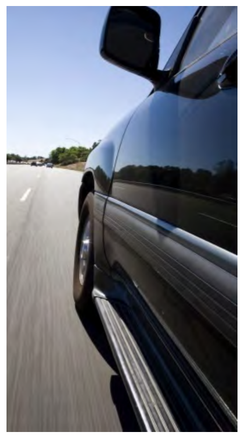
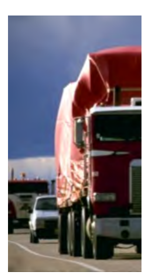
Greater Helena Area Long Range Transportation Plan—2014 Update



PREPARED FOR:
City of Helena (*adopted by City Commission on June 29, 2015*)
Lewis and Clark County (*adopted by County Commission on July 2, 2015*)
Montana Department of Transportation
April 10, 2015

City of Helena



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ACRONYMS

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADA	Americans with Disabilities Act
ADU	Accessory Dwelling Unit
APBP	Association of Pedestrian and Bicycle Officials
AWSC	All Way Stop Control
BEA	Bureau of Economic Analysis
BID	Business Improvement District
BNSF	Burlington Northern Santa Fe
CBD	Central Business District
CDP	Census Designated Place
CEIC	Census & Economic Information Center
CFR	Code of Federal Regulations
CHSP	Comprehensive Highway Safety Plan
CIP	Capital Improvement Program
CMSN	Committed Major Street Network
CRN	County Road Network
CTSM	Committed Transportation System Management
DEQ	Department of Environmental Quality
DHV	Design Hourly Volume
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
HATS	Helena Area Transit System
HAWK	High-Intensity Activated Crosswalk
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
HITP	Helena Inclusive Transit Planning
HUD	Department of Housing and Urban Development
IMBA	International Mountain Biking Association
ITE	Institute of Transportation Engineers
JLUS	Joint Land Use Study
LCI	League (of American Bicyclists) Certified Instructors
LED	Light-Emitting Diode
LOS	Level of Service
LRTP	Long Range Transportation Plan
MACI	Montana Air Congestion Initiative
MAP-21	Moving Ahead for Progress in the 21st Century Act
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization
MRL	Montana Rail Link
MSN	Major Street Network
MUTCD	Manual on Uniform Traffic Control Devices
NACTO	National Association of City Transportation Officials
NB	Northbound
NBPDP	National Bicycle and Pedestrian Documentation Project
NMTAC	Non-Motorized Travel Advisory Council
PDO	Property Damage Only
PER	Preliminary Engineering Report
PPLT	Prickly Pear Land Trust
PROWAG	Public Rights-of-Way Accessibility Guidelines
PIP	Public Involvement Plan
REMI	Regional Economic Models, Inc.
RRFB	Rectangular Rapid Flashing Beacon
RV	Recreational Vehicle
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users
SB	Southbound
TA	Transportation Alternatives
TCC	Transportation Coordinating Committee
TDM	Travel Demand Model
TDP	Transit Development Plan
TSM	Transportation System Management
TWG	Technical Working Group
TWLTL	Two-way, Left-turn Lane
US	United States
USDOT	US Department of Transportation
UTD	Urban Transportation District
v/c	Volume-to-Capacity Ratio

Chapter 1

BACKGROUND AND GOALS

1.1 Introduction

Lewis and Clark County, the City of Helena, and the Montana Department of Transportation (MDT) partnered to update the community's Long Range Transportation Plan (LRTP). The existing LRTP (i.e. the "Plan") was completed ten (10) years ago and is commonly referred to as the 2004 Update. The LRTP Update provides a blueprint for guiding transportation infrastructure investments based on system needs and associated decision making principles. Land use changes in the surrounding area, substantial upgrades to the community's transportation system, and the community's increasing interest in transportation related matters have necessitated an update to the 2004 Plan. Although the City of East Helena chose not to participate financially in the LRTP Update, input was received from the City Council and Planning Board to help inform the final version of the LRTP document.

The development of the Plan was overseen by the Helena Area Transportation Coordinating Committee (TCC). The TCC is comprised of a multitude of individuals representing various departments of Lewis and Clark County, the City of Helena, the City of East Helena, MDT and the Federal Highway Administration (FHWA). Other area stakeholders also sit on and contribute to the activities of the TCC. A Technical Working Group (TWG) was established to guide work and review deliverables produced by the consultant team. Both the TCC and TWG provided advisory and oversight capacity, as required, on all matters related to the LRTP Update.

The LRTP Update is intended to provide guidance to the decision-makers in the Greater Helena Area by responding to existing transportation system concerns through a menu of large and small improvements to the transportation network. The recommendations made in this document cover all modes of transportation, including travel by private vehicle, foot, bicycle and transit. Recommended projects are intended to relieve existing problems and prepare the transportation system to meet future needs. As a truly "multi-modal" transportation plan, the LRTP includes not only a traditional examination of traffic operations and the community's road network, but also an assessment of non-motorized transportation, transit, trip reduction strategies, traffic calming and other traffic management techniques.

According to the 2010 census, the Helena urban area population falls just under the 50,000 population threshold for designation as a Metropolitan Planning Organization (MPO). MPO designated communities have more stringent requirements for transportation planning as set forth in the provisions of the Moving Ahead for Progress in the 21st Century Act (MAP-21) legislation. It is likely that the Helena urban area population will reach the 50,000 threshold at the next census (2020). If the population criteria remains the same, the Helena area will become an MPO designated community.

1.2 Study Area Boundary

Transportation plans generally begin by defining the study area. Sometimes the study area follows governmental urban area boundaries such as city limits, but most often they include land outside existing city limits in which future growth is seen as likely to occur. As a part of the 2014 update to the Greater Helena Area LRTP, an evaluation of the 2004 LRTP's study area boundary was undertaken. Subsequently, slight adjustments were deemed necessary and made to the study area boundary. The study area boundary includes the entire city limits of Helena and East Helena, as well as unincorporated lands surrounding these cities. The unincorporated lands included five (5) census designated places:

- Helena Valley Northwest CDP
- Helena Valley Northeast CDP
- Helena Valley West Central CDP
- Helena Valley Southeast CDP
- Helena West Side CDP

The study area boundary was expanded slightly over the 2004 boundary for two reasons. First, to include land where recent growth has occurred or is anticipated to occur in the foreseeable future and second, to include the revised urban boundary resulting from the 2010 Census. Information on the 2004 and modified 2014 study area boundary for the LRTP is shown on **Figure 1.1**.

Local Plans Reviewed

- Lewis and Clark County Growth Policy Update (On-going)
- Fort William H. Harrison Limestone Hills Training Area Joint Land Use Study (On-going)
- City of Helena Growth Policy (2011)
- Greater Helena Area Community Transportation Safety Plan (September, 2013)
- Helena Area Transit Development Plan Update 2008-2013 (September 2013)
- Greening Last Chance Gulch (September 2013)
- Helena Gateway Intersection Concept Study (September 2012)
- Lewis and Clark County Preliminary Engineering Reports (February, 2012)
- Railroad Quiet Zone Preliminary Feasibility Study (March, 2011)
- Complete Streets Policy (December 20, 2010)
- Centennial Trail Master Plan (2009)
- Helena Climate Change Task Force Action Plan 2009 (August 19, 2009)
- Lewis and Clark County 2004 Growth Policy (February 15, 2004)

State Plans Reviewed

- The Comprehensive State Highway Safety Plan (CHSP)

Federal Plans Reviewed

- MAP-21 Planning Factors
- Livability Principles from HUD/EPA/USDOT

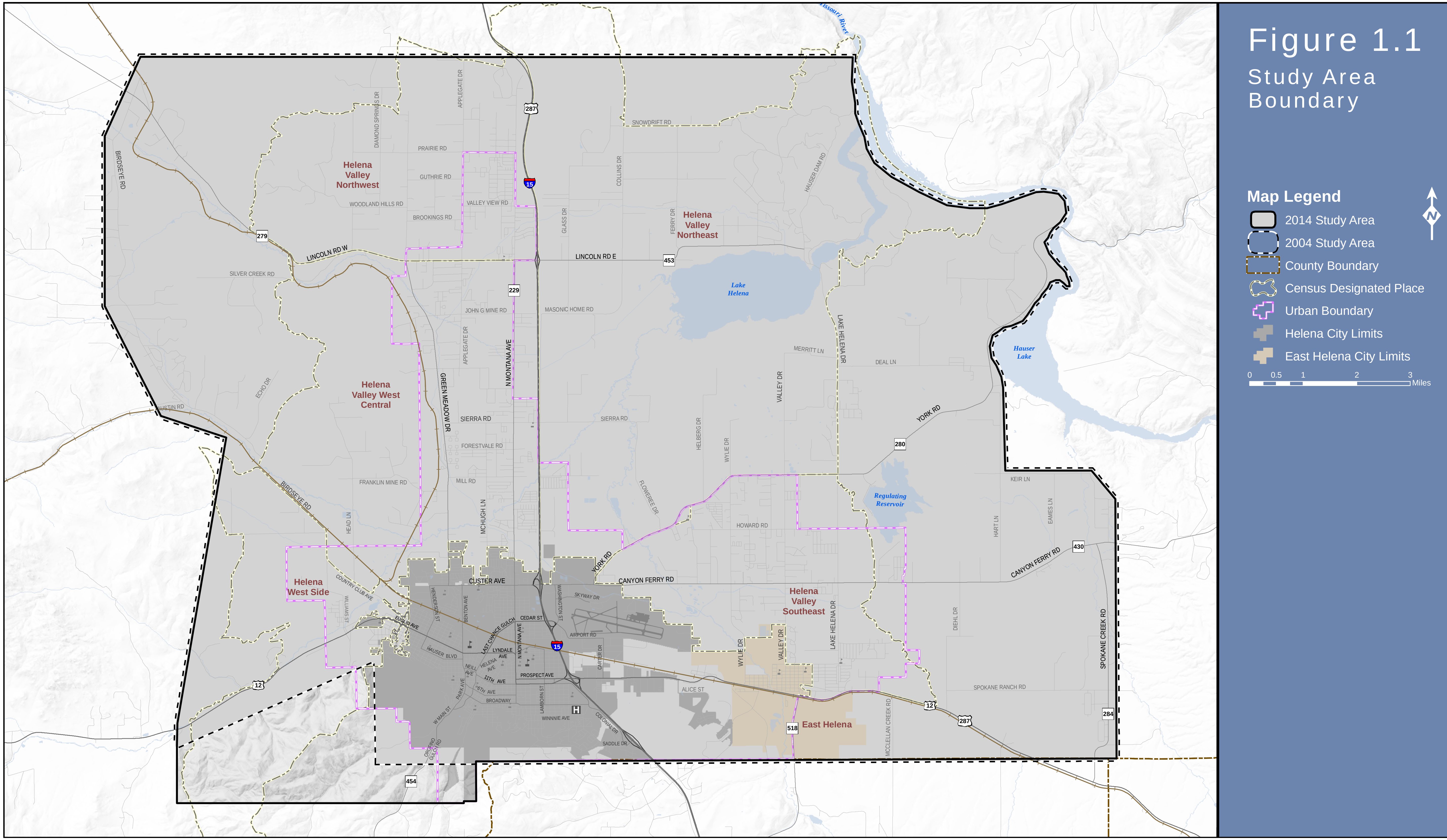

Figure 1.1

Study Area Boundary

1.3 Goals and Objectives

Development of goals and objectives for the LRTP is a critical step in the transportation planning process. In addition to capturing all related information from previous community planning efforts, the goals and objectives lay out the general course of action for the LRTP development and represent the community's vision for the future transportation system. Accordingly, developing goals and objectives cannot be accomplished within a vacuum. It is an iterative process that continually evolves through guidance provided by the TWG, TCC, stakeholders, the general public, and elected officials.

The goals and objectives developed for the LRTP and described herein reflect the needs and desires relative to transportation. The information was vetted with the public throughout the entire planning process in a variety of public forums. The goals and objectives developed for the LRTP are connected concepts – that is they represent the desired end result of the community's transportation system once projects identified are implemented. Goals and objectives also provide direction on how to get to that end result. Using transportation planning factors contained in MAP-21 as guidance for this LRTP, it is clear the importance that the establishment of goals and objectives carries. Collectively, the goals and objectives inform the planning process and set the course of action for the transportation system for years to come.

1.3.1 Visionary Principles

Based on a review of relevant planning efforts within the community, five primary principles were developed to carry forward in the LRTP. These principles are founded on the following:

1. The community desires a connected, smarter transportation system through land use and transportation planning. This type of system allows citizens to choose what mode of travel they desire, and makes travel more convenient while promoting an active lifestyle by choice for its citizens.
2. The Greater Helena area provides a stable economic base for a variety of services and industry. The community embraces the opportunity to attract jobs and support ongoing economic vitality.
3. Efficient travel and increased mobility is desirable to minimize transportation and associated costs.
4. Transportation influences quality of life. The community desires a transportation system that is compatible with the environment and context of the Greater Helena area, with special consideration given to sustainability and conserving natural and cultural resources.
5. The community desires a safe and secure transportation system, and strives for a reduction in crashes, injuries and fatalities.

The 2014 LRTP Update Goals:

Goal 1: Maintain the existing transportation system.
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.
Goal 3: Promote consistency between land use and transportation planning to enhance mobility and accessibility.
Goal 4: Support coordinated land use and transportation planning efforts to manage and develop the transportation system.
Goal 5: Provide a safe and secure transportation system.
Goal 6: Support economic vitality of the community.
Goal 7: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.
Goal 8: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision-making process.

1.3.2 Goals and Objectives for the LRTP Update

Goal 1: Maintain the Existing Transportation System.

The Greater Helena area transportation system is aging, and available funding is not sufficient for the necessary maintenance. There is often competition between funding for new projects as compared to maintenance and operations of the existing system. The short- and mid-term focus should turn to optimizing the existing transportation system to the greatest extent possible.

Objectives:

1.1. Maintain existing roadway systems to optimize their usefulness and minimize life-cycle costs.
1.2. Monitor the performance of key facilities and work with local and regional partners to identify critical deficiencies in the roadway network.
1.3. Use transportation project selection criteria to identify and prioritize maintenance activities and project development.
1.4. Relieve pressures on the existing transportation system through minor infrastructure improvements, maintenance and system preservation activities rather than expanding the current system.
1.5. Encourage reuse and/or redevelopment around existing transportation facilities.

Goal 2: Improve the Efficiency, Performance and Connectivity of a Balanced Transportation System.

A transportation system that performs well allows users to choose multiple transportation modes and to move through those modes in a safe and efficient manner. An efficient system allows people to move from place to place in as direct a route as possible, allowing them to reduce the amount of time spent in travel, the distance that must be traveled, and the amount of time spent in congested traffic. Connectivity allows citizens to make route decisions and mode choices based on traffic and road conditions, or desired destinations.

Objectives:

2.1. Ensure the current street network of collectors, minor arterials, principal arterials and the interstate is adequate to safely and efficiently handle projected traffic.
2.2. Promote the development of an effective roadway network through improvements in intersection and roadway capacity.
2.3. Improve opportunities for active transportation (non-motorized) as part of daily travel mode choice within the community by increasing pedestrian, bicycle and transit connections.
2.4. Ensure that mobility-challenged populations, such as low income, persons with disabilities, or senior citizens, have travel options in the Greater Helena area.
2.5. Identify and reduce (or eliminate) freight movement impacts on area roadways and identify improvements to eliminate deficiencies with the objective of improving freight movement.

Goal 3: Promote Consistency between Land Use and Transportation Planning to Enhance Mobility and Accessibility.

Land use decisions affect the quality and quantity of transportation infrastructure throughout the planning area. Rural, low-density developments may necessitate transportation features different than urban, high-density developments. This goal recognizes that not all land developments in the planning area realize the same transportation amenities, and that differences do exist between the rural and urban locales found within the LRTP boundary. Transportation system amenities are not always required to be similar between the different development types and forms. The City of Helena's Growth Policy has attempted to address consistency in infrastructure via the identification of an urban growth boundary; that is, the area immediately adjacent to the City of Helena that is currently unincorporated but likely to realize future urban density growth and potential annexation.

Objectives:

3.1. Develop and implement road design and construction standards within the urban growth boundary that reflect the potential for annexations of currently unincorporated land. As urban development occurs, ensure that basic transportation amenities are in place within the urban growth boundary.
3.2. Recognize that land use policy discussions regarding future development and corresponding density in the North Valley are on-going via the County's Growth Policy Update. Land use decisions are tied to the adequacy of transportation infrastructure and may serve to constrain growth depending on policy directions in Lewis and Clark County.
3.3. Develop and implement consistent access management and corridor preservation standards, ordinances and plans appropriate to the roadway network and land use throughout the area.

Goal 4: Support Coordinated Land Use and Transportation Planning Efforts to Manage and Develop the Transportation System.

As the Greater Helena area population ages and the number of persons per household decreases, options in housing and transportation will be need to meet the demands of the population. Transportation improvements should be integrated with local land use planning to ensure the proper mix of roads, trails, transit, paths and other bicycle and pedestrian features co-exist.

Objectives:

4.1. Integrate land use planning and transportation planning to manage and develop the transportation system.
4.2. Use transportation project programming to encourage desired development patterns within the community and ensure new development is adequately served.
4.3. Ensure an environmentally responsible and sound transportation system that minimizes adverse environmental impacts within the community.

Goal 5: Provide a Safe and Secure Transportation System.

Most community planning efforts recognize the desire for a safe transportation system. Community safety and security can be improved by transportation efforts in a number of ways. Reducing crashes, improving the ability of emergency responders to quickly and reliably respond to emergencies, and providing evacuation routes in the event of a natural disaster will all assist to improving safety and security. Educational programs that help travelers understand the particular safety concerns associated with various travel modes can also help all users travel with increased confidence and security.

Objectives:

5.1. Reduce the rates of fatalities and crashes occurring on all transportation facilities.
5.2. Identify barriers to effective and prompt emergency response.
5.3. Implement safety initiatives and educational programs for all modes of transportation.
5.4. Coordinate with freight operators and agencies on projects that can enhance the security of the freight transportation system in the region.

Goal 6: Support Economic Vitality of the Community.

All economic activity relies on a functioning, diverse transportation network. Vehicle, freight, air, transit, rail and non-motorized infrastructure all have a purpose to serve when linking economic vitality to the costs of doing business. Transportation in terms of economic vitality is only one component of a successful business environment. High quality schools, diversity in housing types, low debt, availability of infrastructure, and access to a highly educated workforce all contribute to the economic success of a community.

Objectives:

6.1. Optimize the transportation system to meet the needs of the Greater Helena area, including employment centers, and industrial and commercial areas.
6.2. Provide attractive and convenient transportation facilities that attract and retain business, young professionals, families and older adults.
6.3. Facilitate the movement of goods and freight to commercial and industrial centers.

Goal 7: Protect and Enhance Environmental Sustainability, Provide Opportunities for Active Lifestyles, and Conserve Natural and Cultural Resources.

Both the MAP-21 planning factors and the livability principles from HUD/EPA/USDOT point to quality of life concerns in the development of LRTP's. Not only are impacts to the environment taken more seriously, but increasingly citizens are demanding a more holistic approach to transportation. The preservation of natural, historic and cultural resources, as well as promoting a healthy, active lifestyle, are priorities of this LRTP and current Federal transportation planning guidance.

Objectives:

7.1. Promote transportation projects, plans and/or programs that encourage reducing fuel consumption, reducing vehicle miles of travel, and thereby minimizing air pollution.
7.2. Coordinate transportation planning activities with appropriate federal, state, and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation.
7.3. Engage stakeholders and the public in the decision-making stage of the transportation planning process.
7.4. Coordinate transportation planning activities with local and regional land use planning activities, including the City and County Growth Policies (and subsequent updates).

Goal 8: Promote a Financially Sustainable Transportation Plan that is actively used to Guide the Transportation Decision-making Process.

Transportation facilities that provide options to the public, reduce the time spent traveling, reduce fuel consumption, and make the best use of limited public funds for infrastructure improvements are desirable. Not only are costs related to the cost of building facilities, but there are also associated costs of time spent in vehicles.

Objectives:

8.1. Identify available funding mechanisms potentially including federal and state gas tax revenue, impact fees, transportation bond issues, local option gas taxes, and other revenue funding sources used in similar cities.
8.2. Encourage cooperation between public, private and non-profit organizations in the development, funding, and management of transportation projects.
8.3. Promote cost-effective recommendations that balance transportation system needs with available funding and expected expenditures.
8.4. As funds become available for transportation projects, place priority for funding on those projects and programs identified in the LRTP.

1.3.3 Alignment of Goals with MAP-21 and Livability Principles

Although technically not required since the Greater Helena area is not an MPO, it is still desirable to review alignment of local LRTP transportation goals with the MAP-21 planning factors. Additionally, the Livability Principles from HUD/EPA/USDOT, while technically not Federal law, are worthy national transportation process objectives that should be reviewed and considered. **Table 1.1** depicts the relationship between the proposed Greater Helena Area LRTP goals, the required MAP-21 planning factors, and the objectives contained in the Livability Principles from HUD/EPA/USDOT.

Table 1.1: Alignment of Goals with MAP-21 and Livability Principles

			Helena Area LRTP Goals							
			Goal 1: Maintain the existing transportation system.	**Goal 2**: Improve the efficiency, performance and connectivity of a balanced transportation system.	**Goal 3**: Promote consistency between land use and transportation planning to enhance mobility and accessibility.	**Goal 4**: Support coordinated land use and transportation planning efforts to manage and develop the transportation system.	**Goal 5**: Provide a safe and secure transportation system.	**Goal 6**: Support economic vitality of the community.	**Goal 7**: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.	**Goal 8**: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision-making process.
MAP-21 Planning Factors	1	Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.						✓		✓
MAP-21 Planning Factors	2	Increase the **safety** of the transportation system for motorized and non-motorized users.					✓			
MAP-21 Planning Factors	3	Increase the **security** of the transportation system for motorized and non-motorized users.					✓			
MAP-21 Planning Factors	4	Increase the **accessibility and mobility** of **people and for freight**.		✓	✓	✓		✓		
MAP-21 Planning Factors	5	**Protect and enhance the environment**, promote **energy conservation**, improve the **quality of life**, and promote **consistency between transportation improvements** and State and local planned growth and economic development patterns.			✓				✓	✓
MAP-21 Planning Factors	6	Enhance the **integration and connectivity** of the transportation system, across and between modes, people and freight.		✓		✓				
MAP-21 Planning Factors	7	Promote **efficient system management and operation**.		✓						
MAP-21 Planning Factors	8	Emphasize the **preservation of the existing transportation system**.	✓							
Livability Principles	1	Provide more **transportation choices**.		✓						
Livability Principles	2	Promote equitable, **affordable housing**.		✓	✓	✓				✓
Livability Principles	3	Enhance **economic competitiveness**.						✓		
Livability Principles	4	**Support** existing **communities**.	✓	✓	✓	✓	✓		✓	
Livability Principles	5	Coordinate policies and **leverage investment**.								✓
Livability Principles	6	**Value communities and neighborhoods**.	✓	✓	✓	✓	✓			

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Chapter 2

OUTREACH AND PUBLIC INVOLVEMENT

2.1 Community Involvement and Outreach Effort

The 2014 LRTP update process had significant and ongoing public involvement components. Education and public outreach were an essential part of fulfilling the local entities responsibility to successfully inform the public about the transportation planning process. All three contracting entities (i.e. the City of Helena, Lewis and Clark County and MDT) sought to empower the public to voice their ideas and values regarding transportation issues.

2.2 Participation Procedures

An initial step in the transportation planning process was to develop a Public Involvement Plan (PIP). The PIP described the information and input opportunities that were provided as part of the development of the LRTP. The PIP encouraged active participation in identifying and commenting on transportation issues at every stage of the planning process. Participant involvement included:

- The general community - residents of Lewis and Clark County, the City of Helena, and adjacent areas;
- Landowners and business;
- Governmental agencies;
- Stakeholder groups; and
- Other interested parties.

Methods for notification of informational meetings, and other outreach opportunities, were detailed in the PIP. The community and interested parties were kept informed of all aspects of the planning study, and their input was sought throughout the process by the City of Helena, Lewis and Clark County, MDT and the consultant team via several methods.

To participate is to express one's self at the proper time and in the proper forum. Public participation means participation in planning by people (the public) within the Greater Helena area, its area citizens and entities, by planning and engineering professionals, and by those who are not professional planners or government officials. It is a process of taking part in the transportation planning and decision-making that affects the community.

TWG and the consultant team's efforts to secure participation were targeted to stakeholders, who are entities that could be significantly affected by the Plan recommendations or could significantly influence implementation. Stakeholders included, but were not limited to: the general public; low income, minority and disabled communities; neighborhood representatives; business interests; emergency services providers; special transportation interests (such as transit users and bicycle organizations); local officials; private developers; and federal and state transportation agencies.

The Greater Helena area needs the public involved in transportation planning to ensure their expectations are being considered. Additionally, the public can provide varied and unique information needed to develop, maintain, and carry out an effective planning process. Planning staff, consultants and local officials need comments from those who know the community best: the people who live, work and play there. Public involvement informs and educates the public about transportation planning and creates an informed community, which in turn leads to better planning. Public participation gives the public a sense of ownership of the Plan and fosters cooperation among the public and the project partners.

The PIP contained the following elements:

- **Involvement Opportunities** - Provided the opportunity for the public to be involved in all phases of the planning process;
- **Communication** - Established mechanisms for maintaining communications between the public and local officials such as processes like mailings, legal ads, displays and newsletters;
- **Information** - Assured that technical information was available and in a simplified, understandable form;
- **Public Input** - Described the methods used to consider comments from the public; and
- **Advisory Committee(s) Role** - The use of the TCC and TWG, and the means of providing input from a cross-section of affected citizens through the TCC and TWG, and various other groups of interest.

2.2.1 Technical Working Group (TWG)

A Technical Working Group (TWG) was established to guide process, review deliverables, and provide technical oversight during the planning process. Meetings were generally held every month. The TWG included representatives from the Montana Department of Transportation, Lewis and Clark County, and the City of Helena. The TWG was the principal guiding force behind the LRTP Update. TWG meetings occurring throughout the planning process are specifically listed in **Table 2.1**.

Table 2.1: Summary of TWG Meetings

Date	Agency or Individual	Date	Agency or Individual
02/04/2014	TWG Meeting No. 1	**10/07/2014**	TWG Meeting No. 9
03/04/2014	TWG Meeting No. 2	**12/02/2014**	TWG Meeting No. 10
04/01/2014	TWG Meeting No. 3	**12/19/2014**	TWG Meeting No. 11
05/06/2014	TWG Meeting No. 4	**01/06/2015**	TWG Meeting No. 12
06/03/2014	TWG Meeting No. 5	**02/03/2015**	TWG Meeting No. 13
07/01/2014	TWG Meeting No. 6	**03/03/2015**	TWG Meeting No. 14
08/05/2014	TWG Meeting No. 7	**04/07/2015**	TWG Meeting No. 15
09/02/2014	TWG Meeting No. 8		

2.2.2 Transportation Coordinating Committee (TCC)

Much like the Technical Working Group (TWG), the Transportation Coordinating Committee (TCC) also provided oversight during the planning process. The TCC manages the executive business of the Greater Helena Area LRTP Update, and is a regular standing committee that generally meets every other month to discuss transportation matters in the community. The TCC works closely with the City, County, and State to develop and keep current urban transportation planning, design and construction in the Helena area. The TCC meetings occurring throughout the planning process are shown in **Table 2.2**.

Table 2.2: Summary of TCC Meetings

Date	Agency or Individual	Date	Agency or Individual
02/11/2014	TCC Meeting No. 1	**12/09/2014**	TCC Meeting No. 8
04/08/2014	TCC Meeting No. 2	**01/13/2015**	TCC Meeting No. 9
06/10/2014	TCC Meeting No. 3	**02/10/2015**	TCC Meeting No. 10
08/12/2014	TCC Meeting No. 4	**03/10/2015**	TCC Meeting No. 11
09/09/2014	TCC Meeting No. 5	**04/14/2015**	TCC Meeting No. 12
10/14/2014	TCC Meeting No. 6	**05/12/2015**	TCC Meeting No. 13
11/20/2014	TCC Meeting No. 7	**06/09/2015**	TCC Meeting No. 14

2.2.3 Public Informational Meetings

Three public informational meetings were held during the LRTP planning process. The first meeting was an introductory meeting to discuss and identify the issues and visioning that should be addressed as part of the LRTP. This meeting focused on informing the public about the scope of the planning process, key dates during its development, and a review of the study area boundary.

The second public meeting was held to review the transportation system issues and areas of concern, and to assure that all of the major transportation problems have been identified and included in the analysis. A summary of the existing and proposed transportation system conditions was presented. A variety of key issues were identified. The issues generally fell within four categories: 1) the need to plan for future growth; 2) to relieve traffic congestion; 3) to improve traffic safety; and 4) to provide alternatives to the automobile. Specific problem intersections and roadway corridors were identified and presented at this first meeting.

The third public meeting was held after the preliminary project recommendations were completed. This meeting gave the public the opportunity to review the preliminary project recommendations in their entirety, including a thorough review of recommended projects that not only offered mitigation measures to solve existing transportation issues, but also measures to accommodate future growth issues. The three public opportunities described above were held at various locations, as follows:

- Informational Mtg. No. 1 – City-County Building
- Informational Mtg. No. 2 – West Valley Fire Department
- Informational Mtg. No. 3 – Helena Regional Airport

Appendix A contains all public comments received over the course of the planning process.

2.2.4 Other Public Outreach Activities

Formal and informal meetings and presentations occurred many times over the course of the project. These are specifically listed in **Table 2.3**.

Table 2.3: Summary of Other Outreach Activities

Date	Agency or Individual
05/13/2014	Downtown BID Board of Directors
05/20/2014	Transit Technical Advisory Committee
03/26/2014	Helena Citizens Council
04/07/2014	Fire Districts
04/08/2014	Non-Motorized Technical Advisory Committee
05/07/2014	SRTS Committee
05/07/2014	ADA Committee
05/07/2014	Running Groups - Running Freaks, Tread Lightly, Helena Vigilante Runners, HURL
05/07/2014	Bike Shops/Team - Team Great Divide, Big Sky Cyclery, BSC Race Team, Great Divide Cyclery, The Garage, Icthus Cycle Works, Helena Dynamos, MT Velo Race Team
05/08/2014	Trails / Open Space Committee / BikeWalk Montana / Tourism BID
05/08/2014	Public Informational Meeting No. 1
05/09/2014	Bicycle Tour
05/09/2014	Helena Bicycle Club
06/25/2014	Fort William H. Harrison
06/30/2014	Helena School District
07/01/2014	East Helena City Council
07/02/2014	Helena / Lewis and Clark County Parks Board
07/24/2014	Northern Plains Resource Council
08/07/2014	Helena / Lewis and Clark County Consolidated Planning Board
08/08/2014	Helena Housing Authority
08/26/2014	Helena Area Chamber of Commerce Transportation Committee / Helena Regional Airport Authority
09/03/2014	Public Informational Meeting No. 2
01/08/2015	Joint City / County Commission Work Session No. 1
01/13/2015	Public Informational Meeting No. 3
03/17/2015	Environmental Protection Agency
04/15/2015	City Commission Administrative Meeting
06/04/2015	Joint City / County Commission Work Session No. 2
06/29/2015	City Commission Public Hearing
07/02/2015	County Commission Pubic Hearing

Public Hearings

Separate public hearings were conducted near the completion of the planning process to obtain formal public comment on the draft document before the Lewis and Clark County Commission and Helena City Commission. The public hearings covered all elements of the draft and a 30-day comment period was provided. After reviewing the comments received at the public hearings, both the Lewis and Clark County Commission and Helena City Commission adopted the LRTP as written.

News Releases

Television and newspaper articles were used several times during the planning process to help keep the public informed. News releases were issued 2 weeks prior to public meetings (and the public hearing), to generate interest in the process, and to encourage participation by the public.

Newsletters

Several newsletters were created and distributed in hard copy format during the various outreach events, including specific stakeholder meetings and the formal informational meetings. The newsletters were generally available and posted to the LRTP website one month before each of the informational meetings.

Website

The results of the traffic studies and analyses conducted during the study process were made available to the public on the Internet website. As sections of the report and graphic displays became available, they were posted on the website for public review and comment. This enabled the public to stay abreast of the developments occurring during the planning process. It also provided an opportunity for the public to submit comments. In addition, a Facebook site was created and maintained throughout the process to disseminate information about meetings and LRTP progress.

2.2.5 Specific Concerns Cited During Outreach

Specific topics were discussed during the various outreach activities with stakeholder groups. More detail on the various topics is included in **Appendix A**. The sections below highlight the variety of content discussed during the various stakeholder outreach meetings.

2.2.5.1 General Community Concerns

- Alternate east/west routes
- Custer Avenue
- Country Club Avenue – width, speeds, safety
- Non-motorized facilities – safe, connected, various types
- At-grade RR crossings
- Heightened wayfinding – for both vehicles and non-motorized
- Caird property – improvements to five-legged intersection for all users
- Transit expansion and infrastructure – service changes, sidewalks, bus stops, connectivity
- High speed rail – to serve North Valley
- Connector roads – East Helena to Airport (via US 12)
- Multi-modal system for all
- Boulder Avenue – thru traffic volumes and speeds

2.2.5.2 Downtown

- Make more pedestrian & bicycle friendly
- Discourage high speed “thru-traffic” on 11th and Neill Avenues

2.2.5.3 Transit

- Provides affordable transportation to transportation disadvantaged groups
- Infrastructure to support operations (sidewalks, shelters, bus stops, etc.)
- Elevate stature of transit equal to private automobiles in LRTP

2.2.5.4 ADA Committee

- Infrastructure around bus stops
- Ramp infrastructure at intersections
- More timely snow removal

2.2.5.5 Non-Motorized Travel Advisory Council (NMTAC)

- Make LRTP integrated throughout
- Focus on variety of users and connecting destinations
- Centennial Trail is a priority
- Elevate non-motorized planning to the same level as motorized
- Evaluate bicycle traffic on the Walking Mall
- Identify parking areas for the trail system
- Get people from the neighborhoods to the trail system

2.2.5.6 Fort Harrison

- Make Fort Harrison and Veterans Administration more prominent in LRTP effort
- Improving Country Club Avenue should be number 1 priority
- Improve intersections with Country Club Avenue (Joslyn Street, Head Lane, Williams Street)
- Explore improvements to Franklin Mine Road and Head Lane

2.2.5.7 East Helena City Council

- Main Street and Montana Avenue - possible signalization
- Additional east/west connection connecting East Helena to Airport Road

2.2.5.8 Helena School District

- Difficult crossings of arterials (Montana Avenue, Euclid Avenue, Benton Avenue, etc.)
- At-grade railroad crossings a concern - changes can affect school traffic flow
- Flow around schools always a concern to evaluate
- Increasing focus on “walk zones” – provide options for parents and students
- Continuous sidewalks are desirable
- Custer Avenue a concern - discharge 1,600 students along facility

2.2.5.9 Planning Board

- Focus on moving people & providing choices
- Move away from auto-centric focus
- Understand and quantify “induced demand” resulting from road improvements
- Make recommendations to induce “parity” in land developments in City and County

2.2.5.10 Chamber of Commerce / Helena Regional Airport

- Speeds near the intersection of Washington Street and Canyon Ferry Road
- Overall congestion on Custer Avenue
- Safety concerns at Lake Helena Drive and York Road
- Night-time driving conditions on Custer Avenue (west of Montana Avenue)
- East Helena merge/diverge patterns (at east end of city)

2.2.5.11 Parks Board

- Connect parks as destinations
- Minimize impacts to existing or planned parks (ball fields, Custer Avenue, etc.)

2.2.5.12 Helena Housing Authority

- Evaluate Caird property for intersection improvements
- Support efforts to promote walkability and bikeability

2.2.5.13 Helena Bicycle Club (HBC)

- Fund and complete the Centennial Trail
- Adopt the NMTAC’s Bicycle Lane Network
- Incorporate the Complete Streets Policy into each aspect of this plan
- Develop a bicycle-friendly central business district
- Promote education and encouragement programs like PSAs, commuting classes, and education through the Helena Police Department

Specific support has been lent to the following projects or concepts:

- Roundabouts
- Bulb-outs
- Euclid/Lyndale/Montana as a logical and viable bicycle commuting option
- Contra-flow bike lanes on one-way streets
- Crossing Henderson Avenue on the Centennial Trail
- Two-way traffic on Last Chance Gulch
- Rerouting the Great Divide mountain bike trail to Last Chance Gulch
- Bicycle detection at signalized intersections
- Storm grate rehabilitation
- Moving stop sign to before the bikeways on Henderson and Benton bike routes on through streets so that stop signs, signals, and T-intersections do not hinder bike traffic. The HBC, with the support of business owners and managers, recommended how the NMTAC should advise the City as to the ordinance restricting bicycle, skateboard, and other wheeled vehicle traffic in the pedestrian mall, namely that the ordinance should be rescinded. Benefits of rescinding the ordinance, how it should be done, concerns of users and businesses, frequently asked questions, and signatures from businesses are included as well.

2.2.5.14 Helena Tourism Alliance & Business Improvement District (TBID)

- Promote Helena as a tourism destination, geocaching capital, and IMBA mountain biking ride center
- Improve parking and access at trailheads
- Improve connectivity from Downtown to trailheads

2.2.5.15 Safe Routes to School Committee (SRTS)

- Make walking and bicycling to school easier and safer
- Promote the implementation of the elementary school-focused walking and bicycling education and encouragement program
- Increase enforcement visibility
- Empower students to get to school on bike

2.2.5.16 Prickly Pear Land Trust

- Extend trail system along Prickly Pear Creek to East Helena and Montana City
- Support development of a Parks and Recreation District
- Support collaborative District management of all of the trails, recreational facilities, parks, etc., that are in within a 10 mile radius of Downtown, including southern Lewis & Clark County, City of Helena, East Helena, and north Jefferson County.
- Support a uniform wayfinding system for economic and recreation benefit.

Chapter 3

EXISTING TRANSPORTATION SYSTEM

3.1 Introduction

Data about the current transportation system was analyzed to establish the existing traffic conditions and to determine potential problem areas. Existing data was provided by the Montana Department of Transportation (MDT), the City of Helena, and Lewis and Clark County. Additionally, data was collected in the spring of 2014 to supplement the available information. Using a combination of the supplied and collected data, the existing operational characteristics of the transportation network were determined.

3.2 Major Street Network

In order to understand a community's transportation system, it is necessary to first identify which roadways will be evaluated as part of the planning process. A community's transportation system is made up of a hierarchy of roadways, with each roadway being functionally classified according to certain parameters including, but not limited to, geometric configuration, spacing in the community transportation grid, speeds, and land use. Functional classification is a method of classifying roads by the service they provide as part of the overall highway system. Most travel involves movement through a network of roads. Functional classification defines the nature of traveling within a network in a logical and efficient manner by defining the part that any particular road or street should play in serving the flow of trips through the entire highway network.

For this work, emphasis was placed on roadways that are functionally classified as collectors, minor arterials, and principal arterials within the study area (refer to **Figures 3.1** and **3.2**). These functional classifications are not limited to the "urban" or "rural" settings. The local streets, the lowest ranking roadways, are not being examined due to the assumption that if the major street network (i.e. collectors and above) is functioning to an acceptable level, the local roadways are not being used beyond their intended function. However, if problems begin to occur on the major street network, then the resulting issues will begin to infiltrate neighborhood routes (i.e. local streets). As such, the overall health of a transportation system can be characterized by the health of the major street network.

Included in the current study area are roadways with functional classifications of interstate system, principal arterial, minor arterial, collector routes, and local streets. Rural roadways in the study area generally carry a smaller volume than their urban counterparts. Although traffic volumes may differ on urban and rural sections of a street, it is important to maintain coordinated standards to allow for efficient operation of urban development. The following list describes the classifications that are being utilized for this work.

- **Interstate Highways:** The purpose of an interstate highway is to provide for regional and interstate travel. Interstate highways are access-controlled facilities with access provided only at a limited number of interchanges. The interstate system has been designed as a high-speed facility with all road intersections being grade separated. Interstate 15, which traverses the study area, is a four-lane divided highway with a posted speed limit of 65 miles per hour (mph) through Helena.

- **Principal Arterial System:** The purpose of a principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an area. This group of roads carries a high proportion of the total traffic. Most of the vehicles entering and leaving the area, as well as most of the through traffic bypassing the central business district, utilize principal arterials. Significant intra-area travel, such as between central business districts and outlying residential areas, and between major suburban centers, is served by principal arterials.

  The spacing between principal arterials may vary from less than one mile in highly developed areas (e.g., the central business district), to five miles or more on the urban fringes. Principal arterials connect to other principal arterials or to the interstate system. The major purpose of the principal arterial is to provide expedient movement of traffic, not access to abutting lands. The speed limit on a principal arterial could range from 25 to 70 mph depending on the area setting.

- **Minor Arterial Street System:** The minor arterial street system interconnects with and augments the principal arterial system. It accommodates trips of moderate length at a somewhat lower level of travel mobility as compared to principal arterials, and it distributes travel to smaller geographic areas. With an emphasis on traffic mobility, minor arterials include all arterials not classified as principal arterials while providing some access to adjacent lands.

  The spacing of minor arterial streets may vary from several blocks to a half-mile in highly developed areas of town, to several miles in the suburban fringes. They are not normally spaced more than one mile apart in fully developed areas. On-street parking may be allowed on minor arterials if space is available. Posted speed limits on minor arterials would typically range between 25 and 55 mph, depending on the setting.

- **Collector Street System:** The urban collector street network serves a joint purpose – provide equal priority to the movement of traffic and to access residential, business, and industrial areas. Collectors are broken down to "major" and "minor" designations. This type of roadway differs from those of the arterial system in that collector roadways may traverse residential neighborhoods. The collector system distributes trips from the arterials to ultimate destinations. The collector streets also collect traffic from local streets in the residential neighborhoods, channeling the traffic on to the arterial systems. On-street parking is usually allowed on most collector streets if space is available. Posted speed limits on collectors typically range between 25 and 45 mph.

  The rural collector street network serves the same access and movement functions as the urban collector street network – a link between the arterial system and local access roads. Collectors penetrate but should not have continuity through residential neighborhoods. The actual location of collectors should be flexible to best serve developing areas and the public.

  The most important concept is that long segments of continuous collector streets are not compatible with a well-functioning network. Long, continuous collectors will encourage through traffic, essentially turning collectors into arterials. Furthermore, this results in the undesirable interface of local streets with arterials, causing safety problems and increased costs of construction and maintenance.

The collector street system should intersect arterial streets at a uniform spacing of one-half to one-quarter mile in order to maintain good progression on the arterial network. Ideally, collectors should be no longer than one to two miles and should be continuous for their entire length. Opportunities need to be identified through good design and review of subdivisions to create appropriate collector streets in developing areas.

- **Local Street System:** The local street network comprises all facilities not included in the higher systems. The primary purpose of local streets is to permit direct access to abutting lands and connections to higher systems. Usually service to though-traffic movements is intentionally discouraged either through low speed limits or other traffic calming measures. On-street parking is usually allowed on the local street system. The speed limit on local streets is usually 25 mph.

Figures 3.1 and **3.2** present the existing "Federally Approved" functional classification system for the Helena area.

3.3 Existing Roadway Volumes and Capacity

Roadway traffic data was collected by MDT, City of Helena, and Lewis and Clark County. The data was used to establish existing traffic conditions and to provide data on historic traffic volumes. Average annual daily traffic (AADT) counts for the year 2013 were used to represent existing conditions. The existing AADT along the major street network is presented in **Figures 3.3** and **3.4**. Additionally, the existing facility size for the major street network is presented in **Figure 3.5**.

The capacity of the roadways is of critical importance when looking at the growth of a community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the road begins to "fail". As such, it is important to investigate the size and configuration of the existing roadways and to determine if these roads need to be expanded to accommodate the existing or projected traffic demands. The capacity of a roadway is based on a number of features including the number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. However, for planning and comparison purposes, theoretical roadway capacities were developed based on simplistic roadway configurations. **Table 3.1** presents the capacities that have been used for this work. These values are not intended a set thresholds for roadway performance, but rather provide general information to be used to compare roadway performance.

Table 3.1: Theoretical Roadway Capacity

Road Configuration	Capacity (vpd)*
2 Lane	12,000
2 Lane – Divided/TWLTL	18,000
3 Lane	18,000
4 Lane	24,000
4 Lane – Divided/TWLTL	32,000
5 Lane – Divided/TWLTL	40,000
Interstate	68,000

**Values represent planning level daily capacities developed for this Transportation Plan and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on roadway design features and access control*

The capacities shown in **Table 3.1** represent theoretical daily volumes; however, traffic is not evenly distributed during the day. The transportation system experiences significant peaks in demand, especially during the work "rush" hours. These limited times create the greatest periods of stress on the transportation system. By concentrating large volumes in a brief period of time, a road's short-term capacity may be exceeded and road users will perceive large amounts of congestion.

A roadway's capacity, and volume-to-capacity (v/c) ratio, can be used as a comparison tool when looking at the transportation system. By definition, the v/c ratio is the result of the traffic volume of a roadway divided by the capacity. **Figures 3.6** and **3.7** present the resultant v/c ratios for the existing major street network. The v/c ratios help identify potential capacity deficiencies for the transportation system.

3.4 Existing Intersection Level of Service

Urban road systems are ultimately controlled by the efficiency of the major intersections. Intersection failure directly reduces the number of vehicles that can be accommodated during the peak hours that have the highest demand. Additionally, reduction to the total daily capacity of a corridor may also result from intersection failure. As a result of this strong impact on corridor function, intersection improvements can be a cost-effective means of increasing a corridor's traffic volume capacity. In some circumstances, corridor expansion projects may be able to be delayed with targeted intersection improvements. Due to the significant portion of total expense for road construction projects used for project design, construction mobilization, and adjacent area rehabilitation, a careful analysis must be made of the expected service life from intersection improvements. If adequate design life can be achieved with only improvements to the intersections, then a corridor expansion may not be the most efficient solution. With that in mind, it is important to determine how well the major intersections are functioning by determining their Level of Service (LOS).

LOS is a qualitative measure developed to quantify driver perception for elements such as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. LOS provides a scale that is intended to match the perception by motorists to the operation of the intersection. LOS is used as a means for identifying intersections that are experiencing operation difficulties, as well as a means to compare multiple intersections. The LOS scale represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using the intersection. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion. **Table 3.2** portrays a graphical representation of LOS.

The LOS at 97 intersections within the study area was calculated. Data was collected during the spring of 2014 at 75 of the 97 intersections (26 signalized and 49 unsignalized locations). Each intersection was counted during the peak hours, defined as 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The AM and PM peak hour time periods do not account for intersection traffic conditions after school. At intersections close to schools, the peak hour may be during the after school time frame (the LRTP does not take into account the congestion experienced during this time). Additionally, peak hour turning movement counts were obtained from MDT for the other 22 study intersections (all signalized locations). Data at these locations was collected at various periods over the past few years. The majority of the signalized intersections located within the core Downtown Business District were not counted or analyzed due to recent planning efforts in the area. Intersections where peak hour turning data were collected are presented in **Figures 3.8** and **3.9**.

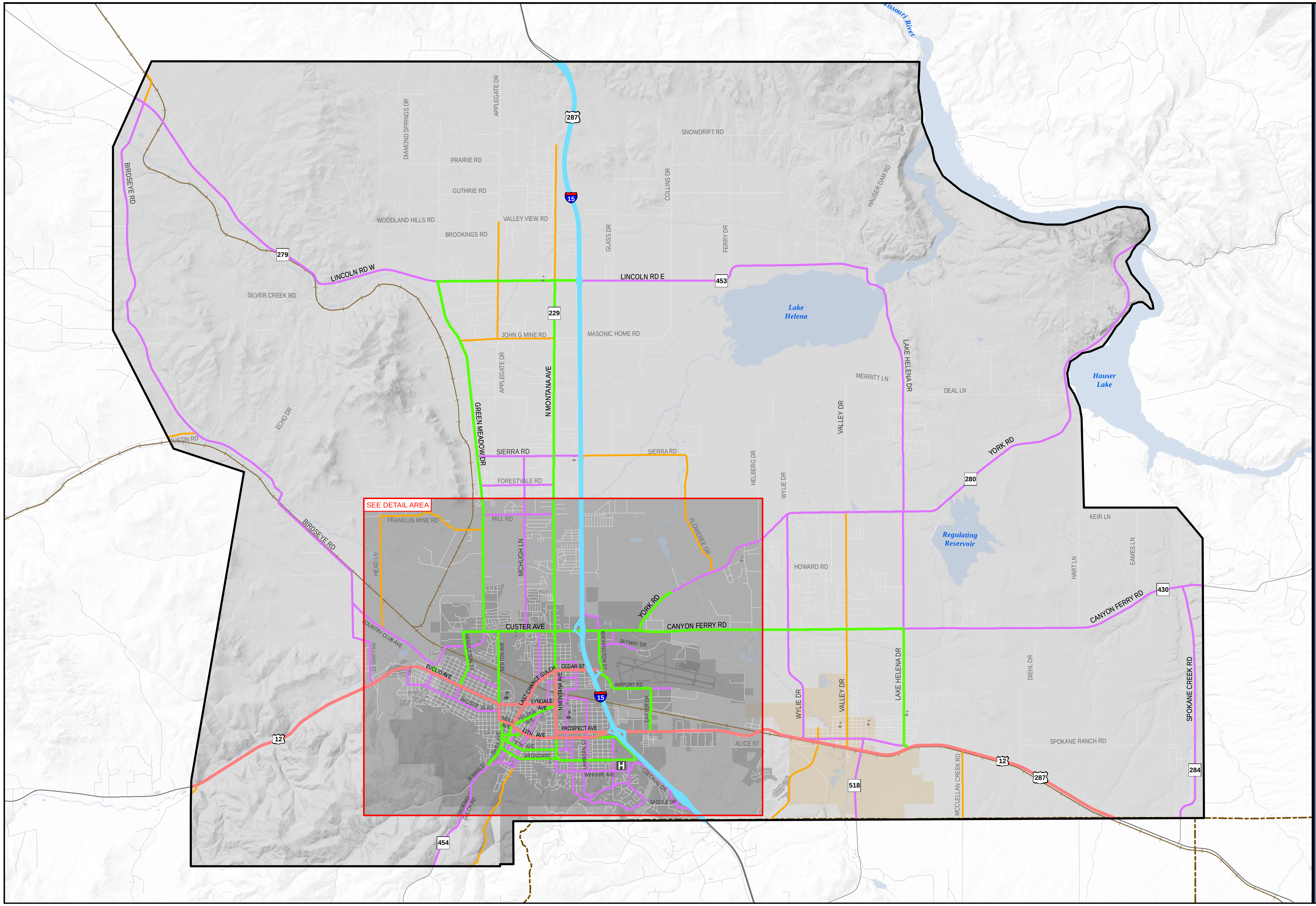


Figure 3.1

Existing Functional Classification

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

0 0.5 1 2 3 Miles

*Represents federally approved functional classification.

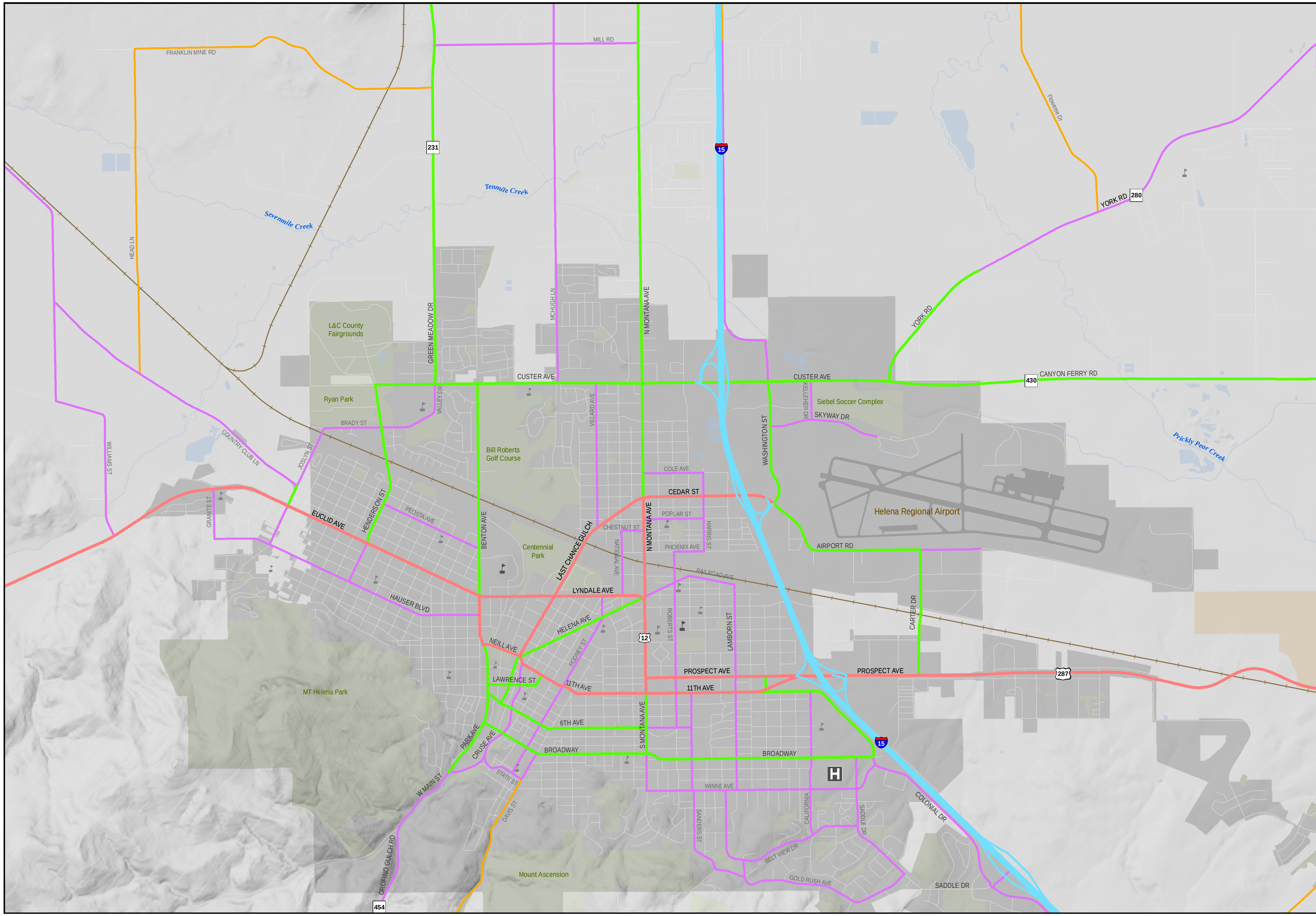


Figure 3.2
Existing Functional Classification
Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Functional Classification*

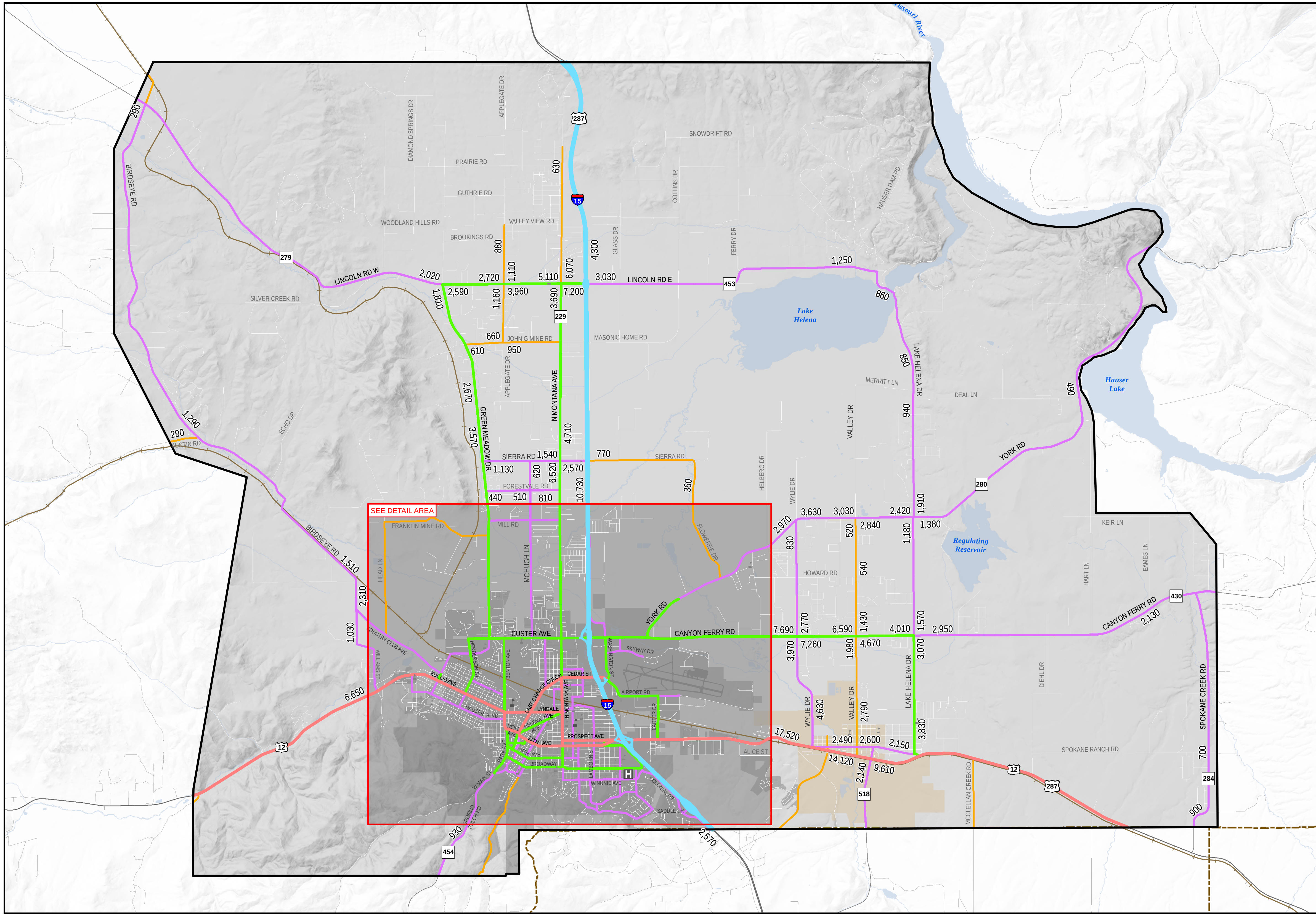
- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

0 0.25 0.5 0.75 1 Miles

*Represents federally approved functional classification.

Figure 3.3

Existing Average Annual Daily Traffic



Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- 1,500 — 2013 Average Annual Daily Traffic[†]

0 0.5 1 2 3 Miles

*Represents federally approved functional classification.

[†]*Data Provided by MDT Data and Statistics*

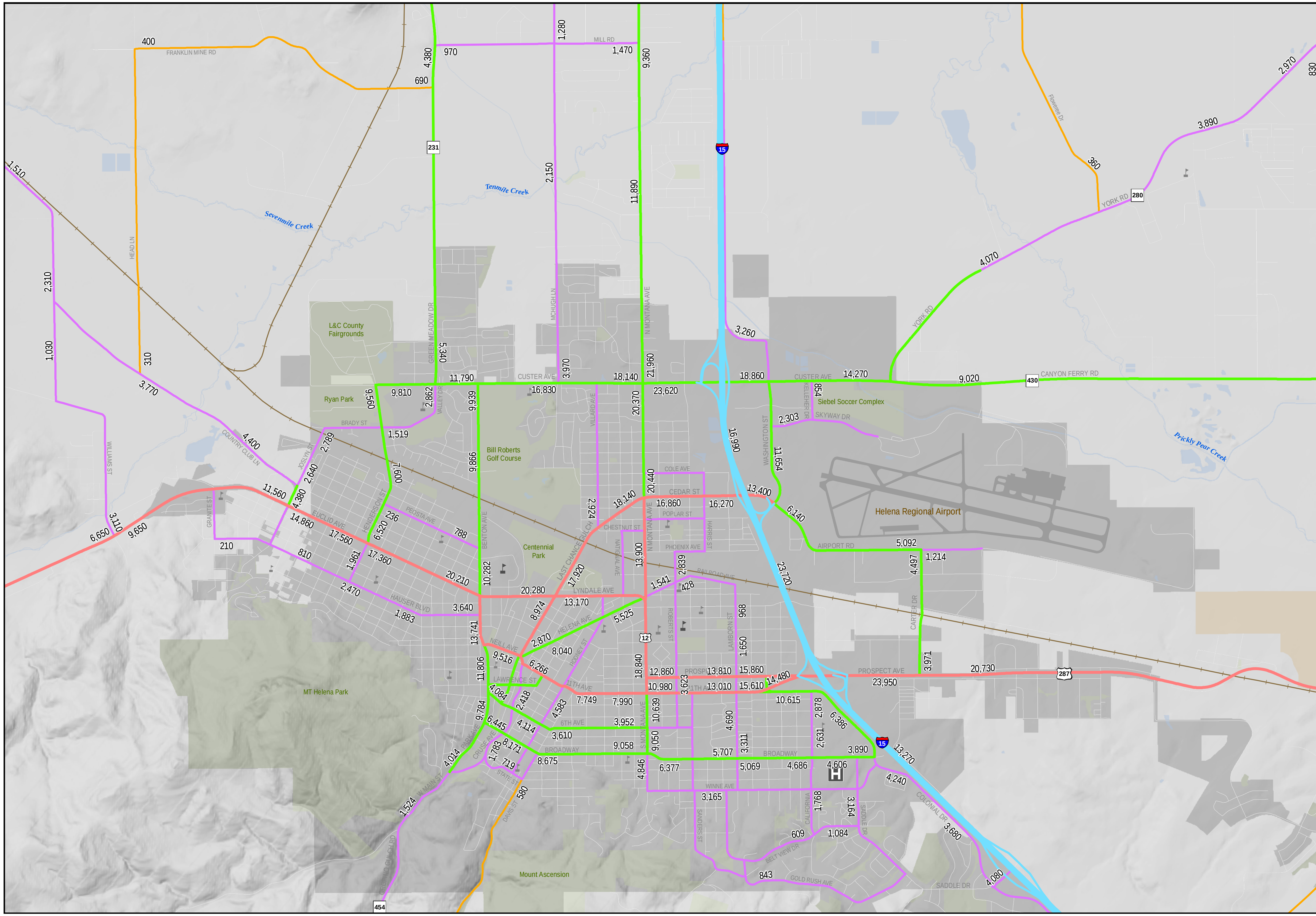


Figure 3.4

Existing Average Annual Daily Traffic

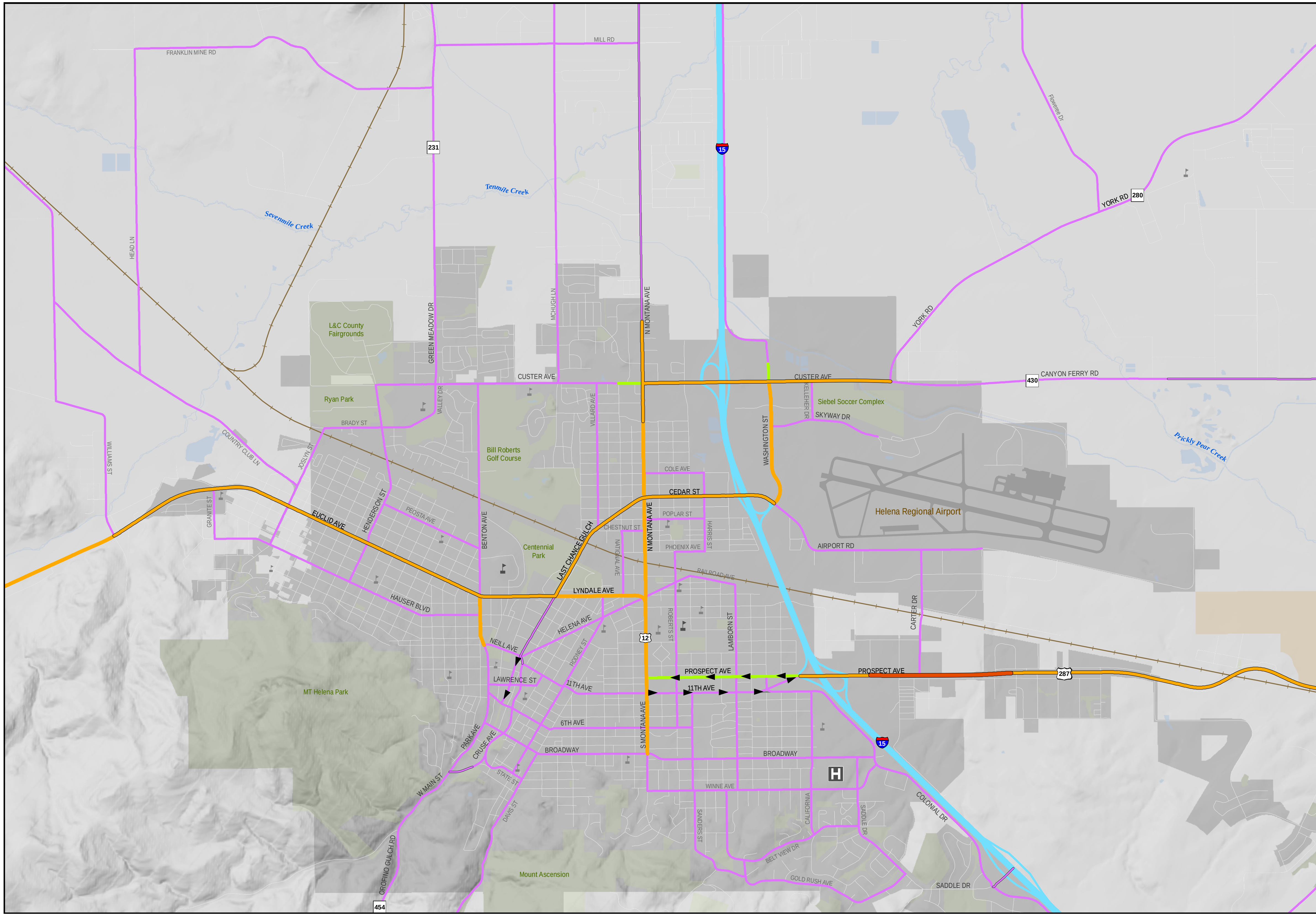
Detail Area

*Represents federally approved functional classification.

[†]*Data Provided by MDT Data and Statistics*

Figure 3.5

Existing Corridor Facility Size
Detail Area



Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park
- Interstate
- Local
- One-Way Street

Corridor Size*

5 Lanes	Divided / TWLTL
4 Lanes	Divided / TWLTL
	Undivided / No TWLTL
3 Lanes	Undivided / No TWLTL
2 Lanes	Divided / TWLTL
	Undivided / No TWLTL

0 0.25 0.5 0.75 1 Miles

*Two-Way Left-Turn Lane (TWLTL)

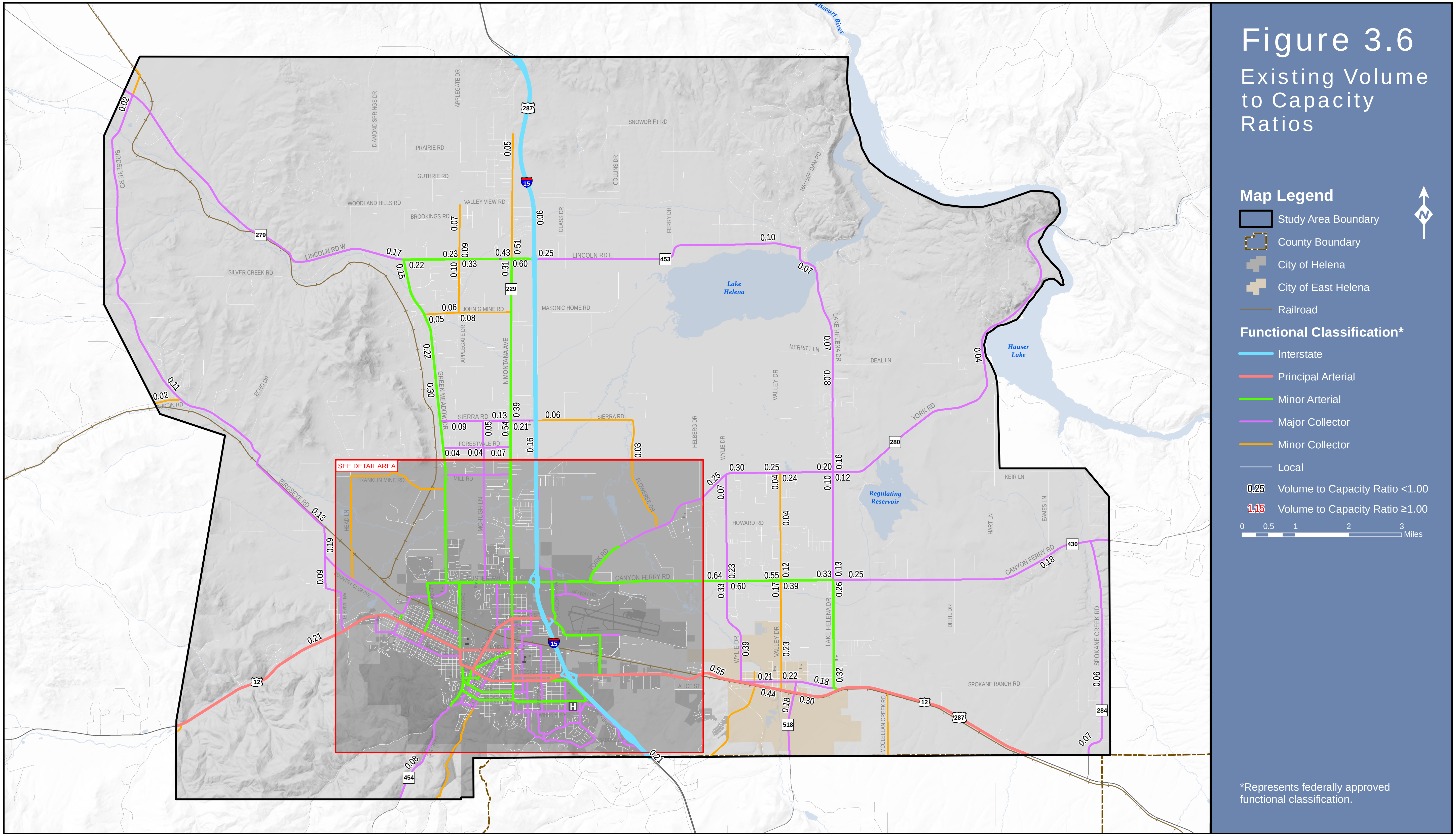


Figure 3.6
Existing Volume to Capacity Ratios
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Functional Classification*
Interstate
Principal Arterial
Minor Arterial
Major Collector
Minor Collector
Local
0.25 Volume to Capacity Ratio <1.00
1.15 Volume to Capacity Ratio ≥1.00
Miles
*Represents federally approved functional classification.
SEE DETAIL AREA
Lake Helena
Hauser Lake
Regulating Reservoir
LINCOLN RD W
LINCOLN RD E
CANYON FERRY RD
SIERRA RD
YORK RD

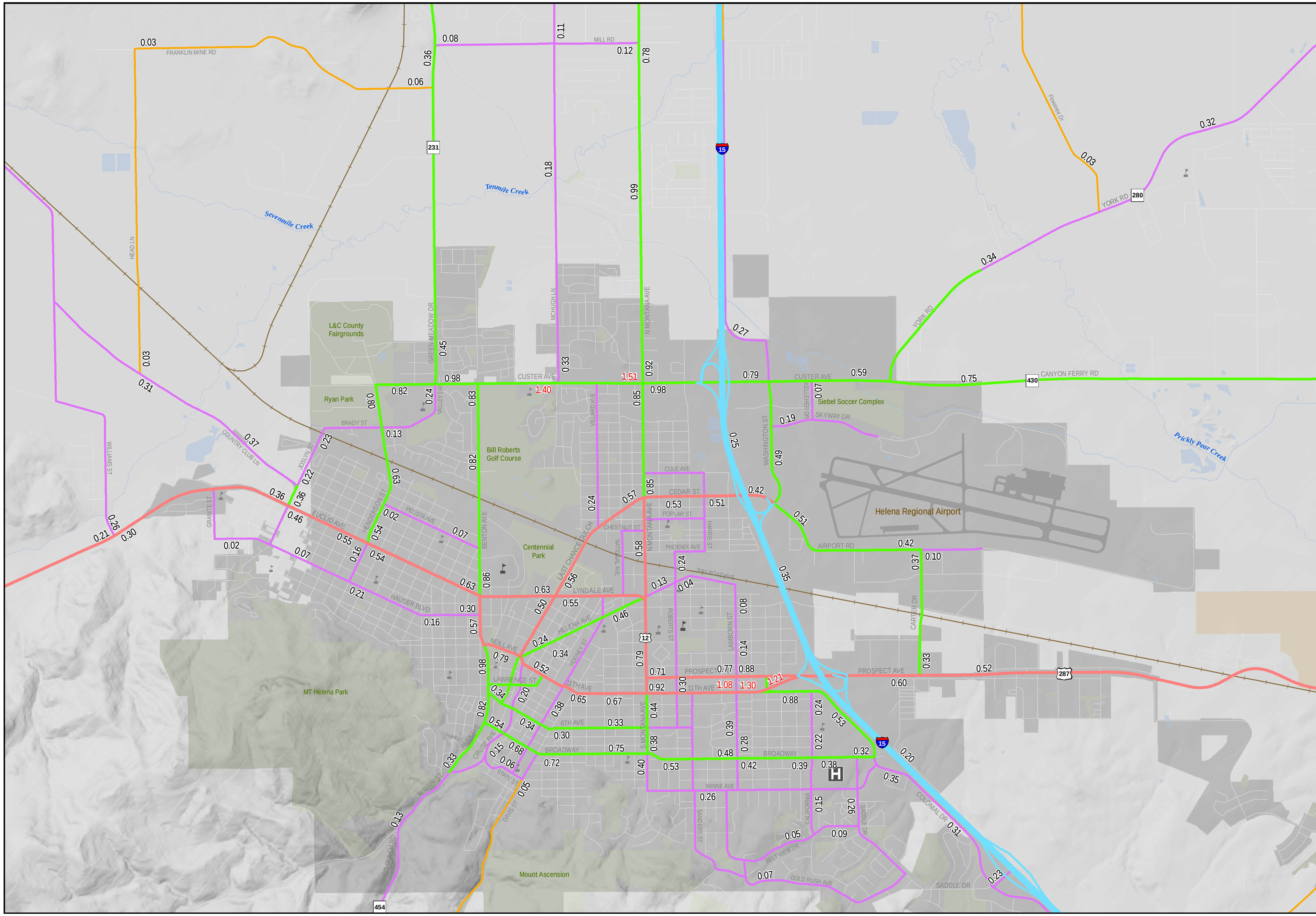


Figure 3.7

Existing Volume to Capacity Ratios

Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- 0.25 Volume to Capacity Ratio <1.00
- 1.15 Volume to Capacity Ratio ≥1.00

0 0.25 0.5 0.75 1 Miles

*Represents federally approved functional classification.

Table 3.2: Intersection LOS Descriptions

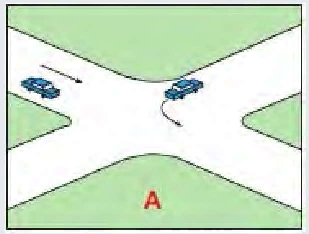
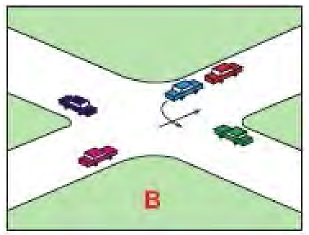
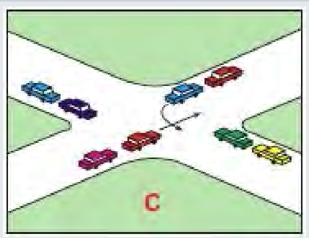
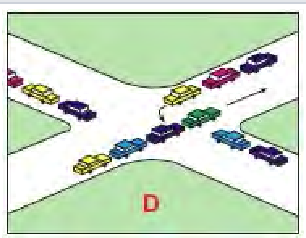
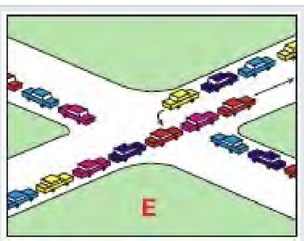
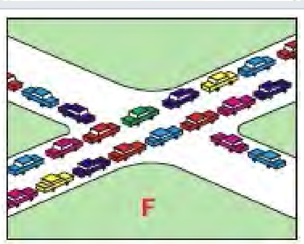
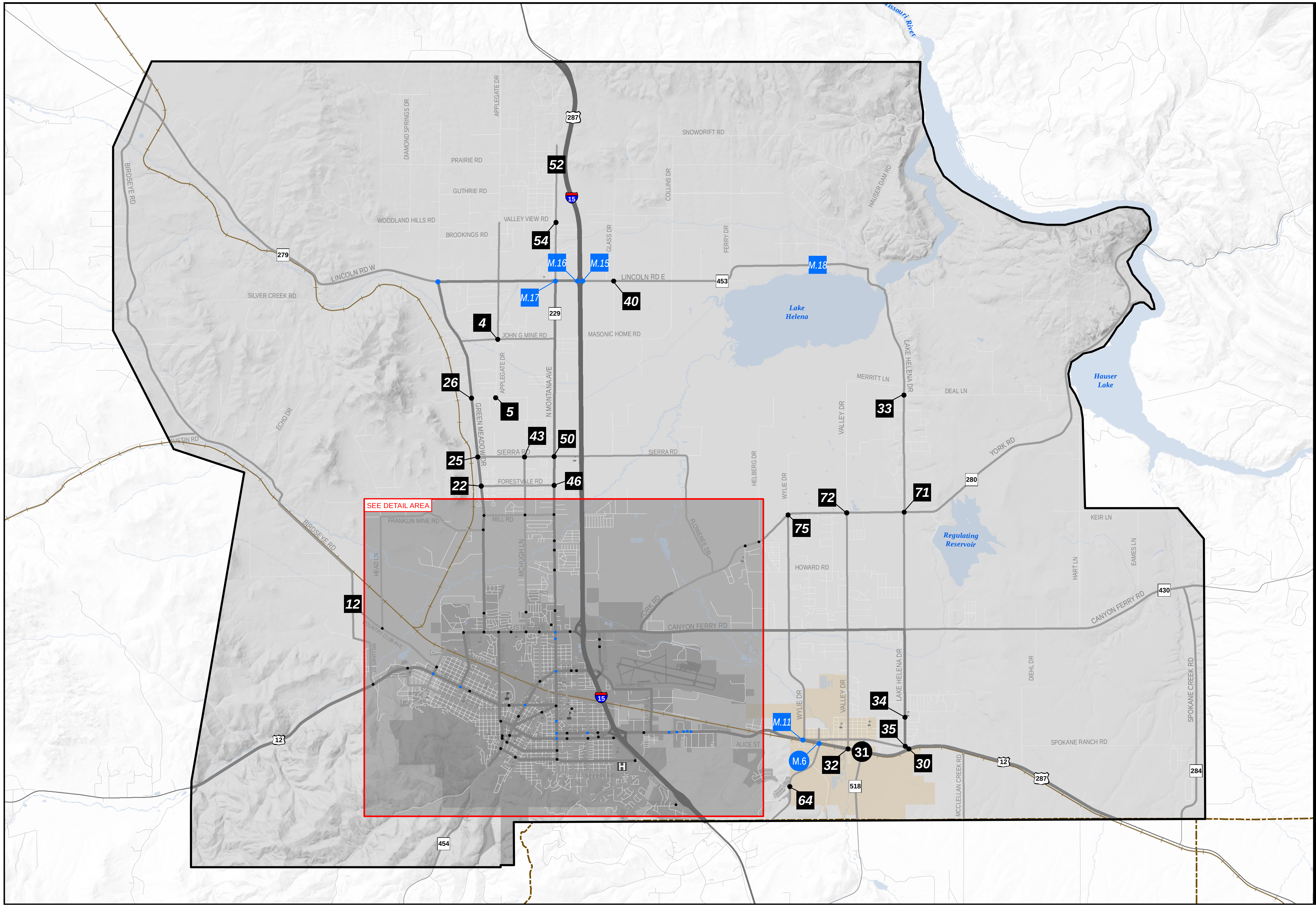
LOS	Description	Average Delay per Vehicle (sec)	
		Signalized	Unsignalized
	Traffic moves freely, low volumes accompany the free flow condition. At signalized intersections, progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. At unsignalized intersections, nearly all drivers find freedom of operation with very little time spent waiting for an acceptable gap. Very seldom is there more than one vehicle in queue.	< 10	< 10
	Traffic moves fairly freely, volumes are somewhat low. At signalized intersections, there is good progression and/or short cycle lengths. Vehicles generally clear on one green phase. At unsignalized intersections, some drivers begin to consider the average control delay an inconvenience, but acceptable gaps are still very easy to find. Occasionally there is more than one vehicle in queue.	10 to 20	10 to 15
	Traffic moves smoothly, volumes are beginning to increase. At signalized intersections, higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping. At unsignalized intersections, average control delay becomes noticeable to most drivers, even though acceptable gaps are found on a regular basis. It is not uncommon for an arriving driver to find a standing queue of at least one additional vehicle.	20 to 35	15 to 25
	Traffic approaching unstable flow, the influence of congestion becomes more noticeable. At signalized intersections, longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. At unsignalized intersections, average control delay is long enough to be an irritation to most drivers. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives.	35 to 50	25 to 35
	Unstable traffic flow, volumes at or near capacity. At signalized intersections, the high delays generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences. At unsignalized intersections, drivers find the length of the average control delay approaching intolerable levels. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives.	50 to 80	35 to 50
	Saturation condition, volumes are over capacity. This is considered to be unacceptable to most drivers. This condition occurs with oversaturation. At signalized intersections, it may occur at high volume/capacity ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values. At unsignalized intersections, delays are high because acceptable gaps are hard to find. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives.	> 80	> 50

Figure 3.8

Intersection Count Locations



Map Legend
- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- 10 Signalized
- 10 Unsignalized
- M.1 Signalized (MDT)
- M.1 Unsignalized (MDT)

0 0.5 1 2 3 Miles

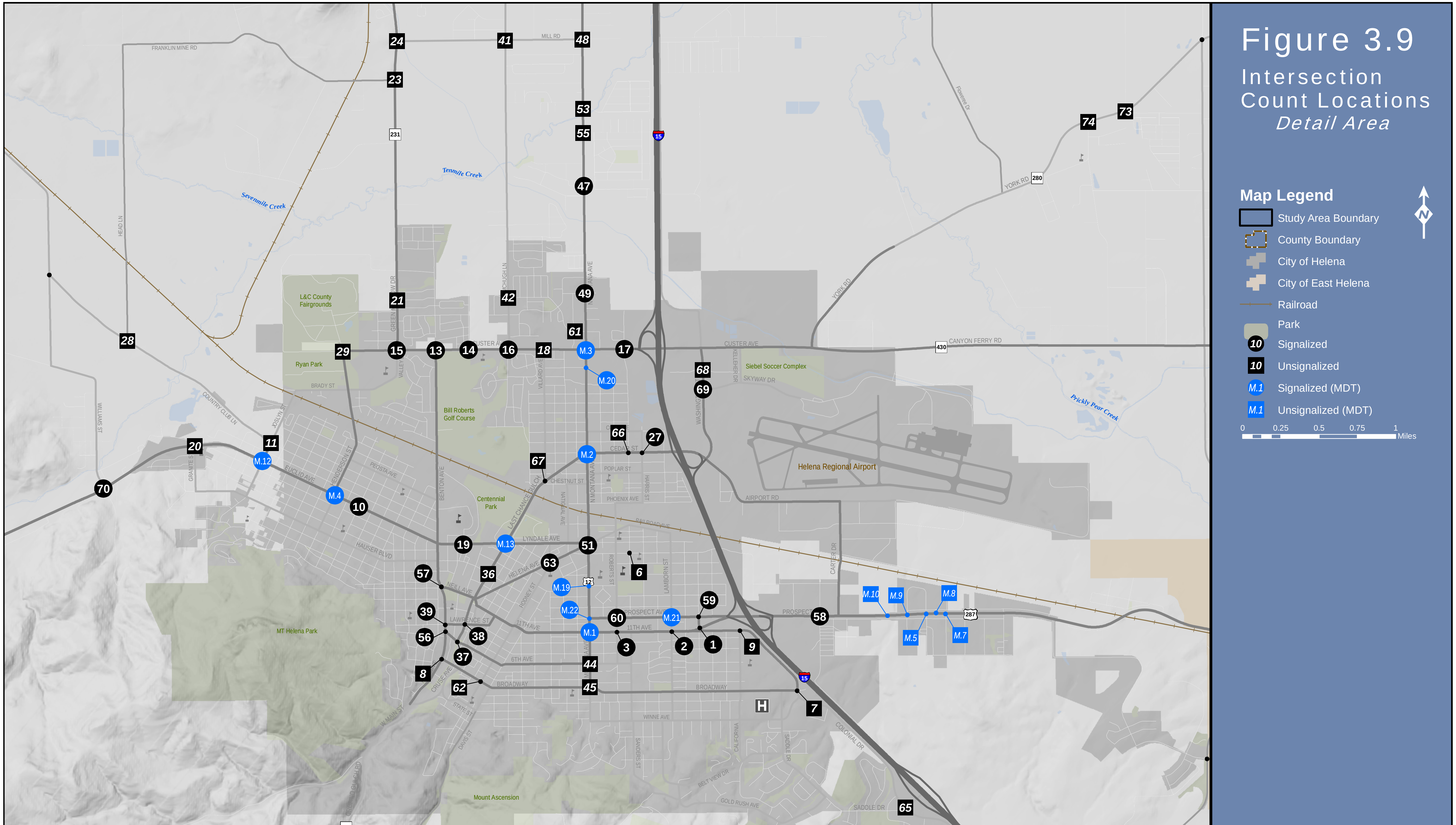


Figure 3.9
Intersection Count Locations
Detail Area
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Park
Signalized
Unsignalized
Signalized (MDT)
Unsignalized (MDT)
Miles
Helena Regional Airport
Siebel Soccer Complex
L&C County Fairgrounds
Ryan Park
Bill Roberts Golf Course
Centennial Park
MT Helena Park
Mount Ascension
Tenmile Creek
Sevenmile Creek
Prickly Pear Creek

3.4.1 Signalized Intersections

For signalized intersections, the LOS is based on the average stopped delay per vehicle. **Table 3.2** identifies the relationship between LOS and average stopped delay per vehicle. The procedures used to evaluate signalized intersections use detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types, and other parameters. This information is then used to calculate delay and determine the capacity of each intersection. An intersection is determined to be functioning adequately if it is operating at a LOS C or better. At signalized intersections that are experiencing over saturated conditions, the turning movement counts only reflect what the traffic signals are serving, and in some cases do not reflect the actual demand placed on the network. In these circumstances the calculated LOS nay be underreported. **Table 3.3** presents the LOS and average vehicle delay for the signalized intersections during AM and PM peak hours. The existing intersection LOS is shown in **Figures 3.10** and **3.11**. Detailed results for individual turning movements are provided in **Appendix B**.

3.4.2 Unsignalized Intersections

LOS for two-way stop-controlled intersections are based on the delay experienced by each movement within the intersection, rather than on the overall stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary since the operating characteristics of stop-controlled intersections are substantially different. Driver expectation and perceptions are entirely different. For two-way stop controlled intersections the through traffic on the major (uncontrolled) street experiences no delay at the intersection. Conversely, vehicles turning left from the minor street experience more delay than other movements and at times can experience significant delay. Vehicles on the minor street which are turning right or going across the major street experience less delay than those turning left from the same approach. Due to this situation, the LOS assigned to a two-way stop controlled intersection is based on the average delay for vehicles on the minor street approach.

For all-way stop-controlled intersections, LOS is based on average vehicle delay experienced at the intersection. This methodology is similar to that of signalized intersections. The results of the LOS analysis for the unsignalized intersections are presented in **Table 3.4**. The existing intersection LOS is shown in **Figures 3.10** and **3.11**. Detailed results for individual turning movements are provided in **Appendix B**.

