as the 10th Avenue S Corridor. In 2002, Great Falls received designation to attainment status for carbon monoxide. Great Falls is now under a December 2000 CO Limited Maintenance Plan (LMP). Montana DEQ submitted an updated Great Falls CO LMP in 2011. In addition, revisions to the State Implementation Plan that would include some alternative CO monitoring strategies were laid out in the 2011 LMP. However, until the U.S. Environmental Protection Agency (EPA) acts on these submittals, the December 2000 CO LMP is the controlling document for current air quality conformity determinations. The former non-attainment area is not located within the study area, so no further transportation conformity analysis would be necessary.

Depending on the scope of the project under consideration, an evaluation of mobile source air toxics (MSATs) may be required. MSATs are compounds emitted from highway vehicles and off-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. The expectation that special air-quality design considerations would be required is low when considering future project design.

HAZARDOUS SUBSTANCES

The Natural Resource Information System (NRIS) database was searched for underground storage tank (UST) sites, leaking underground storage tank (LUST) sites, abandoned mine sites, remediation response sites, landfills, National Priority List sites, hazardous waste, crude oil pipelines, and toxic release inventory sites within the study area. There is a cluster of UST and LUST sites at the Airport Interchange, and there are numerous tank sites along Terminal Drive with facilities associated with the airport. None of these sites is, however, likely to result in added cost or resources for any project forwarded from the study.

There is one unresolved LUST site near 34th St Southwest, referred to as the Ruth Graham Property, and two other LUST sites along the Northwest Bypass both east and west of 34th St Northwest. Both of those sites are also currently unresolved. One is the Yellowstone Truck Stop, and the other is N&H Transportation. Construction near these LUST sites may result in handling and disposal of contaminated soils, which would increase costs.

WATER QUALITY ACT/STATE SUPERFUND SITES

Four Water Quality Act (WQA) or State Superfund Sites are listed in DEQ's on-line database; only one of the four is active. The active site, Western Byproducts, is located near the north end of the study area between I-15 and Vaughn Road. Information available for this site indicates that it is currently an "Active" site; however, a "No Further Action" status was issued in 1984. If a project encroaches onto this facility, there may be additional costs associated with contaminated soil and groundwater. Efforts should be made to avoid impacts on this site, if possible, as it is still listed on the WQA Ranking List.

3.3.2. BIOLOGICAL ENVIRONMENT

The following information applies to natural resources within the study area and reflects a baseline natural resource condition. Depending on the level of detail available through the high-level baseline scan, some of the information is presented at the county level, some at the study area level, and some at the corridor level.

MAMMALS

Wildlife species inhabiting or traversing the project study area are typical of those that occur in developed and disturbed areas of central Montana. Most species habituate to disturbed areas and, as a result, are predominately generalist species.

Common mammals occupying habitats in, traversing, or having a distribution range that overlaps the study area are white-tail deer, mule deer, and coyote. Other common mammals potentially occurring in the project area include, but are not limited to, porcupine, raccoon, striped skunk, badger, bobcat, red fox, muskrat, Richardson's ground squirrel, deer mouse, and meadow vole.

A review of the MDT Maintenance Animal Incident Database from January 2004 through December 2013 shows 39 records of animal carcasses within the study area. With the exception of only a few other animals, white-tail and mule deer account for most of the recorded wildlife mortalities within the study area. One elk, one pronghorn antelope, one mountain lion, and two coyotes comprise the other records. Most of the carcass pickups were located around the bridge over the Sun River and to the north, from RP 279.5 to RP 284.

BIRDS

Trees or structures that would be impacted by any project should be removed outside of the nesting season, which typically extends from April 15 to August 15, or when active nests are not present. Any projects forwarded from this study would have to include consideration of potential constraints that may result from nesting times of migratory birds.

No bald eagle or golden eagle nests were identified within one-half mile of the study area. Review of the corridor for eagle nests would have to occur during project design and before construction to verify that no new nests are present.

THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) maintains the federal list of threatened and endangered species. Species on this list receive protection under the Endangered Species Act. An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened

species is one that is likely to become endangered in the foreseeable future. USFWS also maintains a list of species that are candidates or are proposed for possible addition to the federal list. According to USFWS, four threatened, endangered, or candidate species are listed as occurring in Cascade County (see **Table 3.7**).

Table 3.7: Threatened and Endangered Species in Cascade County

Common Name	Status
Canada Lynx	Threatened
Red Knot	Proposed
Sprague's Pipit	Candidate
Whitebark Pine	Candidate

A search of the Montana Natural Heritage Program's Natural Heritage Tracker database (report generated May 15, 2014) revealed that there are no records of any threatened, endangered, proposed, or candidate species within the boundaries of the corridor study. As the federal status of protected species changes over time, reevaluation of the listing status and a review for the potential occurrence of these species in the project area should take place before issuing a determination of effect relative to potential project impacts. If a project moves forward from this study, completion of an evaluation of potential effects on any of the species listed above has to occur during the project development process.

SPECIES OF CONCERN

Montana Species of Concern (SOCs) are native animals breeding in the state that are considered to be at risk due to declining population trends, threats to their habitats, and/or restricted distribution. Designation of a species as an SOC is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to direct limited resources to priority data collection needs and to address conservation needs proactively.

According to the Montana Natural Heritage Program's Natural Heritage Tracker database (report generated May 15, 2014), there is one historic record of many-headed sedge within the study area. This record is from 1891, and there is no expectation for this species to occur within the study area due to development of Great Falls since 1891.

Conducting a reevaluation for the presence of SOC is important during the project design phase. If present, developers should consider adding special conditions to the project design and/or construction documents to avoid or minimize impacts on these species.

FISHERIES INFORMATION

Montana Fish, Wildlife, and Parks (FWP) listed the Sun River as a substantial fishery resource value and manages the Sun River as a trout water. According to the Montana Fisheries Information System (MFISH) database (report generated May 15, 2014), the following fish species were listed as commonly occurring within the Sun River in the study area:

- Brown trout
- Longnose sucker
- Longnose dace
- Stonecat

- Walleye
- White sucker

FWP listed the Missouri River as a substantial fishery resource value, and it manages the Missouri River as a non-trout water. Forwarding any projects that affect the Sun River or Missouri River would likely require incorporation of design measures to facilitate aquatic species passage. Notification of FWP is necessary for impacts on the Sun River aquatic resources.

VEGETATION

According to the Montana National Heritage Program Landcover Report, the dominate land cover near the study area is developed land consisting of major roads, including the Interstate, and residential and commercial land. Outside the developed land in the city of Great Falls are some cultivated crops, including hay land south of the Gore Hill Interchange and north of the Emerson Junction, as well as a minor amount of grassland, wetlands, and riparian habitat near the Sun River crossing. All land types in the project area are disturbed to some extent. If forwarding a project from the study, following the practices outlined in Standard Specification 201 and any related supplemental specifications would help minimize adverse impacts on vegetation.

NOXIOUS WEEDS

The Invaders Database System lists 28 exotic plant species and 10 noxious weed species documented in Cascade County, some of which may be present within the study area. Seeding disturbed areas with desirable plant species would reduce the spread and establishment of noxious weeds and allow reestablishing permanent vegetation. If forwarding a project from the study, field surveys for noxious weeds should begin before any ground disturbance.

CRUCIAL AREAS PLANNING SYSTEM

The Crucial Areas Planning System (CAPS) is a resource intended to provide useful and non-regulatory information during the early planning stages of development projects, conservation opportunities, and environmental review. The finest data resolution within CAPS is at the square-mile section scale or water body. Use of these data layers at a more localized scale is not appropriate and may lead to inaccurate interpretations since the classification may or may not apply to the entire square-mile section. This scale is too broad for use during MDT's assessment of potential impacts at the project level.

CAPS provides both general recommendations and those specific to transportation projects for terrestrial and aquatic species and habitat. The CAPS system recommendations can have a generic application to possible project locations if moving forward from the study. Coordination with the FWP wildlife biologist should occur during project development.

3.3.3. SOCIAL AND CULTURAL ENVIRONMENT

DEMOGRAPHIC AND ECONOMIC CONDITIONS

Under NEPA and MEPA, as well as associated implementing regulations, state and federal agencies must assess potential social and economic impacts resulting from proposed actions. FHWA guidelines recommend consideration of impacts on neighborhoods and community cohesion, social groups

(including minority populations), and local and/or regional economies, as well as growth and development induced by transportation improvements.

Title VI of the U.S. Civil Rights Act of 1964, as amended (USC 2000(d)) and Executive Order 12898 require that no minority, or, by extension, low-income person shall be disproportionately adversely impacted by any project receiving federal funds. For transportation projects, this means that no particular minority or low-income person may be disproportionately isolated, displaced, or otherwise subjected to adverse effects. If forwarding a project from the improvement option(s) occurs, an Environmental Justice evaluation would have to occur during the project development process.

Population Characteristics

Understanding population composition is necessary, as the data may influence the types of improvements identified. For example, an aging population may indicate a need for specific types of transportation improvements such as transit services and/or non-motorized infrastructure improvements. The presence of a disadvantaged population may warrant other considerations, especially during project development activities.

The population of the city of Great Falls increased at a higher rate than Cascade County between 1980 and 2010. However, both the city and the county experienced much lower growth than the state of Montana and the United States over the same period. The percentage of county and city residents age 65 or older has shown a notable increase over the past 30 years, while the percentage of those younger than 18 has decreased. The median age in the city increased from 30.6 years in 1980 to 39.0 years in 2010. The county experienced a similar increase in median age, rising from 28.6 years in 1980 to 38.9 years in 2010. These statistics point to the aging of the population and follow similar trends within Montana and across the United States.

Table 3.8 shows population, race, and ethnicity data for 2010. A comparison is provided between the city of Great Falls, Cascade County, and the state of Montana. The population of Great Falls is predominately white, with percentages of minority populations slightly higher than for the state of Montana. The U.S. Census data show that Great Falls and Cascade County have roughly the same ethnic composition.

Table 3.8: Population Race and Ethnicity Data (2010)

Race/Ethnicity	City of Great Falls	Cascade County	State of Montana
White	86.7%	87.4%	87.8%
Hispanic or Latino	3.4%	3.3%	2.9%
Black or African American	1.0%	1.2%	0.4%
American Indian and Alaska Native	4.7%	4.0%	6.1%
Asian	0.9%	0.8%	0.6%
Native Hawaiian and Other Pacific Islander	0.1%	0.1%	0.1%
Some Other Race	0.0%	0.1%	0.1%
Two or More Races	3.2%	3.1%	2.2%
Total Population	58,505	81,327	989,415

Source: U.S. Bureau of the Census, *Census of the Population*

Population Projections

The Montana Department of Commerce Census and Economic Information Center provides county-level population projections. The projections were developed by Regional Economic Models, Inc. (REMI) for the state of Montana, using the firm's *eREMI* model. Projections of Cascade County based on the *eREMI* model show a population increase of approximately 19 percent by 2035. In comparison, the model projects that the state of Montana's population will grow by approximately 17 percent by 2035. The projections suggest that Cascade County's population will have an average annual growth rate of approximately 0.7 percent per year up to 2035.

Employment and Income Characteristics

Employment by economic sector was evaluated for the city of Great Falls, Cascade County, and the state of Montana. The data show that most employment in the city and county is associated with service industries, followed by the retail trade and construction industries. The city of Great Falls and Cascade County have a higher percentage of employment in the Armed Forces industry than the state of Montana. This is likely due to the influences of Malmstrom Air Force Base on the city and county. Unemployment rates as of July 2014 show that Cascade County has a lower unemployment rate (4.0 percent) than the state of Montana (4.4 percent) and the United States (6.5 percent).

Table 3.9 presents income statistics for the city of Great Falls, Cascade County, and the state of Montana. The American Community Survey shows that estimated income levels for the city of Great Falls and Cascade County are below the median incomes for the state of Montana. The number of residents living below the poverty line is shown to be higher for the city of Great Falls than for the county and the state. The city and county are also shown to have a greater percentage of persons under the age of 18 living in poverty than the state. The share of persons over the age of 65 living in poverty is similar among the city, the county, and the state.

Table 3.9: Income Statistics

Income	City of Great Falls	Cascade County	State of Montana
Median Household Income	\$42,085	\$43,817	\$45,456
Median Family Income	\$56,368	\$56,958	\$58,951
Per Capita Income	\$23,238	\$23,976	\$25,002
Persons Living in Poverty	16.9%	14.9%	14.8%
Persons Under 18 Living in Poverty	27.8%	24.2%	19.9%
Persons over 65 Living in Poverty	8.6%	8.5%	8.4%
Families Living in Poverty	13.2%	11.4%	9.8%
Families with Children under 18 Living in Poverty	24.1%	20.9%	17.0%

Source: 2008-2012 American Community Survey 5-Year Estimates

LAND OWNERSHIP AND LAND USE

Ownership of the land within the study area is a mix of private and public. MDT and State Trust are the only holders of public land within the corridor, most of which is in the form of right-of-way or state parklands. The land in the study area is a mixture of residential, commercial, industrial, agricultural, and recreational holdings. Additional research and coordination would be required to ascertain the specific encumbrances associated with particular parcels of land. Any projects that move forward from this study would have to consider adjacent land use.

RECREATIONAL RESOURCES

Various recreational resources exist within and near the study area. According to the Montana FWP resources list, there are two state-owned parks inside the study area, Westside Viaduct Park and West Hill Park. Currently the only development on either of these two parks is a lift station in West Hill Park. The remainder of this parkland is undeveloped and not currently available for public use. There is also one city-owned park, Community Hill Park, located within the study area. The Community Hill Park is currently being used as a community garden/orchard. It has standard access hours, outside of which it is locked preventing public access.

If a project is forwarded that may impact these parks, an evaluation should take place to determine what the parks' availability for use by the public is at that time. If these parks become available for full-time public use in the future, additional investigation and coordination with the officials having jurisdiction over the parks would be necessary to determine whether the parks are "significant" and protected by Section 4(f) of the U.S. Department of Transportation Act.

At this time, there are no Section 6(f) resources identified in the study area. If a project were to be developed outside of the study area, reevaluation of 6(f) resources would have to occur, as they exist close to the study area limits.

CULTURAL RESOURCES

A file search of the study area through the Montana State Historic Preservation Office revealed one historic property located within 0.15 mile of the existing alignment, the Missouri River/Warden Bridge. In total, five National Registry of Historic Places listed historic districts and properties are located within one mile of the study corridor, but they are outside the study area (see **Table 3.10**). An examination of the Montana Cadastral Survey information indicates that at least 33 historic-age properties are located within 0.2 mile of the existing corridor. The study area contains many cultural resources, all of which consist of historic sites. Cultural resources would not likely be a substantial issue, but the issue is important to address as planning progresses.

Table 3.10: Historic Properties

Site	Site No.	NRHP Eligibility
Missouri River/Warden Bridge	24CA0401	Listed
Cascade County Courthouse	24CA0233	Listed
Great Falls Central Business District	24CA0977	Listed
C.M. & St. P. Passenger Depot	24CA0271	Listed
Great Falls Railroad Historic District	24CA0335	Listed
Great Falls West Bank Historic District	24CA1527	Listed

If a project is forwarded from the study, a cultural resource survey for unrecorded historic, pre-historic, and archaeological properties within the area of potential effect would be completed during the project development process. Flexibility in design would be important to avoid and/or minimize impacts on historically significant sites. In addition, historic properties and sites have the potential to be considered Section 4(f) resources.

NOISE

Traffic noise may have to be evaluated for planned improvements to the study corridor. Noise analysis is necessary for "Type I" projects. If the roadway improvements are limited (e.g., the horizontal and vertical alignments are not changed, and the highway remains a two-lane facility), then the project would not be considered a Type I project. If the improvements planned for the road would include a substantial shift in the horizontal or vertical alignments, increasing the number of through lanes, passing lanes, or turning lanes, or increasing the traffic speed and volume, then the project would be considered a Type I project, which would require a detailed noise analysis. The analysis would include measuring ambient noise levels at selected receivers and modeling design-year noise levels using projected traffic volumes.

Noise abatement measures would be considered for the project if noise levels approach or substantially exceeded the noise abatement criteria. The noise abatement measures must be considered reasonable and feasible before implementation. If noise abatement measures were deemed necessary, they could increase costs of proposed future Type I roadway improvements.

A traffic noise analysis report was completed in 2003 for 10th Avenue S between 14th Street SW and the Missouri River¹¹. Following the study, a concrete "Jersey" barrier was installed along the edge of shoulder on 10th Avenue S. A follow-up traffic noise study was conducted in 2005 which showed some noise reductions likely resulting from the Jersey barrier¹².

An overlay with plant mix seal project was completed on I-315 in 2007 to help reduce road noise. In addition, a project was completed in 2013 that included diamond grinding the roadway surfacing along 10th Avenue S.

If a project is forwarded from this corridor planning study, further traffic noise analysis may be necessary in accordance with existing criteria.

VISUAL RESOURCES

The visual resources of an area include landforms, vegetation, water features, and physical modifications caused by human activities that give the landscape its visual character and aesthetic qualities. Visual resources are typically assessed based on the landscape character (what is seen), visual sensitivity (human preferences and values regarding what is seen), scenic integrity (degree of intactness and wholeness in landscape character), and landscape visibility (relative distance of seen areas) of a geographically defined view shed. An evaluation of the potential effects on visual resources may be necessary, depending on the improvement options forwarded from this study.

3.4. AREAS OF CONCERN AND CONSIDERATION SUMMARY

This section provides a list and description of areas of concern and consideration within the study area. These areas were identified through review of as-built drawings, field review, public databases, and other resources. More discussion has been provided in the previous sections, and it is reiterated here, as appropriate. **Figure 3.2** provides a graphical summary of the areas of concern.

3.4.1. TRANSPORTATION SYSTEM

Bridges

- Some bridges along the Interstate have surface widths that do not meet current standards.
- Some bridges have deck conditions with ratings that indicate the need for rehabilitation.

Pavement Condition

- A segment of I-15 currently has poor surfacing conditions. A resurfacing project is planned for this location in 2017.
- I-315 has poor to fair surfacing conditions.

Railroad

- The Interstate crosses over the railroad at two locations within the study area.

Air Service

- The Great Falls International Airport is adjacent to the study area and is accessed primarily by the Gore Hill Interchange.

Mainline Interstate

- One location on I-15 has a vertical grade that does not meet current standards.
- Two vertical curves on I-15 do not meet current standards.
- One horizontal curve on I-15 and one horizontal curve on I-315 do not meet current standards.

Interchanges

- Seven of eight interchange on-ramps do not appear to meet current standards for acceleration length.
- Three of seven interchange off-ramps do not appear to meet current standards for deceleration length.
- Spacing between the 10th Avenue S and 14th Street SW Interchanges does not appear to meet current standards.
- Emerson Junction is a partial interchange, and it does not support full vehicle movements.

Intersections

- Six of the twelve intersections evaluated have an existing LOS of D or worse during one or both peak hours.

Safety

- Four fatal crashes and eight incapacitating injury crashes occurred during the five-year analysis.
- A trend of fixed-object collisions was noted occurring along the Interstate.

3.4.2. ENVIRONMENTAL CONSIDERATIONS

Physical Environment

- Areas of prime farmland if irrigated and farmlands of statewide importance exist within the study area.
- There are signs of instability and past landslides near the Gore Hill area.
- Much of the study area is located within the Great Falls MS4 area.
- I-15 crosses over the Sun River.

Biological Environment

- Thirty-nine animal carcasses were recorded over the past ten years.
- Five threatened, endangered, or candidate species are listed within Cascade County.
- Seven rare fish species are listed within the study area.
- Twenty-eight exotic plant species and ten noxious weed species are documented within Cascade County.

Social and Cultural Environment

- At least two 4(f) resources are located within the study area.
- The Missouri River/Warden Bridge is listed as an historic property.

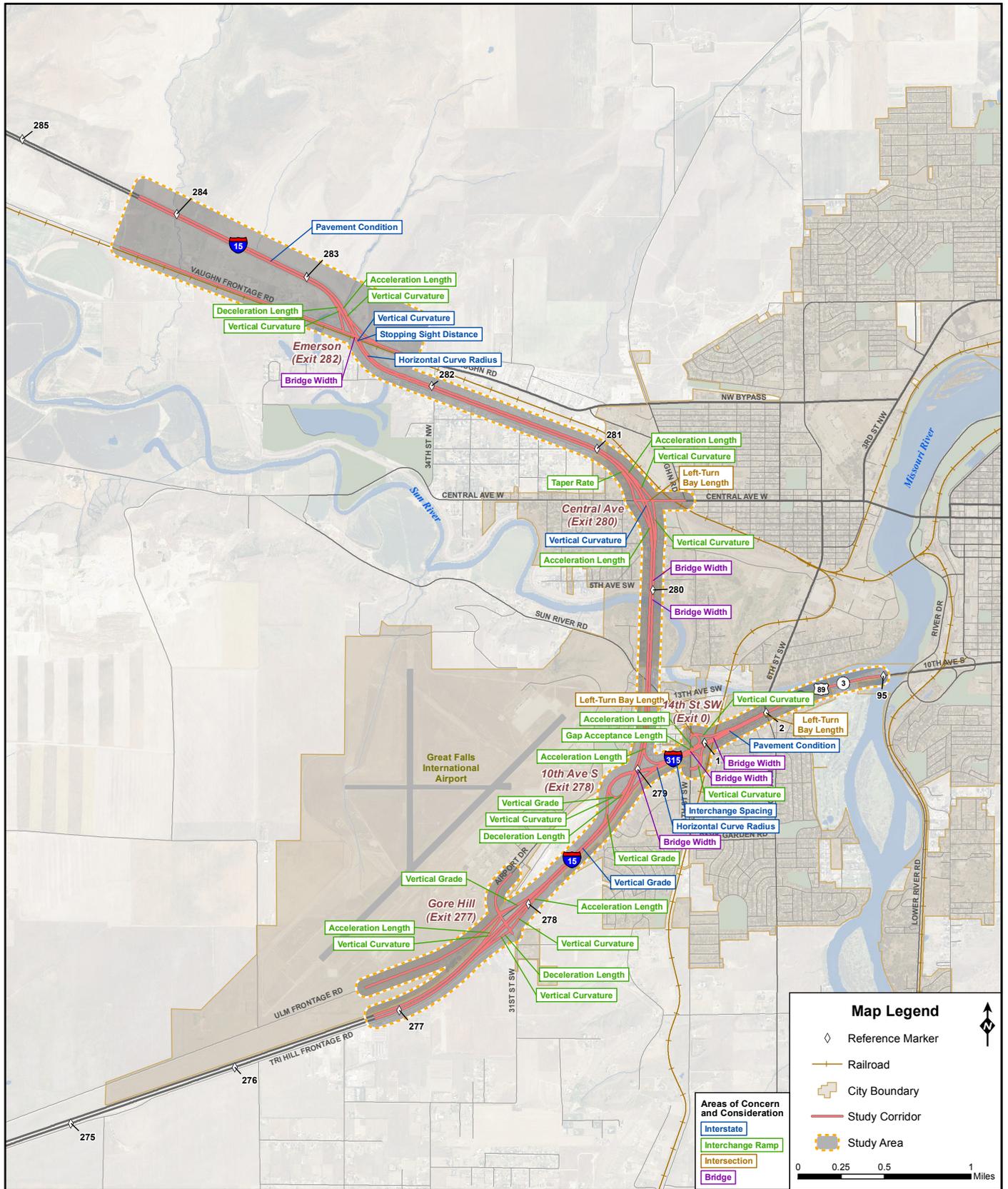


Figure 3.2: Areas of Concern and Consideration

Chapter 4

Corridor Needs and Objectives

Needs and objectives for the *I-15 Corridor Planning Study* were developed based on a review of existing data, local plans, and input from resource agencies, stakeholders, and the public. The needs and objectives explain why an improvement option, or options, may be necessary. The process includes analysis of the social, environmental, and engineering conditions described in the *Existing and Projected Conditions Report*, and it recognizes the characteristics of the corridor.