Table 3.3: Existing Signalized Intersection LOS

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	11th Ave & Fee St	24.3	**C**	24.1	**C**
2	11th Ave & Lamborn St	13.5	**B**	14.8	**B**
3	11th Ave & Roberts St	12.1	**B**	12.0	**B**
10	Cleveland St & Euclid Ave	12.6	**B**	11.3	**B**
13	Custer Ave & Benton Ave	24.7	**C**	22.6	**C**
14	Custer Ave & Cooney Dr	11.3	**B**	12.9	**B**
15	Custer Ave & Green Meadow Dr	29.1	**C**	29.3	**C**
16	Custer Ave & McHugh	24.1	**C**	22.4	**C**
17	Custer Ave & Sanders St	26.7	**C**	25.4	**C**
19	Getchell & Lyndale Ave	10.9	**B**	13.0	**B**
27	Harris St & Cedar St	13.9	**B**	11.7	**B**
31	Highway 12 & Lane/Route 518	15.8	**B**	14.9	**B**
37	Last Chance Gulch & 6th Ave	12.4	**B**	12.2	**B**
38	Lawrence & Last Chance Gulch	12.1	**B**	12.0	**B**
39	Lawrence & Park Ave	16.0	**B**	17.6	**B**
47	Montana Ave & Lodestar	14.6	**B**	14.7	**B**
49	Montana Ave & Partridge Pl	10.2	**B**	14.4	**B**
51	Montana Ave/Helena Ave/Lyndale Ave	24.8	**C**	22.8	**C**
56	Park Ave & 6th Ave	14.0	**B**	18.2	**B**
57	Park Ave/Neill Ave/Benton Ave	23.9	**C**	28.1	**C**
58	Prospect Ave & 18th St	28.6	**C**	27.1	**C**
59	Prospect Ave & Fee St	20.6	**C**	22.9	**C**
60	Prospect Ave & Roberts St	11.1	**B**	10.8	**B**
63	Rodney St & Helena Ave	12.4	**B**	11.5	**B**
69	Washington St & Skyway Dr	10.8	**B**	12.9	**B**
70	Williams St & Highway 12	12.0	**B**	13.1	**B**
Intersections Counted by MDT					
M.1	11th Ave & Montana Ave	11.4	**B**	13.6	**B**
M.2	Cedar St & Montana Ave	29.1	**C**	32.5	**C**
M.3	Custer Ave & Montana Ave	31.3	**C**	30.7	**C**
M.4	Henderson St & Euclid	16.0	**B**	16.1	**B**
M.6	Highway 12 & Highway 282	20.5	**C**	21.8	**C**
M.12	Joslyn St & Euclid Ave	12.0	**B**	11.4	**B**
M.13	Last Chance Gulch & Lyndale Ave	30.9	**C**	34.8	**C**
M.19	Montana Ave & Billings Ave	16.1	**B**	17.9	**B**
M.20	Montana Ave & Tara Court	11.1	**B**	13.5	**B**
M.21	Prospect Ave & Lamborn St	10.9	**B**	9.7	**A**
M.22	Prospect Ave & Montana Ave	20.8	**C**	22.8	**C**

Table 3.4: Existing Unsignalized Intersection LOS

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
4	Applegate Dr & John G Mine Rd	7.2	A	7.4	A
5	Applegate Dr & Norris Rd	9.7	A	9.7	A
6	Boulder Ave & Sanders St	13.1	B	11.1	B
7	Broadway & Colonial	72.9	F	30.4	D
8	Broadway & Park	11.8	B	17.5	C
9	California & Colonial	19.4	C	27.8	D
11	Country Club & Joslyn	20.5	C	22.5	C
12	Country Club & Williams	17.1	C	12.6	B
18	Custer Ave & Villard	89.5	F	179.6	F
20	Granite & Highway 12	32.3	D	44.7	E
21	Green Meadow & Brookfield	16.2	C	13.8	B
22	Green Meadow & Forestvale Rd	16.1	C	13.5	B
23	Green Meadow & Franklin Mine	18.3	C	15.7	C
24	Green Meadow & Mill Rd	20.7	C	15.7	C
25	Green Meadow & Sierra Rd	13.4	B	9.3	A
26	Green Meadow Dr & Norris Rd	15.3	C	12.5	B
28	Head Lane & Country Club Ave	14.6	B	12.9	B
29	Henderson St & Custer Ave	31.0	D	38.4	E
30	Highway 12 & Lake Helena Dr	26.9	D	35.4	E
32	Highway 12 & Valley Dr	67.2	F	48.6	E
33	Lake Helena Dr & Deal Ln	9.2	A	9.5	A
34	Lake Helena Dr & Lewis St	27.3	D	14.7	B
35	Lake Helena Dr & Old Highway 12	38.7	E	23.4	C
36	Last Chance Gulch & 14th St	31.2	D	104.0	F
40	Lincoln Rd & Glass Dr	13.0	B	11.7	B
41	McHugh & Mill Rd	12.0	B	13.0	B
42	McHugh & Road Runner	16.0	C	16.6	C
43	McHugh & Sierra Rd	10.9	B	10.9	B
44	Montana Ave & 6th Ave	15.2	C	17.5	C
45	Montana Ave & Broadway	22.6	C	27.3	D
46	Montana Ave & Forestvale Rd	16.1	C	25.0	C
48	Montana Ave & Mill Rd	19.6	C	44.8	E
50	Montana Ave & Sierra Rd	13.7	B	18.5	C
52	N Montana Ave & Prairie Rd	9.5	A	11.5	B
53	N Montana Ave & Valley Forge Rd	21.5	C	31.1	D
54	N Montana Ave & Valley View Rd	13.4	B	13.6	B
55	N Montana Ave & Buffalo Rd	25.5	D	37.9	E
61	Road Runner Dr & Dredge Dr	12.4	B	18.2	C
62	Rodney St & Broadway	16.4	C	19.0	C
64	Runkle Parkway & Highway 282	10.5	B	10.6	B
65	Saddle Dr & Colonial	12.8	B	14.2	B
66	Sanders & Cedar	94.6	F	187.2	F
67	Villard & Last Chance Gulch	265.1	F	3,187.9	F
68	Washington & Cromwell Dixon	20.3	C	65.2	F
71	York Rd & Lake Helena Dr	15.3	C	14.1	B
72	York Rd & Valley Dr	12.9	B	12	B
73	York Rd & Helberg Dr/Herrin Rd	18.7	C	14.8	B
74	York Rd & Tizer Rd	23.5	C	13.8	B
75	York Rd & Wylie Dr	14.9	B	12.7	B
Intersections Counted by MDT					
M.5	Highway 12 & Elaine St	15.5	C	97.5	F
M.7	Highway 12 & Lola St	28.6	D	209.2	F
M.8	Highway 12 & N Side Frontage Rd Access	349.5	F	36.4	E
M.9	Highway 12 & Nicole St	102.3	F	39.5	E
M.10	Highway 12 & S Side Frontage Rd Access	36.5	E	25.2	D
M.11	Highway 12 & Wylie Dr	151.0	F	106.9	F
M.14	Lincoln Rd & Green Meadow Dr	15.0	B	13.3	B
M.15	Lincoln Rd & I-15 NB Ramps	13.9	B	79.3	F
M.16	Lincoln Rd & I-15 SB Ramps	66.4	F	30.3	D
M.17	Lincoln Rd & Montana Ave	29.5	D	19.3	C
M.18	Lincoln Rd E & Mountain Heritage Rd	9.6	A	9.8	A

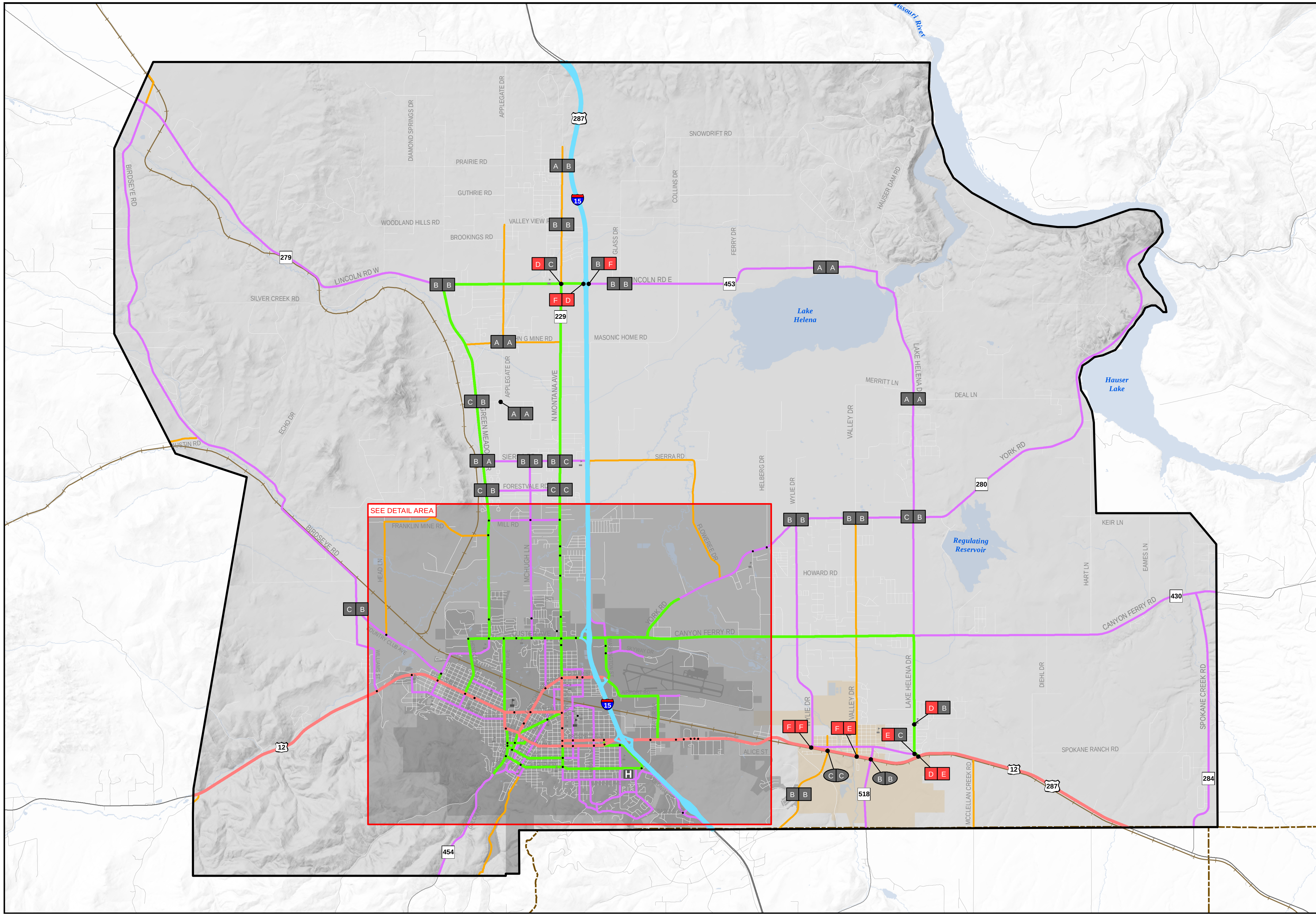


Figure 3.10

Existing Intersection Level of Service

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

Signalized Intersection

AM A C PM

Unignalized Intersection

AM C D PM

A, B, C, D, E, F = Level of Service

0 0.5 1 2 3 Miles

*Represents federally approved functional classification.

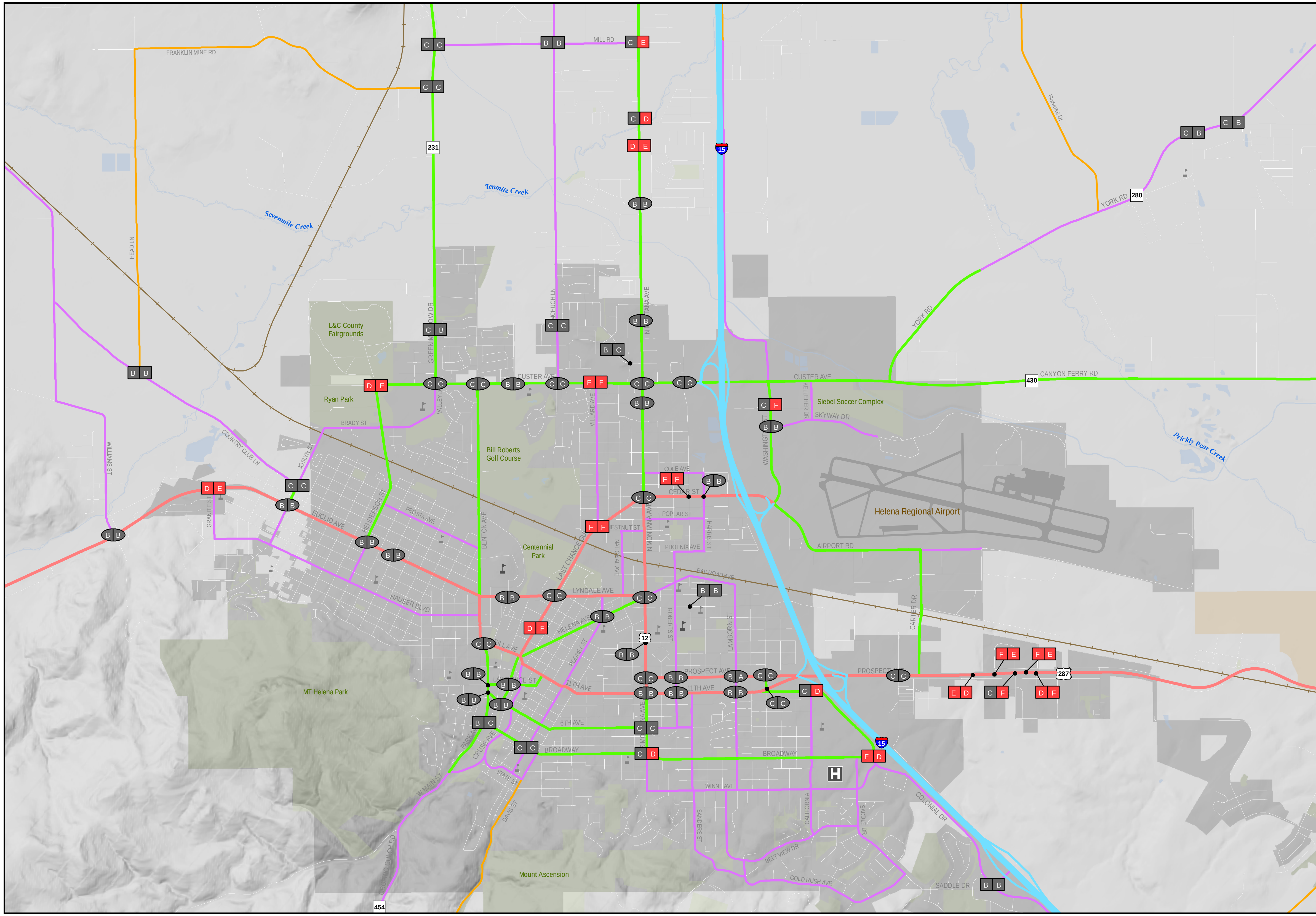


Figure 3.11

Existing Intersection Level of Service

Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

Signalized Intersection

AM A C PM

Unignalized Intersection

AM C D PM

A, B, C, D, E, F = Level of Service

0 0.25 0.5 0.75 1 Miles

*Represents federally approved functional classification.

3.5 Non-Motorized Transportation

3.5.1 Commute and Trip Choice

The vehicle or type of transportation that people choose for their trips, either commuting to and from work, doing errands, or other trips, is available via the American Community Survey (ACS) and the National Household Travel Survey (NHTS). The former includes commute mode share data while the latter includes mode share choices for all trips, regardless of purpose.

3.5.1.1 Journey to Work / Commuting (ACS) 2012 Data

Table 3.5 presents commuter mode share for Montana, Lewis and Clark County, Helena, and East Helena as given by the American Community Survey (ACS) five year estimates. **Figure 3.12** illustrates the walking and bicycling mode shares Montana, Lewis and Clark County, Helena, and East Helena. The walking and bicycling mode shares for the various Montana cities are presented in **Figure 3.13**. The City of Helena has the highest walking and bicycling to work mode shares in the study area, ranks second in the state for walking to work, and third for bicycling to work. Helena also has the lowest share of working age commuters using an automobile to commute to work (83 percent). Helena residents also have, on average, shorter travel times (13.5 minutes), with nearly 70 percent spending less than 15 minutes commuting to work. Montana as a whole ranks 3rd amongst states for the largest percentage of residents who bike to work.

Table 3.5: ACS Commute (Journey to Work) Data – 2012 5-Year Estimates

Mode Share	Montana	Lewis and Clark County	Helena	East Helena
Walking	4.8%	4.1%	7.5%	3.1%
Bicycling	1.4%	1.6%	3.3%	0.5%
Driving*	85.2%	88.4%	83.4%	92.2%
Travel Time to Work (mean)	18	17.7	13.5	15.8

Source: American Community Survey (ACS) Five-Year Estimates, 2008-2012
**Driving mode share combines single occupancy vehicles and carpools.*

Figure 3.12: Commute Mode Share (State and Study Area)

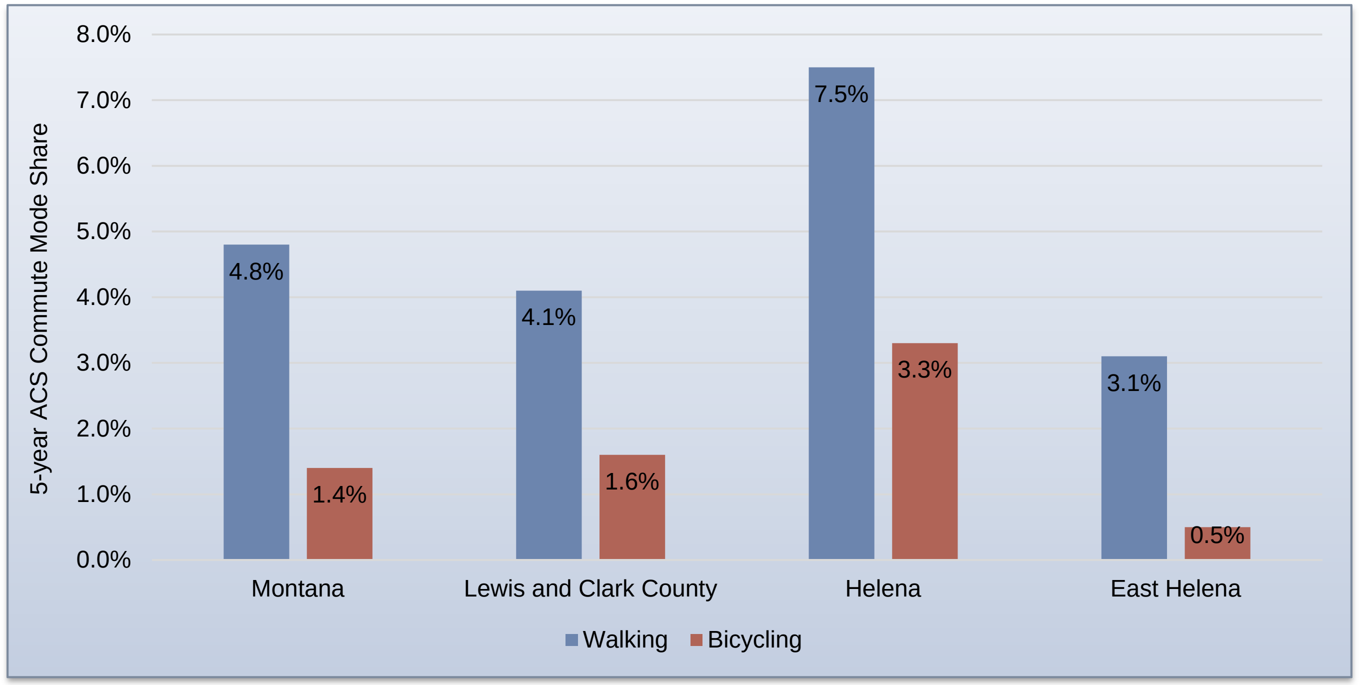
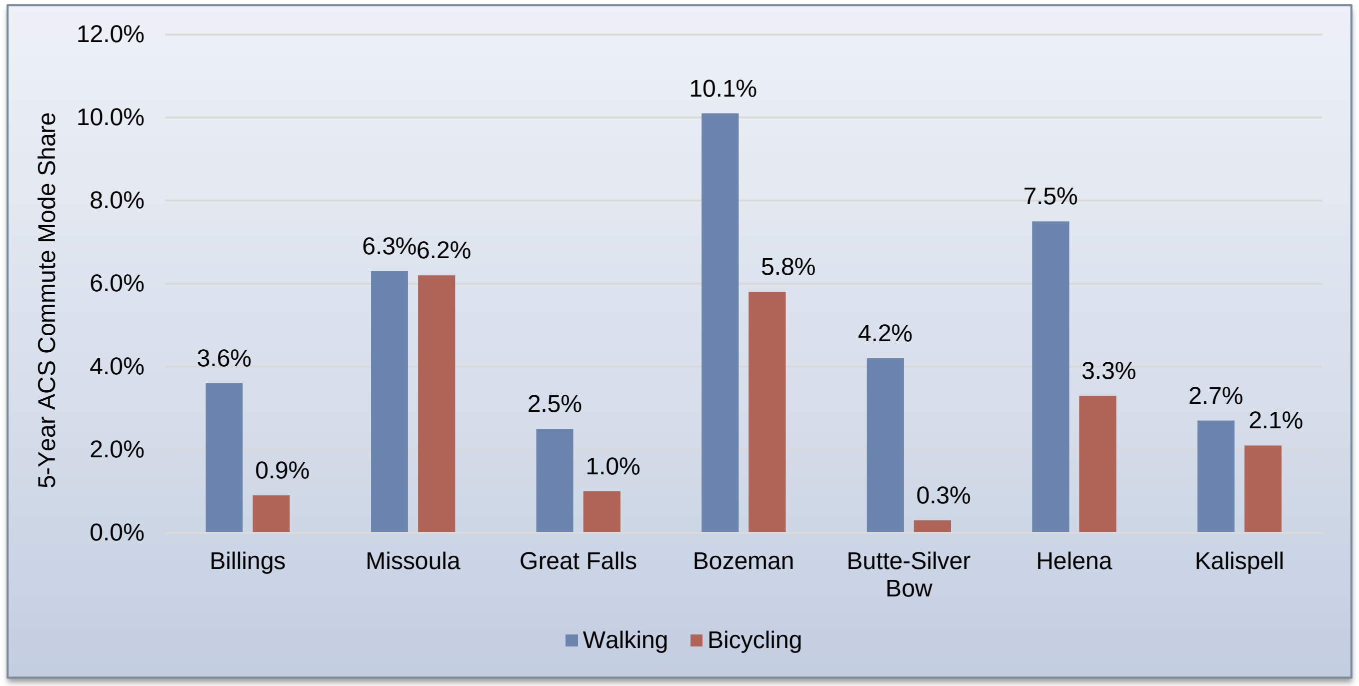


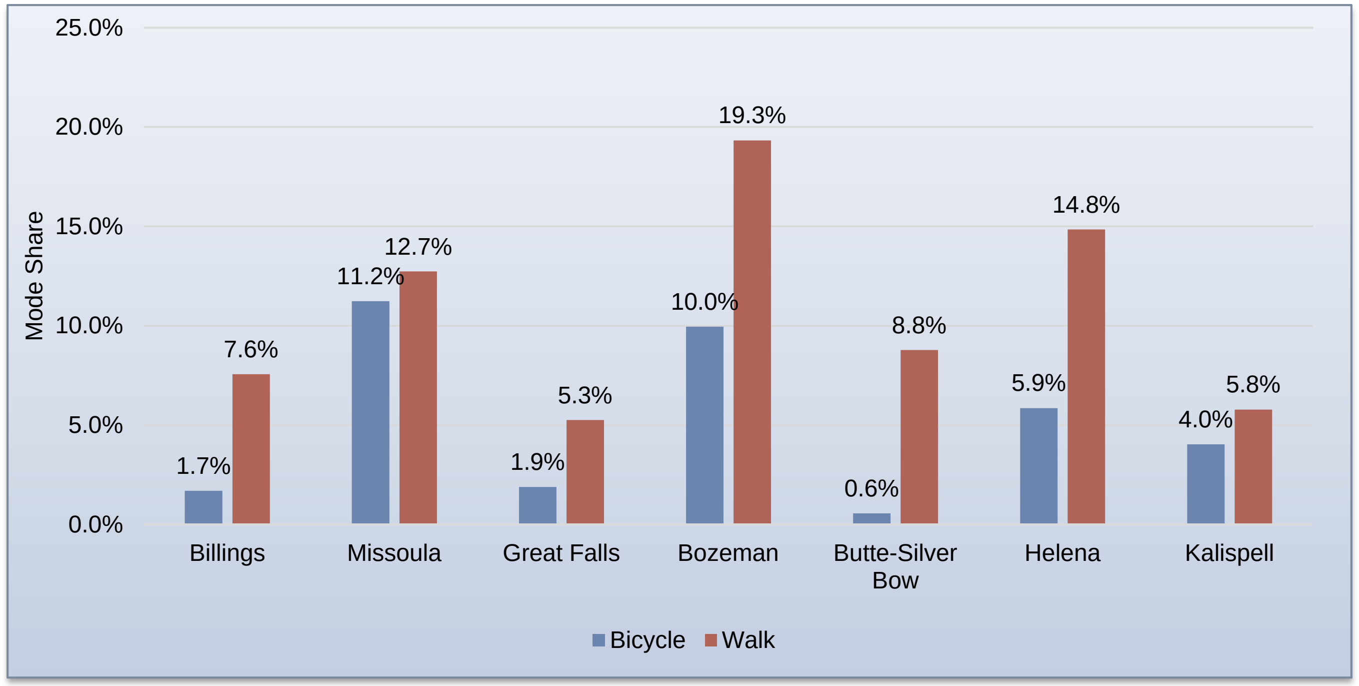
Figure 3.13: Commute Mode Share (Seven Largest Montana Cities)



3.5.1.2 National Household Travel Survey (NHTS) 2009 Data

Journey to Work data from the ACS is an important and consistent data source to measure changes in mode share over time. This data represents only one type of trip, however, and does not accurately reflect overall levels of bicycling and walking over all trip types. Data from the National Household Travel Survey (NHTS) provides mode share data aggregated at the national level for all trips and not just commute to work trips. For example, NHTS indicates that for every 1.0 bike to work trip, there are another 1.6 utilitarian bike trips (for shopping, personal trips, transporting others, medical/dental visits, meals, other reasons), 0.5 bike to school trips, and 4.8 social/recreational trips. Overall bike to work trips represent approximately 7.5 percent of all bike trips nationally. It should be noted that approximately 41 percent of bike trips counted by NHTS are return home trips indicating many bicyclists perform part of their round trip by other means. **Figure 3.14** applies the national averages in the NHTS and applies them to the localized ACS Journey to Work data to provide an estimate of overall levels of walking and bicycling.

Figure 3.14: Overall Mode Share (Based on 2009 Data)



3.5.2 User Counts

Between May 2011 and September 2013, bicycling and walking user counts were performed each May and September at 16 locations (two of which were included for the first time in May 2012). The weather was sunny and warm or sunny and partly cloudy for five of the six counts, the exception being the cold and rainy May 17, 2012 count which had the lowest overall count figures. Regardless of the fluctuation of total bicyclists from count to count, the number of female bicyclists has remained fairly constant.

The top five highest count locations for bicyclists and pedestrians combined were all in the downtown area (between Lyndale, Benton, the south end of town, and Montana). The only count location that saw more bicyclists than pedestrians was the Prospect Bike/Ped Bridge.

On-street Surveys

Volunteers conducted informal surveys of bicyclists and pedestrians as they counted users during the May and September counts in 2011 and 2012. No survey data was available for May and September 2013.

Bicyclists, on average, rode twice as far per trip than pedestrians walked (approximately 4 miles vs. 2 miles) while the trip time for both bicyclists and pedestrians was about 24 minutes. The average age of bicyclists and pedestrians surveyed was 38 years old.

The majority of bicyclists chose directness over convenience, while pedestrians were even split between the two reasons. Almost every pedestrian surveyed walked year round, while about half of bicyclists rode year round. When asked what other transportation modes they used, most bicyclists and pedestrians answered “Walking” or “Driving my car”.

Most bicyclists wanted to see more and wider bike lanes, while pedestrians wanted better crossings, wider sidewalks, and more shade trees along the street.

3.5.3 Existing Plans, Codes, and Policies

Numerous plans, codes, and policies were reviewed and found to directly inform non-motorized modes within the study area. Detailed descriptions of the non-motorized aspects of the respective documents are found in **Appendix E**. **Table 3.6** presents a summary of the plans, codes and policies that were reviewed for the non-motorized existing conditions analysis.

Table 3.6: Plan, Code or Policy Reviewed

Plan, Code or Policy Reviewed
2004 Helena Area Transportation Plan
2013 Regional Parks, Recreation, and Trails District Feasibility Study
2010 Helena Parks, Recreation, and Open Space Plan
Centennial Trail Master Plan
Greening America’s Capitals: Greening Last Chance Gulch
Helena Bicycle Friendly Communities (BFC) Application Feedback, Fall 2013
WALC Institute Walkability Workshop
City of Helena Code (Title 7: Public Ways and Property; Title 8: Traffic Regulations; Title 11: City of Helena Zoning Ordinance; Title 12: City of Helena Subdivision Regulations)
City of Helena Engineering Standards
Lewis and Clark County Key Issues Report
Lewis and Clark County Public Works Manual
Lewis and Clark County Subdivision Regulations
2011 City of Helena Growth Policy
2004 Lewis and Clark County Growth Policy
City of Helena Complete Streets Policy
Helena Snow Policy, Procedures, Plan, Codes, and Comparison (Winter 2013-2014)

3.5.4 Existing Bicycling Conditions

3.5.4.1 Types of Bikeways

Consistent with bikeway classifications throughout the nation, these Bikeway Design Guidelines identify the following bikeway classes by degree of separation from motor vehicle traffic.

Paved Shoulder Bikeway

The pave shoulder bikeway facility may be helpful for Helena, especially rural county areas in the study area. The AASHTO *Guide for the Development of Bicycle Facilities* includes this bikeway type especially for application in rural communities in which "adding of improving paved shoulders often can be the best way to accommodate bicyclists". The paved shoulder also has geometric benefits for motorists, as well, which are described below under 'Bike Lanes'.

Shared Roadways

Shared roadways allow bicyclists and cars to operate within the same travel lane, either side by side or in single file depending on roadway configuration. The most basic type of bikeway is a signed shared roadway. This facility is used to connect other bikeways (usually bike lanes), or designate preferred routes through high-demand corridors.

Bike Boulevards

Shared roadways may also be designated by pavement markings, branding and/or directional signage, and other treatments to mitigate high vehicle speeds and/or volumes including traffic diverters, chicanes, chokers, and/or other traffic calming devices.

Bike Lanes

This type of separated bikeways uses signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists.

Cycle Tracks

Bikeways that combine the user experience of a separate path with the on-street infrastructure of conventional bike lanes through various forms of physical separation from adjacent traffic.

Shared Use Paths

Bikeways in rights of way separate from roads, and are for the use of bicyclists, pedestrians, and other non-motorized users such as skateboarders and rollerbladers.

Why Separated On-Street Facilities

A national study comparing streets with bike lanes to those without found that 15 percent of bicyclists on streets without bike lanes rode on the sidewalks, versus 3 percent on the streets with bike lanes. In addition, on streets with bike lanes, 81 percent of bicyclists obeyed stop signs, versus 55 percent on streets without[1].

One's chance of injury drops by about 50 percent when riding on a major city street with a bike lane and no parked cars (as opposed to a major city street without bike lanes and with parking)[2].

Separated facilities also provide a buffer for pedestrians by creating more space between sidewalks and moving motor vehicle travel lanes. They also provided a breakdown lane for motorists and a clear recovery zone (for errant vehicles that leave the traveled way to recover into their own lane).

When Bozeman, Montana, installed a greater network of bike lanes, bicycle commuting mode share went from 4.7 percent of commute trips to 6.3 percent of commute trips between 2000 and 2010. Missoula's bicycle commuting mode share also increased from about 4.5 percent to 5.8 percent for similar reasons. Bozeman measured an instantaneous increase in bicycling and walking along West Babcock Street in 2007 of 256 percent when bike lanes and sidewalks were installed.

3.5.4.2 Existing Facilities

The Helena area has approximately 150 miles of off- and on-street bicycle network facilities. **Figures 3.15** and **3.16** depict the existing network under current conditions.

Bike lanes on Canyon Ferry Road

Bike Lanes

There are approximately 17 miles of on-street bike lanes within the study area boundary, including lanes on 11th Ave (eastbound one-way on the left side of the road), Prospect Ave (westbound one-way on the right side of the road), Helena Ave, North Last Chance Gulch, Custer Ave, Benton Ave, Lamborn St, and Canyon Ferry Rd.

Shared Lane Markings

Shared lane markings, or “sharrows”, are roadway markings that indicate a travel lane shared by bicyclists and motor vehicles. According to NACTO, among other benefits, shared lane markings “reinforce the legitimacy of bicycle traffic on the street and recommend proper bicyclist positioning.” Helena installed the city’s first shared lane markings in 2014 on Lamborn St, between 9th Ave and Prospect Ave, a two block section to connect the Lamborn St bike lanes south of 9th Ave, the 9th Ave signed bike route, and the 11th Ave and Prospect Ave bike lanes, totaling .15 miles of shared lane markings.

Signed Bike Routes

Signed bike routes are shared facilities, typically on streets with lower motor vehicle traffic volumes and speeds (like those suited for bicycle boulevards) and use signage to alert motorists and bicyclists that they are designated bike routes. The Helena area has one, 3.2 mile bike route that runs east-west (for the most part) and uses sections of 9th Ave, Lawrence Ave, Benton Ave, Flowerree St, Dearborn Ave, and Hauser Blvd, providing an alternative to parallel, high traffic streets. This signed bike route links three schools, two churches, Downtown Helena, two parks, and many businesses on 11th Ave.

Shared Use Paths

Helena’s 27 miles of shared use paths are perhaps the most prominent and well-known bicycling and walking facilities in the area. The flagship, east-west Centennial Trail has been developed over many years and more expansion is planned for the future. Several loop paths exist within some of Helena’s larger parks, as well (i.e. Centennial Park). More information about the Centennial Trail Master Plan is found in a previous section on existing background documents. The Capital Interchange shared use path connects both 11th Ave and Prospect Ave on the west, across the Interstate 15 interchange, to Prospect Ave on the east; the 11th Ave left side bike lane is designed in such a way to accommodate predictable transitions from the bike lane to the shared use path. Several small shared use paths exist in Northwest Park, Nature Park, near the Helena Regional Airport, Helena High School, through and near Mountain View Park, around MDT headquarters, and Rossiter School while sidepaths are currently on at least one side of North Montana Ave, Le Grande Cannon Blvd, Sierra Rd, Lincoln Rd, Henderson St, Benton Ave, Custer Ave, Broadway/18th St, Washington St, Skyway Dr, and McHugh Dr.

Shared use path in Centennial Park

Natural Surface Trails

Helena is a world-renowned mountain biking community, with ~100 miles of soft, natural surface trails and what the International Mountain Bicycling Association calls “a modern day gold rush for mountain bikers”. The impressive network of trails in the South Hills are focused around Mt. Helena and Mt. Ascension and earned Helena a bronze-level IMBA Ride Center designation in 2013, an honor given to only 10 other communities in the United States. More trails are found in places like the Scratch Gravel Hills, and near Trout Creek, Hauser Lake, and the Missouri River. While many of these natural surface trails do not serve as transportation facilities, they are destinations that attract local trips, some of which could be better served by walking and bicycling.

Mountain bike trail in South Hills

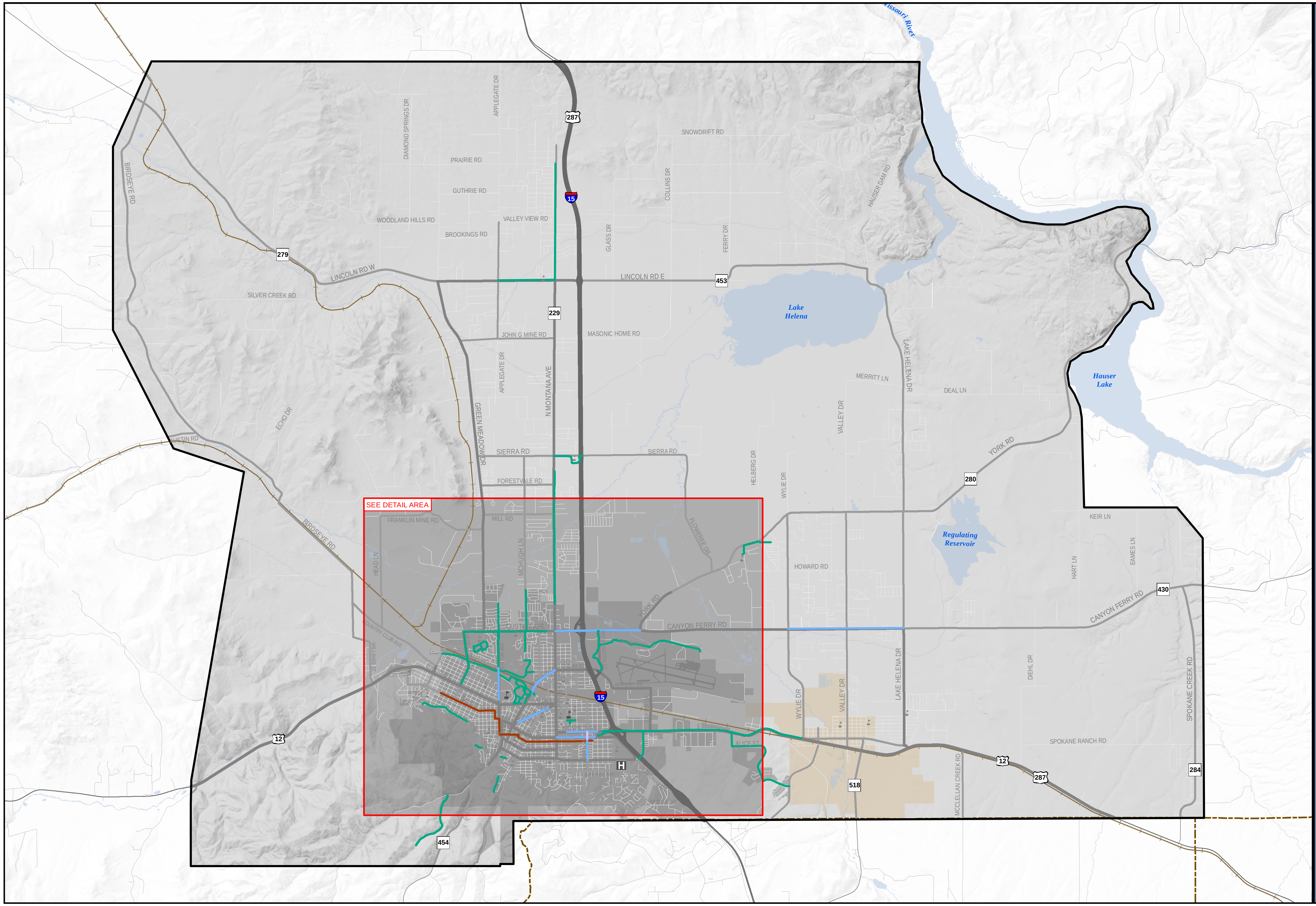


Figure 3.15

Existing Bicycle Network

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Bicycle Facility Type

- Bike Lanes
- Designated Bike Route
- Shared-Use Paths
- Sharrows

0 0.5 1 2 3 Miles

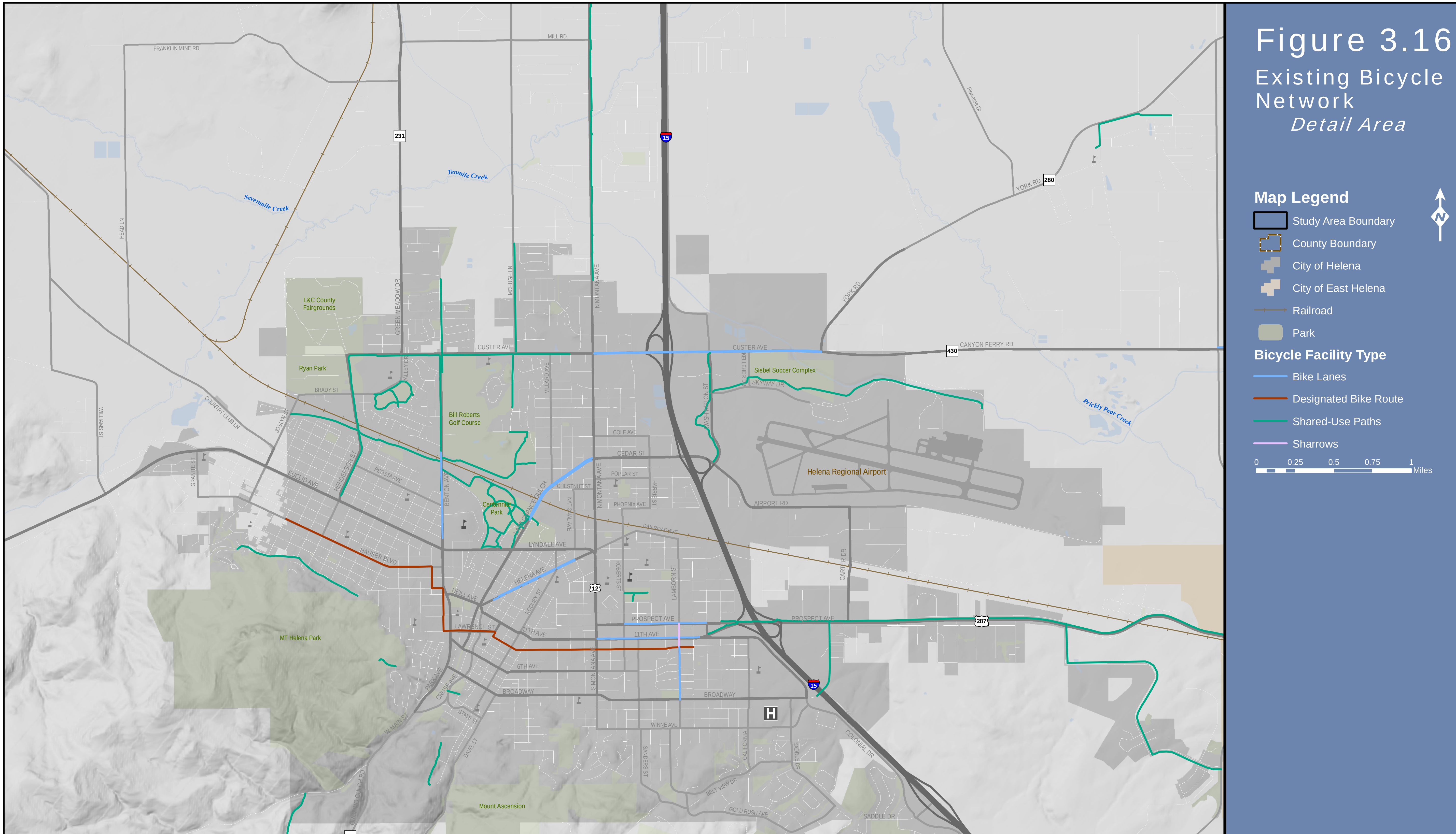


Figure 3.16

Existing Bicycle Network

Detail Area

3.5.4.3 Programs

Bicycle Parking

The City does not currently have a Request-A-Rack program such that businesses could request or purchase and install a standard bike rack that meets City standards. The City's parks, fairgrounds, and downtown areas have a very limited bicycle parking supply. Several of the parking garages that serve the Last Chance Gulch area of Helena do have bike parking, but their location and availability are not well known or publicized.

Bicycle parking on Last Chance Gulch

City of Helena's Requirements

Ordinance 3152, 4-23-2012 requires that the racks hold a bike upright, be clearly visible, provide shelter from the weather, allow the user to lock their bicycle to the rack, and not conflict with pedestrian and vehicle traffic.

The City of Helena requires that parking lots with 10 or more parking spaces must provide three bicycle spaces within 50' of a main building entryway. Parking lots with 50 or more automobile parking spaces must also provide secure bicycle parking (long term, secure parking area) equal to five percent of the total number of parking spaces in excess of 10. This requirement is not limited to any particular area or use and is applicable to all commercial projects and properties, the creation of parking garage and structures, and residential dwelling units that create 10 or more off street parking spaces.

Nonconforming status could remain in effect if there is no change in building size of 25% or more and can remain the same unless the parking area is reconstructed or changed. No new development or remodel project has sought a variance to reduce the required bicycle parking since the ordinance was passed in April 2012.

Parking Offset Incentive

Additionally, for every two, non-required bicycle spaces on the property of non-residential land uses, one required off-street parking space requirement is satisfied. The maximum reduction allowed is 20 percent of the minimum required off-street parking spaces (required accessible parking spaces excluded). In short, business and property owners are incentivized to increase the bicycle parking supply and are able to reduce the need for larger and costly vehicle spaces.

Law Enforcement

HPD Bike Patrol Officers

In the past, the Helena Police Department (HPD) has had at least two uniformed officers on bicycles assigned to the downtown area during the summer. This has at least temporarily been changed beginning in 2014 due to a lack of manpower. Motorcycle officers are now patrolling the same areas. HPD continues to use bike patrol officers during parades (i.e. Vigilante Parade) in order to increase mobility, response time, and access crowded or constrained spaces.

Other Programs

In 2013, HPD initiated a volunteer program to help put more "eyes on the street" and on bicycles. These "eyes on the street" ambassadors report problems they see. In 2014, HPD completed a bicycle education program for all volunteers and some officers.

Storm Drain Grate Replacement Programs

The Storm Drain Grate Replacement Program is a line item in the citywide roadway maintenance budget. The Commission allocates money during the budget cycle and the City replaces the grates identified as needing replacement to be friendlier to cyclists.

3.5.4.4 Maintenance

Street Sweeping and Bike Lane Restriping

On City streets, bike lanes are swept at the same time as the rest of the street. Although most sweeping is around spot improvements and public requests, maintenance crews give higher priority to high traffic city streets. If the Streets Division receives a public request to sweep the bike lane, crews will typically perform the work within two days. MDT sweeps all routes over which they have jurisdiction as needed. All roadways are restriped once a year, including bike lane lines and symbols.

Snow Removal

Information regarding snow removal on roads and on-street bikeways is found in the section on existing policies under Helena Snow Policy, Procedures, Plan, Codes & Comparison (Winter 2013-2014).

Parks and Trails

The Centennial Trail and other Helena City-maintained off-street shared use paths are maintained by the Helena Department of Parks and Recreation. The Department does not have a specific maintenance plan, but they do follow prioritized plowing and clearing sidewalks in and around parks and other recreation facilities first; paths and trails that are under their jurisdiction are cleared as soon as possible. One of the concerns of the Department's Park Maintenance Superintendent is that the maintenance of new trails and paths is often overlooked and that it has been assumed that the Department will maintain them, even though budget, manpower, and equipment may not be available.

3.5.5 Existing Walking Conditions

As stated previously, about 4.1 percent (Lewis & Clark County) and 7.5 percent (City of Helena) of all commute trips to and from work are walking trips. 14.8 percent of all trips, regardless of type, are estimated to be walking trips. Both of these figures far surpass state and national averages.

3.5.5.1 Pedestrian Needs

People walk for various reasons and needs vary, often depending on trip purpose. All pedestrians share some common needs including safety, connectivity, and accessibility (especially for persons with disabilities). Senior citizens and mobility-impaired pedestrians may lack motorized transportation options and may consequently depend on transit and pedestrian-focused aspects of the transportation network.

Needs of Pedestrians with Disabilities

To adequately plan for pedestrians with disabilities, each disability and its corresponding limitations should be considered. It is important to also be aware of how planning for people with one disability may affect users with other limitations.

Helena's ADA (Americans with Disabilities Act) Committee seeks to

- Recognize, plan and design for, and accommodate the variety and breadth of disabilities experienced by Helena residents

- Focus not only on disabled residents that are wheelchair-bound, but also the vision-impaired and mentally handicapped
- Make the Greater Helena area safer and more comfortable for those with disabilities, and thereby improve conditions for all other users, as well

People with mobility impairments range from those who use wheelchairs, crutches, canes, orthotics, prosthetic devices, and face constraints. Uneven or rough surfaces, narrow surfaces, steep longitudinal slopes and steep cross slopes are common obstacles for disabled users. Walking-aid users are most affected by the above mentioned obstacles, as well as long distances between crossing opportunities and situations that require fast reaction time.

Certain disabled populations (those who are partially or full blind or deaf, those with limited perceptions of touch or balance, and those with color blindness) face difficulties with lack of depth perception, information about their surroundings, and non-visual information; the inability to react quickly; complex intersections; and detection of street crossing timing. Curb ramp orientation is particularly important to those with visual impairments as diagonal curb ramps leading out into the intersection can be confusing when compared to perpendicular curb ramps which lead to the opposing sidewalk.

Hearing-impaired pedestrians rely on visual information. Their primary mobility difficulties include the inability to hear approaching vehicles and detect the time of their arrival. This is especially an issue in locations with limited sight distances, such as curved street segments, or overgrown vegetation impeding sight lines.

People with cognitive impairments encounter difficulties in thinking, learning, responding, and performing coordinated motor skills. These impairments can cause some to experience difficulty navigating to and from destinations. They may not understand standard street signage, and may be unable to read and benefit from signs with symbols and colors.

Each proposed facility should be designed in accordance with the ADA design standards.

Children and Older Adults

Children are less mentally and physically developed than adults, and often have limited peripheral vision and less ability to judge speed and distance, locate sounds and comprehend street signs. They lack familiarity with traffic, and may act impulsively or unpredictably.

Older adults often exhibit degrading sensory or physical capabilities. This can lead to loss of vision and hearing, the ability to react quickly, and the strength to walk otherwise normal distances between places.

Similar to designing walking facilities for users with disabilities, similar consideration should be given to young and elderly users.

3.5.5.2 Facilities

Pedestrians use sidewalks, trails, alleys, tunnels, and shared use paths in and around Helena. Helena's older core neighborhoods and grid street systems lend themselves, in part, to the high rates of walking and non-motorized transportation use in the Helena area. In the downtown core, Last Chance Gulch's pedestrian improvements like bulbouts, signage, and benches; and its commercial character with patio and sidewalk dining, and street-level pedestrian-focused businesses, make it a main attraction for residents and visitors. The pedestrian mall at the south end of Last Chance Gulch has been discussed previously, and should be mentioned again as it is the only pedestrian-only street in the Helena area and contributes to the character of the area. **Figures 3.17** and **3.18** depict the locations of existing sidewalk within the Helena city limits.

Sidewalk and Shared Use Path Inventory

Due to the absence of county sidewalk data, the following figures are limited to walking facilities within Helena City limits. There are 240 miles of street frontage sidewalks out of the 468 total miles of potential sidewalk mileage within the City limits. 51.3 percent of the roads with potential for sidewalks currently have them.

Shared use paths are used by many user types, including walkers, joggers, in-line skaters, and bicyclists. There are 25 miles of shared use paths in the project area.

3.5.5.3 Sidewalk Gaps

Some of the older, established neighborhoods of Helena, or those developed in the 1960s through parts of the 1980s, have discontinuous sidewalk networks. The majority of sidewalk gaps are concentrated in neighborhoods where facilities were not required during development, like the residential areas west of Hayes Ave and Downtown, north of Last Chance Gulch and east of Nature Park, and south and east of the State Capitol Building. The commercial core of Downtown and the neighborhoods north of Custer Ave have nearly complete sidewalk networks.

Desire lines

There are currently nearly 228 miles of street frontage sidewalk gaps out of the 468 miles of potential sidewalk mileage within the City limits. About 49 percent of the potential total mileage for sidewalks (assuming they would be installed on both sides of every non-Interstate system street within the City limits) is absent. It should be noted, however, that not all of the remaining potential sidewalk mileage would need sidewalks.

According to the "Montana Building Active Communities Resource Guide", the presence of sidewalks along streets and in neighborhoods can help to improve the physical activity and health of residents and help to diversify the options for transportation in a community. Following the addition of sidewalks in a neighborhood in Bozeman, Montana, pedestrian activity increased 273 percent immediately.

More information on sidewalk and cost sharing programs from other Montana communities can be found in the "Resource Guide" cited above. Recommended programs and policies for Helena are discussed in the section titled "Policy and Program Recommendations".

3.5.5.4 Programs

Sidewalk Maintenance

Construction and Replacement

Section 7-4-2 of the Helena City Code states that the "abutting property owner" is responsible for building sidewalks to City specifications. Sections 7-4-8 and 9 cover maintenance and repair of sidewalks. More information regarding construction and replacement is found in the City Code review in a previous section of this plan.

Property owners may perform sidewalk maintenance themselves, which requires a permit issued by the City ($5 for the first 70 linear feet and $2 for each additional 50 linear feet), or hire a contractor to do the work.

The City of Helena has a Sidewalk Replacement Program, which is a loan package available to property owners to help offset these maintenance costs. It allows property owners to pay for sidewalk repairs in part and cover the rest of the construction cost balance with a no-interest loan over 10 years (although the 0% interest rate is not guaranteed from year to year). Property owners may also make no initial payment on the maintenance costs and cover the full amount of these costs with a low-interest loan from the City. A statement is sent to the property owner in December of the year the replacement occurs that explains the total amount due and the payment options. Other than the constraint of contractors available to do work at certain times during the year, the program currently has a waiting list and response seems to be positive.

Snow Removal

Information regarding snow removal on sidewalks, curb ramps, and driveway approaches is found in the section on existing policies under Helena Snow Policy, Procedures, Plan, Codes & Comparison (Winter 2013-2014).

Other

Other walking programs that are applicable to bicycling as well can be found in the section on Bicycling Programs.

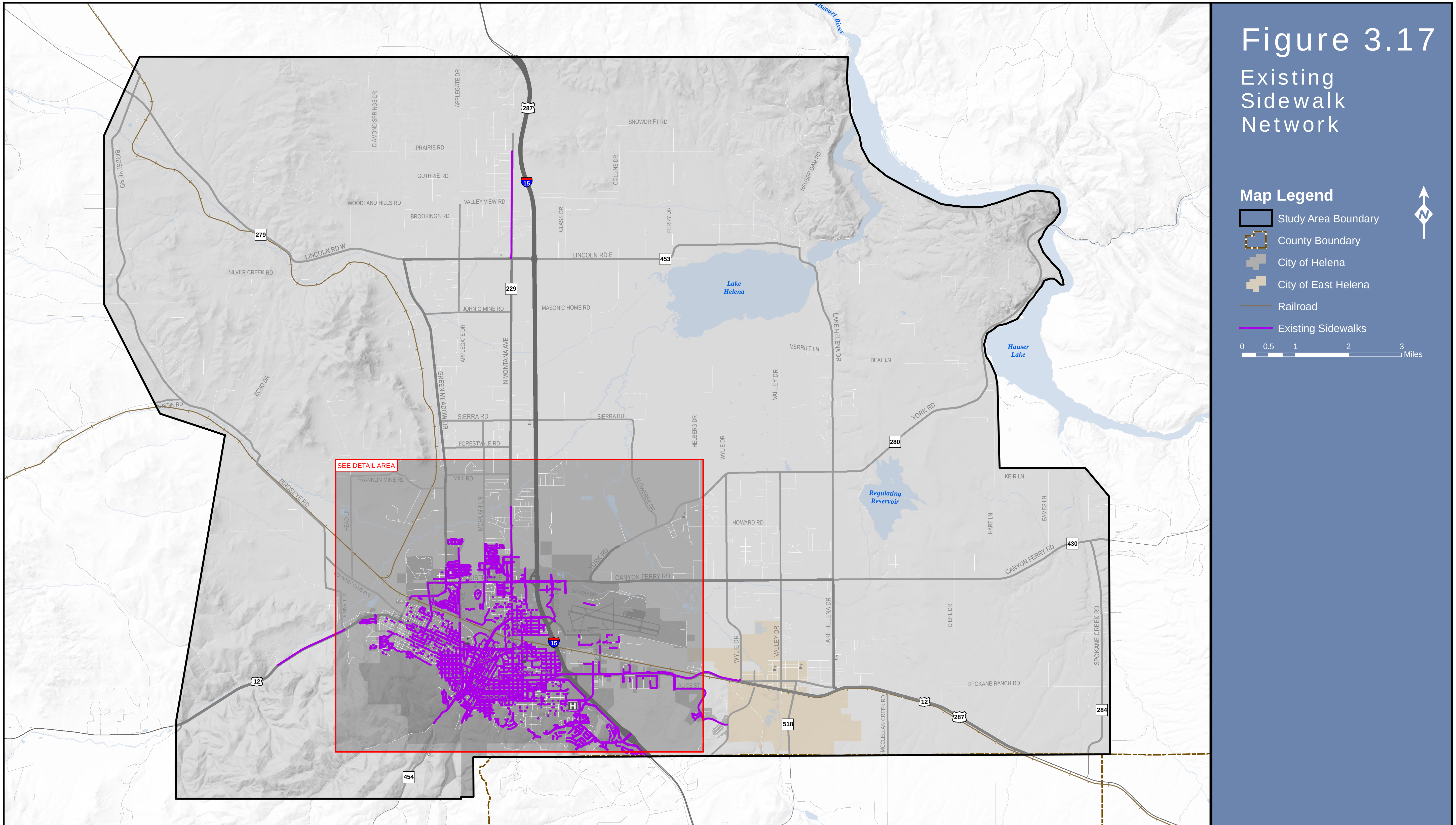


Figure 3.17
Existing Sidewalk Network
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Existing Sidewalks
0 0.5 1 2 3 Miles
N
SEE DETAIL AREA
Lake Helena
Hauser Lake
Regulating Reservoir
LINCOLN RD E
LINCOLN RD W
CANYON FERRY RD
SIERRA RD
YORK RD
SPOKANE RANCH RD

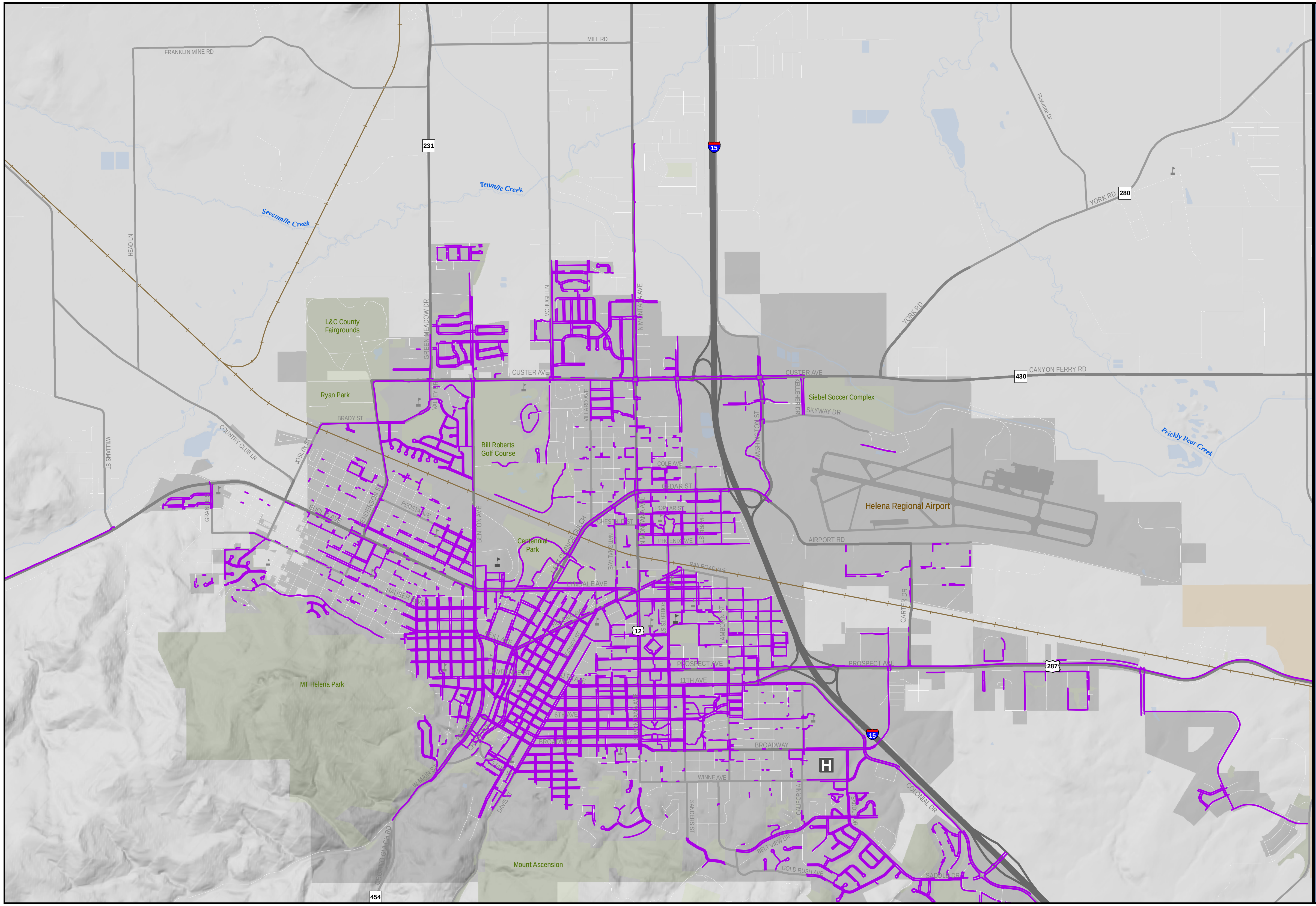


Figure 3.18

Existing Sidewalk Network

Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park
- Existing Sidewalks

0 0.25 0.5 0.75 1 Miles

3.5.6 Multi-modal Programs

3.5.6.1 Programs and Events

BikeWalk Helena

BikeWalk Helena is a collaborative initiative between NMTAC, Lewis & Clark County, and the County Health Department. Its mission is to "enhance and expand the walkability and bikeability of Helena through the development of a safe, convenient and accessible network of corridors that serve to improve connectivity promote alternatives to motorized travel, and enhance Helena appeal as a healthy, pedestrian and cyclist-friendly place to live and play." Their website also contains helpful resources for area bicyclists and pedestrians and descriptions of their programs.

BikeWalk Helena PSA

PSA Videos

BikeWalk Helena produced four public service announcement-style videos in 2013 covering topics such as predictable bicycling, being seen while on the road, bicycling through intersections, obeying traffic rules, crosswalks and knowing where to stop at intersections, and walking to school.

Commuter Challenge

The Helena Area Commuter Challenge is an annual event during the month of May (in conjunction with National Bike Month) to encourage commuters to bike, walk, or take transit to work instead of driving. Incentives include discounts at area restaurants and shops; other prizes; commuter events; complimentary breakfasts; a virtual leaderboard; hashtags on Facebook, Twitter, and Instagram; Bike to Work Calculator, bike safety checks; bike recycling and donation drives; and user surveys and counts.

Recycle Your Cycle

BikeWalk Helena has hosted an annual bike donation and consignment event since 2010 at the Fairgrounds, with used bikes, helmets, gear, clothing, accessories, bicycle safety checks, and registration. All of the proceeds from sales and donations from the event benefit the efforts of the Safe Routes to School program.

Open Streets in Helena

Open Streets

In September 2013, BikeWalk Helena, in partnership with the City of Helena and Downtown Helena, Inc., organized the fourth Open Streets event in two years on Last Chance Gulch (between Placer and the pedestrian mall). Open Streets events close one or more streets to cars and open them up to walking, biking, games, exercise, a bike parade, arts and crafts, and kids' activities and riding courses. Several hundred people attended the Open Streets events, participating on skateboards, bikes, scooters, and walking. The goal of these events is to encourage more Helena area residents to walk or bike around town.

Bicycle and Pedestrian Documentation Project

BikeWalk Helena publishes data from each semi-annual bicycling and walking user count since spring 2011 on a third party website that allows visitors to visualize levels of bicycling and walking in Helena, weather during the counts, and information on how the counts were conducted. For analysis of the counts, see the Needs Analysis section.

Complimentary Valet Bike Parking

BikeWalk Helena provides free valet bike parking at several events throughout the year, including Community Monday at the Blackfoot, Ales to Trails, and Alive at Five. Offering valet bike parking at events encourages able attendees to ride a bike, thus reducing the need for event parking for automobiles, reducing costs for event promoters, and alleviating congestion.

Ales to Trails

Narrate Church, a local religious organization in Helena, organizes the Ales to Trails annual fundraising event in May (in conjunction with Bike Month). All proceeds (tickets, drink sales, and donations) from the event support the Friend of Centennial Trail organization, which uses funds raised to match grants with the ultimate goal of completing construction of the Centennial Trail. In 2013, the event raised $10,000 and in 2014 the goal was raised to $15,000. Proceeds from the 2014 event exceeded the goal.

Rx Trails

BikeWalk Montana has spearheaded a Prescription Trails program (initially championed by the Lewis & Clark County Health Department) that encourages area doctors to prescribe certain trails or walking and bicycling facilities (i.e. Centennial Park loop trail) to patients in an effort to encourage and facilitate physical activity and better health. BikeWalk Montana has developed a guide and a map to assist both the physicians and the patients in the implementation and success of this program.

Staff and doctors at Cooperative Health Clinic and Sage Clinic have used the program to assist their patients (especially cardiac patients at Sage Clinic) in recovery and improving physical fitness.

Law Enforcement

Safe Routes and Bike Rodeos

School Resource Officers (SRO) from HPD participate in Safe Routes to School programs in Helena schools, especially with younger students who are learning how to walk and ride a bike to school for the first time. SROs also participate in bike rodeos and other safety programs outside of schools, relying on local groups to organize the events.

3.5.7 Connectivity to Transit

Trips by transit often begin and end on foot, by bicycle, or both. When non-motorized connectivity to transit is poor, ridership and ease of use of the system is also negatively affected. By improving sidewalks at and near bus stops, constructing bus shelters for waiting patrons, and planning routes near popular bicycling and walking routes, connectivity to transit can improve. Helena's transit system, Helena Area Transit Service (HATS), is a service of the City of Helena and serves the area with multiple bus transit services.

HATS ADA accessible bus

3.5.7.1 Routes

During the summer, HATS runs a free Trolley to Trails route sponsored by local bike and running shops, restaurants, banks, and other businesses. It runs on Saturday and Sunday at 8:00, 8:40, and 9:20 am between the Woman's Mural Broadway, Last Chance Gulch, and the Mount Helena Ridge Trail trailhead.

3.5.7.2 ADA

All HATS buses meet ADA requirements and accommodate patrons in wheelchairs and with other disabilities.

3.5.7.3 Bikes on Buses

All HATS buses have front end-mounted bike racks that carry two bikes each and bicycle/transit users may bring their bicycles on all routes at all times.

3.5.8 Conclusion

Over recent years, the concerted efforts of many Helena area groups, residents, and governmental agencies, past and present planning efforts, programs, and high walking and bicycling ridership have made Helena a friendlier place to bike and walk. Among the seven largest cities in Montana in 2012, Helena had the second highest walk to work mode share (7.5%) and the third highest bike to work mode share (3.3%). Walking and bicycling trips for all purposes (commuting, groceries, recreation, etc.) likely make up an even higher percentage of all trips made in the Helena area.

The progress Helena has made so far is very encouraging; however the analysis in this memorandum also shows that there is still significant room for improvement with both the provision of walking and bicycling facilities, but also expanded programs in the Helena area. The Helena area has many involved stakeholder groups from a variety of backgrounds who are acting as partners to the City/County. There is also a high perceived public interest in improving conditions for bicycling and walking further as indicated by nearly 1,000 survey responses as part of this analysis.

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Chapter 4

PROJECTED TRANSPORTATION SYSTEM

An analysis of the projected transportation conditions was performed to estimate how traffic patterns and characteristics may change from the existing conditions. The inputs for this analysis included the existing conditions and the potential growth in housing and jobs out to the year 2035.

Also provided in this chapter is a description of the traffic modeling effort that was conducted to project the potential future travel conditions. Using the results of the traffic model, it is possible to identify future capacity constraints and other areas of concern.

4.1 Socioeconomics

Local and regional population and economic characteristics have important influences on motor vehicle travel in the Helena area. The study area for the LRTP includes all of the land within the City of Helena, the City of East Helena, and adjacent lands in Lewis and Clark County where suburban development has occurred or may occur in the future. The adjoining lands in the county include the Helena Valley and lands south and west of the City of Helena.

A review of demographics within the study area was made to gain an understanding of historical trends in population, age, employment and other socioeconomic conditions. Understanding the composition of the population is necessary, as the data may influence the types of improvements that are 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. Additionally, the presence of a disadvantaged population may warrant other considerations.

Likewise, existing land uses and potential land use changes have a direct influence on the transportation network and its use. For this reason, it is important to review community development patterns over time and understand where community conditions may be favorable for new residential and commercial growth.

This chapter discusses the background and assumptions used to project growth in the Helena area to the year 2035. By using population, employment and other socioeconomic trends as aids, the future transportation requirements can be defined. A travel demand model (traffic model) of the transportation system for the Greater Helena area was built by the Montana Department of Transportation (MDT) and information from this analysis was used to allocate future residential and employment growth. The changes to the system that are projected to occur by the year 2035 were incorporated into the model to forecast the future transportation conditions. Using the updated model, various scenarios were developed to test a range of transportation improvements to determine what affects they might have on the transportation system within the Helena area.

Population growth trends occurring in nearby Broadwater and Jefferson Counties were also important considerations for the LRTP. Residents of these adjoining counties often work, shop, and recreate in the Helena area and their commuting patterns have impacts on the regional transportation system.

4.1.1 Population and Demographic Trends

4.1.1.1 Historic Population Trends

Table 4.1 shows the total populations for Lewis and Clark County, the City of Helena, the City of East Helena, Broadwater and Jefferson Counties, and numerous Census Designated Places located within the Helena area over the 1970 to 2010 period. Census designated places (CDPs) are delineated by the Census Bureau to provide data for settled concentrations of population that are identifiable by name but are not legally incorporated. The CDPs listed in the table were initially created for the 2000 Census and corresponding data from earlier censuses is not available for these demographic subdivisions. The table also shows the overall change (shown as a percentage) in residents of the County, the cities of Helena and East Helena, and other geographies since 1970. Population data for the State of Montana and the nation provide benchmarks to help compare local population growth trends.

The total population of Lewis and Clark County in 2010 was 90% higher than it was in 1970. Double digit population growth has occurred over the last 4 decades and Lewis and Clark County's population reached 63,395 in 2010. The City of Helena has experienced steady growth over the 1970-2010 period; however, not at the rates of change seen for Lewis and Clark County. Between 1970 and 2000, the City's population grew at between 3 and 5% each decade. Between 2000 and 2010, the City grew at more than 9% and recorded its highest population to date (28,190).

The City of East Helena's population remained steady at about 1,650 residents over the 1970 to 2000 period. The only exception to this was in 1990 when the City's population declined by more than 6% to 1,538. Between 2000 and 2010, the City of East Helena grew by nearly 21% and reached 1,984 residents at the time of the 2010 Census.

With the exception of the Helena West Side CDP, the total populations of the CDPs surrounding the cities of Helena and East Helena grew substantially between 2000 and 2010. The most notable population increases were seen in the Helena Valley Northwest and the Helena Valley Northeast CDPs, which saw increases of more than 67% and 41%, respectively, over the last decade. The Helena West Side CDP saw a decrease in population of about 4% between 2000 and 2010.

The total populations for both Broadwater and Jefferson Counties have generally increased at rates similar to those seen in Lewis and Clark County each decade over the 1970 to 2010 period. Total populations in each county in 2010 were more than double the populations recorded in 1970.

Due to the proximity to Helena, the total populations of the Montana City, Clancy, and Jefferson City CDPs were reviewed. When considered together, these CDPs showed a total increase in population of more than 27% between 2000 and 2010. The Census recorded 4,848 residents within these CDPs in 2010. The Montana City CDP, located just south of the Lewis and Clark County line, showed an increase in population of more than 30% over the last decade and had a total population of more than 2,700 residents in 2010.Both the State of Montana and the United States showed population increases during each decade between 1970 and 2010. Overall, the population of the US and State of Montana increased by 52% and 42%, respectively, over the 1970-2010 period.

Table 4.1: Historic Population Data

Area	1970	1980	1990	2000	2010
Lewis and Clark County	**33,281**	**43,039**	**47,495**	**55,716**	**63,395**
Net Change (%) over Decade	--	*29.3%*	*10.3%*	*17.3%*	*13.8%*
All Unincorporated Areas	8,900	17,454	21,348	28,294	33,221
Net Change (%) over Decade	--	*96.1%*	*22.3%*	*32.5%*	*17.4%*
Helena Valley West Central CDP	*	*	*	6,983	7,883
Net Change (%) over Decade	--	--	--	--	*12.9%*
Helena Valley NW CDP	*	*	*	2,082	3,482
Net Change (%) over Decade	--	--	--	--	*67.2%*
Helena Valley NE CDP	*	*	*	2,122	2,995
Net Change (%) over Decade	--	--	--	--	*41.1%*
Helena Valley SE CDP	*	*	*	7,144	8,227
Net Change (%) over Decade	--	--	--	--	*15.2%*
Helena West Side CDP	*	*	*	1,711	1,637
Net Change (%) over Decade	--	--	--	--	*-4.3%*
City of Helena	22,730	23,938	24,609	25,780	28,190
Net Change (%) over Decade	--	*5.3%*	*2.8%*	*4.8%*	*9.3%*
City of East Helena	1,651	1,647	1,538	1,642	1,984
Net Change (%) over Decade	--	*Negligible*	*-6.6%*	*6.8%*	*20.8%*
Broadwater County	**2,526**	**3,267**	**3,318**	**4,385**	**5,612**
Net Change (%) over Decade	--	*29.3%*	*1.6%*	*32.2%*	*28.0%*
Spokane Creek CDP	*	*	*	*	*355*
Net Change (%) over Decade	--	--	--	--	--
Winston CDP	*	*	*	*73*	*147*
Net Change (%) over Decade	--	--	--	--	*101.4%*
Jefferson County	**5,238**	**7,029**	**7,939**	**10,049**	**11,406**
Net Change (%) over Decade	--	*34.2%*	*12.9%*	*26.6%*	*13.5%*
Combined Montana City, Clancy, and Jefferson City CDPs	*	*	*	3,795	4,848
Net Change (%) over Decade	--	--	--	--	*27.5%*
State of Montana	**694,409**	**786,690**	**799,065**	**902,195**	**989,415**
Net Change (%) over Decade	--	*13.3%*	*1.6%*	*12.9%*	*9.7%*
United States	**203,392,031**	**226,545,805**	**248,709,873**	**281,421,906**	**308,745,538**
Net Change (%) over Decade	--	*11.4%*	*9.8%*	*13.2%*	*9.7%*

Source: US Bureau of the Census, Census of the Population
**No data available*

Table 4.2 presents historical annual average percent changes in population for Lewis and Clark County, the Cities of Helena and East Helena, and other local geographies and compares them with the annual rates of change for the State of Montana and the nation over the same time periods. The table shows that annual population growth for Lewis and Clark, Broadwater, and Jefferson Counties has been above those for the state and nation over the last 4 decades. The annual average percent change in population for the City of Helena was typically lower than the state and nation until nearly matching the state and nation in the most recent decade. Annual average percent changes in population in CDPs adjoining the cities of Helena and East Helena between 2000 and 2010 were nearly twice as high as those seen for the state and nation over the same decade.

Table 4.2: Historic Annual Average Percent Changes in Population

Area	Last 40 Years (1970 - 2010)	Last 20 Years (1990 - 2010)	Last 10 Years (2000 - 2010)
Lewis and Clark County	**1.62%**	**1.45%**	**1.30%**
All Unincorporated Areas of County	3.35%	2.24%	1.62%
*Helena Area CDPs **	--	--	*1.91%*
City of Helena	*0.54%*	*0.68%*	*0.90%*
City of East Helena	*0.46%*	*1.28%*	*1.91%*
Jefferson County	2.94%	2.18%	1.35%
Broadwater County	2.02%	2.66%	2.50%
State of Montana	0.89%	1.07%	0.93%
United States	1.05%	1.09%	0.93%

**Based on combined population totals in 2000 and 2010 for Helena Valley West Central CDP, Helena Valley Northwest CDP, Helena Valley Northeast CDP, Helena Valley Southeast CDP, and Helena West Side CDP.*

4.1.1.2 Population Changes Since 2010

The Census Bureau releases population estimates each year for various geographies to update information collected in the most recent census. Each new series of data incorporates the latest administrative record data, geographic boundaries, and methodology to provide annual revisions to the decennial census. **Table 4.3** shows the US Census Bureau estimates of current (mid-year 2012) population estimates for Lewis and Clark County, the City of Helena, City of East Helena, Broadwater and Jefferson Counties, as well as the State of Montana, and the nation. These estimates show populations in the County and City are continuing to increase at rates comparable to those seen during the last decade. The rate of growth continues to outpace that seen for the state and nation.

Table 4.3: Population Changes Since 2010

Area	2010 Population	Estimate as of July 1, 2012	% Change since 2010
Lewis and Clark County	**63,395**	**64,876**	**2.33%**
All Unincorporated Areas	*33,221*	*33,669*	*1.35%*
City of Helena	*28,190*	*29,134*	*3.35%*
City of East Helena	*1,984*	*2,043*	*2.97%*
Broadwater County	5,612	5,756	2.03%
Jefferson County	11,406	11,401	Negligible Change
State of Montana	989,415	1,005,141	1.59%
United States	308,745,538	313,914,040	1.67%

Source: US Bureau of the Census, Current Estimates Data, available at http://www.census.gov/popest/data/index.html

4.1.1.3 Race and Ethnicity

Table 4.4 depicts the race and ethnicity characteristics in Lewis and Clark County, the City of Helena, and the City of East Helena as indicated in the *American Community Survey (ACS)* Profile Report for the 2007-2012 period for these selected geographies. Similar statistics are provided for the State of Montana and the United States for comparison purposes. The ACS data are period estimates meaning they represent the characteristics of the population and housing over a specific data collection period (5 years in this case). For this reason, the total populations shown differ from those recorded during the 2010 Census. The percentages listed for ethnic groups presented in the table may not match the Census total percentages and percentages may not add up to 100%.

Table 4.4: Population Race and Ethnicity Data (2008-2012)

Race/Ethnicity	Lewis and Clark County	City of Helena	City of East Helena	State of Montana	United States
White	93.8%	93.6%	90.0%	89.6%	74.2%
Black or African American	0.4%	0.5%	0.0%	0.4%	12.6%
American Indian and Alaska Native	2.3%	2.1%	6.2%	6.3%	0.8%
Asian	0.5%	0.4%	0.2%	0.6%	4.8%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.6%	0.1%	0.2%
Some Other Race	0.4%	0.7%	0.0%	0.6%	4.8%
Two or More Races	2.6%	2.7%	3.0%	2.4%	2.7%
Hispanic or Latino (of any race)	2.5%	2.9%	1.7%	2.9%	16.4%
Total Population	**63,432**	**28,381**	**2,031**	**990,785**	**309,138,720**

Source: US Bureau of the Census, American Community Survey (ACS) Profile Report: 2008-2012 (5-year estimates), available at http://mcdc1.missouri.edu/acsprofiles/acsprofilemenu.html

The populations of Lewis and Clark County and the cities of Helena and East Helena are predominately white with percentages of minority populations generally similar to those seen for the State of Montana. The racial and ethnic composition of the geographic subdivisions examined are not nearly as diverse as that of the nation as a whole.

4.1.1.4 Age Distribution

Table 4.5 depicts the change in total population and age composition for Lewis and Clark County, the City of Helena, and the City of East Helena since 1980. Three age categories—residents less than 18 years old, residents 18 to 64 years old, and residents over age 65—were considered in the analysis of age distribution.

As shown earlier, the County and the cities of Helena and East Helena showed notable increases in population between 1980 and 2010. Over the same period, the share of residents in the “less than 18 years old” category decreased and the percentage of residents in “65 years and over” category increased for all geographies. The age group from 18 to 64 generally represents the working-age population. In all three geographies, this age group encompassed nearly 64% of the residents and larger percentages of working-age residents existed in 2010 than in 1980.

Changes in the structure of the population also impact another measure of population composition, median age. The median age is the age at the midpoint of the population. Half of the population is older than the median age and half of the population is younger. The median age is often used to describe the “age” of a population.

The median ages of Lewis and Clark County residents increased from 28.9 years to almost 41 years between 1980 and 2010. The median ages for residents of the City of Helena and City of East Helena also increased over the period and were 40.3 years and 36.3 years, respectively, at the time of the 2010 Census. These statistics point to the aging of the population, and corresponds to similar trends within Montana and the United States.

Table 4.5: Age Distribution (1980 to 2010)

Area	1980	1990	2000	2010
Lewis and Clark County				
% Less than 18 Years Old	29.3	27.7	25.6	22.7
% 18-64 Years Old	61.1	60.7	62.7	63.5
% 65 Years and Older	9.6	11.6	11.7	13.8
Median Age	**28.9**	**34.1**	**38.0**	**40.9**
City of Helena				
% Less than 18 Years Old	26.3	24.7	22.4	20.1
% 18-64 Years Old	62.3	61.3	63.7	64.3
% 65 Years and Older	11.4	14.0	13.9	15.6
Median Age	**29.5**	**35.1**	**38.8**	**40.3**
City of East Helena				
% Less than 18 Years Old	30.5	27.1	25.2	22.9
% 18-64 Years Old	57.5	57.4	58.5	63.9
% 65 Years and Older	12.0	15.5	16.3	13.2
Median Age	**30.9**	**35.4**	**37.9**	**36.3**
State of Montana				
% Less than 18 Years Old	29.4	27.8	25.5	22.6
% 18-64 Years Old	59.9	58.9	61.1	62.6
% 65 Years and Older	10.7	13.3	13.4	14.8
Median Age	**29.0**	**33.8**	**37.5**	**39.8**
United States				
% Less than 18 Years Old	28.2	25.6	25.7	24.0
% 18-64 Years Old	60.5	61.8	61.9	63.0
% 65 Years and Older	11.3	12.6	12.4	13.0
Median Age	**30.0**	**32.9**	**35.3**	**37.2**

Source: US Bureau of the Census, Census of the Population

To examine more specifically how age groups have changed in Lewis and Clark County, the City of Helena, and the City of East Helena, age group data from the 2000 Census and 2010 Census were reviewed. This review showed the following changes:

- The population grew at a faster rate in the older ages than in the younger ages over all geographies examined.
- The population over the age of 55 (including the share of residents over age 85) grew substantially (typically more than 40% higher than in 2000) in Lewis and Clark County and the City of Helena.
- Lewis and Clark County and the City of Helena showed notable increases (typically more than 40% higher than 2000) in the 55-59 years, 60-64 years, 55-74 years, and 85 years and older age groups over the most recent decade.
- The populations of the County and City of Helena showed a notable decrease (drop of 20% or more) in the 35-44 year old age group.
- The population of the City of East Helena showed notable increases (typically 50% or more than in 2000) in the 21-24 year old, 25-34 year old, and 55—64 year old age groups.
- Notable decreases in the population aged 65-75 years and 85 years and older were seen in the City of East Helena between 2000 and 2010.
- The population aged 45 to 64 in the County grew by 35% between 2000 and 2010. The large growth in this age group is primarily due to the aging of the Baby Boom population. The Baby Boom includes people born from mid-1946 to 1964. The Baby Boom is distinguished by a dramatic increase in birth rates following World War II and comprises one of the largest generations in U.S. history.

4.1.1.5 Disability Status

The 2008-2012 ACS 5-Year Estimate for Lewis and Clark County and the cities of Helena and East Helena was consulted to obtain information about the number of residents with disabilities (which include hearing or vision difficulties, cognitive difficulties, and ambulatory difficulties). This information is important to review since segments of the population with disabilities may require special accommodations for transport or unique considerations in the design of transportation infrastructure.

The ACS data showed that approximately 12-14% of the civilian non-institutionalized populations of the County and cities of Helena and East Helena were considered to have one or more disabilities. This data also indicated the following for disabled residents:

- About 2-3% of residents of the County and City of Helena under the age of 18 had one or more disabilities;
- About 12% of the residents between 18 and 64 years of age (the working-age population) in the County, City of Helena, and City of East Helena had one or more disabilities; and
- Nearly one third of residents 65 years and older had one or more disabilities.

4.1.1.6 Personal Travel and Commuting Characteristics

According to the ACS profile for the 2008-2012 period, residents in about 95% of all occupied housing units in Lewis and Clark County commute to work. In the cities of Helena and East Helena, 91% and 99% of residents, respectively, had access to at least one vehicle. In comparison, residents of nearly 95% of all occupied housing units in Montana and 91% of all occupied housing units in the nation had access to one or more vehicles.

Information about the number of workers (16 years and older) and their commuting characteristics is also available from the ACS. The ACS information provided estimates of the total share of workers who commute or work at home, the transportation modes used by commuters, and the mean travel times to work for commuters. **Table 4.6** presents commuting characteristics for workers in the various geographies of Lewis and Clark County. Similar statistics for the State of Montana and the United States are provided for comparison.

The table shows that nearly 90% of commuting workers in Lewis and Clark County rely on personal vehicles or carpools for transportation to work destinations. The share of workers in the City of Helena who drove alone to work is below that seen for the other geographic areas examined. Workers in the City of Helena were also more likely to walk to work or use other means to commute as compared to the other geographies reviewed. The share of commuting workers from the City of East Helena who drove alone to work was well above that of the other geographic areas considered. The table also suggests public transportation options are more limited for Montana residents as compared to elsewhere in the United States. Workers in Lewis and Clark County and the cities of Helena and East Helena also have notably shorter commute times than elsewhere in the state or nation.

Table 4.6: Mode of Transportation to Work (2008-2012)

Subject	City of Helena	City of East Helena	Lewis and Clark County	State of Montana	United States
Number of Workers 16 Years and Older	**14,838**	**1,023**	**32,319**	**470,377**	**139,893,632**
% Who Commuted to Work	*96.3%*	*97.7%*	*95.8%*	*93.5%*	*95.7%*
% Who Worked at Home	*3.7%*	*2.3%*	*4.2%*	*6.5%*	*4.3%*
Transportation Mode					
Drove alone, car, truck, van	*71.2%*	*86.3%*	*76.6%*	*75.0%*	*76.1%*
Carpooled	*12.2%*	*5.9%*	*11.9%*	*10.5%*	*10.0%*
Public Transportation (excluding taxicabs)	*0.5%*	*0.0%*	*0.5%*	*0.9%*	*5.0%*
Walked to Work	*7.5%*	*3.1%*	*4.1%*	*4.8%*	*2.8%*
Other means of commuting	*4.9%*	*2.3%*	*2.8%*	*2.5%*	*1.8%*
Mean Travel Time to Work	**13.5 min**	**15.8 min**	**17.7 min**	**18.0 min**	**25.4 min**

Source: US Bureau of the Census, American Community Survey (ACS) Profile Report: 2008-2012 (5-year estimates), available at http://mcdc1.missouri.edu/acsprofiles/acsprofilemenu.html

Similar ACS data indicates workers residing in Broadwater and Jefferson Counties have considerably longer commute times, 25.8 minutes and 20.4 minutes, respectively, than workers in the Helena area. This is likely due to the fact that Helena is the workplace for a considerable number of workers in these counties.

4.1.2 Housing Units and Households

The Census Bureau identifies a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements. A household includes all the persons who occupy a housing unit according to the Census Bureau definition. For purposes of allocating future residential growth, housing units are of interest since they are inputs to the travel demand model (TDM).

4.1.2.1 Number of Housing Units

Table 4.7 lists the number of housing units that existed within the various geographies of Lewis and Clark County during recent decennial censuses. Overall, the number of housing units in the County increased by nearly 16% during the 1980-2010 period with significant increases in the number of housing units recorded during each of the last two decades in the County. This trend is similar for the City of Helena which showed an 11.6% increase in housing units between 1980 and 2010.

Table 4.7: Number of Housing Units (1980-2010)

Area	1980	1990	2000	2010
Lewis and Clark County				
Population	*43,039*	*47,495*	*55,716*	*63,395*
Housing Units	*18,571*	*21,412*	*25,672*	*30,180*
Net Change	--	*2,841*	*4,260*	*4,508*
Population per Housing Unit	**2.32**	**2.22**	**2.17**	**2.10**
City of Helena				
Population	*23,938*	*24,609*	*25,780*	*28,190*
Housing Units	*10,241*	*11,067*	*12,133*	*13,457*
Net Change	--	*826*	*1,066*	*1,324*
Population per Housing Unit	**2.34**	**2.22**	**2.12**	**2.09**
City of East Helena				
Population	*1,647*	*1,538*	*1,642*	*1,984*
Housing Units	*659*	*644*	*728*	*916*
Net Change	--	*-15*	*84*	*188*
Population per Housing Unit	**2.50**	**2.39**	**2.26**	**2.17**
Unincorporated Areas of the County				
Population	*17,454*	*21,348*	*28,294*	*33,221*
Housing Units	*7,671*	*9,701*	*12,811*	*15,807*
Net Change	--	*2,030*	*3,110*	*2,996*
Population per Housing Unit	**2.28**	**2.20**	**2.21**	**2.10**

Source: US Bureau of the Census, Census of the Population

Several interesting findings are apparent from the housing unit data presented in **Table 4.7**:

- The number of housing units in the County increased by nearly 8,800 over the last 20 years with 27% of the housing units added within the City of Helena and 3% added in the City of East Helena.
- 70% of the new housing units over the last 20 years were built in unincorporated areas of Lewis and Clark County.
- In total, there were 4,508 more housing units in the County in 2010 than there were in 2000 with 29% of these housing units being added within the City of Helena and 4% being added in the City of East Helena.
- Of the 4,508 housing units added between 2000 and 2010 in the County, 2,996 units were added within unincorporated areas.
- In 2010, 47.6% of the County's housing units were located in the Cities of Helena and East Helena and 52.4% of the housing units occurred on unincorporated lands within the County.
- During the 2000-2010 period, the number of housing units in unincorporated areas of the county increased at an average rate of 2.33% per year while the number of housing units in the City of Helena increased by 1.09% per year.

Changes in the number of housing units within Lewis and Clark County CDPs surrounding Helena during the last decade were also examined. This review showed that 45% of all the new housing units added in the County during the 2000-2010 period were located in the five CDPs adjoining the City of Helena and City of East Helena. The increase in housing units in these CDPs accounted for two-thirds of all housing units added within unincorporated areas of the County between 2000 and 2010.

4.1.2.2 Population Per Housing Unit

The data in **Table 4.7** shows that the population per housing unit decreased for all geographies over the 1980-2010 period. The population per housing unit in Lewis and Clark County and the City of Helena was similar at 2.10 and 2.09 persons per housing unit, respectively, at the time of the 2010 Census. The occupancy rate for City of East Helena was slightly higher at 2.17 persons per housing unit in 2010. For comparison, the population per housing unit for the State of Montana was 2.04 according to the 2010 Census.

Because not all housing units are occupied, it is interesting to consider the number of residents per occupied housing unit. At the time of the 2010 Census, more than 88% of the housing units in Lewis and Clark County were occupied and 95% of those in the City of Helena were occupied. If only occupied housing units are considered, the resulting population per housing unit rates are 2.37 people per unit in the County and 2.21 people per unit in the City of Helena. The population per occupied housing unit for the State of Montana was 2.41 based on data in the 2010 Census.

Data for the five CDPs surrounding Helena showed notably higher housing unit occupancy rates. The combined occupancy rate for housing units in 1990 was 2.77 persons per housing unit. By the time of the 2010 Census, this rate had decreased to 2.51 persons per housing unit.

4.1.3 Employment and Income Trends

Lewis and Clark County is Montana's sixth most populous county, while Helena, the state capitol and county seat, is the state's sixth largest city. The Cities of Helena and East Helena accounted for 48% of Lewis and Clark County's total population. Helena is known for its record of economic stability, owing in large part to government employment. Helena is also regarded as a trading and transportation hub due to its central location in Montana. Carroll College and the University of Montana-Helena College of Technology are located in Helena and have combined annual enrollments approaching 3,000 students.

4.1.3.1 Historic Employment in Lewis and Clark County

Employment by industry for Lewis and Clark County for milestone years between 1980 and 2011 is represented in **Table 4.8**. The most recent available data shows that total full and part-time employment in the county was 46,340 in 2011 with more than 98% of the jobs being non-farm related employment. Total full and part-time employment in Lewis and Clark County in 2011 was 79.2% higher than that recorded in 1980.

Table 4.8: Employment Trends for Lewis and Clark County (1980–2011)

Employment	1980	1990	2000	2010	2011	% Change (1980 - 2011)
Total Full and Part-time Employment	**25,845**	**29,914**	**38,723**	**46,059**	**46,340**	**79.2%**
Farm Employment	*547*	*592*	*710*	*685*	*695*	*27.1%*
Non-Farm Employment	*25,298*	*29,322*	*38,013*	*45,374*	*45,645*	*80.4%*
Employment by Industry						
Agricultural Services & Forestry	*119*	*186*	*431*	*231*	*229*	*92.4%*
Mining	*108*	*184*	*87*	*299*	*362*	*235.2%*
Construction	*1,027*	*993*	*2,037*	*2,,247*	*2,184*	*112.7%*
Manufacturing	*1,286*	*1,075*	*1,229*	*867*	*893*	*-30.6%*
Transportation & Public Utilities	*1,985*	*1,270*	*1,701*	*1,082*	*1,034*	*-47.9%*
Wholesale Trade	*740*	*771*	*1,019*	*784*	*781*	*5.5%*
Retail Trade	*3,987*	*5,105*	*6,657*	*4,767*	*4,759*	*19.4%*
Finance, Insurance & Real Estate	*2,194*	*2,319*	*3,176*	*4,450*	*4,471*	*103.8%*
Services	*6,525*	*9,230*	*12,402*	*19,417*	*19,686*	*201.7%*
Federal & Civilian Government	*1,270*	*1,413*	*1,423*	*1,993*	*1,935*	*52.4%*
Military	*277*	*371*	*299*	*321*	*337*	*0.7%*
State & Local Government	*5,780*	*6,405*	*7,552*	*8,916*	*8,974*	*55.3%*

Source: US Department of Commerce Bureau of Economic Analysis – Table CA25 and Table CA25N.

The data in **Table 4.8** shows that between 1980 and 2011, almost all industry sectors in the county gained jobs with the most notable net increase in employment occurring in the services industry where the total number of jobs increased by 13,161 over the period. Other industry sectors showing sizable increases in employment since 1980 include: construction (net gain of 1,157 jobs); finance, insurance and real estate (net gain of 2,271 jobs); and state and local government (net gain of 3,194 jobs). The government and government enterprises sector accounted for approximately one-quarter of all full and part-time employment in the county in 2011. Declines in employment were seen only in the manufacturing and transportation and public utilities sectors. Combined, these sectors had about 1,350 fewer jobs in 2011 than in 1980.

4.1.3.2 Employment Trends by Industry

Table 4.9 presents data on the estimated number of civilian employees (age 16 years and older) and the industries in which they are employed in Lewis and Clark County, the City of Helena, and the City of East Helena. The data in the table, taken from 2008-2012 ACS profile for these geographies, also includes employment estimates by industry. As the table shows, the employed population in Lewis and Clark County totals about 32,618 and approximately half of the employed persons in the county reside in either the City of Helena or City of East Helena.

Table 4.9: Civilian Employment by Industry (2008-2012)

Industry	Lewis and Clark County		City of Helena		City of East Helena	
Agriculture, forestry, fishing, hunting, and mining	799	2.4%	146	1.0%	15	1.5%
Construction	2,272	7.0%	642	4.3%	59	5.8%
Manufacturing	852	2.6%	310	2.1%	30	2.9%
Wholesale Trade	469	1.4%	193	1.3%	18	1.8%
Retail Trade	3,229	9.9%	1,385	9.2%	175	17.1%
Transportation, warehousing, and public utilities	1,059	3.2%	259	1.7%	37	3.6%
Information	459	1.4%	303	2.0%	-	0.0%
Finance and Insurance, and real estate and rental and leasing	2,455	7.5%	904	6.0%	169	16.5%
Professional, scientific, management and administrative	3,521	10.8%	1,787	11.9%	99	9.7%
Education services, health care, and social assistance	6,733	20.6%	3,640	24.2%	110	10.8%
Arts, entertainment, and recreation, and accommodation, and food services	3,105	9.5%	1,692	11.3%	64	6.3%
Other services, except public administration	1,280	3.9%	533	3.5%	67	6.6%
Public administration	6,385	19.6%	3,236	21.5%	179	17.5%
Total Employed Population 16 year of age and older	**32,618**		**15,030**		**1,022**	

Source: US Bureau of the Census, American Community Survey (ACS) Profile Report: 2008-2012 (5-year estimates), available at http://mcdc1.missouri.edu/acsprofiles/acsprofilemenu.html

The employment by industry data from the 2008-2012 ACS for the various geographies of Lewis and Clark County generally supports the information presented earlier in **Table 4.8**. The majority of the employment in the County and City of Helena is associated with public administration (government), the service industries, the finance and real estate industry, and the retail trade and construction industries. The employment data in **Table 4.9** suggests that more than 46% of the County's employment occurs in the City of Helena and that about 3% of the employment occurs in the City of East Helena.

It is worth noting the difference in the total employed population for Lewis and Clark County presented in **Table 4.9** and the full and part-time employment total presented for the county in **Table 4.8**. The data in **Table 4.8** shows employment by industry in the county and does not consider where employees reside. **Table 4.9** provides estimates of the employment by industry for residents of Lewis and Clark County. With that in mind, it is evident there are a substantial number of jobs in the county being filled by persons living outside Lewis and Clark County. The county sees considerable numbers of residents from northern Jefferson County, Broadwater County and Powell County who commute to work in the Helena area each day.

The most recent Montana County Flier publication for Lewis and Clark County (February 2012) prepared by the Montana Department of Labor and Industry identifies the largest civilian employers in the County:

- St. Peter's Hospital (1,000+ employees);
- Blue Cross/Blue Shield (250-499 employees);
- Carroll College (250-499 employees);
- Shodair Hospital (250-499 employees); and
- Walmart (250-499 employees).

4.1.3.3 Employment Trends by Industry

Unemployment rates are represented in **Table 4.10** and are current as of April 2013. The data shows an unemployment rate for Lewis and Clark County lower than that for the State of Montana (4.2% versus 5.4%) and for the United States (6.5%). Corresponding unemployment information for the cities of Helena and East Helena is unavailable so information from the 2008-2012 ACS profile is presented. The ACS for the 2008-2012 period showed that the unemployment rates in the City of Helena and the City of East Helena (5.2% and 4.6%, respectively) were also lower than that seen for the State and nation.

Table 4.10: Employment Statistics (2013)

Area	Total Labor Force	Employed	Unemployed	Unemployment Rate
Lewis and Clark County	34,363	32,910	1453	4.2%
City of Helena*	15,894	15,030	832	5.2%
City of East Helena*	1,082	1,022	49	4.6%
State of Montana	506,422	478,968	27,454	5.4%
United States	154,408,000	144,423,000	9,984,000	6.5%

Source: MT Department of Labor and Industry, Research and Analysis Bureau – Labor Force Statistics, December 2013 (data is not seasonally adjusted) available at http://www.ourfactsyourfuture.org/cgi/databrowsing/?PAGEID=4&SUBID=205.
**US Bureau of the Census, American Community Survey (ACS) Profile Report: 2008-2012 (5-year estimates), available at http://mcdc1.missouri.edu/acsprofiles/acsprofilemenu.html*

Income Levels

Estimates of median household income and per capita income for Lewis and Clark County, the City of Helena, City of East Helena, and other geographies are available in the 2008-2012 ACS profile and shown in **Table 4.11**. The ACS shows estimated median household incomes for Lewis and Clark County and the City of Helena as $54,535 and $49,445, respectively. The estimated median household income level for the City of East Helena is $51,314. All of these median household income levels are above the median household income for the State of Montana ($45,456). In general, households within Lewis and Clark County earn about 20% more than what is earned by an average Montana household. Lewis and Clark County's median household income was about 103% of that estimated for the nation ($53,046). Per capita income levels in Lewis and Clark County and the City of Helena are similar to those of the nation but notably greater than those for Montana as a whole. The per capita income level in the City of East Helena is slightly less than that seen for the state.

Estimates of per capita personal income for 2012 are available from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA) for the nation, states, counties, and other selected geographies. Personal income is the income received by all persons from all sources. Per capita personal income is calculated as the total personal income of the residents of an area divided by the population of the area. BEA data for 2012 shows that Lewis and Clark County's estimated per capita personal income exceeds that for the state but is below that estimated for the nation.

Table 4.11: Income Levels (2008-2012)

Area	Median Household Income	Per Capita Income	2012 Per Capita Personal Income
Lewis and Clark County	$54,535	$27,861	$41,098
City of Helena	$49,445	$29,567	*No Data*
City of East Helena	$51,314	$24,668	*No Data*
State of Montana	$45,456	$25,002	$38,555
United States	$53,046	$28,051	$43,735

Sources: US Bureau of the Census, American Community Survey (ACS) Profile Report 2008-2012 Estimates.
U.S. Department of Commerce, Bureau of Economic Analysis (BEA) GDP and Personal Income Regional Data available at http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=5#.

4.1.3.4 Poverty Status

Table 4.12 presents poverty statistics for various geographies in Lewis and Clark County and comparable statistics for the State of Montana and the nation.

Table 4.12: Poverty Status (2008-2012)

Area	Persons Living in Poverty (%)	Persons Under 18 in Poverty (%)	Persons over 65 in Poverty (%)
Lewis and Clark County	9.7	10.6	5.4
City of Helena	12.8	11.3	6.3
City of East Helena	10.9	7.3	20.5
State of Montana	14.8	19.9	8.4
United States	14.9	20.8	9.4

Source: US Bureau of the Census, American Community Survey (ACS) Profile Report: 2008-2012 (5-year estimates), available at http://mcdc1.missouri.edu/acsprofiles/acsprofilemenu.html

According to the 2008-2012 ACS profile, the number of residents in Lewis and Clark County (including the cities of Helena and East Helena) living below the poverty line was considerably below that seen for the State (14.8%) and nation (14.9%). The ACS estimates show 9.7% and 12.8% of the individuals living in Lewis and Clark County and City of Helena, respectively, were living in poverty. About 11% of the residents in East Helena were estimated to be living below the poverty line. The same trends hold true when considering the share of persons living in poverty under the age of 18 years and over the age of 65.

Note the poverty statistics shown for the City of East Helena are considered "statistically suspect" due to their margins of error according the ACS profile.

4.2 Existing Land Use and Development

4.2.1 Existing Land Use and Development

Land use plays a critical role in shaping transportation networks. Land use decisions affect the transportation system and can increase viable options for people to access work and recreation sites, goods, services, and other resources in the community. In turn, the existing and future transportation system may be impacted by the location, type, and design of land use developments through changes in travel demands, travel mode choices, and travel patterns.

4.2.1.1 City of Helena

The City of Helena was initially developed around the Last Chance Gulch area, the site of a historic gold strike which fueled population and economic growth. The arrival of the railroad and designation of Helena as the territorial capitol (and later the state capitol) further stimulated growth and development in the city. The city has served as the center of state government since 1894 so government offices occupy a considerable amount of space throughout the City, The Capitol Complex, located east of Montana Avenue between Broadway and 6th Avenue, is the site of many state government agencies.

The Last Chance Gulch area initially developed as the City's retail and business center and Helena's "historic downtown" continues to house numerous business establishments, restaurants, galleries, specialty stores, financial institutions, and significant amounts of professional office space. Commercial development is no longer focused on the downtown area and many retail functions have shifted to outlying shopping centers and commercial areas, like those along Montana Avenue, Custer Avenue, Washington Street, Lyndale/Euclid Avenues, and the 11th Avenue and Prospect Avenue corridor. The construction of the I-15/Custer Avenue interchange has been instrumental in helping to spur commercial development in the North Montana Avenue, Custer Avenue, and Washington Street area. Areas like Rodney Street between 6th Avenue and Broadway and the historic depot area (Sixth Ward) continue to evolve into small commercial centers within the heart of the city.

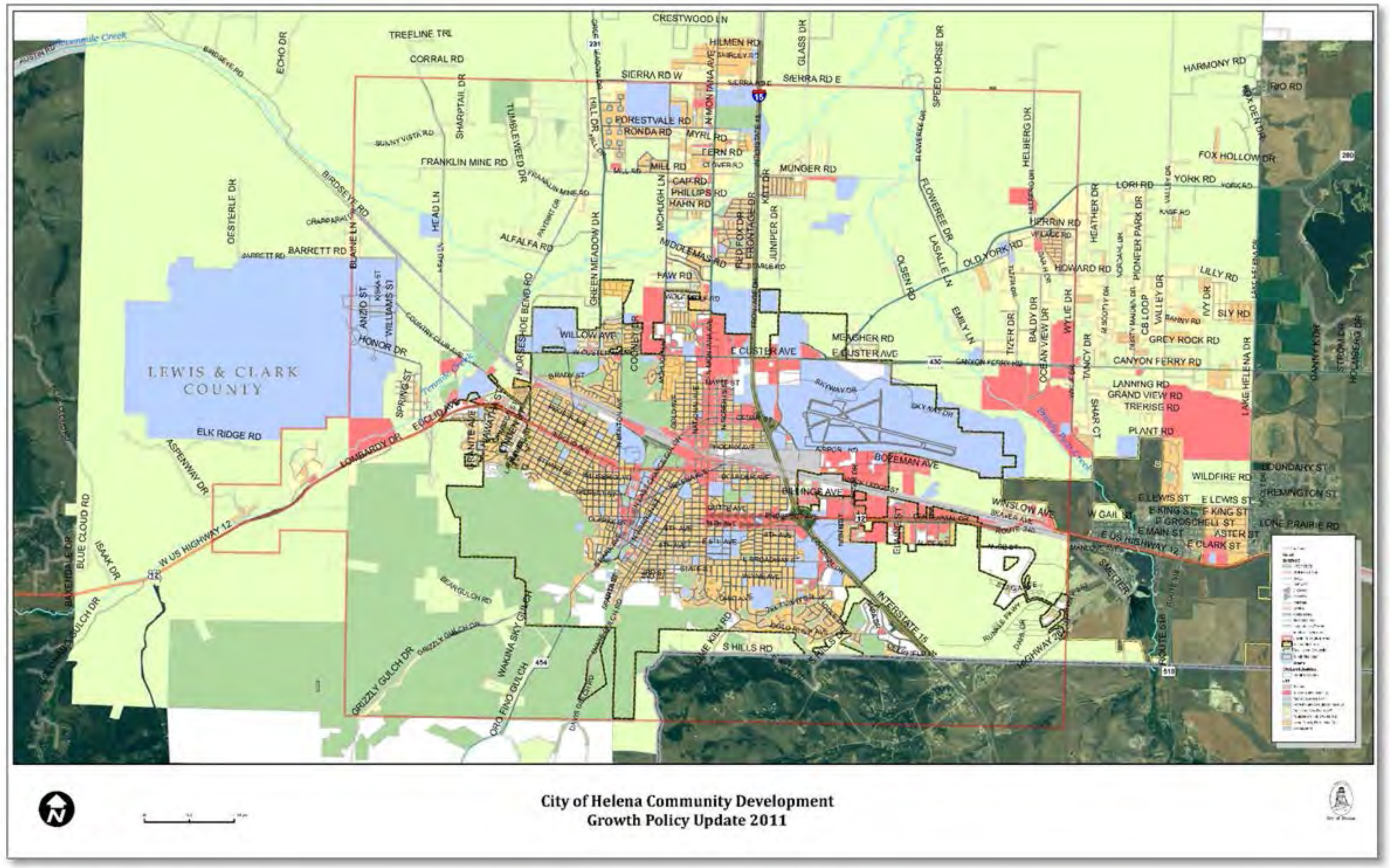
Residential development has most recently occurred on Helena's southeast and north sides, with a mixture of single-family homes, multi-family apartments, condominiums, and townhouses. Helena's west side contains developed properties interspersed with vacant lots. It has grown more slowly, but is expected to expand as existing residential development and vacant properties are annexed.

Industrial uses were historically centered along the railroad and such development is generally concentrated south of the railroad between Montana Avenue and I-15. Industrial areas also exist in the vicinity of the airport and east of I-15 and between US Highway 12 East and the airport.

Fort Harrison and the Veterans Hospital, located west of Helena, represent the largest single area within the public use/government category, in addition to the Helena Regional Airport property at the eastern edge of the city. Both Fort Harrison and the Airport area have experienced significant facility expansions within the last decade.

The area around St. Peter's Hospital located in the southeastern part of Helena has seen robust development over the last 20 years. This portion of the community houses numerous medical office buildings and clinics and the Shodair Children's Hospital.

Figure 4.1, taken from the *City of Helena 2011 Growth Policy*, illustrates current land uses in the Helena area.



Source: City of Helena Growth Policy Update 2011

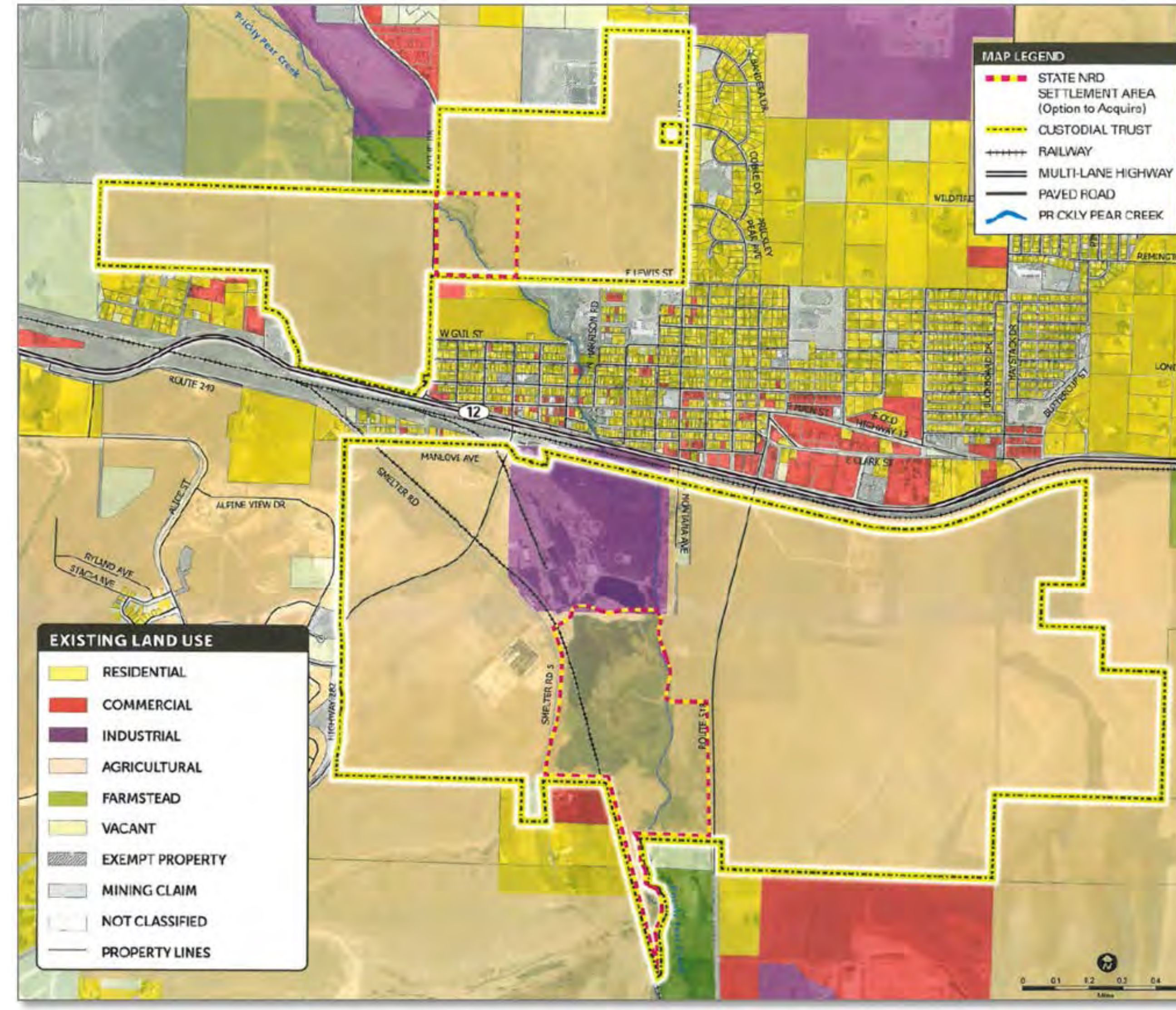
Figure 4.1: Existing Land Use - City of Helena

4.2.1.2 City of East Helena

The City of East Helena was built on a grid system of streets with commercial areas along Main Street (Old U.S. Highway 12) and a large industrial area comprised of the former Asarco smelter and the railroad. U.S. Highway 12 now divides the industrial area and railroad from the remainder of the community. The primary commercial area in the City exists along east Main Street and East Clark Street. Industrial development is primarily located on the south side of U.S. Highway 12; the existing industrial facilities there consisting mainly of the former ASARCO smelter and American Chemet's operating plant.

Residential uses dominate the area north of Main Street although an area of residential use occurs between Main Street and US Highway 12. Higher density residential areas are concentrated outside the eastern city limits. Smaller high density residential areas are scattered within the city boundaries. Extensive subdivision and rural residential development has occurred in county areas along the northeastern and southwestern perimeters of the city.

Figure 4.2 illustrates current land uses in the East Helena area.



Source: Montana Environmental Trust Group by CTA Architects (2012)

Figure 4.2: Existing Land Use – City of East Helena

4.2.1.3 County Lands in LRTP Study Area

County lands surrounding the cities of Helena and East Helena contain numerous tracts of land of 1 to 5 acres that include agricultural uses, single unit residential uses, non-residential mixed uses, and may also include vacant land and on large tracts of land over 5 acres. Although agriculture is still the predominant land use in the Helena Valley adjoining the cities of Helena and East Helena, sizable areas of agricultural lands have been converted to residential uses during the last decade.

Census data shows that four of the five CDPs surrounding Helena showed double digit growth between 2000 and 2010. Growth was most notable in the Helena Valley Northwest and Helena Valley Northeast CDPs where total populations grew by 67% and 41%, respectively, between 2000 and 2010.

4.2.2 Recent Development Trends and Future Growth Areas

The City of Helena and the surrounding Helena Valley have seen considerable growth and development over the last several decades. **Figure 4.3**, found in the City of Helena 2011 Growth Policy, shows historical changes to the city limits since 1960. It is readily apparent from a review of the figure that the City has grown substantially since 1960. The 2010 Census shows the incorporated area of the City encompassed about 16.35 square miles of land and the City's land area grew by 2.34 square miles between 2000 and 2010. As the figure shows, the city has grown around most of its periphery, most notably to the west, north, and to the east.

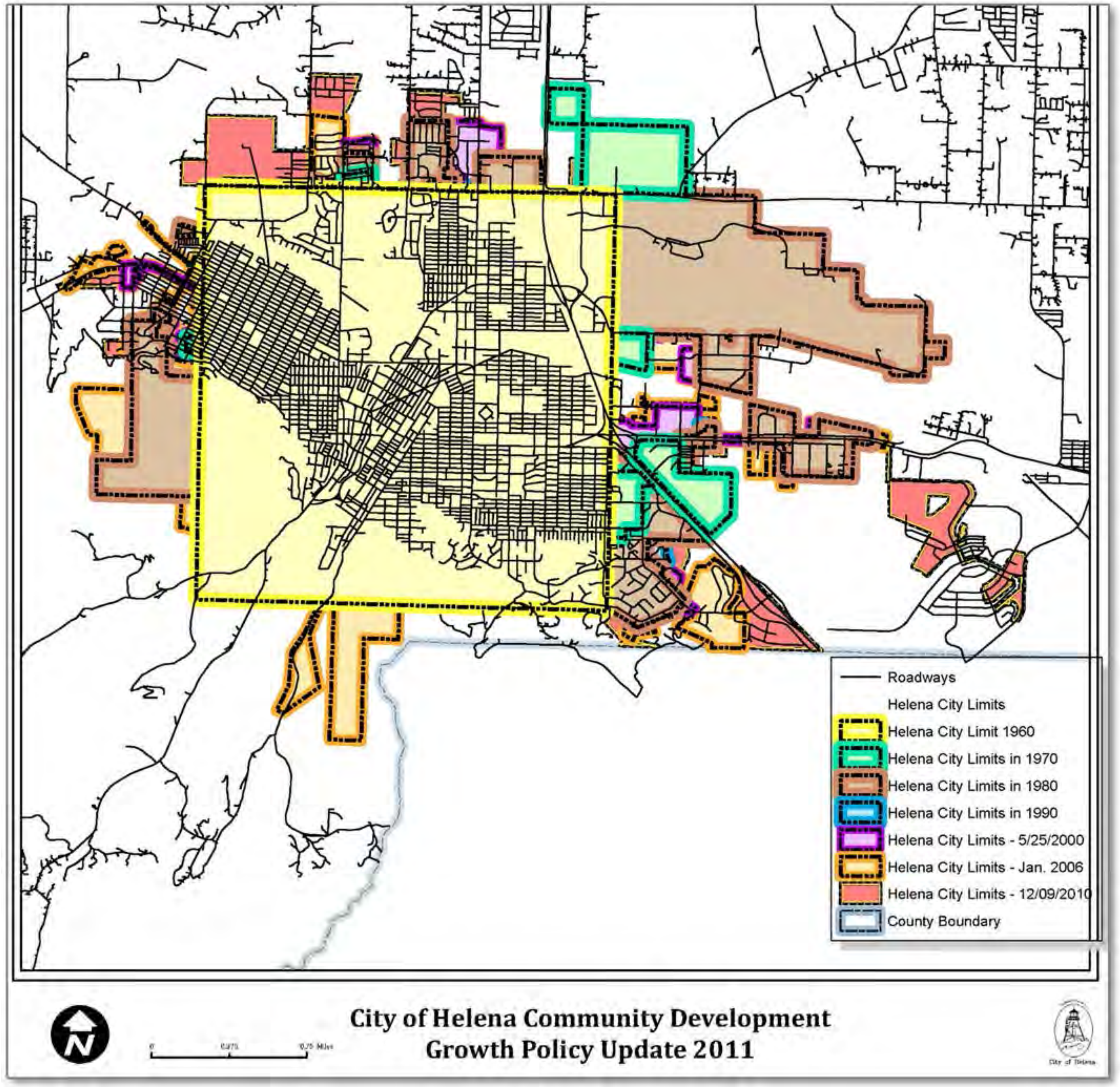


Figure 4.3: Changes to Helena City Limits Since 1960

Northern Jefferson County, particularly the South Hills and Montana City areas, have seen substantial growth and residential development. This has continued the development trend seen in the southeast part of the City of Helena.

4.2.2.1 City of Helena Future Growth Areas

Chapter 10 of the *City of Helena 2011 Growth Policy* addresses land use and includes a discussion about what land use changes may be seen in the future. The discussion addresses lands adjoining the City and explores the potential for annexations and further urban development. The Growth Policy is clear that future urban development depends greatly on the availability of existing infrastructure and the ability to efficiently and cost-effectively expand public infrastructure into new areas. Potential future urban development areas are discussed below.

West Side. The City's Growth Policy indicates the unincorporated neighborhoods of Helena's west side has considerable potential for urban development if City infrastructure is extended into this area. Lands in the Country Club Avenue/Joslyn Street/Highway 12 area are viewed as underutilized land and could absorb more light commercial and residential uses. There is a potential for annexation in the Ten Mile Creek/Country Club Avenue/Williams Street area and further extension of City services, including the installation of improvements to key area roads. These improvements could facilitate the conversion of agricultural lands and vacant/underdeveloped tracts to retail, office, and urban density residential uses.

Northwest Side. The area north of the City, generally located between Green Meadow Drive and I-15, contains a small number of agricultural lands, and is primarily relatively high density residential with commercial uses located primarily near Montana Avenue and Custer Avenue. The area has seen a number of annexations in recent years and this trend is expected to continue in the foreseeable future. The region between Montana Avenue and Interstate-15 contains large areas of undeveloped land, Resurrection Cemetery, and the Helena Valley Irrigation District Canal. With annexation and the extension of City water, sewer, and Sanders Street northward, this area could accommodate commercial/office or light industrial, particularly adjacent to I-15 and the irrigation canal, and moderate to high density residential development located throughout the region.

Northeast Side. The County area northeast of the City, generally located between Interstate 15 and Prickly Pear Creek, contains agricultural lands, primarily low density residential development with some higher density residential development. Commercial uses are located primarily near Custer Avenue and Washington Street. This area is likely to continue to see additional commercial growth. The area east of I-15 and north of Custer Avenue could accommodate higher density development with a mixture of low to moderate intensity office/commercial uses and moderate to high density residential uses if annexed and City services are extended and the transportation network is expanded with collector and arterial streets. The area between the airport and Prickly Pear Creek north of US Highway 12 has the potential for development with higher densities; and could accommodate a mixture of industrial, light industrial/manufacturing, commercial, and office uses.

East Side. The east side area is located east of Saddle Drive, extends across I-15, and is bounded by Custer Avenue/Canyon Ferry Road on the north and the Jefferson County line on the south. The Growth Policy indicates the area south of the Helena Airport and north of Highway 12 has high value for commercial/light manufacturing and industrial uses because of access to rail, highway, and air transportation. There are also some large tracts of land under single ownerships that are prime development areas. The southeastern portion of this area is in the process of being developed as a planned community. This new development (Mountain View Meadows Subdivision) will adjoin the East Helena city limits. A portion of this area, Crossroads at Mountain View Meadows, currently has preliminary plat approval and zoning for high to moderate intensity commercial and high to moderate density residential uses. The area near the South Helena Interchange is largely undeveloped but has potential for predominantly commercial/office use with compatible industrial uses and high density residential. This large area could accommodate core commercial development that could serve a wide area.

South Side. The area located outside the southern City boundary contains some single-family residential uses. Several open space acquisitions have occurred in recent years in this area that may limit residential development in the area. Expansion and further development in the health care district around St. Peters Hospital is viewed as desirable in the Growth Policy.

Figure 4.4 presents a future land use map for the Helena area taken from the *City of Helena 2011 Growth Policy.*

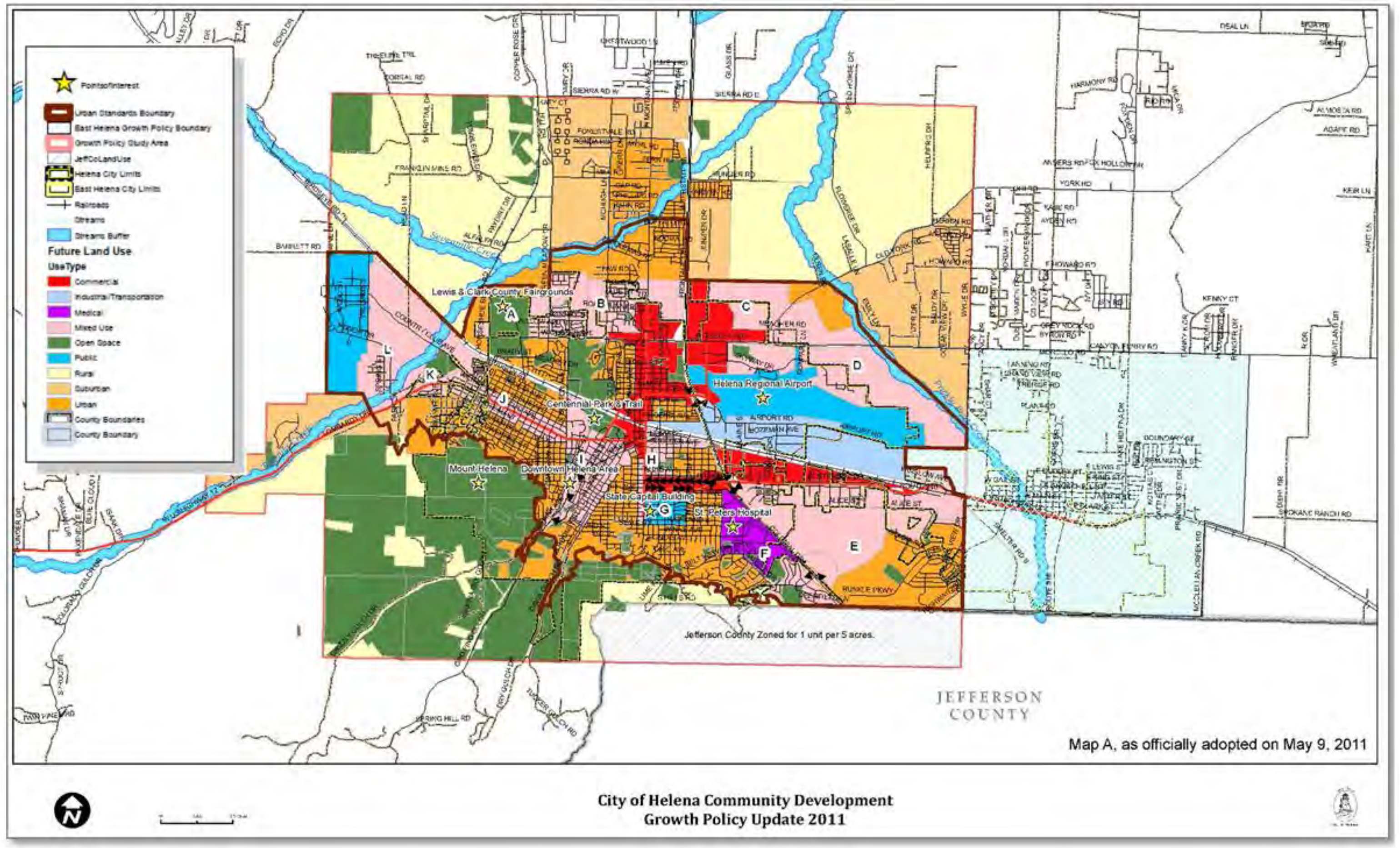


Figure 4.4: Future Land Use Map for the Helena Area

4.2.2.2 Helena Valley Growth Areas

Much of the growth seen in the Helena area in recent decades has occurred in the Helena Valley, particularly on county lands adjoining the Cities of Helena and East Helena and portions of the valley. Census statistics show that between 2000 and 2010, the Helena Valley population grew by 4,600 people, an average annual growth rate of 1.9%. The majority of the Helena Valley is very sparsely populated. The population projections show a range of new growth. According to the projections, the Helena Valley could see anywhere between 7,000 to more than 18,000 new residents in the next 20 years. In order to accommodate the projected population growth that will occur, somewhere between 2,800 and 7,300 new housing units will need to be built in the Helena Valley over the next 20 years.

Lewis and Clark County is currently working to update the Growth Policy for the Helena Valley. The update focuses on five important issues to the Valley—water availability, waste water management, roads, fire protection and flooding. It is expected the Growth Policy Update will help identify areas within the Helena Valley where growth and development pressure will be seen and help provide strategies to cope with new development.

4.2.2.3 City of East Helena Future Growth Areas

Very little vacant platted land exists within the City of East Helena; however, significant acreage for future development within the City exists due to the 2009 annexation of more than 1,600 acres of undeveloped agricultural land formerly owned by Asarco. These former Asarco lands, administered by the Montana Environmental Trust Group, have been the subject of discussions about potential redevelopment opportunities.

In May 2011, the EPA hosted a community planning charrette and open house to develop a vision for future redevelopment in East Helena. The charrette, a day-long planning workshop, provided a venue for community representatives and other key stakeholders to develop a preliminary vision, goals and priorities that can help shape and coordinate remediation, local planning and development at the East Helena Superfund Site. Three key areas were identified for redevelopment:

- **East Fields/Southeast Fields** - Establish an industrial park as a catalyst for economic development in the area located south of US Highway 12 and east of Secondary Route 518. Establish a rail spur to create a rail-accessible industrial park and create an industrial corridor that connects to new industrial uses in Jefferson County, immediately south.
- **Lamping Field** - Establish a commercial, retail, office district in the southern portion of the Lamping Fields that takes advantage of frontage along US Highway 12 and Wylie Drive.
- **Dartman Field** - Expand public, institutional and residential uses on this parcel located on the north edge of the city. Development should integrate new residential uses (single-family, multi-family and senior-friendly housing) with public and institutional uses.

In October 2012, the Montana Environmental Trust Group unveiled several conceptual plans for potential future redevelopment of the former Asarco properties in East Helena. The conceptual plans further explored the potential for commercial and light industrial development in the East Fields and Southeast Fields. The conceptual plans highlighted Lamping Field as a site for commercial and light industrial developments. Dartman Field is viewed as a suitable area for new residential uses and school district expansion.

4.2.3 Population, Housing, and Employment Projections

4.2.3.1 Lewis and Clark County Population Projections

Projections are estimates of the population for future dates. They illustrate reasonable estimates of future population based on assumptions about current or expected demographic trends. Population projections (along with forecasts of the number of future housing units or households and employment conditions) are used to help predict future travel patterns and assess the performance of the transportation system.

Several sources of population projections for Lewis and Clark County were examined to help understand potential growth within the County. These projections are briefly discussed in the following paragraphs and summarized in **Table 4.13**.

Table 4.13: Population Projections for Lewis and Clark County

Projection Source	2010 Census	2015	2020	2025	2030	2035
eREMI	63,395	67,068	70,208	72,772	74,495	75,419
Helena Public Schools Demographic Study	63,395	65,450	67,930	--	--	75,348*
Woods & Poole Economics, Inc.	**63,395**	**67,164**	**70,697**	**74,090**	**77,239**	**80,106**
City of Helena 2011 Growth Policy	63,395	--	69,187	--	80,591	--
MBAC CEDS 2014-2019	63,395	67,982	72,768	--	--	89,489**

**Projected from 2020 to 2035 using same rate (0.69% per year) as for 2010 to 2020 projections in Helena Public Schools Demographic Study.*
***Projected from 2020 to 2035 using same rate (1.4% per year) as for MBAC CEDS 2014-2019.*

The Lewis and Clark County Growth Policy (2004) projected the County's population to be 63,316 by the year 2010 but did not project populations for other future years.

The City of Helena 2011 Growth Policy includes a chapter devoted to historical population growth and the identification of population trends for Helena and the surrounding area to the year 2030. The City's Growth Policy estimated the County's population to be 61,912 in 2010 and projected the County's population to reach 69,187 by 2020 and 80,591 by 2030. Population data from the 2010 Census was not available at the time the growth policy was produced.

County level population projections are available from Montana Department of Commerce Census & Economic Information Center (CEIC). The CEIC projections were developed by Regional Economic Models, Inc. (REMI) and provide complete annual demographic forecasts through 2060 for the State of Montana and each county. The eREMI model projects Lewis and Clark County's population to be 75,419 by the year 2035. This represents an overall increase in population of approximately 19% over the 2010 population and a growth rate in population of about 0.70% per year.

Woods & Poole Economics, Inc. produces long-term economic and demographic projections for every county in the U.S. The Woods & Poole's database for Lewis and Clark County includes population projections through 2040 and projects the county's population to be 80,106 by 2035. This represents an overall increase in population of approximately 26% over the 2010 population at a corresponding growth rate of about 0.94% per year. Overall, the projection for Lewis and Clark County in 2035 is 7% higher than the comparable eREMI projection.

The Helena Public Schools Demographic Study prepared in April 2013 contains a detailed demographic analysis to help identify future numbers of students within the district and help anticipate school needs by 2020. The study projects the County's population to be 67,930 in 2020 based on a growth rate of 0.69% per year. If this rate is continued into the future, it results in a County population of 75,348 by 2035. This projection is comparable to the eREMI projection for the County.

The Montana Business Assistance Connection (MBAC) recently released the *Tri-County Region Comprehensive Economic Development Strategy 2014-2019 (CEDS).* The CEDS examines current and anticipated socio-economic conditions within the MBAC region (Lewis and Clark, Broadwater and Meagher Counties) and includes a detailed review of conditions within each county. The CEDS projects populations within the MBAC region to grow at a rate of about 1.4% per year. The document projects Lewis and Clark County's population to be 72,768 by 2020. If this rate is maintained into the future, the County's population would be 89,489 by 2035. This projection is 11.7% higher than the Woods & Poole projection for 2035 and 18.7% higher than the eREMI projection for the County in 2035.

For the purposes of this LRTP, the Woods & Poole Economics, Inc. projections were selected as the preferred set of population projections for Lewis and Clark County. The projections are less conservative than the eREMI or Helena Public Schools projections and optimistically suggest the Helena area will continue to grow at a higher rate than expected for the state as a whole. The Woods & Poole projections also represent a "middle-of-the-road" set of projections when considering the high and low ranges of future population forecasts for the county. The Technical Working Group (TWG) confirmed the appropriateness of the Woods and Poole year 2035 population forecast as the planning horizon population control total.

4.2.3.2 Population Projections for Incorporated Areas

Population projections for the City of Helena and the City of East Helena are not available from eREMI or Woods & Poole Economics, so the principal sources of projections come from local planning documents.

The City of Helena 2011 Growth Policy analyzed long-term historical population data and concluded an annual growth rate of 1.3% was reasonable for projecting the City of Helena's population. The Growth Policy projected the City's population to be 34,510 by 2020 and 39,268 in 2030 based on trends evident at the time the document was prepared.

The City of East Helena's Growth Policy (Draft Update March 2014) also examined historic population trends in the community and projected populations for the City to the year 2030. The East Helena Growth Policy considered various growth scenarios and showed future populations of up to 2,442 by the 2020 and 3,006 by 2030.

4.2.3.3 LRTP Study Area Population Projections

The share of the population living within the Greater Helena Area LRTP Study Area in 2010 was estimated using 2010 Census data at the census block level. GIS analysis was used to identify the total population within all census blocks entirely within or crossed by the established study area boundary. This analysis established the Study Area population to be 58,750 residents in 2010.

The population of the Study Area accounted for 92.7% of the County's total population in 2010. The future population of the Study Area was determined by holding this percentage constant and applying it to the projected Woods & Poole forecasts for Lewis and Clark County for target years through 2035. As **Table 4.14** shows, the population of the Study Area is projected to grow by more than 15,600 residents by 2035 resulting in a total population of 74,900 by 2035. The projections recognize that most of the County's population will continue to be located in the Helena area.

Table 4.14: Population Projections for the LRTP Study Area

Year	LRTP Study Area Population
2010 Baseline	58,750*
2035	74,237**

** 2010 LRTP Study Area population calculated through GIS analysis to identify populations of census blocks contained in or crossed by Study Area boundary.*
***Future population for Study Area projected based on Woods & Poole projection for Lewis and Clark County for target year and assumption the LRTP Study Area's share of total county population will remain constant at 92.7% of total county population.*

4.2.3.4 Housing Unit Projections

The number of housing units is a key component in the traffic model. Housing units distribute people throughout the network to given locations. They represent the population and act as a hub for traffic within the network. Having a realistic value for number of people per housing unit helps distribute the traffic more accurately. However, it is often quite difficult to precisely represent the population through housing units. This is in part because the number of people per housing units varies based on location and can change at any time.

According to the 2010 Census, Lewis and Clark County had 63,395 residents distributed among 30,180 housing units. The City of Helena had 13,457 housing units in 2010 and the City of East Helena contained 916 housing units. The five CDPs surrounding the cities of Helena and East Helena contained 9,649 housing units.

Based on a GIS analysis of census blocks entirely within or crossed by the study area boundary, it was determined the Study Area had a 2010 population of 58,750 residents and contained 25,869 housing units resulting in an occupancy rate of 2.27 persons per housing unit. The Study Area contained almost than 93% of the population and 86% of the housing units that existed within the County in 2010. Sixty percent of the housing units within the Study Area in 2010 were located within the Cities of Helena and East Helena.

If this occupancy rate is held constant and applied to projected future populations, the LRTP Study Area would have 32,688 housing units by 2035. This represents an increase of 6,819 housing units over the number of housing units established for 2010. In practice, occupancy rates are ever changing and are likely to not remain constant over the planning horizon of the LRTP.

Table 4.15 shows population and housing unit projections for Lewis and Clark County and the LRTP Study Area to the year 2035. The allocation of future housing units within the Study Area is discussed in **Section 4.3** of this chapter.

Table 4.15: Housing Unit Projections

Area	2010	2035	Net Change (2010 - 2035)
Lewis and Clark County			
Population	63,395	80,106	16,711
Housing Units*	30,180	38,135	7,955
Population	58,750	74,237	15,487
Housing Units**	25,869	32,688	6,819

**Based on 2.10 persons per housing unit in County*
***Based on 2.27 persons per housing unit in LRTP Study Area*

As **Table 4.15** shows, 7,955 additional housing units are anticipated within the County by 2035 with the majority (6,819 housing units) being located within the LRTP Study Area.

4.2.3.5 Lewis and Clark County Employment Projections

Employment numbers are used in the traffic model to help distribute vehicle traffic as accurately as possible within the street and road network. Places with high levels of employment will tend to generate high levels of vehicle traffic. The traffic generated is based in part on the employment type: either retail or non-retail jobs.

BEA full and part-time employment data estimates the total employment for Lewis and Clark County at 45,374. The BEA does not provide long-term employment projections at the county level; however, such projections are available from Woods & Poole Economics, Inc. The Woods & Poole's database for Lewis and Clark County provides projections of total employment for the county through 2040. The Woods & Poole projections show that total non-farm employment in the county may reach 62,531 by 2035 - 17,157 more jobs than seen in 2010 levels. This represents an overall increase of 37.8% increase in non-farm employment over the 2010-2035 period and an employment growth rate of 1.29% per year.

Since BEA employment data from 1970 through 2011 shows higher rates of growth for total employment in the county, future employment was also projected using the annual average percent change in employment (1.65%) seen between 2000 and 2011. Using this growth rate, total non-farm employment in the county would increase to 68,242 by 2035. This represents an increase of 22,868 jobs within Lewis and Clark County over the 2010 to 2035 period.

Table 4.16 shows total non-farm employment projections for the County to 2035 and the projected numbers of retail and non-retail jobs.

Table 4.16: Non-Farm Employment Projections to 2035 for Lewis and Clark County

Projection Method	2010	2035	Net Change (2010 - 2035)
Woods & Poole Economic Projections	45,374*	62,531**	17,157
Projected at 1.65% per year (2000 – 2011)	45,374*	68,242***	22,868

**Based on Total Non-Farm employment from US Department of Commerce Bureau of Economic Analysis – Table CA25 and Table CA25N.*
***Woods & Poole Economics, Inc., Lewis and Clark County. Montana, 2014 Data.*
****Projected based on 1.65% per year growth.*

Through consultation with planning staff and/or representatives of the City of Helena, City of East Helena, and Lewis and Clark County, the Woods & Poole employment forecast was selected as the preferred employment forecast for the LRTP. The Woods and Poole forecast represents a slightly more conservative view of future employment than suggested by the annual employment growth rate seen between 1980 and 2011 in the County. However, the projections suggest Lewis and Clark County will continue to see notable job growth over the foreseeable future. The TWG confirmed the appropriateness of the Woods and Poole employment forecasts.

4.2.3.6 LRTP Study Area Employment Projections

Within the LRTP Study Area, the MDT traffic model showed that approximately 95.4 percent of employment within Lewis and Clark County is located within the study area. Total employment within the model consists of 21.6 percent retail and 78.4 percent non-retail jobs.

Future employment within the LRTP Study Area was estimated considering the Woods and Pool projections for the county shown in **Table 4.16**. The proportion of jobs in the LRTP Study Area versus the county was held constant over the projection period. Likewise, the same distribution of job types (21.6% retail jobs and 78.4% non-retail jobs) was held constant through 2035. This methodology resulted in a 2035 projection of 59,655 total jobs within the study area (12,886 retail jobs and 46,768 non-retail jobs) using the Woods & Poole data. **Table 4.17** presents employment projections for the LRTP Study Area to the year 2035.

Table 4.17: Employment Projections to 2035 for the LRTP Study Area

Employment Category	2010	2035	Net Change (2010 - 2035)
Total Nonfarm Employment	**43,287**	**59,655***	**16,368**
Retail Employment	*9,351*	*12,886***	*3,536*
Non-Retail Employment	*33,936*	*46,768***	*12,832*

**Estimated based on 95.4% of projected employment occurring within the study area.*
***Total employment projected to consist of 21.6% retail and 78.4% non-retail.*

4.3 Allocation of Future Growth

Modeling of future travel patterns out to the year 2035 planning horizon using MDT's traffic model required identification of future socioeconomic characteristics within each census tract and census block. County population and employment projections were translated into predictions of increases in housing and employment within Lewis and Clark County and the Greater Helena Area LRTP Study Area.

To accomplish this task, an initial allocation of future housing and employment growth within the Study Area was made based on a review of existing land use maps for the City of Helena and surrounding county area, City and County growth policies, and other relevant planning documents. This review helped identify where residential, commercial and industrial development has occurred in the Helena area and provided information about where future residential and commercial growth might occur in the future. For example, the *City of Helena 2011 Growth Policy* includes several exhibits illustrating past annexation patterns, subdivisions, vacant lands, and future land use maps. The initial allocation of future housing units and employment attempted to reflect known patterns of growth and potential new growth areas within the Study Area.

After the initial assignment of housing and employment through the year 2035 was made, planning staff and/or representatives of the City of Helena, Lewis and Clark County, and the Montana Department of Transportation were engaged on June 3, 2014 to discuss the distribution of future housing and employment within the Helena area. This coordination enabled local government staff to consider and review the growth assignments based on their knowledge of recent land use trends, land availability and development limitations, land use regulations, planned public improvements, and known development proposals.

Figure 4.5 shows where future housing units are expected to be developed by the year 2035. As discussed previously, 6,819 new housing units were allocated within the Study Area. Similarly, **Figures 4.6** and **4.7** show where the projected increases in retail and non-retail employment are anticipated through the year 2035, respectively. Within the LRTP Study Area, 3,536 retail and 12,832 non-retail jobs were allocated. The allocation of future retail and non-retail jobs was based on existing trends and on the Woods & Poole employment forecast for the LRTP Study Area.

4.4 Projected Roadway Volumes and Capacity

Projected traffic volumes were estimated using the travel demand model. A comparison of the existing and projected conditions models were made to determine the percent change in traffic volume. The percent change was then applied to known existing AADT count sites to reflect projected daily traffic volumes. Presented in **Figures 4.8** and **4.9** are the resulting projected daily traffic volumes within the study area. Similarly, **Figures 4.10** and **4.11** present the projected v/c ratios. It must be noted that the volumes shown in **Figures 4.8** and **4.9** and the v/c ratios shown in **Figures 4.10** and **4.11** are based on the "existing plus committed" roadway network. In other words, these are the projected volumes and projected v/c ratios if no changes to the transportation system, other than those currently committed to, are implemented.

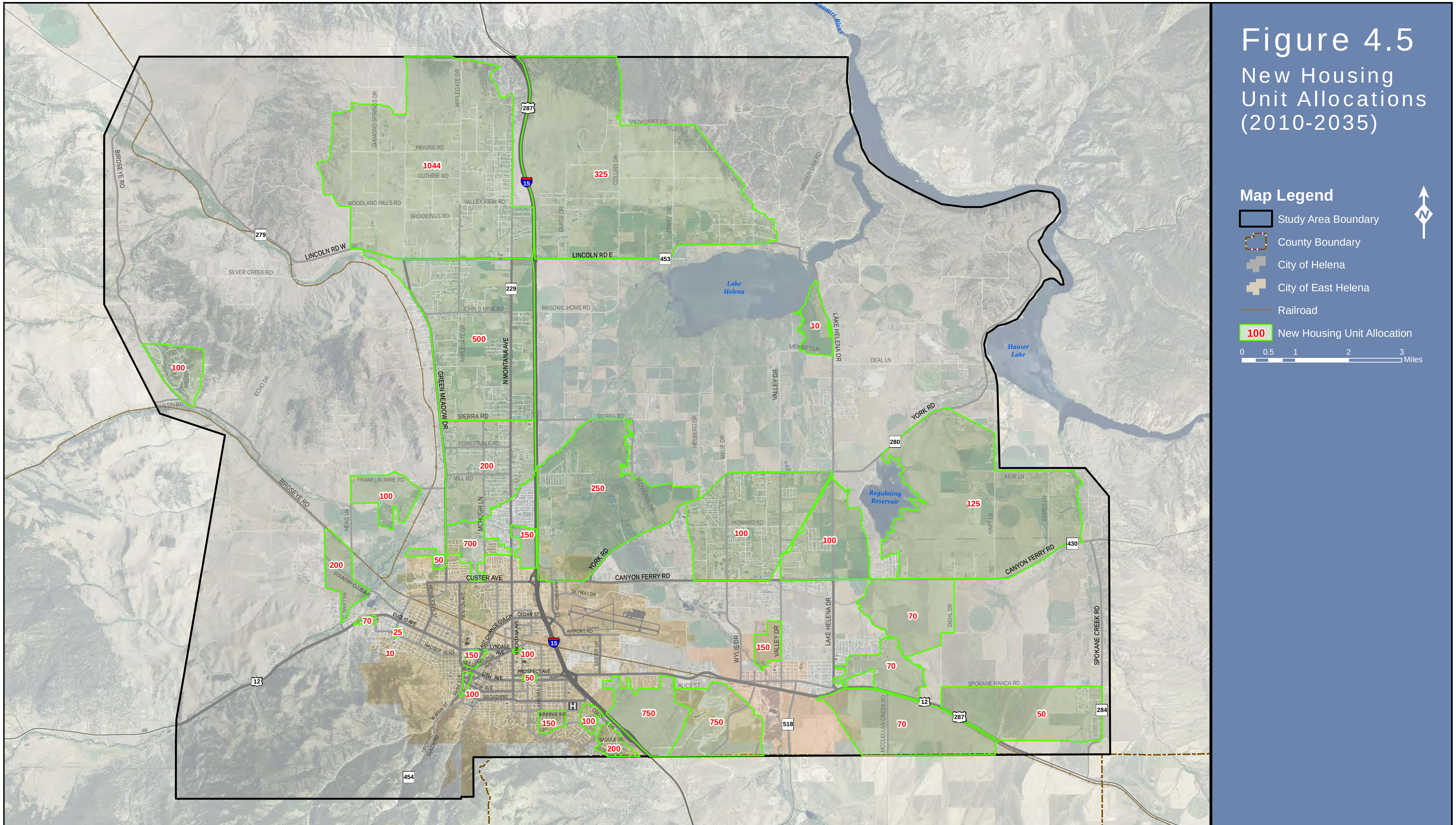


Figure 4.5
New Housing Unit Allocations (2010-2035)
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
100 New Housing Unit Allocation
0 0.5 1 2 3 Miles
N
Lake Helena
Hauser Lake
Regulating Reservoir
LINCOLN RD W
LINCOLN RD E
CANYON FERRY RD
CUSTER AVE
YORK RD
SIERRA RD
N MONTANA AVE
GREEN MEADOW DR
VALLEY DR
LAKE HELENA DR
SPOKANE CREEK RD
BIRDSEYE RD
1044
325
500
200
250
100
125
70
750
150
50
10
25
700
200

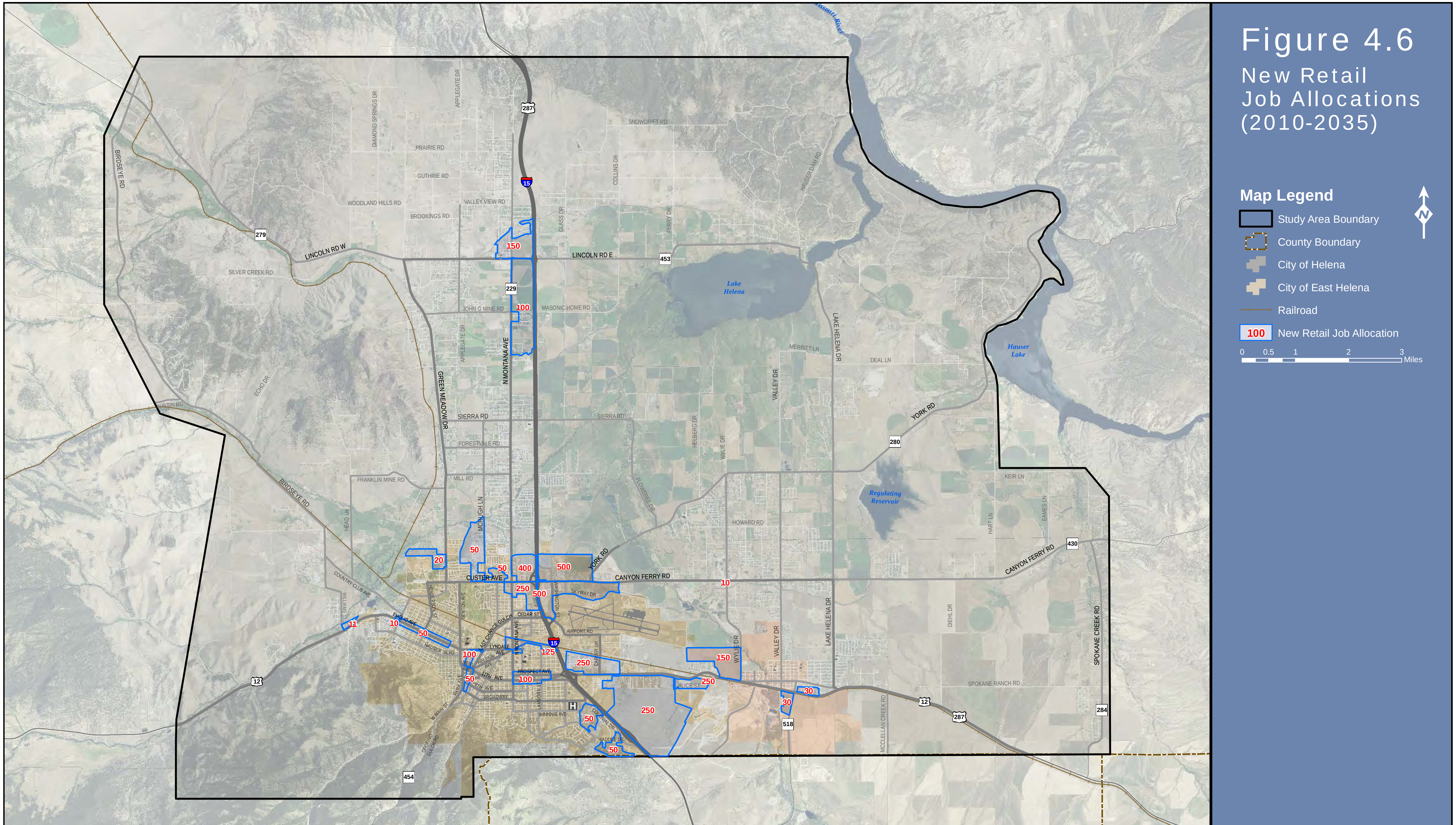


Figure 4.6
New Retail Job Allocations (2010-2035)

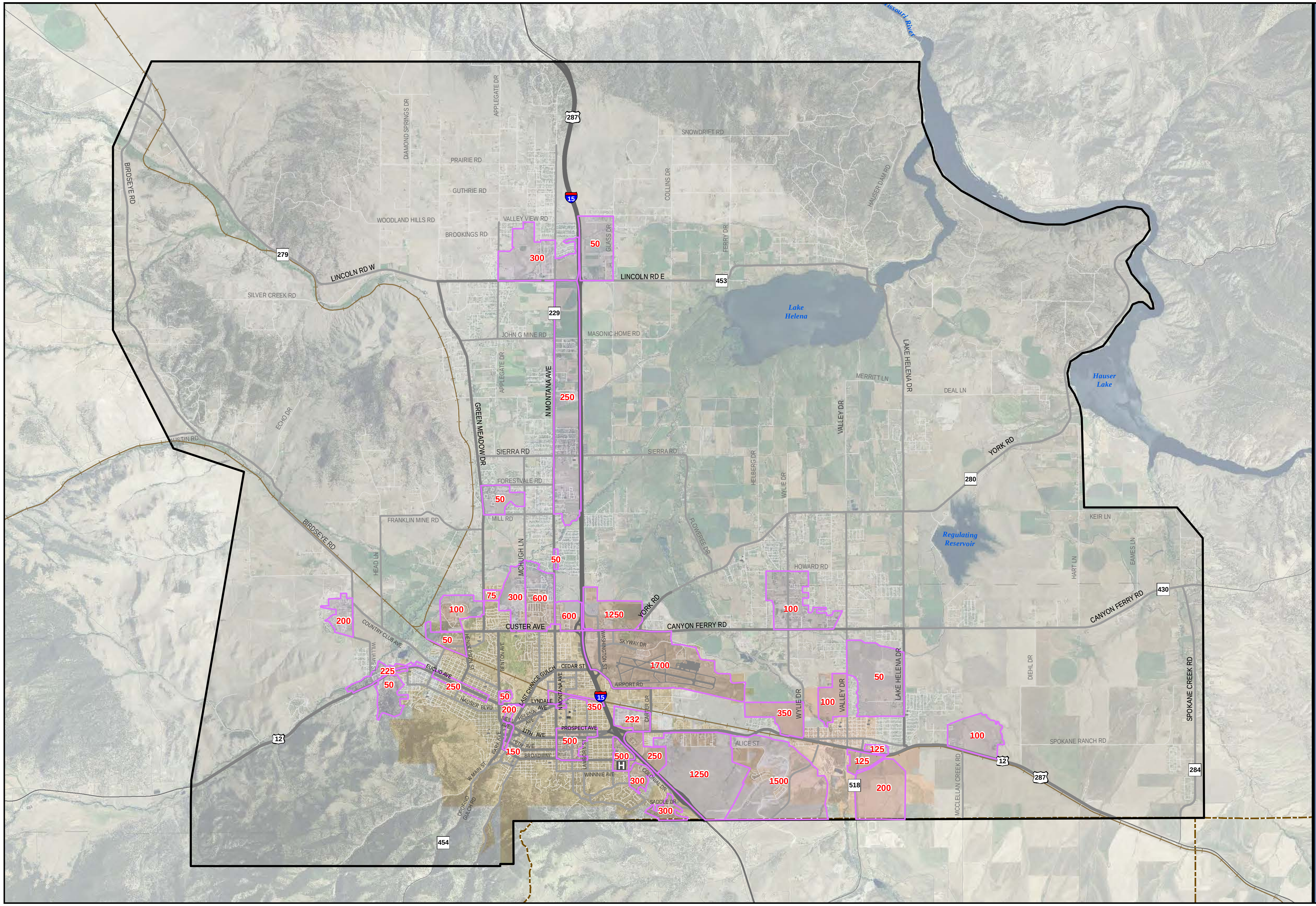


Figure 4.7
New Non-retail Job Allocations (2010-2035)

Map Legend
- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- 100 New Non-retail Job Allocation

0 0.5 1 2 3 Miles

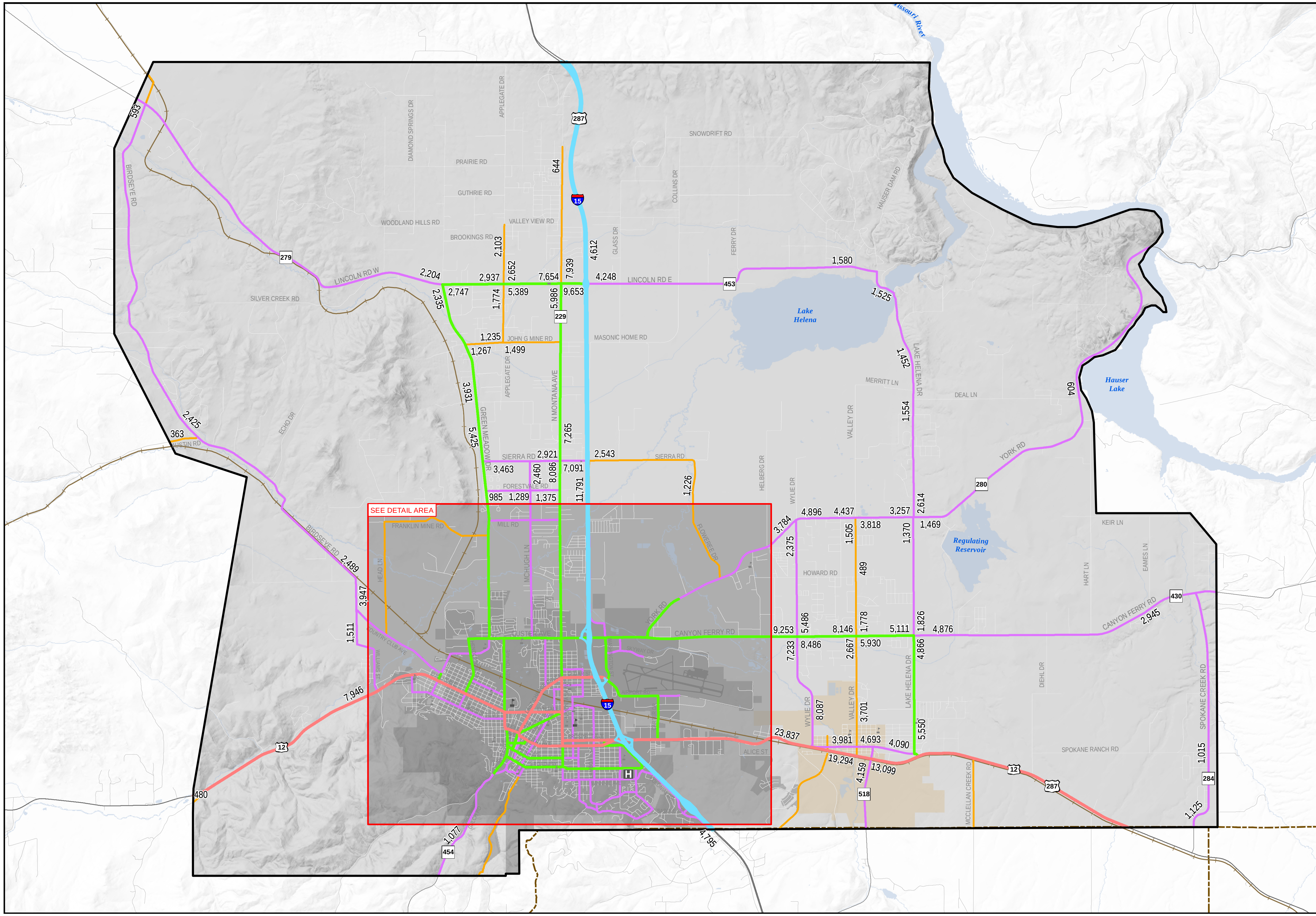


Figure 4.8

Projected (Year 2035) Average Annual Daily Traffic

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

1,500 2035 Projected Average Annual Daily Traffic[†]

*Represents federally approved functional classification.

[†]*Projected AADT values are based on existing traffic counts and traffic model exercises.*

0 0.5 1 2 3 Miles

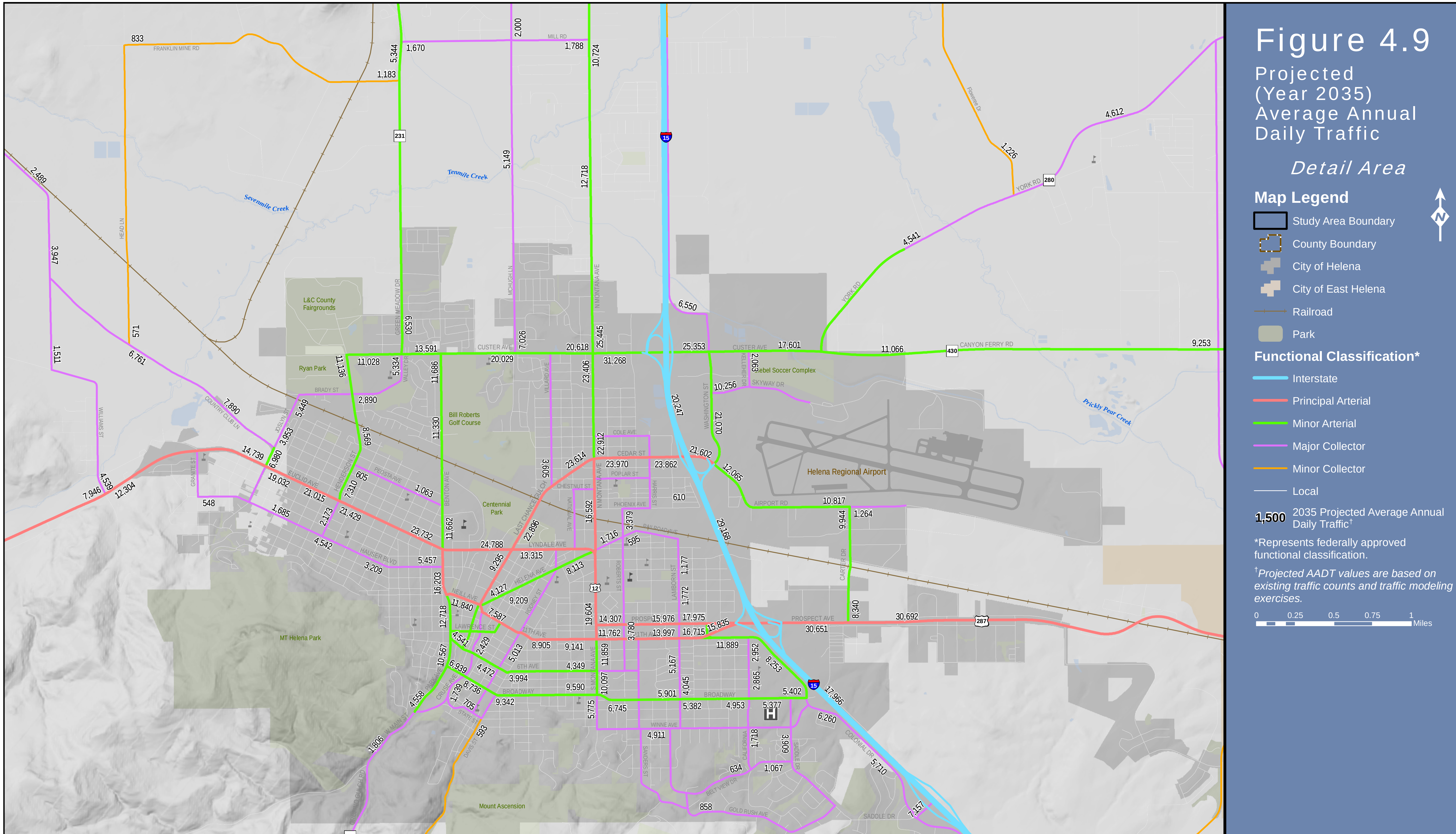


Figure 4.9

Projected (Year 2035) Average Annual Daily Traffic

Detail Area

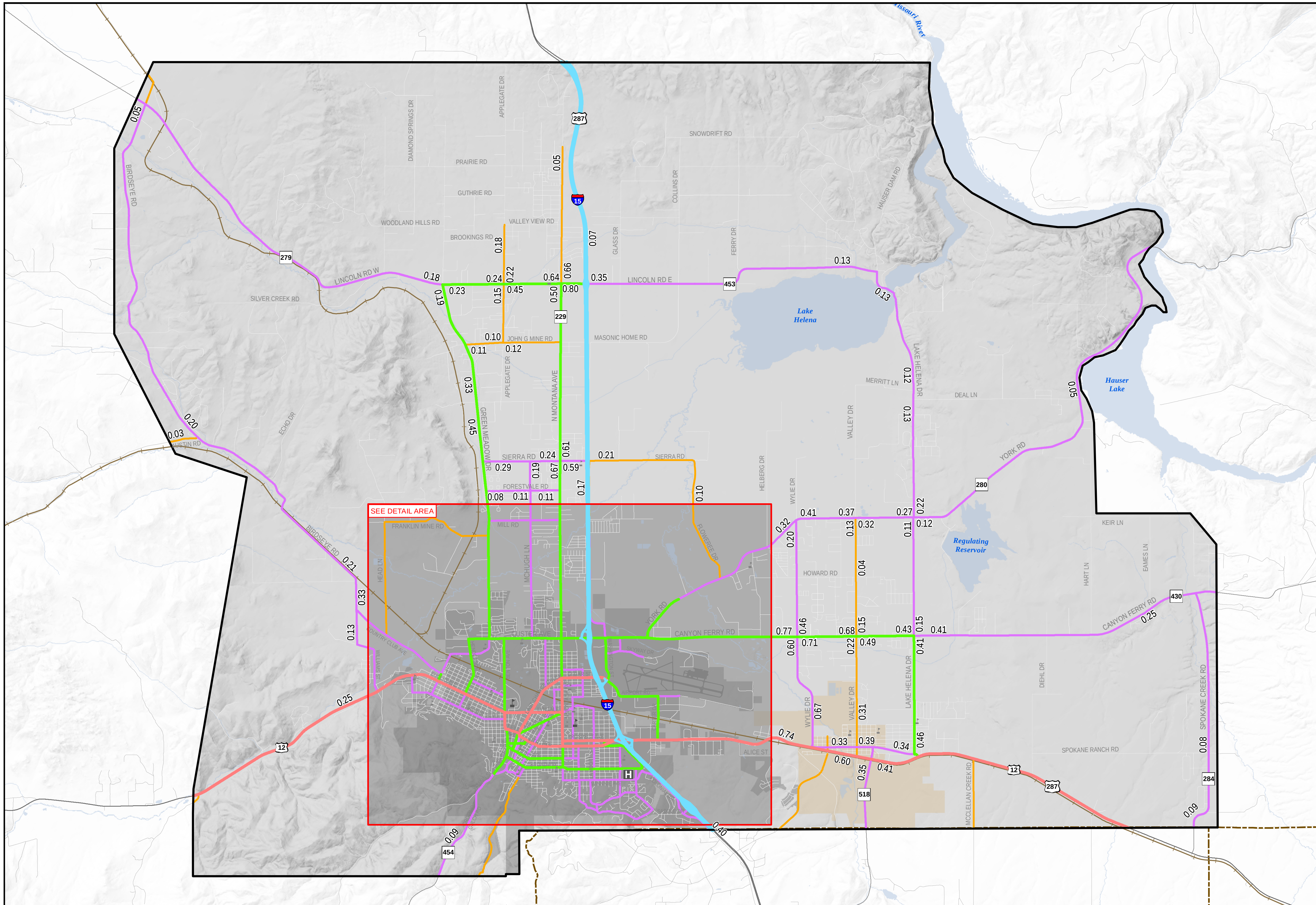


Figure 4.10

Projected (Year 2035) Volume to Capacity Ratios

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- 0.25 Volume To Capacity Ratio <1.00
- 1.15 Volume To Capacity Ratio ≥1.00

*Represents federally approved functional classification.

0 0.5 1 2 3 Miles

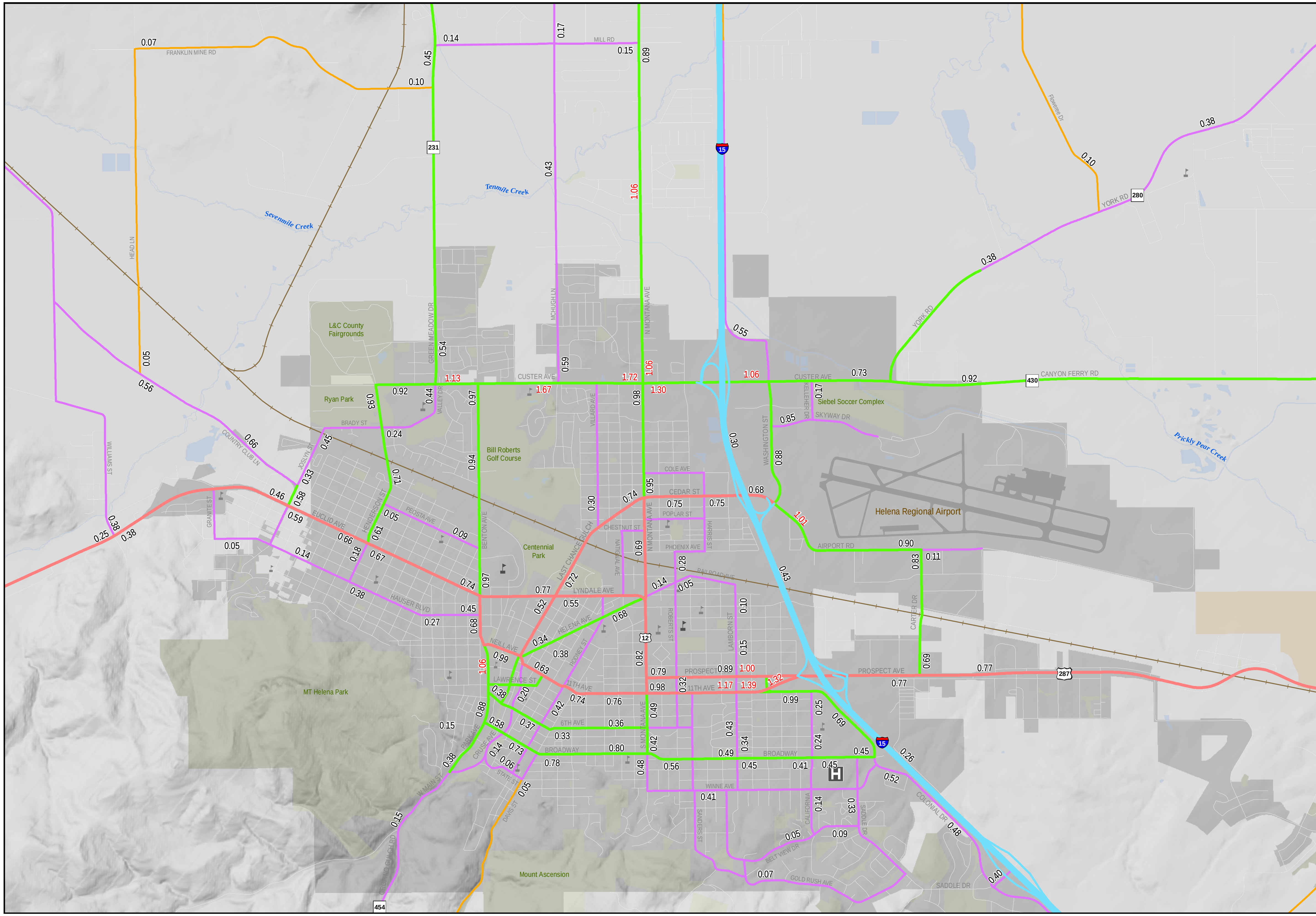


Figure 4.11

Projected (Year 2035) Volume to Capacity Ratios

Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- 0.25 Volume to Capacity Ratio <1.00
- 1.15 Volume to Capacity Ratio ≥1.00

*Represents federally approved functional classification.

0 0.25 0.5 0.75 1 Miles

4.5 Projected Intersection Level of Service

Projections for intersection traffic volumes were made for the 97 intersections analyzed previously in **Chapter 3**. These projections were based on the percent growth rates calculated from the travel demand model for the year 2035. The growth rate that was determined for a given intersection as a whole was applied to each individual turning movement to represent the projected conditions. The intersection LOS was calculated using the existing street layout, lane-use configuration, and traffic control devices. The results of this analysis are presented in **Tables 4.18** and **4.19** for signalized and unsignalized intersections, respectively. A graphical representation of the LOS analysis is presented in **Figures 4.12** and **4.13**. Detailed results for individual turning movements are provided in **Appendix B**

Table 4.18: Projected Signalized Intersection LOS

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	11th Ave & Fee St	24.7	**C**	24.2	**C**
2	11th Ave & Lamborn St	16.0	**B**	15.3	**B**
3	11th Ave & Roberts St	12.4	**B**	14.9	**B**
10	Cleveland St & Euclid Ave	12.9	**B**	12.2	**B**
13	Custer Ave & Benton Ave	26.4	**C**	20.4	**C**
14	Custer Ave & Cooney Dr	15.6	**B**	10.6	**B**
15	Custer Ave & Green Meadow Dr	29.5	**C**	25.2	**C**
16	Custer Ave & McHugh	27.5	**C**	28.1	**C**
17	Custer Ave & Sanders St	26.0	**C**	23.9	**C**
19	Getchell & Lyndale Ave	12.3	**B**	11.1	**B**
27	Harris St & Cedar St	23.3	**C**	25.5	**C**
31	Highway 12 & Lane/Route 518	46.3	D	21.8	**C**
37	Last Chance Gulch & 6th Ave	12.3	**B**	12.4	**B**
38	Lawrence & Last Chance Gulch	12.0	**B**	12.0	**B**
39	Lawrence & Park Ave	16.2	**B**	18.0	**B**
47	Montana Ave & Lodestar	16.5	**B**	12.9	**B**
49	Montana Ave & Partridge Pl	17.9	**B**	13.1	**B**
51	Montana Ave/Helena Ave/Lyndale Ave	25.8	**C**	23.7	**C**
56	Park Ave & 6th Ave	14.4	**B**	18.2	**B**
57	Park Ave/Neill Ave/Benton Ave	22.6	**C**	24.3	**C**
58	Prospect Ave & 18th St	25.5	**C**	34.9	**C**
59	Prospect Ave & Fee St	19.2	**B**	23.5	**C**
60	Prospect Ave & Roberts St	14.6	**B**	10.7	**B**
63	Rodney St & Helena Ave	12.6	**B**	11.6	**B**
69	Washington St & Skyway Dr	11.7	**B**	13.8	**B**
70	Williams St & Highway 12	12.4	**B**	12.8	**B**
Intersections Counted by MDT					
M.1	11th Ave & Montana Ave	11.6	**B**	14.4	**B**
M.2	Cedar St & Montana Ave	19.3	**B**	22.3	**C**
M.3	Custer Ave & Montana Ave	27.1	**C**	26.4	**C**
M.4	Henderson St & Euclid	16.0	**B**	16.5	**B**
M.6	Highway 12 & Highway 282	23.2	**C**	21.5	**C**
M.12	Joslyn St & Euclid Ave	11.9	**B**	11.7	**B**
M.13	Last Chance Gulch & Lyndale Ave	23.4	**C**	26.1	**C**
M.19	Montana Ave & Billings Ave	16.3	**B**	18.2	**B**
M.20	Montana Ave & Tara Court	11.5	**B**	11.2	**B**
M.21	Prospect Ave & Lamborn St	11.9	**B**	12.4	**B**
M.22	Prospect Ave & Montana Ave	20.5	**C**	23.3	**C**

Table 4.19: Projected Unsignalized Intersection LOS

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
4	Applegate Dr & John G Mine Rd	7.8	**A**	8.0	**A**
5	Applegate Dr & Norris Rd	10.4	**B**	10.5	**B**
6	Boulder Ave & Sanders St	13.2	**B**	11.1	**B**
7	Broadway & Colonial	478.2	**F**	74.9	**F**
8	Broadway & Park	12.6	**B**	20.8	**C**
9	California & Colonial	27.8	**D**	56.2	**F**
11	Country Club & Joslyn	186.0	**F**	225.2	**F**
12	Country Club & Williams	38.2	**E**	18.3	**C**
18	Custer Ave & Villard	333.6	**F**	654.3	**F**
20	Granite & Highway 12	72.9	**F**	190.6	**F**
21	Green Meadow & Brookfield	20.3	**C**	16.0	**C**
22	Green Meadow & Forestvale Rd	23.8	**C**	17.3	**C**
23	Green Meadow & Franklin Mine	25.0	**C**	19.7	**C**
24	Green Meadow & Mill Rd	40.4	**E**	22.1	**C**
25	Green Meadow & Sierra Rd	56.6	**F**	14.4	**B**
26	Green Meadow Dr & Norris Rd	29.1	**D**	16.4	**C**
28	Head Lane & Country Club Ave	32.0	**D**	21.0	**C**
29	Henderson St & Custer Ave	41.5	**E**	58.5	**F**
30	Highway 12 & Lake Helena Dr	110.1	**F**	102.9	**F**
32	Highway 12 & Valley Dr	480.6	**F**	181.2	**F**
33	Lake Helena Dr & Deal Ln	9.5	**A**	10.3	**B**
34	Lake Helena Dr & Lewis St	186.3	**F**	22.4	**C**
35	Lake Helena Dr & Old Highway 12	324.1	**F**	165.0	**F**
36	Last Chance Gulch & 14th St	36.7	**E**	163.6	**F**
40	Lincoln Rd & Glass Dr	17.8	**C**	14.5	**B**
41	McHugh & Mill Rd	18.3	**C**	22.7	**C**
42	McHugh & Road Runner	101.3	**F**	171.0	**F**
43	McHugh & Sierra Rd	28.9	**D**	37.2	**E**
44	Montana Ave & 6th Ave	18.3	**C**	21.7	**C**
45	Montana Ave & Broadway	34.5	**D**	42.7	**E**
46	Montana Ave & Forestvale Rd	20.0	**C**	37.3	**E**

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
48	Montana Ave & Mill Rd	23.6	**C**	89.0	**F**
50	Montana Ave & Sierra Rd	66.0	**F**	151.7	**F**
52	N Montana Ave & Prairie Rd	9.5	**A**	11.6	**B**
53	N Montana Ave & Valley Forge Rd	26.7	**D**	42.8	**E**
54	N Montana Ave & Valley View Rd	14.4	**B**	14.7	**B**
55	N Montana Ave & Buffalo Rd	33.3	**D**	54.2	**F**
61	Road Runner Dr & Dredge Dr	22.9	**C**	231.4	**F**
62	Rodney St & Broadway	19.4	**C**	23.8	**C**
64	Runkle Parkway & Highway 282	36.8	**E**	26.8	**D**
65	Saddle Dr & Colonial	144.5	**F**	173.6	**F**
66	Sanders & Cedar	*	**F**	*	**F**
67	Villard & Last Chance Gulch	*	**F**	*	**F**
68	Washington & Cromwell Dixon	572.2	**F**	*	**F**
71	York Rd & Lake Helena Dr	19.0	**C**	16.9	**C**
72	York Rd & Valley Dr	17.1	**C**	14.6	**B**
73	York Rd & Helberg Dr/Herrin Rd	26.3	**D**	16.4	**C**
74	York Rd & Tizer Rd	38.6	**E**	16	**C**
75	York Rd & Wylie Dr	20.5	**C**	15.6	**C**
Intersections Counted by MDT					
M.5	Highway 12 & Elaine St	24.2	**C**	1,553.2	**F**
M.7	Highway 12 & Lola St	69.4	**F**	2,449.9	**F**
M.8	Highway 12 & N Side Frontage Rd Access	4,930.1	**F**	102.5	**F**
M.9	Highway 12 & Nicole St	1,019.5	**F**	119.4	**F**
M.10	Highway 12 & S Side Frontage Rd Access	101.4	**F**	54.8	**F**
M.11	Highway 12 & Wylie Dr	810.7	**F**	1,444.8	**F**
M.14	Lincoln Rd & Green Meadow Dr	17.0	**C**	14.5	**B**
M.15	Lincoln Rd & I-15 NB Ramps	18.7	**C**	343.7	**F**
M.16	Lincoln Rd & I-15 SB Ramps	139.3	**F**	41.5	**E**
M.17	Lincoln Rd & Montana Ave	144.7	**F**	121.8	**F**
M.18	Lincoln Rd E & Mountain Heritage Rd	9.8	**A**	10.0	**B**

**Delay exceeds software limits*

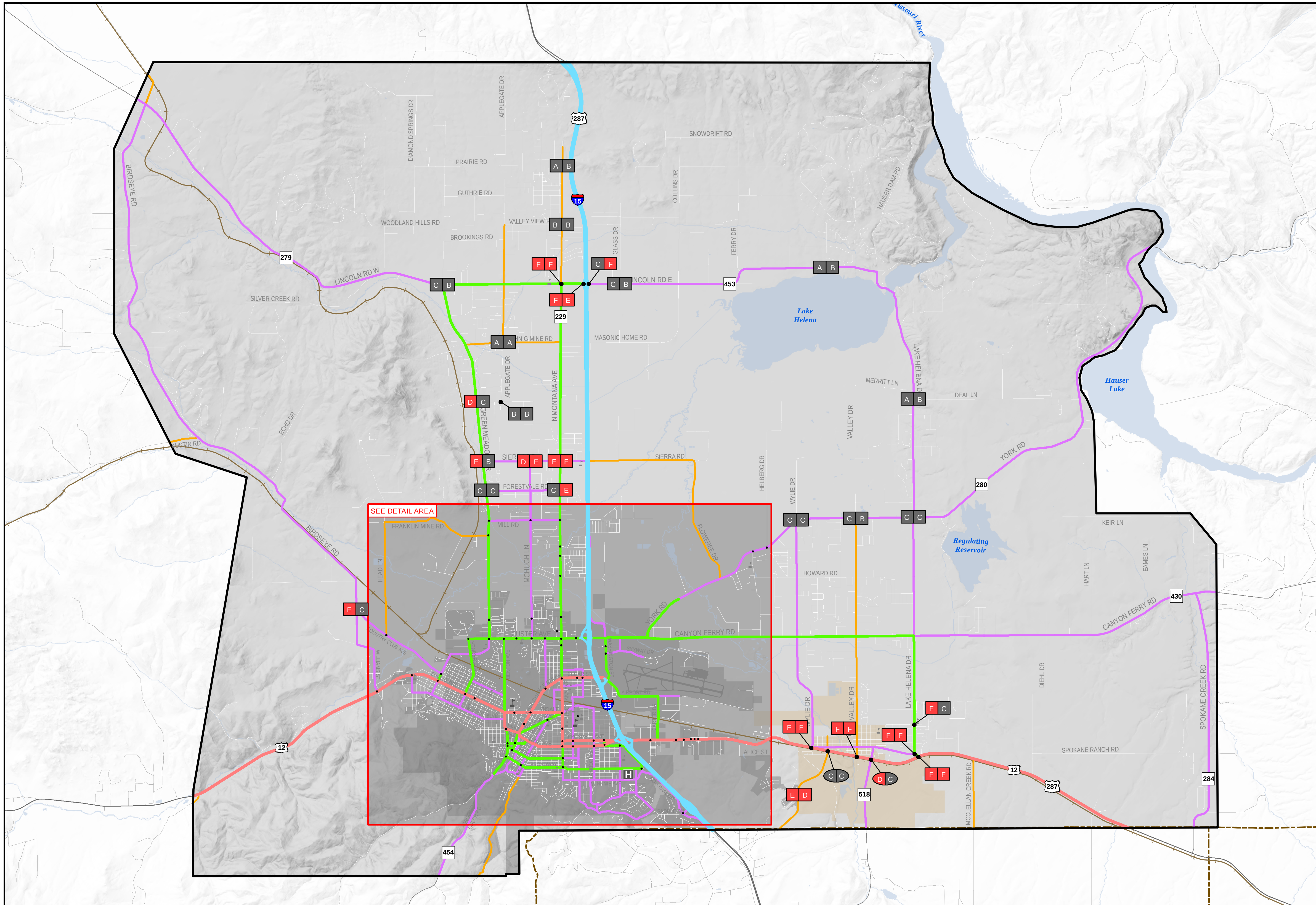


Figure 4.12

Projected (Year 2035) Intersection Level of Service

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

*Represents federally approved functional classification.

Signalized Intersection

AM — A C — PM

Unignalized Intersection

AM — C D — PM

A, B, C, D, E, F = Level of Service

0 0.5 1 2 3 Miles

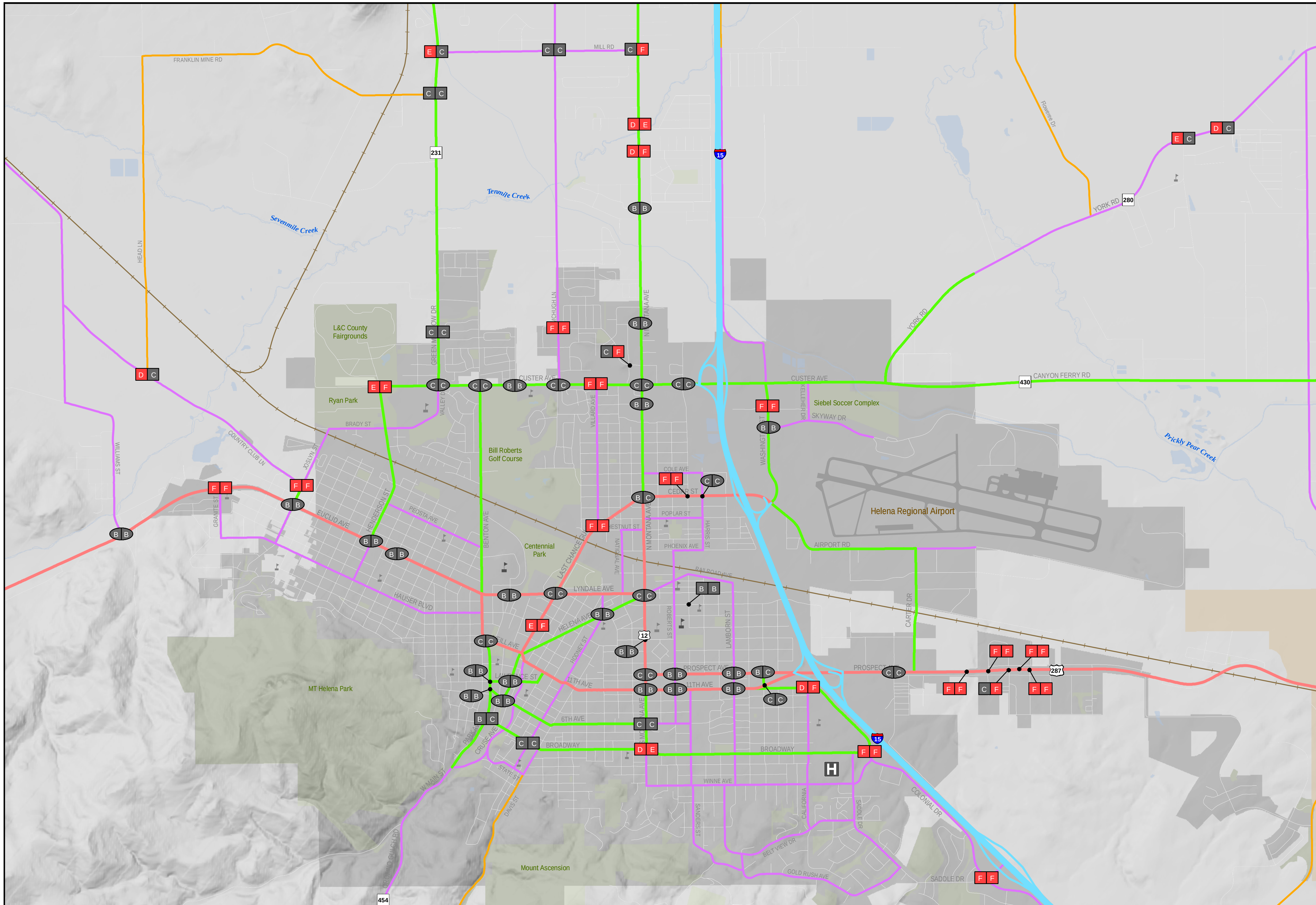


Figure 4.13

Projected (Year 2035) Intersection Level of Service

Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Functional Classification*

- Interstate
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

*Represents federally approved functional classification.

Signalized Intersection

AM A C PM

Unignalized Intersection

AM C D PM

A, B, C, D, E, F = Level of Service

0 0.25 0.5 0.75 1 Miles

4.6 Alternative Modeling Scenarios

The travel demand model developed for the LRTP was used to analyze the effects that various network improvements would have on the transportation network. Using the traffic model provided by MDT, it is possible to produce traffic assignments that predict the effects of major modifications and additions to the street network.

Alternatives such as the addition of new arterial links, street closures, and the extension or expansion of existing routes were identified and discussed by the Technical Working Group (TWG). Modeling scenarios were ultimately developed to include roadway capacity additions or new roadway links in areas where transportation needs presently exist, or where future investment may be needed as a result of expected population/employment growth. **Figure 4.14** gives a graphical representation of the alternative scenarios.

The alternatives presented in this section are for modeling purposes only and do not represent actual project recommendations by themselves. The analysis of these alternatives was made to give a theoretical idea of how certain network modifications made to the transportation system affect the overall network and surrounding area. Should projects arise in the future along these corridors, design alternatives to those discussed in this section will need to be analyzed to determine the appropriate configuration of the roadways.

Thirteen modeling scenarios were developed for the purposes of this exercise and are discussed in this section. The alternative scenarios are generally localized and create new links or expand existing facilities in a particular study subarea. The effect of each scenario on the network generally occurs most noticeably in a concentrated area where changes to the network are made. Because all scenarios involve new links, severed links, and/or roadway capacity additions, the scenario analysis is focused on how traffic volumes are shifted on key facilities throughout the major effected area.

In this section are narrative descriptions of the proposed modifications for each model run, along with a tabular description of the results. The modeling of each alternative scenario was completed under projected year 2035 conditions assuming that no other modifications to the existing traffic network were made. For comparison purposes, the projected year 2035 Existing plus Committed (E+C) modeling results were used as baseline conditions. The results of each alternative scenario run were compared to the baseline conditions. The main attribute used for determining the affect that the alternative scenario has on the transportation system is the percent change in traffic volumes compared to the baseline conditions.