The following needs and objectives were used to develop improvement options. Improvement options identified in this study may lead to future transportation projects that would improve safety and operations or address infrastructure concerns. The purpose and need statement for any future project should be consistent with the needs and objectives contained in this study. However, not all of the needs and objectives at the corridor level must be included in a project-level purpose and need statement.

NEED 1: IMPROVE THE SAFETY OF THE CORRIDOR

Objectives (To the Extent Practicable)

- Reduce the frequency and severity of crashes.
- Improve roadway elements to meet current design criteria to address identified safety concerns.
- Reduce conflicts between vehicles of varying types and speeds.
- Address identified crash trends and clusters.

NEED 2: ACCOMMODATE EXISTING AND FUTURE CAPACITY DEMANDS

Objectives (To the Extent Practicable)

- Maintain LOS standards for mainline segments and interchange ramps.
- Improve operations and maintain LOS standards for intersections.

NEED 3: PROVIDE FOR THE MOBILITY OF PEOPLE AND FREIGHT

Objectives (To the Extent Practicable)

- Provide for the movement and transfer of people and goods.
- Maintain the roadway for effective and prompt emergency response.

OTHER CONSIDERATIONS

- Environmental resource impacts of improvement options
- Local and regional planning efforts
- Funding availability
- Construction feasibility and impacts
- Security of the transportation system

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Chapter 5

Improvement Options

Improvement options were identified to address previously defined issues or areas of concern. They are intended to satisfy the corridor needs and objectives outlined in **Chapter 4**. The improvement options reflect input from stakeholders and the public, as well as a thorough evaluation of the existing and projected conditions for the study corridor. Three steps are applied to develop improvement options:

1. Identify roadway issues and areas of concern based on field review, engineering analysis of as-built drawings, crash data analysis, consultation with resource agencies, and information provided by the public.
2. Identify overall corridor needs and objectives.
3. Analyze the information gathered to develop a range of improvement options to address the roadway issues and areas of concern, as well as to satisfy corridor needs and objectives.

The following sections discuss the recommended improvement options, associated planning-level cost estimates, and potential implementation timeframes.

5.1. PROJECT IMPLEMENTATION

Implementation of improvement options depends on the availability of funding, right-of-way needs, and other project delivery elements. Estimated implementation timeframes were developed for each improvement option based on anticipated project delivery. Implementation timeframes were defined as follows:

- **Short-term:** Implementation is recommended within a 0- to 5-year period.
- **Mid-term:** Implementation is recommended within a 5- to 10-year period.
- **Long-term:** Implementation is recommended within a 10- to 20-year period.

Planning level cost estimates were also developed for each improvement option. The costs include estimates for right-of-way, preliminary engineering, construction engineering, construction, and indirect costs. In addition, an inflationary factor of 3 percent per year was applied to the planning level costs to account for estimated year of expenditure. Cost ranges are provided in some cases, indicating unknown factors at the particular planning-level stage. All costs are listed in 2015 dollars. **Appendix 5** contains planning-level cost estimates, including all assumptions.

Also included is a list of potential funding sources and likely agency responsibility. No funding has been identified for any of the recommended improvement options. Refer to **Chapter 6** for more information on funding mechanisms.

5.2. RECOMMENDED IMPROVEMENT OPTIONS

This section contains descriptions of the recommended improvement options developed for the study corridor. For ease of identification, the improvement options were given unique identifiers via a numbering scheme and were grouped based on facility type and location.

5.2.1. INTERSTATE 15 (I-15)

1.0. SOUTHBOUND AUXILIARY LANE (RP 278.1 TO 278.5)

The existing grade between the Gore Hill and the 10th Avenue S interchanges is five percent in the southbound direction. A high percentage of southbound vehicles enter the Interstate at 10th Avenue S and immediately exit at Gore Hill. The steep grade, combined with the mixture of multiple vehicle types, results in a wide range of vehicle speeds between the two interchanges. Over the five-year analysis period, there were 26 reported crashes in the southbound direction between the two interchanges.

An auxiliary lane in the southbound direction between the Gore Hill and 10th Avenue S interchanges would help improve safety and operations. The auxiliary lane would provide additional capacity for slow-moving vehicles and would help improve the safety of merging and diverging maneuvers. Improvements made at this location may influence the Gore Hill Interchange. Modifications to the Airport Drive intersection and southbound off-ramp may be necessary to accommodate vehicle turning movements. This improvement option should be coordinated with those recommendations for the Gore Hill Interchange (see Option 11.0).

- **Estimated Cost:** \$1,900,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP

2.0. INTERSTATE ALIGNMENT (RP 282.3 TO 283.0)

This location has an existing alignment that does not meet existing standards. There is an identified trend of single-vehicle-, nighttime-, and inclement-weather-related crashes. A major rehabilitation project (IM 15-5(123)282) is planned for I-15 between RP 282.2 and 285.9. The alignment of the Interstate would, however, remain unchanged under this project.

2(a). Roadway Illumination

This location has averaged four nighttime crashes per year over the past five years. There is currently street lighting at the Emerson Junction Interchange between approximately RP 282.6 and 282.8. Installation of additional illumination along the Interstate may help to address nighttime crash trends. The planned major rehabilitation project will include additional lighting at this location.

- **Estimated Cost:** \$500,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP

2(b). Reconstruct Roadway

The planned major rehabilitation project may help to improve safety in the area; however, it will not improve the roadway alignment. If crash trends continue after the planned major rehabilitation project,

improvements to the roadway geometrics may be necessary to improve safety. Reconstruction of the existing bridge structures at Emerson Junction would likely be required if the Interstate alignment were improved to meet current standards. This option should be considered a long-term solution if other short-term solutions fail to address existing crash trends.

- **Estimated Cost:** \$24,000,000
- **Implementation Timeframe:** Long-term
- **Potential Funding Source:** NHPP, HSIP

5.2.2. INTERSTATE 315 (I-315)

3.0. PAVEMENT REHABILITATION (RP 0.0 TO 1.4)

The westbound lanes of I-315 have poor pavement conditions, while the eastbound lanes are in fair condition. Resurfacing I-315 is necessary to preserve the roadway and to improve surface conditions.

- **Estimated Cost:** \$1,000,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP

4.0. BRIDGE DECK TREATMENT

Bridge deck ratings on I-15 at RP 0.01 and on I-315 at RP 0.34 indicate a need for rehabilitation. Maintaining bridge decking helps to ensure proper surface conditions and to extend the overall life of the bridge. Minor rehabilitation of the deck could include patching, sealing, resurfacing, restriping, etc., and would not modify the existing structures. The bridge deck widths would remain unchanged during rehabilitation. There may be an opportunity to include this recommendation in the planned minor bridge rehabilitation project NHPB STWD(206).

- **Estimated Cost:** \$600,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP

5.0. DIAGRAMMATIC GUIDE SIGNING (10TH AVE S TO 14TH ST SW)

This area experiences operational concerns resulting from the proximity of the 10th Avenue S and 14th Street SW interchanges. Due to existing developments and additional design constraints, it is not feasible to reconstruct the existing ramps to provide additional distance between the two interchanges. Providing advance overhead diagrammatic guide signing for eastbound traffic before entering I-315 may help to improve safety and operations by providing drivers with a visual warning about the lane use configurations at this location. **Figure 5.1** shows a conceptual guide sign layout for eastbound traffic.

- **Estimated Cost:** \$200,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP



Figure 5.1: Conceptual Guide Sign

6.0. WESTBOUND AUXILIARY LANE (14TH ST SW TO I-15)

The existing I-315 westbound on-ramp at the 14th Street SW Interchange and I-15 northbound on-ramp do not meet existing standards. In addition, the proximity of the two interchanges creates operational issues related to vehicle merging and diverging maneuvers. Providing a westbound auxiliary lane between the interchanges and reconstructing the I-15 northbound on-ramp would help improve traffic operations and safety. **Figure 5.2** provides a graphical concept of this improvement option. Actual design and geometrics would be determined during project development.



Figure 5.2: I-315 Westbound Auxiliary Lane Concept

- **Estimated Cost:** \$2,000,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP

7.0. WESTBOUND AUXILIARY LANE (FOX FARM RD TO 14TH ST SW)

The existing length of the westbound off-ramp at the 14th Street SW Interchange does not provide for adequate vehicle storage and deceleration length. In addition, the proximity of the 14th Street SW Interchange and the intersection with Fox Farm Road influences driver-lane decisions at the intersection. Drivers traveling westbound and wishing to exit I-315 at 14th Street SW are likely to travel in the right lane through the Fox Farm intersection. This results in vehicles stacking at the intersection, which can block the right-turn lane.

Providing a westbound auxiliary lane between Fox Farm Road and 14th Street SW would increase vehicle storage along the off-ramp and would help to improve traffic operations at the intersection with Fox Farm Road. The addition of an auxiliary lane would require some reconstruction of the intersection, particularly along the east approach leg. Coordination of the signal timing between the 14th Street SW and Fox Farm Road intersections should also be evaluated to determine if further improvements could be made to traffic operations.

- **Estimated Cost:** \$1,200,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP, CMAQ

5.2.3. INTERCHANGES

8.0. LENGTHEN SOUTHBOUND OFF-RAMP (10TH AVE S INTERCHANGE)

The I-15 southbound off-ramp at the 10th Avenue S Interchange does not meet current standards for length and geometrics. A trend of single-vehicle rollover crashes was identified at this location. Providing for additional length, widening the ramp, and/or slope flattening the curve along the off-ramp would help improve safety by allowing vehicles more time to slow down before exiting the Interstate.

- **Estimated Cost:** \$260,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP

9.0. MODIFY LANE MERGE (WEST OF CENTRAL AVE INTERCHANGE)

The southbound off-ramp at Central Avenue has a channelized, stop-controlled, right-turn lane. There is a dedicated receiving lane along Central Avenue for right-turning traffic. Just west of the intersection are three westbound lanes that merge into a single lane within approximately 300 feet. Modifications to signing and striping are needed to indicate the lane change properly.

- **Estimated Cost:** \$20,000
- **Implementation Timeframe:** Short-term
- **Potential Funding Source:** STPU, Local

10.0. FEASIBILITY ANALYSIS (EMERSON JUNCTION)

The Emerson Junction Interchange, Exit 282 on I-15, provides partial access to Vaughn Road and the surrounding area. The interchange is currently configured as a partial diamond interchange consisting of a northbound on-ramp and a southbound off-ramp. Local officials have an interest in expanding the current partial interchange at Emerson Junction to a full movement interchange. A recommendation for a full movement interchange at, or near, Emerson Junction has been included as an illustrative project in local planning documents, including federally approved Long Range Transportation Plans, dating back to 1968.

The corridor study process evaluated this improvement option and determined that a full movement interchange at Emerson Junction does not clearly meet the identified needs of the Interstate corridor. Further analysis is necessary to advance this recommendation and demonstrate to FHWA that existing interchanges and/or local roads and streets neither can provide the necessary access, nor can be improved to accommodate design-year traffic demands satisfactorily. Justification for proposed Interstate access revisions must follow the *Interstate System Access Informational Guide*¹⁰.

FHWA's interest is to ensure the following:

- All new or revised access points are considered using a decision-making process that is based on information and analysis of the planning, environmental, design, safety, and operational effects of the proposed change.
- All new or revised access points support the intended purpose of the Interstate System.
- No new or revised access points will have an adverse impact on the safety or operations of the Interstate System and connecting local roadway network or other elements of the transportation system.
- All new or revised access points are designed to acceptable standards.

In addition to the aforementioned interests, the *Guide* also outlines eight policy requirements that must be satisfied for approval. According to the *Guide*, a typical Interstate System Access Change Request begins with the statewide or metropolitan planning process. The work done in the transportation planning process, be it a long-range transportation plan or a corridor study, can be used to define the initial scope and nature of the project. The next step in the process is to refine the scope and conduct the required analysis, then to make an initial determination if the project is reasonable.