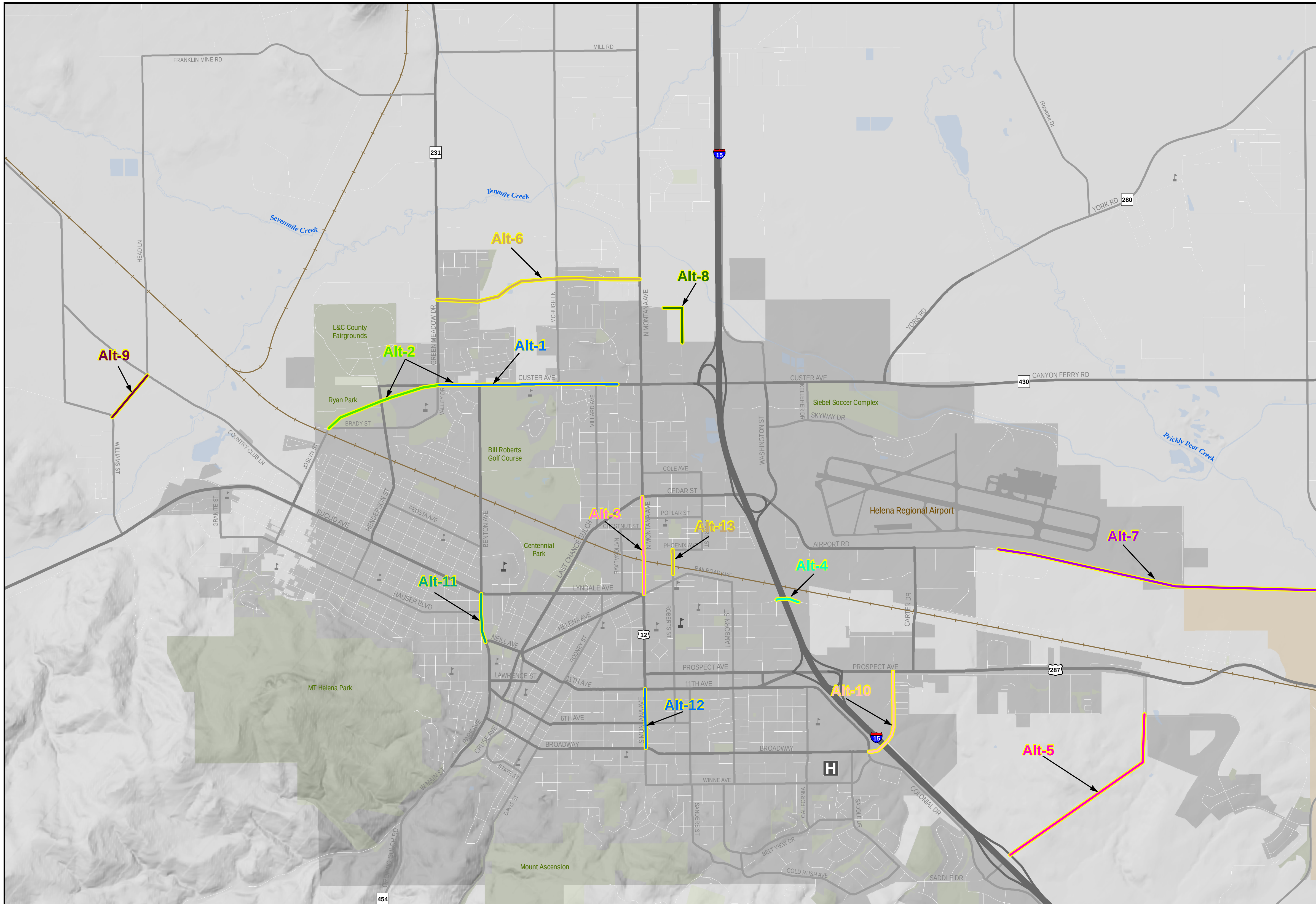


Figure 4.14
Alternative Scenarios

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

0 0.25 0.5 0.75 1 Miles

Alt-1: Custer Avenue (National Avenue to Green Meadow Drive)

This alternative was modeled as a five-lane minor arterial roadway on Custer Avenue, between National Avenue and Green Meadow Drive. Traffic signal control would remain at McHugh Lane, Cooney Drive, Benton Avenue, and Green Meadow Drive. Scenario analysis results indicated:

- Traffic volumes on Custer Avenue between Villard Drive and Henderson Street increased by approximately 40 percent.
- Travel times on Custer Avenue from Villard Drive to Green Meadow Drive decreased by approximately 60 percent as a result of the increased capacity.
- Traffic volumes south of Custer Avenue on both Villard Drive and McHugh Lane increased by approximately 40 percent.
- Traffic volumes on Montana Avenue realized little change.

Alt-2: Custer Avenue (National Avenue to Joslyn Street)

This model alternative included all aspects of alternative 1, but also included the re-routing of Custer Avenue west of Green Meadow Drive to traverse in a southwesterly direction to connect with the northern terminus of Joslyn Street. This segment west of Green Meadow Drive would be a two-lane minor arterial roadway. Scenario analysis results indicated:

- Traffic volumes on Custer Avenue between Villard Drive and Green Meadow Drive increased by approximately 40 percent.
- Traffic volumes carried by the new extension of Custer Avenue reached nearly 10,000 vehicles per day (vpd).
- Travel times on Custer Avenue from Villard Drive to Green Meadow Drive decreased by approximately 60 percent as a result of the increased capacity.
- Traffic volumes on Joslyn Street increased by 174 percent and travel times increased by nearly 20 percent.
- Traffic volumes on Brady Street decreased by approximately 97 percent, however, travel times remained largely unchanged.

Alt-3: Montana Avenue (Lyndale Avenue to Cedar Street)

This segment of Montana Avenue is currently a four-lane principal arterial facility with two lanes in each direction. A model run incorporating a “road diet” was evaluated between Lyndale Avenue and Cedar Street. The road diet configuration included one travel lane in each direction, and a two-way, left-turn lane (TWLTL) in the center. On-street bicycle lanes on each side of the roadway were also included, although this specific feature does not affect model capacity. Scenario analysis results indicated:

- Traffic volumes on Montana Avenue between Lyndale Avenue and Cedar Street decreased by approximately 13 percent.
- Travel times on Montana Avenue between Lyndale Avenue and Cedar Street increased by approximately 20 percent.
- Traffic volumes on National Avenue increased by more than 50 percent, however, little change in travel time was noted.

Alt-4: Boulder Avenue (Washington Street to California Street)

The connection between Washington Street and California Street, along Boulder Avenue, was closed to vehicular traffic. Scenario analysis results indicated:

- Traffic volumes decreased by nearly 95 percent on Boulder Avenue.
- Traffic volumes on Gibbon Street north of Prospect Avenue increased by approximately 13 percent.
- Little impact was seen to the surrounding area.

Alt-5: New Southeast Arterial (South Helena Interchange to Mountain View Drive)

A new road segment connected the South Helena Interchange to Mountain View Drive. The road was modelled as a principal arterial, with one travel lane in each direction and a TWLTL in the center. On-street bicycle lanes on each side of the roadway would also be included, although this specific feature did not affect model capacity. Scenario analysis results indicated:

- Traffic volumes on Alice Street south of US 12 increased by 184 percent.
- Traffic volumes southbound on I-15 increased by approximately 20 percent
- Traffic volumes on Fee Street south of 11th Avenue increased by approximately 16 percent.
- Traffic volumes carried on the new extension exceeded 6,000 vpd.
- Travel time on Colonial Drive increased by approximately 16 percent.

Alt-6: Horseshoe Bend Road / Wolf Road (Green Meadow Drive to Montana Avenue)

This model run included a new two-lane collector road between Green Meadow Drive and Montana Avenue. The route would initially traverse due east from the intersection of Green Meadow Drive and Horseshoe Bend Road, and then curve northeasterly to tie into the intersection of Wolf Road and McHugh Lane. East of this intersection, portions of the roadway have already been built to a city collector standard to its intersection with Montana Avenue. Scenario analysis results indicated:

- Traffic volumes on Wolf Road increased by as much as 247 percent, however, travel times decreased by nearly 57 percent as a result of the increased capacity.
- Traffic volumes on Custer Avenue changed little.
- Traffic volumes on Mill Road decreased by as much as 31 percent.
- Traffic volumes carried by the new extension exceeds 3,700 vpd.
- Traffic volumes on Benton Avenue south of Horseshoe Bend Road increased by 68 percent.
- Travel times on Benton Avenue south of Horseshoe Bend Road increased by approximately 5 percent.

Alt-7: Airport Road (Carter Drive to Valley Drive)

This model run included a new minor arterial connection on Airport Road, extending east from the intersection of Carter Drive, to Valley Drive in East Helena. The modelled road configuration was similar to that already in place west of Carter Drive (i.e. a two-lane minor arterial roadway). Scenario analysis results indicated:

- Traffic volumes on Airport Road increased by over 3,500 percent, however, travel times decreased by nearly 61 percent as a result of increased capacity.
- Traffic volumes on Valley Drive increased by as much as 50 percent.
- Travel times on Valley Drive increased by nearly 20 percent.
- Traffic volumes on both Bozeman Avenue and B Street decreased by more than 50 percent.
- Traffic volume on Wylie Drive decreased by more than 50 percent, however, little change in travel time was realized.
- Traffic volumes on the new extension were upwards of 6,000 vpd.
- Traffic volumes on US 12, west of Wylie Drive, decreased by nearly 20 percent.

- Traffic volumes on Canyon Ferry Road, west of Wylie Drive, decreased by 8 percent.

Alt-8: Sanders Street Extension (Custer Avenue to Ptarmigan Lane)

This model alternative extends Sanders Street north of its current northerly terminus, and then wraps around to the west to intersect with Ptarmigan Lane. The road would be built to a City collector standard, and mimic the portion of Sanders Street recently built just south of Custer Avenue (i.e. two lanes). Scenario analysis results indicated:

- Traffic volumes on Custer Avenue between Montana Avenue and Sanders Street decreased by approximately 5 percent and travel times decreased by 15 percent.
- Traffic volumes on Montana Avenue between Custer Avenue and Ptarmigan Lane decreased by approximately 8 percent and travel times decreased by nearly 8 percent.
- Traffic volumes carried by the new extension reached nearly 3,000 vpd.

Alt-9: Head Lane Extension (Country Club Avenue to Williams Street)

This model run included a two-lane collector roadway connecting the intersection of Head Lane and Country Club Avenue to the approximately 90 degree bend in the existing Williams Street to the southwest (see **Figure 4.14**). Scenario analysis results indicated:

- Traffic volumes on Birdseye Road between Williams Street and Country Club Avenue decreased by over 40 percent, however, little impact was noted with regard to travel time.
- Traffic volumes on Williams Street west of the new extension increased by 15 percent.
- Traffic volumes carried by the new extension were over 900 vpd.
- Traffic volumes on both Head Lane and Franklin Mine Road increased by more than 11 percent.

Alt-10: Broadway Extension (Colonial Drive to U.S. Highway 12)

This model run would extend Broadway as a two-lane minor arterial roadway. It would extend east of its intersection with Colonial Drive, traverse under I-15 (i.e. grade separated), and then curve to the north to align with 18th Street. It would follow the 18th Street alignment all the way to the intersection with U.S. Highway 12. Scenario analysis results indicate:

- Traffic volumes on Broadway west of Colonial Drive increased by nearly 95 percent and travel times increased by about 50 percent.
- Traffic volumes on the new extension exceeded 10,500 vph.
- Traffic volumes on US 12 west of 18th Street decreased by nearly 11 percent.
- Traffic volumes on Colonial Drive north of Broadway decreased by nearly 23 percent.

Alt-11: Benton Avenue (Neill Avenue to Euclid/Lyndale Avenue)

This model run includes modifying Benton Avenue, between Neill Avenue and Euclid/Lyndale Avenues. Currently a four-lane principal arterial, the road would be modified such that there would be two (2) northbound lanes and one (1) southbound lane (i.e. three (3) lanes total). On-street bicycle lanes on each side of the roadway would also be included. Scenario analysis results indicate:

- Traffic volume on Benton Avenue, south of Euclid/Lyndale Avenues, decreased by around two percent.
- Traffic on Last Chance Gulch between Lyndale and Neill Avenues increased by nearly 24 percent.
- Traffic volumes on Park Avenue, south of Neill Avenue, decreased by 23 percent.
- Traffic volumes on Last Chance Gulch, south of Neill Avenue, decreased by nearly 21 percent.

Alt-12: S. Montana Avenue (Broadway to Prospect Avenue)

The segment of South Montana Avenue between Broadway and Prospect Avenue is currently a four-lane minor arterial facility, with two lanes in each direction. A model run incorporating a "road diet" is desirable between Broadway and Prospect Avenue. The road diet configuration would include one travel lane in each direction, and a two-way left-turn lane (TWLTL) in the center. On-street bicycle lanes on each side of the roadway would also be included. Scenario analysis results indicate:

- Traffic volumes on South Montana Avenue, north of Prospect Avenue, decreased by less than one percent.
- Traffic volumes on South Montana Avenue, south of 11th Avenue decreased, by four percent.
- Traffic volumes on Sanders Street south of 11th Avenue increased by 12.5 percent.
- Traffic volumes on Broadway, east of South Montana Avenue, decreased by over 33 percent.

Alt-13: Roberts Street Closure (Bozeman Street to Phoenix Avenue)

This alternative would result in the closure of Roberts Street between Bozeman Street and Phoenix Avenue. This alternative included removing the link from the future year 2035 model scenario to assess the resulting impacts on area roadways if Roberts Street was no longer in service. As with other model runs, this run was for the future year 2035 model scenario. Scenario analysis results indicate:

- Traffic volumes on South Montana Avenue, north of Prospect Avenue, increased by 2.6 percent.
- Traffic volumes on South Montana Avenue, north of Bozeman Street, increased by 1.3 percent.
- Traffic volumes on Roberts Street, south of Bozeman Street, decreased by 86.8 percent.
- Traffic volumes on Roberts Street, north of Phoenix Street, decreased by over 99 percent.

Due to the heightened interest in the potential closure of Roberts Street, some qualitative measures were also reviewed, as follows:

Non-Motorized Travel

The closure of Roberts Street would eliminate north and south pedestrian and bicycle movements that presently exist. If closed, pedestrians and bicyclists would be required to utilize Bozeman Street, Montana Avenue, and Phoenix Avenue to traverse in a north / south manner. This would result in approximately 0.5 miles of out of direction travel (each way). This additional length of travel results in added travel time to non-motorized trips in this area.

Emergency Service Response

Similar to the non-motorized impacts described above, the closure of Roberts Street <u>may</u> present out of direction travel for emergency response providers (police, fire and ambulance). The distance for out of direction travel could be a maximum 0.50 miles – similar to non-motorized uses – depending on the route taken by the responders.

Transit Access

The closure of Roberts Street is not expected to delay or affect transit service patrons accessing the HATS facility from a length / out of direction travel perspective. The closure of Roberts Street would result in similar lengths of travel using Roberts Street / Bozeman Street as using Phoenix Avenue / Montana Avenue. However without any improvements to Montana Avenue the pedestrian infrastructure is essentially absent to provide a safe pedestrian environment along Montana Avenue.

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Chapter 5

SAFETY

Crash data within the study area was analyzed to determine problem areas, “hot-spot” crash locations, and behavioral characteristics. Trend analysis comparisons were also made for Lewis and Clark County and the State of Montana to help identify unique trends. The following sections provide an analysis of available crash data to help identify crash trends and contributing factors.

Improving transportation safety requires more than just fixing a road or increasing police patrols. In order to be most effective, safety improvements need to consider the “four E’s” of transportation safety: Education, Enforcement, Engineering, and Emergency Services.

5.1 Study Area Crash Analysis

The MDT Traffic and Safety Bureau provided crash data for the five-year period from January 1st, 2009 to December 31st, 2013. The crash data were obtained from the MDT Safety Management System. The crash reports are a summation of information from the scene of the crash provided by responding officers. As such, some of the information contained in the crash reports may be subjective.

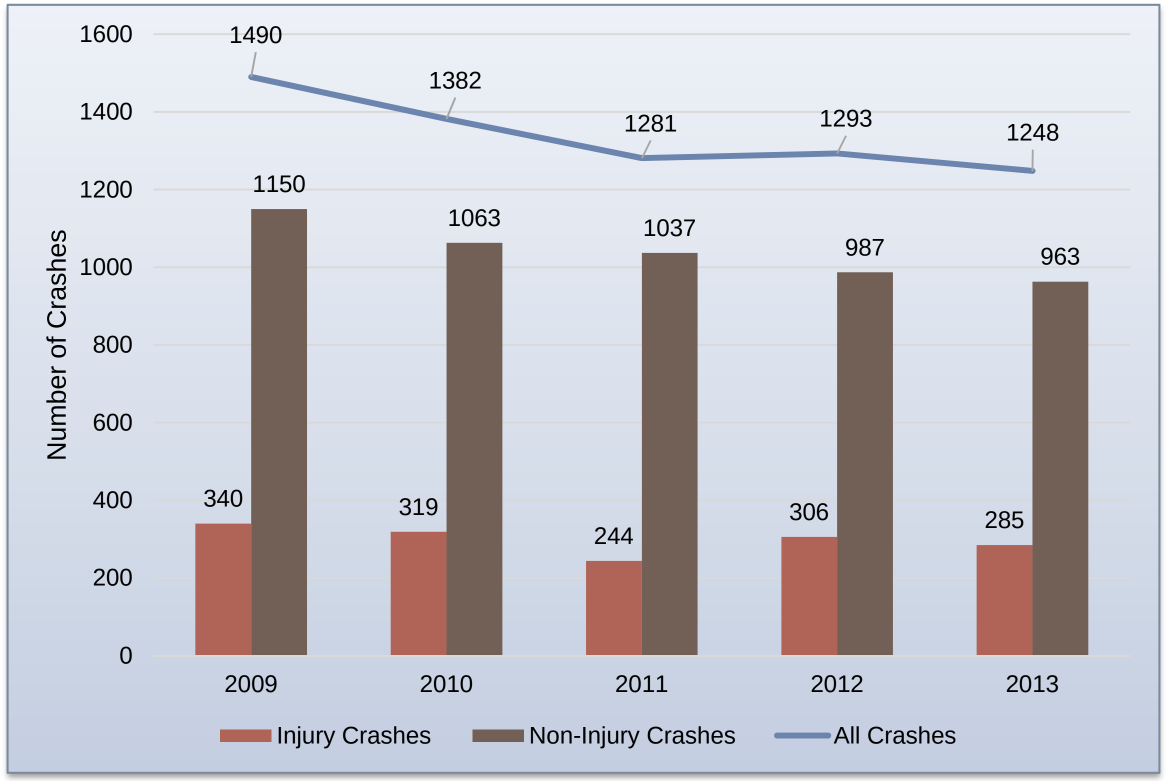
According to the MDT crash database, there were 6,694 crashes reported within the study area during the analysis time period. The number of crashes per year has been decreasing over the five year period of interest. There were 1,490 and 1,248 crashes in 2009 and 2013, respectively. However, the number of injury (all those crashes that resulted in any injury) and non-injury crashes per year have not followed the same trends. Non-injury crashes have decreased with each passing year, whereas injury crashes increased between 2011 and 2012. The yearly crashes are presented in **Figure 5.1**.

The crash database was plotted spatially based on the XY coordinates recorded for each crash. **Figures 5.2** and **5.3** show the density of crashes within the study area based on the spatial data. Crash clusters are generally noted at intersections with the highest traffic volumes.

Crash data used in the LRTP Update planning process is part of the Highway Safety Improvement Program and is covered by Section 409, USC 23, which states:

“Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”

Figure 5.1: Crashes-per-Year



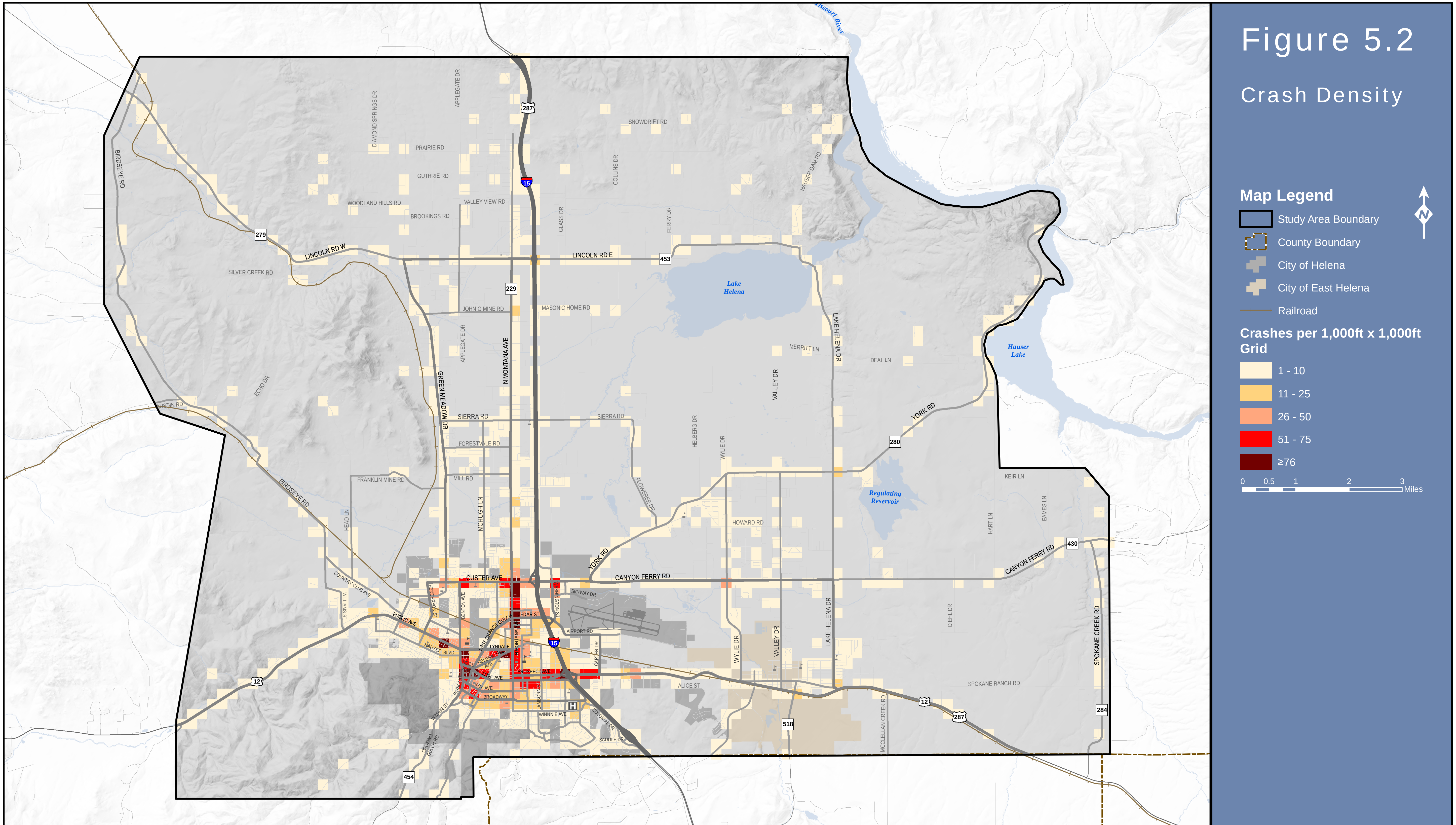


Figure 5.2
Crash Density
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Crashes per 1,000ft x 1,000ft Grid
1 - 10
11 - 25
26 - 50
51 - 75
≥76
0 0.5 1 2 3 Miles
N
Lake Helena
Hauser Lake
Regulating Reservoir
Missouri River
LINCOLN RD W
LINCOLN RD E
CANYON FERRY RD
YORK RD
SIERRA RD
N MONTANA AVE
GREEN MEADOW DR
BIRDSEYE RD
CUSTER AVE
EUCLID AVE
PROSPECT AVE
SPOKANE CREEK RD
LAKE HELENA DR
VALLEY DR
WYLIE DR
SPOKANE RANCH RD
SNOWDRIFT RD
PRAIRIE RD
GUTHRIE RD
BROOKINGS RD
VALLEY VIEW RD
MASONIC HOME RD
JOHN G MINE RD
SILVER CREEK RD
FRANKLIN MINE RD
MILL RD
HOWARD RD
ALICE ST
DEAL LN
KEIR LN
MERRITT LN
APPLEGATE DR
FERRY DR
COLLINS DR
GLASS DR
HELBERG DR
HART LN
EAMES LN
DEHL DR
MCCLELLAN CREEK RD
FOREST VALE RD
MCHUGH LN
COUNTRY CLUB AVE
ECHO DR
HEAD LN
FLOWERREE DR
SKYWAY DR
CEDAR ST
AIRPORT RD
LYNDALE
BROADWAY
WINNIE AVE
SADDLE DR
287
15
279
453
229
280
430
12
518
284
454

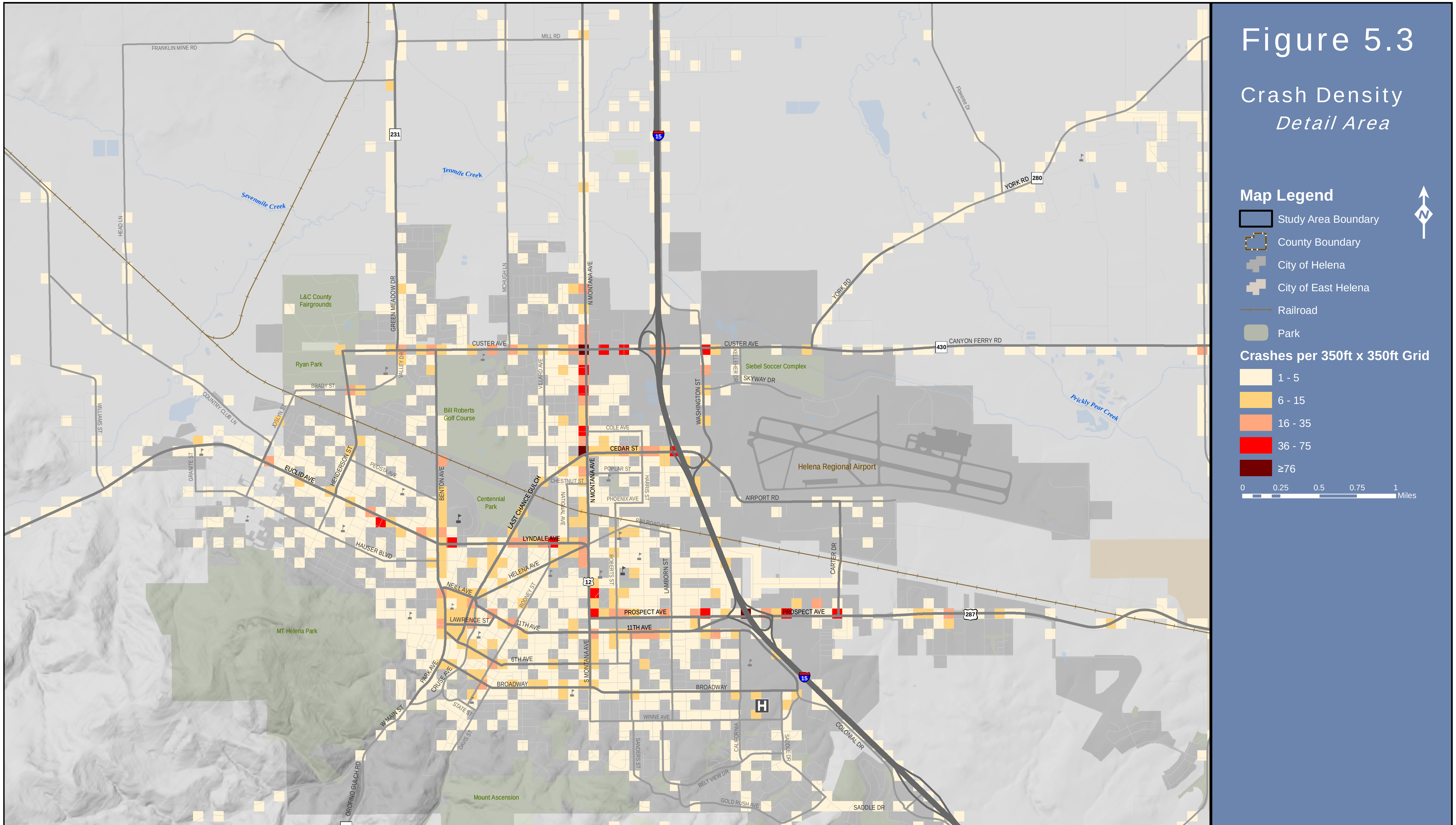


Figure 5.3

Crash Density

Detail Area

5.1.1 Crash Period

Crash data for the study area was evaluated based on the period of time when the crash occurred. With regards to time-of-day, spikes in the number of crashes occur during peak hours. Slightly over 50 percent of crashes were reported between 12:00 PM and 6:00 PM. The PM peak hours (3:00 PM to 6:00 PM) accounted for approximately 32 percent of crashes. **Figure 5.4** presents the time-of-day distribution for crashes occurring in the study area.

The most common month for crashes is December, followed by January and November. During these months, inclement weather conditions often exist which can contribute to an increase in the number of crashes. Additionally, it is common for traffic volumes to increase during the month of December due to increased holiday related traffic. Nearly 80 percent of crashes occur on weekdays, with Friday being the most common day with 17.6 percent of crashes. The fewest number of crashes were reported on Sundays. **Figure 5.5** presents the month-of-year and day-of-week distributions for crashes occurring in the study area.

Figure 5.4: Crash Statistics for Time-of-Day

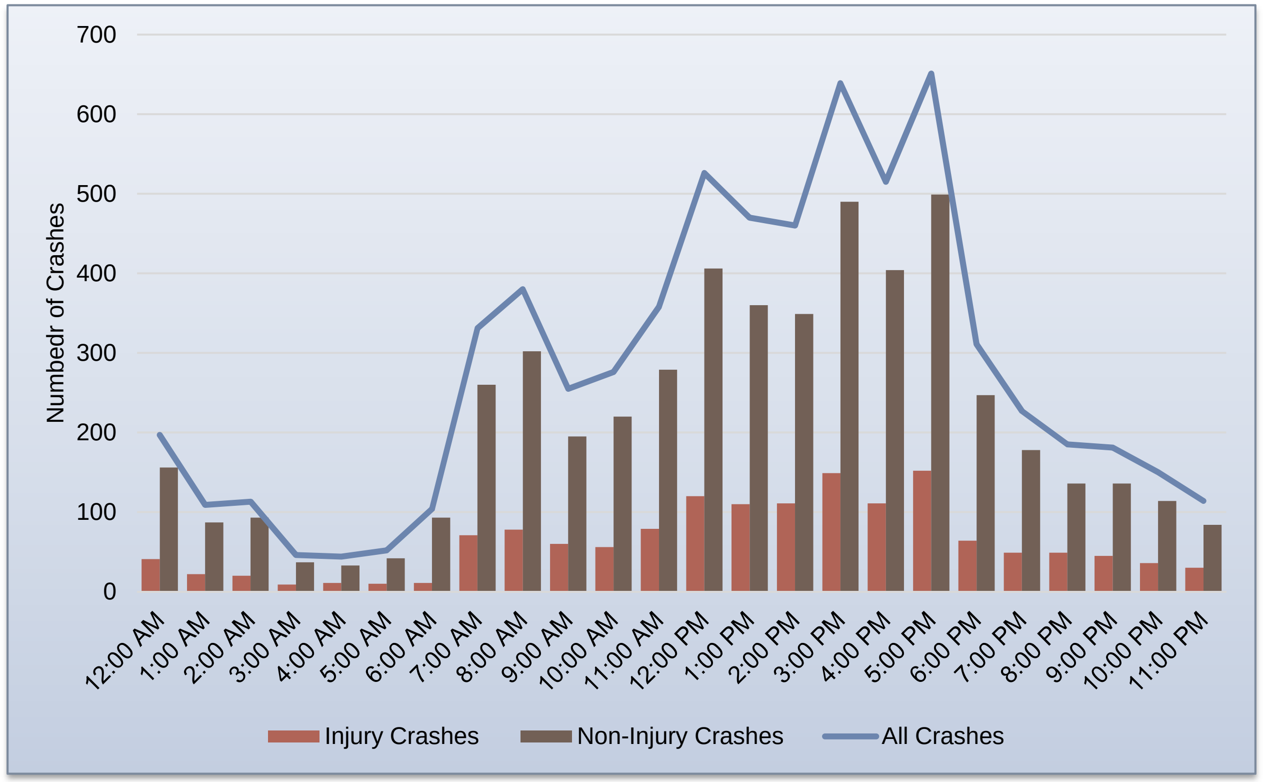
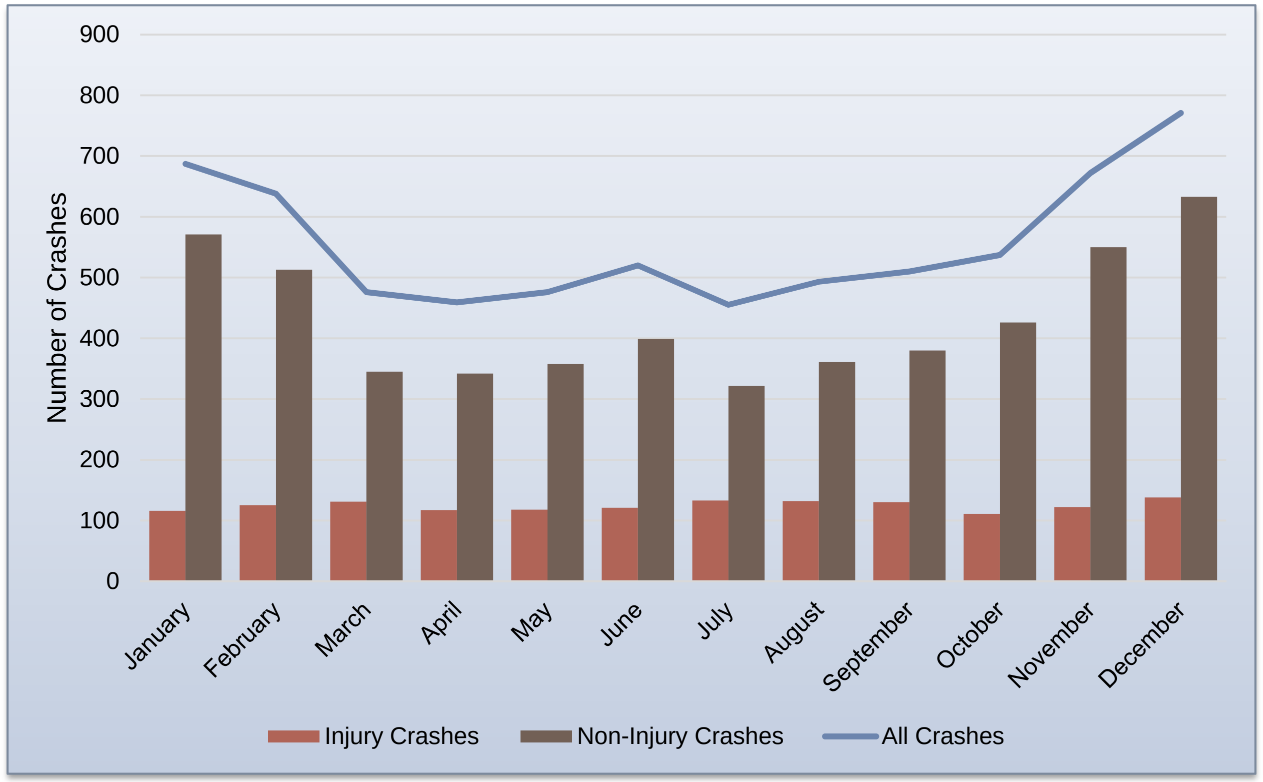
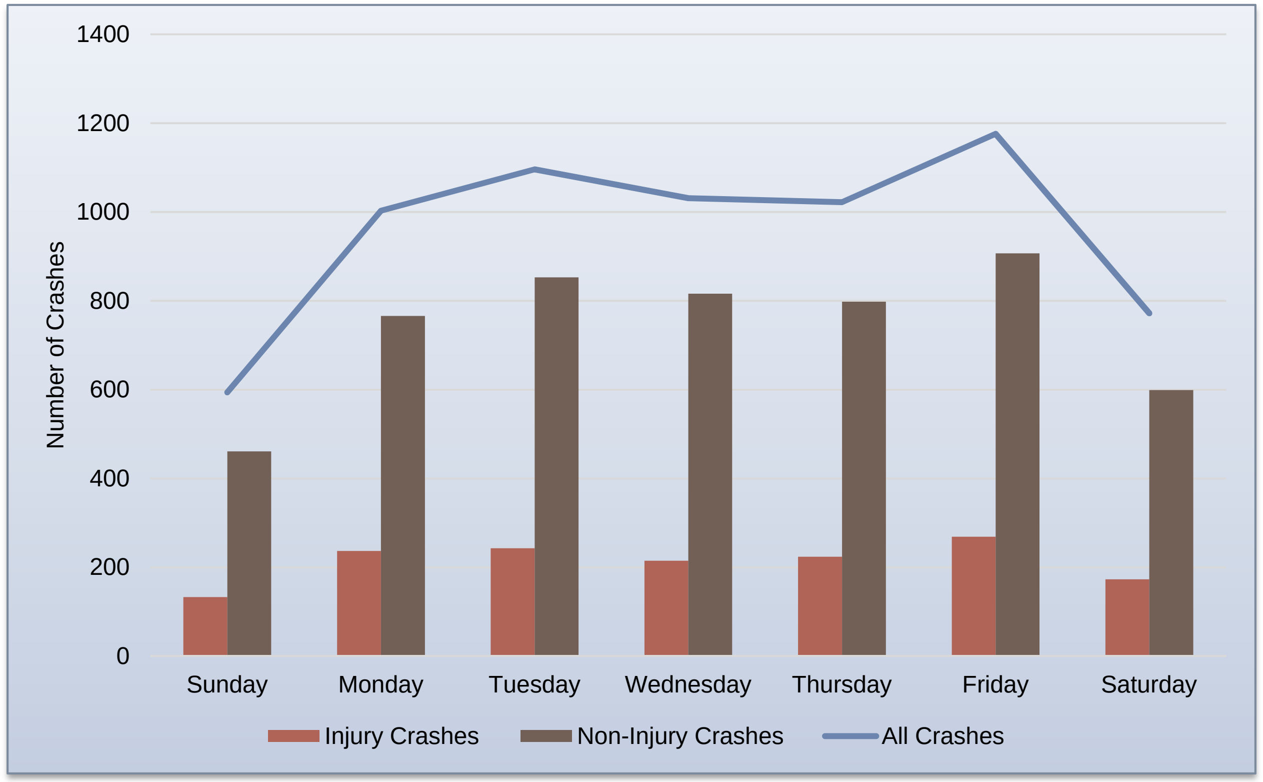


Figure 5.5: Crash Statistics for Month-of-Year and Day-of-Week

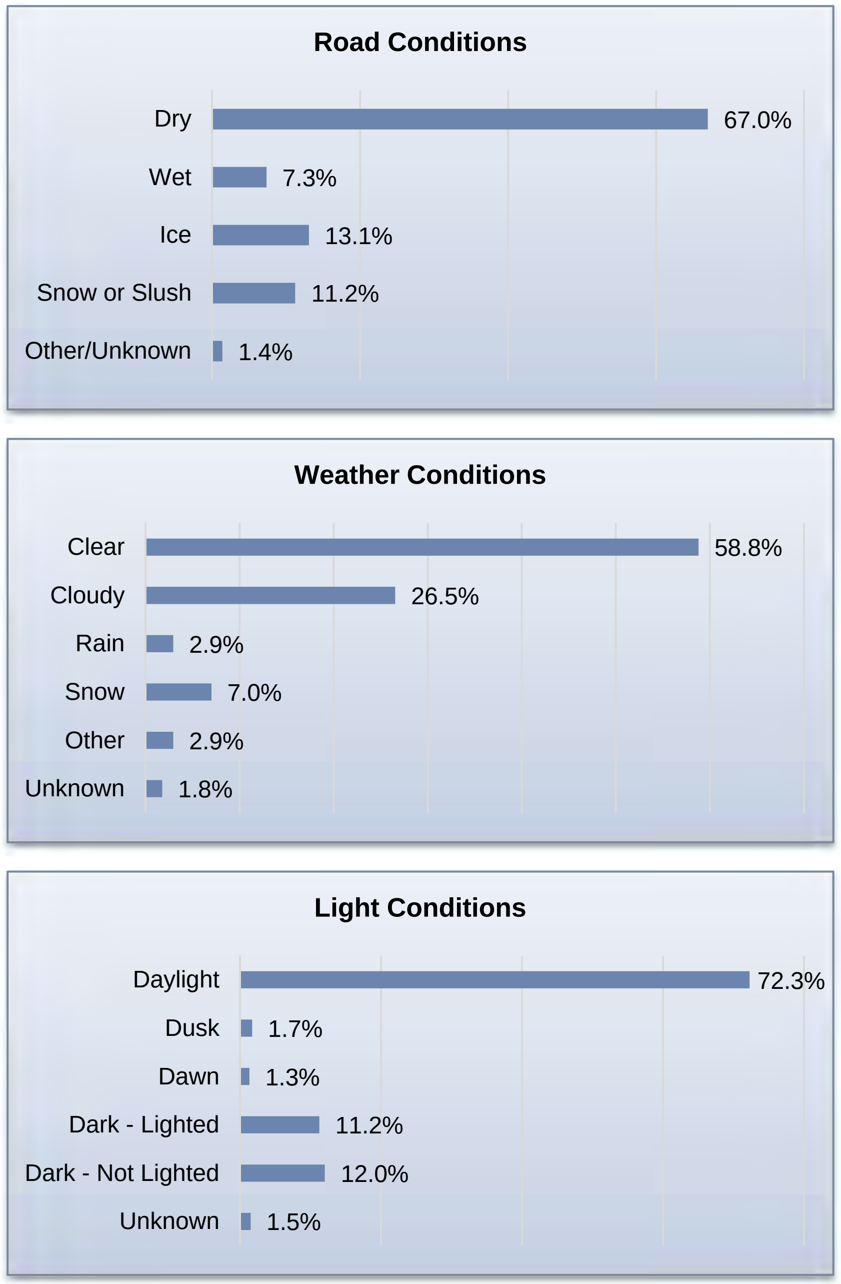




5.1.2 Environmental Factors

Crash data was reviewed to see if any trends exist related to environmental factors such as weather, roadway surfacing, and light conditions. Approximately 67 percent of the reported crashes occurred while the road surface was dry, while approximately 32 percent occurred on wet, icy, snowy, or slushy surfacing. Inclement weather conditions (i.e. rain, snow, sleet, or fog) were present for approximately 10 percent of crashes. Approximately 72 percent of crashes occurred in daylight conditions, while approximately 12 percent of crashes occurred under dark, not lighted conditions. Statistics for environmental factors are presented in **Figure 5.6**.

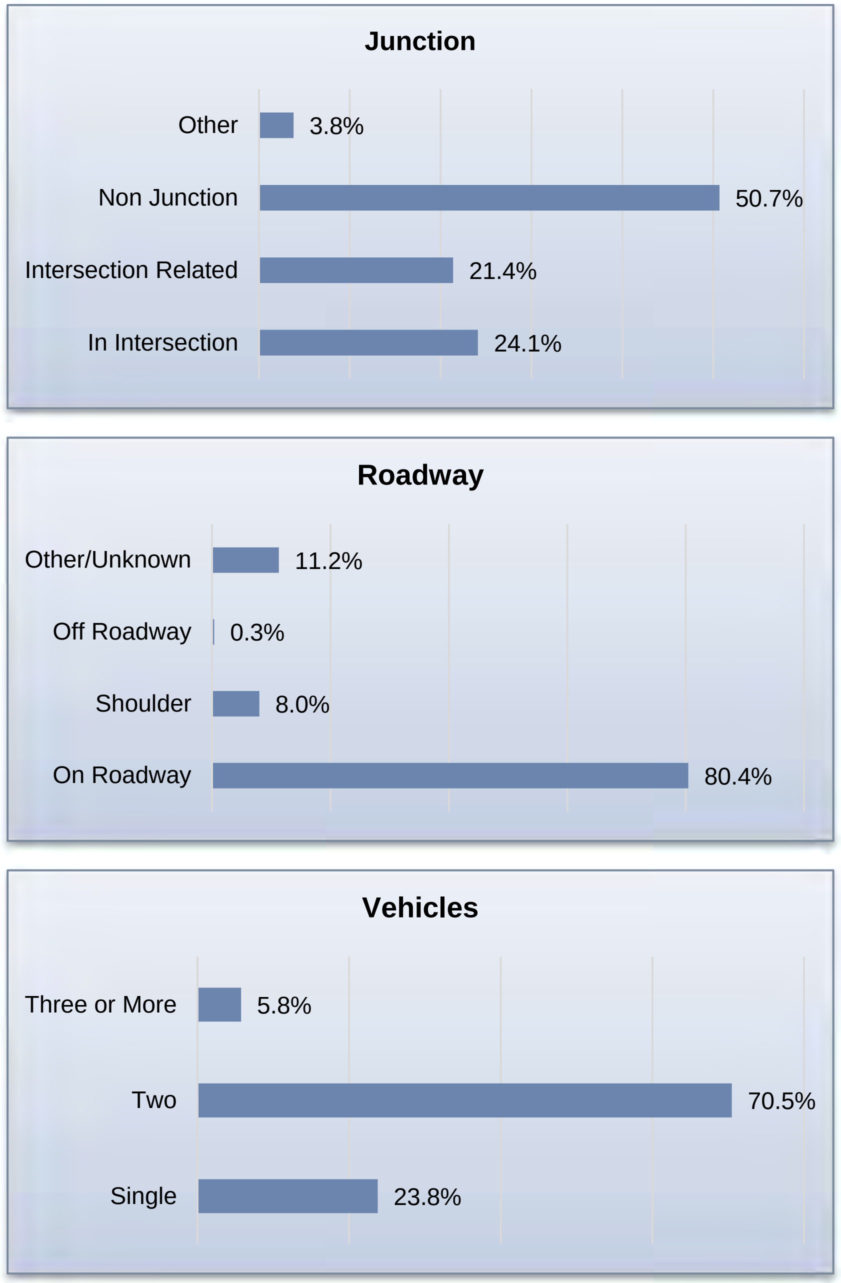
Figure 5.6: Crash Statistics for Environmental Factors



5.1.3 Crash Type

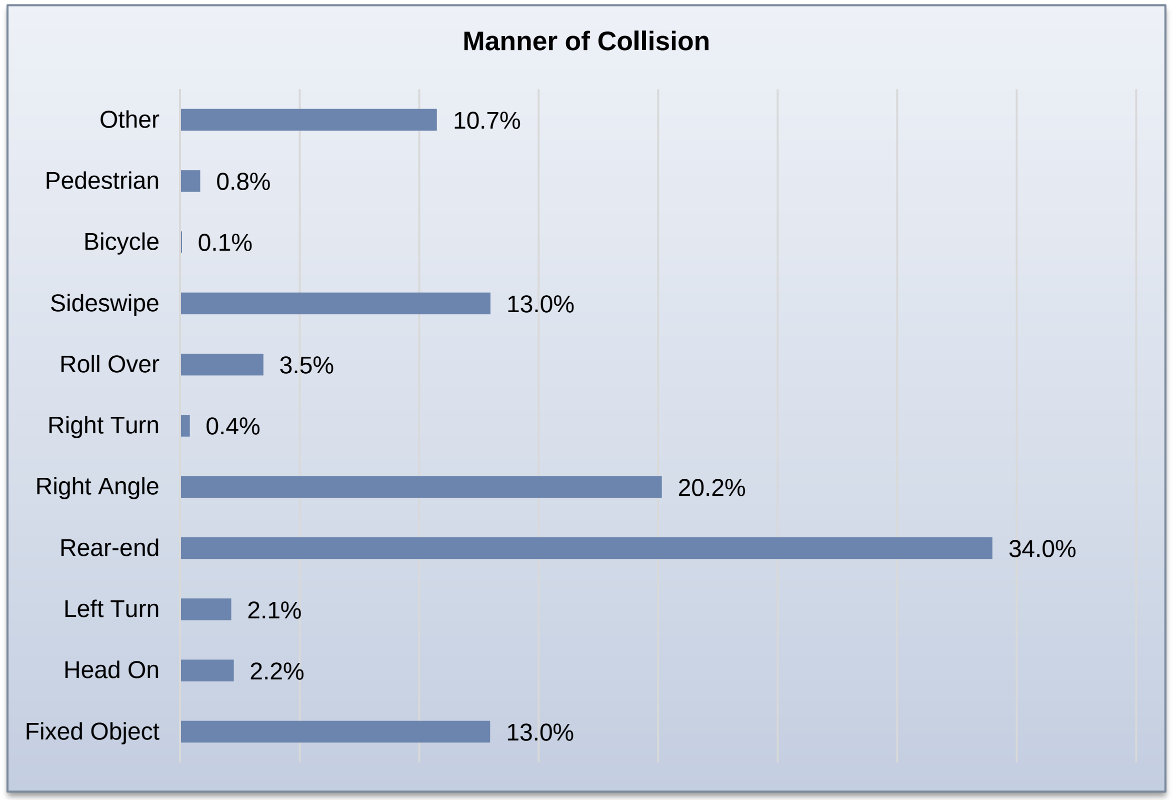
Almost 51 percent of crashes occurred at non-junction locations, while approximately 46 percent of crashes occurred in an intersection or were related to an intersection. Over 80 percent of crashes occurred on the roadway, while approximately eight percent occurred on the shoulder. Single vehicle crashes accounted for fewer than 24 percent of crashes. **Figure 5.7** presents the statistics for crash location and number of vehicles.

Figure 5.7: Crash Statistics for Location and Number of Vehicles



The most common manner of collision was rear end crashes which accounted for 34 percent of reported crashes. Right angle crashes were the next most common, accounting for slightly more than 20 percent of crashes. **Figure 5.8** presents the manner of collisions that occurred within the study area.

Figure 5.8: Crash Statistics for Collision Type



5.1.4 Crash Severity

Reported crashes are categorized by severity. The most severe injury defines the severity of the crash. For example, if a crash results in a fatality and an injury, the crash would be defined as a fatal crash. Presented in **Figure 5.9** are the crash severity statistics. Furthermore, **Figures 5.10** and **5.11** present the locations of crashes which resulted in incapacitating injuries and/or fatalities. 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 they were capable of performing before the injury.

During the five year analysis period, there were 1,467 injury (22 percent) and 27 fatal (0.4 percent) crashes resulting in a total of 1,993 injured and 33 deceased individuals. Of the injury crashes, 140 (approximately 2 percent) resulted in incapacitating injuries. **Figure 5.9** presents the statistics for crash severity.

Figure 5.9: Crash Statistics for Severity

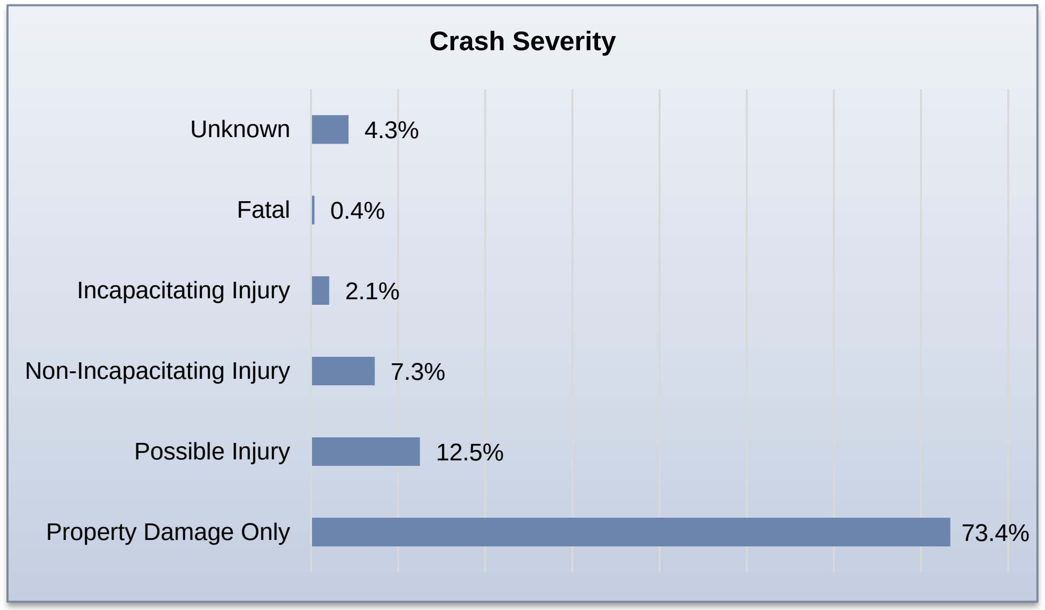
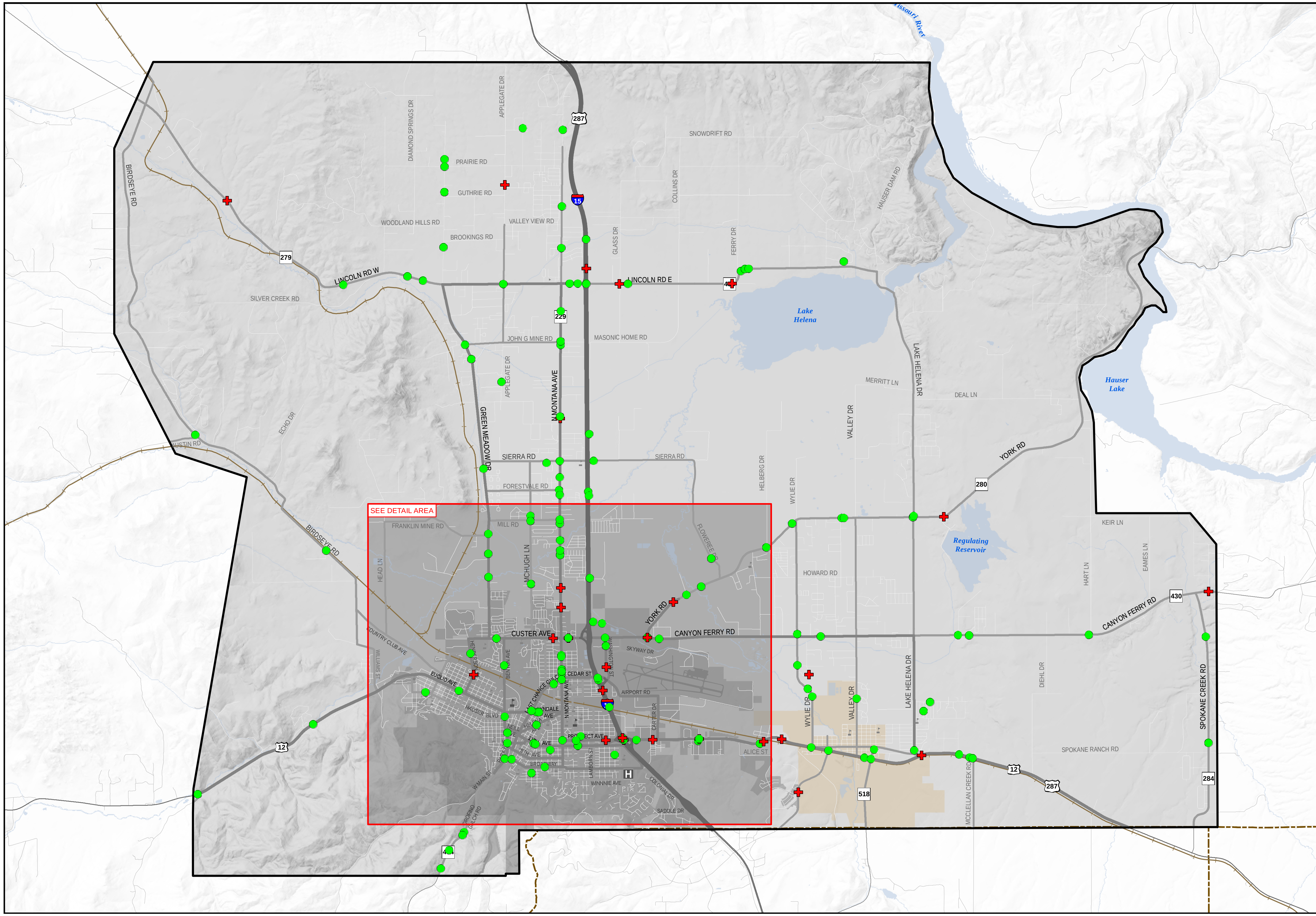


Figure 5.10
Severe Crash Locations



Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Severe Crashes†

- Fatality
- Incapacitating Injury

†Jan 01, 2009 to Dec 31, 2013

0 0.5 1 2 3 Miles

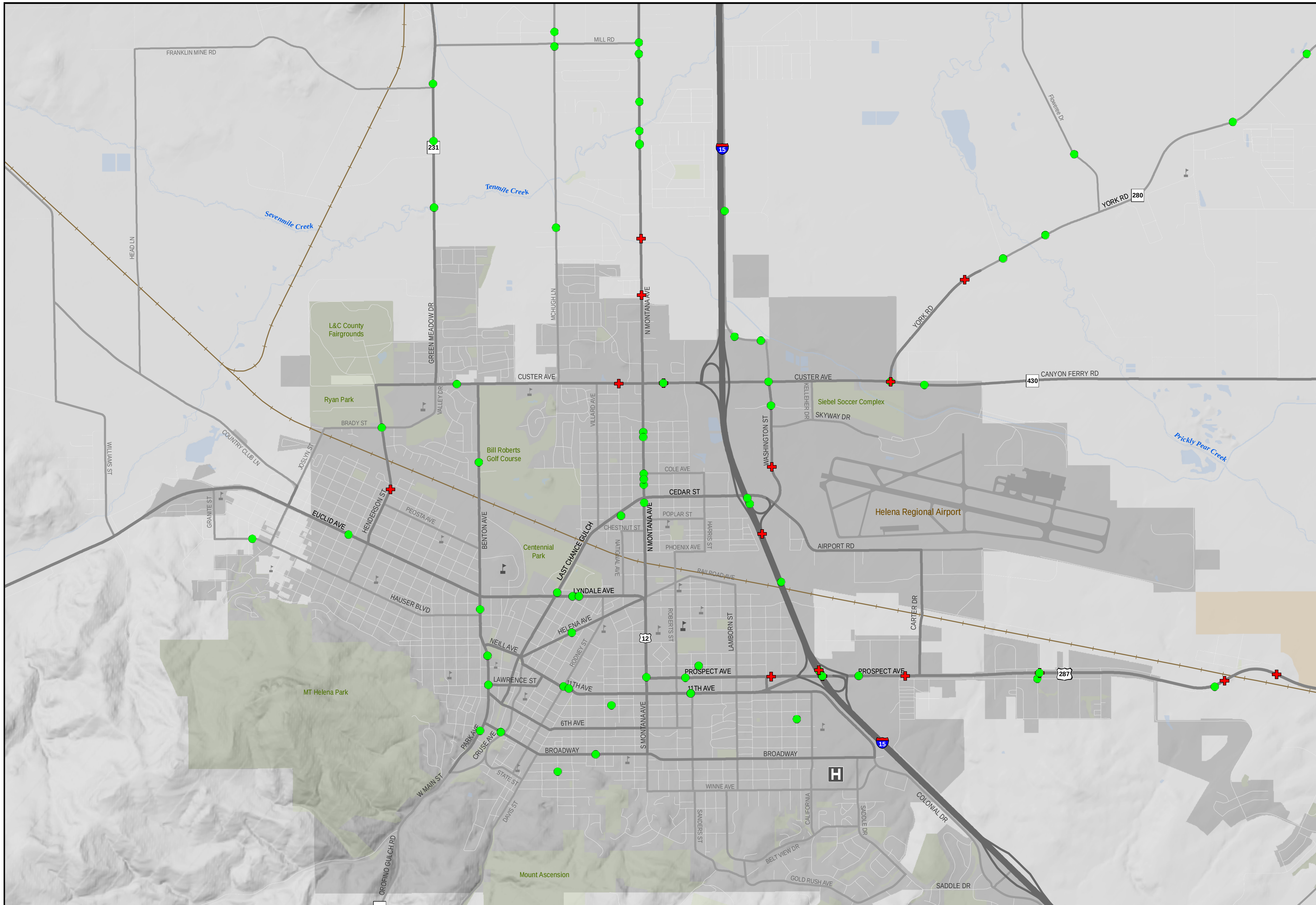


Figure 5.11
Severe Crash Locations
Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Severe Crashes†

- Fatality
- Incapacitating Injury

†Jan 01, 2009 to Dec 31, 2013

0 0.25 0.5 0.75 1 Miles

5.1.5 Intersection Crashes

The 97 intersections that were studied for LOS were also investigated for crashes. The crash information was analyzed to identify those intersections with crash characteristics that may warrant further study.

The number of crashes at each intersection was determined spatially from the GIS crash database. Any crash located within 150 feet was counted for that intersection. Intersection traffic volumes were determined from PM peak hour turning movement counts. A design hourly vehicle (DHV) factor of 10.80 percent was applied to the peak hour counts to estimate daily traffic volumes based on MDT permanent count site locations within the study area.

The crash rate represents the number of crashes against the daily traffic volumes of the intersection. The rate is expressed as the number of crashes per million entering vehicles. The following equation is used to calculate crash rate:

$$\frac{Total\ Number\ of\ Crashes\ \times 1{,}000{,}000\ vehicles}{Vehicles\ per\ day\ \times Number\ of\ Years \times 365\ days/year} = Crash\ Rate$$

The severity index is calculated by applying multipliers to crashes based on severity. For the severity index, crashes were broken into three categories of severity: property damage only (PDO), non-incapacitating injury, and fatality or incapacitating injury crashes. Each of these three types is given a different multiplier: one (1) for PDO, three (3) for injury, and eight (8) for fatality or incapacitating injury crashes. The following equation is used to calculate severity index:

$$\frac{(\#PDO\ \times 1) + (\#Injury\ \times 3) + (\#Fatal\ or\ Incap\ \times 8)}{Total\ Number\ of\ Crashes} = Severity\ Index$$

The severity rate was determined by multiplying the crash rate by the severity index. **Table 5.1** lists the aforementioned crash statistics for each of the studied intersections.

Table 5.1: Intersection Crashes

ID	Intersection	Total Crashes	Fatal	Incap. Injury	Injury	Crash Rate	Severity Index	Severity Rate
1	11th Ave & Fee St	11	0	0	1	0.21	1.18	0.25
2	11th Ave & Lamborn St	0	0	0	0	0.00	0.00	0.00
3	11th Ave & Roberts St	7	0	0	3	0.24	1.86	0.45
4	Applegate Dr & John G Mine Rd	0	0	0	0	0.00	0.00	0.00
5	Applegate Dr & Norris Rd	0	0	0	0	0.00	0.00	0.00
6	Boulder Ave & Sanders St	0	0	0	0	0.00	0.00	0.00
7	Broadway & Colonial	8	0	0	1	0.46	1.25	0.57
8	Broadway & Park	2	0	0	0	0.09	1.00	0.09
9	California & Colonial	13	0	0	4	0.68	1.62	1.10
10	Cleveland & Euclid	1	0	0	1	0.03	3.00	0.08
11	Country Club and Joslyn	5	0	0	1	0.38	1.40	0.53
12	Country Club and Williams	2	0	0	0	0.24	1.00	0.24
13	Custer Ave & Benton Ave	33	0	0	7	0.77	1.42	1.09
14	Custer Ave & Cooney Dr	15	0	0	3	0.38	1.40	0.54
15	Custer Ave & Green Meadow Dr	18	0	0	6	0.56	1.67	0.93
16	Custer Ave & McHugh	16	0	0	5	0.35	1.63	0.56
17	Custer Ave & Sanders St	49	0	0	12	0.72	1.49	1.08
18	Custer Ave & Villard	11	0	0	1	0.28	1.18	0.33
19	Getchell & Lyndale	0	0	0	0	0.00	0.00	0.00
20	Granite & Highway 12	15	0	0	3	0.74	1.40	1.03
21	Green Meadow Dr & Brookfield	5	0	0	0	0.41	1.00	0.41
22	Green Meadow Dr & Forestvale	6	0	0	2	0.54	1.67	0.91
23	Green Meadow Dr & Franklin Mine	3	0	1	0	0.23	3.33	0.78
24	Green Meadow Dr & Mill Rd	4	0	0	2	0.32	2.00	0.64
25	Green Meadow Dr & Sierra Rd	1	0	0	0	0.09	1.00	0.09
26	Green Meadow Dr & Norris Rd	1	0	0	1	0.12	3.00	0.37
27	Harris St & Cedar St	17	0	0	3	0.39	1.35	0.53
28	Head Lane & Country Club Ave	2	0	0	0	0.24	1.00	0.24
29	Henderson St & Custer Ave	6	0	0	0	0.28	1.00	0.28
30	Highway 12 & Lake Helena Dr	5	0	0	0	0.28	1.00	0.28
31	Highway 12 & Lane/Route 518	17	0	1	5	0.61	2.00	1.23
32	Highway 12 & Valley Dr	3	0	0	0	0.10	1.00	0.10
33	Lake Helena Dr & Deal Ln	3	0	0	0	1.54	1.00	1.54
34	Lake Helena Dr & Lewis St	3	0	0	1	0.29	1.67	0.49
35	Lake Helena Dr & Old Highway 12	3	0	0	1	0.24	1.67	0.39
36	Last Chance Gulch & 14th St	8	0	0	1	0.37	1.25	0.46
37	Last Chance Gulch & 6th Ave	8	0	0	0	0.72	1.00	0.72
38	Lawrence & Last Chance Gulch	13	0	0	3	1.25	1.46	1.83
39	Lawrence & Park Ave	14	0	1	2	0.52	1.79	0.92
40	Lincoln Rd & Glass Dr	3	1	0	0	0.46	3.33	1.54
41	McHugh & Mill Rd	4	0	1	1	0.54	3.25	1.75
42	McHugh & Road Runner	0	0	0	0	0.00	0.00	0.00
43	McHugh & Sierra Rd	2	0	0	1	0.37	2.00	0.74
44	Montana Ave & 6th Ave	13	0	0	1	0.49	1.15	0.57
45	Montana Ave & Broadway	11	0	0	2	0.40	1.36	0.54
46	Montana Ave & Forestvale Rd	4	0	1	2	0.24	3.75	0.89
47	Montana Ave & Lodestar	10	0	0	6	0.33	2.20	0.73
48	Montana Ave & Mill Rd	6	0	1	1	0.29	2.50	0.73
49	Montana Ave & Partridge Pl	23	0	0	7	0.51	1.61	0.83
50	Montana Ave & Sierra Rd	10	0	1	1	0.46	1.90	0.88
51	Montana Ave/Helena Ave/Lyndale Ave	10	0	0	3	0.20	1.60	0.32

ID	Intersection	Total Crashes	Fatal	Incap. Injury	Injury	Crash Rate	Severity Index	Severity Rate
52	N Montana Ave & Prairie Rd	4	0	0	1	1.20	1.50	1.80
53	N Montana Ave & Valley Forge Rd	6	0	0	4	0.26	2.33	0.60
54	N Montana Ave & Valley View Rd	2	0	0	0	0.20	1.00	0.20
55	N Montana Ave & Buffalo Rd	7	0	2	2	0.29	3.57	1.02
56	Park Ave & 6th Ave	12	0	0	4	0.50	1.67	0.83
57	Park Ave/Neill Ave/Benton Ave	15	0	0	1	0.40	1.13	0.45
58	Prospect Ave & 18th St	6	0	0	2	0.11	1.67	0.19
59	Prospect Ave & Fee St	9	1	0	2	0.29	2.22	0.64
60	Prospect Ave & Roberts St	2	0	0	2	0.07	3.00	0.22
61	Road Runner Dr & Dredge Dr	3	0	0	1	0.28	1.67	0.46
62	Rodney St & Broadway	14	0	0	3	0.69	1.43	0.98
63	Rodney St & Helena Ave	7	0	0	5	0.51	2.43	1.23
64	Runkie Parkway & Highway 282	0	0	0	0	0.00	0.00	0.00
65	Saddle Dr & Colonial	3	0	0	1	0.15	1.67	0.26
66	Sanders & Cedar	17	0	0	3	0.46	1.35	0.62
67	Villard & Last Chance Gulch	9	0	0	2	0.21	1.44	0.31
68	Washington St & Cromwell Dixon	30	0	1	8	1.10	1.77	1.94
69	Washington St & Skyway Dr	9	0	0	3	0.33	1.67	0.55
70	Williams St & Highway 12	3	0	0	0	0.17	1.00	0.17
71	York Rd & Lake Helena Dr	14	0	2	4	2.05	2.57	5.26
72	York Rd & Valley Dr	3	0	0	0	0.46	1.00	0.46
73	York Rd & Helberg Dr/Herrin Rd	4	0	1	1	0.38	3.25	1.24
74	York Rd & Tizer Rd	3	0	0	1	0.26	1.67	0.44
75	York Rd & Wylie Dr	7	0	0	3	0.91	1.86	1.69
M.1	11th Ave & Montana Ave	13	0	0	4	0.27	1.62	0.43
M.2	Cedar St & Montana Ave	70	0	1	15	1.08	1.53	1.65
M.3	Custer Ave & Montana Ave	89	0	0	25	1.76	1.56	2.76
M.4	Henderson St & Euclid Ave	3	0	0	0	0.09	1.00	0.09
M.5	Highway 12 & Elaine St	1	0	0	0	0.03	1.00	0.03
M.6	Highway 12 & Highway 282	7	0	1	2	0.23	2.57	0.59
M.7	Highway 12 & Lola St	16	1	1	4	0.46	2.38	1.09
M.8	Highway 12 & N Side Frontage Rd	1	0	0	0	0.03	1.00	0.03
M.9	Highway 12 & Nicole St	2	0	0	0	0.06	1.00	0.06
M.10	Highway 12 & S Side Frontage Rd	0	0	0	0	0.00	0.00	0.00
M.11	Highway 12 & Wylie Dr	4	0	1	1	0.11	3.25	0.35
M.12	Josyln St & Euclid Ave	2	0	0	0	0.07	1.00	0.07

ID	Intersection	Total Crashes	Fatal	Incap. Injury	Injury	Crash Rate	Severity Index	Severity Rate
M.13	Last Chance Gulch & Lyndale Ave	21	0	1	5	0.36	1.81	0.65
M.14	Lincoln Rd & Green Meadow Dr	4	0	0	1	0.51	1.50	0.76
M.15	Lincoln Rd & I-15 NM Ramps	3	0	0	2	0.19	2.33	0.44
M.16	Lincoln Rd & I-15 SB Ramps	4	0	0	1	0.24	1.50	0.36
M.17	Lincoln Rd & Montana Ave	5	0	0	1	0.23	1.40	0.32
M.18	Lincoln Rd & Mountain Heritage Rd	1	0	0	0	0.33	1.00	0.33
M.19	Montana Ave & Billings Ave	4	0	0	0	0.11	1.00	0.11
M.20	Montana Ave & Tara Ct	46	0	0	10	0.99	1.43	1.42
M.21	Prospect Ave & Lamborn St	22	0	0	6	0.82	1.55	1.26
M.22	Prospect Ave & Montana Ave	29	0	1	5	0.54	1.59	0.86

The following are the intersections with the highest number of crashes per million entering vehicles:

1. York Rd & Lake Helena Dr 2.05
2. Custer Ave & Montana Ave 1.76
3. Lake Helena Dr & Deal Ln 1.54
4. Lawrence & Last Chance Gulch 1.25
5. N Montana Ave & Prairie Rd 1.20
6. Washington St & Cromwell Dixon 1.10
7. Cedar St & Montana Ave 1.08
8. Montana Ave & Tara Ct 0.99
9. York Rd & Wylie Dr 0.91
10. Prospect Ave & Lamborn St 0.82

The following are the intersections with the highest severity index:

1. Montana Ave & Forestvale Rd 3.75
2. N Montana Ave & Buffalo Rd 3.57
3. Green Meadow Dr & Franklin Mine 3.33
4. Lincoln Rd & Glass Dr 3.33
5. McHugh & Mill Rd 3.25
6. York Rd & Helberg Dr/Herrin Rd 3.25
7. Highway 12 & Wylie Dr 3.25
8. Cleveland & Euclid 3.00
9. Green Meadow Dr & Norris Rd 3.00
10. Prospect Ave & Roberts St 3.00

The following are the intersections with the highest severity rate:

1. York Rd & Lake Helena Dr 5.26
2. Custer Ave & Montana Ave 2.76
3. Washington St & Cromwell Dixon 1.94

4. Lawrence & Last Chance Gulch 1.83
5. N Montana Ave & Prairie Rd 1.80
6. McHugh & Mill Rd 1.75
7. York Rd & Wylie Dr 1.69
8. Cedar St & Montana Ave 1.65
9. Lake Helena Dr & Deal Ln 1.54
10. Lincoln Rd & Glass Dr 1.54

5.2 Safety Data Trend Analysis

The MDT Highway Traffic Safety Section supplied crash statistics for January 01, 2009 to December 31, 2013. A safety data trend analysis was conducted to compare the crash characteristics of Lewis and Clark County against the State of Montana.

5.2.1 Impairment

Of the reported crashes, Lewis and Clark County had a lower rate of alcohol/drug related crashes (7.8 percent) as compared to the State of Montana (9.8 percent of crashes were related to alcohol/drugs). **Table 5.2** presents summary statistics for alcohol/drug related crashes for Lewis and Clark County and the State of Montana.

Table 5.2: Crash Statistics for Alcohol/Drug Related

	Total Crashes	Alcohol/Drug Related Crashes	
Lewis and Clark County	7,949	619	7.8%
State of Montana	101,158	9,899	9.8%

5.2.2 Safety Belt Use

Crashes in Lewis and Clark County had a higher rate of occupants using proper restraints than the State of Montana. Almost 4.8 percent of occupants in Lewis and Clark County, and 7.4 percent of occupants in the State of Montana, involved in crashes were either not using safety belts, or not using them properly. **Table 5.3** presents summary statistics for safety belt usage for Lewis and Clark County and the State of Montana.

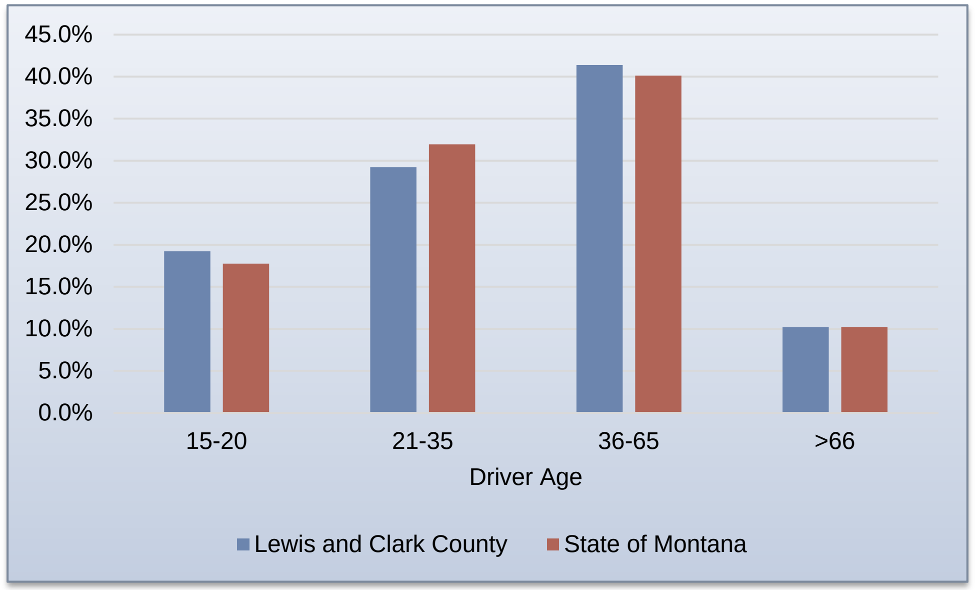
Table 5.3: Crash Statistics for Safety Belt Usage

	Occupant Using Proper Restraints	Occupant Not Using Proper Restraints	
Lewis and Clark County	16,835	843	4.8%
State of Montana	201,520	16,168	7.4%

5.2.3 Driver Age

Younger drivers (under the age of 21) were involved in 19.2 percent of crashes within Lewis and Clark County, compared to 17.7 percent in the State of Montana. Drivers over the age of 65 were involved in 10.2 percent of crashes within Lewis and Clark County, compared to 10.2 percent for the State of Montana. **Figure 5.12** presents the crash distribution for driver age for Lewis and Clark County, and the State of Montana.

Figure 5.12: Crash Distribution for Driver Age



5.2.4 Vehicle Type

Motorcycles were involved in 1.5 percent of crashes in Lewis and Clark County and 2.1 percent of crashes in the State of Montana. Large vehicles were involved in 5.7 percent of crashes in Lewis and Clark County 6.2 percent of crashes in the State of Montana. **Table 5.4** presents summary statistics of crashes by vehicle type.

Table 5.4: Crash Statistics for Vehicle Type

	Total Crashes	Motorcycle Crashes		Large Vehicle Crashes	
Lewis and Clark County	7,949	118	1.5%	455	5.7%
State of Montana	101,158	2,085	2.1%	8269	6.2%

5.3 Pedestrian and Bicycle Crashes

Bicycle and pedestrian collision data analysis can provide City and County staff, and elected and appointed officials, with a case for improved infrastructure and programs that can improve safety of bicyclists and pedestrians. Crash data from the Helena area include many details that help create an informed and complete analysis, including speed limit, involvement of alcohol, time of day, date, day of the week, weather conditions, road surface conditions, and severity. While collision data are sometimes incomplete (e.g. the party at fault in each crash was not indicated in the data analyzed in this section) and do not capture the safety performance of trails nor the frequency of "near misses", unreported crashes, and other potentially harmful or negative interactions between roadway users, it does provide a general sense of the safety issues and crash "hot spots" in Helena.

Identifying corridors, intersections, areas, or specific points where collisions occur more than others can help justify infrastructure improvements and programs at these locations, and other locations with similar conditions, throughout the Helena area. The City of Helena has made improvements immediately following a serious or fatal pedestrian or bicyclist crash. The bicycle and pedestrian bridge on Prospect Ave through the Capital Interchange, the new Custer Ave Interstate 15 interchange, and the underpass on Broadway St are projects that have been implemented in order to reduce the risk and frequency of crashes in recent years.

5.3.1 Pedestrian Crashes

There have been 70 total pedestrian-related crashes recorded between January 1, 2009 and December 31, 2013 within study area boundaries (see **Figure 5.13**). 53 were within Helena City limits. 39 were at intersections, driveways, roadway access points, or were otherwise intersection-related. Seven occurred during inclement weather, two were at dawn or dusk, and 20 at night. All six fatal crashes occurred either during morning and evening commutes or late at night. Only one crash was reported to be alcohol-related, and did not result in any fatalities. In addition to the 2009-2013 crash data analyzed above, rudimentary GIS analysis maps generated from 1991-1995 MDT data show where and how many crashes occurred during that five year period. There were 64 total reported crashes within Helena City limits. The data seems to illustrate that the number of crashes in the same amount of time has decreased by about 17% (from 64 to 53).

The 1991-1995 data depict where the crash "hot spots" were 20 years ago within Helena City limits. They include many of the same streets that were identified above. In addition to linear hot spots, cluster hot spots were identified near Helena High School, Capital High School, and the Euclid and Benton intersection. It appears that these cluster hot spots and the Highway 12/Euclid linear hot spot have had fewer pedestrian-motorist crashes according to the most recent data.

Comparing the number of recorded crash rates for these two periods with the approximate commute percentages of those modes from the US Census and American Community Survey is one way to reach a general conclusion about the overall level of safety for walking in the Helena area. In 1990, Helena area residents walking to work made 7.8% of all commute trips, where as in 2012, this figure had decreased by 22% to 6.1%. The number of crashes also decreased, but by 17%, indicating that rates of walking and rates of pedestrian-motor vehicle crashes are following approximately the same trend.

Concentration

Pedestrian-motorist collisions are concentrated in the following areas or along the following corridors, ranked by number of collisions. These are generally the higher traffic volume corridor within Helena:

- Downtown – 15 collisions (including 6 on or near Last Chance Gulch)
- Capital Interchange (Prospect Avenue & I-15) – 8 collisions (including two fatal collisions)
- Montana Avenue – 7 collisions (including one fatal collision)
- Custer Avenue – 5 collisions (including two fatal collisions)
- Last Chance Gulch (northeast of Centennial Park) - 4 collisions
- Euclid Avenue – 4 collisions

Fatal Crashes

Additionally, five of the six fatal pedestrian-related crashes occurred at, on, or near Montana Ave, Custer Ave, or Capital Interchange. Two of these five were at or in intersections. Sidewalks were present about 50% of the time in these crashes.

5.3.2 Bicycle Crashes

Nationwide, bicyclists are typically at fault in the majority of crashes. This is often due to erratic and unsafe riding behavior including riding on the wrong side of the road, riding on sidewalks, and disobeying traffic control devices. Dedicated bicycling facilities, such as bike lanes, have been shown to improve behavior and increase safer riding practices by providing designated road space and directional cues. From January 1, 2009 to December 31, 2013, there were a total of 35 reported crashes involving bicycles in the Helena area, 24 of which were within Helena city limits (see **Figure 5.14**). 23 of the 35 total crashes (66 percent) occurred at intersections, driveways, roadway access points, or other junctions. One occurred during inclement weather, one at night, and three at dusk or dawn. During the five year crash data collection period, only one of the bicycle-motor vehicle crashes was fatal. There were no crashes between bicyclists and pedestrians recorded during this period in the study area. Unlike the pedestrian crash data, there was no indication of how many of the crashes were alcohol-related.

Between 1991 and 1995, there were 79 total reported crashes within Helena City limits. Comparing this data to newer data seems to illustrate that the number of crashes in the same amount of time has decreased by about 70% (from 79 to 24).

One way to make a general conclusion about the overall level of safety for bicycling in the Helena area is to compare the number of recorded crash rates for our two periods with the approximate commute percentages of those modes from the US Census and American Community Survey. In 1990, Helena area residents bicycling to work made 1.2% of all commute trips, where as in 2012, this figure had increased 56% to 2.7%. The number of crashes decreasing by 70% and the number of commute trips made by bicycle increasing by 56% means that bicycling is not only more popular but potentially safer as well.

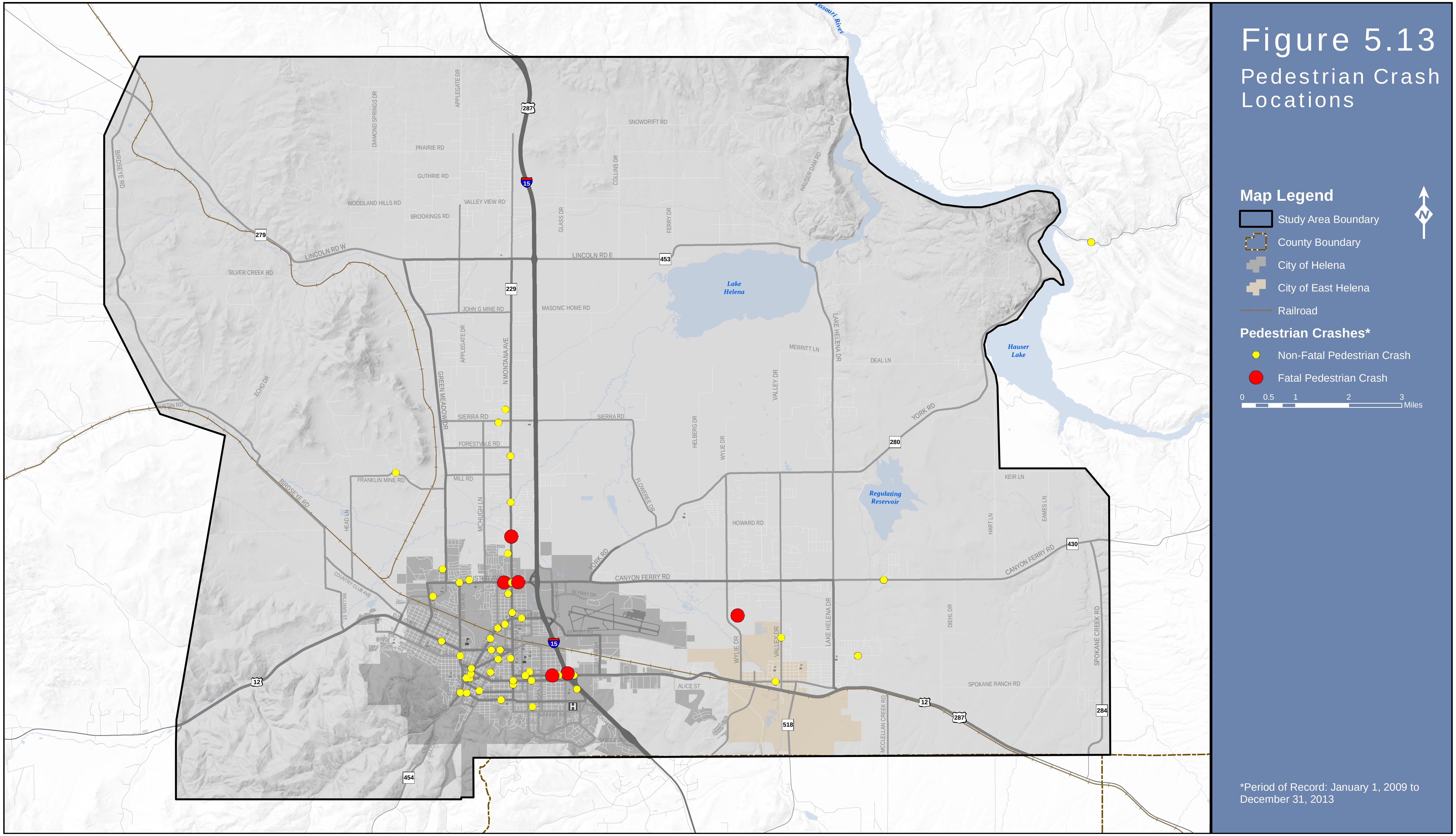
Giving special attention to future educational opportunities for motorists and/or bicyclists may help to increase safety and reduce crashes for both user types; additional information will be provided in the recommendations.

Concentration

Bicyclist-motorist collisions are concentrated in the following areas or along the following corridors, ranked by number of collisions (out of 35 total crashes):

- Prospect Avenue – 7 collisions
- Montana Avenue – 7 collisions (including one fatal collision)
- Euclid Avenue – 5 collisions
- Downtown – 5 collisions

The 1991-1995 MDT bicycle-motor vehicle crash data depict identifies many of the same streets that had high concentrations of crashes in the 2009-2013 data (Montana Avenue, Prospect Avenue near the Capital Interchange, Euclid Avenue/Highway 12, and other streets in the downtown area).



*Period of Record: January 1, 2009 to December 31, 2013

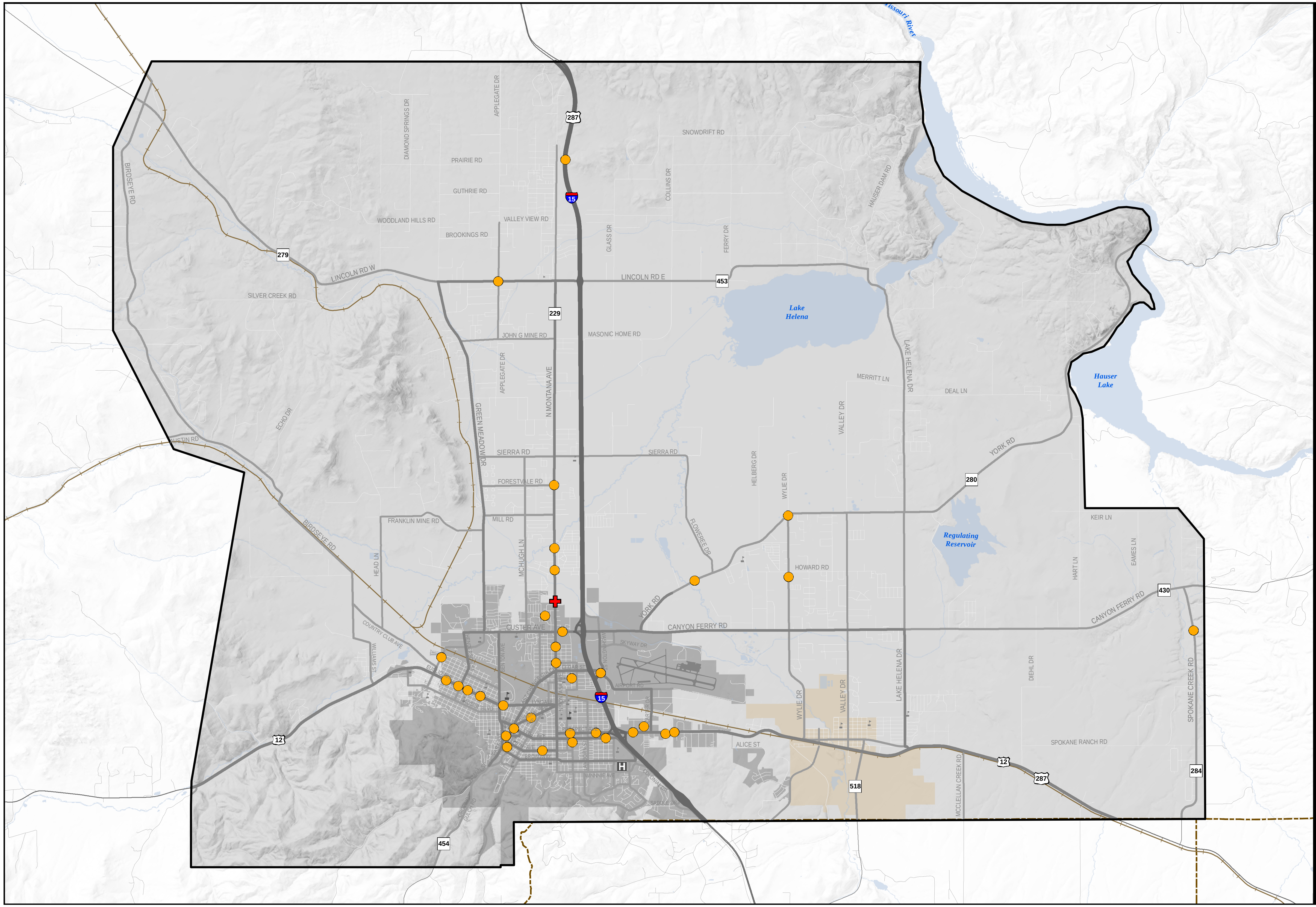


Figure 5.14

Bicycle Crash Locations

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Bicycle Crashes*

- Non-fatal Bicycle Crash
- Fatal Bicycle Crash

0 0.5 1 2 3 Miles

*Period of Record: January 1, 2009 to December 31, 2013

Chapter 6

FREIGHT

The Helena area is located along local, regional, and international trade routes. On a local level, many businesses rely on timely freight delivery in order to provide products to their customers. It is important that delivery vehicles are able to travel through the area in a safe and effective manner. Regionally, Helena sits along routes connecting the cities of Bozeman, Butte, Great Falls, and Missoula. Two major roadways serve as these connections, US Highway 12 runs east-west, and Interstate 15 runs north-south. At international scales, Helena is situated along the Canamex Corridor, a freight corridor connecting Canada, the United States, and Mexico.

Helena is also situated along Montana Rail Link's (MRL's) east-west rail line that connects Laurel, Montana with Sandpoint, Idaho. MRL averages 35 trains passing through the study area each day, with 18 of those trains passing between 6:00 AM and 6:00 PM, making this line MRL's busiest route[3]. In addition to MRL's line through the area, Burlington Northern Santa Fe Railways (BNSF) has a rail line that travels from Helena to Great Falls. This line is currently non-operational due to damage along the route.

6.1 Truck Services and Facilities

Statewide, freight carried by truck accounts for 55 percent of all freight in terms of dollars of freight[4]. **Figure 6.1** presents the percent share of freight value by mode. It can be seen that truck and pipeline carry the vast majority of goods. Twenty-two percent of total freight is transported into Montana on trucks.

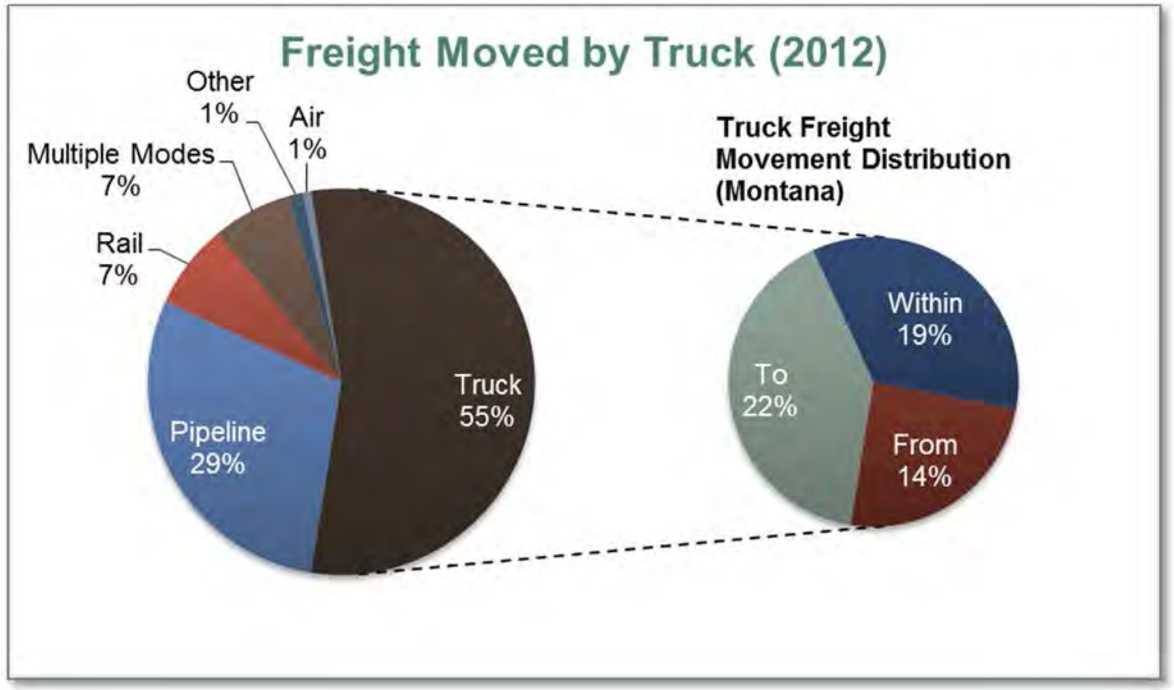


Figure 6.1: Freight Moved by Truck (2012)

6.2 Existing Conditions

This section summarizes the existing truck facilities, routes, and high freight activity zones within the study area.

6.2.1 Facilities

There are no designated truck routes within the Greater Helena LRTP study area. Geography and trade routes generally dictate which roads trucks use. For north/south travel, I-15 is used due to the relatively high speed limit and controlled access. In 2013, I-15 carried upwards of 900 heavy trucks per day, on average, through the study area. For east/west travel, US 12 is commonly used. US 12 traverses the city of Helena as Prospect Avenue, 11th Avenue, Montana Avenue, Lyndale Ave, and Euclid Ave. This route has at least two lanes in each direction throughout Helena, and requires passing through 17 traffic signals. In 2013, the principal arterials that make up US 12 within Helena carried upwards of 500 heavy vehicles per day. Outside of Helena, US 12 carried approximately 750 heavy trucks per day. **Table 6.1** summarizes the average annual daily traffic (AADT) and percentage of heavy vehicles at various locations throughout the study area.