Specific to the Emerson Junction process, it is envisioned that a feasibility study would be conducted to determine the most appropriate interchange configuration. The feasibility study would provide a detailed evaluation of potential interchange locations/configurations based on operational and safety considerations, right-of way and land use impacts, costs, environmental resources constraints, and agency/public acceptance.

Once a preferred configuration is selected, and after a determination is made as to its reasonableness, the Interstate System Access Change Request can be completed and submitted to FHWA. After FHWA receives the request, the operational and engineering acceptability would be determined in accordance with the eight policy requirements. If the project were found to be acceptable, the project development process would be allowed to continue.

The next stage of the project development process would consist of developing the environmental document and initiating preliminary engineering for the preferred configuration. FHWA approval is considered a Federal action, and as such, requires following NEPA procedures. After completion of the NEPA process, final FHWA approval may be granted. For these steps to occur, a project-funding source should be identified.

Per Montana Transportation Commission policy¹³, sponsorship by a local government is a prerequisite for the consideration of a new interchange. The sponsor is responsible for preparing feasibility and environmental studies, arranging the financial package for the project, utility moves, and securing necessary right-of-way.

A local project sponsor would be needed to fund an operational analysis/feasibility study, conducted by a qualified traffic engineer, of the Emerson Junction Interchange. The study must consider state and federal regulations, including the *Interstate System Access Informational Guide* and Montana Transportation Commission Policy.

- **Estimated Cost:** \$250,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** Local, Private

5.2.4. INTERSECTIONS

11.0. INTERSECTION IMPROVEMENTS (GORE HILL INTERCHANGE)

The Gore Hill Interchange services the Great Falls International Airport and surrounding areas. Four intersections exist within the immediate vicinity of the Interchange. The intersections are closely spaced and are projected to have failing traffic conditions. The existing width of the overpass structure does not allow for additional lanes or turn bays at the interchange. In addition, this area experiences high percentages of truck traffic due to access to the truck stop to the south and to airport and freight facilities to the north. Large trucks have difficulty maneuvering through the interchange.

Modifications to the intersections are needed to improve the operations and capacity of this interchange. Due to the proximity of the four intersections, it is desirable to evaluate the intersections as a network, rather than individually, when analyzing potential improvements. Improvements made to the intersection with the southbound off-ramp should be coordinated with those recommendations made in Option 1.0.

Five planning-level concepts were developed as potential improvements to the Gore Hill Interchange intersections. The following sections provide a description for the concepts. A more detailed traffic engineering study would have to be conducted during project development to determine the appropriate intersection treatments.

These concepts are aimed at providing a 20-year design life. If a new overpass structure were constructed, the structure would be built for a 75-year design life. Given the long-term needs of the area, and the constraints at the existing interchange location, it may be appropriate to evaluate the location of the interchange to ensure that long-term growth would be accommodated.

Concept A—Roundabouts with Intersections Relocated

Concept A consists of two, four-legged roundabouts and relocation of the southbound on-ramp and the Tri Hill Frontage Road. On the north side of the Interstate, a four-legged roundabout would be created that would combine the southbound off-ramp, Frontage Road, and Airport Drive approaches (**Figure 5.3**). The southbound off-ramp approach would be located on the southeast side of the roundabout, outside the influence of the splitter island. A minimal amount of new right-of-way would be anticipated along the northwest quadrant of the roundabout to accommodate the realignment of the Frontage Road approach.

South of the Interstate, new right-of-way would be necessary to reroute the Tri Hill Frontage Road south of the existing truck stop. This concept would result in an LOS of C or better along all approaches at both roundabouts during the peak hours under existing and projected conditions.

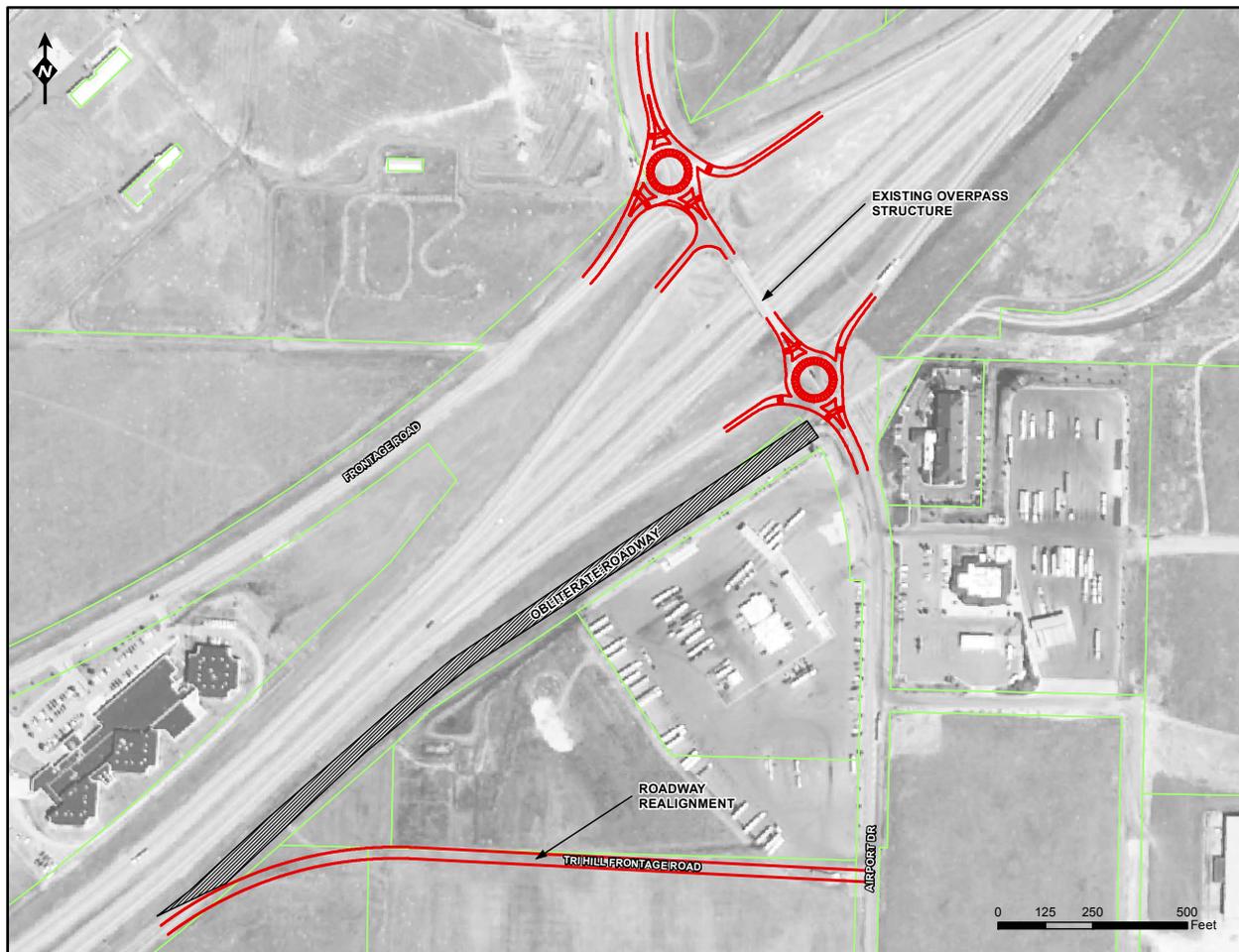


Figure 5.3: Gore Hill Concept A

- *Estimated Cost (Concept A): \$7,700,000*

Concept B—Five-legged Roundabouts

Concept B would result in single-lane, five-legged roundabouts to the north and south of the Interstate. The five-legged roundabouts would combine all existing approaches (**Figure 5.4**). On the north side of the Interstate, the Frontage Road approach would be shifted to the north, and the southbound off-ramp would shift to the south to align with the roundabout. No new right-of-way is anticipated north of the Interstate.

South of the Interstate, the northbound off-ramp would shift to the north, closer to the I-15 mainline. The southern Airport Drive approach would be realigned to the east, which may require a minimal amount of new right-of-way. This concept would result in an LOS of B or better along all approaches at both roundabouts during the peak hours under existing and projected conditions.

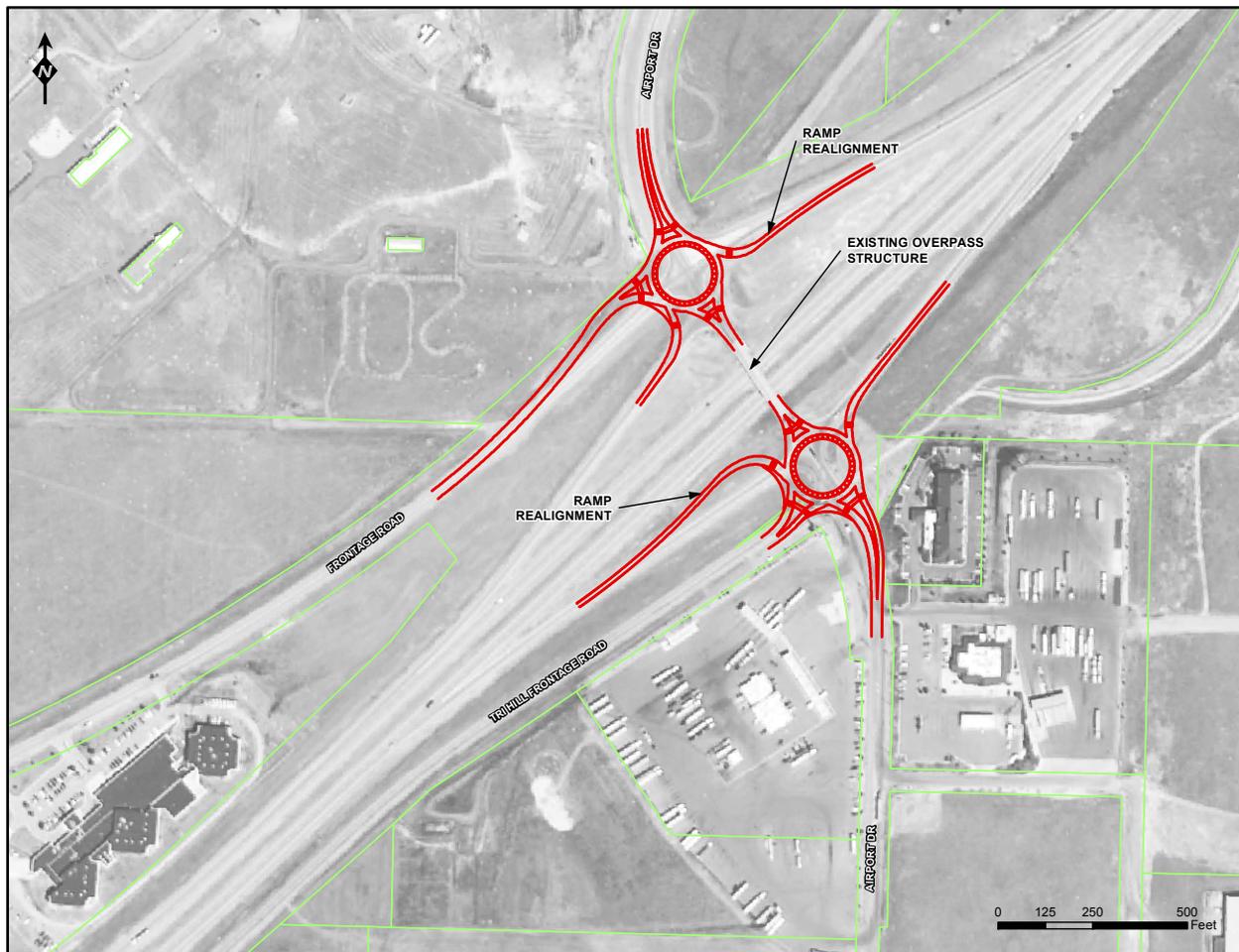


Figure 5.4: Gore Hill Concept B

- *Estimated Cost (Concept B): \$7,600,000*

Concept C—Roundabouts with Intersections Shifted

Concept C would include single-lane, four-legged roundabouts on both sides of the Interstate (**Figure 5.5**). On the north side, a four-legged roundabout would be created by combining the southbound off-ramp, Frontage Road, and Airport Drive approaches. The southbound off-ramp approach would be located on the southeast side of the roundabout, outside the influence of the splitter island. A minimal amount of new right-of-way would likely be needed along the northwest quadrant of the roundabout to accommodate the realignment of the Frontage Road approach.

On the south side of the Interstate, the Airport Drive and I-15 northbound ramps would be combined into a four-legged roundabout. The Tri-Hill Frontage Road approach would be shifted to the southeast of the roundabout. The realigned approach would require new right-of-way and would result in minor impacts to the existing truck stop. This concept would result in an LOS of C or better along all approaches at both roundabouts during the peak hours under existing and projected conditions.

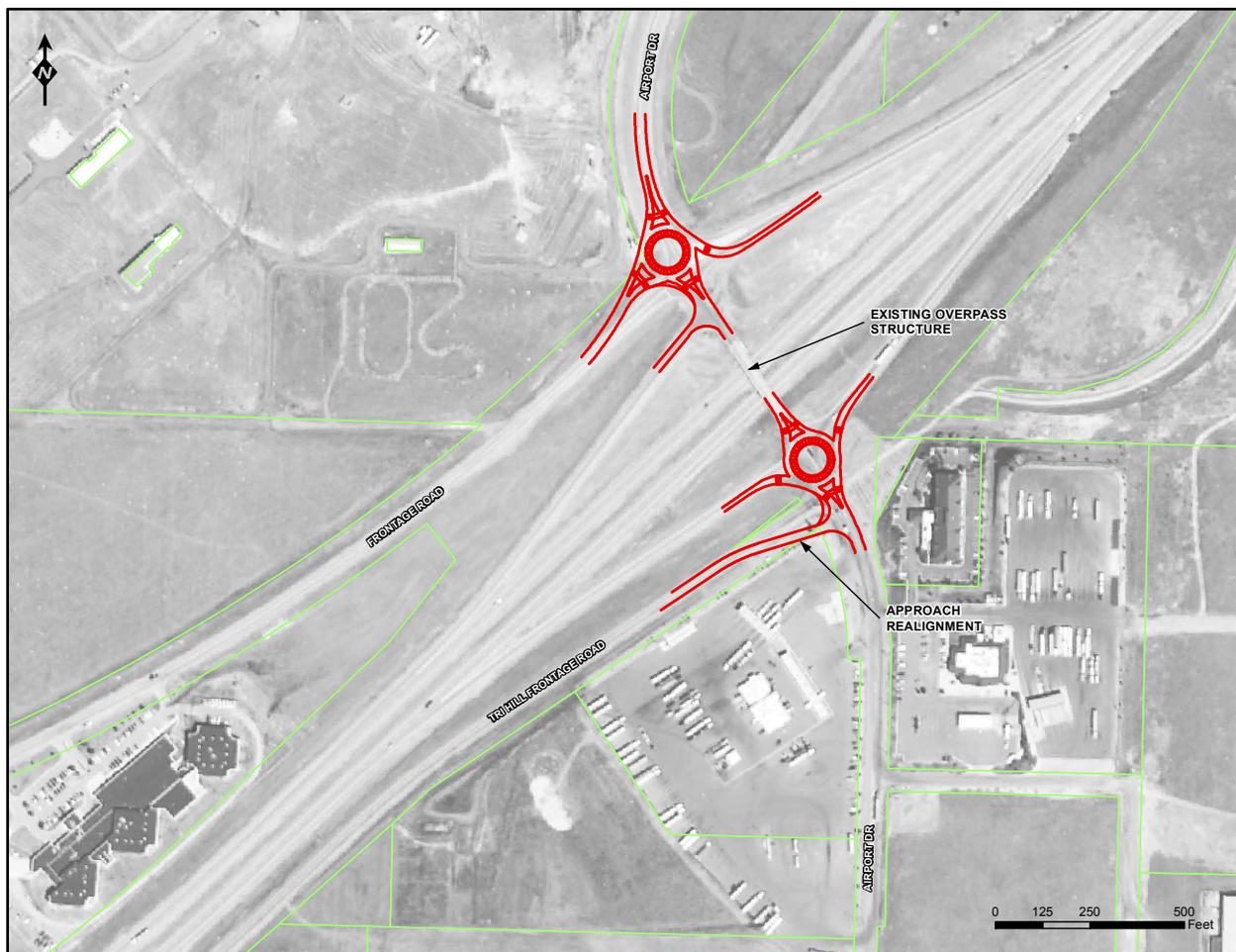


Figure 5.5: Gore Hill Concept C

- *Estimated Cost (Concept C): \$5,200,000*

Concept D—Traffic Signals without Realignment

This concept would include installing traffic signals at the existing four-legged intersections (**Figure 5.6**). No major alignment changes are envisioned under this concept. No new right-of-way would be anticipated with this concept.

North of the Interstate, a signal would be installed at the intersection of Airport Drive, Frontage Road, and the southbound off-ramp. The southbound on-ramp approach would remain at its current location. South of the Interstate, a traffic signal would be installed at the intersection of Airport Drive and the northbound ramps. The Tri Hill Frontage approach would be unchanged under this concept.

Both intersections have an LOS C or better for all approaches under both existing and projected conditions. In order to accommodate a southbound, left-turn lane at the southern intersection, a new or widened overpass structure would be needed.

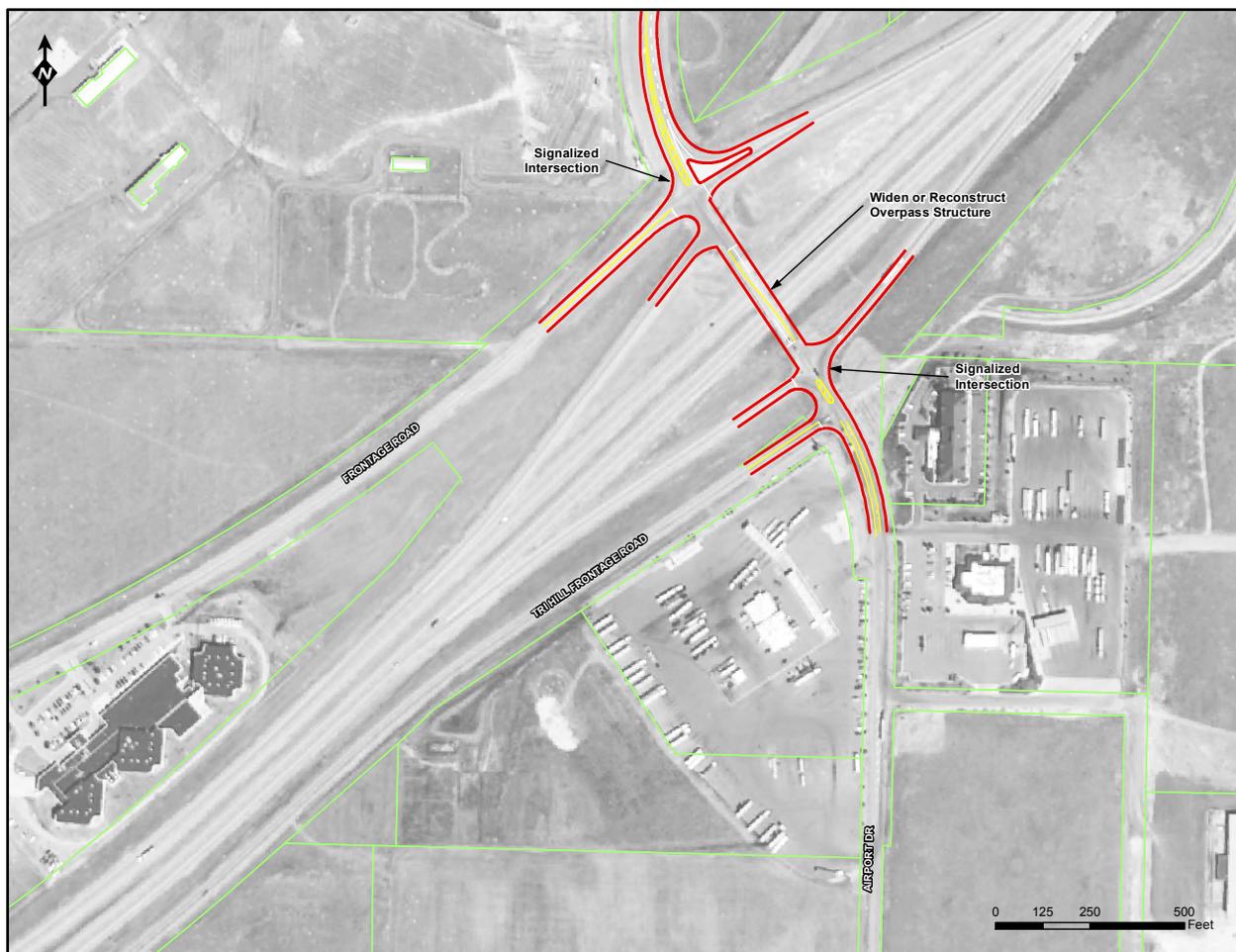


Figure 5.6: Gore Hill Concept D

- *Estimated Cost (Concept D): \$5,200,000 (widen existing structure) to \$6,700,000 (replace structure)*

Concept E—Traffic Signals with Intersections Relocated

This concept would be a combination of Concept D and Concept A. Traffic signals would be installed at the existing four-legged intersections (**Figure 5.7**). In addition, the Tri Hill Frontage Road would be relocated as shown in Concept A.

North of the Interstate, a signal would be installed at the intersection of Airport Drive, Frontage Road, and the southbound off-ramp. The southbound on-ramp approach would remain at its current location. No new right-of-way would be anticipated north of the Interstate.

On the south side of the Interstate, a traffic signal would be installed at the intersection of Airport Drive and the northbound ramps. The Tri Hill Frontage Road would be rerouted to the south of the truck stop. A new right-of-way would be necessary for the rerouted Tri Hill Frontage Road.

This concept would offer intersection delay and an LOS comparable to Concept D. Both signalized intersections have an LOS C or better under existing conditions, which would continue under projected conditions. As with Concept D, a new or widened overpass structure would be needed to accommodate a southbound left-turn lane at the southern intersection.