Table 6.1: Percent of Heavy Vehicles

Location	2013 AADT	Percent Heavy Vehicles	2013 Heavy Vehicles (per day average)
US 12 - east of Lake Helena Drive	6,160	5.7	351
US 12 - between Carter Dr and Wylie Dr	20,730	3.6	746
US 12 - between 11th Ave and Carter Dr	23,950	3.1	742
Montana Ave - between Prospect Ave and Lyndale Ave	18,840	2.0	377
Lyndale Ave - between Last Chance Gulch and Benton Ave	20,280	2.9	588
Eulcid Ave - west of Joslyn St	11,560	5.0	578
Custer Ave - east of I-15	18,860	3.2	604
Custer Ave - west of I-15	23,620	2.6	614
Montana Ave - north of Custer Ave	21,960	1.1	242
I-15 - south of South Helena Interchange	9,760	7.0	683
I-15 - south of Prospect Ave	13,270	5.1	677
I-15 - south of Cedar Ave	23,720	3.7	878
I-15 - south of Custer Ave	16,990	5.2	883
I-15 - south of Lincoln Rd	10,730	7.4	794
I-15 - north of Lincoln Rd	4,300	18.4	791

Source: Montana Department of Transportation Data and Statistics Bureau, Traffic Data Collection Section, 2014

6.2.2 Future Demand

According to the data collected from the Freight Analysis Framework (presented in **Figure 6.2**), it is expected that by 2040 trucks will have increased their mode share to 60 percent (as compared to 55 percent now) based on value of freight carried. This increase will increase the volume of trucks travelling along the roadways of Montana and within the study area.

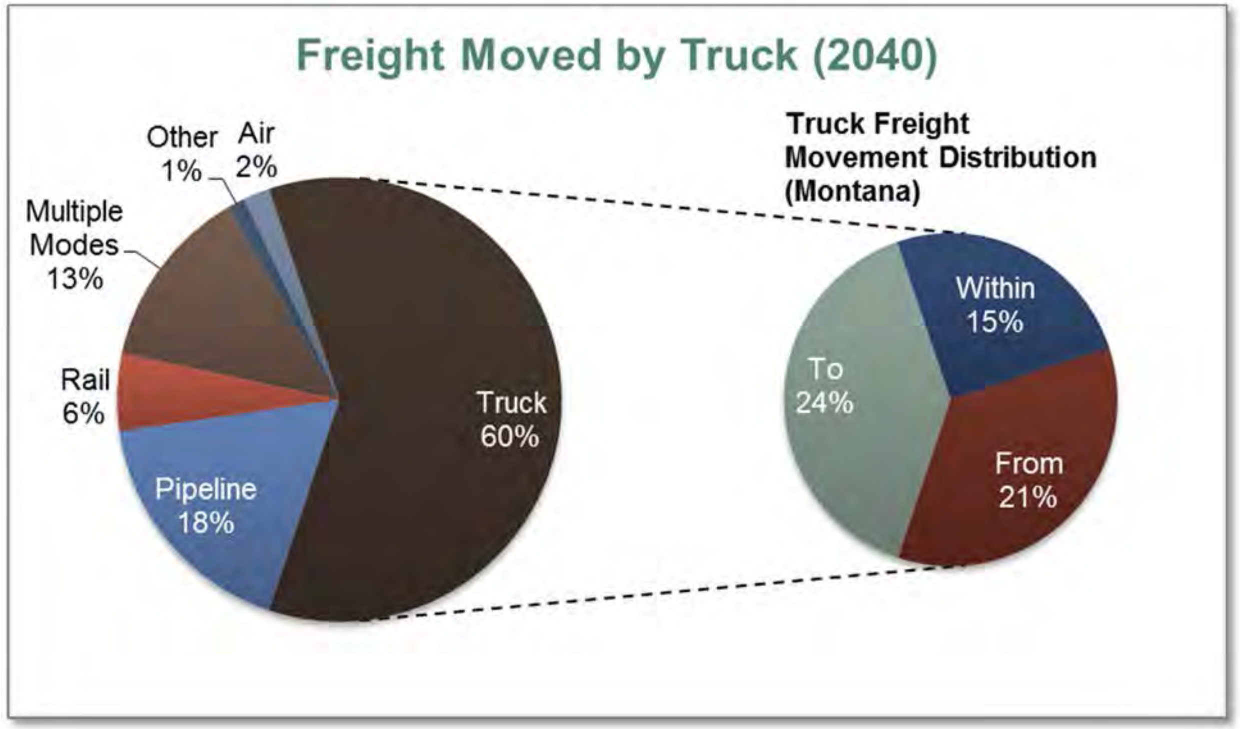


Figure 6.2: Freight Moved by Truck (2040)

6.2.3 Activity Centers

The spatial location of trucking activity centers can greatly affect the transportation network as a whole. For example, if a business wishes to receive daily deliveries from large trucks, they would need to ensure that the trucks have a safe location to unload goods. If a loading dock or large parking area were not available, it is possible the truck would have to stop in the roadway while unloading (note that the latter does occur in some areas of Helena's downtown). This would block traffic and may create a safety hazard. Many businesses that generate a high volume of truck traffic tend to be located in industrial or commercial areas that allow for large unloading areas. While not exhaustive, **Figures 6.3** and **6.4** present the locations of trucking activity centers located in the study area boundary.

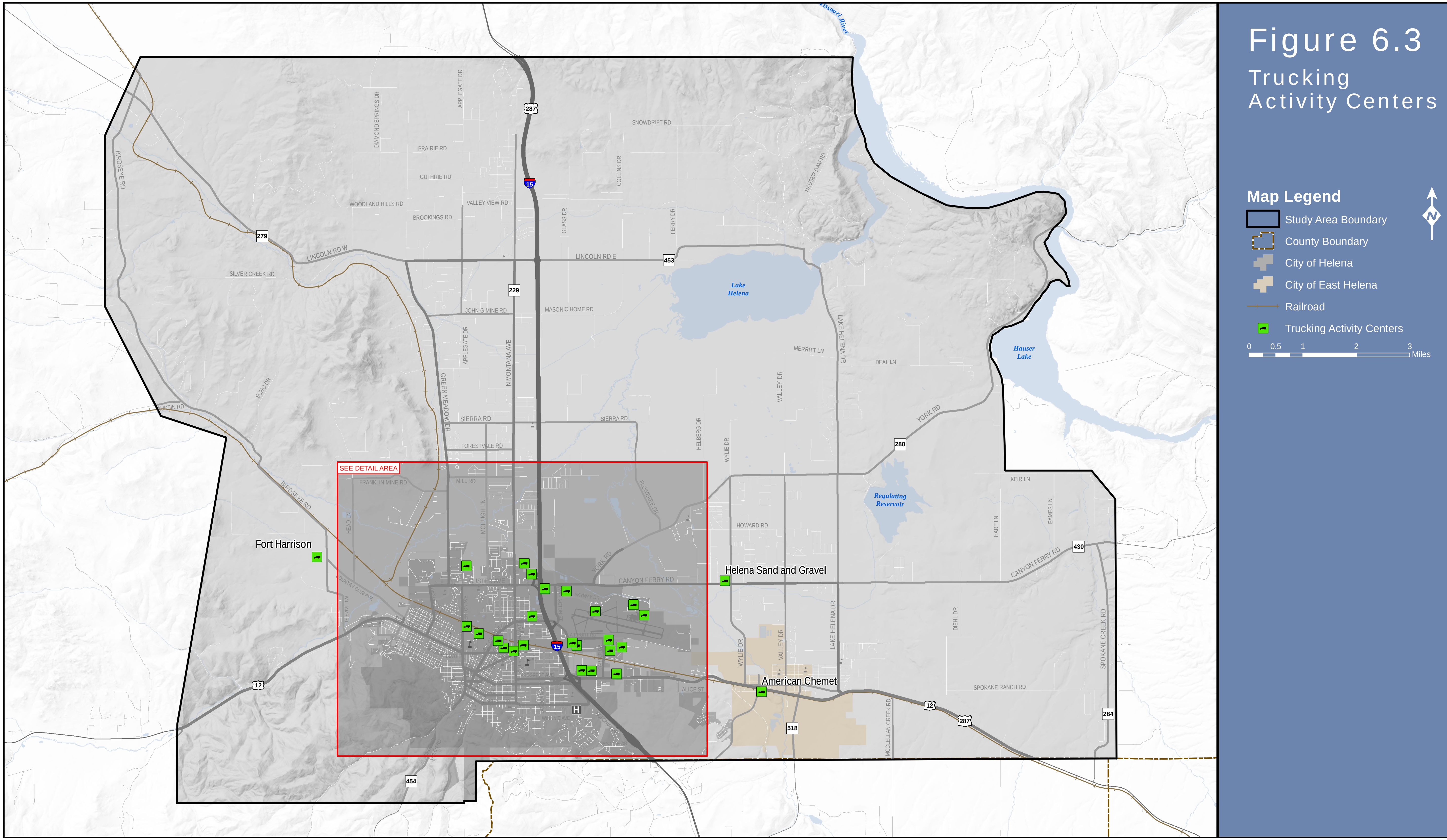


Figure 6.3
Trucking Activity Centers

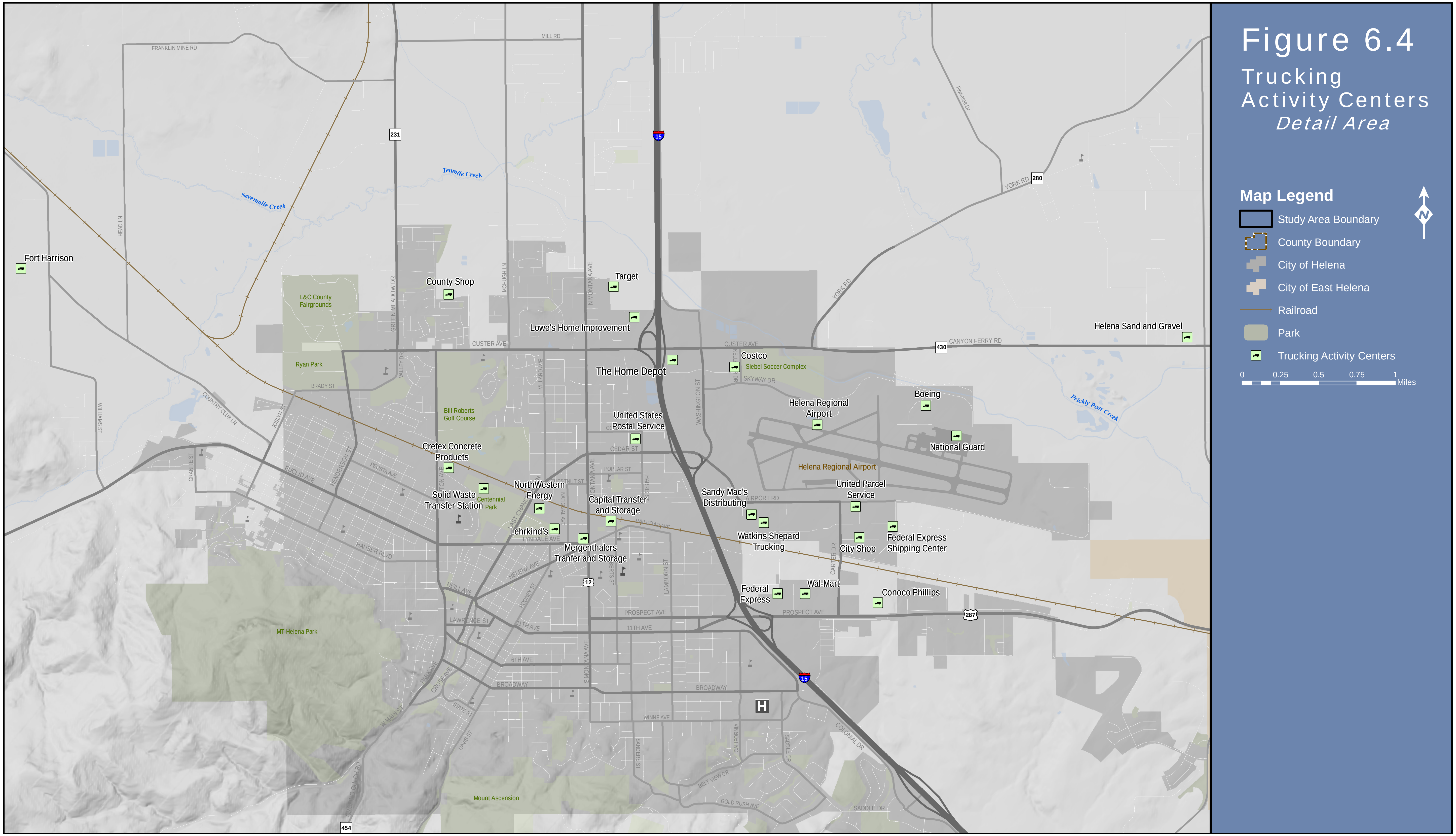


Figure 6.4
Trucking Activity Centers
Detail Area
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Park
Trucking Activity Centers
0 0.25 0.5 0.75 1 Miles
Fort Harrison
County Shop
Target
Lowe's Home Improvement
The Home Depot
Costco
Siebel Soccer Complex
Helena Sand and Gravel
Boeing
Helena Regional Airport
National Guard
United States Postal Service
Cretex Concrete Products
NorthWestern Energy
Solid Waste Transfer Station
Capital Transfer and Storage
Lehrkind's
Mergenthalers Tranfer and Storage
Sandy Mac's Distributing
Watkins Shepard Trucking
United Parcel Service
City Shop
Federal Express Shipping Center
Federal Express
Wal-Mart
Conoco Phillips
L&C County Fairgrounds
Ryan Park
Bill Roberts Golf Course
Centennial Park
MT Helena Park
Mount Ascension
Tenmile Creek
Sevenmile Creek
Prickly Pear Creek

6.3 Rail Service and Facilities

Statewide, freight carried by rail accounts for seven percent of all freight in terms of dollars of freight. **Figure 6.5** presents the percent share of freight value by mode. It can be seen that truck and pipeline carry the vast majority of goods. It can also be seen that five percent of total freight value is carried from Montana by rail.

The Helena area sits along MRL's main east/west rail line that travels from Laurel, Montana to Sandpoint, Idaho. On this line, MRL operates its own trains along with shuttling BNSF trains. The average number of trains passing through the study area each day is 35, with 18 of those trains passing between 6:00 AM and 6:00 PM, making this line MRL's busiest route[5]. A north/south line owned by BNSF exists in the study area, however, it is non-operational due to damage between Helena and Great Falls. **Table 6.2** depicts the rail crossing volumes within the Helena city limits.

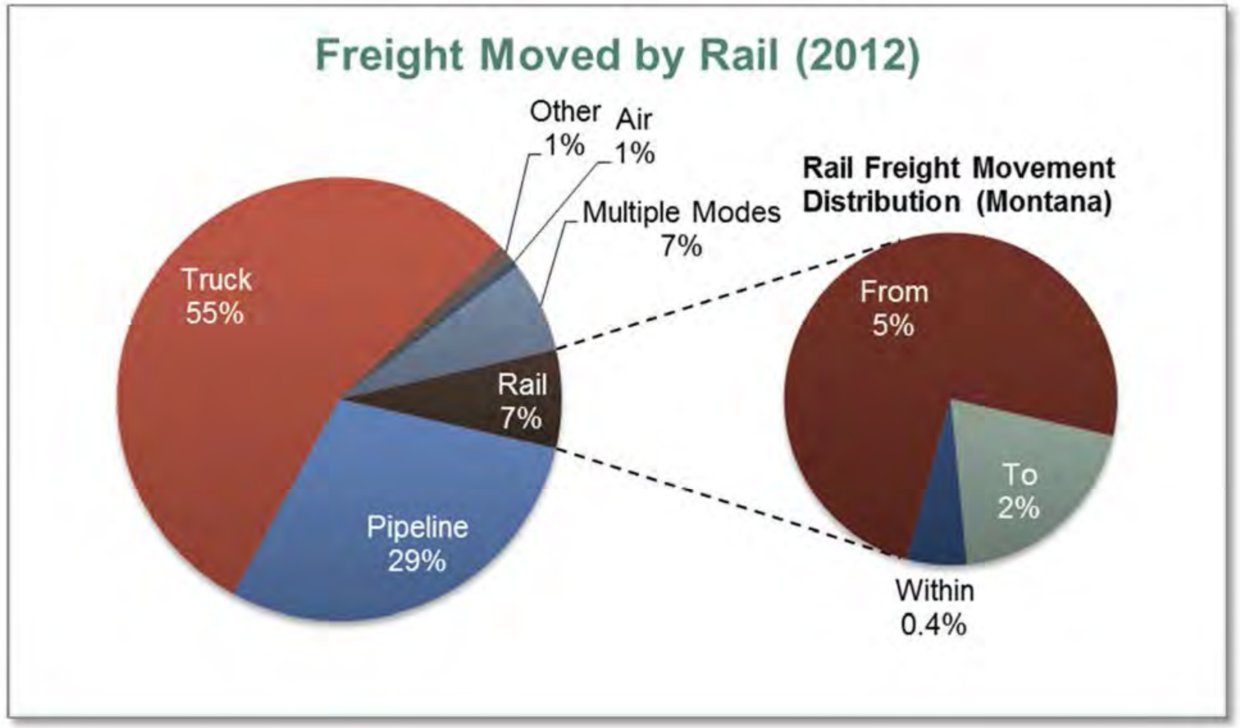


Figure 6.5: Freight Moved by Rail (2012)

Table 6.2: At-grade Rail Crossing Volumes

Crossing Location	Crossing Number	Crossing Type	Crossing Position	Total Trains	Total Switching Trains	Total Daylight Thru Trains (6 AM – 6 PM)	Effective Date
Carter Dr	060190U	Main	At-Grade	29	4	15	06/30/14
Carter Dr	086240V	Industry	At-Grade	0	2	0	06/30/14
Roberts St	060192H	Main	At-Grade	35	14	18	06/30/14
Roberts St	913786R	Depot	At-Grade	0	0	0	06/30/14
Montana Ave	060193P	Main	At-Grade	35	0	18	06/30/14
Montana Ave	060198Y	Industry	At Grade	0	0	0	06/30/14
National Ave	086375B	Main	At Grade	35	0	18	06/30/14
National Ave	086358K	Industry	At Grade	0	0	0	06/30/14
Benton Ave	060199F	Main	At Grade	35	0	18	06/30/14
Benton Ave	060200X	Spur	At Grade	0	0	0	06/30/14
Joslyn St	098742R	Main	At Grade	35	0	18	06/30/14

Source: Data obtained from City of Helena on 08/12/2014 and is based on US DOT Crossing Inventory Form(s) provided by Montana Rail Link on 07/13/2014 for the purposes of updating data in the Railroad Quiet Zone Feasibility Study.

6.3.1 Existing Conditions

The east/west MRL rail line that traverses the study area consists of one continuous rail line with various sidings and spur lines. Within the city of Helena, typical speed ranges over the crossings are 10 – 20 mph (for mainline crossings at Roberts Street, Montana Avenue and National Avenue) and 10 – 45 mph (for mainline crossings at Carter Drive, Benton Avenue and Joslyn Street). Speeds are limited to a maximum of 45 mph for all mainline crossings in the city.

6.3.2 Traffic Impact

Inevitably, roadways and railroads must cross. At these locations there is opportunity for conflict between road users and the rail traffic, therefore, crossing control is required. Crossing control can be broken into two categories, at-grade and grade-separated. At-grade crossing are designed such that vehicles are driven directly over the railway at the same elevation. At-grade crossings can have either active or passive traffic control systems. The Manual on Uniform Traffic Control Devices (MUTCD) defines passive traffic control systems as consisting of signs and pavement markings only, whereas active traffic control systems consist of any system that includes four-quadrant gate systems, automatic gates, flashing-light signals, traffic control signals, actuated blank-out and variable message signs, and other active traffic control devices.[6] Grade-separated crossings are any crossing in which vehicle traffic is able to cross the railway over a bridge or through an underpass. Grade-separated crossings eliminate the conflict between vehicles and trains, however, these crossing are more expensive than an at-grade crossing. **Table 6.3** summarizes the location and type of each rail crossing within the study area. Many of the at-grade crossings exist in locations with relatively low traffic volumes. Within the city limits of Helena six at-grade crossings exist. At each of these locations, vehicular traffic is required to stop and wait for trains as they pass. Three grade-separated crossings exist within the Helena city limits. One of the grade-separated crossings, at Henderson Street, is an underpass with a clearance height of 14 feet. This height can cause limitations for large vehicles attempting to travel through the area.

Table 6.3: Railroad Crossings

ID #	Location	Type	Active/Passive	2013 Roadway AADT	Notes
MRL Line from Laurel, MT to Sandpoint, ID					
1	S. Mitchell Gulch Rd	At-grade	Passive	Not available	
2	McClellan Creek Rd	At-grade	Passive	Not available	
3	MT 518	At-grade	Active	2,140	
4	S. Montana Ave	At-grade	Active	Not available	
5	HWY 282	At-grade	Active	Not available	Multiple crossings
6	HWY 282	At-grade	Passive	Not available	Montana City spur
7	US 12	Grade-separated	N/A	20,730	Overpass
8	Carter Dr	At-grade	Active	4,500	
9	Carter Dr	At-grade	Passive	4,500	Spur Line
10	I-15	Grade-separated	N/A	23,720	Overpass
11	N. Roberts St	At-grade	Active	2,840	Multiple crossings
12	N. Montana Ave	At-grade	Active	13,900	Multiple crossings
13	National Ave	At-grade	Active	Not available	Multiple crossings
14	Last Chance Gulch	Grade-separated	N/A	17,920	Overpass
15	Benton Ave	At-grade	Active	9,840	
16	Henderson St	Grade-separated	N/A	7,600	Underpass
17	Joslyn St	At-grade	Active	2,790	
18	Head Ln	At-grade	Active	310	
19	Birdseye Rd	At-grade	Passive	2,310	Spur
20	Birdseye Rd	At-grade	Active	1,510	
BNSF Line to Great Falls (inactive)					
21	Alfalfa Rd	At-grade	Passive	Not available	
22	Franklin Mine Rd	At-grade	Passive	690	
23	Hill Dr	At-grade	Passive	Not available	
24	Norris Rd	At-grade	Passive	420	
25	John G Mine Rd	At-grade	Passive	280	
26	Silver Creek	At-grade	Passive	Not available	
27	Lincoln Rd	At-grade	Active (no gate)	2,020	
28	Chevallier Dr	At-grade	Passive	50	

6.3.3 Future Demand

The data provided by the Freight Analysis Framework (given in **Figure 6.6**) shows that by 2040 rail will account for six percent of the freight, by value, transported in Montana. This is a small decrease from the 2012 value of seven percent. It is, however, hard to predict the impact that the small decrease in proportion of rail freight to total freight, between 2013 and 2040, has on actual rail traffic volume and frequency in the Helena area. It is likely that with conducive economic factors and future yet-to-be-identified rail infrastructure improvements that rail traffic through the Helena area could possibly increase over the planning horizon.

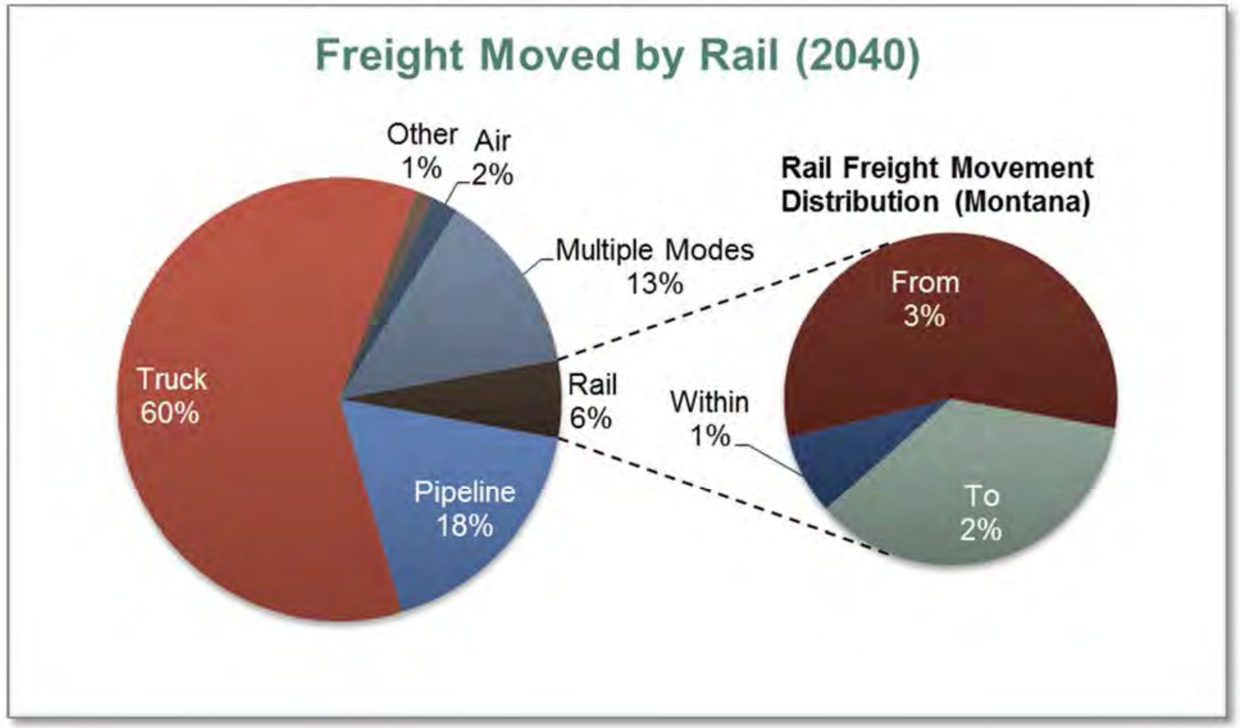
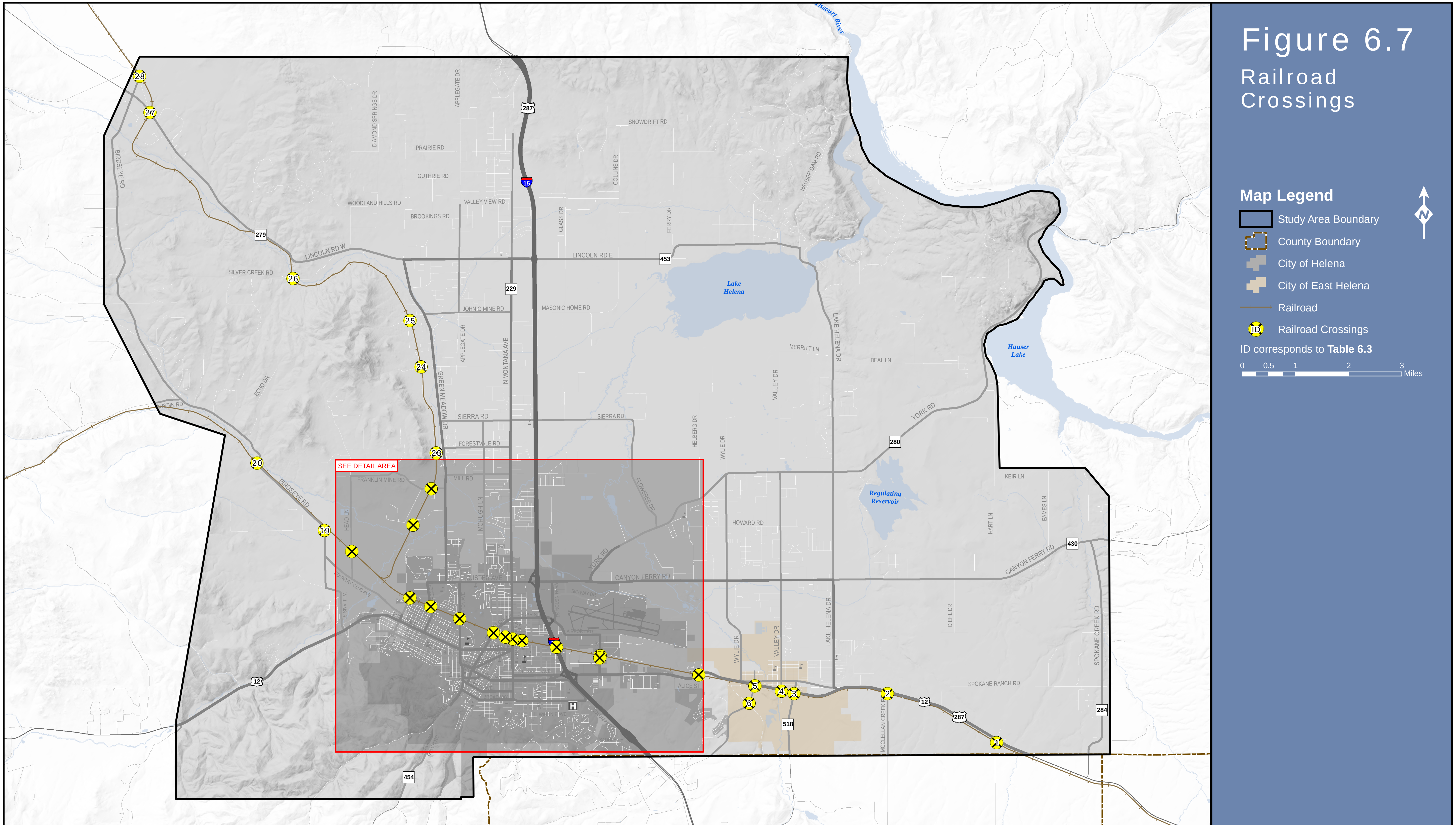


Figure 6.6: Freight Moved by Rail (2040)

6.4 Conclusion

Within any transportation network, large vehicles affect traffic flow and patterns by decreasing the available capacity of the roadway. Within the Helena area heavy trucks account for nearly five percent of the traffic stream along major routes. In addition to large trucks, the rail line traversing the area has 16 active at-grade crossings, some of which cross roadways with over 4,000 AADT. **Figures 6.7** and **6.8** present the spatial distribution of the rail crossings in the study area. With traffic and freight volumes expected to increase in the coming years, it will be important that freight traffic, both trucks and rail, be taken into consideration with any possible changes to the transportation network. Potential influences of freight traffic on transportation network planning include, but are not limited to:

- Providing grade-separated crossings,
- Reinforcing at-grade crossing infrastructures,
- Ensuring adequate lane width for trucks, and
- Ensuring adequate turning radii for trucks at intersections.


SEE DETAIL AREA
Lake Helena
Hauser Lake
Regulating Reservoir
LINCOLN RD W
LINCOLN RD E
SIERRA RD
CANYON FERRY RD
YORK RD
BIRDSEYE RD
SPOKANE RANCH RD
Figure 6.7
Railroad Crossings
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Railroad Crossings
ID corresponds to Table 6.3
0 0.5 1 2 3 Miles

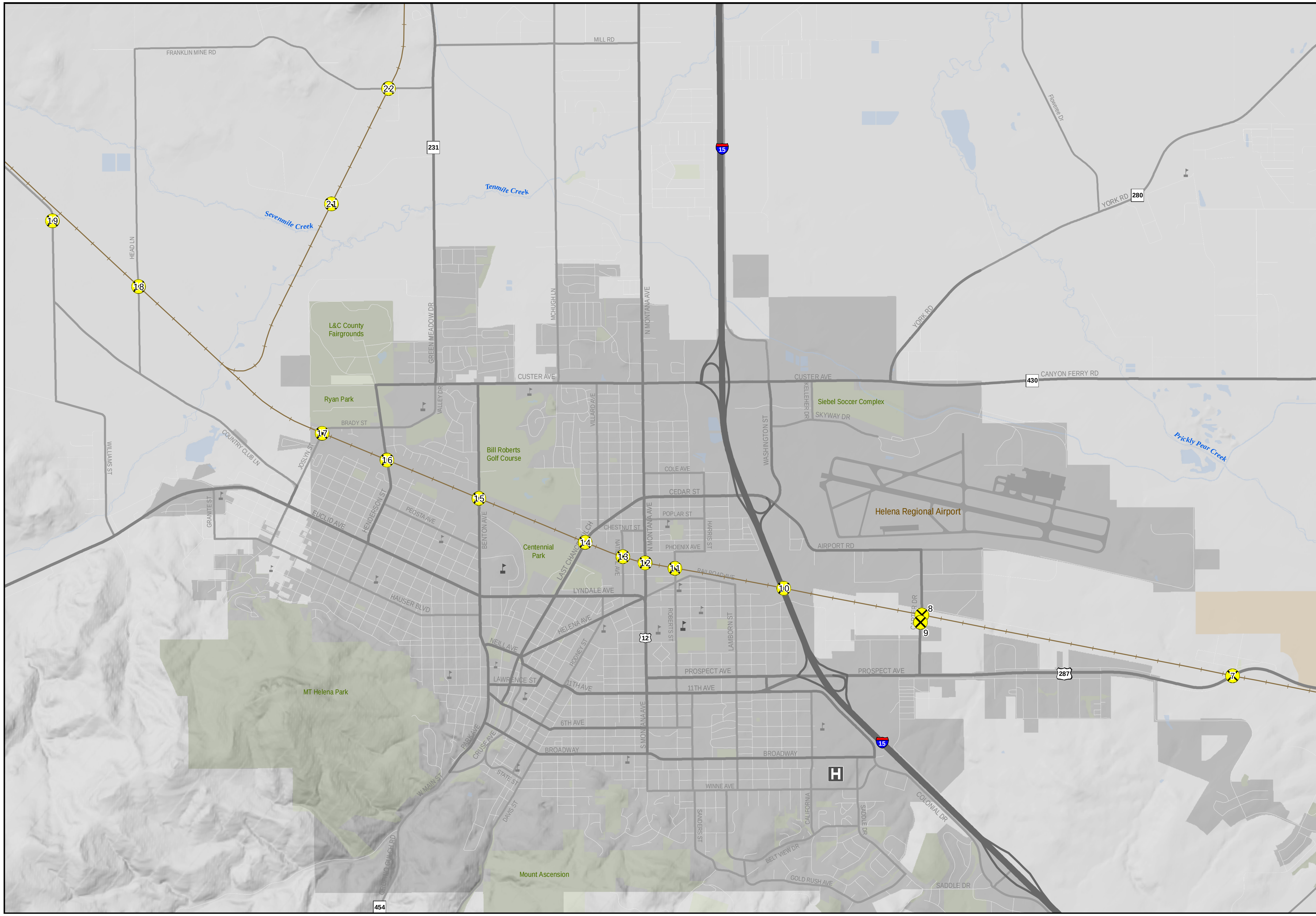


Figure 6.8
Railroad Crossings
Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park
- Railroad Crossings

ID corresponds to **Table 6.3**

0 0.25 0.5 0.75 1 Miles

Chapter 7

RURAL ROAD CONSIDERATIONS

7.1 Introduction

This chapter focuses on several topics concerning rural roadway conditions in Lewis and Clark County and within the study area boundary for the LRTP. As Lewis and Clark County is currently in the process of updating its Growth Policy with focus on the Helena Valley Planning Area, this chapter attempts to summarize road planning and engineering efforts to date. In addition, this narrative attempts to portray the significant financial hurdles the County realizes in implementing needed road improvements. LRTP roadways will continue to degrade without funding. Most information summarized in this introduction has been taken directly from the Lewis and Clark County Growth Policy Update Report[7], dated September 2014.

Most of the local roads in the Helena Valley Planning Area are built for low volumes of traffic. As growth occurs, these low volume roads must be upgraded to accommodate additional traffic and to be brought into compliance with the County's roadway standards (see **Section 7.2**). The cost of upgrading substandard roads to accommodate growth has historically been borne by the developer, however this manner of funding road improvements was successfully challenged by the development community in recent years. At current funding levels, Lewis and Clark County cannot maintain a high level of road maintenance on existing roads, let alone pay to upgrade roads to handle increasing traffic volumes.

7.1.1 Gravel Roads

Because gravel roads typically have low traffic thresholds and generate dust that affects air quality, gravel is not an appropriate surface to accommodate high traffic volumes and significant growth. Once a road serves 400 vehicle trips on an average weekday (just over 40 residences), County standards (see **Section 7.2**) call for roads to be paved. The need for paving is driven by the number of vehicle trips per se, but studies have documented that once a certain number of residences are established, the percentage of heavy truck traffic on the road increases, which disproportionately increases wear and tear and can cause damage to the road base that is not designed to support heavy loads. In order to accommodate projected growth over the next 20 years, many currently gravel roads will have to be upgraded and will require increased levels of maintenance. In 2014 the Lewis and Clark County Public Works Department completed a PASER analysis of gravel roads. That analysis found that within the LRTP study area boundary there are 17.83 miles of gravel roads that are in a poor or failing condition.

7.1.2 Paved Roads

To evaluate the condition of its paved roads, Lewis and Clark County uses the PASER Manual for Paved Roads published by the Transportation Information Center at the University of Wisconsin. Using this manual as a guide, the Lewis and Clark County Public Works Department has objectively evaluated the state of roadways by the condition of the paved surface. The PASER evaluations rate the condition of the road on a scale of 1 to 10, with 1 being "failing" and 10 being "excellent." Based on its road construction experience, the Public Works Department estimates a roadway that is ranked as a 1 or 2 per the PASER grading system costs $1,000,000 a mile to fix, while a road ranked as a 3 or 4 costs $250,000 per mile or one quarter the cost. The PASER analysis does not determine if the roadway is built to county standards in terms of design factors such as roadway width and alignment – that is determined through individual Preliminary Engineering Reports (PERs) for specific facilities - but it is a readily available and effective means of identifying paved roads that are unsuitable for servicing high density subdivisions. In 2014 the Lewis and Clark County Public Works Department completed a PASER analysis of hard surfaced county roads. That analysis found that within the LRTP study area boundary there are 26.51 miles of hard surface roads (either paved, chip sealed or milled) that are in a very poor or failing condition.

7.2 County Roadway Standards

Construction of new roads or reconstruction of existing roads in the County are subject to the road standards defined in the Lewis and Clark County Public Works Manual[8]. The manual states that roads are to be designed to provide safe and adequate passage for vehicular, pedestrian and non-motorized traffic and ensure proper drainage, including surface crown, culverts, curbs and gutters, drainage swales and storm drains. All applicable standard drawings for County design requirements are available in the Public Works Manual.

The County's transportation facilities are categorized into a functional classification system that strives to provide for the safe and efficient movement of people and goods while preserving residential areas and maintaining the economic vitality of commercial and industrial areas. This system classifies transportation facilities according to an appropriate integrated network that is intended to link land use development activities with transportation facilities for optimum utilization of both. The County's functional classification system is intended to be in compliance with the Federal classification system. Roadways within the county are functionally classified as minor local (gravel), local, minor collector, major collector, and arterial roadways. Definitions for these classifications are presented in the following sub-sections. Note that the annual average daily traffic (AADT) ranges used in the functional class descriptions are intended to be used for guidance purposes only. Some local roads and collectors in the County may have traffic counts that are higher or lower than their functional class indicates.

Minor Local Road (Gravel)

Roadways used primarily for direct access to residential, commercial, industrial, or other abutting property. The AADT is projected to be 1 - 400.

Local Road

Roadways used primarily for direct access to residential, commercial, industrial, or other abutting property. The AADT is projected to be 401 - 1,500.

Minor Collector

Minor collector streets serve the dual functions of distributing traffic between local roads, major collectors and arterials, and provide access to abutting properties. Therefore, higher traffic volumes and higher speeds are the norm. Minor collector streets typically carry AADT volumes of 1,501 - 3,500. Minor collector streets connect arterial networks and neighborhoods to commercial areas; fixed route transit service is low while bicycle and pedestrian activities range from moderate to high.

Major Collector

Major collector streets serve the dual functions of distributing traffic between local roads, minor collectors and arterials, and provide access to abutting properties. Therefore, higher traffic volumes and higher speeds are the norm. Major collector streets carry AADT volumes greater than 3,500. Major collector streets connect arterial networks and neighborhoods to commercial areas; fixed route transit service is low while bicycle and pedestrian activities range from moderate to high.

Arterial

That part of the roadway system serving as the principal network for through traffic flow. The routes connect areas of principal traffic generation and important rural highways entering the City of Helena, East Helena, Lincoln, and Augusta. If an arterial roadway standard is needed, the Montana Department of Transportation (MDT) standards for the appropriate roadway are used.

7.3 Previous Studies and Preliminary Engineering Reports

Several studies and Preliminary Engineering Reports (PERs) have been prepared over the past decade that examined County roadways. Some have been prepared by the County via consultants, while others have been prepared by private developers via their engineers-of-record to document their pro-rate share of road upgrade costs. It is the intent of this section to summarize the relevant studies and PERs that have recently been prepared.

Birdseye Road - Barrett Road to Lincoln Road

Problem: Based on a previously prepared Preliminary Engineering Report (PER)[9] that examined ten miles of Birdseye Road, the existing roadway does not meet several minimum road design standards set by Lewis and Clark County, or minimum criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO). The width of the roadway is below standards for a facility classified as a Major Collector under the Lewis and Clark County Subdivision Regulations, Appendix J, Road Standards. The aspects of the highway measured from the edge of the traveled way outward to include cut and fill slopes are also below safety standards in some areas. The current surfacing structure components are thinner than minimum County Major Collector standards in some areas and also show some signs of subgrade deterioration.

The horizontal and vertical curvature of Birdseye Road is deficient in numerous locations. Design criteria assessing roadway curvature is governed in part by the terrain that the roadway traverses. Based on the PERs selected terrain classifications along Birdseye Road, there are a minimum of thirteen spots having horizontal curvature, vertical curvature, or sight distance deficiencies.

The 2012 total estimated cost to reconstruct the road to meet minimum assigned design criteria is approximately $1.32 million per mile. This cost estimate includes engineering, traffic control during construction, right-of-way acquisition, and other contingencies. The 2012 base construction cost is estimated to be an average of approximately $892,000 per mile, excluding costs for additional right-or-way, final engineering, etc.

Recommendation: Reconstruct sections of Birdseye Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, five different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. Each typical section had individually unique characteristics. The five typical section milepost limits are as follows (see actual PER for additional information):

- Typical Section A – Barrett Road (MP 0.00) to railroad crossing (MP 1.80)
- Typical Section B – Railroad crossing (MP 1.80) to Austin Road (3.80)
- Typical Section C – Austin Road (MP 3.80) to Raven Road (MP 5.90)
- Typical Section D – Raven Road (MP 5.90) to Vista Grande Road (MP 7.80)
- Typical Section E – Vista Grande Road (MP 7.80) to Lincoln Road (MP 10.05)

Wylie Drive - Canyon Ferry Road to York Road

Problem: Based on a previously prepared Preliminary Engineering Report (PER)[10] that examined two miles of Wylie Drive, the existing roadway does not meet several minimum design criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO), or the minimum standards set by Lewis and Clark County. Likewise, the current pavement structure is deficient to meet the needs of the projected loadings it will experience within the study's evaluation period. Although the horizontal and vertical alignments are within minimum accepted standards, the aspects of the highway measured from the edge of the traveled way outward to include cut and fill slopes are below safety standards for a facility classified as a Major Collector.

The 2012 total estimated cost to reconstruct the road to meet assigned design criteria is approximately $1.33 million per mile. This cost estimate includes engineering, traffic control during construction, right-of-way acquisition and other contingencies. The 2012 base construction cost is estimated to be approximately $900,000 per mile, excluding costs for additional right-or-way, final engineering etc.

Recommendation: Reconstruct sections of Wylie Drive from Canyon Ferry Road north to York Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, three (3) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. Each typical section had individually unique characteristics. The three typical section milepost limits are as follows (see actual PER for additional information):

- Typical Section A – Canyon Ferry Road (MP 0.00) to MP 0.65
- Typical Section B – MP 0.65 to Herrin Road (MP 1.50)
- Typical Section C – Herrin Road (MP 1.50) to York Road (MP 2.00)

Valley Drive – Lewis Street to York Road

Problem: Based on a Preliminary Engineering Report (PER)[11] previously prepared for a 3.5-mile long segment of Valley Drive, the existing roadway does not meet several minimum design criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO), or the minimum standards set by Lewis and Clark County. Likewise, the current pavement structure is deficient to meet the needs of the projected loadings it will experience within the study's evaluation period. Although the horizontal and vertical alignments are within minimum accepted standards, the aspects of the highway measured from the edge of the traveled way outward to include cut and fill slopes are below safety standards for a facility classified in the Greater Helena Area Transportation Plan – 2004 Update as a Minor Collector.

The 2012 total estimated cost to reconstruct the road to meet assigned design criteria is approximately $1.15 million per mile. This cost estimate includes engineering, traffic control during construction, right-of-way acquisition and other contingencies. The 2012 base construction cost is estimated to be approximately $773,000 per mile, excluding costs for additional right-or-way, final engineering etc.

Recommendation: Reconstruct sections of Valley Drive from Lewis Street north to York Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, five (5) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. Each typical section had individually unique characteristics. The five typical section milepost limits are as follows (see actual PER for additional information):

- Typical Section A – Lewis Street to East Helena City Limits (MP 0.00 to MP 0.75)
- Typical Section B – East Helena City Limits to Canyon Ferry Road (MP 0.75 to MP 1.50)
- Typical Section C – Canyon Ferry Road to Howard Road (MP 1.50 to MP 2.50)
- Typical Section D – Howard Road to beginning of pavement (MP 2.50 – MP 3.00)
- Typical Section E – Beginning of pavement to York Road (MP 3.00 – MP 3.50)

McHugh Lane - City Limits to Sierra Road

Problem: A Preliminary Engineering Report (PER)[12] was previously prepared for a 2.3-mile long segment of McHugh Lane between the Helena city limits and Sierra Road. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues:

- An abundance of intersection related crashes
- The horizontal alignment at the intersection of Forestvale Road is offset to the west on the north side of the intersection (note: this is currently being addressed through an MDT-led safety project; refer to CSTM-2)
- The current surfacing structure components are thinner than minimum county standards
- The subgrade in the segment has a moderate to high risk of failure

No locations were found that had vertical alignment deficiencies. The roadway and ditch cross-sections were generally within the county standards.

Despite being classified as a Major Collector in the Greater Helena Area Transportation Plan – 2004 Update, McHugh Lane was treated as a Minor Collector in the PER since the projected 2031 traffic volumes were more indicative of a Minor Collector under the County road standards.

The 2012 total estimated cost to reconstruct the road to meet assigned design criteria is approximately $1.18 million per mile. This cost estimate includes engineering, traffic control during construction, right-of-way acquisition, and other contingencies. The 2012 base construction cost is estimated to be approximately $800,000 per mile, excluding costs for additional right-or-way, final engineering, etc.

Recommendation: Reconstruct sections of McHugh Lane from the Helena city limits to Sierra Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, four (4) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. Each typical section had individually unique characteristics. The four typical section milepost limits are as follows (see actual PER for additional information):

- Typical Section A – Helena City Limits (MP 0.00) to MP 0.30
- Typical Section B – MP 0.30 to Mill Road (MP 1.30)
- Typical Section C – Mill Road (MP 1.30) to Forestvale Road (MP 1.80)
- Typical Section D – Forestvale Road (MP 1.80) to Sierra Road (MP 2.30)

Applegate Drive (north of Lincoln Road)

Problem: A Preliminary Engineering Report (PER)[13] was previously prepared for a three mile long segment of Applegate Drive, north of Lincoln Road. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues:

- Four crash clusters were identified at intersections or approaches
- The existing gravel surfacing ranges in thickness from 0 inches to 9 inches
- The existing base course does not appear to meet county gradation or plasticity standards
- The road side ditches were found to be too shallow by county standards

No locations were identified as having horizontal or vertical alignment deficiencies.

The 2012 total estimated cost to reconstruct the road to meet assigned design criteria is approximately $1.0 million per mile. This cost estimate includes engineering, traffic control during construction, right-of-way acquisition, and other contingencies. The 2012 base construction cost is estimated to be approximately $670,000 per mile, excluding costs for additional right-or-way, final engineering, etc.

Recommendation: Reconstruct sections of Applegate Drive north of Lincoln Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, four (4) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. Each typical section had individually unique characteristics. The four typical section milepost limits are as follows (see actual PER for additional information):

- Typical Section A – Lincoln Road (MP 0.00) to MP 0.25
- Typical Section B – MP 0.25 to Brookings Road (MP 0.75)
- Typical Section C – Brookings Road (MP 0.75) to Prairie Road (MP 2.00)
- Typical Section D – Prairie Road (MP 2.00) to MP 3.00

John G. Mine Road – North Montana Avenue to Green Meadow Drive

Problem: A Geotechnical and Materials Report[14] and Pro-Rata Share of Improvements Spreadsheet[15] were previously prepared as a condition of approval for the Frontier Village Estates Major Subdivision. Of interest was the analysis to John G. Mine Road between Green Meadow Drive and North Montana Avenue. The associated documents compared existing conditions against the Lewis and Clark County Road standards, proposed various typical sections along the facility to bring the road up to standards for a minor collector, and calculated an overall cost and a pro-rate cost to the developer for the contemplated improvements. The 2011 total estimated cost to reconstruct the road to meet assigned design criteria is approximately $370,000 per mile. This cost estimate includes engineering, traffic control during construction, right-of-way acquisition, and other contingencies.

Recommendation: Reconstruct sections of John G. Mine Road, between Green Meadow Drive and North Montana Avenue, to various typical sections to bring into alignment with minor collector roadway standards. Reference is made to the previously prepared documents in which three (3) different typical sections were identified.

North Montana Avenue (north of Lincoln Road)

Problem: A Preliminary Engineering Report (PER)[16] was previously prepared for a three and a half mile long segment of North Montana Avenue, beginning at the intersection with Lincoln Road and travelling north. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues:

- The existing roadway does not meet several minimum design criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO), or the minimum standards set by Lewis and Clark County.
- The current pavement structure is deficient to meet the needs of the projected loadings under current and projected conditions.

- The aspects of the highway measured from the edge of the traveled way outward, to include cut and fill slopes, are below safety standards for a facility classified as a major collector.

No locations were identified as having horizontal or vertical alignment deficiencies.

Recommendation: Reconstruct North Montana Avenue north of Lincoln Road to achieve a 40-foot surfacing width and to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, a specific pavement surfacing design and width was described based on traffic volumes and availability of soils analysis. The recommended overall road surfacing width for reconstruction to accommodate two travel lanes and shoulders is 40 feet.

Lake Helena Drive – Old US Highway 12 (E. Main Street) to Lincoln Road East

Problem: A Preliminary Engineering Report (PER)[17] was previously prepared for an eight and a half mile long segment of Lake Helena Drive, beginning at the intersection of old US Highway 12 (East Main Street) in East Helena and travelling north to the intersection with Lincoln Road East (Montana Secondary Highway 453). The PER evaluated geometric, safety, and pavement issues. The report identified the following issues:

- The existing roadway does not meet several minimum design criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO), or the minimum standards set by Lewis and Clark County.
- The current pavement structure is deficient to meet the needs of the projected loadings under current and projected conditions.
- The aspects of the highway measured from the edge of the traveled way outward, to include cut and fill slopes, are below safety standards for a facility classified as a minor collector.

No locations were identified as having horizontal or vertical alignment deficiencies.

Recommendation: Reconstruct Lake Helena Drive to achieve a 32-foot surfacing width and to bring into alignment with minor collector roadway standards. Reference is made to the previously prepared PER. In the PER, two (2) specific pavement surfacing designs were described based on traffic volumes and availability of soils analysis. The recommended overall road surfacing width for reconstruction to accommodate two travel lanes and shoulders is 32 feet.

North Helena Valley Infrastructure Study

The North Helena Valley Infrastructure Study [18]examined the North Valley to identify infrastructure needs, constraints and opportunities. The planning area was located approximately 6 miles north of the Helena city limits. The study area was bounded to the east by Glass Drive, to the south by Lincoln Road, and to the west by Diamond Springs Road and Woodland Hills Road. The northern boundary was Douglas Circle.

The planning area roughly included 14.65 square miles of land generally sparsely developed with more intense development located primarily west of Montana Avenue, where a number of subdivisions have located. The study area was characterized as an area of rapid growth.

Numerous conclusions were reached in the final report that spoke to transportation. Perhaps most telling was that to bring the transportation network up to County standards and to accommodate projected growth in the North Valley Study Area, between $16 million and $23 million dollars (2005 figures) in investments would be needed. The study further defined a multitude of improvements to the transportation network. Some of the improvements identified in the 2005 study have been included in this LRTP Update, and costs have been inflated. These improvements include:

- **Green Meadow Drive - north of Lincoln Road**: Reconstruct Green Meadow Drive north of Lincoln Road to bring into alignment with minor collector roadway standards. Year 2035 AADT traffic volumes are estimated to be approaching 1,000 vpd for this roadway.
- **Prairie Road - North Montana Avenue to Buffalo Horn Drive**: Reconstruct Prairie Road, between North Montana Avenue and Buffalo Horn Drive, to bring into alignment with local roadway standards. Year 2035 AADT traffic volumes are estimated to be approaching 750 vpd for this roadway.
- **Valley View Road - North Montana Avenue to Applegate Drive**: Reconstruct Valley View Road, between North Montana Avenue and Applegate Drive, to bring into alignment with local roadway standards.
- **Brookings Road - Applegate Drive to Green Meadow Drive**: Reconstruct Brookings Road, between Applegate Drive and Green Meadow Drive, to bring into alignment with local roadway standards.
- **Woodland Hills Road - Green Meadow Drive to Lone Mountain Drive**: Reconstruct Woodland Hills Road, between Green Meadow Drive and Lone Mountain Road, to bring into alignment with local roadway standards.

Valley View Heights Roadway Capital Improvements Study

A Valley View Heights Roadway Capital Improvements Study[19] was prepared in support of the Lewis and Clark County Growth Policy Update. The study evaluated approximately 2 miles of Minor Collector roadways (Collins and Ferry Drives) and 3 miles of Local roadways (Fantasy, Tea & Snowdrift). The study briefly addressed the current condition of the roadways and presented recommendations and alternatives aimed at satisfying one of two roadway improvement options for each a representative Minor Collector and a representative Local roadway category:

- Option 1 – Select ride quality, safety, and maintenance improvements only.
- Option 2 – Full upgrade to County Standards.

For Option 1 improvements, the study recommends minor road widening and minor profile grade work at various locations. Geometric and width improvements in target locations are expected to produce noticeable ride quality, drainage, and safety increases at a fraction of the cost required to perform a full-scale upgrade to county standards. Road segments wider than 20 feet would be maintained at their current width. Road segments with top widths that are currently less than 20 feet would be widened to the following:

- Gravel Minor Collector – 20 to 24-foot top width
- Gravel Local Road – 20 to 24-foot top width

For Option 2 improvements, all roadways would be widened (as required) to meet County Road Standards. Improvements would likely require a full reconstruct from the subgrade up in several locations. Road segment minimum top widths would be as follows:

- Paved Minor Collector – 28-foot top width (min.)
- Paved Local Road – 24-foot top width (min.)

Opinions of Probable Cost were prepared for the two improvement options by selecting representative Local and Minor Collector Roads (respectively) within the network to come up with a representative cost of improvements for other roads. For this purpose, Tea Road and Ferry Drive were selected as the most representative Local and Minor Collector Roads (respectively) within the network. 2014 Opinions of Probable Costs (per mile of road improvement) were calculated as follows:

Representative Local Road	Construction Cost	Cost w/Eng. & Contingencies
Option 1	$169,000	$227,500
Option 2	$981,000	$1,325,000

Representative Minor Collector Road	Construction Cost	Cost w/Eng. & Contingencies
Option 1	$124,500	$168,000
Option 2	$1,088,000	$1,470,000

7.4 Paser Analysis

7.4.1 Gravel Roads

Roadway rankings for gravel roads within the LRTP study area boundary are summarized in **Table 7.1**. Gravel roads were rated on a scale of 1 to 5, with 1 being "failed" and 5 being "excellent". **Table 7.2** shows the actual rankings given to each gravel road segment within the LRTP study area boundary as rated by Lewis and Clark County.

Table 7.1: Lewis and Clark County Gravel Road Condition Summary (within Study Area Boundary)

Pavement Surface Condition	PASER Rating	Miles	Percentage of Total (%)
Failed	1	2.62	3.00
Poor	2	15.21	17.40
Fair	3	44.79	51.25
Good	4	22.36	25.59
Excellent	5	2.41	2.76
Total Length Inventoried		**87.38**	

Table 7.2: Lewis and Clark County PASER Analysis (Gravel Roads within Study Area Boundary)

Road Number	Route Name / Designation	Surface	Length of Road (mi)	2014 PASER Rating
185	Diehl Dr-North & South	Gravel	2.62	1
49	Merritt Ln	Gravel	1.03	2
116	Cedar Valley Rd	Gravel	0.9	2
162	Harmony Rd	Gravel	1.7	2
157	Stanley St	Gravel	0.28	2
124A	Meagher Ave	Gravel	0.33	2
125	White Dr	Gravel	0.17	2
126	Toole Dr	Gravel	0.14	2
124	Hickman Dr	Gravel	0.19	2
60	Groschell St	Gravel	0.24	2
733A	Terrace Ave	Gravel	0.26	2
738	Hiawatha Street - South	Gravel	0.07	2
629	Hiawatha Street - North	Gravel	0.43	2
732	Minnesota Ave	Gravel	0.22	2
630	Wilder St	Gravel	0.59	2
729	Spring St	Gravel	0.59	2
743	Stuart St	Gravel	0.21	2
610aa	Knight St	Gravel	0.07	2
613	Laurel St	Gravel	0.13	2
615	Leslie Ave	Gravel	0.12	2
610A	Elizabeth St	Gravel	0.13	2
739	Flowerree St (Split Up)	Gravel	0.32	2
457	Linden St	Gravel	0.13	2
999M	Park Dr	Gravel	0.3	2
631	Winston Street - North	Gravel	0.07	2
999E	Summit St	Gravel	0.14	2
999L	Wyoming Ave	Gravel	0.2	2
731	Utah Ave	Gravel	0.16	2
733	Green St	Gravel	0.08	2
770	Sewell Rd West	Gravel	0.5	2
784	Del Ray Dr	Gravel	0.1	2
776B	Aaron Drive	Gravel	0.1	2
803	Carol Dr	Gravel	0.1	2
788	College Place Rd	Gravel	0.2	2
785	Rainier Rd	Gravel	0.1	2
776A	Aiken Rd	Gravel	0.1	2
786	Lynn Rd	Gravel	0.05	2
84	Spokane Ranch Rd	Gravel	2.85	2
24	Clark St East	Gravel	0.585	2
49a	Valley Drive N Of York	Gravel	2.24	3
995	Landmark Dr	Gravel	0.08	3
768	Rinay Rd	Gravel	0.45	3
826	Hilma Dr	Gravel	0.15	3
775	Carolina Dr	Gravel	0.1	3
804	Myles Rd	Gravel	0.17	3
763aa	Norris Rd W	Gravel	0.2	3
783	Alabama Dr	Gravel	0.05	3
775A	Progress Rd	Gravel	0.125	3
787	Georgia Dr	Gravel	0.15	3
2	Lake Helena Drive N Of York Rd	Gravel	1.73	3
69a	Deal Lane	Gravel	2.1	3
102	Billings Ave	Gravel	0.16	3
49b	Valley Dr	Gravel	1	3
71	Keir Ln	Gravel	2.75	3
993	Eames Ln	Gravel	1.56	3
135A	Oak Ave	Gravel	0.18	3
136	Maple Ave	Gravel	0.31	3
41	Riggs St East	Gravel	0.11	3
135aa	Lewis St	Gravel	0.2	3

Road Number	Route Name / Designation	Surface	Length of Road (mi)	2014 PASER Rating
58	King St	Gravel	0.23	3
57	Dudley St	Gravel	0.24	3
121	Custer Avenue East	Gravel	0.34	3
59	Clinton St	Gravel	0.24	3
179	Matt Staff Rd	Gravel	1.45	3
999d	Doug E (Cemetary)	Gravel	0.13	3
100	Collins Dr-North	Gravel	0.9	3
70	Helburg Dr	Gravel	1.8	3
50a	Juniper Dr	Gravel	0.1	3
103	Olson Rd	Gravel	0.38	3
723	Grizzly Gulch Dr	Gravel	6.4	3
996a	Oro Fino Gulch Rd	Gravel	1.35	3
113	Arastra Gulch	Gravel	0.85	3
605	Davis Gulch Dr	Gravel	1.1	3
603	Dry Gulch Dr	Gravel	1	3
1010	Spring Hill Rd	Gravel	0.6	3
856	Tucker Gulch Rd	Gravel	1	3
697	Head Dr	Gravel	1.9	3
698	Franklin Mine Rd	Gravel	2	3
696a	Colorado Gulch Dr	Gravel	0.8	3
609a	Hauser Blvd (Street)	Gravel	0.21	3
643	Broadwater Ave	Gravel	0.3	3
999H	Lombardy Dr	Gravel	0.6	3
745	Le Grande Cannon Blvd	Gravel	0.91	3
76	Prairie Rd-East	Gravel	0.95	3
764	Bitterroot Rd	Gravel	0.35	3
765	Ponderosa Rd	Gravel	0.3	3
767	Shady Dr	Gravel	0.2	3
812	Hope Rd	Gravel	0.5	3
776C	Barnett Dr	Gravel	0.17	3
813	Griffin Rd	Gravel	0.5	3
682	Rosemary Rd	Gravel	0.25	3
769	Ross Rd	Gravel	0.3	3
812A	Bonner Rd	Gravel	0.5	3
805	Faw Rd West	Gravel	0.1	3
820	Hahn Rd	Gravel	0.1	3
986	Barrett Rd	Gravel	1	3
721	Chapparal Ave	Gravel	0.48	3
21	Old Lake Helena Dr	Gravel	0.5	4
704	John G Mine Rd-West	Gravel	0.35	4
701	Silver Creek Rd	Gravel	1	4
158	Meadowlark Dr	Gravel	0.66	4
148	Rogan	Gravel	0.24	4
155	Valley View Rd	Gravel	0.95	4

Road Number	Route Name / Designation	Surface	Length of Road (mi)	2014 PASER Rating
8	Hart Ln-North	Gravel	1.8	4
79	Howard Rd	Gravel	1.73	4
80	Tizer Dr	Gravel	1.21	4
183	Hart Ln-South	Gravel	2	4
81	Baldy Dr	Gravel	1	4
66	Hauser Dam Rd	Gravel	2.4	4
161	Glass Dr-North	Gravel	2.5	4
160	Applegate Dr-North	Gravel	2.62	4
77	Green Meadow Dr-North	Gravel	2.9	4
17	Glass Dr-South - N Or Sierra Rd	Gravel	0.5	4
82	Mcclellan Creek Rd	Gravel	1.21	5
67	Ferry Dr.	Gravel	1	5
644	Mill Rd E	Gravel	0.2	5
122	Custer Avenue West	Gravel	0.5	2
796	Mitchell Ave	Gravel	0.2	2
799	Dunbar Ave	Gravel	0.21	2
689	Silsbee Ave	Gravel	0.12	2
797	Reed Ave	Gravel	0.13	2
798	Willow Ave	Gravel	0.16	2
999Sa	Smelter Rd.	Gravel	0.44	3
	Total		**87.38**	

7.4.2 Paved Roads

Roadway rankings for paved roads within the LRTP study area boundary are summarized in **Table 7.3**. Paved roads were rated on a scale of 1 to 10, with 1 being "failed" and 10 being "excellent". **Table 7.4** shows the actual rankings given to each paved road segment within the LRTP study area boundary as rated by Lewis and Clark County. **Figure 7.1** depicts the paved road PASER ranking graphically.

Table 7.3: Lewis and Clark County Paved Road Condition Summary (within Study Area Boundary)

Pavement Surface Condition	PASER Rating	Miles	Percentage of Total (%)
Failed	1	0.00	0.00
Very Poor	2	2.30	7.50
Poor	3	8.53	27.83
Fair	4	11.22	36.62
Fair	5	0.20	0.65
Good	6	0.00	0.00
Good	7	0.00	0.00
Very Good	8	6.52	21.27
Excellent	9 and 10	1.88	6.13
Total Length Inventoried		**30.65**	

Table 7.4: Lewis and Clark County PASER Analysis (Paved Roads within Study Area Boundary)

Road Number	Route Name / Designation	Surface	Length of Road (mi)	2014 PASER Rating
690	Country Club Ave	Paved	2	2
763	Norris Rd - E Of Applegate	Millings	0.30	2
602A	Williams St	Paved	2.5	3
2b	Lake Helena Dr-North of Canyon Ferry	Millings	2	3
135	Lewis St	Paved	0.29	3
2c	Lake Helena Dr-South of Lewis	Paved	0.54	3
2c	Lake Helena Dr-North of Lewis	Paved	1.50	4
72	Montana Ave North	Paved	3.2	3
2a	Lake Helena Drive N Of York Rd	Paved	2.67	4
284	Route 284 Canyon Ferry Road	Paved	3.2	4
69	Deal Lane	Paved	0.72	4
80a	Tizer Dr	Paved	0.49	4
997	Smelter S Rd Hyway-282	Paved	2.64	4
161a	Glass Dr-North	Paved	0.2	5
4aa	York Rd	Paved	3.17	8
996	Oro Fino Gulch Rd	Paved	3.35	8
84	Spokane Ranch Road - W Of 284	Paved	0.7	9
76	Prairie Rd - W Of No Mt	Paved	0.4	9
49	Valley Dr - S Of York Rd	Paved	0.5	9
160	Applegate Dr - N Of Lincoln Rd	Paved	0.28	10
	Total		**30.65**	

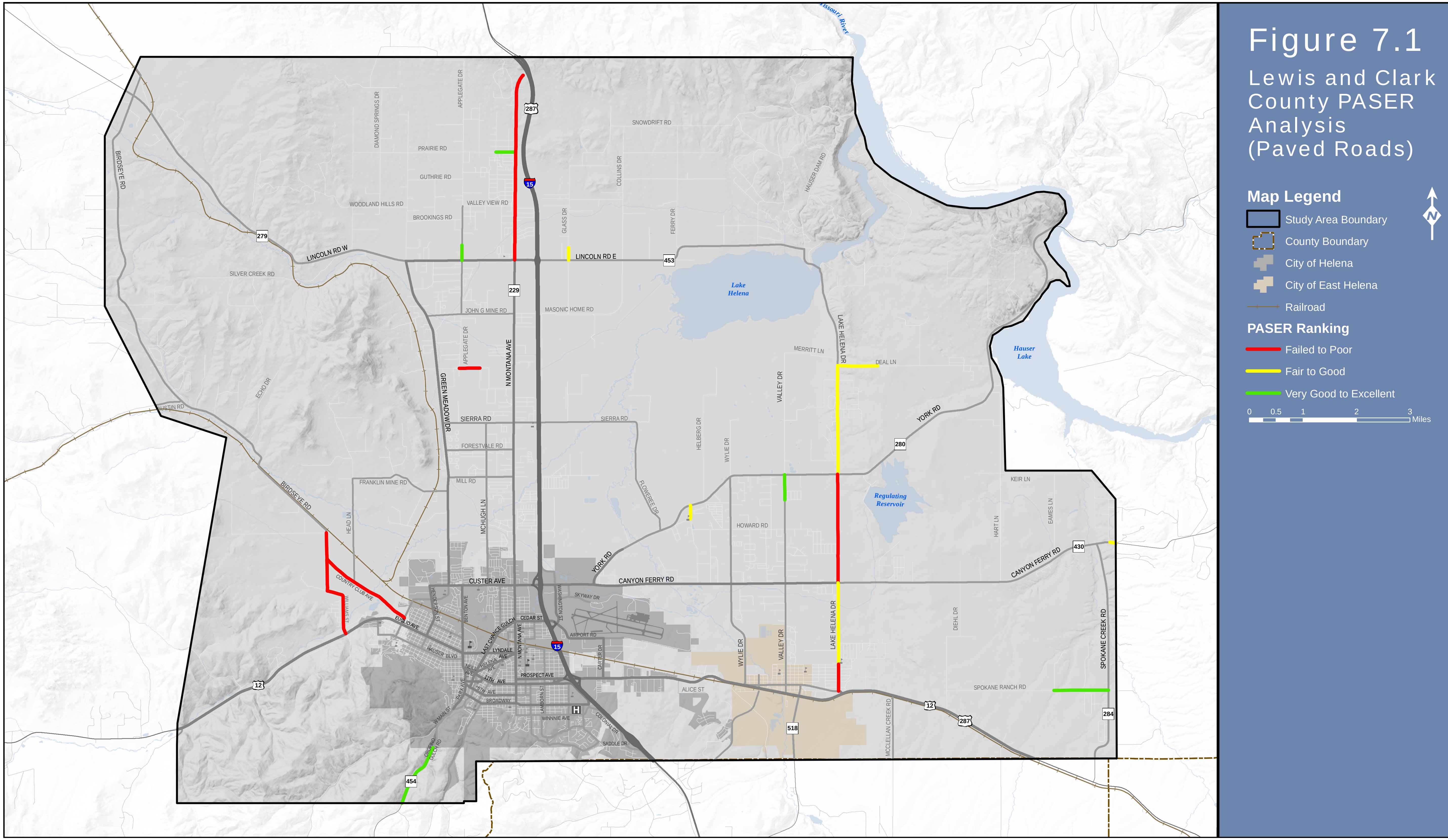


Figure 7.1
Lewis and Clark County PASER Analysis (Paved Roads)

7.4.3 Chip Seal Roads

Roadway rankings for chip sealed roads within the LRTP study area boundary are summarized in **Table 7.5**. Chip sealed roads were rated on a scale of 1 to 5, with 1 being "failed" and 5 being "excellent". **Table 7.6** shows the actual rankings given to each chip sealed road segment within the study area boundary as rated by Lewis and Clark County. **Figure 7.2** depicts the chip sealed road PASER ranking graphically.

Table 7.5: Lewis and Clark County Chip Sealed Road Condition Summary (within Study Area Boundary)

Pavement Surface Condition	PASER Rating	Miles	Percentage of Total (%)
Failed	1	2.81	5.92
Poor	2	21.40	45.12
Fair	3	18.93	39.91
Good	4	4.29	9.04
Excellent	5	0.00	0.00
Total Length Inventoried		**47.43**	

Table 7.6: Lewis and Clark County PASER Analysis (Chip Sealed Roads within Study Area Boundary)

Road Number	Route Name / Designation	Surface	Length of Road (mi)	2014 PASER Rating
55	Winslow Ave	Chip Seal	0.5	1
48	Weston St	Chip Seal	0.14	1
56	Beck St	Chip Seal	0.12	1
10	Floweree Dr	Chip Seal	2.05	1
300	Canal Rd	Chip Seal	0.5	2
49c	Valley Dr	Chip Seal	2.53	2
989	Canal Cir	Chip Seal	0.29	2
738a	Hiawatha Street - South	Chip Seal	0.21	2
609	Hauser Blvd (Street)	Chip Seal	0.84	2
994a	Granite Ave	Chip Seal	0.17	2
611	Choteau Street	Chip Seal	0.42	2
612	Cannon St	Chip Seal	0.42	2
610	Knight St	Chip Seal	0.49	2
613a	Laurel St	Chip Seal	0.22	2
457a	Linden St	Chip Seal	0.38	2
631	Winston Street - South	Chip Seal	0.25	2
607	Sierra Rd-West	Chip Seal	1.3	2
759	Middlemas Rd	Chip Seal	0.4	2
645	Motsiff Rd	Chip Seal	0.5	2
109	Terrence Rd	Chip Seal	0.1	2
1001	Percy Helena	Chip Seal	0.07	2
685	Robin Dr	Chip Seal	0.1	2
71a	Keir Dr	Chip Seal	0.76	2
646	Ronda Rd	Chip Seal	0.5	2
652	Van Orsdel Rd	Chip Seal	0.25	2
602	Birdseye Rd	Chip Seal	10	2
51	Stable Rd	Chip Seal	0.2	2
50	Juniper Dr	Chip Seal	0.5	2
763	Applegate Dr-South	Chip Seal	1.9	3
10A	Sierra Rd-East	Chip Seal	2.15	3
295	Collins Dr-South	Chip Seal	0.7	3
66a	Hauser Dam Rd	Chip Seal	0.85	3
295A	Masonic Home Rd	Chip Seal	1.4	3
698a	Franklin Mine Rd	Chip Seal	0.33	3
644	Mill Rd W	Chip Seal	1.4	3
608	Forestvale Rd	Chip Seal	1.3	3
705	John G Mine Rd-East	Chip Seal	1.5	3
763a	Norris Rd E	Chip Seal	0.6	3
673	Temple Rd	Chip Seal	0.3	3
696	Colorado Gulch Dr	Chip Seal	3.4	3
606	McHugh Dr	Chip Seal	3	3
108	Erickson Rd	Chip Seal	0.1	3
9	Wylie Dr	Chip Seal	3.8	4
20	Herrin Rd	Chip Seal	0.49	4
	Total		**47.43**	

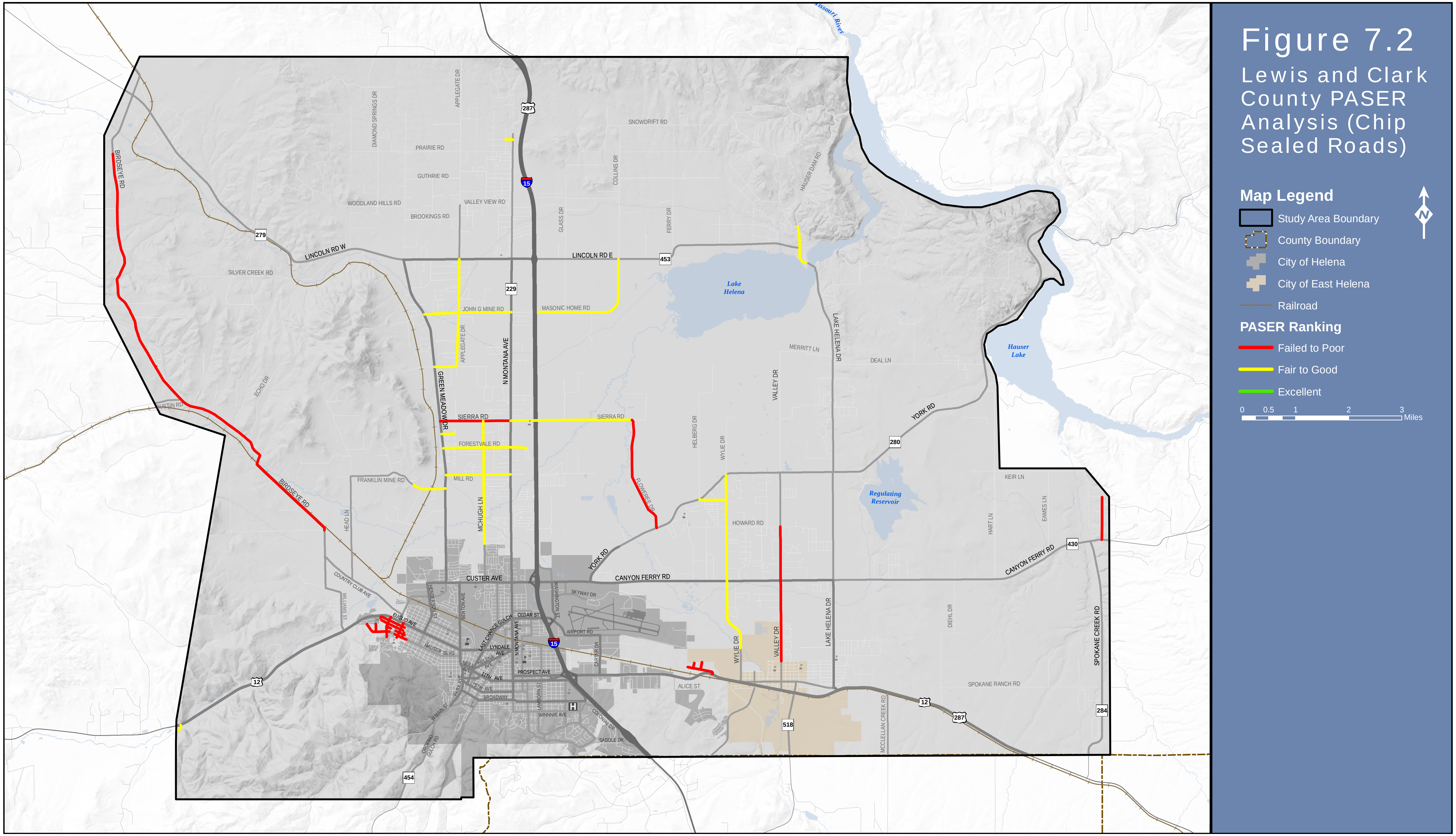


Figure 7.2

Lewis and Clark County PASER Analysis (Chip Sealed Roads)

7.5 Road Network Recommendations

There are two categories of projects identified for rural roadway "major" improvements. These categories are major street network (MSN) and county road network (CRN) projects. More description on the recommended projects under these categories can be found in **Chapter 8** of this LRTP.

MSN projects are typically large road reconstruction projects that take time to development, are costly, and are needed to meet existing or future capacity demands. These can be thought of as "unconstrained" because they are definitely needed either now or in the future to keep up with historic growth patterns or current volumes. CRN projects are similar by definition, but may also have significant funding hurdles and therefore a higher degree of uncertainty in being realized. CRN projects are thus more illustrative in nature, and because of traditional funding limitations are one of four focus areas in the on-going Lewis and Clark County Growth Policy Update. Thus by definition they can be considered "constrained" in that without improvements to this category of roads, development potential in the County may be somewhat limited. The reader is referred to the Lewis and Clark County Growth Policy Update for further information. Recommended MSN and CRN projects are shown in **Figure 8.1** and **Figure 8.2** located in **Chapter 8**.

7.5.1 Unconstrained System

Those MSN projects that fall within Lewis and Clark County jurisdictional limits are shown in **Table 7.7**. Further definition of these projects is contained in **Chapter 8**.

Table 7.7: MSN Recommended Projects – Specific to Lewis and Clark County

Project ID	Location	Estimated Planning-Level Cost
MSN-4	Country Club Avenue	$5,324,000
MSN-5	McHugh Lane - City Limits to Sierra Road	$6,534,000
MSN-8	Sanders Street – Future Extension from Lowes Property to North Montana Avenue	$3,751,000
MSN-16	Williams Street – Ten Mile Creek Bridge to Barrett Road	$2,541,000
MSN-17	Horseshoe Bend Road / Wolf Road – Green Meadow Drive to McHugh Lane	$2,178,000
MSN-19	Cooney Drive (north extension) – Custer Avenue to Andesite Avenue / Faw Road extension	$2,783,000
MSN-20	Andesite Avenue / Faw Road extension – east of Benton Avenue to McHugh Lane	$1,210,000
MSN-24	Lincoln Road – North Montana Avenue to Interstate 15 NB Ramp	$11,616,000
MSN-25	Joslyn Street – Hauser Boulevard to US Highway 12 (Euclid Avenue)	$1,210,000
MSN-26	Joslyn Street – US Highway 12 (Euclid Avenue) to Country Club Avenue / Leslie Avenue	$363,000
	Total Estimated Costs	**$37,510,000**

7.5.2 Constrained System

The CRN projects within Lewis and Clark County jurisdictional limits are shown in **Table 7.8**. Further definition of these projects is contained in **Chapter 8**.

Table 7.8: CRN Recommended Projects – Specific to Lewis and Clark County

Project ID	Location	Estimated Planning-Level Cost
CRN-1	Birdseye Road - Barrett Road to Lincoln Road	$17,666,000
CRN-2	Wylie Drive - Canyon Ferry Road to York Road	$3,630,000
CRN-3	Valley Drive – Lewis Street to York Road	$5,445,000
CRN-4	Applegate Drive (north of Lincoln Road)	$3,993,000
CRN-5	John G. Mine Road – North Montana Avenue to Green Meadow Drive	$1,936,000
CRN-6	North Montana Avenue (north of Lincoln Road)	$6,776,000
CRN-7	Head Lane – Country Club Avenue to Franklin Mine Road	$2,178,000
CRN-8	Franklin Mine Road – Head Lane to Green Meadow Drive	$2,178,000
CRN-9	New East / West collector – Frontage Road to York Road	$3,751,000
CRN-10	Wylie Drive – Canyon Ferry Road to East Helena City limits	$2,057,000
CRN-11	Mill Road – Green Meadow Drive to Montana Avenue	$1,452,000
CRN-12	Forestvale Road – Green Meadow Drive to Montana Avenue	$1,573,000
CRN-13	Sierra Road – Green Meadow Drive to Montana Avenue	$1,815,000
CRN-14	Green Meadow Drive - north of Lincoln Road	$3,509,000
CRN-15	Prairie Road - North Montana Avenue to Buffalo Horn Drive	$2,904,000
CRN-16	Valley View Road - North Montana Avenue to Applegate Drive	$968,000
CRN-17	Brookings Road - Applegate Drive to Green Meadow Drive	$968,000
CRN-18	Woodland Hills Road - Green Meadow Drive to Lone Mountain Drive	$968,000
CRN-19	Lake Helena Drive - old US Highway 12 (E. Main Street in East Helena) to Lincoln Road East	$13,310,000
	Total Estimated Costs	**$77,077,000**

7.6 Conclusion

The Greater Helena Area LRTP focuses on collector, minor arterial and principal arterial roadways on the federally-approved functional classification system. This system has previously been represented graphically in **Chapter 3** (see Existing Functional Classification). The focus on the federally-approved system of collector and arterial roadways, by default, neglects any meaningful assessment of local lower volume County roads. This is also true for City roads. Regardless, much of the information contained in this chapter can be synthesized into a few salient points. These are summarized below:

Costs

Information presented in the *Valley View Heights Roadway Capital Improvements Study (December 2014)* presents very detailed and current road construction and material costs that can be used as a guide for future improvements contemplated by Lewis and Clark County in other areas of the Helena Valley. The costs developed in the *Valley View Heights Roadway Capital Improvements Study* are within the approximate range of planning level costs used in this LRTP Update. For example as a comparison, construction costs for a paved Local Road are highly variable and range from $968k per mile (LRTP estimate) to $981k per mile (Valley View Study estimate). Construction costs for a paved Minor Collector Road range from $1,088k per mile (Valley View Study estimate) to $1,170k per mile (LRTP estimate).

Fiscal Liability

It is very clear that the transportation system needs in the LRTP planning area are grossly underfunded. Two categories of projects were developed to classify major transportation network needs. The MSN projects are those projects that are currently within the County's jurisdictional authority and clearly will need improvement just to mitigate existing impacts. Roadways such as Country Club Avenue, Williams Street, Lincoln Road, etc., will need modifications and will hopefully be candidates for traditional funding sources available for transportation projects.

The CRN projects, however, are those that are lower volume, more local in nature with limited funding and may therefore require innovative funding strategies (such as bonding programs, special assessments, etc.). This latter concept is currently being explored in the Lewis and Clark County Growth Policy Update, along with other potential policies to better manage growth. Some of the fiscal ideas being debated include the following:

- General obligation bonds or revenue bonds paid by general taxpayers
- Special Improvement District assessments paid by users in those districts
- Impact fees paid by builders of new subdivisions and housing
- State and federal grants
- State and federal low-interest loans
- Federal transportation funding.

Maintenance

It is very clear that a high percentage of gravel and paved county roads are in need of increased funding for maintenance activities. PASER rating analysis completed by Lewis and Clark County in 2014 identified the following percentages of roads in poor to fair conditions within the LRTP study area boundary:

- Approximately 72% of gravel roads are poor to fair condition
- Approximately 73% of paved roads are poor to fair condition
- Approximately 91% of chip sealed roads are poor to fair condition

Without increased funding for normal maintenance activities, road conditions will continue to deteriorate.

Chapter 8

FACILITY RECOMMENDATIONS

8.1 Recommended Major Street Network Improvements

The following sections present a variety of recommended street improvement projects. The projects are either needed to meet the anticipated traffic demands for the year 2035 or to bring sub-standard roadways up to current standards based on the functional classification of the roadway. There are two categories of street improvement projects developed for "major" improvements - major street network (MSN) and county road network (CRN) projects. MSN projects are typically large, robust road reconstruction projects that take time to develop, are costly, and are needed to meet existing or future capacity demands. CRN projects are similar by definition, but may also have significant funding hurdles and therefore a higher degree of uncertainty in being realized. CRN projects are thus more illustrative in nature, and because of traditional funding limitations are one of five focus areas in the on-going Lewis and Clark County *Growth Policy Update*. The reader is referred to the Lewis and Clark County *Growth Policy Update* for further information. Recommended MSN and CRN projects are shown in **Figure 8.1** and **Figure 8.2** at the end of this section. A summary of MSN projects from the 2004 Update and the status of each project is shown in **Table 8.1** to provide background for the currently proposed MSN projects.

8.1.1 MSN Projects from the 2004 Transportation Plan

A list of recommended major street network (MSN) projects what were recommended as part of the *Greater Helena Area Transportation Plan - 2004 Update* and their status as of this plan update are listed in this section. The 2004 update of the Transportation Plan included 42 recommended MSN projects. Of these projects, 5 were completed, 2 are partially completed, and 35 have not been completed. Of the either partially completed or not completed projects from the previous plan, 24 projects have been included in this update of the plan as recommended projects. The various 42 projects recommended from the previous plan and their resultant status is summarized in **Table 8.1**.

Table 8.1: MSN Projects from 2004 Update & Status for 2014 LRTP

MSN ID	Location of Past MSN Project	Past Recommendation	Status for this Plan Update
1	Custer Avenue (Montana Ave. to Green Meadow Drive)	Widen to a five-lane urban arterial	**NOT COMPLETED,** modified and included herein as **MSN-1**
2	Montana Avenue - Railroad Grade Separation	Construct a grade-separated railroad crossing	**NOT COMPLETED,** modified and included herein as **MSN-2**
3	Custer Avenue (west extension) - Green Meadow Drive to Joslyn Street	Construct new connection as two-lane roadway	**NOT COMPLETED,** not included herein for further consideration
4	Benton Avenue (north extension) - Custer Avenue to Mill Road	Construct new connection as two-lane collector	**PARTIALLY COMPLETED,** not included herein for further consideration
5	Cooney Drive (north extension) - Custer Avenue to Mill Road	Construct new connection as two-lane collector	**NOT COMPLETED,** modified and included herein as **MSN-19**
6	Horseshoe Bend Road extension (Green Meadow Drive to McHugh Lane)	Construct a new connection as two-lane collector	**NOT COMPLETED,** modified and included herein as **MSN-17**
7	Faw Road extension (Green Meadow Drive to McHugh Lane)	Construct a new connection as two-lane collector	**PARTIALLY COMPLETED,** modified and included herein as **MSN-20**
8	Alfalfa Road extension (Green Meadow Drive to McHugh Lane)	Construct a new connection as two-lane collector	**NOT COMPLETED,** not included herein for further consideration
9	Franklin Mine Road extension (Green Meadow Drive to McHugh Lane)	Construct a new connection as two-lane collector	**NOT COMPLETED,** not included herein for further consideration
10	Montana Avenue (Custer Avenue to Cedar Street)	Reconstruct this segment to a five-lane configuration	**NOT COMPLETED,** modified and included herein as **MSN-13**
11	East Side Frontage Road (South Helena Interchange to 18th Street)	Construct a new connection as two-lane collector	**NOT COMPLETED,** modified and included herein as **MSN-11**
12	East Side Loop Road (South Helena Interchange to US Highway 12)	Construct a new connection as two-lane collector	**NOT COMPLETED,** modified and included herein as **MSN-10**
13	Alice Street (18th Street to East Side Loop Road)	Construct a new connection as two-lane collector	**NOT COMPLETED,** modified and included herein as **MSN-12**
14	Sanders Street (Birch Street to North of Custer Avenue)	Construct a new connection as two-lane collector	**COMPLETED**
15	Washington Street (Cedar Street to Canyon Ferry Road)	Reconstruct this segment to a three-lane facility	**COMPLETED**

MSN ID	Location of Past MSN Project	Past Recommendation	Status for this Plan Update
16	East Railroad Avenue Extension	Construct a new connection as two-lane collector	**NOT COMPLETED,** not included herein for further consideration
17	Montana Avenue/Lyndale Avenue/Helena Avenue	Construct a complex roundabout at this intersection	**NOT COMPLETED,** modified and included herein as **MSN-15**
18	Country Club Avenue	Construct a new connection as urban collector	**NOT COMPLETED,** modified and included herein as **MSN-4**
19	Head Lane	Pave segment to minor collector standards	**NOT COMPLETED,** modified and included herein as **CRN-7**
20	Franklin Mine Road	Pave segment to minor collector standards	**NOT COMPLETED,** modified and included herein as **CRN-8**
21	Howard Road (Wylie Drive to Valley Drive)	Pave segment to minor collector standards	**NOT COMPLETED,** not included herein for further consideration
22	Sierra Road (Floweree Drive to Valley Drive)	Construct a new connection as a minor collector	**NOT COMPLETED,** not included herein for further consideration
23	Floweree Drive (Merritt Lane Extension to York Road)	Reconstruct to minor collector standard.	**NOT COMPLETED,** not included herein for further consideration
24	McHugh Lane (Sierra Drive to Applegate Drive)	Construct a new connection as a major collector	**NOT COMPLETED,** not included herein for further consideration
25	Valley Drive (Howard Road to York Road)	Pave segment to minor collector standards	**NOT COMPLETED,** modified and included herein as **CRN-3**
26	Forestvale Road (Green Meadow Drive to Montana Avenue)	Upgrade to a higher standard	**NOT COMPLETED,** modified and included herein as **CRN-12**
27	Munger Road (Extension to Floweree Drive)	Construct a new connection as a minor collector	**NOT COMPLETED,** not included herein for further consideration
28	Helberg Drive (York Road to Merritt Lane Extension)	Resurface and widen to a minor collector standard.	**NOT COMPLETED,** not included herein for further consideration
29	Benton Avenue (MRL Railroad Crossing to Custer Avenue)	Upgrade segment to a higher standard	**NOT COMPLETED,** modified and included herein as **MSN-21**
30	Benton Avenue Railroad Grade Separation	Initiate an in-depth “Grade Separation Feasibility Study”	**NOT COMPLETED,** modified and included herein as **MSN-23**
31 (a)	Preferred Alternative/I-15 Corridor Projects	Reconstruct Custer Interchange, and also widen Custer Avenue (between Montana Avenue and Washington Street) to a five-lane typical section width.	**COMPLETED**
31(b)	Preferred Alternative/I-15 Corridor Projects	Construct auxiliary lanes on Interstate 15 between the Custer Avenue Interchange and the Capitol Interchange ramps.	**NOT COMPLETED,** modified and included herein as **CMSN-1**
31(c)	Preferred Alternative/I-15 Corridor Projects	Reconstruct the Capital Interchange, along with the appropriate connection to Colonial Drive.	**NOT COMPLETED,** modified and included herein as **MSN-33**
31(d)	Preferred Alternative/I-15 Corridor Projects	Reconstruct Lincoln Interchange to increase capacity through additional bridge lanes and on- and off-ramp modifications.	**COMPLETED**
31(e)	Preferred Alternative/I-15 Corridor Projects	Reconstruct Cedar Street, between Montana Avenue and Interstate 15, to a five-lane principal arterial standard.	**COMPLETED**
33	Williams Street Realignment	Realign segment	**NOT COMPLETED,** modified and included herein as **MSN-16**
34	Claim Jumper Drive (Theoretical East Extension)	Construct a new connection as a collector	**NOT COMPLETED,** not included herein for further consideration
35	Merritt Lane Extension (Interstate 15 East Frontage Road to Lake Helena Drive)	Construct a new connection as a minor collector	**NOT COMPLETED,** not included herein for further consideration
36	Sierra Road (Green Meadow Drive to Montana Avenue)	Upgrade to a higher standard	**NOT COMPLETED,** modified and included herein as **CRN-13**
37	Mill Road (Green Meadow Drive to Montana Avenue)	Upgrade to a higher standard	**NOT COMPLETED,** modified and included herein as **CRN-11**
38	Airport Road (Washington Street to Carter Drive)	Upgrade to a minor arterial	**NOT COMPLETED,** modified and included herein as **MSN-6**
39	Henderson Railroad Crossing	Reconstruct the railroad crossing to provide at least 16.5 feet of vertical clearance and also incorporate proper travel lane widths.	**NOT COMPLETED,** modified and included herein as **MSN-22**

8.1.2 Committed MSN Improvements

Committed projects are only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years, are not listed here as they will not have an effect on the traffic model. Committed improvements listed are only considered if they are likely to be constructed within a five-year timeframe (i.e. year 2015 through the year 2020), and a funding source has been identified and is assigned to the specific project.

CMSN-1: Capitol Interchange / Cedar Interchange / Interstate 15 (MDT 2016 Letting): Project includes new bridge structures on Interstate 15 and additional interstate lanes. The bridge structures will be constructed with four lanes, however the interstate will be constructed with 3 lanes between the Cedar and Capitol interchanges until capacity demands require the fourth "inside" lane.

CMSN-2: West Main Street – Design improvements to West Main Street between Reeder's Village approach and Grizzly Gulch.