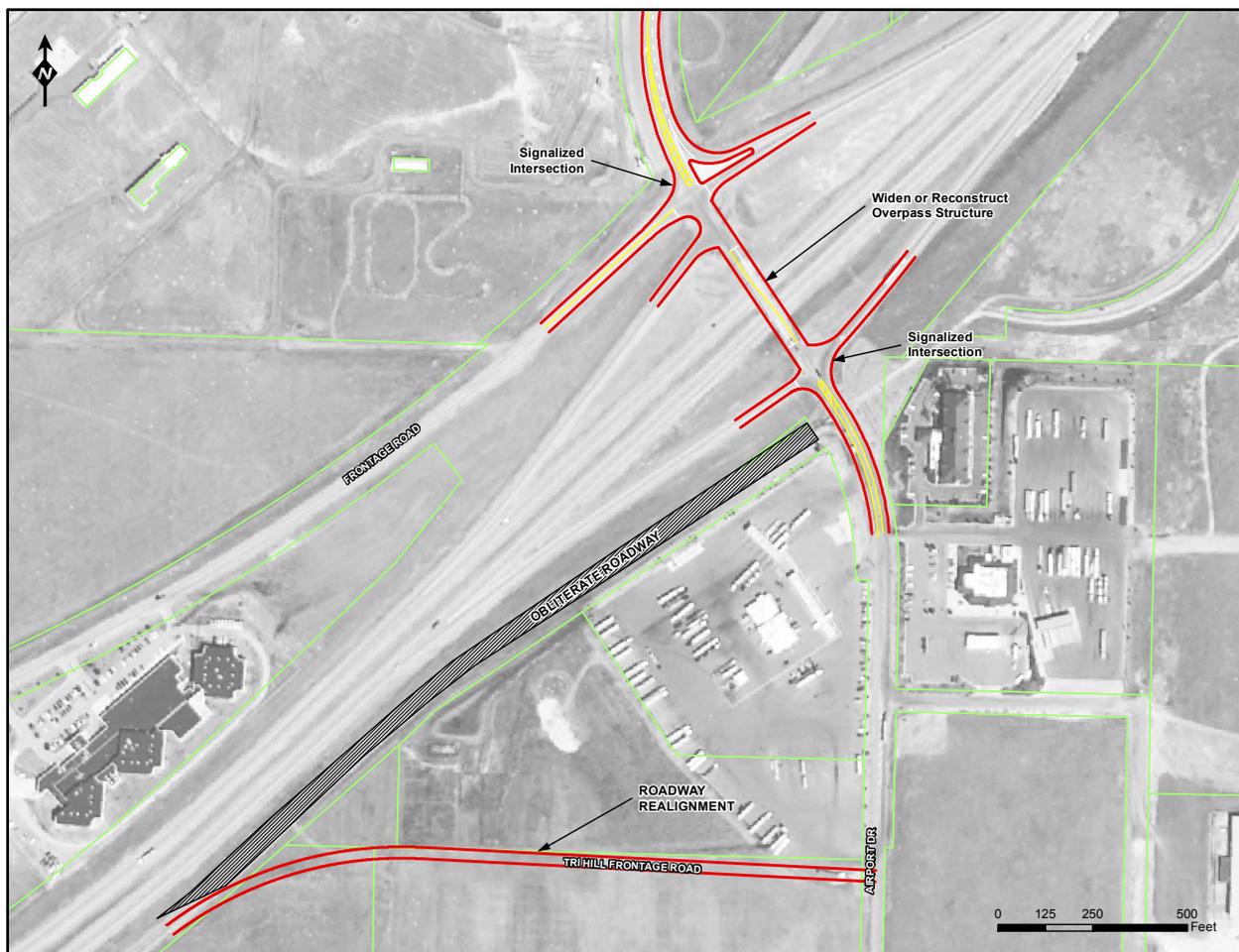


Figure 5.7: Gore Hill Concept E

- *Estimated Cost (Concept E): \$7,600,000 (widen existing structure) to \$9,000,000 (replace structure)*

Gore Hill Interchange Concept Summary

Five conceptual options were evaluated for the intersections at the Gore Hill Interchange. The appropriate traffic control for this location should be evaluated further during the project development process. A detailed traffic engineering study would be completed during project development. Other design issues may ultimately impact the final recommended configuration for these intersections.

- **Estimated Cost:** \$5,200,000 to \$9,000,000
- **Implementation Timeframe:** Mid-term
- **Potential Funding Source:** NHPP, HSIP, CMAQ

12.0. INTERSECTION IMPROVEMENTS (CENTRAL AVE INTERCHANGE)

The Central Avenue Interchange is configured as a standard diamond interchange with stop-control provided on the off-ramps. In addition to the intersections directly at the interchange, the intersection of Central Avenue and Vaughn Road was evaluated due to its proximity to, and resulting impacts on, interchange operations. The three Central Avenue intersections experience high amounts of vehicle delay during the peak hours. In addition, the intersections are projected to have failing traffic conditions in the future.

Additional traffic control, such as roundabouts or traffic signals, would be needed to accommodate existing and future traffic volumes. Based strictly on traffic operations, both traffic signals and single-lane roundabouts would provide enough capacity for projected conditions. The appropriate traffic control for this location should be evaluated further during the project development process. Other design issues may ultimately impact the final recommended configuration for these intersections.

- **Estimated Cost:** \$8,100,000 (traffic signals) to \$10,600,000 (roundabouts)
- **Implementation Timeframe:** Long-term
- **Potential Funding Source:** NHPP, HSIP, CMAQ, STPU

13.0. INTERSECTION IMPROVEMENTS (FOX FARM ROAD INTERSECTION)

The signalized intersection of Fox Farm Road and 10th Avenue S is projected to fail during the peak hours due to high vehicle delay. In addition, the length of the eastbound left-turn bay does not appear to provide enough vehicle storage. Lengthening the existing turn bay would improve storage for left-turning vehicles; however, the overall delay of the intersection would remain the same.

Due to the existing configuration, the signal timing is generally inefficient. Ultimately, it would be desirable to reconfigure the intersection and modify signal timing to increase efficiency. However, existing development constrains the configuration of the northbound approach leg.

In the interim, the overall delay of the intersection may be reduced by installing dual left-turn lanes along the eastbound approach leg. This configuration could be achieved by narrowing (or removing) the existing median separating the left-turn and through lanes on the eastbound approach leg. This improvement option would also provide for additional storage for the eastbound left-turn lane.

- **Estimated Cost:** \$100,000
- **Implementation Timeframe:** Short-term
- **Potential Funding Source:** NHPP, CMAQ, STPU

5.3. SUMMARY

This chapter identifies improvement options for the study corridor. The options were identified based on evaluation of several factors, including, but not limited to, field review, engineering analysis of as-builts, crash data analysis, consultation with various resource agencies, and information provided by the public.

The recommended improvement options are intended to offer a range of potential mitigation strategies for corridor issues and areas of concern. Small-scale improvement options were identified, and they may be as simple as modifying signing and striping. Larger, more complex reconstruction improvements were also envisioned. The potential may exist to combine improvement options during project development for ease of implementation and other efficiencies. **Table 5.1** summarizes the improvement options, including estimated implementation timeframes, potential funding sources, agency responsibility, and planning-level cost estimates. The improvement options are also shown graphically in **Figure 5.8**.

Table 5.1: Recommended Improvement Options

Improvement Option	Location	Description	Estimated Implementation Timeframe	Potential Funding Source	Agency Responsibility	Cost Estimate
INTERSTATE 15						
1.0	Southbound Auxiliary Lane	RP 278.1 to 278.5	Construct auxiliary lane between Gore Hill and 10th Ave S interchanges in southbound direction.	Mid-term	NHPP HSIP	MDT \$1.9M
2(a)	Roadway Illumination	RP 282.3 to 283.0	Install additional illumination along the Interstate.	Mid-term	NHPP HSIP	MDT \$500k
2(b)	Reconstruct Roadway	RP 282.3 to 283.0	Reconstruct roadway and bridge structures to meet current design standards.	Long-term	NHPP HSIP	MDT \$24.0M
INTERSTATE 315						
3.0	Pavement Rehabilitation	RP 0.0 to 1.4	Resurface both directions of I-315.	Mid-term	NHPP	MDT \$1.0M
4.0	Bridge Deck Treatment	<ul style="list-style-type: none"> I-15 Overpass (RP 0.01) 14th St SW Overpass (EB) 14th St SW Overpass (WB) 	Rehabilitate bridge decks.	Mid-term	NHPP	MDT \$600k
5.0	Diagrammatic Guide Signing	10th Ave S to 14th St SW	Install overhead diagrammatic guide signage for eastbound traffic.	Short-term	NHPP HSIP	MDT \$200k
6.0	Westbound Auxiliary Lane	14th St SW to I-15	Reconstruct I-315 westbound and the I-15 on-ramp to provide an auxiliary travel lane.	Mid-term	NHPP HSIP	MDT \$2.0M
7.0	Westbound Auxiliary Lane	Fox Farm Rd to 14th St SW	Reconstruct I-315 westbound and the Fox Farm Road intersection to provide an auxiliary travel lane.	Mid-term	NHPP HSIP CMAQ	MDT \$1.2M
INTERCHANGES						
8.0	Lengthen Southbound Off-ramp	10th Ave S Interchange	Lengthen southbound off-ramp.	Mid-term	NHPP HSIP	MDT \$260k
9.0	Modify Lane Merge	Central Ave west of Interchange	Modify signing and striping.	Short-term	STPU Local	Local \$20k
10.0	Feasibility Analysis	Emerson Junction	Secure a local project sponsor to fund an operational analysis/feasibility study of the Emerson Junction Interchange.	Mid-term	Local Private	Local \$250k
INTERSECTIONS						
11.0	Intersection Improvements	Gore Hill Interchange	Install additional traffic control such as roundabouts or traffic signals.	Mid-term	NHPP HSIP CMAQ	MDT \$5.2M to \$9.0M
12.0	Intersection Improvements	Central Ave Interchange	Install additional traffic control such as roundabouts or traffic signals.	Long-term	NHPP HSIP CMAQ STPU	MDT \$8.1M to \$10.6M
13.0	Intersection Improvements	Fox Farm Intersection	Install dual eastbound left-turn lanes.	Mid-term	NHPP CMAQ STPU	MDT \$100k

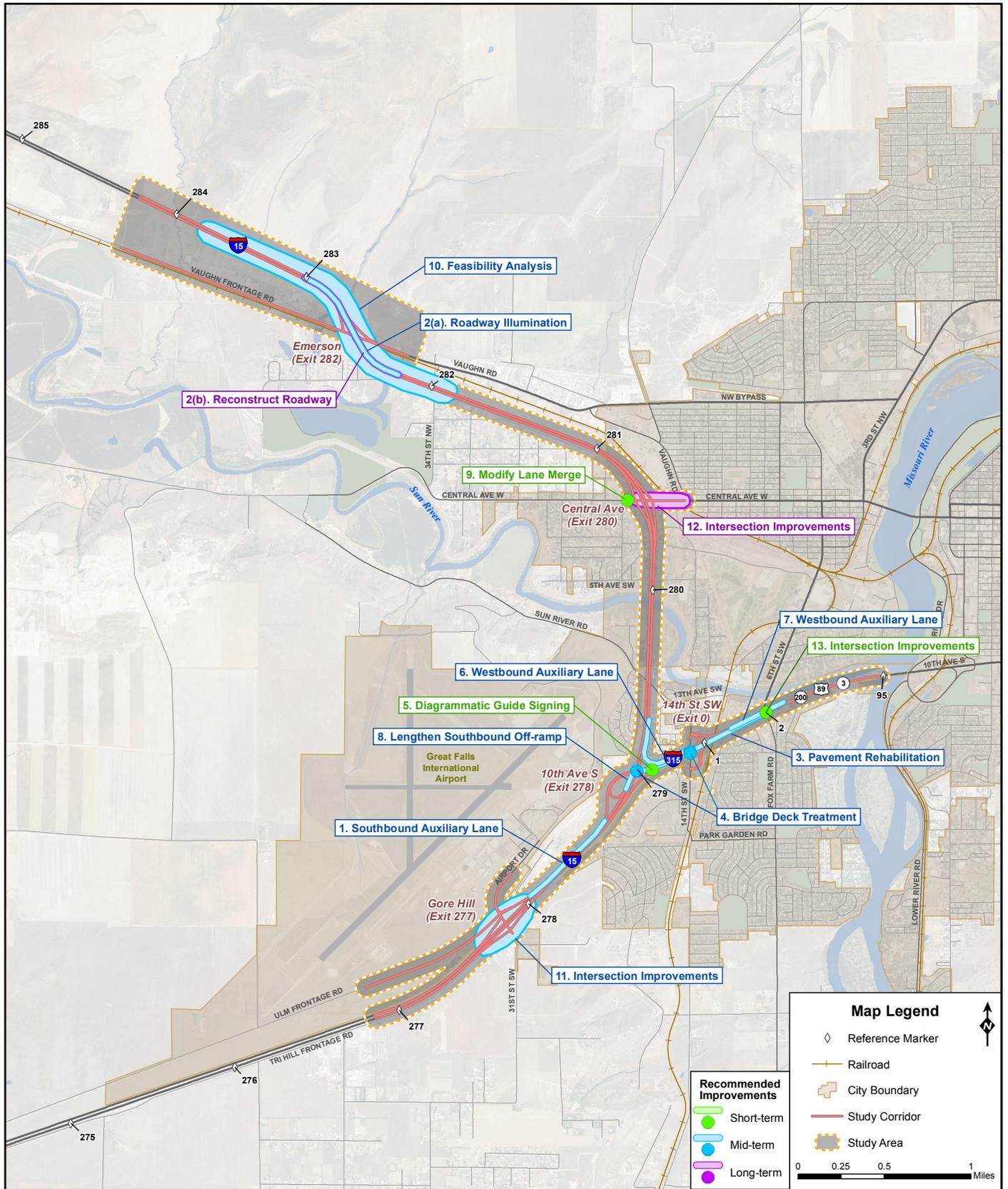


Figure 5.8: Recommended Improvement Options

Chapter 6

Funding Mechanisms

This chapter identifies mechanisms that may be used to fund improvements to the study corridor. Included is a list of funding sources developed for the distribution of federal and state transportation funding. MDT administers numerous programs that are funded from state and federal sources. Each year, in accordance with 60-2-127, Montana Code Annotated (MCA), the Montana Transportation Commission allocates a portion of available Federal-aid highway funds for construction purposes and for projects located on the various systems in the state as described throughout this chapter. This includes federal funds the state receives under the Moving Ahead for Progress in the 21st Century Act (MAP-21).