CMSN-3: Front Street – Design improvements to Front Street between Neill Avenue and West 14th Street to include water infrastructure, storm drainage, and streetscape features.

8.1.3 Recommended MSN Projects

A number of MSN projects have been identified and are shown in **Table 8.2**. The project numbering scheme in the table does not represent or imply priority with respect to individual projects. Planning level costs shown in the table are based on year 2014 dollars. Most MSN project planning level costs were derived using MDTs Preliminary Estimate Tool (*revised 7/2014*). If available, recent preliminary engineering reports (PERs) or other relevant studies were obtained and reviewed. **Appendix F** contains the planning level cost estimates with assumptions. In addition to construction costs, other miscellaneous costs were included such as traffic control, mobilization, contingencies, construction engineering, incidental & indirect costs (IDICs), right-of-way, and utility relocation costs. **Appendix F** also contains inflationary adjustments out to 5, 10, 15 and 20 year intervals in an effort to depict the potential project cost increases over the planning horizon.

Table 8.2: Recommended MSN Projects

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
MSN-1	Custer Avenue – Montana Avenue to Green Meadow Drive	Existing and future year capacity concerns; lack of on-street bicycle facilities.	Reconstruct Custer Avenue between Montana Avenue and Green Meadow Drive to meet design year traffic volumes. Details of lane widths, boulevard treatment and pedestrian crossing opportunities across the roadway will be developed during the project design development process. In addition to on-street bicycle lanes, it is envisioned that the shared use path on the south side of the roadway would be retained and/or replaced with a similar shared use path. A past corridor study[20] completed by Master's Degree candidates affiliated with George Mason University identified the following potential considerations in development of this project: • Presence of Section 106 historic properties • Presence of Federal Section 4(f) and Section 6(f) properties, including the Bill Roberts Municipal Golf Course and the Lewis and Clark County Fairgrounds, • Presence of wetlands near the Custer Avenue / Henderson Street intersection; and • Presence of two (2) State Superfund sites west of Henderson Street.	$7,865,000	TSM-17; BL-13; SPOT-24; SUP-25
MSN-2	Montana Avenue – Railroad Grade Separation	Vehicle delay; increasing congestion; air quality concerns. A Statewide Rail/Highway Grade Separation Needs Study[21] was completed by MDT (dated March 2003) in which this at-grade crossing was identified as the number 2 most feasible in the state for grade separation.	A "Grade Separation Feasibility Study" was prepared in June of the year 2002 that examined four different alternatives: a fully separated overpass, a fully separated underpass, a partially separated overpass, and a partially separated underpass. The study identified a fully separated underpass crossing as the most feasible alternative. The underpass option was deemed most preferable by the public for its less intrusive aesthetics and the complete elimination of rail/vehicle conflicts. Montana Rail Link (MRL), however, preferred the fully separated overpass crossing as it is easier to construct and minimizes disturbances to train operations during construction. Both fully separated options are feasible, and a decision should be made as to which option to pursue as funding packages are assembled for the project. There may be access issues to businesses and intersecting streets; variations should be explored such as partial grade separation (for example two center lanes carried through a grade separation with two outer lanes remaining at grade). Partial separation may provide capacity when a train is crossing while still providing access to businesses. The concept of a three-lane road configuration has also been brought forward by the Technical Working Group (TWG) established for this LRTP Update. A three-lane road configuration may address certain non-motorized considerations until which time a funding package could be established for the project described above. Additional study would be necessary to understand the complete impact of a three-lane configuration to traffic operations, especially at the major intersections of Montana Avenue with Lyndale Avenue and Cedar Street.	$21,780,000	MSN-14; MSN-15; BL-31; SUP-5

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
MSN-3	Neill Avenue – Park Avenue to North Last Chance Gulch	Poor roadway definition due to widths; lack of non-motorized connectivity along and across the road; poor downtown connectivity.	Improvements envisioned for Neill Avenue are intended to provide better delineation, reduce crossing distances, and better connect the northern and southern portions of downtown through appropriate travel lane widths, slower speeds, and pedestrian and bicycling improvements. Narrowing of the roadway prism is envisioned to attain better defined travel lanes, parking lanes, and buffered bicycle lanes. Channelization and aesthetic treatments are envisioned at the three primary intersections with Getchell, Fuller and Front Streets. Two of the intersections (Fuller and Front Streets) have been the subject of past conceptual visioning via EPAs Greening Americas Capitals program. The visioning exercise, referred to as *Greening Last Chance Gulch (September 2013)*[22], developed various conceptual exhibits for this area of the downtown.	$968,000	TSM-22; BBL-2; CT-2; SPOT-20
MSN-4	Country Club Avenue	Lack of east/west connectivity through the community; regional traffic volume increases; roadway surface / base deterioration; lack of non-motorized facilities; future development pressures.	Reconstruct Country Club Avenue between the intersection of Joslyn Street and Williams Street. The reconstructed roadway should be built to City complete streets standards. Shoulders should be added and marked as bike lanes. This is a popular recreational route and a key commuter route to get to Fort Harrison and the Veteran Administration complex.	$5,324,000	CRN-7; TSM-2; TSM-3; BL-11; SUP-26
MSN-5	McHugh Lane - City Limits to Sierra Road	A Preliminary Engineering Report (PER)[23] was previously prepared for a 2.3-mile long segment of McHugh Lane between the Helena city limits and Sierra Road. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues: • An abundance of intersection related crashes • The horizontal alignment at the intersection of Forestvale Road is offset to the west on the north side of the intersection (note: this is currently being addressed through an MDT-led safety project; refer to CSTM-2) • The current surfacing structure components are thinner than minimum county standards • The subgrade in the segment has a moderate to high risk of failure No locations were found that had vertical alignment deficiencies. The roadway and ditch cross-sections were generally within the county standards.	Reconstruct sections of McHugh Lane from the Helena city limits to Sierra Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, four (4) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. City complete streets standards should be utilized for those areas between existing city limits and the designated urban growth boundary.	$6,534,000	SUP-15
MSN-6	Airport Road – Washington Street to "B" Street	Poor access control; increasing traffic volumes; future development pressures; potential future truck usage.	This section of Airport Road should be reconstructed using the City's complete streets standards. The portion west of Carter Drive and generally east of Washington Street was identified by the City of Helena for reconstruction (per Fall 2014 citywide inventory).	$1,331,000	BL-3; SUP-2
MSN-7	Airport Road – Future Extension from "B" Street to Wylie Drive	Poor east-west connectivity; increasing traffic volumes; desire to eliminate railroad grade crossing; potential future truck usage; service to future land development.	Extend Airport Road from "B" Street to Wylie Drive in East Helena. Future extension would traverse private lands and would require accommodation of existing property owners. The extended road should be built to City complete streets standards. The construction of this road would improve travel connectivity between Helena and East Helena, and reduce traffic volumes on US Highway 12. Also, the completion of the route would not include a crossing of the existing rail facilities.	$6,534,000	BL-2; SUP-1
MSN-8	Sanders Street – Future Extension from Lowes Property to North Montana Avenue	Poor north-south connectivity, increasing traffic volumes on North Montana Avenue and Custer Avenue, and service to future land development.	Extend Sanders Street from its current northern termini (near Lowes), north and then west, to tie into North Montana Avenue. Future extension would traverse private lands and would require accommodation of existing property owners. The extended road should be built to City complete streets standards.	$3,751,000	BL-34; SHR-2
MSN-9	11th Avenue – Montana Avenue to Interstate 15	Capacity concerns under existing and projected conditions.	Modify 11th Avenue between Montana Avenue and the Capital Interchange at Interstate 15 to include three travel lanes in the eastbound direction. An on-street bicycle lane in the eastbound direction, on the northern portion of the facility, is also desirable. At the intersection of 11th Avenue and Fee Street, the southern lane will be a combination thru-lane (for those wanting to travel to I-15) and right-turn lane (for those wanting to maneuver to Colonial Drive). The third lane would drop at the Capital Interchange southbound on-ramp to the Interstate.	$3,146,000	BL-1
MSN-10	East Side Loop Road – South Helena Interchange to Crossroads Parkway	Lack of north / south connectivity and future land development needs.	Construct a new roadway east of Interstate 15, connecting the South Helena Interchange to the intersection of Crossroads Parkway and Alice Street. The roadway should be constructed to City complete streets standards.	$4,235,000	BL-38

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
MSN-11	East Side Frontage Road – South Helena Interchange to 18th Street	Lack of north / south connectivity and future land development needs.	Construct a new roadway east of Interstate 15, connecting the South Helena Interchange to the current southerly terminus of 18th Street (near the Montana Department of Transportation headquarters), to City complete street standards.	$4,719,000	BL-39
MSN-12	Alice Street – 18th Street to East Side Loop Road	Lack of east / west connectivity and future land development needs.	Reconstruct Alice Street to City complete street standards between the extension of 18th Street and the proposed East Side Loop Road to provide improved east / west connectivity and serve future development needs in the area.	$4,356,000	BL-40
MSN-13	Montana Avenue – Custer Avenue to Cedar Street	Rear-end accidents and peak hour congestion; prevalence of drive approaches to adjacent businesses; high traffic volumes; lack of pedestrian facilities.	Reconstruct this segment of Montana Avenue from the current four-lane configuration to a five-lane configuration, with the fifth lane being a two-way, center turn lane for turning vehicles into driveways and public streets. It is beneficial to remove the turning vehicles from the traffic stream, and the installation of the TWLTL will reduce crash trends and facilitate thru-mobility in the corridor. Sidewalks, on-street bicycle lanes, and corridor lighting should be placed on both sides of this segment when reconstruction takes place.	$3,872,000	TSM-29; BL-31
MSN-14	Boulder Avenue Connections – North Hannaford Street to Blaine Street	Poor east-west connectivity; undeveloped road facilities; private property considerations; strengthening network for future Caird property redevelopment; reduce truck traffic on Boulder Avenue.	Construct and/or reconstruct segments in the Boulder Avenue area to City complete streets standards. Extend East Lyndale Avenue (beginning just east of North Hannaford Street) to tie into Boulder Avenue just east of Interstate 15. East to the theoretical extension of California Street, route the minor collector road in a southerly direction to tie into Billings Avenue, then reconstruct in an easterly direction to the start of existing pavement section at Blaine Street. This new road routing will remove an existing portion of the road off of private property. However to realize this improvement an easement or acquisition will be necessary across BNSF lands just east of North Hannaford Street. Washington Street, just north of Boulder Avenue, would be extended in a northerly direction to form a “tee” intersection with the newly extended East Lyndale Avenue. This connection is important as it complements future improvements recommended for the five-point intersection at Montana/Lyndale/Helena Avenue near the reclaimed Caird property (see **MSN-15**). Note that Lyndale Avenue east of Montana Avenue may realize an increase in truck traffic, while truck traffic on Boulder Avenue may decrease.	$2,299,000	MSN-2; MSN-15; BL-31; SUP-5
MSN-15	Montana Avenue / Lyndale Avenue / Helena Avenue Intersection	The geometrics of this intersection inhibit acceptable operations for the traffic movements during the peak hours of the day.	The long term recommendation for the intersection includes closing both Helena Avenue approaches to create a traditional “four-legged” intersection. Access to the various businesses on Helena Avenue will be perpetuated via Boulder Avenue, Lyndale Avenue and National. The intersection of National and Lyndale Avenue should be signalized when signal warrants are met. Consideration of the close proximity of this intersection to the Montana Avenue & Lyndale Avenue intersection should be investigated during design. The intersection of Boulder Avenue east of Montana Avenue should be limited to a right-in/right-out movement. On the west side of Montana Avenue, Boulder Avenue should remain a three-quarter movement – right-in, right-out and left-in (no left-out). The newly created four legged intersection should be signalized, and squared up such that all approach legs are opposite each other. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$6,050,000	MSN-2; BL-31; SUP-5
MSN-16	Williams Street – Ten Mile Creek Bridge to Barrett Road	Traffic volume increases on Williams Street necessitate bringing the road facility up to standards for a major collector. Two existing sharp horizontal curves present potential safety concerns.	Reconstruct Williams Street between the Ten Mile Creek Bridge and Barrett Road to bring into alignment with major collector roadway standards. Also, work with adjacent landowners to realign the two sharp curves on Williams Street north of Ten Mile Creek and south of Country Club Avenue. Traffic volumes will increase on this route due to future residential land development and changes to Fort Harrison operations. This route will provide a complementary access to vehicles currently using Country Club Avenue, and is important for thru-movements to Fort Harrison and the Veterans Administration facilities. With widened shoulders the opportunity exists to mark bicycle lanes in the future.	$2,541,000	TSM-2; BL-11; BL-35
MSN-17	Horseshoe Bend Road / Wolf Road – Green Meadow Drive to McHugh Lane	Lack of east / west connectivity and future land development needs.	Construct a new east / west route, to City complete streets standards between Green Meadow Drive and McHugh Lane. The approximate location would begin near the intersection of Horseshoe Bend Road and Green Meadow Drive (westerly end), and traverse easterly to tie in with Wolf Road at the intersection of Wolf Road and McHugh Lane. This would necessitate some horizontal curvature in the roadway. Note that east of McHugh Lane, Wolf Road has already been constructed to a City collector standard to North Montana Avenue. The construction of this route will modestly ease congestion on Custer Avenue, however more importantly will serve to facilitate future land development activities, and provide more route choices for residents to reach employment centers in the city of Helena.	$2,178,000	

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
MSN-18	Kelleher Drive extension – Canyon Ferry Road to new East / West route (CRN-9)	Lack of north / south connectivity to future development area.	This is a north / south route that would could ease congestion on Canyon Ferry Road and serve future development opportunities north of Custer Avenue and west of York Road. It is suggested that this corridor be built as development occurs to City complete streets standards.	$1,936,000	
MSN-19	Cooney Drive (north extension) – Custer Avenue to Andesite Avenue / Faw Road extension	Lack of north / south connectivity and congestion on Custer Avenue.	This is another north / south route that would could ease congestion on Custer Avenue and serve future development opportunities north of Custer Avenue and west of McHugh Lane. It is suggested that this corridor be built as development occurs to City complete streets standards.	$2,783,000	
MSN-20	Andesite Avenue / Faw Road extension – east of Benton Avenue to McHugh Lane	Lack of east / west connectivity and future land development needs.	Continue constructing a new east / west route to City complete streets standards, between Benton Avenue and McHugh Lane. The approximate location would be near the easterly terminus of Andesite Avenue, and traverse easterly to the intersection of Faw Road and McHugh Lane. The construction of this route will facilitate future land development activities and provide more route choices for residents to reach employment centers in the city of Helena	$1,210,000	
MSN-21	Benton Avenue – MRL Railroad Crossing to Custer Avenue	Increasing traffic congestion on Benton Avenue, conflict between turning movements and thru traffic.	It is recommended that this existing segment of Benton Avenue be brought up to City complete streets standards. This 0.7-mile segment should be widened to provide appropriate driving lanes, shoulders and lighting. Pedestrian features should be included in the design (i.e. east side sidewalk and/or path). Bicycle lanes should be stenciled on the widened shoulders.	$1,815,000	PED-1; BL-29; MSN-23; SUP-3; SUP-24
MSN-22	Henderson Street Railroad Crossing	Narrow roadway width, lack of suitable vertical clearance and poor roadway drainage.	Reconstruct bridge structure to provide at least 16.5 feet of vertical clearance and also incorporate road improvements to attain City complete streets standards.	$2,904,000	BL-20; SPOT-27
MSN-23	Benton Avenue Railroad Grade Separation	Delay concerns and operational problems occur at this at-grade railroad crossing. A Statewide Rail/Highway Grade Separation Needs Study was completed by MDT in which this at-grade crossing was identified as the number 4 most feasible in the state for grade separation.	Complete a “Grade Separation Feasibility Study” to ascertain whether an overpass or underpass would be feasible. In the prior statewide study, both were described as feasible, but a more detailed study will further document impacts to adjacent business and homeowners. This grade separation is important for emergency service providers and overall traffic flow operations. The feasibility study should identify a preferred alternative for construction.	$5,929,000	PED-1; BL-29; MSN-21; SUP-3; SUP-24
MSN-24	Lincoln Road – North Montana Avenue to Interstate 15 NB Ramp	A Traffic Engineering Report [24] completed during 2014 provided a study of the Lincoln Road corridor between North Montana Avenue and I-15. The corridor is currently experiencing traffic operational issues related to peak hour traffic congestion. The intersection of Lincoln Road and North Montana currently has high vehicle delay and poor LOS during the peak hours. The current configuration and all-way traffic control does not provide enough capacity to handle existing or projected demands. Similarly, the intersection of Lincoln Road and the I-15 NB ramps is experiencing congestion-related issues during the PM peak hour. Vehicle queues along the off-ramp are nearing the interstate mainline, and if remained unchanged, are expected to continue to increase.	Recommendations from the Traffic Engineering Report include: • Reconstruct the intersection of North Montana Avenue and Lincoln Road to include a modern single-lane roundabout (with westbound right-turn bypass lane) • Reconstruct the intersection of Lincoln Road and I-15 NB Off-Ramp to include a modern single-lane roundabout (with eastbound right-turn bypass lane) • Reconstruct the intersection of Lincoln Road and the I-15 SB On-Ramp, and modify the SB On-Ramp to provide two receiving lanes on the on-ramp, (similar to that experienced at the Cedar Street Interchange SB on-ramp). Long-term, a shared use path to the north of and parallel to Lincoln Road should be evaluated.	$11,616,000	CRN-6; PED-14; SUP-8
MSN-25	Joslyn Street – Hauser Boulevard to US Highway 12 (Euclid Avenue)	Roadway surfacing deterioration, sub-standard widths, increasing traffic volumes and future development pressures due to possible annexation.	Reconstruct Joslyn Street, between Hauser Boulevard and US Highway 12, to City complete streets standards. This portion of Joslyn Street has been identified by the City of Helena for reconstruction (per Fall 2014 citywide inventory).	$1,210,000	BB-5
MSN-26	Joslyn Street – US Highway 12 (Euclid Avenue) to Country Club Avenue / Leslie Avenue	Roadway surfacing deterioration, sub-standard widths, increasing traffic volumes and future development pressures due to possible annexation.	Reconstruct Joslyn Street, between US Highway 12 and Country Club Avenue / Leslie Avenue, to City complete streets standards. This portion of Joslyn Street has been identified by the City of Helena for reconstruction (per Fall 2014 citywide inventory).	$363,000	BL-22; SUP-6; SUP-11
MSN-27	6th Avenue – Cruse Avenue to Montana Avenue	Roadway surfacing deterioration and increasing traffic volumes.	Reconstruct 6th Avenue, between Cruse Avenue and Montana Avenue, to City complete streets standards. This portion of 6th Avenue has been identified by the City of Helena for reconstruction (per Fall 2014 citywide inventory).	$2,299,000	PED-25; SPOT-7; BL-31
MSN-28	11th Avenue – Cruse Avenue to Montana Avenue	Roadway surfacing deterioration and increasing traffic volumes.	Reconstruct 11th Avenue, between Cruse Avenue and Montana Avenue, to City complete streets standards. This portion of 11th Avenue has been identified by the City of Helena for reconstruction (per Fall 2014 citywide inventory).	$2,178,000	BL-31
MSN-29	Carter Drive – Prospect Avenue to Billings Avenue	Roadway surfacing deterioration and increasing traffic volumes.	Reconstruct Carter Drive, between Prospect Avenue and Billings Avenue, to City complete streets standards. This portion of Carter Drive has been identified by the City of Helena for reconstruction (per Fall 2014 citywide inventory).	$968,000	BL-9

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
MSN-30	Wylie Drive – East Helena City Limits to US Highway 12 (EAST HELENA)	Roadway surfacing deterioration and increasing traffic volumes.	Reconstruct Wylie Drive, between the East Helena city limits and US Highway 12, to an appropriate urban collector street standard.	$2,541,000	
MSN-31	Montana Avenue – Lewis Street to US Highway 12 (EAST HELENA)	Roadway surfacing deterioration and increasing traffic volumes.	Reconstruct Montana Avenue, between Lewis Street and US Highway 12, to an appropriate urban collector street standard.	$1,452,000	
MSN-32	Lane Avenue – Main Street to US Highway 12 (EAST HELENA)	Roadway surfacing deterioration and increasing traffic volumes.	Reconstruct Lane Avenue, between Main Street and US Highway 12, to an appropriate urban collector street standard.	$605,000	
MSN-33	Capital Interchange – Reconstruct as per EIS	Traffic congestion, geometrics, levels of service, conflicts between turning movements and thru traffic.	Reconstruct the Capital Interchange as per the I-15 Corridor EIS.	$50,820,000	
			Total Estimated Planning Costs (MSN Projects)	**$178,112,000**	

8.2 Recommended CRN Projects

A number of CRN projects have been identified and are shown in **Table 8.3**. The project numbering scheme in the table does not represent or imply priority with respect to individual projects. Planning level costs shown in the table are based on year 2014 dollars. Most CRN project planning level costs were derived using MDTs Preliminary Estimate Tool (*revised 7/2014*). If available, recent preliminary engineering reports (PERs) or other relevant studies were obtained and reviewed. **Appendix F** contains the planning level cost estimates with assumptions. In addition to construction costs, other miscellaneous costs were included such as traffic control, mobilization, contingencies, construction engineering, incidental & indirect costs (IDICs), right-of-way, and utility relocation costs. **Appendix F** also contains inflationary adjustments out to 5, 10, 15 and 20 year intervals in an effort to depict the potential project cost increases over the planning horizon.

Table 8.3: Recommended CRN Projects

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
CRN-1	Birdseye Road - Barrett Road to Lincoln Road	Based on a previously prepared Preliminary Engineering Report (PER)[25], the following issues were identified: roadway width is below standards for a facility classified as a major collector; aspects of the roadway measured from the edge of the traveled way outward, to include cut and fill slopes, are below safety standards in some areas; and current surfacing structure components are thinner than minimum standards for a facility classified as a major collector. In addition, geometric deficiencies were identified throughout the roadway corridor. In total, 13 locations were identified as having horizontal curvature, vertical curvature, or sight distance deficiencies.	Reconstruct sections of Birdseye Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, five (5) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths. Each typical section had individually unique characteristics.	$17,666,000	BL-4
CRN-2	Wylie Drive - Canyon Ferry Road to York Road	Based on a previously prepared Preliminary Engineering Report (PER)[26], the following issues were identified: current surfacing structure components are thinner than minimum county standards; aspects of the highway measured from the edge of the traveled way outward, to include cut and fill slopes, are below safety standards in some areas; and crash clusters were noted at the intersections of Wylie Drive with both Canyon Ferry and York Roads.	Reconstruct sections of Wylie Drive from Canyon Ferry Road north to York Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, three (3) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths.	$3,630,000	CRN-10
CRN-3	Valley Drive – Lewis Street to York Road	A Preliminary Engineering Report (PER)[27] was previously prepared for a 3.5-mile long segment of Valley Drive between Lewis Street and York Road. The PER identified the following issues: the surfacing on approximately three miles of Valley Drive do not meet county standards for paved roads; and roadside ditches were found to be shallow by county standards. No locations were found that had horizontal or vertical alignment deficiencies, largely due to the straight and flat nature of the road. A crash cluster was noted at the intersection of Valley Drive and Canyon Ferry Road, however a traffic signal was installed in 2009 to mitigate the crash cluster.	Reconstruct sections of Valley Drive from Lewis Street north to York Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, five (5) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths.	$5,445,000	BB-14; BL-2

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
CRN-4	Applegate Drive (north of Lincoln Road)	A Preliminary Engineering Report (PER)[28] was previously prepared for a three mile long segment of Applegate Drive, north of Lincoln Road. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues: • Four crash clusters were identified at intersections or approaches • The existing gravel surfacing ranges in thickness from 0 inches to 9 inches • The existing base course does not appear to meet county gradation or plasticity standards • The road side ditches were found to be too shallow by county standards No locations were identified as having horizontal or vertical alignment deficiencies.	Reconstruct sections of Applegate Drive north of Lincoln Road to various typical sections to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, four (4) different typical sections were identified throughout the corridor that defined specific pavement surfacing design and widths.	$3,993,000	
CRN-5	John G. Mine Road – North Montana Avenue to Green Meadow Drive	A Geotechnical and Materials Report[29] and Pro-Rata Share of Improvements Spreadsheet[30] were previously prepared as a condition of approval for the Frontier Village Estates Major Subdivision. Of interest was the analysis to John G. Mine Road between Green Meadow Drive and North Montana Avenue. The associated documents compared existing conditions against the Lewis and Clark County Road standards, proposed various typical sections along the facility to bring the road up to standards for a minor collector, and calculated an overall cost and a pro-rate cost to the developer for the contemplated improvements.	Reconstruct sections of John G. Mine Road, between Green Meadow Drive and North Montana Avenue, to various typical sections to bring into alignment with minor collector roadway standards. Reference is made to the previously prepared documents in which three (3) different typical sections were identified.	$1,936,000	
CRN-6	North Montana Avenue (north of Lincoln Road)	A Preliminary Engineering Report (PER)[31] was previously prepared for a three and a half mile long segment of North Montana Avenue, beginning at the intersection with Lincoln Road and travelling north. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues: • The existing roadway does not meet several minimum design criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO), or the minimum standards set by Lewis and Clark County. • The current pavement structure is deficient to meet the needs of the projected loadings under current and projected conditions. • The aspects of the highway measured from the edge of the traveled way outward, to include cut and fill slopes, are below safety standards for a facility classified as a major collector. No locations were identified as having horizontal or vertical alignment deficiencies.	Reconstruct North Montana Avenue north of Lincoln Road to achieve a 40-foot surfacing width and to bring into alignment with major collector roadway standards. Reference is made to the previously prepared PER. In the PER, a specific pavement surfacing design and width was described based on traffic volumes and availability of soils analysis. The recommended overall road surfacing width for reconstruction to accommodate two travel lanes and shoulders is 40 feet.	$6,776,000	MSN-24; PED-14; SUP-8
CRN-7	Head Lane – Country Club Avenue to Franklin Mine Road	Roadway surface deterioration and future development pressures.	Pave Head Lane from its intersection with Country Club Avenue, north to the intersection with Franklin Mine Road. This area will receive future development pressures, and the existing graveled surface is beginning to see base failures and significant rutting. This long-term project will help connect an alternative route from west of the city limits to Green Meadow Drive (with completion of project **CRN-8** described below). The roadway should be paved to a minor collector standard, and an intersection light should be installed at the intersection of Country Club Avenue and Head Lane to provide more visibility.	$2,178,000	MSN-4
CRN-8	Franklin Mine Road – Head Lane to Green Meadow Drive	Roadway surface deterioration and future development pressures.	Pave Franklin Mine Road from its intersection with Head Lane, east to the intersection with Green Meadow Drive. This area will receive future development pressures, and the existing graveled surface is beginning to see base failures and significant rutting. This long-term project will help connect an alternative route from west of the city limits to Green Meadow Drive (with completion of project **CRN-7** described above). The roadway should be paved to a minor collector standard, and an intersection light should be installed at the intersection of Franklin Mine Road and Green Meadow Drive to provide more visibility.	$2,178,000	TSM-12

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
CRN-9	New East / West collector – Frontage Road to York Road	Future development pressures; east / west connectivity needs.	Develop a new east / west collector corridor between the Frontage Road and York Drive. Future collector corridor would traverse private lands and would require accommodation of existing property owners. The new road should be built to City complete streets standards. The construction of this road would improve travel connectivity between the Frontage Road (east of I-15) and York Road. The intersections of this new roadway with both the Frontage Road and York Road will need to be evaluated for auxiliary lanes.	$3,751,000	
CRN-10	Wylie Drive – Canyon Ferry Road to East Helena City limits	Roadway surface deterioration, future development pressures and narrow roadway widths.	This section of Wylie Drive should be rebuilt to reduce future maintenance needs and better accommodate the traffic increases seen over the past decade. Any surfacing work should be completed in conjunction with roadway base modifications.	$2,057,000	CRN-2
CRN-11	Mill Road – Green Meadow Drive to Montana Avenue	Roadway surface deterioration, future development pressures and narrow roadway widths.	This section of Mill Road should be rebuilt to reduce future maintenance needs and better accommodate the traffic increases seen over the past decade. Any surfacing work should be completed in conjunction with roadway base modifications.	$1,452,000	
CRN-12	Forestvale Road – Green Meadow Drive to Montana Avenue	Roadway surface deterioration and future development pressures.	This section of Forestvale Road should be rebuilt to reduce future maintenance needs and better accommodate the traffic increases seen over the past decade. Any surfacing work should be completed in conjunction with roadway base modifications.	$1,573,000	PED-18
CRN-13	Sierra Road – Green Meadow Drive to Montana Avenue	Roadway surface deterioration, future development pressures and narrow roadway widths.	This section of Sierra Road should be rebuilt to a major collector standard to reduce future maintenance needs and better accommodate the traffic increases that will occur in the future. Any surfacing work should be completed in conjunction with roadway base modifications. Additional right-of-way will be required. A shared use path should be contemplated for this important east-west route.	$1,815,000	SUP-22; SPOT-21; SPOT-25
CRN-14	Green Meadow Drive - north of Lincoln Road	Sub-standard existing gravel surfacing, possible sub-standard road base course, road side ditch variation, intersection safety, and land development pressures.	Reconstruct Green Meadow Drive north of Lincoln Road to bring into alignment with minor collector roadway standards. Year 2035 AADT traffic volumes are estimated to be approaching 1,000 vpd for this roadway.	$3,509,000	
CRN-15	Prairie Road - North Montana Avenue to Buffalo Horn Drive	Sub-standard existing gravel surfacing, possible sub-standard road base course, road side ditch variation, intersection safety, and land development pressures.	Reconstruct Prairie Road, between North Montana Avenue and Buffalo Horn Drive, to bring into alignment with local roadway standards. Year 2035 AADT traffic volumes are estimated to be approaching 750 vpd for this roadway.	$2,904,000	
CRN-16	Valley View Road - North Montana Avenue to Applegate Drive	Sub-standard existing gravel surfacing, possible sub-standard road base course, road side ditch variation, intersection safety, and land development pressures.	Reconstruct Valley View Road, between North Montana Avenue and Applegate Drive, to bring into alignment with local roadway standards.	$968,000	
CRN-17	Brookings Road - Applegate Drive to Green Meadow Drive	Sub-standard existing gravel surfacing, possible sub-standard road base course, road side ditch variation, intersection safety, and land development pressures.	Reconstruct Brookings Road, between Applegate Drive and Green Meadow Drive, to bring into alignment with local roadway standards.	$968,000	
CRN-18	Woodland Hills Road - Green Meadow Drive to Lone Mountain Dr	Sub-standard existing gravel surfacing, possible sub-standard road base course, road side ditch variation, intersection safety, and land development pressures.	Reconstruct Woodland Hills Road, between Green Meadow Drive and Lone Mountain Road, to bring into alignment with local roadway standards.	$968,000	
CRN-19	Lake Helena Drive - old US Highway 12 (E. Main Street in East Helena) to Lincoln Road East	A Preliminary Engineering Report (PER)[32] was previously prepared for an 8.5-mile long segment of Lake Helena Drive, beginning at the intersection with old US Highway 12 (E. Main Street in East Helena) and travelling north to the intersection with Lincoln Road East. The PER evaluated geometric, safety, and pavement issues. The report identified the following issues: • The existing roadway does not meet several minimum design criteria presented as guidance by the American Association of State Highway and Transportation Officials (AASHTO), or the minimum standards set by Lewis and Clark County. • The current pavement structure is deficient to meet the needs of the projected loadings under current and projected conditions. • The aspects of the highway measured from the edge of the traveled way outward, to include cut and fill slopes, are below safety standards for a facility classified as a minor collector.	Reconstruct Lake Helena Drive to achieve a 32-foot top surfacing width and to bring into alignment with minor collector roadway standards. Reference is made to the previously prepared PER. In the PER, two specific typical sections were proposed that exhibited different surfacing depths and different slope treatments. Both typical sections included 12 foot travel lanes and 4 foot shoulders.	$13,310,000	BL-24
			Total Estimated Planning Costs (CRN Projects)	**$77,077,000**	

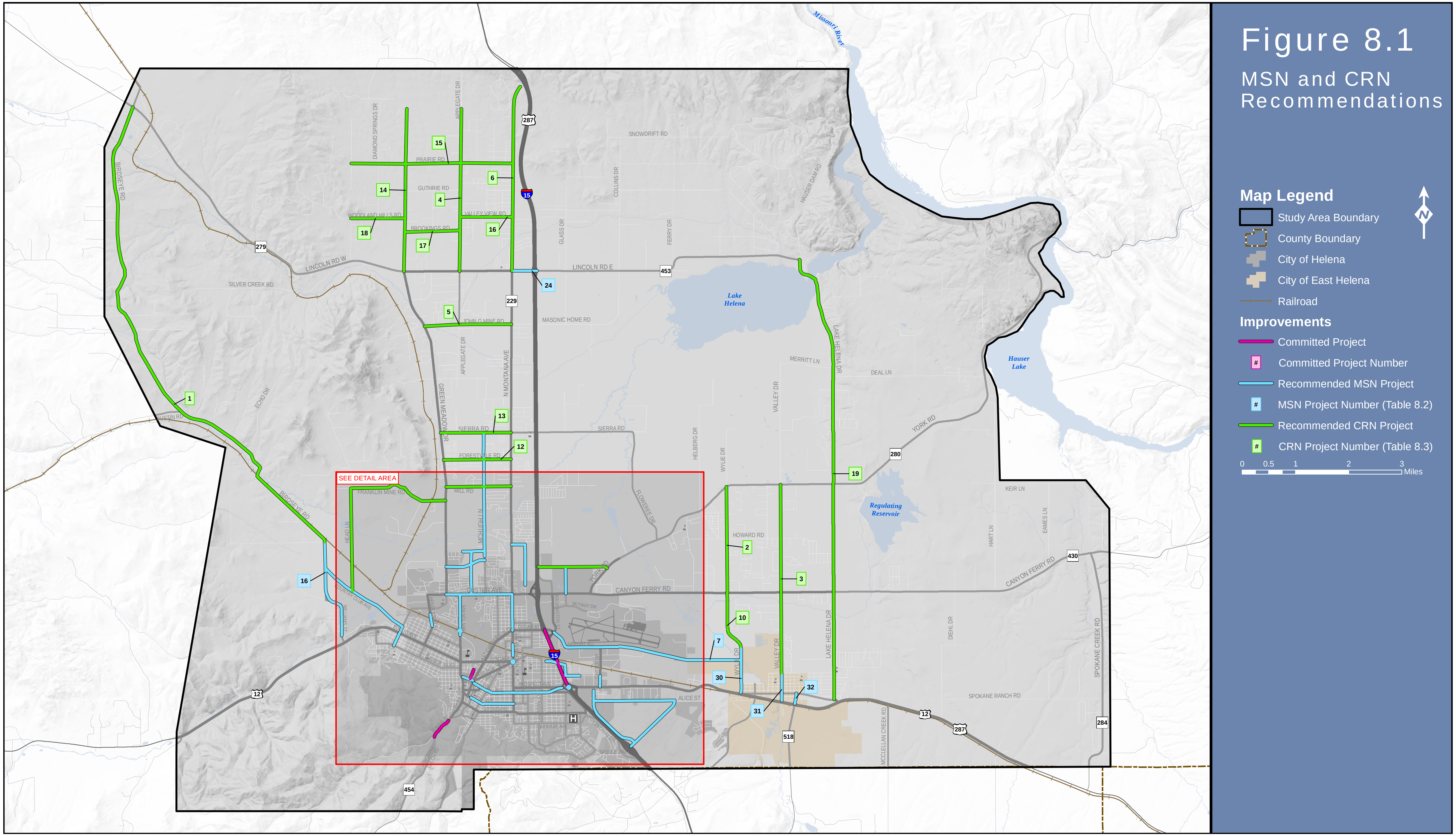


Figure 8.1
MSN and CRN Recommendations

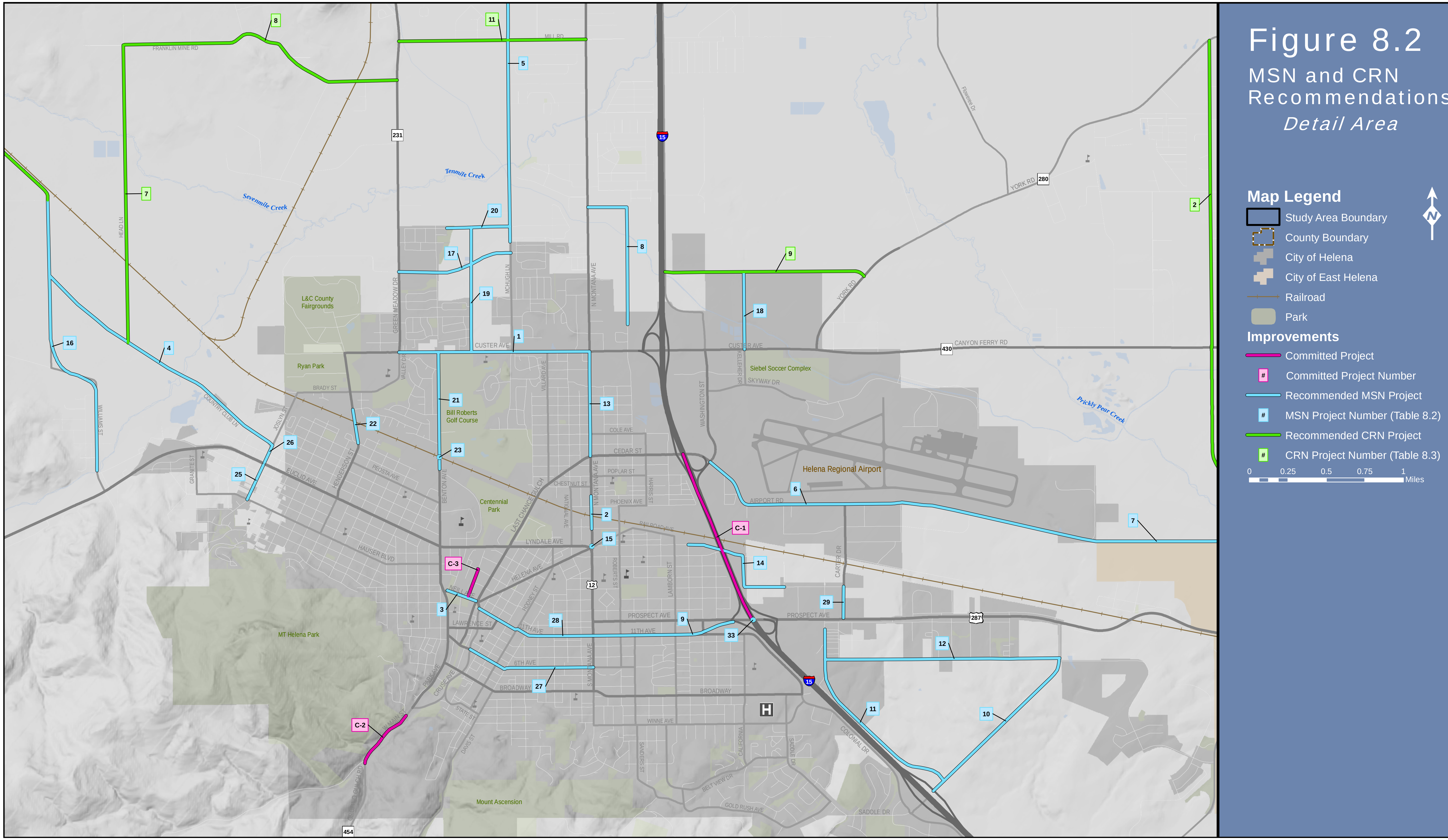


Figure 8.2
MSN and CRN Recommendations
Detail Area

8.3 Recommended Transportation System Management Improvements

In addition to MSN and CRN project recommendations, a variety of smaller transportation system management (TSM) projects are recommended. Recommended TSM projects are shown in **Figure 8.3** and **Figure 8.4** at the end of this section.

8.3.1 TSM projects from the 2004 Transportation Plan

A total of 53 TSM projects were recommended in the 2004 update of the Transportation Plan. The status of these projects were reviewed to determine which have been completed, which are no longer valid, and which projects should be included as part of this plan update. Of the 53 projects, 13 were completed, 1 was partially completed, and 39 were not completed. Of the either partially completed or not completed projects from the previous plan, 21 projects have been included in this update of the plan as recommended TSM projects. The complete listing of the 53 projects, and their subsequent status for this 2014 Update to the Transportation Plan, are listed in **Table 8.4**.

Table 8.4: TSM Projects from 2004 Update & Status for 2014 LRTP

TSM ID	Location of Past TSM Project	Past Recommendation	Status for this Plan Update
1	US Highway 12 West	Install corridor lighting to the segment	**NOT COMPLETED,** not included herein for further consideration
2	US Highway 12 West/Williams Street	Install a traffic signal at this intersection	**COMPLETED**
3	Williams Street/Country Club Avenue	Modify intersection geometry	**NOT COMPLETED,** modified and included herein as **TSM-2**
4	Country Club Avenue/Joslyn Street	Modify intersection geometry	**NOT COMPLETED,** modified and included herein as **TSM-3**
5	Helena Avenue/Rodney Street	Delineate left-turn bays on both the east and west side of Helena Avenue	**NOT COMPLETED,** not included herein for further consideration
6	Helena Avenue/Roberts Street/Gallatin Avenue	Modify intersection geometry	**NOT COMPLETED,** not included herein for further consideration
7	Euclid Avenue/Henderson Street	Delineation of left-turn bays at intersection	**NOT COMPLETED,** modified and included herein as **TSM-5**
8	Countywide Signing and Pavement Marking Plans	Establish countywide signing and pavement marking plan	**NOT COMPLETED,** not included herein for further consideration
9	US Highway 12 East/Carter Drive	Signalize intersection when warrants are met	**COMPLETED**
10	Lincoln Road/Green Meadow Drive	Modify intersection geometry	**NOT COMPLETED,** modified and included herein as **CTSM-3**
11	McHugh Lane/Forestvale Road	Reconfigure the intersection and move cemetery access to the west	**NOT COMPLETED,** modified and included herein as **CTSM-2**
12	Howard Road (Valley Drive to Lake Helena Drive)	Add centerline striping and shoulder paint	**NOT COMPLETED,** not included herein for further consideration
13	York Road/Herrin Road/Helberg Drive	Modify intersection geometry	**NOT COMPLETED,** modified and included herein as **TSM-6**
14	York Road/Wylie Drive	Safety improvements to the intersection	**NOT COMPLETED,** modified and included herein as **TSM-7**
15	York Road/Lake Helena Drive	Modify intersection geometry	**NOT COMPLETED,** modified and included herein as **TSM-8**
16	York Road/Valley Drive	Installation of intersection lighting and "INTERSECTION AHEAD" signage on all four legs	**NOT COMPLETED,** not included herein for further consideration
17	York Road/Hart Lane	Installation of "INTERSECTION AHEAD" signage on all three legs	**NOT COMPLETED,** modified and included herein as **TSM-11**
18	Norris Road (Applegate Drive to Montana Avenue)	Open road to through traffic	**COMPLETED**
19	Green Meadow Drive - Intersection Lighting	Install roadway lighting at intersections with higher classification roadways	**NOT COMPLETED,** modified and included herein as **TSM-12**
20	Countywide Shoulder Striping - Major Roadways	Stripe the shoulders of "higher classification" roadways throughout the county	**PARTIALLY COMPLETED,** modified and included herein as **TSM-13**
21	Mill Road/McHugh Lane	Install intersection lighting	**NOT COMPLETED,** not included herein for further consideration

TSM ID	Location of Past TSM Project	Past Recommendation	Status for this Plan Update
22	Valley Drive Signing	Install "CURVE AHEAD" warning sign on the south leg of the northern most curve on Valley Drive	**NOT COMPLETED,** modified and included herein as **TSM-23**
23	Birdseye Road Signing	Install two "CURVE AHEAD" warning signs in the northbound direction, one north of Ten Mile Creek and the other just prior to the Birdseye Fire Department	**COMPLETED**
24	Applegate Drive/John G Mine Road	Modify intersection geometry and install "INTERSECTION AHEAD" warnings signs	**NOT COMPLETED,** not included herein for further consideration
25	Sierra Road - McHugh Lane and Frontage Road Intersections	Install "INTERSECTION AHEAD" warning signs on all legs of both intersections	**NOT COMPLETED,** modified and included herein as **TSM-24**
26	Lake Helena Drive - Chevron Signing a Deal Lane	Install chevron signing at intersection such that it is visible to westbound traffic on Deal Lane	**NOT COMPLETED,** modified and included herein as **TSM-25**
27	Keir Lane - East of Spokane Creek	The "RIGHT WINDING ROAD" warning sign (W1-5R) should be replaced with "RIGHT REVERSE TURN" sign (W1-3R)	**NOT COMPLETED,** not included herein for further consideration
28	Custer Avenue/Villard Avenue	Signalize intersection	**NOT COMPLETED,** modified and included herein as **TSM-17**
29	Montana Avenue/6th Avenue	Signalize intersection	**NOT COMPLETED,** not included herein for further consideration
30	Montana Avenue/Broadway	Signalize intersection	**NOT COMPLETED,** modified and included herein as **TSM-18**
31	Villard Avenue/Last Chance Gulch	Restripe intersection to eliminate through movement between the north/south legs	**NOT COMPLETED,** modified and included herein as **TSM-19**
32	US Highway 12 Signals (Lola/Nicole Street and east of Janet Street)	Signalize intersections	**NOT COMPLETED,** modified and included herein as **TSM-21**
33	Custer Avenue/Cooney Drive	Modify intersection with an eastbound left-turn bay	**COMPLETED**
34	Custer Avenue Signal Coordination	Coordinate all signals along the Custer Avenue corridor	**COMPLETED**
35	Neill Avenue/Helena Avenue/Cruse Avenue/Last Chance Gulch	Modify intersection geometry	**NOT COMPLETED,** modified and included herein as **TSM-22**
36	Neill Avenue/Benton Avenue/Park Avenue	Modify signal phasing such that when the Opticom system is triggered by the fire department, the east leg is flushed through	**COMPLETED**
37	Park Avenue Curb "Bulb-outs"	Install curb "bulb-outs" near Qwest Building	**COMPLETED**
38	Euclid Avenue/Harrison Avenue	Signalize intersection when warrants are met	**NOT COMPLETED,** not included herein for further consideration
39	Last Chance Gulch (eastbound before Cedar Street) signing	Install signage on Last Chance Gulch (eastbound) to warn motorists of lane drop at Cedar Street	**COMPLETED**
40	Truck Route System	Establish truck routes through the study area	**NOT COMPLETED,** modified and included herein as **TSM-20**
41	Traffic Counting Program	Revise City of Helena's traffic counting program	**COMPLETED**
42	County Maintenance Assessment	Revise County maintenance plan	**COMPLETED**
43	Lyndale Avenue/Rodney Street	Modify intersection geometry	**NOT COMPLETED,** not included herein for further consideration
44	Broadway Corridor Traffic Calming	Evaluate Broadway corridor for traffic calming measures	**NOT COMPLETED,** not included herein for further consideration
45	Last Chance Gulch (Lyndale Avenue to Neill Avenue)	Implement parking restrictions near the intersection	**NOT COMPLETED,** not included herein for further consideration
46	Neill Avenue (Last Chance Gulch to Benton Avenue)	Investigate the need to re-stripe the segment	**NOT COMPLETED,** modified and included herein as **MSN-3**
47	Broadway/Cruse Avenue	Improve pedestrian movements	**NOT COMPLETED,** not included herein for further consideration
48	18th Street and US Highway 12 East Frontage Road	Close US Highway 12 East Frontage Road between Douglas Street and 18th Street and reroute traffic on Cannon Street	**NOT COMPLETED,** not included herein for further consideration
49	Benton Avenue and Lyndale Avenue	Modify intersection geometry	**COMPLETED**
50	Community-Wide Opticom System Review	Retain the system manufactures to evaluate the system	**COMPLETED**

TSM ID	Location of Past TSM Project	Past Recommendation	Status for this Plan Update
51	County Land Development Issues/Geometric Considerations	Ensure that development impacts are mitigated as the community grows	**NOT COMPLETED,** not included herein for further consideration
52	Emergency Service Notification/Caution Lights - 11th Avenue/Prospect Avenue and Hannaford Street	Emergency Service Notification lights should be installed to notify drivers when the Fire Department receives a call	**NOT COMPLETED,** not included herein for further consideration
53	Forestvale Road/Interstate 15 Emergency Access	Emergency access provisions should be implemented via a security gate for rural Fire Department responders	**NOT COMPLETED,** not included herein for further consideration

8.3.2 Committed TSM Improvements

Committed projects are typically only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years, are not necessarily listed since they will not have an effect on the traffic model. For completeness, though, all committed TSM improvement projects are listed in this section.

CTSM-1: SF 139 - Helena Signal Borders - Prospect & 11th - tentative 2016 construction. The intent of the project is to draw attention to the signals in urban locations, where accidents are higher, by installing retroreflective signal borders around signal heads.

CTSM-2: SF 129 - Recon Int Helena (Lake Helena/Causeway & Forestvale & McHugh) - tentative 2015 construction. Project includes minor intersection improvements at both intersections.

CTSM-3: SF 119 - Jct S-279/S-231 (Lincoln Road & Green Meadow) - roundabout with 2016 construction.

CTSM-4: SF 139 - Canyon Ferry Dam SFTY (S-284 RP 8.5-9.5) tentative 2016 construction. Project will install signage and rumble strips at the dam (90 degree corner).

CTSM-5: Downtown Helena ADA Ramps – Design of approximately 170 ADA ramps in the greater Last Chance Gulch area, along Helena Avenue, and along Last Chance Gulch.

CTSM-6: Lyndale & Montana Avenue Sidewalks - sidewalks and ADA improvements on Lyndale Avenue from Benton Avenue to the intersection of Montana Avenue / 1th Avenue. Tentative construction beyond 2019.

CTSM-7: Helena Signal Upgrades - MDT (all urban routes - signal connectivity and synchronization) - tentative late 2014. The following signal timings have recently been upgraded: Custer Avenue (McHugh Lane to Green Meadow Drive), Custer Avenue (Washington Street to Montana Avenue), and Lyndale/Euclid Avenues (Last Chance Gulch to Joslyn Street). The following signal timings are scheduled: Prospect/11th Avenues (completion expected in 2015), Cedar Street (completion expected in 2017) and Downtown (completion expected in 2019).

CTSM-8: East Helena East (RP 49.87 to 57.48 on US-12) - crack seal & seal and cover; tentative 2016 construction.

CTSM-9: W Williams Street – Benton – HLNA: crack seal & seal and cover with some overlay on US-12 from RP 39.5 to 42.1.Tentative 2016 construction.

CTSM-10: Bridge Preservation, GF IM 2014 – I-15 bridge deck seal and overlays. Tentative 2018 construction. Begins at the Gates of the Mountains and goes North. There will be reduced traffic speed.

CTSM-11: D3 Rockfall Mitigation – PH 1 – rock scaling, trim blasting, rockfall netting and fencing on I-15. RP 219 to 247. 2015 construction. Project will include interstate delays including 6 different sites in Wolf Creek Canyon. Traffic will be on a crossover and will be stopped for a period during scaling, delays could be 20 minutes or more.

CTSM-12: Joslyn Street & Country Club Avenue – intersection improvements to include installation of four-way stop control.

CTSM-13: Centennial Trail - anticipated completion is Spring 2015; however; planting of the trees will be completed in Spring of 2015.

CTSM-14: Centennial Trail West (Joslyn Street Path)

CTSM-15: Helena Industries Bulb-outs

8.3.3 Recommended TSM Projects

A number of TSM projects have been identified and are shown in **Table 8.5**. The project numbering scheme in the table **does not** represent or imply priority with respect to individual projects. Planning level costs shown in the table are based on inflationary adjustments to past cost estimates from a variety of sources (if available). Example source documents include the prior 2004 LRTP Update, or other relevant studies. **Appendix F** contains the planning level cost estimates with assumptions. In addition to construction costs, other miscellaneous costs were included such as traffic control, mobilization, contingencies, construction engineering, incidental & indirect costs (IDICs), right-of-way, and utility relocation costs. **Appendix F** also contains inflationary adjustments out to 5, 10, 15 and 20 year intervals in an effort to depict the potential project cost increases over the planning horizon.

Table 8.5: Recommended TSM Projects

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
TSM-1	Citywide	Fixed objects located within the sight distance triangle at intersecting roads can present a visual obstruction. Vehicles parked too close to the intersection can limit visibility.	Remove and/or modify the sight distance triangle ordinance at intersections to better define what is and isn't allowed within the sight distance triangle (see **Appendix D** for guidance). Some items that influence the sight distance at intersecting roads include fences, trees, shrubs, signs, and on-street parking.	Cost Unknown	
TSM-2	Williams Street & Country Club Avenue	Poor intersection geometrics; turning movement conflicts.	Create a traditional "four-legged", or "tee", intersection by removing the heavy skew at the existing intersection. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$464,640	MSN-4; MSN-16
TSM-3	Country Club Avenue / Leslie Street & Joslyn Street	Poor intersection geometrics; turning movement conflicts.	A long-term improvement, separate from the short-term improvement described under **CTSM-12**, is to implement a more conventional intersection. One concept is to develop an eastbound to southbound right-turn "slip lane" to facilitate this travel movement under yield control. The northbound and southbound travel movements on Joslyn Street could become free-flowing movements, with designated left turn lanes (the remaining lanes on Joslyn would be shared thru/right-turn lanes). The westbound movement (i.e. Leslie Avenue) and the eastbound leg on Country Club Avenue should be stop controlled. Another concept that could be explored is a modern roundabout. With a modern roundabout, careful consideration must be made to the presence of heavy military vehicles travelling through the intersection. For both concepts, consideration should be given to paving the one block segment of Leslie Avenue just east of the intersection during project development. Portions of this project are moving forward by the City of Helena. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$371,470	MSN-4
TSM-4	Prospect Avenue & Fee Street	Erratic vehicle maneuvers have been observed at this intersection when both lanes realize dual left-turning vehicles in the northbound to westbound direction.	Place skip markings in the northbound-to-westbound direction for the two turning lanes exiting Fee Street. The skip markings envisioned are those similar to the intersection of Montana Avenue and 11th Avenue for the left-turning movements.	$45,980	
TSM-5	Euclid Avenue & Henderson Street	Poor intersection geometrics; turning movement conflicts for the northbound and southbound legs (i.e. Henderson Street); capacity concerns.	Reconstruct the intersection to provide left-turn bays on both the north and south legs of this intersection, along with combination thru-/ right-turn lanes. Extensive work on all four quadrants of the intersection will be required to provide acceptable curb radii for trucks, buses, and emergency vehicles. It is likely that some right-of-way acquisition will be required around the four corners of the intersection. Significant new signal work will be required to realize a left-turn protection and acceptable operations. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$1,395,130	BB-11; BL-20; SUP-10
TSM-6	York Road / Herrin Road / Helberg Drive	Poor intersection geometrics & night-time visibility concerns.	Square up the north and south legs of the approach. The "informal" eastbound right-turn lane should be re-configured to a right-turn deceleration lane. An intersection light should be placed at this location to improve visibility at this intersection. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$371,470	BL-36
TSM-7	York Road / Wylie Drive	Sight distance and night-time visibility concerns.	Install a streetlight to increase visibility at the intersection. Existing large trees just to the east of the intersection create a sight distance obstruction that should be corrected. The south leg should incorporate an "oversized" STOP sign to increase visibility for approaching traffic. Overhead flashers may be advisable if crash statistics or trends develop in the future. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$55,660	BL-36
TSM-8	York Road / Lake Helena Drive	Increasing traffic due to development; projected level of service deterioration; crash concerns.	A single lane roundabout should be evaluated at this location via an engineering traffic study due to traffic volumes, deteriorating levels of service, crash concerns, and the existing speeds entering the intersection. An engineering investigation should be completed when project development activities are programmed to determine function and need. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	BL-36
TSM-9	Henderson Street / Custer Avenue	Lack of separation from the recreational access road to the west and the Fairgrounds entrance to the north. Congestion during event periods.	A modern roundabout should be installed at the intersection and pulled farther south from the Fairgrounds. Some curvature will need to be introduced into Custer Avenue leading into the roundabout. The roundabout may serve as a "gateway" treatment to this community attraction, better meter traffic flows, provide for better pedestrian connectivity, and improve safety. It may also serve to better manage traffic flow with high peak events in the area such as the Last Chance Stampede Fair, Small Fry football, and baseball games. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$1,115,620	BL-20
TSM-10	York Road / Tizer Road	Increasing traffic due to development; projected level of service deterioration; crash and speed concerns.	A single lane roundabout should be evaluated at this location via an engineering traffic study due to traffic volumes, crash concerns, and the existing speeds entering the intersection. Because of proximity to Warren School, and existing and future land development pressures to the north of the intersection, the intersection necessitates a treatment to slow vehicles down and better meter traffic. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	BL-36
TSM-11	York Road / Hart Lane	Limited signing.	All three legs of this intersection should have "INTERSECTION AHEAD" warning signs installed in accordance with current MUTCD guidelines.	$6,050	BL-36

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
TSM-12	Green Meadow Drive – Intersection Lighting	Night-time visibility concerns.	Roadway intersections along Green Meadow Drive with higher classification roadways should be illuminated to improve night-time visibility. These intersections include Forestvale Road, Sierra Road, Mill Road, and Norris Road.	$93,170	CRN-8
TSM-13	Countywide Shoulder Striping – Major Roadways	Night-time visibility and run-off-the-road concerns.	Higher classification rural roadways in the County should be considered for white shoulder striping. If possible, Lewis and Clark County should program shoulder striping work in their annual maintenance program. The roadways identified that may benefit from shoulder striping include Mill Road, McHugh Lane, Forestvale Road, Wylie Drive and Valley Drive. Birdseye Road and Lake Helena Drive have been striped since the last LRTP Update.	Cost Unknown	
TSM-14	California and Colonial Drive	Unacceptable level of service during the PM peak hour (due to heavy traffic volumes on Colonial Drive) and in the future (for both AM and PM peak hours).	This intersection should be signalized in the future to improve operations. A traffic signal warrant analysis will need to be completed to ensure warrants are met and potential impacts to any adjacent intersections are identified. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	BB-15; BL-1
TSM-15	Broadway and Colonial Drive	Unacceptable level of service during both the AM and PM peak hours; deterioration in the future.	This intersection should be evaluated for a single-lane roundabout to improve operations. Although a traffic signal could also be considered, a signal at this intersection may have adverse impacts to the adjacent intersection of Winne Avenue and Colonial Drive that may necessitate a right-in, right-out approach configuration on Winne Avenue. A roundabout would improve traffic flow at the Broadway and Colonial Drive intersection, while still allowing the Winne Avenue and Colonial Drive intersection to function for all turning movements. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	BB-15; BL-1; BL-7
TSM-16	Last Chance Gulch and 14th Street	An unacceptable level of service is currently realized during the AM and PM peak hours, and in the future the LOS is expected to deteriorate further.	This intersection should be modified to improve operations. An engineering analysis should be completed to include a traffic signal warrant analysis to verify whether warrants are met, along with potential impacts to any adjacent intersections. Design details will be determined through engineering analysis during project development and may assess traffic signalization, mini-roundabout, and/or other treatments. As the primary easterly entrance to the Great Northern Town Center, pedestrian and bicycle considerations should be incorporated into any future design and construction. In the short-term, curb bulb-outs should be contemplated with appropriate crosswalk markings. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	PED-11
TSM-17	Custer Avenue and Villard Avenue	Under existing conditions it has been operating at levels of service of F and F in the AM and PM peak hours, respectively. The Villard Avenue corridor is important to this part of Helena as it links two major east / west routes (Custer Avenue and Last Chance Gulch).	This intersection should be modified to improve operations. An engineering analysis should be completed to include a traffic signal warrant analysis to verify whether warrants are met, along with potential impacts to any adjacent intersections. Design details will be determined through engineering analysis during project development and may assess traffic signalization, mini-roundabout, and/or other treatments. This would be a TSM project that could be completed prior to a major expansion of the Custer Avenue corridor as recommended in project **MSN-1**. Another treatment that could be considered as temporary, until the Custer Avenue corridor is expanded, would be to physically restrict northbound left-turn movements off of Villard Avenue. This would have to be done very cautiously, because travel movements to the Four Georgians elementary school make-up a large percentage of the northbound left-turns in the AM and PM peak. Without this travel option, cut-thru traffic at the adjacent trailer park may increase. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	BB-10
TSM-18	Montana Avenue and Broadway	Under existing conditions it is operating at levels of service of C and D in the AM and PM peak hours, respectively. The intersection will likely deteriorate under future year conditions.	This intersection should be modified to improve operations. An engineering analysis should be completed to include a traffic signal warrant analysis to verify whether warrants are met, along with potential impacts to any adjacent intersections.	$744,150	BL-31
TSM-19	Villard Avenue and Last Chance Gulch	This intersection has poor levels of service for the northbound and southbound leg.	It is not recommended to install a traffic signal at this location due to the thru-mobility purpose of the corridor and the proximity of the intersection to the overpass. It is recommended, however, to stripe the north leg of this intersection (i.e. Villard Avenue) to provide a dedicated right-turn lane and left-turn lane for the southbound movements (i.e. the north leg of Villard Avenue). By doing this, the thru-movement is eliminated (i.e. southbound on Villard Avenue to Chestnut Street). This is beneficial due to poor geometrics, and the south side of the intersection (i.e. Chestnut Street) should be modified to a “right-in / right-out” approach. Also, the placement of a “no parking” curb zone on Villard Avenue, near Last Chance Gulch Street, is recommended through signing and striping. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$130,680	BB-10

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
TSM-20	Truck Route System	The Helena community currently does not have a truck route system through the community.	It is recommended that the proposed truck route system shown on **Figure 8.5** be utilized as a basis for an ordinance recognizing the preferred movement of "thru-trucks" within the planning area. Local businesses that rely on trucking are very sensitive to their impact on the transportation system. An idea explored through the LRTP has been whether the community would benefit from having an adopted truck route system. Truck route systems are primarily intended for "thru-truck" traffic. These are typically vehicles passing through town on their way to other communities. For local businesses that rely on truck traffic, they are generally allowed to use any and all transportation system features unless expressly prohibited from doing so by local or state ordinances. For a truck route system to be effective, it should be formally acknowledged and adopted by the local governing bodies. Often times this is done through a local ordinance. The adoption of a truck route system also creates a need for signing, such that truckers know when entering the community what routes are specifically in place for the truck user. The proposed "thru-truck" route system takes truck traffic off of the 11th Avenue / Prospect Avenue corridors and shifts it towards Carter Drive, Airport Road, Last Chance Gulch and Lyndale / Euclid Avenues. Note that trucks cannot be precluded from travelling on a National Highway System (NHS) route.	$65,340	
TSM-21	US Highway 12 Signals – Shepard Way/Nicole Street and Crossroads Parkway	Future development pressures will necessitate signalized access onto US Highway 12.	Two signalized intersections are recommended to coincide with long-term area development land use plans. One signal should be located at the US Highway 12 & Shepard Way/Nicole Street intersection. The other should be located at the intersection with Crossroads Parkway. These signals can only be installed once traffic signal warrants are met. Pedestrian considerations in the form of crosswalks and signing should be investigated when traffic signal warrants are met and project development activities have commenced. Additionally, northbound left-turns from Lolo Street should be restricted to improve safety and encourage traffic to use the US Highway 12 & Shepard Way/Nicole Street intersection once signalized. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$1,301,960	
TSM-22	Neill Avenue / Helena Avenue / Cruse Avenue / Last Chance Gulch	Traffic congestion; lack of suitable non-motorized infrastructure; business parking and access concerns.	The City of Helena commissioned and completed a concept study to evaluate the feasibility and constructability of a modern intersection at the Neill Avenue/Helena Avenue/Cruse Avenue/Last Chance Gulch intersection. The evaluation included a full operational analysis and preliminary design of intersection alternatives. The primary goals of the effort were to establish a preliminary intersection design for the purposes of assessing right-of-way and infrastructure impacts, and for use in future final design efforts. The alternatives developed met the City's complete streets objectives to accommodate non-motorized traffic (pedestrian and bicycles). The recommendations contained in the study suggested carrying forward three alternatives for further detailed study in an appropriate environmental review process. The three alternatives were; Alternative 1B (single lane roundabout with two lane entry from Neill Rd), Alternative 6 (enlarged signalized intersection), and a "no-build" alternative. After the concept study was completed, the City Commission elected to drop the project from additional consideration and allocate available City of Helena funds to the West Main Street reconstruction project. For improvements to be delivered at this intersection in the future, a funding package will need to be identified and an environmental process completed to examine the social, environmental and economic impacts of the project on the community and adjacent businesses (if Federal funds are to be utilized).	$4,719,000	MSN-3; BBL-2; CT-2
TSM-23	Valley Drive Signing	Limited signing.	A "CURVE AHEAD" warning sign should be erected on the south leg of the northernmost curve on Valley Drive (i.e. just south of Lake Helena).	$3,630	
TSM-24	Sierra Road – McHugh Lane and Frontage Road Intersections	Limited signing; night-time visibility concerns.	The intersection of Sierra Road with both McHugh Lane and the Frontage Road should have "INTERSECTION AHEAD" warning signs erected on all approaches. Additionally, Sierra Road and the Frontage Road should have an intersection light installed to increase visibility.	$37,510	
TSM-25	Lake Helena Drive – Chevron Signing at Deal Lane	Limited signing.	A two-direction large arrow sign should be erected at the intersection of Deal Lane and Lake Helena Drive. This is a "T intersection" and the two-direction sign should be installed such that it is viewable by westbound traffic on Deal Lane.	$6,050	
TSM-26	Sierra Road and North Montana Avenue	Intersection currently operates with poor levels of service during both the AM and PM peak hours.	This intersection should be signalized when warrants are met. The intersection is currently all-way stop-control (AWSC) with an overhead flasher. Traffic signalization may be conducive to improve traffic and pedestrian operations at this location to better regulate vehicles flow, especially due to its proximity to Rossiter Elementary School. An in-depth technical review of the intersection should be completed prior to or during project development activities.	$744,150	SUP-22
TSM-27	Valley Forge Road and North Montana Avenue	Limited neighborhood access to North Montana; under current conditions realizes poor level of service during the PM peak hour; level of service is expected to deteriorate during the planning horizon to a D and E, for the AM and PM peak hour, respectively.	This intersection should be signalized when warrants are met.	$744,150	BL-31

Project ID	Location	Problem	Recommendation	Estimated Planning-Level Cost	Other Project References
TSM-28	Planning Area	Future safety concerns on high travel corridors.	Complete road safety audits (RSA's) for high travel corridors if and when safety concerns develop in the future. RSA's were recommended in the *Greater Helena Area Community Transportation Safety Plan (September 2013)* as a mitigation strategy for high crash corridors under existing and future conditions. Highway 282 may be a good candidate for an RSA due to its importance in the City of Helena. Lewis and Clark County and the City of East Helena.	Cost Unknown	
TSM-29	North Montana Avenue & Custer Avenue	Lack of left-turn bay storage capacity for the southbound left-turning movement on North Montana Avenue.	Extend southbound left-turn bay to provide additional storage at this intersection. This intersection is over capacity. If Custer Avenue to the west of this intersection is widened, additional time may be allocated to this movement. To address the demand on this movement, dual left turn lanes are needed. The EB left turn lane may benefit by providing dual left turn lanes in this direction also. This intersection should be re-evaluated with any future projects near the intersection.	$464,640	MSN-13; BL-31
TSM-30	Henderson Street and Brady	No designated left-turn phase or bays at newly constructed signal.	Monitor the intersection on a yearly basis to determine if designate left-turn phases are warranted for the northbound and southbound turning movements on Henderson Street	$186,340	BL-5; BL-20
TSM-31	Cutler and Cruse	Vehicle-pedestrian conflicts; sight distance concerns; vehicle speeds.	Reconfigure intersection to reduce vehicle-pedestrian conflicts and improve sight distances. Additional engineering study is needed to identify possible mitigation measures to improve safety at this intersection.	$93,170	
TSM-32	Montana and Main (EAST HELENA)	Fixed objects within the sight distance triangle; vehicles parked too close to the intersection; peak hour level of service concerns; future year LOS deterioration.	This intersection should be modified to improve operations. An engineering analysis should be completed to include a traffic signal warrant analysis to verify whether warrants are met, along with potential impacts to any adjacent intersections.	$744,150	
			Total Estimated Planning Costs (TSM Projects)	**$18,369,010**	

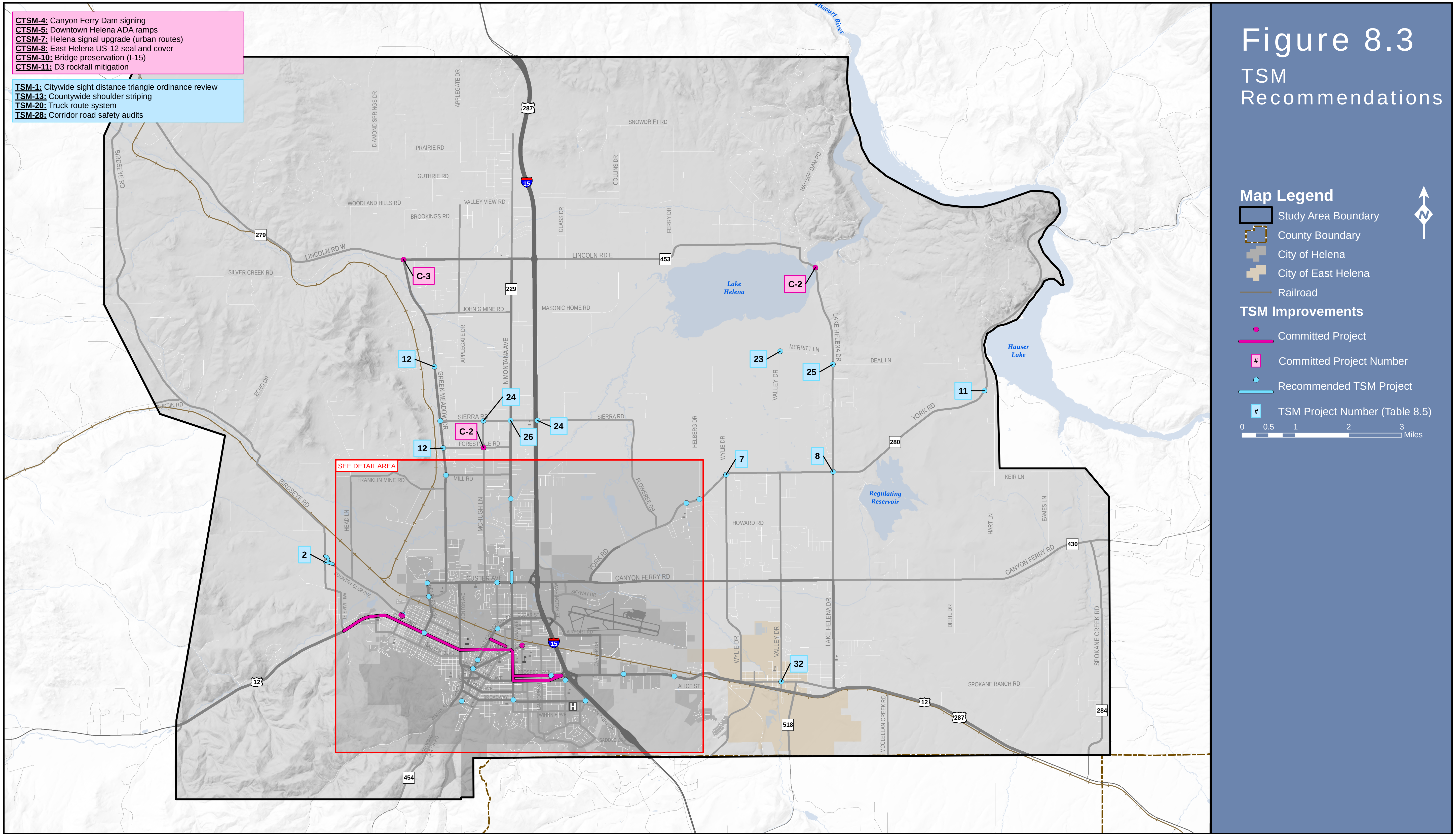


Figure 8.3
TSM Recommendations

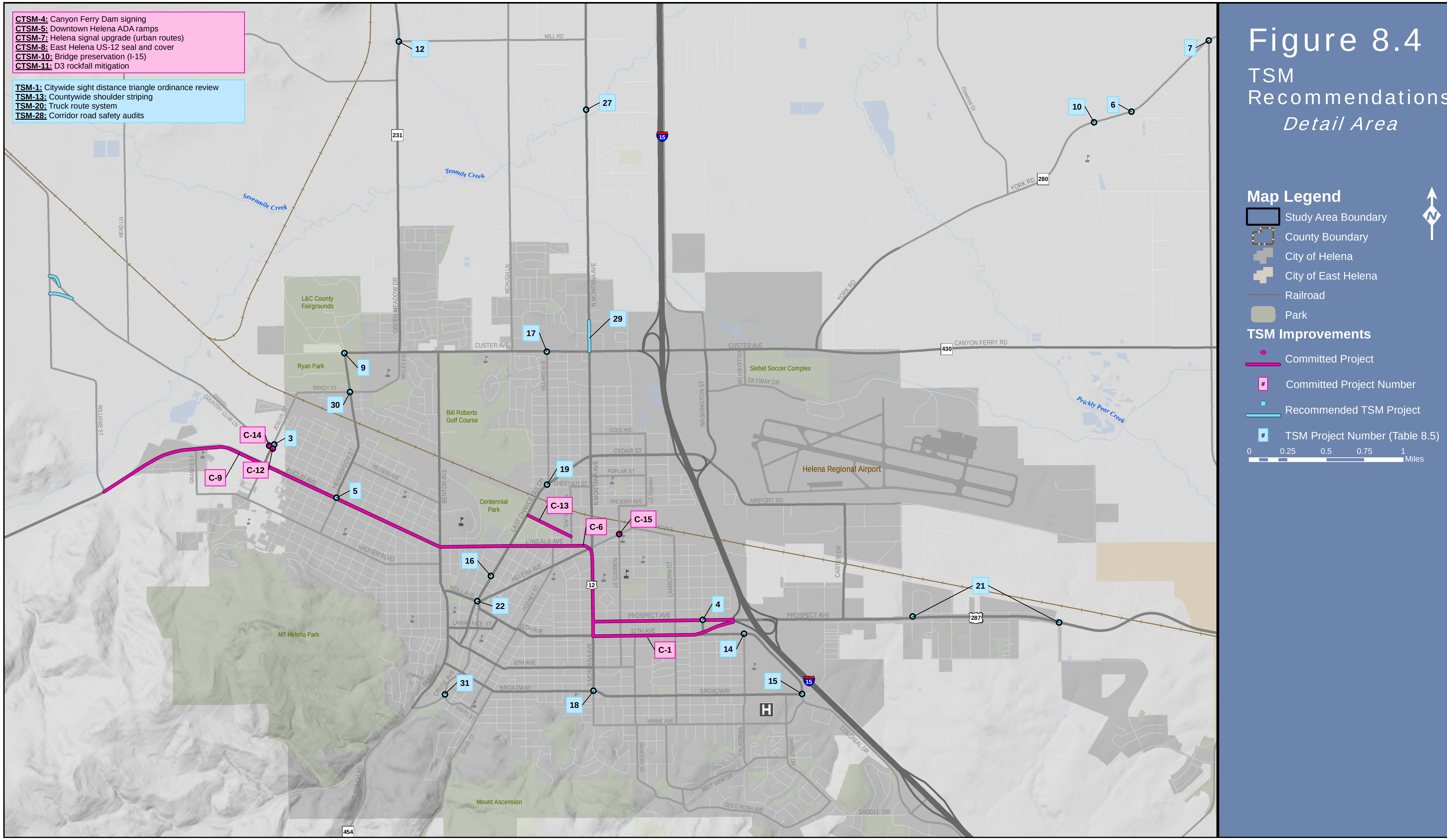


Figure 8.4
TSM Recommendations
Detail Area
CTSM-4: Canyon Ferry Dam signing
CTSM-5: Downtown Helena ADA ramps
CTSM-7: Helena signal upgrade (urban routes)
CTSM-8: East Helena US-12 seal and cover
CTSM-10: Bridge preservation (I-15)
CTSM-11: D3 rockfall mitigation
TSM-1: Citywide sight distance triangle ordinance review
TSM-13: Countywide shoulder striping
TSM-20: Truck route system
TSM-28: Corridor road safety audits
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Park
TSM Improvements
Committed Project
Committed Project Number
Recommended TSM Project
TSM Project Number (Table 8.5)
0 0.25 0.5 0.75 1 Miles
N
L&C County Fairgrounds
Ryan Park
Bill Roberts Golf Course
Centennial Park
Siebel Soccer Complex
Helena Regional Airport
MT Helena Park
Mount Ascension
Sevenmile Creek
Tenmile Creek
Prickly Pear Creek
CUSTER AVE
CANYON FERRY RD
YORK RD
PROSPECT AVE
BROADWAY
LYNDALE AVE
EUCLID AVE
MILL RD
AIRPORT RD
C-1
C-6
C-9
C-12
C-13
C-14
C-15
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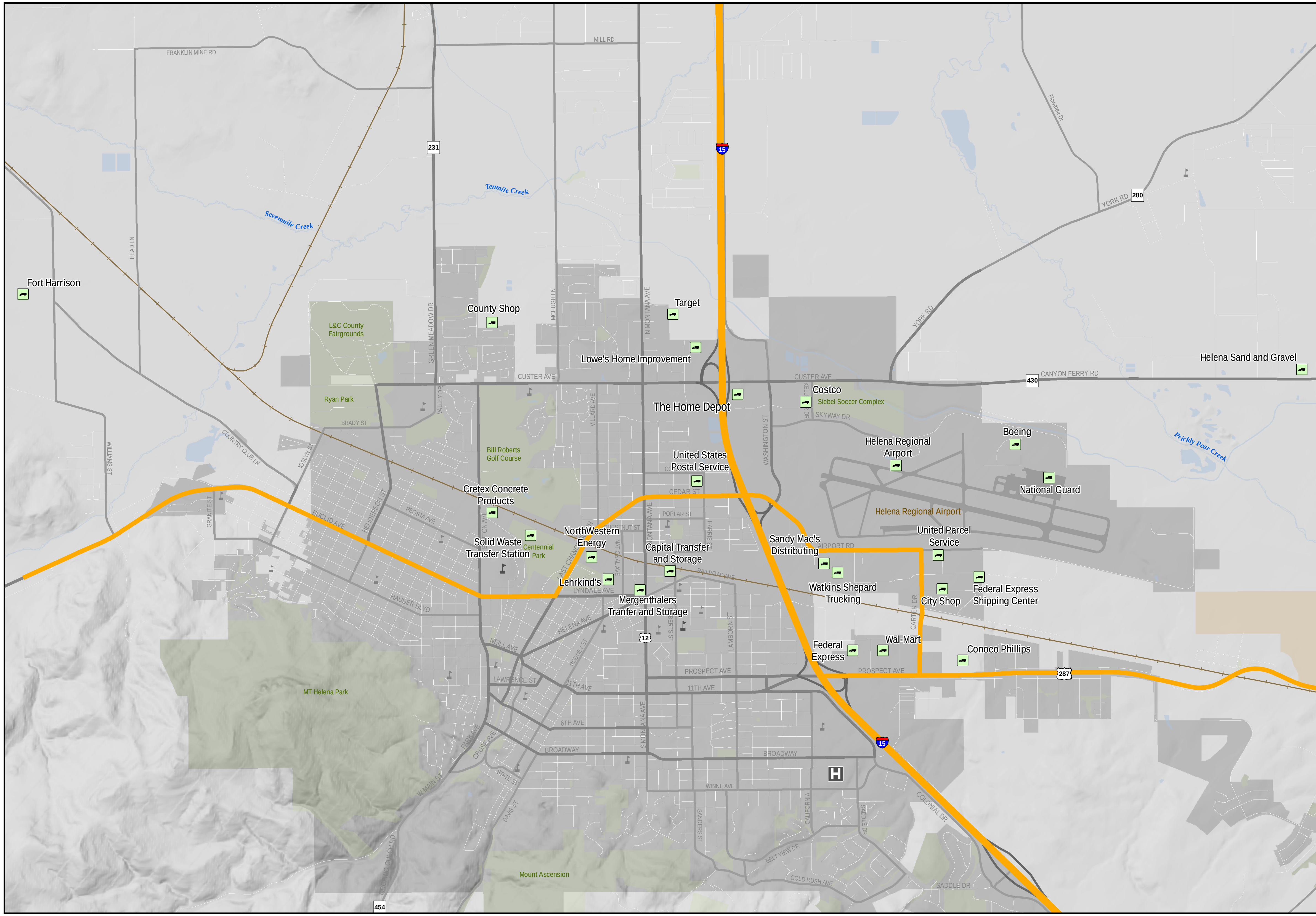


Figure 8.5

Proposed Truck Routes

City of Helena

8.4 Pedestrian Improvements

8.4.1 Pedestrian Recommendations

8.4.1.1 Overview

All residents within the Greater Helena area are pedestrians at some point in their day – whether walking the dog, walking to the store or work, or from a vehicle to a destination. This section includes pedestrian needs (including the needs of those with disabilities, limited mobility, or factors due to age), system deficiencies, recommendation development methodology, and proposed recommendations for pedestrian facility improvements that were developed from the public involvement process and from field observations.

8.4.1.2 Proposed Improvements Methodology

Pedestrian network improvements have been selected to close gaps in the network, make connections to and from major destinations, and improve overall continuity, comfort, and sense of security for pedestrians.

Fieldwork included identifying conditions and needs in the following contexts:

- along the major street network,
- at intersections,
- in the Last Chance Gulch (Downtown Helena) area,
- near schools throughout the study area, and
- in neighborhoods with partially complete sidewalk,

Map discussions of existing needs were conducted during the stakeholder interview process and at the public open house in May 2014. Additional information came from the public online survey and from other public comment. Improvements to the pedestrian network will occur over time along the major street network in the Greater Helena Area as part of roadway improvement projects, signal upgrade projects and as stand-alone pedestrian focused projects. In residential areas, improvements could occur as part of an expanded sidewalk program (see recommendation) or as stand-alone publicly funded projects using sources like the Transportation Alternatives (TA) program.

Additionally, many of the stakeholders in Helena (committees, advisory and advocacy groups, and government agencies) suggested recommending a systematic approach to improve communication between stakeholder groups, residents, property owners, government agencies, planning organizations, and ongoing and future planning efforts in order to improve walking conditions with a more united, well-rounded voice. This can be accomplished by establishing a general, regional pedestrian or walking committee with representation from each related committee or stakeholder group. The committee will act as the central discussion and clearinghouse group responsible for developing, implementing, and maintaining programs and other recommendations in the Helena area. By meeting often and discussing issues, each group's efforts can be more effective and have the input of other interested parties.

8.4.1.3 Facility Recommendations

The proposed pedestrian network for the Greater Helena area consists of:

- Sidewalk improvement and completing network gaps,
- Crossing improvement and overall intersection improvement, including signals, and
- Shared-use path projects (shown in the Bicycling Facility Recommendations **Table 8.13**).

Perpendicular Curb Ramps

Many of the intersections in the Helena area utilize diagonal curb ramps. These facilities, while providing ramps and detectable warnings, direct users out into the intersection rather than in the direction of the crosswalk. Perpendicular and parallel curb ramps should be constructed in the future in all intersection construction, retrofit and reconstruction projects. This will ensure that new facilities are in compliance with PROWAG.

Crossing Improvements

The Helena area has many locations which would benefit from new pedestrian crossings as well as existing pedestrian crossings which could benefit from upgrades (see **Table 8.6**). Such upgrades could include improved curb ramps, high visibility crosswalks, and crossing aids such as Rectangular Rapid Flashing Beacons, Hybrid Beacons, and/or full pedestrian signals. Beacons and signals can make pedestrian crossings where there are high speeds or multiple travel lanes safer to cross than with conventional crosswalks and signage. Note that changes to pedestrian crossings should be determined based on further study to determine the appropriate traffic control features to be installed. This is a requirement on all state maintained routes.

Sidewalks

Improving the sidewalk network (see **Figure 8.6** and **Figure 8.7**) will allow more predictable trips for pedestrians and will improve the overall connectivity of the Greater Helena area. Streets like Montana Ave, Euclid Ave, and Custer Ave all have significant sidewalk gaps which make using these corridors problematic for pedestrians. During the public process, many Helena area residents expressed a desire to improve sidewalks around and leading to and from HATS bus stops.

Other proposed sidewalk additions focus on improving pedestrian conditions around Helena city schools (shared-use paths are recommended for other schools in the County), and along certain streets which either have gaps that hinder their functionality as a walking corridor, or along select corridors in areas of Helena that generally lack sidewalks. **Appendix C** contains a tabular summary of priority sidewalk locations corresponding to the graphical representation shown on **Figure 8.6** and **Figure 8.7**.

Types of Crossing Improvements

- **Rectangular Rapid Flashing Beacons (RRFBs):** An RRFB is a user-actuated amber flashing light that supplements warning signs at un-signalized intersections or mid-block crosswalks. Beacons can be actuated either manually by a push-button or passively through detection. RRFBs present an irregular flash pattern similar to emergency flashers on police vehicles and can be installed on either two-lane or multi-lane roadways. Active warning beacons should be used to alert drivers to yield where bicyclists have the right-of-way crossing a road. RRFBs can improve driver yielding compliance to 95 percent in many locations and should generally not be used where pedestrians cross more than two lanes of traffic without a refuge.

- **Curb Extensions:** Curb extensions visually and physically narrow the street creating shorter and safer crossings for pedestrians and bicyclists. Curb extensions are effective at mid-block or at intersection locations and may be in conjunction with other pedestrian treatments.

- **Pedestrian Hybrid Beacon:** A pedestrian hybrid beacon, also known as a High-intensity Activated Crosswalk (HAWK), consists of a signal-head with two red lenses over a single yellow lens. Hybrid beacons are encouraged to be used for mid-block crossings, however many cities have found utility using them at intersections. With the hybrid beacon, there are no signal indications for motor vehicles on the minor street approaches. Hybrid beacons were developed specifically to enhance pedestrian crossings of major streets.

Hybrid beacons are used to improve non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal (or where there are concerns that a conventional signal will encourage additional motor vehicle traffic on the minor street). The primary difference compared to a standard signal is that a hybrid beacon displays no indication (i.e., it is dark) when it is not actuated. Upon actuation (by a pedestrian or bicyclist on the minor street), the beacon begins flashing yellow, changes to steady yellow, then displays a solid red indication with both red lenses. During the solid red phase, drivers must stop and remain stopped, as with a standard traffic signal.

- **Signal Timing:** In the case of new signals, or as signals are adjusted, upgraded, or replaced, various tools can be used to enhance and improve the pedestrian crossing experience.
    - Leading Pedestrian Intervals (LPI): A 3-5 second ‘head start’ for pedestrians can put pedestrians in the crosswalks where they are visible to drivers before drivers are given a green light where turning conflicts exist.
    - Pedestrian Countdown Signals: Now standard, pedestrian countdown signals should be installed wherever signal upgrades take place.
    - Audible Pedestrian Signals: It is now standard practice to provide audible pedestrian signals at all new signalized intersections and signal upgrades.
    - Adequate pedestrians signal timing: In recent years the design crossing speed of pedestrians was lowered from 4 feet per second to 3.5 feet per second. As signals are adjusted it should be verified that the pedestrian signal has adequate timing for pedestrians to fully clear the intersection.