The list of funding mechanisms discussed in this chapter includes local funding sources available through the city and county, as well as potential private sources. Additional funding sources are possible, but those discussed in this chapter reflect the most probable sources at this time. A narrative description of each potential funding source is provided, including the source of revenue, required match, purpose for which funds are intended, means by which the funds are distributed, and the agency or jurisdiction responsible for establishing priorities for use of the funds.

Funding presently has not been dedicated to any of the recommended improvement options. Considering the current funding limits of the funding programs discussed herein, and the cost of recommended improvements to the corridor, additional funding from alternative sources may be required if all of the transportation needs are to be met over the planning horizon.

6.1. FEDERAL FUNDING SOURCES

The following is a summary of major federal transportation funding categories received by the state through Titles 23-49 United States Code (U.S.C.), including state-developed implementation/sub-programs that may be potential sources for projects. In order to receive project funding under these programs, projects must be included in the STIP and the MPO Transportation Improvement Program, where relevant.

6.1.1. NATIONAL HIGHWAY PERFORMANCE PROGRAM (NHPP)

The National Highway Performance Program (NHPP) provides funding for the NHS, including the Interstate System and Non-Interstate NHS roads and bridges. The purpose of the NHS is to provide an interconnected system of principal arterial routes, which will serve major population centers, international border crossings, intermodal transportation facilities, and other major travel destinations; meet national defense requirements; and serve Interstate and interregional travel. The NHS includes all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

NHPP funds are federally apportioned to Montana and allocated to Districts by the Montana Transportation Commission. Based on system performance, the funds are allocated to three programs, described below:

INTERSTATE MAINTENANCE (IM)

The IM Program finances highway and bridge projects to rehabilitate, restore, resurface, and reconstruct the Interstate System. MDT Districts are allocated IM funds by Montana's Transportation Commission based on system performance. The Federal share for IM projects is 91.24 percent and the state is responsible for 8.76 percent.

The Great Falls District receives approximately \$11.24M in annual IM funding. Funding is currently obligated for the next five years (through 2019). Unfunded projects (beyond 2019) total approximately \$23.0M.

NATIONAL HIGHWAY (NH) SYSTEM (NON-INTERSTATE)

The NH Program finances highway and bridge projects to rehabilitate, restore, resurface, and reconstruct Non-Interstate National Highway System routes. MDT Districts are allocated NH funds by Montana's Transportation Commission based on system performance. The federal share for non-Interstate NHS projects is 86.58 percent, and the state is responsible for the remaining 13.42 percent. The state share is funded through the Highway State Special Revenue Account (HSSR).

The Great Falls District receives approximately \$14.0M in annual NH funding. Funding is currently obligated for the next five years (through 2019). Unfunded projects (beyond 2019) total approximately \$40.0M.

NATIONAL HIGHWAY PERFORMANCE BRIDGE (NHPB)

Federal and state funds under this program are used to finance bridge inspection, improvement, and replacement projects on Interstate and non-Interstate NHS routes. NHPB program funding is established at the discretion of the state. However, Title 23 U.S.C. establishes minimum standards for NHS bridge conditions. If more than 10 percent of the total deck area of NHS bridges in a state is on structurally deficient bridges for three consecutive years, the state must direct NHPB funds equal to 50 percent of the state's FY 2009 Highway Bridge Program to improve bridges each year until the state's NHS bridge condition meets the minimum standard.

Activities eligible for NHS funding include construction, reconstruction, resurfacing, restoration, and rehabilitation of segments of the NHS roadway; construction, replacement, rehabilitation, preservation and protection of bridges on the NHS; and projects or part of a program supporting national goals for improving infrastructure condition, safety, mobility, or freight movements on the NHS. Operational improvements, as well as highway safety improvements, are also eligible. Other miscellaneous activities that may qualify for NHS funding include bikeways and pedestrian walkways, environmental mitigation, restoration and pollution control, infrastructure-based intelligent transportation systems, traffic and traveler monitoring and control, and construction of intra or inter-city bus terminals serving the NHS. The Transportation Commission establishes priorities for the use of NHPP funds, and projects are let through a competitive bidding process.

Given the estimated range of planning-level costs, NHPP funding for improvements is highly unlikely over the short term, but may be available toward the end of the planning horizon, depending on the other NHS needs within the Great Falls District.

6.1.2. SURFACE TRANSPORTATION PROGRAM (STP)

STP funds are federally apportioned to Montana, and they are allocated to various programs by the Montana Transportation Commission. The federal share for these projects is 86.58 percent, with the non-federal share typically funded through HSSR.

URBAN HIGHWAY SYSTEM (STPU)

The federal and state funds available under this program are used to finance transportation projects on Montana's Urban Highway System, as per MCA 60-3-211. STPU allocations are based on a per capita distribution and are recalculated each decade following the U.S. Census. STPU funds are primarily used for resurfacing, rehabilitation, or reconstruction of existing facilities; operational improvements; bicycle facilities; pedestrian walkways, and carpool projects.

State law guides the allocation of urban funds to projects on the Urban Highway System in Montana's urban areas (population of 5,000 or greater) through a statutory formula based on each area's population compared to the total population in all urban areas. Of the total received, 86.58 percent is federal, and 13.42 percent is non-federal match, typically provided from the Special State Revenue Account for highway projects.

Urban funds are used primarily for major street construction, reconstruction, and traffic operation projects on the 430 miles on the state-designated Urban Highway System, but they can also be used for any project that is eligible for STP under Title 23 U.S. C. Priorities for the use of urban funds are established at the local level through local planning processes with final approval by the Transportation Commission.

Great Falls receives approximately \$1.43M in annual STPU funding. The current balance of STPU funding for Great Falls is \$2.65M. Proposed obligations over the next five years total \$7.13M.

6.1.3. HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

HSIP funds are apportioned to Montana for allocation to safety improvement projects approved by the Transportation Commission and are consistent with the strategic HSIP. Projects described in the state *Strategic Highway Safety Plan* must correct or improve a hazardous road location or feature, or address a highway safety problem. The Transportation Commission approves and awards the projects, which are let through a competitive bidding process. Generally, the federal share for the HSIP projects is 90 percent with the non-federal share typically funded through the HSSR account.

HSIP funds are distributed at a statewide level through MDT's Traffic Safety Section as needs and improvements are identified. This is unlike other federal funding sources where an annual allocation is distributed for each District to prioritize. Current Great Falls District HSIP priorities under development through 2019 total an estimated construction cost of approximately \$9.79M. HSIP funding availability beyond 2019 depends on competing safety needs and trends throughout the state.

6.1.4. CONGESTION MITIGATION AND AIR QUALITY (CMAQ) IMPROVEMENT PROGRAM

Federal funds available under this program are used to finance transportation projects and programs to help improve air quality and meet the requirements of the Clean Air Act. Montana's air pollution problems are attributed to CO and particulate matter (PM10 and PM2.5).

CMAQ funds are federally apportioned to Montana and allocated to various eligible programs by formula and by the Transportation Commission. As a minimum apportionment state, a federally required distribution of CMAQ funds goes to projects in Missoula since it was Montana's only designated and classified air quality non-attainment area. The remaining, non-formula funds, referred to as "flexible CMAQ," are directed primarily to areas of the state with emerging air quality issues through various state programs. The Transportation Commission approves and awards both formula and non-formula projects on MDT right-of-way. Infrastructure and capital equipment projects are let through a competitive bidding process. Of the total funding received, 86.58 percent is federal, and 13.42 percent is non-federal match that the state provides for projects on state highways and local governments for local projects.

In general, eligible activities include transit improvements, traffic signal synchronization, bicycle pedestrian projects, intersection improvements, travel demand management strategies, traffic flow improvements, air-quality equipment purchases, and public fleet conversions to cleaner fuels. At the project level, the use of CMAQ funds is not constrained to a particular system (i.e., primary, urban, and NHS). A requirement for the use of these funds is the estimation of the reduction in pollutants resulting from implementing the program/project. These estimates are reported yearly to FHWA.

Great Falls receives approximately \$1.04M in annual CMAQ funding. Current priorities total approximately \$3.79M over the next five years.

MONTANA AIR AND CONGESTION INITIATIVE (MACI)–GUARANTEED PROGRAM (FLEXIBLE)

This is a state program funded with flexible CMAQ funds that the Transportation Commission allocates annually to Billings and Great Falls to address CO issues in these designated, but "not classified," non-attainment areas. The air quality in these cities is roughly equivalent to Missoula; however, since these cities are not classified, they do not get direct funding through the federal formula. Projects are prioritized through the respective Billings and Great Falls Metropolitan planning processes.

MACI DISCRETIONARY PROGRAM (FLEXIBLE)

The MACI Discretionary Program provides funding for projects in areas designated non-attainment or recognized as being "high-risk" for becoming non-attainment. Since 1998, MDT has used MACI Discretionary funds to get ahead of the curve for CO and particulate matter (PM) 10 problems in non-attainment and high-risk communities across Montana. District administrators and local governments nominate projects cooperatively. Projects are prioritized and selected based on air-quality benefits and other factors. The most beneficial projects to address these pollutants have been sweepers and flushers, intersection improvements, and signal synchronization projects.

6.1.5. TRANSPORTATION ALTERNATIVES PROGRAM (TA)

The TA Program requires MDT to obligate 50 percent of the funds within the state-based on population, using a competitive process, while the other 50 percent may be obligated in any area of the state. The federal share for these projects is 86.58 percent, with the non-federal share funded by the project sponsor through the HSSR.

Funds may be obligated for projects submitted by the following:

- Local governments
- Transit agencies
- Natural resource or public land agencies
- School district, schools, or local education authority
- Tribal governments
- Other local government entities with responsibility for recreational trails for eligible use of these funds

Eligible categories include the following:

- On-road and off-road trail facilities for pedestrians and bicyclists, including American with Disabilities Act (ADA) improvements
- Historic preservation and rehabilitation of transportation facilities
- Archeological activities relating to impacts for a transportation project
- Any environmental mitigation activity, including prevention and abatement to address highway related stormwater runoff and to reduce vehicle/animal collisions including habitat connectivity
- Turnouts, overlooks, and viewing areas
- Conversion/use of abandoned railroad corridors for trails for non-motorized users
- Inventory, control, and removal of outdoor advertising
- Vegetation management in transportation right-of-way for safety, erosion control, and controlling invasive species
- Construction, maintenance, and restoration of trails and development and rehabilitation of trailside and trailhead facilities
- Development and dissemination of publications and operation of trail safety and trail environmental protection programs
- Education funds for publications, monitoring, and patrol programs and for trail-related training
- Planning, design, and construction of projects that will substantially improve the ability of students to walk and bicycle to school
- Non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns, outreach to press and community leaders, traffic education and enforcement in school vicinities, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training

The state and any MPO required to obligate TA funds must develop a competitive process to allow eligible applicants an opportunity to submit projects for funding. MDT's process emphasizes safety, ADA, relationships to state and community planning efforts, existing community facilities, and project readiness.