Table 8.6: Pedestrian Spot Improvements

Project ID	Location	Type	Problem	Recommendation	Estimated Planning–Level Cost (Low)	Estimated Planning–Level Cost (High)	Other Project References
PED-1	Benton Ave & Centennial Trail	Trail Crossing	Centennial Trail is discontinuous crossing Benton Avenue and there is no designated place for trail users to safely cross.	Rectangular Rapid Flashing Beacon (RRFB). Also add high viz crossing and move west side curb line back to make waiting area for bikes travelling SB on Benton who want to cross and not block the bike lane.	$17,000	$27,000	MSN-21; MSN-23; BL-29; SUP-3; SUP-24
PED-2	Brady St & Capital High School Short Term Parking Entrance	Raised Crosswalk	Existing marked crosswalk is currently stop controlled. Stop sign is resulting in poor compliance. Sidewalk does not connect to one side of the crossing.	Raised crosswalk. RRFB could be added if gaps do not get created or yielding is not occuring. Stop sign could be removed. Extend sidewalk to crossing on south side of street.	$5,000	$38,000	BL-5
PED-3	Brady St & Church of the Nazarene Parking Entrance	Raised Crosswalk	Existing marked crosswalk may have poor yielding compliance and could benefit from enhancements.	Raised crosswalk. RRFB could be added if gaps do not get created or yielding is not occuring.	$5,000	$35,000	BL-5
PED-4	Euclid Ave & Glendale St	Pedestrian Crossing	There is a ½ mile distance between crosswalks along this section of Euclid Ave.	A study should be determined to site a pedestrian crossing in the vicinity of Glendale St. A full signal or Hybrid Beacon is recommended to help cross peds only when needed. Location could be a full signal at the intersection, hybrid beacon, or even RRFB potentially (if done mid-block). Input from MDT will be necessary to determine which strategy is preferable.	$23,000	$103,000	BBL-1
PED-5	Euclid Ave & Granite Ave	Hybrid Beacon, Full Signal, or Pedestrian Underpass	Existing marked school crossing stretches 90 feet and 5 high speed travel lanes. Improvements will enhance safety.	Recommend a pedestrian hybrid beacon or a full signal to stop traffic and make this crossing safer. Could also be a pedestrian underpass depending on feasibility which would have additional benefits for connecting neighborhoods to Spring Meadow Park. Input from MDT will be necessary to determine which strategy is preferable.	$58,000	$103,000	BBL-1
PED-6	Euclid Ave & Lincoln St	Pedestrian Crossing	There is a ¾-mile gap between existing pedestrian crossings along this section of Euclid Ave.	A study should be determined to site a pedestrian crossing in the vicinity of Lincoln St. Location could be a full signal at the intersections, a hybrid beacon, or even RRFB potentially (if done mid-block). Input from MDT will be necessary to determine which strategy is preferable.	$23,000	$103,000	BBL-1
PED-7	Helena Ave & 14th St	Bulbouts and RRFB	Existing crossing can be improved for pedestrians and to handle bicycle boulevard users.	Improve crossing for pedestrians and bicyclists via bulbouts and an RRFB.	$25,000	$41,000	
PED-8	Helena Ave & Gallatin Ave	Bulbouts	This intersection currently has 6 legs and has little definition or guidance.	Add curb extensions to force westbound drivers on Gallatin Ave to turn right. Add curb extensions to square up the west leg of Gallatin Ave. Add curb extensions to the SW corner of Helena Ave. Enhance pedestrian crossing striping.	$28,000	$43,000	
PED-9	Lake Helena Dr & ~Clinton St	Crosswalk	The roadway network provides poor connectivity for pedestrians in the vicinity.	Provide new crosswalk and sidewalk connections through existing easements. Alleyway easements are located bith north and south of Clinton Street.	$12,000	$18,000	
PED-10	Lake Helena Dr & Lewis St	Crosswalk	A new shared use path is planned along the north side of Lewis Street which will require a crosswalk to cross Lake Helena Drive when implemented.	Provide crosswalk at existing stop sign on the north leg of the intersection if shared use path is implemented.	$11,000	$17,000	
PED-11	Last Chance Gulch & 14th St	Crosswalks and Bulbouts	Existing location of unmarked pedestrian crossings and future bicycle boulevard crossing location.	Improve walkability of this intersection with bulbouts and crosswalks. Bulbouts should be provided with or without full signalization proposed in **TSM-16**.	$45,000	$69,000	TSM-16
PED-12	Last Chance Gulch & Aspen St	Hybrid Beacon	This is over 100 feet of uncontrolled crosswalk with an existing cantilevered warning sign across five lanes of traffic.	Upgrade to a hybrid beacon.	$50,000	$90,000	
PED-13	Last Chance Gulch & Centennial Park (East Entrance)	RRFB	Existing uncontrolled crosswalk can be improved to enhance safety.	Install Rectangular Rapid Flash Beacon. Also add bulbout in easterly parking area to shorten crossing to Memorial Park once Last Chance Gulch is crossed.	$20,000	$33,000	BL-30
PED-14	Lincoln Rd & Jim Darcy School Existing Crossing	RRFB	Existing school crossing has no enhancements to make use more visible during and outside of school commute hours.	Add RRFB to heighten awareness of pedestrians and bicyclists in front of Jim Darcy School.	$15,000	$25,000	MSN-24; CRN-6; SUP-8
PED-15	Lyndale Ave & Warren St	Hybrid Beacon	Existing crossing has no visibility enhancements or refuge over a 4-lane arterial.	Improve crossing to Hybrid Beacon as there is no pedestrian refuge.	$50,000	$90,000	
PED-16	Main St & Proposed East Airport to East Helena Trail	Crosswalk	If shared-use path is implemented a crossing will be needed.	Crosswalk will link the center of East Helena to two potential future routes west to the City of Helena (if implemented).	$2,000	--	

Project ID	Location	Type	Problem	Recommendation	Estimated Planning–Level Cost (Low)	Estimated Planning–Level Cost (High)	Other Project References
PED-17	Montana Ave & Chestnut St	Ped Bicycle Crossing Improvement	There are no existing pedestrian crossings for nearly 0.6 miles in this strech of Montana Ave. This location will also facilitate bicycle boulevard crossings	Bulbouts and Hybrid Beacon	$96,000	$160,000	BL-31
PED-18	Montana Ave & Forestvale Rd	Add RRFB or Remove	This section of Montana Ave is high speed and three lanes.	Recommend including a Rectangular Rapid Flash Beacon or removing crosswalk. In some cases marked crosswalks can actually be more dangerous than not providing one at all.	$600	$25,000	BL-31; CRN-12
PED-19	Montana Ave & Valley Forge Rd	Improve Crossing	The existing east side shared use path along Montana Avenue has an awkward crossing of Valley Forge Road.	Mark the crossing and make it intuitive; provide some sort of barrier on east side of street so that bike/ped is not directly next to traffic before bridge.	$5000	--	BL-31
PED-20	Riggs St & Proposed East Airport to East Helena Trail	Crosswalk	If shared-use path is implemented a crossing will be needed.	Crosswalk will link the center of East Helena to two potential future routes west to the City of Helena (if implemented).	$1,200	--	
PED-21	Roberts St & Walnut St	Curb Ramps	Existing crosswalks do not have curb ramps connecting park to the crosswalk.	Improve existing ramps to ADA standard perpendicular ramps.	$5,000	$10,000	
PED-22	Southwest corner of Cruse Ave & Broadway St	Install Refuge	Existing crossing is over 100 feet in length and allows for high speed turning of vehicles.	Install “pork-chop” style refuge to separate crossing into two stages.	$9,000	$16,000	
PED-23	West leg of Cruse Ave & Broadway St	Bulbout	Existing crossing is over 110 feet in length and allows for high speed turning of vehicles.	Add bulbout due to high traffic on Broadway; bulbouts should not block potential for bike lanes. The southbound slip lane from Broadway to Cruse Ave should be removed with this project.	$1,200	--	
PED-24	Stuart & Benton Ave	Hybrid Beacon	There is no pedestrian crossing on Benton Ave for over ¼ mile between Lyndale and Neill Ave.	Install Hybrid Beacon to assist pedestrian crossings of Benton Ave. A four lane road with no median does not work well with RRFBs. If Benton is converted to 3-lanes per one option in project **BL-29** then it is possible an RRFB could be an alternative.	$15,000	$90,000	BL-29
PED-25	Montana Ave & 6th Ave.	Hybrid Beacon or full signal	Multiple pedestrians have indicated that this location is not functioning well with conventional crosswalks. Driver yielding may be poor.	A full signal may provide the best arrangement at this location and have benefits for cross traffic across Montana Ave as well. A Hybrid beacon is a possibility, but may not perform well with cross-traffic. If Montana Ave is converted to 3-lanes per one option in project **BL-31** then it is possible an RRFB could be an alternative.	$15,000	$120,000	BL-31; MSN-27
PED-26	Main Street & Thurman Avenue (EAST HELENA)	Crosswalk	Lack of marked pedestrian crossing.	Improve crossing for pedestrians across Main Street in East Helena.	$1,200	--	
PED-27	Main Street & 1st Street (EAST HELENA)	Crosswalk	Lack of marked pedestrian crossing.	Improve crossing for pedestrians across Main Street in East Helena.	$1,200	--	
PED-28	Lane Avenue and Porter Avenue (EAST HELENA)	Crosswalk	Lack of marked pedestrian crossing.	Improve crossing for pedestrians across Lane Avenue in East Helena.	$1,200	--	
				Total Estimated Planning Costs (Pedestrian “Spot” Projects)	**$540,600**	**$1,256,000**	

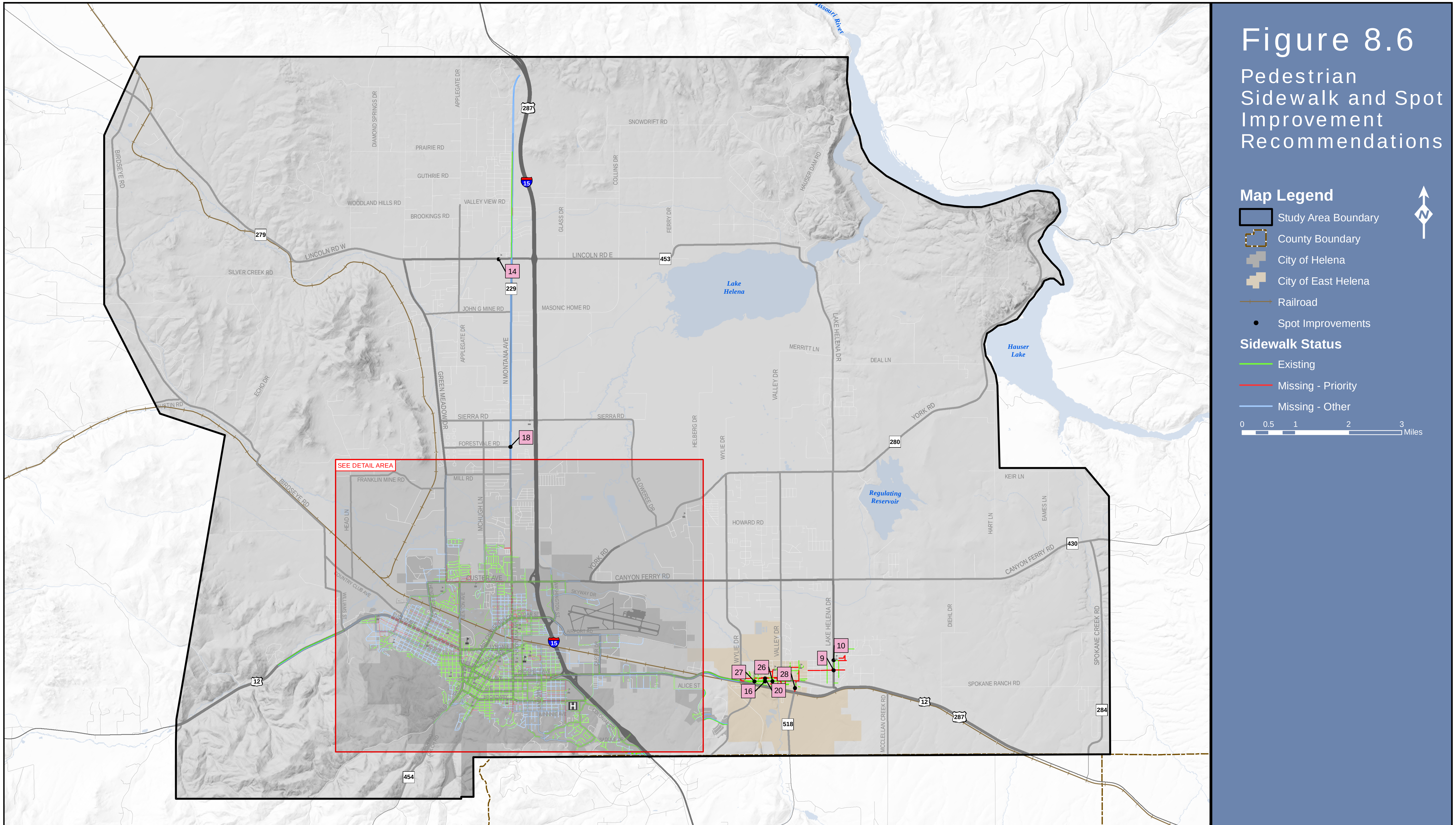
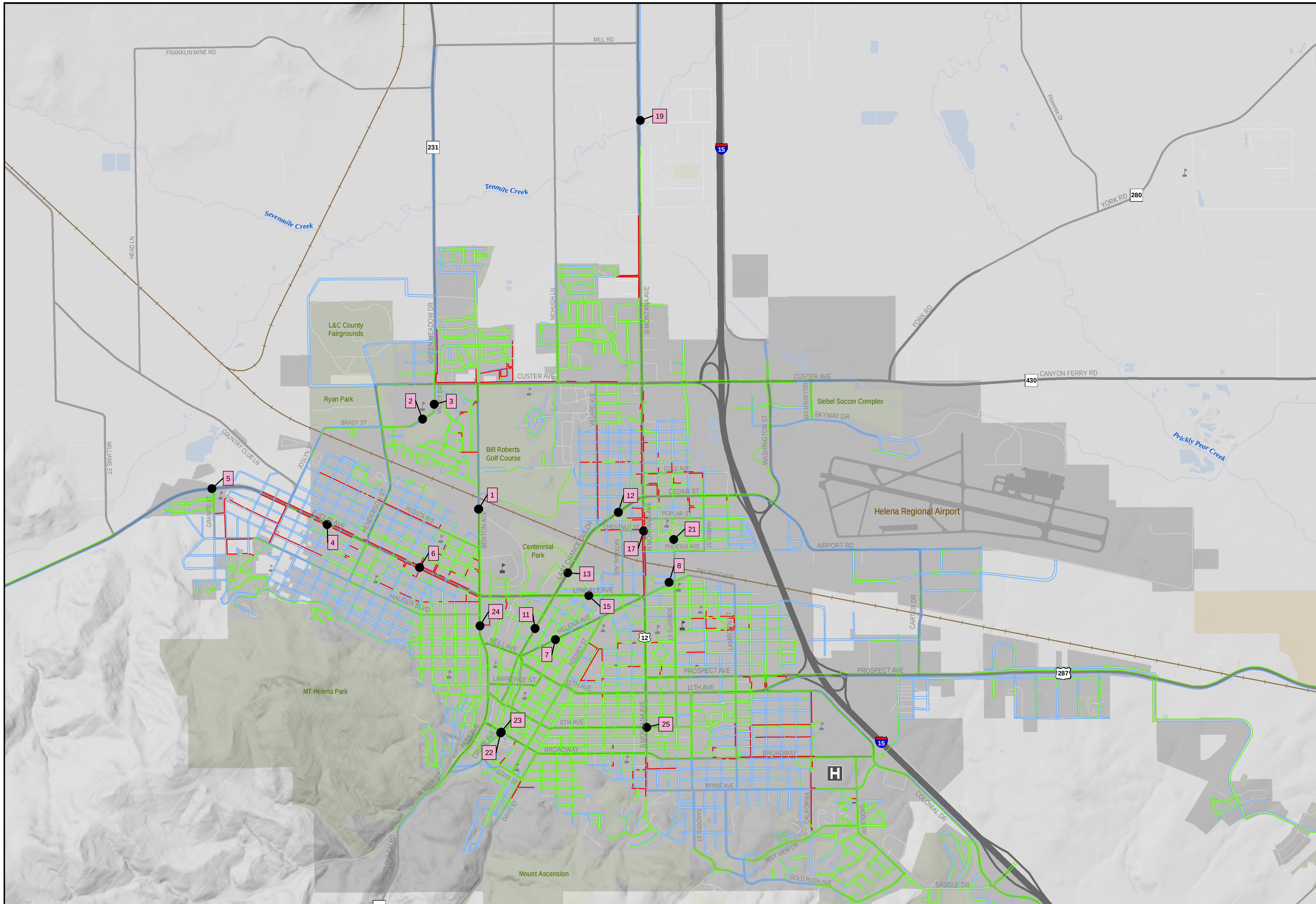


Figure 8.6
Pedestrian Sidewalk and Spot Improvement Recommendations
Map Legend
Study Area Boundary
County Boundary
City of Helena
City of East Helena
Railroad
Spot Improvements
Sidewalk Status
Existing
Missing - Priority
Missing - Other
0 0.5 1 2 3 Miles
SEE DETAIL AREA
Lake Helena
Hauser Lake
Regulating Reservoir
LINCOLN RD W
LINCOLN RD E
CANYON FERRY RD
SIERRA RD
YORK RD
N MONTANA AVE
SPOKANE RANCH RD

Figure 8.7

Pedestrian Sidewalk and Spot Improvement Recommendations

Detail Area



8.4.1.4 Pedestrian Program and Policy Recommendations

If improving walking infrastructure is a vital component to increasing comfort and ease of use, supportive programs and policies are a cost-effective complement. Working directly with the public to encourage walking can increase use and improve safety. The US Census and American Community Survey have shown a decrease in walking to work in Helena by approximately 22 percent from 1990 to 2013. The goals of the following programs and policies are to:

- Increase the visibility and legitimacy of pedestrians in the Helena area
- Support and enhance the infrastructure recommendations in this Plan
- Increase the number, safety, and comfort of people walking in the Helena area

This section references City and County codes, zoning ordinances, and other requirements. While much of the narrative discusses expansion of current programs or other application within the City of Helena, many, if not all, of the following programs and policies can be applied in surrounding communities and Lewis & Clark County as well; doing so will help improve walking countywide. Where ordinances or codes do not currently exist, they should be adopted in the appropriate manner unique to each community and jurisdiction. All programs and policies are proposed; only local elected bodies (i.e. Commissions or Councils) have the authority to approve and enact a proposed program or policy.

Comprehensive Sidewalk and Crossing Program

Construction, management, and maintenance programs help renew and expand sidewalk networks. Many Montana communities, including Helena, have existing programs repairing aging sidewalk or installing new sidewalk infrastructure. The City of Helena's sidewalk replacement program and its no-interest loan program are discussed in the previously prepared *Existing and Projected Conditions Report*. This plan recommends expanding the City's program, implementing a similar program in East Helena and Lewis & Clark County, and creating a comprehensive sidewalk and crossing program that should be developed and adopting in all Helena area communities and jurisdictions. The comprehensive program has the following program and policy components:

New Construction or Rehabilitation in the City or County's Right of Way

The City and/or County should coordinate improvements and bid out sidewalk, crossing, and signal construction and other rehabilitation projects once a year as high of a volume as can be accommodated for the best prices and efficiency. Proposed projects in the pedestrian recommendations (**Figure 8.6** and **Figure 8.7** and **Table 8.6**) should be ordered in as possible. Sidewalks near schools should be prioritized first, followed by gaps that would greatly enhance the overall connectivity of the network (including access to and from HATS bus stops).

Sidewalk Replacement and Expansion

The City and/or County should continue to implement, or consider, the following proposed sidewalk strategies, programs, or policies to encourage sidewalk rehabilitation and construction where property owners are involved:

- Offer no-interest (for partly-financed repairs) and low-interest (for entirely-financed repairs) loans to property owners who wish to replace or rehabilitate sidewalk that fronts their property. The City and/or County should ensure that funding for the no- or low-interest rate loans is available each year;
- ADA Ramp Replacement and Installation – The City of Helena should continue its programmatic approach to replacing sub-standard or installation standard ADA-compliant pedestrian ramps, with a 50%/50% funding share on non-priority ramps and 100% funding on priority ramps..
- Crosswalk Policy – The Cities and County should adopt a crosswalk policy that establishes appropriate crosswalk types for specific roadway crossing types. **Table 8.7** includes pedestrian crossing contextual guidance, developed by Alta Planning + Design, for types of pedestrian crossing accommodation based on roadway context. High-visibility, piano key-style marked crosswalks should be installed at school crossings, busy intersections, and midblock crossings; parallel bar markings may be installed at other acceptable locations. This is especially important where sidewalks are present. ADA-compliant curb ramps should also always be provided when crosswalks are installed.

More information on sidewalk and cost sharing programs from other Montana communities can be found in the "Montana Active Transportation/Active Living Standards Resource Guide".

Winter Sidewalk Maintenance Comprehensive Program

According to survey respondents in the Helena area, winter is the season during which they are least likely to walk. When asked which factors contribute to choosing not to or not being able to walk in the winter, 72 percent said that temperature and weather were major deterrents and nearly 50 percent cited sidewalk maintenance. Improving maintenance of sidewalks in the winter will improve walking conditions in the Helena area and encourage more people to walk during the colder months.

Enforcement Program and Ordinances

City of Helena Ordinance 2025 and City of East Helena Ordinances 29 and 72 should be reviewed for possible revisions to snow removal guidance with the goal that the city would have a more functional pedestrian network during the winter months. This ordinance should explore property owners and their tenants clearing a minimum path of 5 feet (or 4 feet if an existing 4-foot sidewalk exists) on sidewalks (and corners and curb cuts if the property is on a corner) within a specific time interval of a snow event or whenever the accumulation of snow and/or ice creates conditions that are over an inch of accumulated snow or dangerous to property or to persons using the sidewalk. This timeframe should be enforced and should not reset in the case of another snow event. Note that the City of Helena is currently in the process of revising the ordinance.

The City of Helena should also simplify the submission of complaints so that residents can more easily locate the service. Currently, the form is located under Parks & Recreation under "Blvds, Parking, Sidewalks" and Sidewalk Snow and Ice Removal.

Encouragement and Assistance Programs

Elderly residents are more susceptible to falls, are less likely to walk in the winter if sidewalks are not maintained adequately, and are often not physically able to clear their own sidewalks and driveways. The City of Helena Street Division currently provides assistance to those who are not physically able to remove snow berms that may be left by snow plows. The City of East Helena and Lewis & Clark County should adopt this practice as well within their equivalent divisions or departments.

The City of Helena, the City of East Helena, and Lewis & Clark County should develop, implement, and maintain a volunteer program that connects volunteers with elderly resident who are not able to clear their own sidewalks in the winter. Similar programs, like the "Safe Winters Walkways" program in Lawrence, Kansas, and the "Snow Angels" programs in many communities in the United States and Canada, can be referenced for more guidance. This would be an expansion of the current service that the City of Helena provides and made more visible.

Additionally, snow removal can be encouraged and storm warnings can be advertised via billboards, radio ads, and social media.

Table 8.7: Pedestrian Crossing Contextual Guidance – At Unsignalized Intersections

Treatment	Local Streets (15-25mph)		Collector Streets (25-30mph)			Arterial Streets (30-45mph)							
	2 lane	3 lane	2 lane	2 lane w/ refuge	3 lane	2 lane	2 lane w/ refuge	3 lane	4 lane	4 lane w/ refuge	5 lane	6 lane	6 lane w/ refuge
Crosswalk Only (high visibility)			EJ	EJ	X	EJ	EJ	X	X	X	X	X	X
Crosswalk with warning signage and yield lines	EJ					EJ	EJ	EJ	X	X	X	X	X
Active Warning Beacon (RRFB)	X	EJ							X		X	X	X
Hybrid Beacon	X	X	EJ	EJ	EJ	EJ							
Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ					
Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ					

Color Key:

Most Desirable	
Engineering Judgment	**EJ**
Not Recommended	**X**
Not Applicable	N/A

Source: Alta Planning + Design, BikeWalk Montana Annual Summit, March 2, 2015, Helena, MT.

8.5 Bicycle Improvements

8.5.1 Overview

This section outlines potential on and off-street bikeways, trails and crossing improvement projects that will better connect the Helena area's existing facilities and destinations. These recommendations are intended to encourage active living by residents and visitors alike and accommodate a variety of ability levels and interests with particular emphasis on making the bikeway network more comfortable and accessible to a wider range of Helena area residents.

8.5.2 Facility Recommendations

Bicycle facilities vary from bicycle routes designated by signage or shared lane markings to separated, off-street facilities. Opportunities to develop bicycle facilities and a cohesive network also vary and may range from deliberate and coordinated development on the part of the City of Helena, City of East Helena, or Lewis & Clark County to taking advantage of independent street construction, reconstruction and resurfacing projects. Street re-surfacing in particular, is a low-cost way to provide bicycle infrastructure. When streets are resurfaced, new pavement markings are required. During this process, bicycle facilities can often be added depending on existing roadway width and feasibility. In some cases parallel recommendations may exist to accommodate a variety of bicyclist skill levels. For example, this could include the provision of on-street bike lanes and a shared-use path along a collector or arterial roadway.

The recommended Helena area bike network represents a comprehensive set of existing and proposed bicycle transportation facilities. The proposed bicycling network for the Helena area consists of:

- Bicycle boulevards (and other streets with shared lane markings)
- Bike lanes
- Buffered bike lanes
- Protected bike lanes
- Shared use path projects and connections to trails and paths
- Spot improvements including crossings (signalization, markings, ramps, etc.)

8.5.2.1 Street Retrofit Scenarios

In the case of roadway retrofit projects where a street may be reconfigured to provide the physical space for bicycle or buffered bicycle lanes additional study, neighborhood outreach, business outreach and other activities may be needed prior to implementation. In these instances adding separated on-street bicycle facilities may result in non-standard lane widths based on the available curb to curb roadway space. Standards may be different between the City of Helena, Lewis & Clark County and the Montana Department of Transportation. An August 2013 Memo[33] from the US Department of Transportation encourages "flexible approaches to bicycle and pedestrian facility design" in order to help "communities to plan and design safe and convenient facilities for pedestrians and bicyclists."

8.5.2.2 Pavement Markings

Pavement markings are the predominant material of on-street bicycle facilities. The cost of installing and maintaining these markings can vary dramatically depending on the materials used and their location and placement. Inlaid thermoplastic is the most durable form of pavement marking. With inlaid thermoplastic the street is milled out and preformed, or poured thermoplastic is heated up and bonded to the pavement surface. The fact that the markings are inlaid means they are more resistant to snow removal and can wear with the road as it ages. This method is the most expensive, however in some cases the thermoplastic can last as long as the pavement does and will need to be reapplied after road resurfacing or other pavement preservation activities. Paint can be applied as waterborne or epoxy paint with waterborne being less durable. Many streets in Montana need to have pavement markings reapplied annually.

Bicycle facility striping is the most influenced by snow removal and tire wear. If stripes and stencils can be located to minimize tire wear they may last several times longer than adjacent travel lanes. Shared lane markings if placed in the center of the lane will last much longer than if located in the wheel path where MUTCD minimum dimensions often place them. Painted bicycle lanes can expect to last 1-3 years while higher quality materials should give a minimum of 5 years of service up to 15 years or more.

Because of the uncertainty of material choices and specific design it is difficult to accurately estimate the cost of installation or maintenance of on-street bicycle facility markings. Low and high costs are provided with the project tables reflecting cheaper materials on the low end and more expensive materials and potential adjacent lane reconfiguration (if necessary) on the high end (see **Table 8.8**). Engineering costs are not included in the cost estimates as some projects can be done by specification and others may need significant design. Maintenance for on-street bikeways should be considered jointly with the pavement marking maintenance requirements of the adjacent roadway rather than as a separate bicycle specific obligation. They are an integral part of the roadway's function along with vehicle travel and turn lanes, crosswalks, etc.

Table 8.8: Bicycle Facility Lane Markings – Range of Installation Costs (per mile)

Facility Type / Treatment	Low	High
Bike lane (stencil/sign only)	$ 7,000	$ 13,000
Bike lane (paint or thermoplastic)	$ 9,000	$ 55,000
Buffered bike lane (paint or thermoplastic)	$ 14,000	$ 106,000
Bike lane & road reconfiguration (for bike only project)	$ 9,000	$ 106,000
Buffered bike lane & road reconfiguration (for bike only project)	$ 14,000	$ 117,000
Two-way protected bike lane	$ 43,000	$ 96,000
Shared lane marking	$ 13,000	$ 13,000
Bike boulevard	$ 20,000	$ 20,000

8.5.2.3 Separated On-Street Facilities

A national study comparing streets with bike lanes to those without found that 15 percent of bicyclists on streets without bike lanes rode on the sidewalks, versus 3 percent on the streets with bike lanes. In addition, on streets with bike lanes, 81 percent of bicyclists obeyed stop signs, versus 55 percent on streets without[34].

One's chance of injury drops by about 50 percent when riding on a major city street with a bike lane and no parked cars (as opposed to a major city street without bike lanes and with parking)[35].

Separated facilities can also provide a buffer for pedestrians by creating more space between sidewalks and moving motor vehicle travel lanes if the road is reconfigured. They also provided a breakdown lane for motorists and a clear recovery zone (for errant vehicles that leave the traveled way to recover into their own lane).

When Bozeman, Montana, installed a greater network of bike lanes, bicycle commuting mode share went from 4.7 percent of commute trips to 6.3 percent of commute trips between 2000 and 2010. Missoula's bicycle commuting mode share also increased from about 4.5 percent to 5.8 percent for similar reasons. Bozeman measured an instantaneous increase in bicycling and walking along West Babcock Street in 2007 of 256 percent when bike lanes and sidewalks were installed.

8.5.2.4 Bicycle Boulevards

Bicycle boulevards are low-volume, low-speed streets that enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic. Typically, local streets are the most comfortable for bicyclists with vehicle speeds at or below 25 miles per hour and vehicle volumes at or below 3,000 vehicles per day (with 1,500 vehicles per day preferred).

In the urbanized area of Helena, the proposed bicycle boulevard network will function as a second network for bicyclists complementing separated bicycle facilities on the major street network. The vast majority of selected streets will meet speed and volume targets without interventions (see **Table 8.9**). There will be key crossings of arterial roadways that would benefit greatly from improvements. Improvements might include curb extensions or median refuge areas to shorten crossing distances, flashing beacons, hybrid beacons or full signals. Recommended crossing improvements are noted in the spot improvements section (see **Table 8.16**). Since bicycle boulevards are away from the major street network and are often along streets that may be circuitous, comprehensive wayfinding signage is a critical component.

Many of the improvements made for bicycling are also advantageous for walking. Crossing improvements and more people on the street can make bicycle boulevards natural walking corridors as well. Sidewalks have been recommended along proposed bicycle boulevard corridors which lack them (see **Figure 8.6** and **Figure 8.7**).

Table 8.9: Bicycle Boulevards

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost	Other Project References
BB-1	Chesnut Street	Main St & Chestnut St	Proposed Chestnut St Shared Use Path	0.42	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route is a good east-west connector. Will require several intersection improvements.	$8,000	SUP-7
BB-2	Roberts Street	S Montana Ave	Walnut St	1.84	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route is a good north-south connector linking Capitol, schools, parks, shopping and trails.	$35,000	
BB-3	Davis Street	De Ford Trailhead	15th St	1.19	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route links other bikeways as an alternative to riding through downtown to trails, etc.	$23,000	
BB-4	Breckenridge St	Davis St	Montana Ave	0.63	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route provides low traffic alternative to Broadway where Broadway is far too narrow for bike lanes.	$12,000	
BB-5	Joslyn St	Flowerree St	Euclid Ave	0.50	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects trailheads to the south to the Centennial Trail and the Knight St Bicycle Boulevard.	$10,000	MSN-25
BB-6	Peosta Ave	Joslyn St	Benton Ave	1.13	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects Joslyn to Benton. Also connects to Broadwater Elementary which is a pilot SRTS school. Easement will be needed at Josyln.	$22,000	
BB-7	Holter Street	Le Grande Cannon Walkway	Benton Ave	0.45	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects Last Chance Gulch to Hawthorne School and the Le Grande Cannon Trail and other trails.	$9,000	
BB-8	9th / Knight Street	Granite Ave	Hannaford St	3.90	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard and re-route west side. This is a greater formalization of the existing Bike Route in Helena. On the west side of Last Chance Gulch the route is changed to Knight St to include CR Anderson Middle School.	$75,000	
BB-9	Chestnut / Harris / Cole St	Lincoln Park East Entrance	Cole & Sanders Streets	0.56	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route provides east side connectivity.	$11,000	
BB-10	Villard Ave	Last Chance Gulch	Custer Ave	0.86	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects Custer Ave to the south.	$17,000	TSM-17; TSM-19
BB-11	Henderson St	Le Grande Cannon Blvd	Euclid Ave	0.46	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects Le Grande Cannon Path to bicycle lanes further to the north and to CR Anderson Middle School	$9,000	TSM-5; BL-20; SUP-10
BB-12	Hauser Blvd	Kessler St	Helena Ave	0.36	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects other bike facilities through the northern part of Last Chance Gulch. This route was highlighted repeatedly in public comment.	$7,000	
BB-13	Highland/ Dakota	Breckenridge St	California St	1.22	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route provides an alternative to Broadway from St. Peters Hospital over past S Montana Ave.	$24,000	

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost	Other Project References
BB-14	Lewis St	Valley Dr	Kalispell Ave	0.33	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route connects shared use path on both sides of East Helena.	$7,000	CRN-3; BL-2
BB-15	California Street	Gold Rush Ave (via Bull Run Dr)	11th Ave	1.37	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route provides north-south route on east side of town.	$27,000	TSM-14; TSM-15
BB-16	E Clinton St	Thurman Ave	Kalispell Ave	0.49	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard. Route follows new sidewalk between schools to add bicycle awareness.	$10,000	
BB-17	Park Ave	W Lawrence St	Clarke St	0.07	Need for comfortable low-volume and speed designated bicycle routes.	Designate as bicycle boulevard in the northbound direction only.	$1,400	BL-41
			Total Length	**15.78**		**Total Estimated Planning Costs ("BB" Projects)**	**$307,400**	

8.5.2.5 Bike Lanes

A bike lane provides a striped and stenciled lane for one-way travel on a street or highway. Many of the identified projects (see **Table 8.10**) will occur with pavement resurfacing or roadway reconstructions. Bike lanes will be completed by the City of Helena, MDT or Lewis & Clark County. For County projects the option of a wide shoulder is provided; however, it is recommended that these shoulders be marked as bike lanes to increase visibility. For all federal-aid eligible routes, as of the development of this LRTP the minimum travel lane width is 11 feet.

Table 8.10: Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BL-1	11th/ Colonial Ave	Hannaford St	South Hills Rd	5.56	No on-street bicycle facilities on this popular recreational and commuter route linking the hospital and hospitality businesses.	From Washington St to California St the width is 36 feet. All businesses have large off-street parking lots. Prohibit parking and provide 6.5 foot bike lanes. When the street becomes Colonial Drive it widens to 40 feet. Recommend 6.5 foot bike lanes, or buffered bike lanes with 6 foot bike lanes and 2' buffers. On Colonial Drive's approach to Broadway it widens out to nearly 58 feet in width with no other markings than a centerline. Buffered bike lanes are recommended here to use up some of the width. South of Broadway there seems to be some on-street parking use, so a wide parking lane could be designated at 14 feet so that bicyclists can safely pass parked cars. South of Shodair Dr the street narrows again to 38 feet. A wide shoulder is already marked and should be formally designated as a bike lane with symbols to South Hills Road. There is a small amount of on-street parking south of Shodair that should be restricted to allow for a better transition.	$41,000	$119,000	MSN-9; TSM-14; TSM-15
BL-2	Airport Road Extension	B St	Valley Dr	3.06	Bike lanes should be provided with future road construction.	Provide bike lanes with Airport Road extension as recommended in **MSN-7**.	$28,000	$169,000	MSN-7; SUP-1; CRN-3
BL-3	Airport Road	Washington St	B St	1.37	On-street bike lanes are needed to access jobs and connect to future airport road extension.	Western section has sufficient shoulder, where road becomes east-west oriented the shoulder disappears. If the road is reconstructed or improved 6 foot shoulders should be provided and marked as bike lanes.	$13,000	$76,000	MSN-6; SUP-2
BL-4	Birdseye Rd	Honors Dr & Williams St	Proposed Old Rail Trail	0.00	Very popular recreational route lacks shoulders and can be busy during commute periods.	Popular recreational route with no shoulders and high speed traffic. If/when road is reconstructed or widened, 6 foot shoulders should be added where feasible.	$104,000	$632,000	CRN-1
BL-5	Brady St	Henderson St	Custer Ave	0.50	Brady Street in front of Capital High School does not have bicycle facilities.	Recommend parking be eliminated from one side of the road. On the west end it makes sense to keep parking in front of homes (south side), but on the north side where Brady curves, it may be desirable to keep parking on the west side of the road. A lane shift could be implemented near the curve in Brady with one or two raised planters that could define the parking lanes. The road is 40 feet wide. Recommend 8 foot parking lanes, 5 foot bike lanes, and 11 foot travel lanes.	$5,000	$28,000	PED-1; PED-2; SPOT-2; SPOT-24; TSM-30

Table 8.10: Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BL-6	Broadway	Park St	Davis St	0.36	Broadway lacks bicycle accommodation and is a desirable connection for bicyclists on the south side of Last Chance Gulch.	Connects downtown and other bikeways where width exists. Transitions to Breckenridge St Bicycle Boulevard for continued connectivity to the east. Width exists for 5 foot min bike lanes, with some sections having wider bike lanes or even buffered bike lanes possible.	$4,000	$20,000	
BL-7	Broadway St	California St	Existing Broadway I-15 Undercrossing & Path	0.44	Broadway lacks bicycle accommodation and links to I-90 shared use path undercrossing.	Surface parking lots dominate this section of Broadway. Prohibit parking on Broadway and stripe 6.5 foot bike lanes.	$4,000	$25,000	TSM-15
BL-8	Canyon Ferry Road	Canal Bridge west of York Rd	Wylie Dr	2.74	This section lies in between two existing sections of bike lanes; however sufficient space exists.	The shoulder is ample and a bike lane or even a buffered bike lane could be added through the addition of stencils and signage.	$19,000	$35,000	
BL-9	Carter Dr	Prospect Ave	Airport Rd	0.74	There are no north-south network links for bicyclists on the east side of Helena.	Road is about 40 feet wide. Prohibit on-street parking and provide 6.5 foot bike lanes.	$7,000	$41,000	MSN-29
BL-10	Cedar Street	Montana Ave	Washington St	0.79	Cedar Street is a gap in the bicycle system and connects with existing bike lanes at Montana Ave, and crosses I-15.	This recommendation extends bike lanes from N. Last Chance Gulch across Montana Avenue and the I-15 Corridor to Airport Road. Minimally adequate shoulders (5 feet) currently exist that could be inexpensively designated as bike lanes. Review standards to determine if reducing the center turn lane width is feasible to accommodate bike lanes. There are challenges for eastbound bicyclists at the SB I-15 ramp and the Airport Road approach due to slip lane configurations. See **SPOT-4** and **SPOT-5**.	$6,000	$44,000	SPOT-4; SPOT-5
BL-11	Country Club Ave	Williams St	Joslyn St	1.83	This road is popular for commuting to Fort Harrison, the VA and for recreational riding. No facilities are currently present.	This is a popular recreational route and a key commuter route to get to Fort William H. Harrison. If/when the road is reconstructed, add 6 foot rideable shoulders which could also be marked as bike lanes. Part of this project is in the City and the County; different standards may apply.	$17,000	$101,000	MSN-4; TSM-2; TSM-3; MSN-16; BL-35; SUP-26
BL-12	Cruse Ave	Broadway St	Neill Ave	0.49	This road is one of only two downtown roads that go north-south.	Beginning at Broadway headed north, convert angled parking to back-in angled parking. Mark all spaces as 'compact cars only' to prevent encroachment into the bike lane. The following cross-section is proposed. 8' parallel parking, 6 foot bike lane, 11.5 foot travel lanes, 6 foot bike lane, 15' reverse angled parking lane. North of Broadway the road is currently a 3-lane section, 58 feet in width, with parking. Proposed section would include: 8 foot parking lanes, 5 foot bike lanes, 11 foot travel lanes, and a center turn lane/striped median. From 6th Ave north to Neill Ave, the center turn lanes could be removed as there is not significant volume (less than 2,000 ADT). Buffered bike lanes could be accommodated with 8 foot parking lanes, 2 foot parking buffers, 5 foot bike lanes, 2 foot travel lane buffers and two 12 foot travel lanes.	$5,000	$52,000	
BL-13	Custer Ave Bike Lanes	Henderson St	Montana Ave	1.59	This roadway is in need of improvements for all modes.	To be added as part of **MSN-1** capacity improving project for Custer Ave.	$15,000	$88,000	MSN-1; TSM-17
BL-14	E. Lyndale Ave	West Parking Lot of old National Guard Armory	Boulder & Montana Aves	0.68	This arterial does not have designated bicycle facilities	Install bike lanes. Adequate shoulders already exist and most of length could realize simple stenciling and signage. Some re-striping would need to occur at the intersection of Lyndale Ave and N Last Chance Gulch to provide space for bikes. If the road is ever resurfaced 6 foot bike lanes should be provided.	$5,000	$9,000	
BL-15	Frontage Road	Custer Ave	Masonic Home Rd	5.22	This popular bike route has high speeds and no existing shoulders.	Install bike lanes. If/when road is ever improved, add space for shoulder or marked bike lane.	$47,000	$287,000	

Table 8.10: Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BL-16	Green Meadow Drive 1	Custer Ave	Lincoln Rd	6.19	This popular bike route has an inconsistent cross section.	Install bike lanes or provide shoulders. From Custer Ave to Sierra Rd the road currently has ample shoulder; bike lane symbols (and potentially signing) could make this route more visible at minimal cost. From Sierra Rd to John G Mine Rd, when and if roadway is widened, shoulders/bike lanes should match sections to the north and the south. From John G Mine Rd to Barraugh Rd, sufficient shoulder space exists to mark bike lanes. This will provide important visibility to this route. From Barraugh Rd to Lincoln Rd, when and if roadway is widened shoulders/bike lanes should match sections to the south.	$48,000	$188,000	
BL-17	Hauser Blvd Contraflow	Benton Ave	Kessler St	0.12	Many bicyclists want to use Hauser as a two-way linkage, but the road is currently one-way.	Install bike lanes in accordance with either option. The roadway is 40' wide. Option 1: Mark contra flow bike lane only and place shared lane markings in the EB direction. This would result in 7 feet of parking, a 1' buffer, 5 foot bike lane, and 10 foot travel lanes. Option 2: Reduce Hauser to one lane in the EB direction. Provide 8 foot parking 2' buffer, 5' WB bike lane, 10' EB travel lane, 5 foot bike lane, 2' buffer, 8 foot parking.	$1,000	$7,000	
BL-18	Helena Ave	Last Chance Gulch	13th St	0.13	This section of Helena Ave is a gap in the bikeway system.	Extend existing bike lanes up to intersection of Neill Avenue and Last Chance Gulch. For the WB approach the bike lane can become a shared travel lane with sharrows in it. Otherwise space exists the same as it does to the northeast.	$1,000	$7,000	
BL-19	Helena Ave	National Ave	Roberts St	0.34	This section of Helena Ave is a gap in the bikeway system.	Extend existing bike lanes across Montana Ave and terminate into Roberts St.	$4,000	$19,000	
BL-20	Henderson St	Euclid Ave	Custer Ave	0.98	Space for a bike lane exists and not all bicyclists prefer to use existing shared use path.	Install bike lanes. Road section is 38 feet wide. Proposed cross section would include 6.5 foot bike lanes. At the railroad underpass a short bike lane detour will need to be constructed around the outside of the bridge pier. Henderson St has a shared use path, however these bike lanes will provide a quicker and less interrupted experience for commuters trying to get to destinations. There is the option to narrow the travel lanes to 11 feet and provide a combined 8 foot buffered bike lane.	$9,000	$54,000	MSN-22; SPOT-27; TSM-5; BB-11; SUP-10; SPOT-13; SPOT-14; SPOT-15; SPOT-16; SPOT-17; TSM-9; TSM-30
BL-21	Joslyn St / Brady St	Country Club Ave	Henderson St	0.72	This is a popular route for bicycling with no designated bicycle facilities.	Install bike lanes and shared use path (**SUP-11**). Road exhibits 35-37 feet curb-to-curb width, with little to no on-street parking. The residences front other streets on Joslyn St, and on Brady St homes have large driveways and some have other off-street parking. Recommend 6 foot bike lanes and 11-12 foot travel lanes depending on available width. Three sections of lane narrowing currently squeeze bicyclists using this connector and cause problems with impatient motorists. Bicycle ramps and elevated tracks can be retrofitted to each of the narrowings to minimize conflicts.	$7,000	$40,000	SUP-11, SPOT-3
BL-22	Joslyn St	Euclid Ave	Country Club Ave	0.13	Road needs improvement for all users.	Install bike lanes, curb & gutter, and sidewalks, as part of a reconstruction. Provide pavement for bike lanes when this work is done.	$36,000	$76,000	MSN-26; SUP-6; SUP-11
BL-23	Kalispell Ave	Main St	Lewis St	0.39	Road connects Main St to East Valley Middle School and a future shared use path on Lewis St.	Install bike lanes. Road is just over 31 feet in width. Most cars that park do so off the edge of pavement. Proposed section of 10 foot travel lanes and 5 foot bike lanes/shoulders would allow linkage of East Valley Middle School to downtown East Helena.	$4,000	$22,000	
BL-24	Lake Helena Drive 1	Old Hwy 12	York Rd	4.05	This is a popular bicycle route that presently has no accommodation.	Install bike lanes/shoulders. The southern section (south of Eastgate school) has 35 - 36 feet of pavement width and could accommodate 5.5 to 6 foot bike lanes. Residences face side streets. The road north of Lewis Street is approximately 26 feet wide and lacks curb and gutter. Recommend shoulders or bike lanes if the road is ever widened / reconstructed.	$37,000	$223,000	CRN-19

Table 8.10: Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BL-25	Lamborn St	Highland St	Broadway St	0.06	There is a short gap between existing and proposed facilities.	Extend bike lane to Highland Ave Bike Boulevard.	$1,000	$4,000	
BL-26	Main St	4th St	Kalispell Ave	1.10	East Helena has no dedicated east-west bicycle facilities that connect to Main St.	Install bike lanes. Road is very wide and bike lanes could be added using the existing edge line and moving in toward parking. Parking lanes are typically 15 feet wide.	$8,000	$14,000	
BL-27	Masonic Home Rd/ Collins Dr	Frontage Rd	Lincoln Rd	2.39	Popular bike route with high speeds and no shoulders.	Install bike lanes or shoulder if/when road is ever improved.	$22,000	$132,000	
BL-28	McHugh Dr	Custer Ave	Yuhas Ave	0.74	South of Yuhas Ave, McHugh Lane functions as an urban road and could benefit from additional bicycle facilities.	Install bike lanes. From Yuhas Ave to Custer Ave the road is 38 feet wide with no reason for on-street parking. Adding bike lanes to this street would reinforce its value as a commuter route. Proposed section includes 6.5 foot bike lanes	$7,000	$41,000	
BL-29	N Benton Ave	Neill Ave	Custer Ave	1.56	Benton Ave is a key linkage for bicyclists accessing Downtown Helena, but lacks bicycle facilities.	There are several strategies that could be employed to provide bike lanes, however each have significant impacts to the corridor. From Neill Ave to Euclid Ave, Benton is 48 feet in width curb-to-curb in its present 4-lane configuration. Options for adding bike lanes include the following: Option 1: Remove street trees and push curb lines back 5 feet on each side. This would result in impacts including the loss of mature street trees and the sidewalks being attached to the roadway (however the distance from pedestrians to traffic would be unchanged). Option 2: Remove one southbound travel lane and restripe to add bike lanes. Two northbound lanes are needed for queuing and storage for vehicles leaving downtown. Each entry point to Benton Ave from Lyndale Ave only has one turn or through lane. Benton Ave also narrows to one southbound lane at Park Ave. Removing the SB travel lane would result in freeing up enough space to put 5.5 foot bike lanes on the street (one in each direction). This option was modeled as part of the LRTP and significant impacts were forecasted including diversionary trips to nearby streets such as N Park Ave. These impacts would have to be studied in greater detail before any possible implementation. North of Wilder Ave Benton Ave is 50 feet wide and was striped as having an uphill bike lane and downhill sharrows in the summer of 2014. The travel lanes and parking lanes put bicyclists in a strange position in the downhill (northbound direction) where they must choose between getting too close to parked cars or being in the lane with vehicles. These facilities should be upgraded to full bike lanes on both sides as this is an important commuter route. Option 1: 8 foot parking lanes, 6 foot bike lane, and 11 foot travel lanes. Option 2: 7 foot parking lanes, 2 foot buffer, 5 foot bike lane, and 11 foot travel lanes. The bulbouts that exist should be trimmed to accommodate bike lanes (see **Table 8.16** Bicycle Spot Improvements). North of the Centennial Trail crossing, provide 4' minimum, 6' preferred shoulder bike lanes (in absence of curb and gutter). Signing and stenciling is all that is required. From the Centennial Trail crossing to Custer Ave provide 6 foot shoulders with absence of curb and gutter. Signing and stenciling is all that is needed.	$13,000	$97,000	MSN-21; MSN-23; PED-1; SUP-3; SUP-24
BL-30	N Last Chance Gulch	Lyndale Ave	North Entrance of Aquatic Center	0.22	N Last Chance Gulch has a gap between existing bike lanes and planned bike lanes.	Install bike lanes. Will require travel lane narrowing.	$2,000	$24,000	PED-13

Table 8.10: Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BL-31	N Montana Ave	Broadway	Lincoln Rd	8.28	Montana Ave is a key transportation linkage that does not accommodate bicyclists well.	Install bike lanes as part of multiple improvements along multiple different cross-sections of this corridor. From Broadway to 11th Ave, recommend reconfiguring the road to a 3-lane configuration with a center two-way left-turn lane and a single travel lane in each direction. 6 foot bike lanes can be accomplished with this option. This would substantially calm traffic within the existing ~10,000 ADT range. Pedestrians complain about the multiple approach lanes at marked crosswalks and the lack of yielding compliance. A detailed engineering study would be necessary to determine how the intersections would be affected by a lane reduction. From 11th to Boulder Ave: Option 1: narrow existing travel lanes where sufficient space is not available. Option 2: move curb and gutter to provide sufficient space for bike lanes. Section of this road may not be able to sustain relocated curb and gutter and potentially sidewalk without additional property impacts. From Boulder Ave to Cedar, sufficient shoulder space exists to mark bike lanes and perhaps buffered bike lanes in places. Parking, if present, will need to be prohibited. There is a large portion of this section that also lacks sidewalks and curb and gutter. From Cedar to Custer Ave, portions of Montana Ave have sufficient shoulder area. Option 1: narrow travel lanes where sufficient curb-to-curb space does not provide space for bike lanes. Option 2: remove and replace curb and gutter within right-of-way to provide pavement width for bike lanes. From Custer Ave to Wolf Rd, challenges exist to provide bike lanes including the NB lane drop at Partridge Pl / Jordan Dr. Option 1: narrow travel lanes to allow bike lanes within existing curb-to-curb. Option 2: relocate west curb and gutter to provide additional pavement width. From Wolf Rd to College Place Rd, shoulder exists nearly everywhere. Several changes can be made as noted in **Table 8.16** (Bicycle Spot Improvements). From College Place Rd to Lincoln Rd, provide shoulders/bike lanes with any widening project.	$68,000	$434,000	MSN-2; TSM-29; MSN-13; MSN-14; MSN-15; MSN-27; MSN-28; PED-25; PED-17; PED-18; PED-19; SUP-17; SPOT-19; CRN-12; TSM-18; TSM-27
BL-32	Park Ave 1	Broadway St	Neill Ave	0.47	Park Ave is one of two continuous routes north-south through downtown and it lacks dedicated bike facilities.	Install bike lanes. From Broadway to Neill Ave, the street is typically 46 feet curb-to-curb, with 48 feet in some locations. 5 foot bike lanes can be added to the existing cross-section with varying travel lane and parking widths, depending on the available space (Park Ave changes width repeatedly though this section). The street narrows to 40 feet on the southbound approach to Lawrence Street. Parking will need to be prohibited on Park Ave north of Lawrence until sufficient width is achieved in the curb taper. South of Lawrence Street to Broadway, recommend removing all on-street parking as there are multiple parking garages and surface lots. Bike lane should be buffered where possible in this stretch.	$6,000	$38,000	SHR-1

Table 8.10: Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BL-33	Park Ave 2	Oro Fino Gulch Dr Turnoff	Cruse Ave	0.50	Park Avenue is the gateway to many popular trails in the south hills, but has no dedicated bicycle facilities. Formalized bicycle accommodation would make this journey easier and encourage riding to trailheads.	Install bike lanes. From Reeders Village Dr to Cruse Ave there are two options. <u>Option 1</u>: Remove center turn lane and provide wide bike lanes. Width is 55' curb-to-curb. Recommend 8 foot parking lanes and 6.5 foot bike lanes. <u>Option 2</u>: Climbing bike lane only to include 8 foot parking lanes, 5 foot climbing bike lane, center turn lane and 12 foot travel lanes (with the downhill travel lane containing sharrows). South of Reeders Village Dr recommend bike lane in uphill direction only. Shared lane markings in downhill direction	$6,000	$25,000	
BL-34	Sanders Extension	Custer Ave & Sanders St	Sanders St & Montana Ave	1.42	No existing connection.	Provide bike lanes as part of Sanders Extension **MSN-8** project. This would include new bike lanes on the new road, and also adding bike lane striping to Sanders where it currently exists. Parking would be restricted on the existing section.	$13,000	$78,000	MSN-8; SHR-2
BL-35	Williams St	Euclid Ave	Honors Dr & Williams St	1.02	Popular route and connection to Fort Harrison with no bicycle facilities.	Install bike lane or shoulder. Currently the southern section has narrow shoulders. If/when road is reconstructed or ever widened, provide 6' shoulders and mark as bicycle lanes if possible.	$10,000	$57,000	MSN-16; TSM-2; BL-11
BL-36	York Road	Canyon Ferry Rd	York Rd River Bridge	12.61	Popular route with no existing bicycle accommodation.	From Canyon Ferry Road to Meagher Rd, a shoulder exists; add bike lane symbols and adjust intersection slightly. From Meager Rd to Birkland Dr, if and when York Road is widened, shoulders should be provided with additional emphasis on the shoulders being designed as bike lanes. From Birkland Dr to Tizer Rd width currently exists to mark shoulders as bike lanes. Some minor restriping may be needed on the south side as the outside travel lane is quite wide. From Tizer Rd to York Rd River Bridge, if and when road is improved or widened, add shoulder and consider marking it a bike lane	$111,000	$647,000	TSM-6; TSM-7; TSM-8; TSM-10; TSM-11
BL-37	Prospect Ave	Washington St	Hannaford St	0.18	Shared lane markings are uncomfortable for a two-block stretch of Prospect.	Install right sided bike lane. Travel lanes should be shifted to the south in order to provide a minor amount of room necessary to give a continuous separated facility to bicyclists.	$2,000	$20,000	
BL-38	East Side Loop Road	South Helena Interchange	Crossroads Parkway	1.19	Planned roadway near southeastern area of Helena (near South Helena Interchange).	Install bicycle lane when new roadway is constructed.	$11,000	$66,000	MSN-10
BL-39	East Side Frontage Road	South Helena Interchange	18th Street	1.08	Planned roadway near southeastern area of Helena (near South Helena Interchange).	Install bicycle lane when new roadway is constructed.	$10,000	$60,000	MSN-11
BL-40	Alice Street	18th Street	East Side Loop Road	1.51	Planned roadway near southeastern area of Helena (near South Helena Interchange).	Install bicycle lane when new roadway is constructed.	$14,000	$83,000	MSN-12
BL-41	Park Ave	W Lawrence St	Clarke St	0.07	Popular route west of City/County Building.	Install a bike lane in the southbound direction only, on the west side of the roadway.	$1,000	$4,000	BB-17
			Total Length	**72.82**		**Total Estimated Planning Costs (“BL” Projects)**	**$772,000**	**$4,186,000**	

8.5.2.6 Buffered Bike Lanes

Similar to a bike lane in that a striped and stenciled lane is provided for one-way bicycle travel on a street or highway, buffered bicycle lanes provide additional width to 'buffer' the bike lane, on the side of the adjacent travel lane and/or parking lane. They provide a more comfortable experience for bicyclists, but they also are an effective tool to discourage motorists from driving or parking in the bike lane that would otherwise be excessively wide. This excessive width can sometimes be present when a roadway reconfiguration project converts an underutilized travel lane or parking lane to a bike lane.

Buffered bike lanes are recommended for portions of Lyndale Ave, Euclid Avenue and Neill Ave in Last Chance Gulch. Additionally, many of the bike lanes recommended could also be implemented as buffered lanes depending on the method of implementation. **Table 8.11** contains facility recommendations for buffered bicycle lanes.

Table 8.11: Buffered Bicycle Lanes

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
BBL-1	Euclid Ave	Old Broadwater Ln	Benton Ave	3.80	Euclid Avenue has wide parking lanes that are nearly completely underutilized. These parking lanes are used by bicyclists, however the small amount of existing parking can create uncomfortable merging points.	Install buffered bike lanes. Parking should be prohibited along this stretch of Euclid Ave to service general safety objectives for the roadway. Vehicles maneuvering to park create a hazard to traffic operations on this street. This street was also identified by the public as a frequently used route. Nearly all of the adjacent commercial properties have ample off-street parking. The parking lanes can become bike lanes and buffers should be added due to the wide area and to discourage vehicle parking. The current parking lane ranges from 8-10 feet in width. This should be converted to a 6.5' bike lane and appropriate buffer. At intersection approaches with right-turn only lanes, the lanes can become shared turn/bike lanes by using shared lane markings generously within the turn lane.	$53,000	$402,000	PED-4; PED-5; PED-6
BBL-2	Neill Ave	Park Ave	Last Chance Gulch	0.23	Neill Ave is wide for a two-lane street and used by bicyclists downtown.	Street is 54 feet wide with plenty of excess pavement width for a two-lane road facility with parking. This street has high value as a cross-town connector between other bike lanes and the proposed cycle track. The proposed section includes: <u>Option 1</u>: 8 foot parking lanes, 12 foot travel lanes, and 5 foot bike lanes with a 2 foot buffer. <u>Option 2</u>: 8 foot parking lanes, 11 foot travel lanes, and 5 foot bike lanes with a 3 foot buffer.	$4,000	$25,000	MSN-3; TSM-22
BBL-3	W. Lyndale Ave	Benton Ave	West Parking Lot of old National Guard Armory	0.34	This stretch of Lyndale Avenue is popular with bicyclists however there are no dedicated bicycle facilities. Parking is widely used in front of Carroll College and Great Northern Town Center because it is free. This is a relatively short section of parking and eliminating it will improve connectivity and safety for bicyclists.	Parking should be prohibited along this stretch of W Lyndale Ave to service general safety objectives for the roadway. Vehicles maneuvering to park create a hazard to operations on this street. This street was also identified by the public as a frequently used route. The parking lanes can become bike lanes, and buffers should be added due to the wide area and to discourage vehicle parking. The current parking lane ranges from 8-13 feet in width. This should be converted to a 6.5' bike lane and appropriate buffer. At intersection approaches with right-turn only lanes, the lanes can become shared turn/bike lanes by using shared lane markings generously within the turn lane.	$5,000	$36,000	
			Total Length	**4.37**		**Total Estimated Planning Costs ("BBL" Projects)**	**$62,000**	**$463,000**	

8.5.2.7 Protected Bike Lanes or Cycle Tracks

Protected bike lanes, also known as cycle tracks, are exclusive bike facilities that combine the user experience of a separated path with the on-street infrastructure of a conventional bike lane. Protected bike lanes may be at street level or raised at a sidewalk or intermediate level. Protected bike lanes may also be one or two-way depending on design.

One two-way protected bike lane corridor has been proposed (see **Table 8.12**) as part of the Helena area's future bikeway network connecting the Centennial Trail system and Centennial Park with the walking mall in the heart of downtown Helena. This facility type and route are proposed centers around connecting trail users who may be uncomfortable bicycling in traffic or even within conventional bike lanes to downtown. This may attract new bicyclists to downtown improving economic opportunities and reducing congestion.

Table 8.12: Two-Way Cycle Tracks

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
CT-1	Front Street	Neill Ave	Lyndale Ave Sidepath	0.33	There is no low-stress bike route separate from traffic from the Centennial Trail to the Walking Mall that appeals to residents and visitors.	Connects to Lyndale Ave underpass and could be the primary bicycle connection to Downtown & Last Chance Gulch area. Parking will need to be removed on the west side of Front Street, and either a street level or raised cycle track be installed.	$14,000	$32,000	CT-2
CT-2	Neill Ave	Fuller Ave	Front St	0.03	There is no low-stress bike route separate from traffic from the Centennial Trail to the Walking Mall that appeals to residents and visitors.	This is one of two options (**CT-3** or **CT-5**) for connecting a cycle track from Front Street to the Walking Mall. This option includes a short section of 2-way cycle track connecting Front St to Fuller Ave. It is possible that a small portion of the buffered bike lane on Neill Ave could be integrated into this to not duplicate accommodation.	$2,000	$3,000	MSN-3; TSM-22; BBL-2; CT-1; CT-3; SPOT-20
CT-3	Fuller Ave	6th Ave	Neill Ave	0.30	There is no low-stress bike route separate from traffic from the Centennial Trail to the Walking Mall that appeals to residents and visitors.	Fuller Ave is characterized by several large off-street parking lots. It is utilized as a festival street for the Farmer's Market. Road widths range from 40 to 42 feet. Two options have been identified: Option 1: proposed cross section would include an 8 foot parking lane on the west side of the street, two 10 foot travel lanes, a 2 foot buffer and a 10 foot 2-way cycle track on the east side of the street. Flexposts could be positioned at a frequency within the 2 foot buffer that would allow booths to set up between them for the Farmers Market, which would temporarily close the cycle track. This width will allow plowing in the winter. Alternatively removable bollards could be installed that could be completely removed and reinstalled for the Farmer's Market. Option 2: install shared lane markings south of Neill Ave in lieu of cycle track.	$4,000	$29,000	CT-2; CT-4; SPOT-9; SPOT-10; SPOT-11
CT-4	6th Ave	Fuller Ave	Last Chance Gulch	0.03	There is no low-stress bike route separate from traffic from the Centennial Trail to the Walking Mall that appeals to residents and visitors.	This section represents a short gap that to provide continuity between the Walking Mall and the Fuller Ave Cycle Track (**CT-3**) will need to have parking removed. Two options have been identified: Option 1: includes a 2-way cycle track on the south side of the street that seamlessly merges with the Walking Mall. Option 2: includes bike lanes on both sides but would be less cohesive (though the centerline would not move as much).	$1,000	$3,000	CT-3; CT-5
CT-5	N Last Chance Gulch	6th Ave	Front St	0.38	There is no low-stress bike route separate from traffic from the Centennial Trail to the Walking Mall that appeals to residents and visitors.	N Last Chance Gulch is an option for a cycle track as long as the street remains one-way and IF a lane can be removed. This will allow the majority of parking to remain and will result in a safer facility due to no driveway interactions for these three blocks. N Last Chance Gulch is 40 feet wide and could accommodate a cycle track with a 10 foot, 2-way cycle track, a 2 foot buffer, an 8 foot parking lane, a 12 foot travel lane and an 8 foot parking lane.	$17,000	$37,000	CT-4
			Total Length	**1.07**		**Total Estimated Planning Costs ("CT" Projects)**	**$38,000**	**$104,000**	

8.5.2.8 Shared Use Paths

Shared use paths are facilities separate from roadways for use by bicyclists, pedestrians and other non-motorized users. Shared use paths are frequently found in separate rights-of-way such as along railroads, utility corridors, parks and along waterways, but can also exist within the street or highway right-of-way with adequate separation. Shared use paths are generally paved, however unpaved examples such as parts of the Centennial Trail, can function well for multiple user types. Shared use paths should be a minimum of 10 feet wide. **Table 8.13** contains canditate locations for shared use paths.

Table 8.13: Shared Use Paths

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
SUP-1	Airport Road 1	Airport Rd & Washington St	B St	1.36	Existing sections of Airport Road are not comfortable for the majority of bicyclists.	Shared use path should be provided with any future road reconstruction of Airport Road.	$575,000	$683,000	MSN-6; BL-3
SUP-2	Airport Road 2	B St	Proposed East Airport Trail east of Wylie Dr	2.34	Future construction could create opportunities for improved bicycle route selection to East Helena and create loops for recreational users.	To be provided as part of **MSN-7** project on Airport Road. Would create loop trail around the airport and additional options to get to and from East Helena.	$989,000	$1,174,000	MSN-7; BL-2
SUP-3	Benton Ave	Centennial Trail west of Benton Ave	Centennial Trail east of Benton Ave	0.05	There is a discontinuous gap at Benton Ave of the Centenial Trail that should be filled.	Shared use path connector between sections of the Centennial Trail. Allows one crossing to be constructed away from train crossing.	$22,000	$26,000	MSN-21; MSN-23; PED-1; BL-29; SUP-24
SUP-4	Canal/ Green Meadow	Sierra Rd	Montana Ave & N Meadow Rd	4.28	Bicyclists need a safe north-south route to reach Helena from the North Valley.	This path will link North Valley residents, particularly in the vicinity of Jim Darcy School, with other future facilites that lead into Helena.	$1,808,000	$2,147,000	
SUP-5	Centennial Trail East	Centennial Park	Prospect Ave & 18th St	2.43	Bicyclists need safe east-west route through Helena.	Previously proposed section of Centennial Trail East.	$1,027,000	$1,219,000	MSN-2; MSN-14; MSN-15
SUP-6	Centennial Trail West	Euclid Ave & Granite Ave	Joslyn St	0.84	Bicyclists need safe east-west route through Helena.	Install shared use path. Sections may be longer term in potential due to land ownership.	$355,000	$422,000	SUP-11; MSN-26; BL-22
SUP-7	Chesnut Street	East Terminus of Proposed Chesnut St Bicycle Boulevard	Lincoln Park	0.02	There is a small gap in Chesnut Street to reach Lincoln Park	Install new shared-use path that would allow Chestnut St to act as a bicycle boulevard. Add signage to direct bike traffic on park paths to Roberts St Bicycle Boulevard and the eastern extension of the Chestnut Bicycle Boulevard.	$9,000	$11,000	BB-1
SUP-8	E Lincoln Road	Montana Ave	South Lake Helena Turnoff at ~2500 E Lincoln Rd	3.00	There is no existing safe bicycle or pedestrian route to Lake Helena Recreation Area.	Install new shared use path to connect existing path to Lake Helena Rec Area.	$1,268,000	$1,505,000	MSN-24; CRN-6; PED-14
SUP-9	East Airport to East Helena Trail	Eastern Terminus of Skyway Dr Path	Main St between Morton Ave and Harrison Ave	3.28	There are few shared use paths in natural areas in the Helena Area.	Prickly Pear Land Trust working on this. Would create a loop trail to the east of Helena.	$1,386,000	$1,646,000	
SUP-10	Henderson Connector	Euclid Ave	Southern Terminus of Henderson Sidepath	0.02	Henderson St shared use path does not coonnect all the way to Euclid.	Install shared use path to extend existing path to Euclid intersection.	$9,000	$11,000	TSM-5; BB-11; BL-20
SUP-11	Joslyn St /Leslie Ave	Proposed Centennial Trail & Leslie Ave	Proposed Centennial Trail & Joslyn St	0.60	Landowner support for continuing the existing Centennial Trail along the former railroad right-of-way is problematic.	Install shared use path as an alternative to continuing the Centennial Trail along the railroad right-of-way through the trailer court as depicted in **SUP-6**. The railroad option would still be desirable for a long term vision.	$254,000	$301,000	SUP-6; MSN-26; BL-22
SUP-12	Lewis St West	Kalispell Ave	Lake Helena Dr	0.81	East Helena has no continuous shared use paths/trails that cross the city.	Install shared use path to create an east-west linkage in East Helena. Right-of-way acquisition from adjaent landowners may be necessary.	$343,000	$407,000	
SUP-13	Lewis St East	Proposed East Airport Trail	Valley Dr	0.40	East Helena has no continuous shared use paths/trails that cross the city.	Install shared use path to connect Kennedy Park to school and east-west corridor.	$169,000	$201,000	
SUP-14	Lincoln Road Extension	Green Meadow Dr	Applegate Dr	1.05	Households to the west of Lincoln Road do not have a safe route to Jim Darcy School.	Install shared use path to extend existing Lincoln Road path and to connnect to future rail-to-trail, or rail-with-trail, at west end.	$444,000	$527,000	
SUP-15	McHugh Dr	Northern Terminus of Path at Yuhas Ave and McHugh	North of Vallejo Rd	2.58	There is an expressed need to have a more comfortable shared use path connection to the North Valley from Helena.	Install shared use path to extend the existing path to the north.	$1,090,000	$1,295,000	MSN-5
SUP-16	N Montana Ave	N. Terminus of Path at N. Montana Ave	Sierra Rd	0.27	There is a gap between shared use paths on Sierra Road and Montana Ave.	Install shared use path to connect two existing paths.	$115,000	$136,000	

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
SUP-17	N Montana Ave	Sierra Rd	Lincoln Rd	3.03	There is a gap between paths on Lincoln Road and Sierra Road on Montana Ave.	Install shared use path to connect existing path south of Sierra Road to Lincoln Road.	$1,280,000	$1,520,000	BL-31
SUP-18	Old Rail Trail	Brady St & Joslyn St	Birdseye Rd & Chevallier Dr	0.00	There is an expressed need to formalize this railroad right of way as a shared use path.	Bicyclists are currently using this to get from the North Valley to Helena and avoid nearly all traffic and road crossings. This route offers a potential future touring connection to Great Falls and should be pursued if the rail line is ever abandoned (presently it is private property). The right of way should not be permitted to revert to adjacent landowners if abandoned. Until the line is abandoned (if ever), the maintenance track could be utilized as a trail as it currently is – although it is still private property and those using it are legally tresspassing. It is possible that Montana Rail Link may increase use of this line in the future.	$6,210,000	$7,374,000	
SUP-19	Railroad/ Canal Connector	Proposed Old Rail Trail	Kinsey Garden Rd	0.27	If rail trail is developed it will be important to formalize various connections to it.	Install shared use path if the rail trail is constructed.	$115,000	$136,000	
SUP-20	Rossiter School Path on Frontage Rd	Karmen Rd	Sierra Rd	1.23	There is no safe route to Rossiter School from subdivisons to the east of I-15.	Install shared use path to formalize safe route to school	$520,000	$617,000	
SUP-21	School Path Connector	North end of Our Lady of the Valley Church parking lot	Hilmen Rd	0.05	There is an informal trail here to provide a shorter route to Rossiter School from neighborhoods to the north.	Install new shared use path to create formalized connectivity to Rossiter Elementary School.	$22,000	$26,000	
SUP-22	Sierra Road	Green Meadow Dr	Montana Ave	1.31	There is no continuous east-west connection for bicyclists or pedestrians in the North Valley.	Install shared use path to connect existing path on Sierra Road and proposed path on Green Meadow Dr, McHugh, and Montana Ave.	$554,000	$658,000	CRN-13; SPOT-21; TSM-26; SPOT-25
SUP-23	Highway 12	Between Gibbon St and 18th St	Carter Dr	0.16	Parts of existing shared use path along Highway 12 are sidewalks and not to shared use path standard.	Widen and upgrade sidewalk to shared use path dimensions of 10 feet.	$68,000	$81,000	
SUP-24	Benton Ave (east side)	Centennial Trail	Elmwood Ln	0.64	The east side of Benton has a well worn dirt path on it indicating a substantial need.	Install shared use path along east side of Benton Ave.	$271,000	$322,000	PED-1; BL-29; MSN-21; MSN-23; SUP-3
SUP-25	Custer Ave (south side)	Green Meadow Dr	National Ave	1.10	Future presence of south side shared use path.	Pursuant to any project development associated with **MSN-1**, it is envisioned that a shared use path will remain on the south side of Custer Avenue. This could be accomplished by either retaining the existing path if and when Custer Avenue is reconstructed, or reconstructing a new shared use path on the south side of the road in place of concrete sidewalks.	$465,300	$552,200	MSN-1; BL-13; TSM-17, SPOT-24
SUP-26	Country Club Ave (south side)	Spring Meadow State Park	Birdseye Rd	1.50	Desire to connect Fort Harrison to future non-motorized network around Spring Meadow State Park	Install shared use path (south side of Country Club Avenue) to connect Spring Meadow State Park to Birdseye Road.	$634,500	$753,000	MSN-4; BL-11
			Total Length	**32.62**		**Total Estimated Planning Costs ("SUP" Projects)**	**$20,002,800**	**$23,750,200**	

Shared Use Path Maintenance

Necessary maintenance activities vary significantly between jurisdictions and by the type of trail surfacing. Maintenance activities can generally be categorized into one of two types, "routine maintenance" which is done annually or more frequently, and "major" or "capital maintenance" which involves more intensive activity at a less than annual frequency. **Table 8.14** shows routine maintenance techniques and estimated costs for shared use paths.

Table 8.14: Shared Use Path – Routine Maintenance Costs (per mile) *

Routine Maintenance	Activity/Function	Frequency	Annual Cost per Mile (estimate)
Drainage & storm channel maintenance	Clearing of drainage channels and inlet grates	Spring, after snow pack melt, and as needed	$ 500
Sweeping/blowing debris off trail heads	Keep paved surfaces debris free	Spring, after snow pack melt, and as needed	$ 1,200
Litter and trash removal	Keep trail clean and consistent quality of experience for users	Annually, or as needed	$ 1,200
Weed control and vegetation management	Eliminate encroachments into trail corridor and open up sight lines; Manage existence and/or spread of noxious weeds if present	Annually, or less frequently as needed	$ 1,000
Mowing trail shoulders	Increases the effective width of the trail corridor and helps protect encroachment	Twice a year, in late spring and mid to late-summer	$ 1,200
Minor repairs to trail furniture/safety features	Minor repairs for trail tread, slope stability, bridges, signs or other structures	Annually	$ 500
Maintenance supplies for work crews	Supplies for crews such as equipment, materials, bags, safety gear, etc.	Annually	$ 300
Equipment fuel and repairs	Equipment fuel and repair	Annually	$ 600
		TOTAL	**$ 6,500**

Source: Trails for the 21st Century, Rails to Trails Conservancy, 2001 (for routine trail maintenance costs)
** Costs presented in Table 8.14 should be considered a theoretical maximum value for planning purposes.*

The Helena Parks and Recreation Department has a successful track record of partnering with local organizations, user-groups and leveraging limited resources to accomplish trail maintenance activities. The Helena Parks and Recreation Department is in the process of developing an Urban Trails Management Plan which will include both a separate budget for trail maintenance (both routine and major), and maintenance standards and policies that directly influence the level of service to be provided. These maintenance and preventive maintenance standards, and cost budgeting estimates, will help create an estimated frequency schedule for staff to follow that will help ensure that the quality of trails will be maintained at a level of service that is acceptable.

Under current conditions, City of Helena Parks and Recreation staff maintains approximately 27 miles of shared use paths. This Plan recommends an additional 32.62 miles of shared use paths over the 20-year planning horizon. The doubling of shared-use path mileage will necessitate additional funds be allocated to maintenance activities through the City's annual budgeting process. Recently the maintenance division has experienced several constraints in the delivery of services that have resulted from limited funding and increase in assets (parks and trails) to maintain, and a steady increase in the use of parks and trails.

Major or capital maintenance activities typically involve more intensive maintenance and repairs such as pavement seal coating, pavement overlays, pavement reconstruction and bridge or other structural rehabilitations. Any paved trail surface will deteriorate over time with asphalt surfaces dropping in quality rapidly after 10 years. Preservation efforts such as seal coating extend the life of asphalt efficiently and at a lower cost than waiting for the surface to fail requiring expensive reconstruction. Overlays may be needed after multiple seal coats or at approximately 20 years of service. A full reconstruction could be required when needed, typically at 30 years if the seal coat and overlay have been provided. Concrete shared use paths would need very little maintenance and could pay for themselves in saved maintenance over time. It is recommended that the City and County strongly consider the provision of concrete shared use paths when new facilities are being planned or designed. Saw cut joints in the concrete can make them feel more continuous over troweled joints which have a greater tactile impact on wheeled path users.

Financial planning for major or capital maintenance can be challenging to budget for. Typically asphalt shared use paths require greater capital maintenance activities with age and ultimately require full reconstruction at some point. Some jurisdictions stay focused on eventual reconstruction and treat this as a maintenance item to be budgeted for, whereas some treat this as a separate capital project to be considered at a later date in the future. Depending on the existing age and the level of effort routine and capital maintenance combined can run an average budget of between $7,000 and $9,000 per mile (*Source: Pathways Master Plan for the Town of Jackson and Teton County, Wyoming; June, 2007).* Some years may require more expensive maintenance with others requiring none.

The life-cycle of a path immediately after construction does require planning and budgeting for "major" maintenance activities. These activities vary widely and can be somewhat subject to the quality of initial path construction. An example of major maintenance activities and timing could include the following *(Source: Minnesota Local Research Board, Maintenance of Recreational Trails Symposium, May, 2012)*:

- Initial construction: Pave trail and seal asphalt
- Year 2: Crack seal activities
- Year 6: Crack seal
- Year 8: Asphalt seal
- Year 10: Crack seal
- Year 14: Crack seal
- Year 16: Asphalt seal
- Year 18: Crack seal
- Year 20: Asphalt overlay
- Year 22 Crack seal
- Year 24: Asphalt seal
- Year 26 Crack seal
- Year 30: Reconstruction

The future build-out of the path network depicted in this Plan will require additional funding sources and robust partnerships with various groups to budget and implement the necessary maintenance activities associated with the network. The City of Helena and Lewis and Clark County should continue to collaborate with trail users and identify revenue sources for future maintenance activities. The pending Urban Trails Management Plan will present a forum for this discussion to identify partnerships, funding sources and exact costs associated with developing the shared use path network envisioned in this Plan.

8.5.2.9 Spot Improvements

Improvements that are recommended at specific locations rather than along a corridor are known as spot improvements. These could include signalization, crossing improvements or other small connections, and fall under this category. Curb extensions, RRFBs, Hybrid Beacons can all be useful in increasing the comfort and safety for bicyclists at roadway crossings. Additionally the following bicycle specific treatments are also recommended (see **Table 8.16**).

Types of Spot Improvements

Bicycle Ramps

Bicycle ramps can provide key connectivity for bicyclists at roundabouts or over traffic calming features that otherwise would be barriers or cause unsafe merging activity with higher speed traffic.

Through Bike Lane at Intersections with Right Turn Only Lanes

For bicyclists traveling in a bike lane, the approach to an intersection with vehicular turn lanes can present a significant challenge. For this reason it is vital that bicyclists are provided with an opportunity to correctly position themselves to avoid conflicts with turning vehicles. Many bicycle lanes in the Helena area terminate prior to the intersection approach leaving little guidance. Often the 4 feet required to provide a through bike lane can be found by narrowing adjacent approach lanes slightly or through other excess intersection width. Helena currently has several through bike lanes on Custer Avenue.

Shared Bike Lane / Turn Lane

If the physical space is not available to provide a through bike lane, guidance can still be provided through a suggested bike lane within the inside portion of a dedicated motor vehicle turn lane. Shared lane markings or conventional bicycle stencils with a dashed line can delineate the space for bicyclists and motorists within the shared lane or indicate the intended path for through bicyclists. This treatment can also be preferable for a buffered bike lane approach where the buffered lane may become a right turn only lane. **Table 8.15** presents candidate locations for sharrow treatment.

Table 8.15: Sharrows

Project ID	Name	From	To	Length (mi.)	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
SHR-1	Park Ave Bike Sharrows	Cruse Ave	Broadway St	0.32	Street configuration is not compatible with bike lanes.	Option 1: Place sharrows in center of travel lane with frequent 150-200' spacing. There is high turnover parking on this route, so bike lanes may not be the most desirable. Option 2: Provide uphill bike lane and downhill shared lane. 5' bike lane behind reverse angled parking (no bike lanes should be behind front-in angled parking), 8 foot parallel parking and two 12.5 foot travel lanes. Option 3: 10 foot travel lanes, 8 foot parking lane, and two 5 foot bike lanes.	$3,000	$34,000	BL-32
SHR-2	Sanders Street Sharrows	Cole St	Custer Ave	0.54	Street configuration is not compatible with bike lanes.	The street is too narrow through the development south of Custer Ave to accomodate a bike lane with the turn bays, however sharrows could be placed 4' from the curb to provide much the same guidance.	$7,000	--	MSN-8; BL-34
			Total Length	**0.86**		**Total Estimated Planning Costs ("SHR" Projects)**	**$10,000**	**$34,000**	

Table 8.16: Bicycle Spot Improvements

Project ID	Location	Type	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
SPOT-1	Benton Ave between Hollins Ave and Leslie Ave	Modify bulbouts	Existing bulbouts extend past parking lane into travel lane and across intended path of travel for bicyclists.	Modify bulbouts by trimming them back to fit a bike lane, or by adding bike ramps. If bike ramps will be added, prohibit parking 50 feet in each direction to enable bikes enough room to manuver to enter the bulbout in the downhill direction. Preferred solution is to trim back the bulbout to allow for a full continuous bike lane.	$5,000	$10,000	
SPOT-2	Brady St (between railroad and Henderson St)	Provide bike ramps and tracks through neck down features	Bicyclists are being forced into the travel lane with vehicles creating multiple squeeze areas and conflicts.	Install ramps and tracks over neck down features. Provides permeability through traffic calming features.	$27,000	$45,000	BL-5
SPOT-3	Broadway St & Roberts St	Bicycle boulevard ramp and crossing	Roberts does not go through; a ramp system will be needed for bicyclists and pedestrians to overcome.	Improvements to make Roberts permeable for bikes and pedestrians but to keep car volumes low for the bicycle boulevard.	$25,000	$75,000	
SPOT-4	Cedar St & Airport Rd Southwest corner	Airport Rd spot improvement	Bike lane to the right of a right turn only lane would need an alternative design.	Provide a jug-handle waiting area for bikes to position so they can better see right turning traffic (see AASHTO Bike Guide Figure 4-42).	$1,500	$5,000	BL-10

Project ID	Location	Type	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
SPOT-5	Cedar St & I-15 Southbound Ramp	I-15 Ramp	Bike lane to the right of a right turn only lane would need an alternative design.	Widen sidewalk and provide bicycle escape ramp from future bike lane. Have bikes use the pedestrian button or a special bike button to stop right-turn slip lane traffic so they can proceed straight. The pork chop island could be utilized.	$5,000	$7,500	BL-10
SPOT-6	Chestnut St & N Last Chance Gulch St	Bicycle boulevard crossing	There is no crossing at Chesnut across N Last Chance Gulch St.	Provide median refuge on north side of the Chesnut intersection. No left turn lane is needed here. An RRFB should be provided to catch attention of traffic. A hybrid beacon would be preferable if possible.	$20,000	$100,000	
SPOT-7	Davis St & 6th Ave	Bicycle boulevard crossing	It is desirable to have a bicycle boulevard continue across 6th Ave on Davis, however intersecion geometry makes this difficult.	This location is complicated due to skewed angle intersection, existing right-in and right-out side street configuration and poor sight distance afforded by building on NW corner. Recommend a separate traffic study to finalize location and geometry. Hybrid beacon is possible; RRFB may not be enough.	$15,000	$90,000	MSN-27
SPOT-8	Davis St & Broadway St	Bicycle boulevard crossing	Proposed bicycle boulevard has no way to easily cross Broadway.	Provides a method to get to and from the Broadway Bike Lanes. Could have RRFB on both legs, with curb extensions where possible. Bikes should have access to RRFB buttons.	$55,000	$89,000	
SPOT-9	Fuller Ave & 6th Ave	Cycle track crossing	Enhanced crossing will be needed for cycle track users.	RRFB would probably work as a combined bike/ped crossing.	$15,000	$25,000	CT-3
SPOT-10	Fuller Ave & Lawrence St	Cycle track crossing	Enhanced crossing will be needed for cycle track users.	May require signal upgrades, including controller. Ideally there would be a bicycle actuated exclusive bike phase. Other options would be to use a leading pedestrian interval of 5 seconds which would get most bicyclists most of the way across the intersection before cars get a green light. Post “Turning Vehicles Yield to Bikes” signs.	$2,500	$20,000	CT-3
SPOT-11	Fuller Ave & Placer Ave	Cycle track crossing	Enhanced crossing will be needed for cycle track users.	See Missoula's stop controlled 2-way cycle track near the U of M.	$5,000	$10,000	CT-3
SPOT-12	Granite Ave & Overlook Blvd	Trim bulbout	Existing bulbouts extend past parking lane into travel lane and across intended path of travel for bicyclists.	Remove 5 feet of the bulbout so that bicyclists aren't pinched into the lane with cars when travelling downhill.	$1,500	$2,500	
SPOT-13	Henderson St between Hollins and Leslie Aves	Pave alley and mark trail crossing	Abrupt pavement transtion is a hazard for bicyclists.	Path provides a poor experience with these transitions. Pave 20 feet back so that gravel has a chance to fall off before covering the trail.	$1,600	$1,900	BL-20
SPOT-14	Henderson St between Hudson St & Waukesha Ave	Pave alley and mark trail crossing	Abrupt pavement transtion is a hazard for bicyclists.	Path provides a poor experience with these transitions. Pave 20 feet back so that gravel has a chance to fall off before covering the trail.	$1,600	$1,900	BL-20
SPOT-15	Henderson St between Leslie and Wilder Aves	Pave alley and mark trail crossing	Abrupt pavement transtion is a hazard for bicyclists.	Path provides a poor experience with these transitions. Pave 20 feet back so that gravel has a chance to fall off before covering the trail.	$1,600	$1,900	BL-20
SPOT-16	Henderson St between Peosta and Hollins Aves	Pave alley and mark trail crossing	Abrupt pavement transtion is a hazard for bicyclists.	Path provides a poor experience with these transitions. Pave 20 feet back so that gravel has a chance to fall off before covering the trail.	$1,600	$1,900	BL-20
SPOT-17	Henderson St between Waukesha and Peosta Aves	Pave alley and mark trail crossing	Abrupt pavement transtion is a hazard for bicyclists.	Path provides a poor experience with these transitions. Pave 20 feet back so that gravel has a chance to fall off before covering the trail.	$1,600	$1,900	BL-20
SPOT-18	Lawrence St & Warren St	Move sign	Existing sign is not well positioned.	Sign showing westbound bicyclists where to go should be moved to the traffic island instead of the north corner.	$200	--	
SPOT-19	Montana Ave & 9th Ave	Bicycle boulevard crossing	Proposed bicycle boulevard has no way to easily cross Montana Ave.	Crossing opportunities vary depending on if Montana is given a lane reconfiguration.	$15,000	$90,000	BL-31
SPOT-20	Neill Ave between Fuller Ave & Front St	Cycle track & pedestrian crossing	No cossing available for bicyclists or pedestrians to access Woman's/Hill Parks and Downtown.	Install RRFB or full signal.	$17,000	$150,000	MSN-3; CT-2
SPOT-21	Northeast corner of Sierra Rd & Montana Ave	Relocate yellow curb	Existing asphalt curb does not allow shoulder use by byclists	Remove or relocate curb to provide shoulder space for bicyclists.	$500	$2,500	CRN-13; SUP-22; SPOT-25
SPOT-22	South leg of Beaverhead/Lodestar Rds & Montana Ave	Turn lane improvement	Hatched area is in the location a through bike lane could be designated.	Convert hatched buffer to through bicycle lane and reduce taper length for the addition of right turn bay through new hatched gore area.	$1,000	$3,000	
SPOT-23	South leg of Buffalo Rd & Montana Ave	Turn lane improvement	Hatched area is in the location a through bike lane could be designated.	Convert hatched buffer to through bicycle lane and reduce taper length for the addition of right turn bay through new hatched gore area.	$1,000	$3,000	
SPOT-24	Southeast corner of Custer Ave & Valley	Ramp	Northbound bicyclists have an awkward transition here.	Add ramp from NB Brady to path	$3,000	$5,000	MSN-1

Project ID	Location	Type	Problem	Recommendations	Estimated Planning-Level Cost (Low)	Estimated Planning-Level Cost (High)	Other Project References
SPOT-25	Southeast corner of Sierra Rd & Montana Ave	Relocate guardrail	Existing guardrail prevents bicyclists from being able to use shoulder.	To provide shoulder space for bicyclists.	$4,000	$7,500	CRN-13; SUP-22; SPOT-21
SPOT-26	Southwest corner of Cruse Ave & Broadway St	Remove slip lane	Pedestrain crossing is wide and the existing slip lane allows for high speed turning by vehicles.	Remove slip lane and provide curb extension over the previous extents of the slip lane.	$10,000	$15,000	
SPOT-27	Henderson St & Centennial Trail	Provide at-grade crossing or bridge	The Centennial Trail is broken by Henderson Street.	Option 1: Ideal solution is a pedestrian bridge that may have to align closer to railroad tracks to make grade. Option 2: Install RRFB that is button actuated at the trail. Crossing could align with the two curb ramps. This solution could be a pilot condition that could provide service until a pedestrian bridge project becomes is feasible. Either design should not preclude the potential for bike lanes on Henderson St.	$25,000	$300,000	MSN-22; BL-20
				Total Estimated Planning Costs (Bicycle "SPOT" Projects)	**$262,200**	**$1,064,500**	

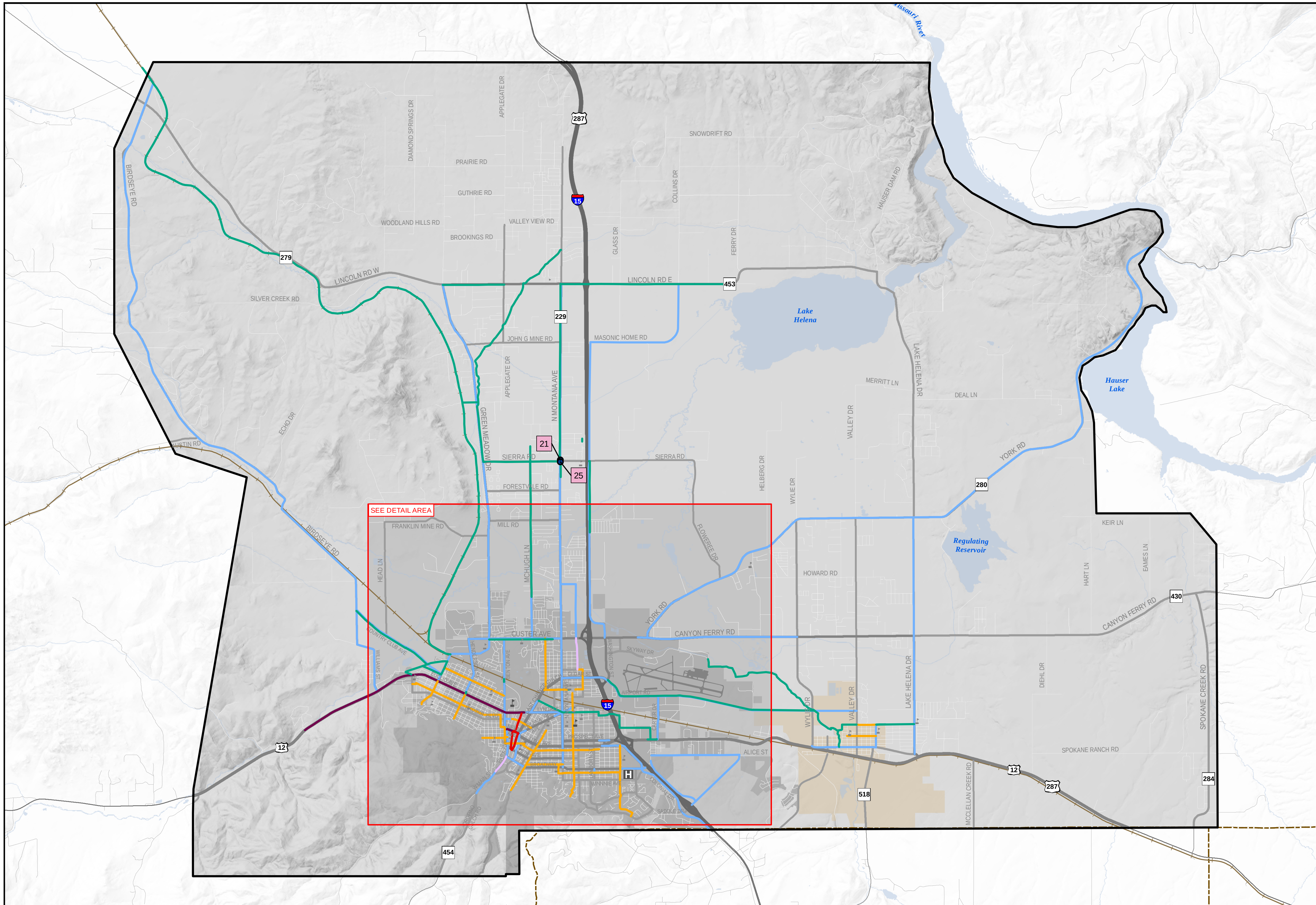


Figure 8.8
Bicycle Network and Spot Improvement Recommendations

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Spot Recommendations

Bicycle Facility Type

- Bicycle Boulevards
- Bike Lanes
- Buffered Bike Lanes
- Cycle Track
- Shared-Use Paths
- Sharrows

0 0.5 1 2 3 Miles

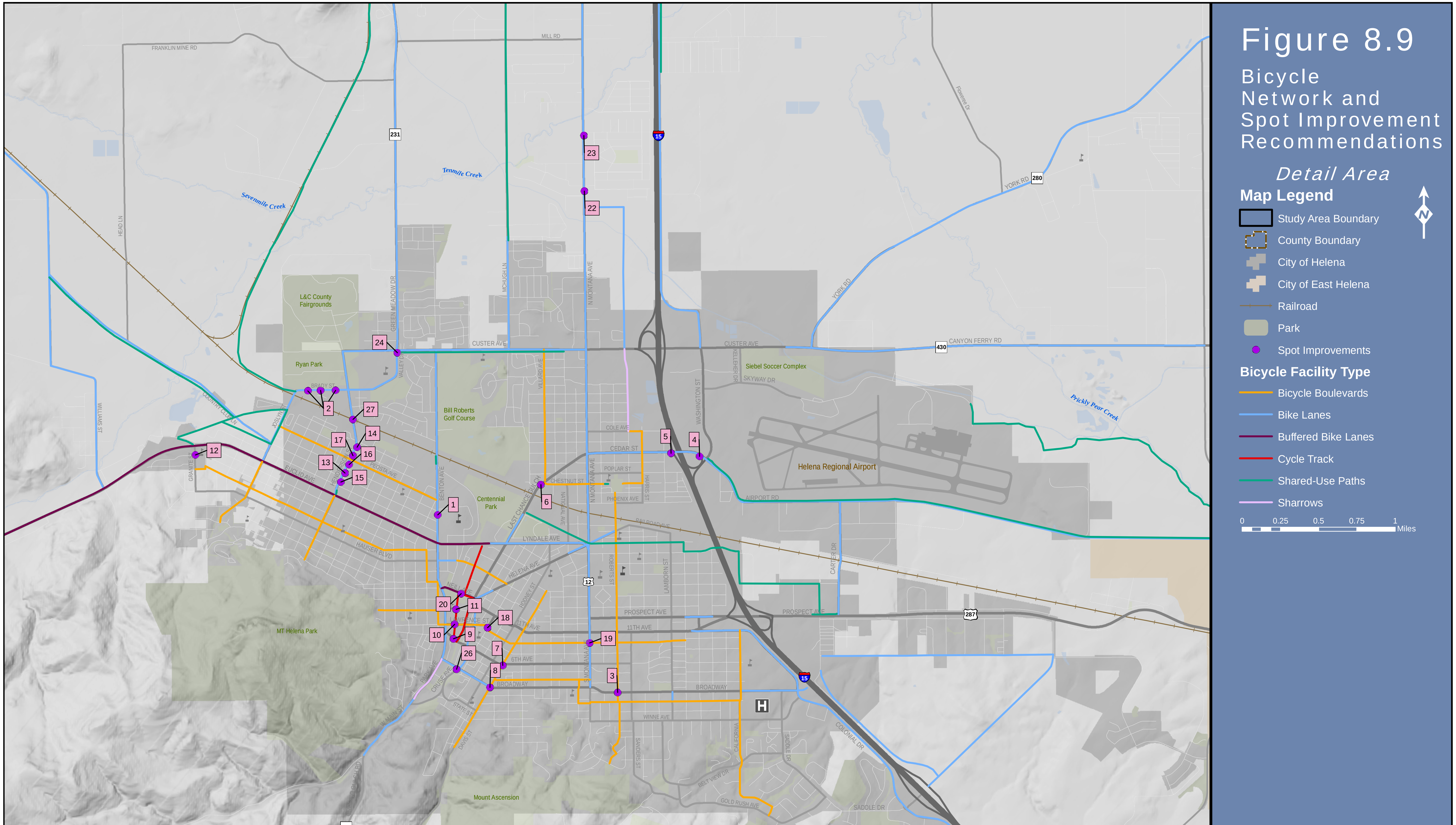


Figure 8.9

Bicycle Network and Spot Improvement Recommendations

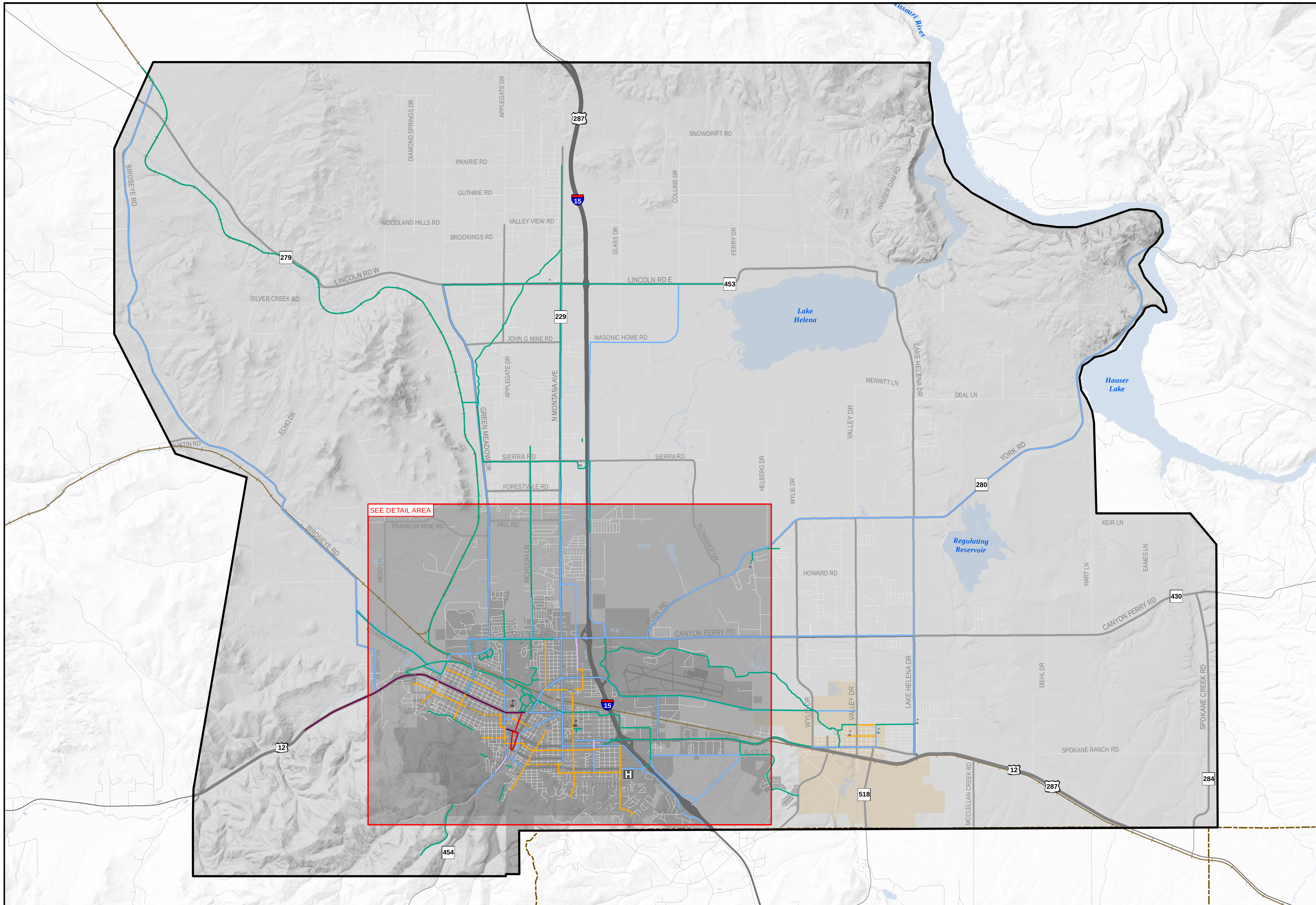


Figure 8.10

Full Bicycle Network Vision

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad

Bicycle Facility Type

- Bicycle Boulevards
- Bike Lanes
- Buffered Bike Lanes
- Cycle Track
- Shared-Use Paths
- Sharrows

0 0.5 1 2 3 Miles

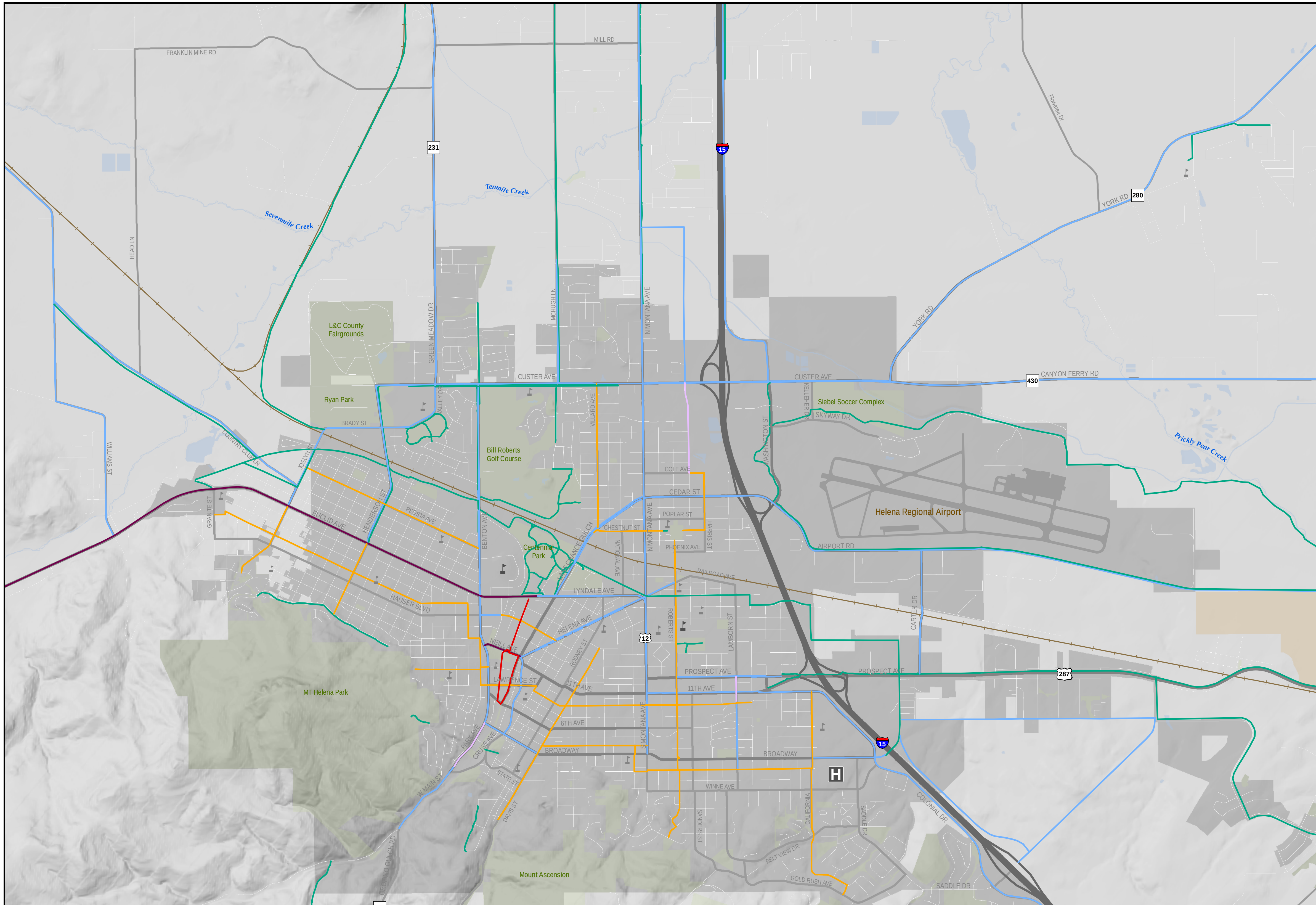


Figure 8.11
Full Bicycle Network Vision
Detail Area

Map Legend

- Study Area Boundary
- County Boundary
- City of Helena
- City of East Helena
- Railroad
- Park

Bicycle Facility Type

- Bicycle Boulevards
- Bike Lanes
- Buffered Bike Lanes
- Cycle Track
- Shared-Use Paths
- Sharrows

0 0.25 0.5 0.75 1 Miles

8.5.3 Bicycle Program and Policy Recommendations

The goals of the following program and policy recommendations are to:

- Increase the visibility and legitimacy of people riding bicycles in the Helena area
- Support and enhance the infrastructure recommendations in this Plan
- Increase the number, safety, and comfort of people bicycling in the Helena area

As was stated in the pedestrian program and policy recommendations sections, the following programs and policies can be applied to the City of Helena, the City of East Helena, and Lewis & Clark County. All programs and policies are proposed; only local elected bodies (i.e. Commissions or Councils) have the authority to approve and enact a proposed program or policy.