6.1.6. CONGRESSIONALLY DIRECTED FUNDS

Congressionally directed funds may be received through either highway program authorization or annual appropriations processes. These funds are generally described as “demonstration” or “earmark” funds. Discretionary funds are typically awarded through a federal application process or by Congressional direction. If a local sponsored project were to receive these types of funds, MDT would administer the funds in accordance with Montana Transportation Commission Policy #5 – *“Policy resolution regarding Congressionally directed funding: including Demonstration Projects, High Priority Projects, and Project Earmarks.”*

6.2. STATE FUNDING SOURCES

6.2.1. STATE FUEL TAX

The state of Montana assesses a tax of \$0.27 per gallon on gasoline and \$0.2775 per gallon on diesel fuel used for transportation purposes. According to state law, each incorporated city and town within the state receives an allocation of the total tax funds based upon the following:

1. The ratio of the population within each city and town to the total population in all cities and towns in the state
2. The ratio of the street mileage within each city and town to the total street mileage in all incorporated cities and towns in the state (The street mileage is exclusive of the Federal-aid Interstate and Primary Systems.)

State law also establishes that each county be allocated a percentage of the total tax funds based upon the following:

1. The ratio of the rural population of each county to the total rural population in the state, excluding the population of all incorporated cities or towns within the county and state
2. The ratio of the rural road mileage in each county to the total rural road mileage in the state, less the certified mileage of all cities or towns within the county and state
3. The ratio of the land area in each county to the total land area of the state

For State Fiscal Year 2015, the city of Great Falls will receive \$993,168, and Cascade County will receive \$200,917 in state fuel tax funds. The amount varies annually, but the current level provides a reasonable base for projection throughout the planning period.

All fuel tax funds allocated to the city and county governments must be used for the construction, reconstruction, maintenance, and repair of rural roads or city streets and alleys. The funds may also be used for the share that the city or county might otherwise expend for proportionate matching of federal funds allocated for the construction of roads or streets that are part of the primary, secondary, or urban system. Priorities for the use of these funds are established by each recipient jurisdiction.

6.2.2. STATE SPECIAL REVENUE/STATE FUNDED CONSTRUCTION

The State Funded Construction Program, which is funded entirely with state funds from the Highway State Special Revenue Account, provides funding for projects that are not eligible for federal funds. This program is totally state funded, requiring no match.

This program funds projects to preserve the condition and extend the service life of highways. Eligibility requirements are that the highways be maintained by the state. MDT staff nominates the projects based on pavement preservation needs, the districts establish priorities, and the Transportation Commission approves the program.

6.3. LOCAL FUNDING SOURCES

Local governments generate revenue through a variety of funding mechanisms. Typically, several local programs related to transportation exist for budgeting purposes and to disperse revenues. These programs are tailored to fulfill specific transportation functions or provide particular services. The following text summarizes programs that are or could be used to finance transportation improvements by the city of Great Falls.

6.3.1. CITY OF GREAT FALLS

SPECIAL REVENUE FUNDS

These funds are used to budget and distribute revenues that are legally restricted for a specific purpose. Several such funds that benefit the transportation system are discussed briefly in the following paragraphs.

SPECIAL IMPROVEMENT DISTRICT (SID) REVOLVING FUND

This fund provides financing to satisfy bond payments for special improvement districts in need of additional funds. The city can establish street SIDs with bond repayment to be made by the adjoining landowners receiving the benefit of the improvement. The city has provided labor and equipment for past projects through the General Fund, with a SID paying for materials.

GAS TAX APPORTIONMENT

Revenues are generated through state gasoline taxes apportioned from the state of Montana. The city of Great Falls' FY 2015 state gas tax apportionment will be approximately \$993,168. Transfers are made from this fund to the General Fund to reimburse expenditures for construction, reconstruction, repair, and maintenance of streets.

TAX INCREMENT FINANCING (TIF)

Increment financing has been used in many municipalities to generate revenue for public improvement projects. As improvements are made within the district, and as property values increase, the incremental increases in property tax revenue are earmarked for this fund. The fund is then used for improvements within the district. Expenditures of revenue generated by this method are subject to certain spending restrictions and must be spent within the district. Tax increment districts could be established to accomplish transportation improvements in other areas of the community where property values may be expected to increase.

Great Falls currently has five active TIF districts: 1) Central Montana Agricultural and Technology Park District; 2) West Bank Urban Renewal District; 3) Great Falls International Airport District; 4) AgriTech Park District, and; 5) Great Falls Downtown Urban Renewal District. The funds generated from TIF districts could be used to finance projects that include street and parking improvements, tree planting, installation of new bike racks, trash containers and benches, and other streetscape beautification projects.

6.3.2. PRIVATE FUNDING SOURCES

Private financing of roadway improvements, in the form of right-of-way donations and cash contributions, has been successful for many years. In recent years, the private sector has recognized that better access and improved facilities can be profitable due to increases in land values and commercial development possibilities. Several forms of private financing for transportation improvements used in other parts of the United States are described in this section.

COST SHARING

The private sector pays some of the operating and capital costs for constructing transportation facilities required by development actions.

TRANSPORTATION CORPORATIONS

These private entities are non-profit, tax-exempt organizations under the control of state or local government. They are created to stimulate private financing of highway improvements.

ROAD DISTRICTS

These are areas created by a petition of affected landowners, which enables issuance of bonds for financing local transportation projects.

PRIVATE DONATIONS

The private donation of money, property, or services to mitigate identified development impacts is the most common type of private transportation funding. Private donations are effective in areas where financial conditions do not permit a local government to implement a transportation improvement itself.

PRIVATE OWNERSHIP

This method of financing is an arrangement where a private enterprise constructs and maintains a transportation facility, and the government agrees to pay for public use of the facility. Payment for public use of the facility is often accomplished through leasing agreements (wherein the facility is rented from the owner), or through access fees whereby the owner is paid a specified sum depending upon the level of public use.

PRIVATIZATION

Privatization is either the temporary or long-term transfer of a public property or publicly owned rights belonging to a transportation agency to a private business. This transfer is made in return for a payment that can be applied toward construction or maintenance of transportation facilities.

GENERAL OBLIGATION (GO) BONDS

The sale of GO bonds can be used to finance a specific set of major highway improvements. A GO bond sale, subject to voter approval, provides the financing initially required for major improvements to the

transportation system. The advantage of this funding method is that when the bond is retired, the obligation of the taxpaying public is also retired. State statutes limiting the level of bonded indebtedness for cities and counties restrict the use of GO bonds. The present property tax situation in Montana, and recent adverse citizen responses to proposed tax increases by local government, suggest that the public may not be receptive to the use of this funding alternative.

MULTI-JURISDICTIONAL SERVICE DISTRICT

The Montana State Legislature authorized this funding option in 1985. This procedure requires the establishment of a special district, somewhat like a SID, which has the flexibility to extend across city and county boundaries. Through this mechanism, an urban transportation district could be established to fund a specific highway improvement that crosses municipal boundaries (e.g., corporate limits, urban limits, or county line). This type of fund is structured similar to an SID with bonds backed by local government issued to cover the cost of a proposed improvement. Revenue to pay for the bonds would be raised through assessments against property owners in the service district.

LOCAL IMPROVEMENT DISTRICT

This funding option is only applicable to counties wishing to establish a local improvement district for road improvements. While similar to a SID, this funding option has the benefit of allowing counties to initiate a local improvement district through a more streamlined process than that associated with the development of a SID.

6.3.3. FUTURE POTENTIAL FUNDING SOURCES

LOCAL SALES TAX

If authorizing legislation were to be approved, local governments would be able to initiate local option taxes as a potential funding source for transportation improvements. One local option tax would be a local sales tax.

WHEEL TAX

If initiated, a tax per wheel on vehicles licensed in counties could generate substantial revenue. The cost to each user of the transportation network would be proportional to the number and type of vehicles owned.

LOCAL OPTION MOTOR FUEL TAX

A local option fuel tax is another means of raising revenue for the construction, reconstruction, maintenance, and repair of public streets and roads. This local tax may be imposed by the people of the county or by the adoption of a resolution by the county commissioners and referred to the people. An advantage to a local motor fuel tax, as with a wheel tax, is that it taxes only the users of the transportation system, and the tax paid by such individuals is directly proportional to their use of the facilities. The revenue from a motor fuel tax must be distributed proportionately among the county and its member municipalities based on vehicle registration.

EXCISE TAXES

Excise taxes are similar to sales taxes with the exception that items taxed are those considered indulgent. The demand for items on which there is an excise tax is generally large; therefore, there is potential to

raise a substantial amount of local revenue. Products on which an excise tax could be imposed for additional local revenue include such items as tobacco, alcohol, and various forms of entertainment. A potential problem with excise taxes arises when the tax causes inter-area competition.

DEVELOPMENT IMPACT FEES

Another way funds can be generated for transportation improvements is by assessing a fee to property developers. The fee is based on the impact the development is likely to have on the transportation network.

VALUE-CAPTURE TAXES

Value-capture taxes are a way to raise revenue following development of transportation improvements. Whereas development fees are assessed to make necessary transportation improvements, value capture taxes impose a fee on businesses that benefit due to their location along improved, highly traveled routes, which assumes improvements have been made. Value-capture taxes may be a means to enter into other forms of funding future improvements. One method to consider would be cash flow management that makes wise use of existing revenue rather than continuing to introduce new sources.

Chapter 7

Conclusions and Next Steps

The Interstate System through the Great Falls area was evaluated at a planning level to obtain an understanding of corridor needs, objectives, constraints, and opportunities. MDT initiated the development of this pre-NEPA/MEPA study, with the cooperation of the Great Falls MPO, to plan for long-term corridor needs and to develop a package of improvement options to address those needs. The study examined geometric characteristics, crash history, land uses, physical constraints, environmental resources, and existing and projected operational characteristics of the corridor.

Publicly available information relative to environmental resources and existing infrastructure, coupled with focused outreach to the public, stakeholders, and various resource agencies, was reviewed to identify improvement options for the corridor. The improvement options include short- and long-term recommendations intended to address the transportation needs of the corridor over the planning horizon (2035). These recommendations would assist the study partners in targeting the most critical needs and allocation of resources.

7.1. NEXT STEPS

The ability to develop and implement the recommended improvement options ultimately depends on availability of funding, right-of-way needs, and other project priorities. At this time, there is no funding identified to complete any of the recommended improvement options contained in this study. The most logical funding source for improvements to the Interstate System is the IM Program. Given current funding levels, the ability to develop recommendations in the short- and mid-term is unlikely through the use of IM funding due to already committed projects and competing needs.

Federal funding allocations for the MDT Great Falls District and the MDT Traffic Safety Section are committed through Federal Fiscal Year 2019, with numerous unfunded projects beyond 2019. There may be opportunity, however, to develop smaller, lower cost improvements through alternative funding sources.

To continue with the development of a project (or projects) the following steps are needed:

- Identify and secure a funding source(s).
- Ensure improvement projects are consistent with long-range planning within the Great Falls MPO and incorporated into the fiscally constrained TIP.
- For MDT-led projects, follow MDT processes for project nomination and development, including a public involvement process and environmental documentation.
- For projects that are developed by others and that may impact MDT routes, coordinate with MDT via the System Impact Action Process.

Should this corridor planning study lead to a project or projects, compliance with NEPA (if federal funding is used) and MEPA (if a state action) would be required. The purpose and need statement for any future project should be consistent with the needs and objectives contained in this study. Further, this corridor planning study would be used as the basis for determining the impacts and subsequent mitigation for the improvement options in future NEPA/MEPA documentation. Any project developed would have to comply with CFR Title 23 Part 771 and ARM 18, sub-chapter 2, which sets forth the requirements for documenting environmental impacts on highway projects.

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