8.5.3.1 Bicycle Parking

Bicycle parking is an important component of the bicycle network. Secure end-of-trip accommodations encourage people to travel by bicycle. All recommendations in this section, when implemented and appropriate, with the exception of bicycle parking generation ordinance language, should be included in an update to the City of Helena Ordinance 3152 and to Section 9-11-13 of the East Helena City Code (1980 Code). Lewis & Clark County should also adopt these guidelines.

Short-Term Bicycle Parking

Short-term bicycle parking is intended for shoppers, customers, and other visitors who require bicycle storage and security for up to several hours.

Rack Design

Rack design standards ensure that required bicycle racks are designed so that bicycles may be securely locked to them without undue inconvenience and will be reasonably safeguarded from accidental damage. Any revised code should add language that requires that racks:

- Enable the bicyclist to lock the frame and one or both wheels with a user-provided U-lock or cable
- Support a bicycle by its frame in two places in a stable upright position without damage to the bicycle or its finish
- Be usable by bikes with no kickstand
- Be usable by bikes with water bottle cages
- Discourage the use of 'wheelbender' and 'wave' racks that provide a poor level of service.

Placement and Parking Area Design

Code and ordinance revisions should consider adding the following bicycle parking area design requirements that solidify existing language or provide additional guidance:

- If located outside, bicycle parking shall be located within 50 feet of each entrance to the building in a visible and obvious location to bicyclists. Bicycle parking should be permanently secured to a paved surface and be located such that it will not become buried by snow removal operations
- Bicycle parking may be provided within a building, but the location must be easily accessible
- Where bicycle parking is covered, overhead clearance must be at least 7 feet
- Each required bicycle parking space must be accessible without moving another bicycle
- Areas set aside for bicycle parking must be clearly marked and reserved for bicycle parking only
- Bicycle parking area shall be at the same grade as the sidewalk or at a location that can be reached by an accessible route

Recommended Racks

The following is based on guidance published by the Association of Pedestrian and Bicycle Professionals (APBP).

- "Inverted U", or "Staple" racks are typically secured to a concrete base and are very secure and easy to use.
- "Coat Hanger" racks, if used properly, can support a bicycle at two points and can operate fixed to a concrete base or can be moved where needed.
- "Post and Loop" or "Lollypop" racks have many of the same characteristics as "Inverted U" racks, but are more compact. They can be installed in series or along a curb line in the sidewalk furnishing zone.

Discouraged Racks

"Wheelbender" racks only support the wheel of the bicycle and can cause serious damage to the bicycle if twisted while secured in the rack. Additionally, this type of rack does not work with all types of locks. By design, these racks do not meet the existing or proposed bicycle rack design standards.

"Comb" and "Wheelbender" racks have the same design flaw in only supporting one of the bicycle's wheels. Many users of this rack type lift their bicycle over the top and rest the frame on the rack to allow use of a bicycle lock, possibly causing damage to the bike and reducing the bicycle parking capacity of the rack. By design, these racks do not meet the existing or proposed bicycle rack design standards.

"Wave" racks require the bicyclists to place their bicycle through the wave pattern, where it is only supported at one point, in order to properly secure the bicycle. Bicycle parked in these racks are unstable and frequently tip over. Many cyclists park their bicycle sideways in this rack to gain stability, thereby reducing the capacity by 60-80 percent. By design, these racks do not meet the proposed bicycle rack design standards.

Bike Corrals (in-street bicycle parking)

Bike corrals offer more short-term bicycle parking (that would normally be placed on the sidewalk) in a consolidated space on the street, occupying a traditional motor vehicle parking space. Bike corrals are commonly installed at locations that attract bicyclists and where parking bicycles at traditional short-term racks may crowd or clutter available sidewalk space. This approach is rapidly gaining popularlity in the United States and in Montana (Missoula and Bozeman).

Before installing bike corrals, a maintenance plan should be developed defining responsibilities, schedule, and methods for improving their longevity, maintaining their utility, and how corrals will fit into snow removal and street sweeping programs. The City or County may also delegate the installation and/or the maintenance of bike corrals to the BID or similar local, district-based associations or even adjacent property owners.

The bike corral parking area can be delineated or protected using poured concrete curbs, bollards, or planter boxes. Regardless of delineation type, corrals should be designed with the user in mind, maintaining ingress and egress and the same aisle and spacing standards desired for the short-term bicycle parking.

The benefits of bike corrals are not limited to the users themselves. Corrals can also provide, on average, a ratio of 8 to 12 customers to one parking space, thus fostering more commercial opportunities for nearby businesses.

Bike corrals were also recommended by the League of American Bicyclists' 2013 Bicycle Friendly Communities Application Feedback Report.

Long-Term Parking

Long-term bicycle facilities are intended for bicyclists who need to park a bicycle for extended periods during the day, overnight, or for a longer duration (i.e. airport parking). Long-term bicycle storage is typically designed for and used by employees, students, residents, and commuters. Long-term parking facilities typically protect bicycles from inclement weather.

These facilities may include:

- *Lockers.* Fully enclosed and secure bicycle parking space accessible only to the owner or operator of the bicycle.
- *Restricted Access Parking.* A location that provides short-term-style bicycle racks within a locked room or locked enclosure accessible only to the owners of bicycles parked within.
- *Personal Storage.* Storage within view of the bicycle owner either in his or her office or another secure location within the building.

Facilities that support long-term bicycle parking include end-of-trip facilities like showers and changing areas. It is recommended that the City of Helena and the City of East Helena create long-term bicycle parking sections of their bicycle parking ordinances or code section that provide requirements for new or remodeled buildings, including minimum space standards that should be included in the design and engineering of the building to include these facilities. An example of ordinance language for long term parking in new and renovated buildings is found in the Salt Lake City Code, Section 21A.44.040 (see http://goo.gl/HT0mO2).

Downtown Helena Bicycle Parking Recommendations

Downtowns are a focal point for bicycle activity due to the high density of employment, restaurants, attractions, services, and, in Helena's case, access to recreational trails. Riding a bicycle downtown can offer many advantages to driving, including the ability to park a bicycle closer to one's intended destination. Downtown Helena has few bicycle racks. It is recommended that a dedicated program to ensure those major attractions, job centers, and other businesses have adequate accommodations for bicyclists. The 'Inverted U' or 'Post and Loop' rack type and/or bike corrals are recommended. In addition to increasing the number of bicycle parking spaces, the location of and instructions on how to use them should be publicized generally through an online map and specifically through the Convention and Visitors Bureau, Chamber of Commerce, BikeHelena, BikeWalk Montana, bike shops, and businesses with bike parking.

Request-A-Rack

Implementing a Request-A-Rack program will allow and encourage requests for bike racks that meet the standards set forth in this section. The City and County should maintain a supply of standard bicycle racks that can be installed upon request by business and property owners and managers, the Business Improvement District (BID), and other bicycle parking requestors to provide increase bicycle parking in the Helena area and mitigate bicycles locked to posts, signs, and trees. The rack request form can be hosted on the city's and county's website. Racks are about $100 per two spaces, and funding could be secured through grants, donations, and partnerships with other organizations.

Improving Other Existing Requirements

The City of Helena requires that parking lots with certain amount of automobile parking spaces must also provide bicycle parking spaces. This requirement should be enforced in order to create more bicycle parking, especially Downtown, and should be introduced in the City of East Helena and Lewis & Clark County.

Bicycle Parking Generation Ordinance Language

The following guidelines in **Table 8.17** should be considered for adoption into the City of Helena's Zoning Ordinance (City Code Title 11 – Chapter 22) and the City of East Helena's City Code section 9-11-13. The number of spaces shown in the accompanying table should be provided as a minimum. Wherever this table indicates two numerical standards, such as "2, *or* 1 per 3,000 sq. ft. of net building area," the larger number applies. Lewis & Clark County should also consider incorporating the same bicycle parking requirements as stated in **Table 8.17** into existing zones where commercial uses are permitted. Only those bicycle parking requirements pertaining to allowed uses for each zoning district should be included for that district.

Table 8.17: Bicycle Parking Generation Table

Use Sub-categories	Specific Uses	Long-term Spaces	Short-term Spaces
Residential Categories			
Household Living	Multi-dwelling	1 per 4 units; or if no garage is available, 1 per unit	2, or 1 per 20 units
Group Living		2, or 1 per 20 residents	2, or 1 per 20 units
	Dormitory	1 per 8 residents	2, or 1 per 20 units
Commercial Categories			
Retail Sales and Service		2, or 1 per 12,000 sq. ft. of net building area	2, or 1 per 5,000 sq. ft. of net building area
	Temporary Lodging	2, or 1 per 20 rentable rooms	2, or 1 per 20 rentable rooms
Office		2, or 1 per 10,000 sq. ft. of net building area	2, or 1 per 40,000 sq. ft. of net building area
Commercial Parking		10, or 1 per 20 auto spaces	None
Commercial Outdoor Recreation		10, or 1 per 20 auto spaces	None
Major Event Entertainment		10, or 1 per 40 seats	2, or 1 per 40,000 sq. ft. of net building area
Industrial Categories			
Manufacturing and Production		2, or 1 per 15,000 sq. ft. of net building area	1 per 5,000 sq. ft. of floor space
Warehouse and Freight Movement		2, or 1 per 40,000 sq. ft. of net building area	1 per 20,000 sq. ft. of floor space
Institutional Categories			
Basic Utilities	Transit stations	8	None
Community Service		2, or 1 per 10,000 sq. ft. of net building area	2, or 1 per 10,000 sq. ft. of net building area
	Park and Ride	10, or 5 per acre	None
Parks and Open Areas		Per review	Per review
Schools	Elementary and/or Junior High	2 per classroom, or 1 per 5 students	2 near administrative offices
	Senior High or similar school	4 per classroom, or 1 per 10 students	2 near administrative offices
Colleges	Excluding dormitories (see Group Living, above)	2, or 1 per 20,000 sq. ft. of net building area, or per review	2, or 1 per 10,000 sq. ft. of net building area, or per review
Medical Centers		2, or 1 per 70,000 sq. ft. of net building area, or per review	2, or 1 per 40,000 sq. ft. of net building area, or per review
Religious Institutions		2, or 1 per 4,000 sq. ft. of net building area	2, or 1 per 2,000 sq. ft. of net building area
Daycare		2, or 1 per 10,000 sq. ft. of net building area	None
Other Categories			
Aviation Terminals		5 per airport terminal	None

8.5.3.2 Bicycle User Counts

Ongoing bicycle user counts provide important information used to approximate usage and demand for facilities and programs. The National Bicycle and Pedestrian Documentation Project (NBPDP), a nationwide effort to provide a consistent model of data collection and ongoing data, states that "without accurate and consistent demand and usage figures, it is difficult to measure the positive benefits of investments in [bicycling], especially when compared to other transportation modes such as the private automobile." In addition to manual counts, the City and/or County should invest in automated and permanent counters on trails and on-street bicycle facilities, which are recommended also by the League of American Bicyclists' 2013 Bicycle Friendly Communities Application Feedback Report. Automated counters typically run from $1,000 - $2,500. Additionally, future traffic signal upgrades and new signals should include technologies that can count bicyclists and pedestrians as well as vehicles as well to supply a steady supply of data that is not a single periodic snapshot of users. Ultimately future data will enable the localized benefits of investments to be measured and understood.

8.5.3.3 Bicycle Skills and Commuting Classes

Bike Helena, another local non-profit group, or bike shops should host and teach bicycling skills and commuting classes on a regular basis. League of American Bicyclists-certified instructors (LCI) can lead the courses and offer guidance to attendees. If there are not any available or certified instructors, an LCI seminar should be organized.

Similar classes should be combined with the on-going efforts of BikeWalk Montana, the Helena Police Department, Lewis & Clark County Sheriff, and Safe Routes to Schools programs to offer similar bicycle safety and skills education targeted at grade school aged children in and outside of schools.

8.5.3.4 Bicycle Tourism

In partnership with Adventure Cycling Association, the Convention and Visitors Bureau, and the Prickly Pear Land Trust, the City of Helena, the City of East Helena, and Lewis & Clark County should expand their bicycle tourism program in order to cater to, attract, and accommodate more bicyclists, primarily those visiting the Helena area on the Great Divide Trail and those who are visiting for the mountain biking opportunities, which is increasing in popularity due to Helena being named a 'Ride Center' by the International Mountain Biking Association (IMBA).

8.5.3.5 Winter Roadway Maintenance Program

The following bicycling-specific recommendations build on the policies and standard procedures found in the Helena Snow Policy, Procedures, Plan, Codes & Comparison (Winter 2013-2014) document reviewed previously and should be added to similar policies in the appropriate departments in East Helena and Lewis & Clark County:

- *Priority:* After emergency snow routes, hospital and public access, streets with bike lanes, buffered bike lanes, or cycle tracks should be prioritized regardless of roadway classification.
- *Berms in bike lanes:* In addition to the care that plow operators take to not block sidewalks, driveways, and curb ramps, additional attention should be paid to ensure that a windrow or berm does not form in the bike lane.
- *Cycle tracks:* It is recommended that if established, cycle tracks be maintained a full sized plow and/or other equipment including truck mounted plows, brooms or blowers depending on cycle track width. If additional equipment is necessary, small, dedicated plows and sweepers, either mounted on a pick-up truck or standalone machines used to clear sidewalks, should be acquired.

8.5.4 Multi-Modal Program and Policy Recommendations

The Helena area has many programs that encourage, educate, and promote both walking and bicycling. Additional and expanded multi-modal (walking and bicycling) programs are recommended in this section and are applicable to the City of Helena, City of East Helena, and Lewis & Clark County.

8.5.4.1 Pedestrian Mall

The proposal to remove the restriction on bicycles on the Last Chance Gulch pedestrian mall can be changed by city ordinance. Skateboarding would remain prohibited. Appropriate language should be added to Title 7 – Chapter 9 of the City Code to require that bicyclists yield to pedestrians and maintain a reasonable, slow speed that should be determined before the ordinance is revised; and requires signage to be added throughout the mall that reflects the change and additional guidelines. No bicycle specific physical changes are proposed such as a designated path, rather the lack of clarification and the obvious pedestrian nature of the mall should be leveraged to maintain slow bicyclist speeds. The pedestrian mall has the opportunity to attract less confident bicyclists who may not be comfortable accessing downtown via Park Avenue or Cruse Avenue. The mall would ideally be connected to the Centennial Trail system via a two-way cycle track proposed in projects **CT-1** through **CT-5**.

8.5.4.2 Crashes and Crash Reporting

Title 8 – Chapter 7 of the Helena City Code and Section 9-10-6 of the East Helena City Code do not include a standard operating procedure for law enforcement to report automobile-bicyclist or automobile-pedestrian crashes. Such a standard operating procedure should be developed so that information about crashes involving pedestrians and bicyclists is recorded and available for analysis.

8.5.4.3 Unified Wayfinding Program

The Helena Tourism and Business Improvement District, Helena Tourism Alliance, Prickly Pear Land Trust, BikeWalk Montana, and BikeHelena have each expressed interest in and desire for a unified countywide program that will provide directional, wayfinding guidance to pedestrians and bicyclists. These groups should work in concert to develop an approach to wayfinding that will follow consistent design, informational, installation, and maintenance standards. If desired, the program may be based on the existing pedestrian wayfinding system in Downtown Helena. A unified, multi-modal wayfinding program is supported by both the Greening Last Chance Gulch Plan and the League of American Bicyclists' 2013 Bicycle Friendly Communities Application Feedback Report.

8.5.4.4 Police Training

Strengthening bicycling and walking information in police education courses or training can help local police officers and sheriffs improve public safety and enforce existing laws more effectively. Police training will enhance other educational and enforcement programs. A more robust police training education program was also supported and recommended multiple times in the League of American Bicyclists' 2013 Bicycle Friendly Communities Application Feedback Report.

8.5.4.5 Media Campaign

Many pedestrians and bicyclists do not know the rules of the road or where to walk or ride. A marketing campaign that highlights these elements, as well as safety and other support programs (existing and recommended in this plan), is an important part of creating awareness of bicycling and walking in the Helena area. A high-profile campaign is an effective way to reach the general public, highlight bicycling and walking as viable and normal forms of transportation, and reinforce safety for all road users. Campaigns are particularly effective when kicked off in conjunction with other bicycling/walking events, back to school in the fall, major community events, baseball games, or other related initiatives.

8.5.4.6 Traffic Citation Diversion Classes

Other than one-time drivers education courses, there are few formal opportunities for motorists and/or bicyclists to learn the legal rights and responsibilities specific to bicycling and walking. The cities and county should work with local partners on traffic citation diversion classes so that road users (pedestrians, bicyclists, and/or motorists) who commit offenses known to endanger pedestrians and bicyclists can, at the discretion of the officer, be invited to take a safety and diversion class in lieu of paying fines.

8.5.4.7 Complete Streets

Policy

The City of Helena currently has a functioning Complete Streets Policy that has been instrumental in many subsequent infrastructure projects. Lewis & Clark County is also encouraged to develop and adopt a policy or resolution within the urban growth boundary that will help shape the community in future years.

Design Guidelines

The City of Helena and Lewis and Clark County should consider developing joint Complete Streets Design Guidelines that can be used within the urban growth boundary. These guidelines will help developers, planners, engineers, contractors, and others to know how to better accommodate all user groups. Such design guidelines draw from a variety of sources including AASHTO, TRB, NACTO, and various studies and research for the latest principles. Some standards do exist within the Subdivision Regulations, but could be expanded to be context oriented to downtown, neighborhood, or suburban environments.

PROWAG

Once adopted/approved on the Federal level, the City should incorporate and enforce the U.S. Access Board's formal set of proposed guidelines for accessible rights-of-way, also known as PROWAG, in its engineering standards, Complete Streets Policy, and any other planning or construction that influences walking or bicycling.

8.5.4.8 Natural Surface Trail Management

Natural Surface Trails

When considering natural surface trails, the cities and county should reference the draft updated South Hills Trails Plan and the following management challenges and accompanying recommendations:

CHALLENGES:

- *Many miles of trail to maintain*: Helena has many miles of trail but limited resources to maintain this vast network. Although increased trail expansion has been recommended as a priority by many trail user groups, maintenance of existing trails constitutes a large percentage of trail work projects

- *Uncontrolled access*: Many unofficial trails in the South Hills are "social trails" that are created by people gaining access to the trail system form their back yards or unauthorized locations. These trails are often redundant and/or poorly located which causes erosion and potentially dangerous trail conditions.

- *Private property issues*: Some of the existing trails cross private property without formal agreements with the property owners. Without easements, agreements or outright purchase, these trails could be closed to public access at any time.

- *Safety on roads*: Several of the trails in the South Hills utilize or cross roadways to provide trail access, or in some cases, constitute a segment of the trails. In either case, measures can be implemented to reduce trail-user and motor vehicle conflicts

RECOMMENDATIONS:

- Remove or reroute trails that are in poor condition, are unsustainable and/or are redundant.

- Where appropriate, create new sustainable trails in appropriate areas that provide access to key destinations and other popular trails.

- With an eye towards minimal net gain of trail mileage on City and/or County open lands, new trail development should be associated with the compensatory closure of unneeded or redundant trails. Exceptions include trail on parcels acquired primarily for trail development or getting trail users off of roadways for safety reasons.

- Engage private property owners to ensure continued trail access across their property through trail easements or fee land acquisition.

- Continue to create and refine trailheads that give the trail system a unique identity and that can be used for all Helena trails.

- Continue to create and maintain a durable and attractive sign system that clearly marks trail directions and features without being obtrusive.

- Pursue opportunities for developing new trails that would meet Americans with Disabilities Act criteria in high use areas.

- When a new subdivision is proposed, the City and/or County should work with the developer to determine if there is a viable trail opportunity and if so, that that trail access is secured.

8.5.4.9 City of Helena Subdivision Regulations

The City of Helena Subdivision Regulations should require, per the Complete Streets Policy, that bicycle and pedestrian facilities be incorporated into all subdivision roadway reconstruction or redesign projects in which curb and gutter are moved or replaced. Due to the limitation of the scope of the recommended requirement (only where the City's Subdivision Regulations apply), it is proposed that projects of this type be tracked as part of the permit approval process within the Planning Division as well as during the design approval process by the City Engineer, who must also consider the most recent edition of recommended guidelines for street design published by the Institute of Transportation Engineers (ITE) and other comparable publications and standards.

8.5.4.10 Lewis and Clark County Subdivision Regulations

The Subdivision Regulations speak to non-motorized travel requirement in both Chapter XI, Section H and also in Appendix J – Road Standards. Various road functional classifications are defined and within the definition are assessments as to types of pedestrian and bicycle activity. Interwoven through both Section H and Appendix J are design guidelines and suggestions for factoring non-motorized facilities into road design processes.

8.5.4.11 Lewis and Clark County Public Works Manual

The Public Works Manual (section 4.11) defines and specifies design details for sidewalks and non-motorized facilities. The Public Works Manual generally relies on design guidelines provided by AASHTO, NACTO, and MPWSS. The Public Works Manual defines non-motorized facilities as Class I (Core Trail Network), Class II (Neighborhood Collector), and Class III (Low Impact Trail). The Public Works Manual specifies that bicycle lanes be provided on streets that are functionally classified as a collector or arterial in locations designated by the County, and that the design of bicycle facilities shall conform to current AASHTO design standards.

8.5.4.12 NACTO Urban Bikeway and Street Design Guides

It is recommended that the City of Helena continue the use of the National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide and Urban Street Design Guide in their reference material and "other comparable publications and standards" mentioned above. It is recommended that both publications be formally endorsed by the City, adopted as official design guides and manuals, and that Helena become a partnering NACTO city. Information about the endorsement and application process is found on NACTO's website.

8.6 Transit Improvements

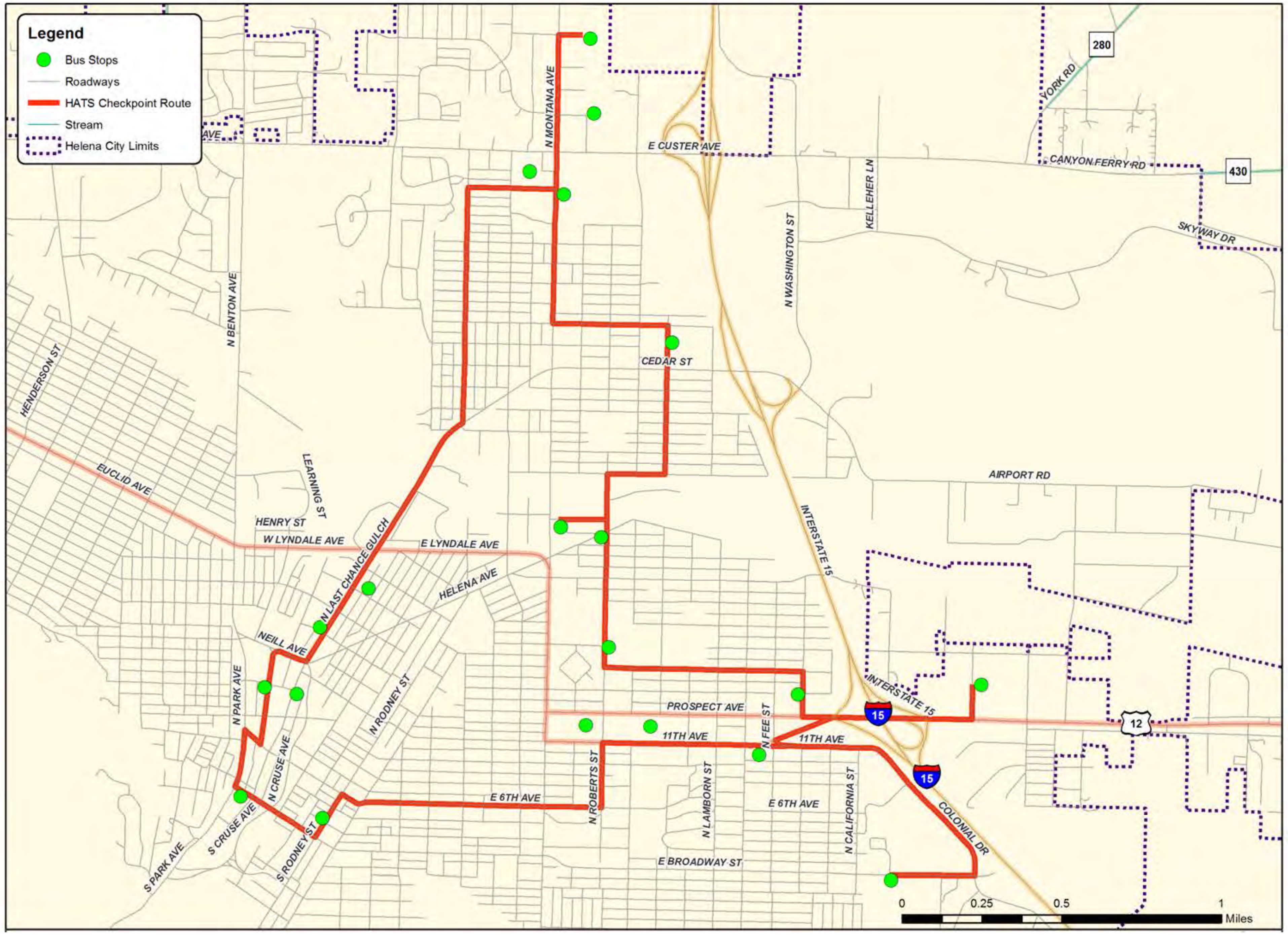
8.6.1 Recommendations from the Transit Development Plan Update (2013 – 2018)

One-year and five-year actions, placed in six categories, were identified during the Helena Area Transit Service (HATS) Transit Development Plan (TDP) Update, and served as the initial basis for HATS to achieve its 2018 vision and goals. The actions developed during the comprehensive TDP Update process are found in **Table 8.18**. The existing checkpoint route is shown as **Figure 8.12**. Potential route changes were developed in the TDP update, however the proposed changes are now outdated and being revised. Reference is made to the HATS website for future proposed route changes.

Table 8.18: HATS Implementation Actions (from TDP Update)

Number	Action	Timeline
Objective 1	**Implement service changes**	
Action 1.1	Add a route and make route and schedule adjustments to improve on-time performance, better meet commuter needs, and improve safety.	Year 1
Action 1.2	Update fare structure to direct curb-to-curb towards people who need it.	Year 1
Action 1.3	Restrict East Valley (north of East Helena) curb-to-curb service to align with demand, density, and funding sources.	Year 1
Action 1.4	Expand fixed route and ADA paratransit to 12 hours per weekday.	Year 1
Action 1.5	Implement 2-5 year service improvements to the extent funding allows.	Years 2-5
Objective 2	**Improve infrastructure.**	
Action 2.1	Move bus stops out of parking lots and onto roads whenever possible.	Year 1
Action 2.2	Establish designated stops with bus stop signs.	Year 1
Action 2.3	Begin addressing issues with bus stop infrastructure and facilities to better serve riders.	Year 1
Action 2.4	Establish designated stops with signage, ADA access, benches, shelters and schedules.	Years 2-5
Action 2.5	Parking management	Years 2-5
Action 2.6	Park & Rides	Years 2-5
Objective 3	**Implement fleet upgrades and improve maintenance supervision**	
Action 3.1	Improve maintenance documentation and procedures.	Year 1
Action 3.2	Implement a financially sustainable phased vehicle replacement and fleet expansion plan.	Years 2-5
Action 3.3	Work with MDT to ensure that HATS operates with vehicles that provide safe, efficient, and quality service.	Years 2-5
Objective 4	**Improve coordination with human services providers to minimize duplication of services and improve overall service to transportation disadvantaged populations.**	
Action 4.1	Work with human service providers to develop strategies to coordinate services and funding to improve efficiency and service quality.	Year 1
Action 4.2	Continue working with human service providers to implement coordination strategies and contracts to improve and expand efficiency, funding and service quality.	Years 2-5
Action 4.3	Expand participation in the TAC to include other organizations in addition to transportation providers and health and human services agencies.	Years 2-5
Objective 5	**Expand funding & partnerships to provide effective commuter service.**	
Action 5.1	Engage stakeholders in TDP implementation.	Year 1
Action 5.2	Consider developing a communications plan.	Year 1
Action 5.3	Pursue ideas for additional revenue.	Year 1
Action 5.4	Position HATS to meet growing demand for services and to become more integrated into the community.	Years 2-5
Action 5.5	Consider creating an Urban Transportation District (UTD) within the Helena area.	Years 2-5
Objective 6	**Strategically implement data management and technology to improve management capabilities as well as service to customers.**	
Action 6.1	Streamline data tracking through interim improvements to spreadsheets and sampling stop-by-stop ridership.	Year 1
Action 6.2	Develop an Intelligent Transportation Systems (ITS) plan following a systems engineering process.	Year 1
Action 6.3	Implement General Transit Feed Specification (GTFS).	Year 1
Action 6.4	Purchase and implement demand response management software.	Year 1
Action 6.5	Implement the data management and ITS plan.	Years 2-5
Objective 7	**Create and implement a marketing, outreach and promotion plan to significantly increase fixed route ridership by commuters and other choice riders, as well as seniors.**	
Action 7.1	Replace current website with a new site that meets standards for peer services.	Year 1
Action 7.2	Improve and update maps and schedules.	Year 1
Action 7.3	Create a brochure.	Year 1
Action 7.4	Continue to improve website.	Years 2-5
Action 7.5	Take advantage of opportunities for free media coverage and other free publicity.	Years 2-5
Action 7.6	Develop a marketing plan with a dedicated budget.	Years 2-5
Objective 8	**Continue to improve management and staffing.**	
Action 8.1	Improve management of curb-to-curb through policy changes and up-to-date tools.	Year 1
Action 8.2	Improve training and procedures as recommended in Maintenance & Operations Review.	Year 1
Action 8.3	Practice sound and sustainable financial management.	Years 2-5
Action 8.4	Provide customer service that produces highly satisfied riders and respects the needs of people with disabilities.	Years 2-5
Action 8.5	Continually monitor rider satisfaction and HATS performance, make modifications where necessary.	Years 2-5

Figure 8.12: HATS Existing Checkpoint Route



8.6.2 Recommendations Appropriate to this LRTP Update

8.6.2.1 Bus Stop Shelters

Bus stop shelters should be placed at the locations with the highest amount of activity. Placing shelters at popular boarding locations such as Walmart or near the Base Camp in the downtown gives passengers better protection from the elements and provides HATS with greater visibility.

The potential costs to realize fixed stops and shelters at high activity locations range from a potential year one cost of approximately $50,000 (assumes adding five shelters in year one) to $20,000 for years two through five (assumes two new shelters per year).

During the development of this LRTP the desire was expressed to provide general guidance on bus stop placement, potential configurations, and overall advantages or disadvantages of curb side bus stop locations. Bus stop placement is an important factor to achieving the best performing transit system possible. Below is a list of factors that should be taken into consideration when deciding on where to locate bus stops.

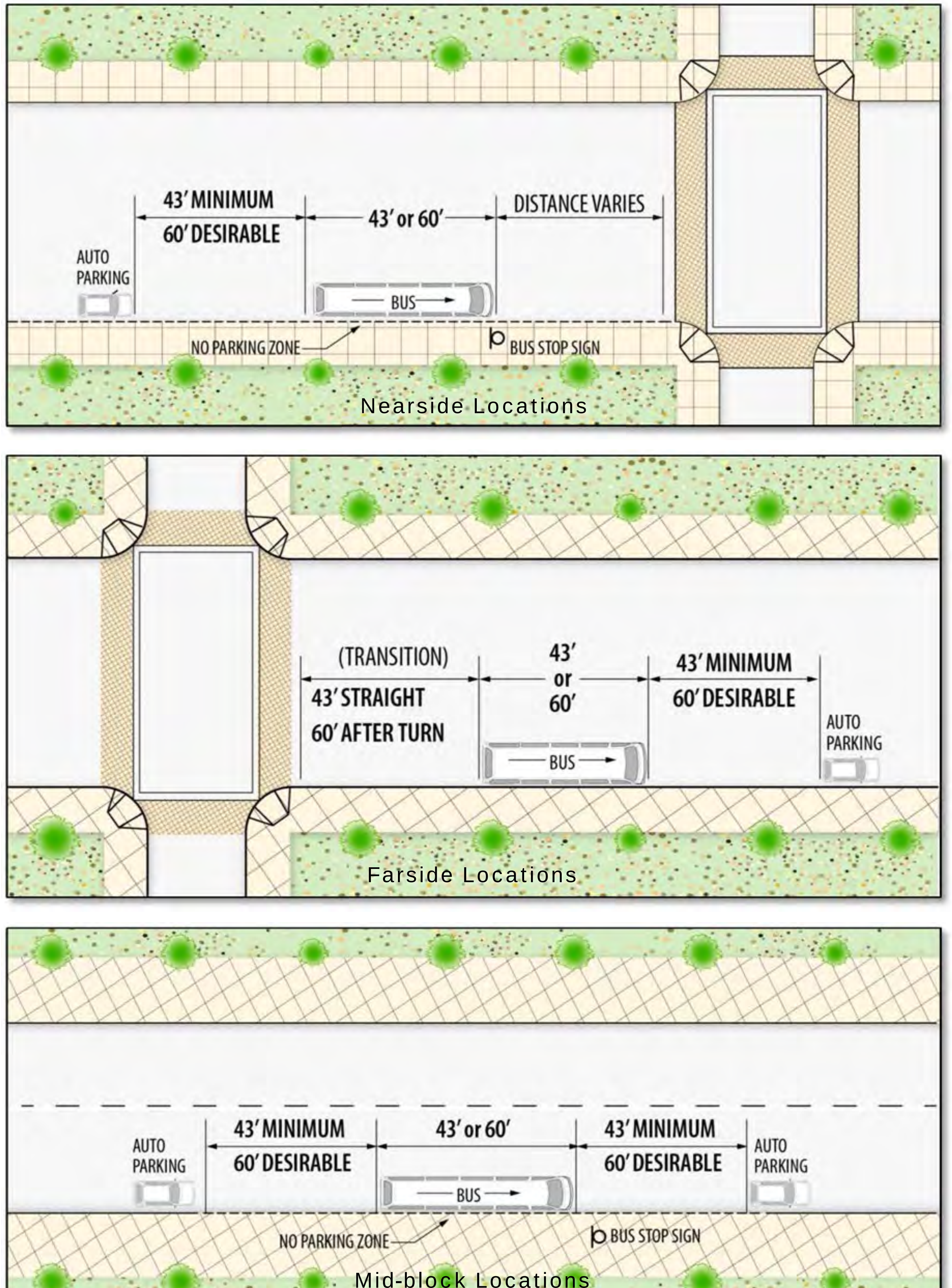
- Spacing along the route
- Location of passenger traffic generators
- Operational effectiveness
- Safety
- Access to the stop including pathways leading to and from the stop
- Right-of-way
- Curb clearance

Table 8.19 gives a list of advantages and disadvantages for the location of the bus stop at intersections. **Figure 8.13** shows the minimum recommended distances required for a bus stop based on the location relative to the intersection. These minimum recommended distances assume that either a 40-foot bus, or a 60-foot articulated bus, is being used. For Helena, something smaller than a 40-foot bus would be appropriate under current conditions, but as the transit system expands over the planning horizon a larger bus would be the appropriate design vehicle.

Table 8.19: Bus Stop Placement Advantages and Disadvantages

Bus Stop Location	Advantages	Disadvantages	Recommended When the Following Location Conditions Exist
NEARSIDE: Located immediately before an intersection	• Less potential conflict with traffic turning onto the bus route street from a side street. • The bus boarding door is close to the crosswalk. • Bus has intersection to merge into traffic. • Bus driver can see oncoming buses with transfer passengers.	• Potential conflicts with right turning traffic due to cars cutting in front of the bus. • The stopped bus obscures the sight distance of drivers and pedestrians entering from the right. • The stopped bus may block visibility of the stop signs or traffic signals. • At signalized intersections, may result in schedule delays.	• When traffic is heavier on the farside than on the approaching side of the intersection. • When pedestrian access and existing landing area conditions on the nearside are better than on the farside. • When street crossings and other pedestrian movements are safer when the bus stops on the nearside than the farside. • When the bus route goes straight through the intersection. • When adequate sight distance can be achieved at the intersection. •
FARSIDE: Located immediately after an intersection	• Does not conflict with vehicles turning right. • Appropriate after the route has made a turn. • The stopped bus does not obscure sight distance to the left for vehicles entering or crossing from the side street. • At signalized intersections, buses can more easily re-enter traffic. • The stopped bus does not obscure traffic control devices or pedestrian movements at the intersection.	• The stopped bus obscures the sight distance to the right of drivers entering from the cross street to the right of the bus. • If the bus stopping area is of inadequate length, the rear of the stopped bus will block the cross street (especially an issue for stops where more than one bus may be stopped at a time). • If the bus stops in the travel lane, it may result in queued traffic behind it blocking the intersection.	• When traffic is heavier on the nearside than on the farside of the intersection. • At intersections where heavy left or right turns occur. • When pedestrian access and existing landing area conditions on the farside are better than on the nearside. • At intersections where traffic conditions and signal patterns may cause delays • At intersections with transit signal priority treatments.
MID-BLOCK: Located 300 feet or more beyond or before an intersection	• The stopped bus does not obstruct sight distances at an intersection. • May be closer to major activity centers than the nearest intersection. • Less conflicts between waiting and walking pedestrians.	• Requires most curb clearance of the three options (unless a mid-block sidewalk extension or bus bulb is built). • Encourages mid-block jaywalking. • May increase customer walking distances if the trip generator is close to an intersection. Length of mid-block stops can vary due to depth of a turn-out and a bus' ability to maneuver in/out of traffic lanes.	• When traffic or street/sidewalk conditions at the intersection are not conducive to a near-side or far-side stop. • When the passenger traffic generator is located in the middle of a long block. • When the interval between adjacent stops exceeds stop spacing standards for the area. • When a mid-block stop is compatible with a corridor or district plan.

Figure 8.13: Suggested Bus Stop Distances



8.6.2.2 Bus Stop Elements

HATS currently does not have design guidance in place for typical shelter configurations, or typical bus stop design elements. Each potential bus stop could incorporate a number of elements. A list of the minimum elements that each bus stop should have is listed below.

- **Landing Area:** The landing area must allow for lifts or ramps to be deployed on a suitable surface to permit a wheelchair to maneuver safely on and off the bus.
- **Pedestrian Connections:** A landing area of 5-feet wide by 8-feet long must be connected to a sidewalk of at least 4-feet wide.
- **Curb Ramps:** These shall be designed to conform to state and federal ADA standards.
- **Signage:** Appropriate signage must be used to mark the location of the bus stop. Route and schedule information should also be supplied at each bus stop.
- **Safety and Security:** Bus stops should not have hazardous conditions that could be potentially unsafe to users. The area should be well lit and free of obstacles.

Figure 8.14, **8.15** and **8.16** show typical shelter characteristics at bus stops.

Figure 8.14: Typical Shelter Layout

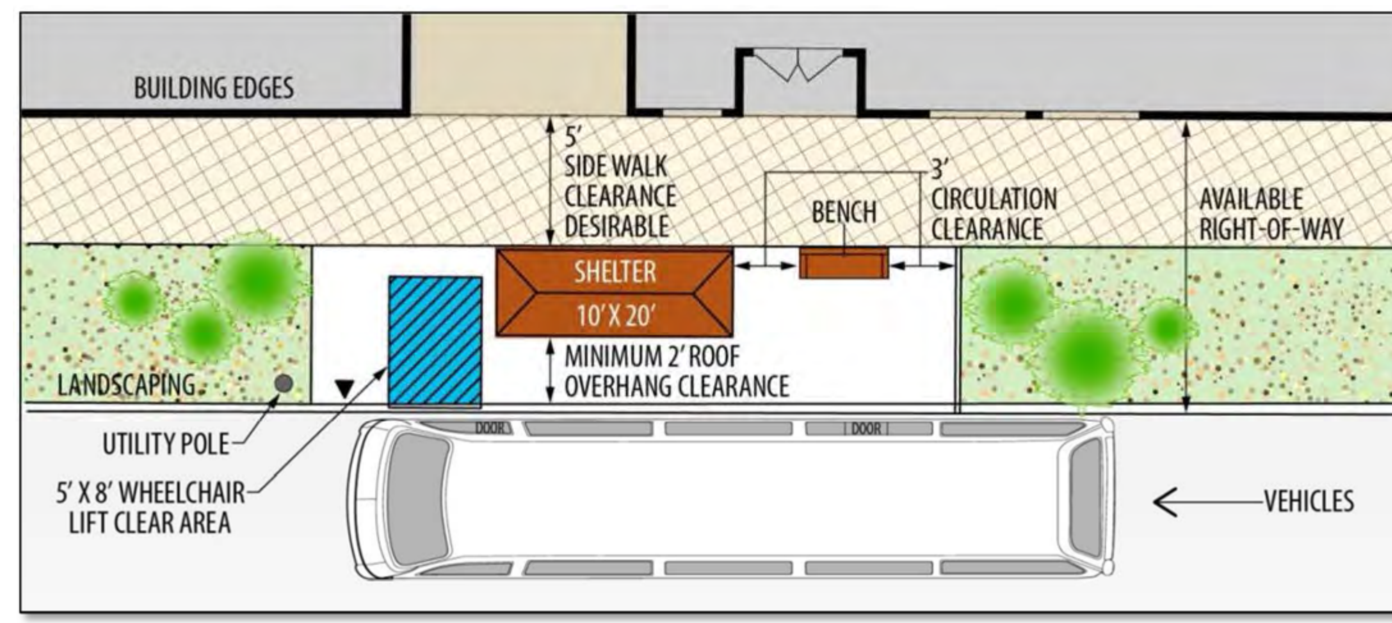


Figure 8.15: Typical Shelter Clearance

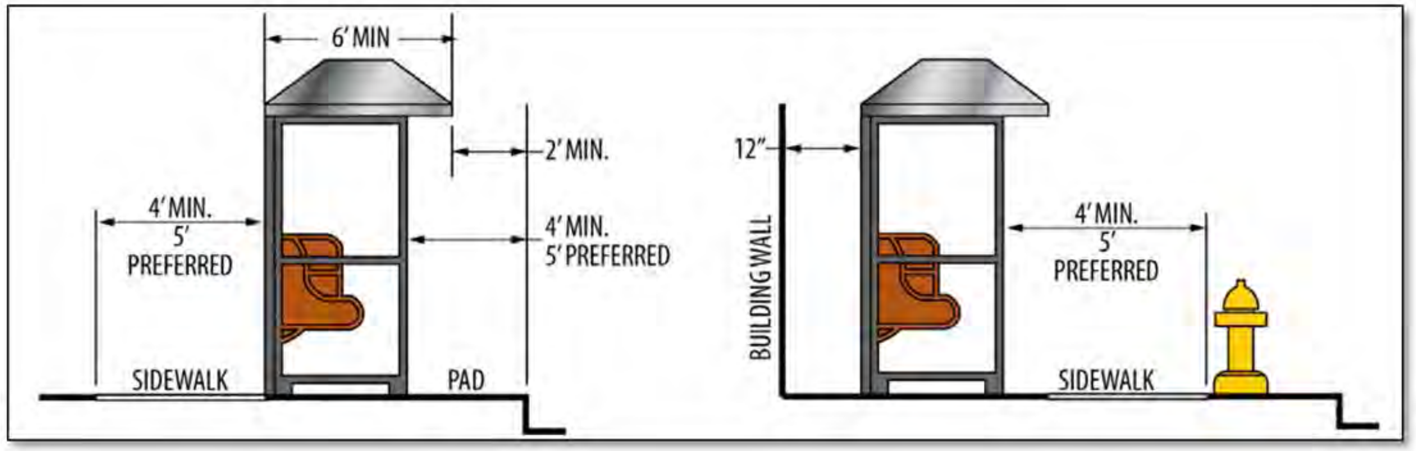
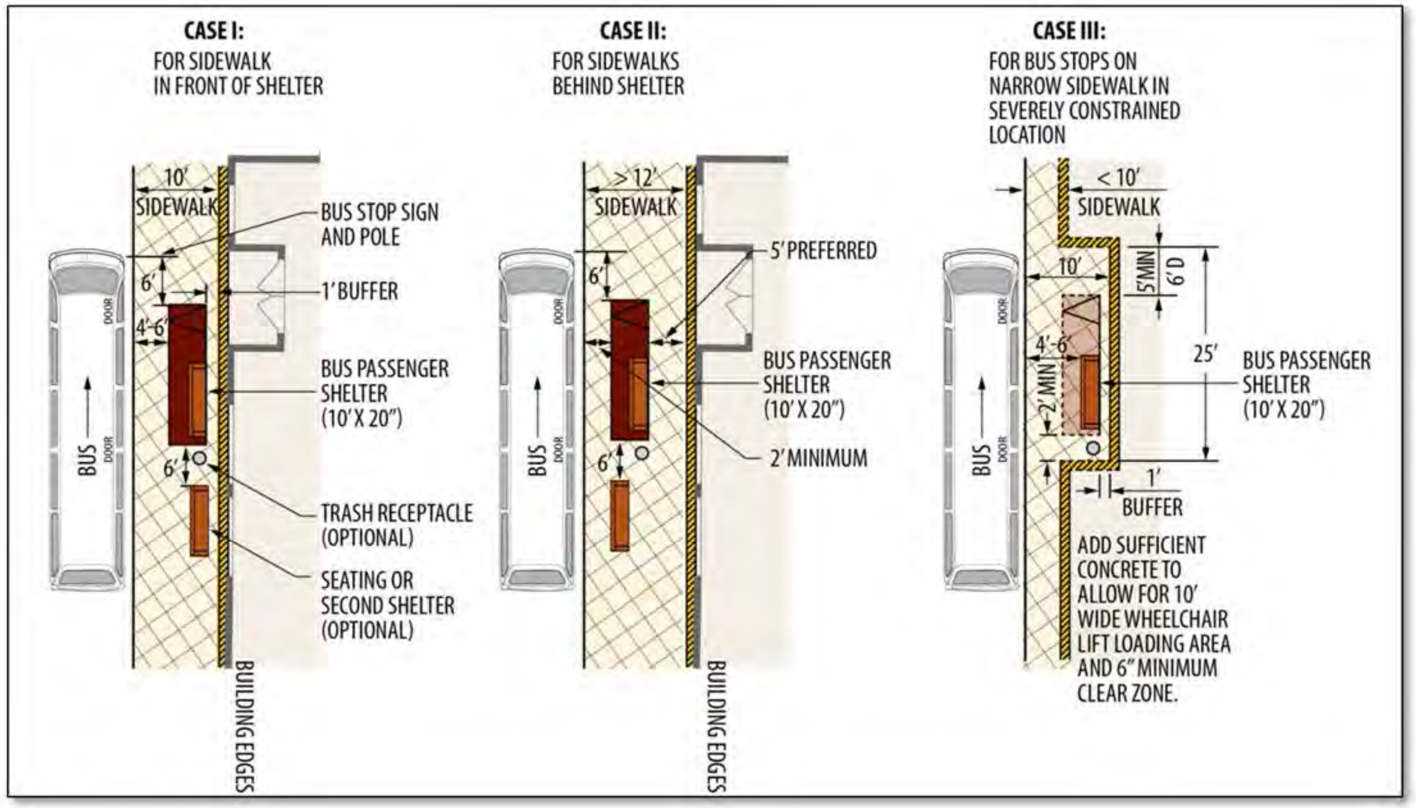


Figure 8.16: Typical Shelter Placement



8.6.2.3 Development Review

As the Helena area continues to grow at the fringe, newly developed areas should be evaluated for transit need. HATS' should have a presence in the development review process for both the city and the county to ensure future projects in the planning area can be considered by HATS for their identification of transit needs and infrastructure. HATS would then have the ability to discuss the feasibility of providing transit to a development during the planning stages. HATS would also have firsthand knowledge of planned developments so that service changes can be considered and evaluated well before the development is completed.

Chapter 9

ADDITIONAL TRANSPORTATION CONSIDERATIONS

This chapter addresses several topics that link the transportation system to broader quality of life considerations within the community. Federal regulations for Metropolitan Planning Organizations (MPOs) require the LRTP to "include both long-range and short-range program strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods." While this is obviously a key consideration for the Greater Helena Area (i.e. non-MPO), it must be recognized that the design, modal mix, and location of transportation infrastructure and facilities can directly affect urban form and functions and community character.

Current directions in transportation planning place importance on developing transportation systems that help reduce unnecessary travel delays and managing travel demands in ways that create balanced multimodal networks that offer multiple transportation choices. Transportation systems also need to provide facilities and services to help achieve reliable and timely access to jobs, community services, affordable housing, and schools while helping create safe streets and improving economic competitiveness, and enhancing unique community characteristics.

Topics addressed on the following pages include: corridor preservation, access management, transportation demand management (TDM), traffic calming, context sensitive solutions, and the broader concept of livability. Also unique to this particular LRTP Update are a summary of the potential for North Valley passenger rail service, and general school considerations within the study area that should be contemplated as transportation projects are developed. These topics are all key considerations to the development of a LRTP that helps support and enhance the overall quality of life in the Greater Helena area.

9.1 Corridor Preservation

Corridor preservation is the application of measures to prevent or minimize development within the right-of-way of a planned transportation facility or improvement within a defined corridor. That includes corridors, both existing and future, in which a wide array of transportation improvements may be constructed including roadways, bikeways, multi-use trails, high occupancy vehicle lanes, or fixed route transportation infrastructure.

The objective of corridor preservation is to enable local governments to better plan for future growth. Corridor preservation helps to assure that a transportation system will effectively and efficiently serve existing and future development within a community, region or state, and prevent costly and difficult acquisitions after the fact. Preserving right-of-way for planned transportation facilities promotes orderly and predictable development. As communities expand, land must be set aside for the transportation infrastructure needed to support development and to maintain a desired level of transportation service. The decisions made about the location and design of the transportation network will have a lasting impact on growth patterns, community design, and modal alternatives.

Corridor preservation policies, programs and practices provide numerous benefits to communities, taxpayers and the public at large. These include, but are not limited to, the following:

- **Reducing transportation costs by preservation of future corridors in an undeveloped state.** Right-of-way costs often represent the single largest expenditure for a transportation improvement, particularly in growing areas where transportation improvement needs are the greatest. By acquiring or setting aside right-of-way well in advance of construction, the high cost to remove or relocate private homes or businesses is eliminated or reduced.
- **Enhancing economic development by minimizing traffic congestion and improving traffic flow, saving time and money.** Low cost, efficient transportation helps businesses contain final costs to customers and makes them more competitive in the marketplace. Freight costs, for instance, accounts for ten percent of the value of agricultural products, the highest for any industry.
- **Increasing information sharing so landowners, developers, engineers, utility providers, and planners understand the future needs for developing corridors.** An effective corridor preservation program ensures that all involved parties understand the future needs within a corridor and that state, local and private plans are coordinated. Clarifying public intentions about the location, timing, and desired level of access control for roadway improvements reduces the risk associated with the timing and phasing of development projects for the private sector. Advanced notice of such intentions also enables developers to plan projects and site-related improvements in a manner that is more compatible with the planned transportation functions of the corridor.
- **Preserving arterial capacity and right-of-way in growing corridors.** Corridor preservation includes the use of access management techniques to preserve the existing capacity of corridors. When it is necessary, arterial capacity can be added before it becomes cost prohibited by preserving right-of-way along growing transportation corridors.
- **Minimizing disruption of private utilities and public works.** Corridor preservation planning allows utilities and public works providers to know future plans for their transportation corridor and make their decisions accordingly.
- **Promoting urban and rural development compatible with local plans and regulations.** The state and local agencies must work closely together to coordinate their efforts. Effective corridor preservation will result in development along a transportation corridor that is consistent with local policies.
- **Reducing adverse social, economic, and environmental impacts on people and communities.** The social and economic costs of relocation can be high for some communities, particularly low-income, ethnic, or elderly populations and small businesses that serve such populations. In addition, where viable transportation corridors are foreclosed by development, roadways may need to be relocated into more environmentally sensitive areas, thereby increasing adverse impacts on the environment.

A variety of techniques have been applied by communities to help preserve right-of-way for future transportation corridors, ranging from setback ordinances to mandatory dedication. Although many jurisdictions have some method of right-of-way preservation in place, no single method works for all situations. Communities that have been most successful at corridor preservation are those that have assembled a variety of tools that they can mix and match to the circumstances at hand. The following are viewed as important elements of successful corridor preservation programs:

- Develop a long-range transportation plan with broad community support;
- Set clear priorities for transportation improvement projects and complete them in a timely manner;
- Identify a funding source for advance acquisition of necessary or desired rights-of-way; and

- Provide a range of mitigation measures to address potential hardship on property owners and to preserve property rights.

National experience in corridor preservation practices has also shown it is helpful to determine desired design objectives and cross-sections for transportation improvements in the community to establish a basis for future right-of-way needs. This helps to facilitate administration of and public support for the program by identifying in advance the amount of right-of-way that will be needed and why.

9.2 Access Management

Access management is the proactive management of vehicular access points to land parcels adjacent to all manner of roadways. Good access management promotes safe and efficient use of the transportation network. Access management techniques are increasingly fundamental to preserving the safety and efficiency of a transportation facility. Access control can extend the carrying capacity of a roadway, reducing potential conflicts.

There are six basic principles of access management that are used to achieve the desired outcome of safer and efficient roadways. These principles are:

- Limit the number of conflict points.
- Separate the different conflict points.
- Separate turning volumes from through movements.
- Locate traffic signals to facilitate traffic movement.
- Maintain a hierarchy of roadways by function.
- Limit direct access on higher speed roads.

Access management encompasses a set of techniques that local governments can use to control access to highways, major arterials, and other roadways. Access management includes several techniques that are designed to increase the capacity of these roads, manage congestion, and reduce crashes. These techniques include:

- **Signal Spacing:** Increasing the distance between traffic signals improves the flow of traffic on major arterials, reduces congestion, and improves air quality for heavily traveled corridors.
- **Access and Driveway Spacing:** Fewer driveways spaced further apart allows for more orderly merging of traffic and presents fewer challenges to drivers.
- **Safe Turning Lanes:** Dedicated left- and right-turn, indirect left-turns and U-turns, and roundabouts keep through-traffic flowing. Roundabouts represent an opportunity to reduce an intersection with many conflict points or a severe crash history (T-bone crashes) to one that operates with fewer conflict points and less severe crashes (sideswipes) if they occur.
- **Median Treatments:** Two-way left-turn lanes (TWLTL) and non-traversable, raised medians are examples of some of the most effective means to regulate access and reduce crashes.
- **Service and Frontage Roads:** Helps alleviate congestion on major limited access thoroughfares by providing parallel routes which can separate local traffic from through traffic.
- **Right-of-Way Management:** As it pertains to R/W reservation for future widenings, good sight distance, access location, and other access-related issues.

State, regional, and local governments across the United States use access management policies to preserve the functionality of their roadway systems. This is often done by designating an appropriate level of access control for each of a variety of facilities. Local residential roads are allowed full access, while major highways and freeways allow very little. In between are a series of road types that require standards to help ensure the free flow of traffic and minimize crashes, while still allowing access to major businesses and other land uses along a road.

It is recommended that City and County governments adopt a set of Access Management Regulations through which the need for access management principles can be evaluated on a case-by-case basis.

For roadways on the State system and under the jurisdiction of the Montana Department of Transportation (MDT), access control guidelines are available which define minimum access point spacing, access geometrics, etc., for different roadway facilities.

For other roadways (non-State), the adoption of an access classification system based upon the functional classification of the roadway (principal arterial, minor arterial or major collector) is desirable. These local regulations should serve to govern minimum spacing of drive approaches/connections and median openings along a given roadway in an effort to fit the given roadway into the context of the adjacent land uses and the roadway purpose. The preparation and adoption of a local Access Management Ordinance should be pursued that can adequately document the local government's desire for standard approach spacing, widths, slopes and type for a given roadway classification.

9.3 Transportation Demand Management

Transportation Demand Management (TDM) measures came into being during the 1970s and 1980s in response to a desire to save energy, improve air quality, and reduce peak-period congestion. TDM strategies focused on identifying alternates to single occupant vehicle use during commuting hours. Therefore, such things as carpooling, vanpooling, transit use, walking and bicycling for work purposes are most often associated with TDM. Many of these methods were not well received by the commuting public and therefore, provided limited improvement to the peak-period congestion problem. Due to the experiences with these traditional TDM measures over the past few decades, it became clear that the whole TDM concept needed to be changed. TDM measures that have been well received by the commuting public include flextime, a compressed workweek and telecommuting. In addition to addressing commute trip issues, managing demand on the transportation system includes addressing traffic congestion associated with special events, such as the Last Chance Stampede and Fair, Helena Brewers baseball games, the Carroll College Symphony Under the Stars, and other large cultural or sporting events held within the community. A definition of TDM follows:

TDM programs are designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel. (FHWA, 1994)

Since 1994, TDM has been expanded to also include route choice. A parallel arterial with excess capacity near a congested arterial can be used to manage the transportation system to decrease congestion for all transportation users.

In Montana, an excellent model for TDM strategies can be found by examining the Missoula Ravalli Transportation Management Association (MRTMA). MRTMA offers vanpool, carpool, and guaranteed ride home programs and works with employers to tailor specific commute programs for their staff.

The Greater Helena area is projected to grow. The accompanying expansion of transportation infrastructure is expensive and usually lags behind growth. Targeted management of demand now will maximize the existing infrastructure and delay the need to build more expensive additional infrastructure. TDM is an important and useful tool to extend the useful life of a transportation system.

9.3.1 Role of Transportation Demand Management

TDM strategies are an important part of the Greater Helena Area Long Range Transportation Plan due to their inherent ability to provide the following benefits to the commuting public:

- Better transportation accessibility;
- Better transportation predictability;

- More, and timelier, information;
- A range of commute choices; and
- Enhanced transportation system performance.

TDM measures can also be applied to non-commuter traffic and are especially easy to adapt to tourism, special events, emergencies and construction. The benefits to these traffic users are similar to those for commuters, and are listed as follows:

- Better transportation accessibility;
- More transportation reliability;
- More, and timelier, information;
- A range of route choices; and
- Enhanced transportation system performance.

These changes allow the same amount of transportation infrastructure to effectively serve more people. They acknowledge and work within the mode and route choices which motorists are willing to make, and can encourage a sense of community. Certain measures can also increase the physical activity of people getting from one place to another.

Such things as alerting the traveling public to disruptions in the transportation system caused by construction or vehicle crashes can also manage demand and provide a valuable service to the traveling public.

Overall, congestion can be avoided or managed on a long-term basis through the use of an integrated system of TDM strategies.

9.3.2 TDM Strategies and Their Effectiveness

TDM strategies, which are or have been used by other communities in the United States, are discussed in this section. By capitalizing on the use of these options, the existing vehicular infrastructure can be made to function at acceptable levels of service for a longer period of time. Ultimately, this will result in lower per year costs for infrastructure replacement and expansion projects, not to mention less disruption to the users of the transportation system.

While some of these options may work well in the Greater Helena area, it is clear that some may be inappropriate. Additionally, some of these options are more effective than others. To provide a TDM system that is effective in managing demand, a combination of these methods will be necessary.

Flextime

When provided by employers, flextime allows workers to adjust their commuting time away from the peak periods. This means that employees are allowed some flexibility in their daily work schedules. For example, rather than all employees working 8:00 to 4:30, some might work 7:30 to 4:00, and others 9:00 to 5:30. This provides the workers with a less stressful commute, allows flexibility for family activities and lowers the number of vehicles using the transportation system during peak times. This in turn can translate into reduced traffic congestion, support for ridesharing and public transit use, and benefits to employees. Flextime allows commuters to match their work schedules with transit and rideshare schedules, which can significantly increase the feasibility of using these modes. Costs for implementing this type of TDM strategy can include increased administrative and management responsibilities for the employer, and more difficulty in evaluating an employee's productivity. Flextime is a TDM strategy that has a high probability of being used successfully within the Greater Helena area.

Alternate Work Schedule

A related but more expansive strategy is to provide an alternate work schedule. This strategy involves using alternate work hours for all employees. It would entail having the beginning of the normal workday start at a time other than 8:00 a.m. For example, starting the workday at 7:30 a.m. would allow all employees to reach the work site in advance of the peak commute time. Additionally, since they will be leaving work at 4:30 p.m., they will be home before the peak commute time, and have more time in the evening to participate in family or community activities. This can be a very desirable side benefit for the employees. This has a similar effect on traffic as flextime, but does not give individual employees as much control over their schedules. An alternate work schedule is a TDM strategy that has a high probability of being used successfully within the Greater Helena area. Currently, employees at Fort Harrison work under an alternate work schedule.

Compressed Work Week

A compressed work week is different from offering "flextime" or the "alternate work schedule" in that the work week is actually reduced from the standard "five-days-a-week" work schedule. A good example would be employers giving their workers the opportunity to work four (4) ten-hour days a week. A compressed work week reduces commute travel (although this reduction may be modest if employees take additional car trips during non-work days or move farther from worksites). Costs for implementing this type of TDM strategy may be a reduction in productivity (employees become less productive at the end of a long day), a reduction in total hours worked, and it may be perceived as wasteful by the public (for example, if staffing at public agencies is low on Fridays). A compressed work week is a TDM strategy that has a high probability of being used successfully within the Greater Helena area.

Telecommuting

Telecommuting in the work place offers a good chance to reduce the dependence to travel to work via car or bus. This is especially true in technical positions and some fields in the medical industry (such as medical transcription). Additionally, opportunities for distance learning, shopping via computers, basic health care services and recreation also exist and can serve to reduce vehicular travel on the transportation system. Telecommuting is usually implemented in response to an employee request, more so than instigated by the employer. Since telecommuting reduces commute trips, it can significantly reduce congestion and parking costs. It is highly valued by many employees and tends to increase their productivity and job satisfaction. Costs associated with this TDM strategy include increased administrative and management responsibilities, and more difficult evaluation of employee productivity. Some employees find telecommuting difficult and isolating. Telecommuting also may reduce staff coverage and interaction, and make meetings difficult to schedule. Many employers in Montana have tried and currently allow some form of telecommuting. This strategy has a high probability of being used successfully within the Greater Helena area.

Ride Sharing (carpooling)

Carpooling is traditionally one of the most widely considered TDM strategies. The idea is to consolidate drivers of single occupancy vehicles into fewer vehicles, with the result being a reduction in congestion. Carpooling is generally limited to those persons whose schedules are rigid and not flexible in nature. Studies have shown that carpooling is most effective for longer trips greater than ten miles in each direction. Aside for the initial administrative cost of set-up and marketing, ridesharing also may encourage urban sprawl by making longer-distance commutes more affordable.

Transit agencies sometimes consider rideshare as competition that reduces transit ridership. Ridesharing is a strategy that would work within the Greater Helena area, especially if set up through the larger employers. An extensive public awareness campaign describing the benefits of this program would help in selling it to the general public.

Vanpooling

Vanpooling is a strategy that encourages employees to utilize a larger vehicle than the traditional standard automobile to arrive at work. Vans typically hold twelve or more persons. Vanpooling generally does not require high levels of subsidy usually associated with a fixed-route or demand-responsive transit service. They can often times be designed to be self-sufficient. The van is typically provided by the employer, or a vanpool brokerage agency, which provides the insurance. The costs of a vanpooling program are very similar to those of ridesharing.

Bicycling

Bicycling can substitute directly for automobile trips. Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel. Although this may not be a measurable statistic pertinent to reducing congesting, providing increased bicycling opportunities can help and can also contribute to quality of life issues. Bicycling characteristics within the Greater Helena area is primarily recreational in nature, and by implementing bikeway network improvements, a gradual shift to bicycling as a commuter mode of travel should be realized. Incentives to increase bicycle usage as a TDM strategy include: construction improvements to bike paths and bike lanes; correcting specific roadway hazards (potholes, cracks, narrow lanes, etc.); development of a more connected bikeway street network; development of safety education, law enforcement and encouragement programs; and the solicitation and addressing of bicycling security/safety concerns. Potential costs of this TDM strategy are expenses associated with creating and maintaining the bikeway network, potential liability and accident risks (in some cases), and increased stress to drivers. Bicycling is an excellent, effective TDM strategy that has a great chance for success in the Greater Helena area.

Walking

Walking as a TDM strategy has the ability to substitute directly for automobile trips. A relatively short non-motorized trip often substitutes for a longer car trip. For example, a shopper might choose between walking to a small local store versus driving a longer distance to shop at a supermarket. Incentives to encourage walking in a community can include: making improvements to sidewalks, crosswalks and paths by designing transportation systems that accommodate special needs (including people using wheelchairs, walkers, strollers and hand carts); providing covered walkways, loading and waiting areas; improving pedestrian accessibility by creating location-efficient, clustered, mixed land use patterns; and soliciting and addressing pedestrian security/safety concerns. Costs are similar to that of bicycling and are generally associated with program expenses and facility improvements. As with bicycling, walking is an excellent TDM strategy that has a great chance for success in the Greater Helena area.

Park & Ride Lots

Park and ride lots are effective for communities with substantial suburb to downtown commute patterns. Park and ride consists of parking facilities at transit stations, bus stops and highway on ramps, particularly at the urban fringe, to facilitate transit and rideshare use. Parking is generally free or significantly less expensive than in urban centers. Costs are primarily associated with facility construction and operation. This TDM strategy is not likely to benefit the transportation system within the Greater Helena area.

Car Sharing

Car sharing is a demand reducing technique that allows families within a neighborhood to reduce the number of cars they own and share a vehicle for the limited times when an additional vehicle is absolutely essential. Costs are primarily related to creation, startup and administrative costs of a car sharing organization. This TDM strategy is not likely to benefit the transportation system within the Greater Helena area.

Traditional Transit

Traditional transit service is an effective TDM strategy, especially in a highly urban environment. Several methods to increase transit usage within the community are to improve overall transit service (including more service, faster service and more comfortable service), reduce fares and offer discounts (such as lower rates for off-peak travel times, or for certain groups), and improved rider information and marketing programs. The costs of providing transit depend on many factors, including the type of transit service, traffic conditions and ridership. Transit service is generally subsidized, but these subsidies decline with increased ridership because transit services tend to experience economies of scale (a 10% increase in capacity generally increases costs by less than 10%). TDM strategies that encourage increased ridership can be very cost effective. These strategies may include offering bicycle carrying components on the transit vehicle, changing schedules to complement adjacent industries, etc. Transit as a TDM strategy in the Greater Helena area has a high likelihood of being successful, especially if commuter passengers can be attracted; however funding constraints are the current limiting factor.

Express Bus Service

Express bus service as a TDM strategy has been used by larger cities in the nation as a means to change driver vehicle characteristics. The use of an express bus service is founded on the idea that service between two points of travel can either be done faster or equal to the private automobile (or a conventional bus service that is not “express”). An express bus service TDM strategy would not be applicable to the Greater Helena area.

Installing/Increasing Intelligent Transportation Systems (ITS)

The use of ITS methods to alert motorists of disruptions to the transportation system will be well received by the transportation users, and are highly effective tools for managing transportation demands.

Installing High Occupancy Vehicle (HOV) lanes

High occupancy vehicle lanes would probably have a low cost / benefit ratio and possibly would be ignored in the Greater Helena area. HOV lanes are generally used on very congested roadways where intersections and access control is somewhat limited. They also can be utilized on urban arterials. A HOV is typically described as having two or more persons in the vehicle during the time of travel. The benefits of a HOV lane in a congested corridor is that increased travel speeds and reliability for HOV passengers is realized. The costs include project construction, management and enforcement. Some critics also argue that HOV lanes encourage urban sprawl, contribute to poor air quality, and increase crash rates due to conflicts between vehicles in higher-speed HOV lanes and vehicles in lower speed general use lanes.

Ramp Metering

Ramp metering has been used by some communities and consists of providing a modified traffic signal at on ramps to interstate highway facilities. The use of this TDM strategy would not be applicable to the Greater Helena area.

Traffic Calming

Traffic calming refers to various design features and strategies intended to reduce vehicle traffic speeds and volumes on a particular roadway. Traffic calming projects can range from minor modifications of an individual street to comprehensive redesign of a road network. Traffic calming can be an effective TDM strategy in that its use can alter and/or deter driver characteristics by forcing the driver to either use a different route or to use an alternative type of transportation (such as transit, bicycling, walking, etc.). Costs of this TDM strategy include construction expenses, problems for emergency and service vehicles, potential increase in drivers’ effort and frustration, and potential problems for bicyclists and visually impaired pedestrians. Traffic calming measures are discussed later in this chapter.

Identifying and Using Special Routes and Detours for Emergencies or Special Events
This type of TDM strategy centers around modifications to driver patterns during special events or emergencies. They can typically be completed with intensive temporary signing or traffic control personnel. A prime example would be modifying travel patterns after the Last Chance Stampede and Fair near the Lewis and Clark County Fairgrounds. Temporary traffic control via signs and flaggers are implemented to provide a swift and safe exit after applicable events.

Linked Trips
This strategy entails combining trips into a logical sequence that reduces the total miles driven on the surrounding transportation system. These trips are generated by associated facilities within a mixed-use development or within an area of the community where adjacent land uses are varied and offer services that would limit the need to travel large distances on the transportation system. This TDM strategy could be successful in the Greater Helena area, particularly as new developments occur in the future that incorporate mixed uses.

Pay for Parking at Work Sites (outside the downtown area)
TDM measures involving "paying for parking" outside the downtown area or at employers or paying more for single occupant vehicles can be regarded by those impacted as Draconian and may be poorly received in the Greater Helena area.

Higher Parking Costs for Single Occupant Vehicles (SOV)
Intuitively, free parking provided by employers is a tremendous incentive for driving alone. If the driver of a SOV is not penalized in some form, there is no perceived reason not to drive to the workplace. One way to counter this reality is to charge a higher price for parking for the SOV user. In the Greater Helena area, this could possibly be implemented within the downtown area, where parking fees are charged. This implementation strategy is not likely to have much of an impact to the frequency of SOV users on the transportation system.

Preferential Parking for Rideshare/Carpool/Vanpools
This concept ties into the discussion above regarding parking of the SOV user. Preferential parking, such as delineating spaces closer to an office for riders sharing their commute or reduced/free parking, can be an effective TDM strategy.

Subsidized Transit by Employers
A subsidized transit program, typically offered by employers to their employees, consists of the employer either reimbursing or paying for transit services in full as a benefit to the employee. This usually comes in the form of a monthly or annual transit pass. Studies show that once a pass is received by an employee, the tendency to use the system rises dramatically.

Guaranteed Ride Home (GRH) Programs for Transit Riders
The guaranteeing of a ride home for transit users is a wise choice for all transit systems, since it gives the users a measure of calm knowing that they will be able to get home. A GRH program provides an occasional subsidized ride to commuters who use alternative modes, for example, if a bus rider must return home in an emergency, or a car pooler must stay at work later than expected. This addresses a common objection to the use of alternative modes. GRH programs may use taxies, company vehicles or rental cars. GRH trips may be free or they may require a modest co-payment. The cost of offering this service tends to be low because it is seldom actually used.

Mandatory TDM Measures for Large Employers
Some communities encourage large employers (typically with at least 50 to 100 employees) to mandate TDM strategies for their employees. This is a control that can be required by local governments on developers, employers, or building managers.

The regulatory agencies often times provide incentives for large employers to make TDM strategies more appealing, such as reduced transit fares, preferred parking, etc.

Required Densification / Mixed Use Elements for New Developments
Requiring new developments to be dense and contain mixed-use elements will ensure that these developments are urban in character and have some services that can be reached by biking, walking or using other non-automobile methods. This also relates to the concept of "linked" or "shared" trips presented in this memorandum. As new developments are proposed, local and regional planners have the opportunity to dictate responsible and effective land use to encourage "shared" trips and reduce impacts to the surrounding transportation system.

Transit Oriented Development (TOD)
Transit Oriented Development (TOD) refers to residential and commercial areas designed to maximize access by transit and non-motorized transportation, and with other features to encourage transit ridership. A TOD usually consists of a neighborhood with a rail or bus station, surrounded by relatively high-density development, with progressively lower-density spreading outwards. Transit Oriented Development generally requires about seven residential units per acre in residential areas and twenty-five employees per acre in commercial centers to adequately justify transit ridership. Transit ridership is also affected by factors such as employment density and clustering, demographic mix (students, seniors and lower-income people tend to be heavy transit users), transit pricing and rider subsidies, and the quality of transit service. This type of development could potentially work well within the Greater Helena area and its outlying areas as development occurs. Features could be built into a given development to encourage transit use from the start, and at the same time could be incorporated into the funding source available to the Helena Area Transit System to help offset costs associated with new service.

Alternating Directions of Travel Lanes
This method of TDM is similar to that of traffic calming in that it strives to change driver characteristics and possibly enable users of the system to try different modes of travel. It also can serve to relieve a corridor during particularly heavy times of the day.

9.3.3 Effectiveness of TDM Strategies
Measuring the effectiveness of TDM strategies can be done using several different methods such as cost, usage, or those listed below:

- Reduced traffic during commute times;
- Reduced or stable peak hour traffic volumes;
- Increased commuter traffic at off peak times;
- Increased use of modes other than single occupant vehicles;
- Increased use of designated routes during emergencies or special events;
- Eased use of the transportation system by tourists or others unfamiliar with the system;
- Reduced travel time during peak hours; and/or
- Fewer crashes during peak hours.

In order to provide a TDM system that will address the needs of the Greater Helena area, the elements of the system must be acceptable to the general population. If elements are proposed which are not acceptable, the TDM system goals will not be reached. However, it is also important to keep in mind the cost of implementing TDM measures.

Table 9.1 presents available TDM measures and ranks them by the likeliness of being accepted and implemented within the Greater Helena area. A rank of "3" indicates that the measure has a high likelihood of being successfully implemented, a rank of “2” indicates that the measure would have more difficulty being accepted or implemented and a rank of “1” indicates that this measure would either be difficult to implement, or is inappropriate for the community at this time. This ranking system is based on input from public meetings, as well as consultant knowledge and experience. It is not survey based.

The measures which could best be adopted and accepted by Greater Helena area residents are those which allow greater flexibility in work hours, changing modes of transportation, or address specific, time-limited situations.

Those measures that would not be used in the Greater Helena area generally address issues not present, such as significant commuting from a suburb to a well-defined destination. If such a problem existed, park and ride lots could be installed to address it. Other measures that would not be implemented in the Greater Helena area in the foreseeable future involve “pay for parking” outside the downtown area. Travel characteristics in Montana are heavily dependent on population densities, distances to services (retail, medical, etc.), and locations of major employment centers.

Often times travel distances are longer than what would be encountered in a larger urban area. Due to this nature of travel in Montana, private automobiles are unlikely to be replaced by other modes of travel until a change in technology occurs which allows travel by a mode that has the same flexibility of the automobile.

Another way to rank TDM measures is by the long-term cost effectiveness of the measure. **Table 9.2** ranks the potential TDM strategies by cost effectiveness. Cost effectiveness is defined as the greatest impact on managing traffic demand at the lowest cost to maintain / extend the transportation system. A rank of “3” indicates a measure which is the most cost effective, a rank of “2” indicates a measure which is moderately cost effective, a rank “1” measure is not cost effective, and the cost effectiveness of a rank “0” is unknown. This ranking system is based on input from public meetings, as well as consultant knowledge and experience. It is not survey based.

Table 9.1: TDM Measures Ranked By Anticipated Usage

Rank	Strategy
1 - Difficult to implement / not applicable at this time.	Alternating directions of travel lanes
	Car sharing
	Express bus service
	Higher parking costs for single occupant vehicles
	Installing HOV lanes
	Mandatory TDM measures for large employers
	Park & Ride Lots
	Pay for parking at work sites (outside the downtown area)
	Preferential parking for rideshare / carpool / vanpools
	Vanpooling
2 - Some difficulty being accepted or implemented.	Bicycling
	Guaranteed ride home program
	Installing /increasing ITS
	Ramp metering
	Required densification / mixed use elements for new developments
	Ride sharing (carpooling)
	Subsidized transit by employers
	Telecommuting
	Transit-Oriented Development
	Use of Transit
	Walking
3 - High likelihood of being successfully implemented.	Alternate work schedule
	Compressed work week
	Flextime
	Identifying routes for emergencies or special events
	Linked trips
	Traffic Calming

Table 9.2: TDM Measures Ranked By Cost Effectiveness

Rank	Strategy
0 - Unknown	Alternating directions of travel lanes
	Identifying routes for emergencies or special events
	Required densification / mixed use elements for new developments
2 - Moderately cost effective	Alternate work schedule
	Car sharing
	Compressed work week
	Flextime
	Guaranteed ride home program
	Installing HOV lanes
	Linked trips
	Park & Ride Lots
	Ramp metering
	Ride sharing (carpooling)
	Subsidized transit by employers
	Telecommuting
	Traffic Calming
	Transit-Oriented Development
	Vanpooling
3 - Most cost effective	Bicycling
	Express bus service
	Higher parking costs for single occupant vehicles
	Installing/increasing ITS
	Mandatory TDM measures for large employers
	Pay for parking at work sites (outside the downtown area)
	Preferential parking for rideshare / carpool / vanpools
	Use of Helena Area Transit System (HATS)
	Walking

Efforts merely to make the general public aware of the TDM programs are ineffective. TDM strategies only succeed when people actually change their trip-making behavior. Trip-making behaviors could be changed with incentives. Marketing programs with incentives can successfully introduce people to new ways of making trips, but keeping these same patrons in the new system then depends on additional measures or a change in mindset.

Pricing parking is among the most cost-effective alternatives. Taxes and/or charges for parking, however, are extremely unpopular with day-to-day users of the system, and are not recommended for the Greater Helena area. However, these strategies are cost-effective since they can immediately change travel behavior and can be revenue neutral or generate revenue. In a highly congested, highly urbanized environment, this is a good option.

Another cost effective TDM alternative is using alternate modes of transportation such as transit, carpools, bicycling and walking. Many residential areas in the Greater Helena area are within easy biking / walking distance of employment sites and shopping opportunities. Bus service is also available for some of the Greater Helena area. The infrastructure for these alternatives is already in place and ready for use at any time.

Work week changes such as a compressed work week, alternate starting times, and telecommuting are among the most popular strategies with commuters, since they offer employees more time at home. They are less popular with employers since they may involve a change in the basic operating policies of the work site. Carpool and vanpool programs are less effective than changes to the work week unless there are parking incentives and they are used consistently by employees. Additionally, managing these programs can be expensive and produce limited impact without supporting incentives and disincentives.

Improvements from transit service changes cannot be quickly realized. Transit users must adjust to the changes, and the true impacts of any changes to the transit system will not be realized for approximately one year. Therefore, these changes must be weighed carefully. They are disruptive to the users of the system, and even attempts to reinstate previous routes are disruptive from a user's standpoint.

While some early evidence suggests that transit, bicycle, or pedestrian related developments are effective in increasing the use of these modes at new residential, commercial, and office sites, the cost effectiveness of these strategies is still unknown. Providing these amenities with the installation of the original infrastructure can provide an aesthetically pleasing, highly desirable development to live and work in. One study in southern California showed that employers who combined financial incentives with an "aesthetically pleasing" site, exhibited trip reduction results that were ten percent higher than those without these two critical strategies.

Finally, the concept of "linked trips" within an area can be an effective means of limiting traffic on the transportation system. These trips are sometimes referred to as "shared" or "internal" trips. These trips are generated by associated facilities within a mixed-use development or within an area of the community where adjacent land uses are varied and offer services that would limit the need to travel large distances on the transportation system. An example would be a development that incorporates residences, office space, industrial space, retail space, a health club, etc. The vehicle operator in this case may live and work in the same development, therefore reducing the need to access the transportation system outside of the immediate area. Linked trips do not represent additional trips on the surrounding transportation system. Future developments that incorporate mixed uses and travel sharing within its limits should be encouraged through the planning function. This is especially desirable given the noted change in demographics that has occurred and is expected to continue occurring over the foreseeable future in the US and Montana.

9.3.4 Event Specific TDM Strategies

TDM strategies can be applied to specific events. If an event occurs on a regular basis which can be planned for, steps can be taken to manage the demands made on the transportation system. In the Greater Helena area there are three events which would benefit from different types of management techniques.

The first is the Last Chance Stampede and Fair. This event draws significant numbers of people in vehicles into the transportation corridors near the Lewis and Clark County Fairgrounds. For the better part of a week, all of the vehicles attempt to leave the area at the same time in the evening when the event concludes (concert, rodeo, etc.). This causes significant congestion on Custer Avenue, Green Meadow Drive and Henderson Street until the vehicles have cleared the area. One TDM measure to address this situation, namely, providing specialized signing and event traffic control "flaggers" allows the greatest opportunity for this traffic to disperse to their destinations. A second TDM measure which could be considered would be temporarily modifying flow direction by alternative travel directions and providing additional traffic control at certain key locations. This would involve using flaggers to direct traffic and allow vehicles to proceed through intersections at the flaggers' direction rather than using traffic control normally in place. This would allow vehicles to get through these intersections in less time than would be possible without the flaggers' help.

The second event, which has been brought forward by members of the public during the public meetings, deals with exiting the Helena Brewers parking lot(s) after a game is over onto Last Chance Gulch. Concern has been expressed by those waiting to turn left or right onto Last Chance Gulch. Alternative travel options do exist that access Lyndale Avenue, however this alternative requires navigating through the congested parking area after a game ends. TDM measures can be put in place to facilitate vehicles exiting this parking lot.

The simplest one is using flaggers to temporarily implement traffic control at the exit point near the City pool. This would allow left and right turning traffic to exit the parking lot in less time than it would otherwise take.

The third item which could be addressed using TDM measures is developing detour routes after the Carroll College Symphony Under the Stars. Due to the sheer amount of traffic on Benton Avenue and Lyndale Avenue after the event ends, developing plans ahead of time to plan detours would help manage the demands of the transportation system.

9.3.5 TDM Conclusions

Many TDM options are available for use in the Greater Helena area. Existing infrastructure is in place to use alternative modes of transportation including transit, walking and bicycling in some areas; some areas will needs expansion as the community grows. There are several major employers in the Greater Helena area including government, Fort Harrison, St. Peters, and the Helena School District who could be approached to implement work week adjustments (flex time, alternate work hours, compressed work week) that could make a noticeable difference to congestion. Designating a couple of prime parking spots for carpooling could increase its use among employees and provide positive recognition for those who carpool.

Developing strategies to manage the demand on the system generated by specific repeatable events such as baseball games or the Last Chance Stampede and Fair would involve a one-time use of City and/or County staff time. Adjustments to these strategies could be made after seeing how they work. Coordination with the Police Department and/or Sheriff's Office, or other departments that would help implement these plans, would then be needed on an intermittent basis. Implementing these strategies in the Greater Helena area could be done quickly and would be obvious to the traveling public. As such, it would be easy to demonstrate a successful TDM program and build approval for implementing additional TDM strategies.

9.3.6 Recommended TDM Strategies

Based upon this general TDM evaluation, the Greater Helena area is poised to implement a successful TDM program. The recommended strategies are listed below. These could be implemented in any order. Since the 2004 Transportation Plan, efforts have been made to expand and improve bicyclist access overall within the community.

- Encourage employers to provide alternate work schedules to their employees.
- Implement a guaranteed ride home program for transit users.
- Provide bike racks in the downtown area for bicycling commuters.
- Increase bicyclist access throughout the community for commuting purposes.
- Encourage walking as a commute choice.
- Encourage biking as a commute choice.
- Look at ways to increase transit ridership.
- Review access to Kendrick Legion Field (Helena Brewers ballpark) and develop a plan to manage traffic into and out of the ballpark.
- Consider factors such as land use/zoning issues when approving non-rural projects in the outlying areas.

9.4 Context Sensitive Solutions

Context Sensitive Solutions (CSS) are an interdisciplinary approach that seeks effective, multi-modal transportation solutions by working with stakeholders to develop, build and maintain cost-effective transportation facilities which fit into and reflect the project's surroundings – its "context." With respect to transportation projects, context can be defined as "all elements related to the people and place where a project is located." This includes both visible elements such as environmental or historic resources and invisible elements such as community values, traditions, and expectations.

CSS is both process and product, characterized by a number of attributes. It involves all stakeholders, including community members, elected officials, interest groups, and affected local, state, and federal agencies. It puts project needs and both agency and community values on a level playing field and considers all trade-offs in decision making. Through early, frequent, and meaningful communication with stakeholders, and a flexible and creative approach to design, the resulting projects should improve safety and mobility for the traveling public, while seeking to preserve and enhance the scenic, economic, historic, and natural qualities of the settings through which they pass.

CSS is guided by four core principles:

1. Strive towards a shared stakeholder vision to provide a basis for decisions.
2. Demonstrate a comprehensive understanding of contexts.
3. Foster continuing communication and collaboration to achieve consensus.
4. Exercise flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments.

Context sensitive designs incorporate a multidisciplinary design team. Residents, business owners, local institutions, city officials, and designers all have a part in the design and implementation of CSS. The conventional approach to design would be to approach the stakeholders at the tail end of the design phase in order to gain approval; involving these people at the beginning of the project ensures that the needs of all the stakeholders and the public are addressed from start to finish. Addressing these needs in the early stages can save valuable time and money in the development process.

Conventional designs place importance strictly on level of service and moving traffic. CSS balances safety, mobility, community, and environmental goals. The idea is to achieve a design that creates a unity for all of the users and for the area. CSS focuses not only on moving traffic, but also on pedestrians, bicycles, and aesthetic issues. Roads are built around the needs of pedestrians and bicyclists instead of just being built to handle the highest amount of traffic at the highest speeds possible. A properly constructed road will be safe for all users, regardless of their mode of travel. A CSS allows flexibility for its users when choosing their travel type.

CSS should encourage "smart growth" within the area. This refers to a type of city center growth that discourages urban sprawl by creating an area where pedestrians, bikes, transit, and vehicles can function in harmony within the network. Mixed-use development is also used in the area to allow for a variety of activities to take place. CSS creates a sense of community and unity to the area, while increasing safety levels and aesthetic value to the area.

Another purpose of CSS is to give users flexibility in the design process of transportation elements. All projects are different and should be treated as such. It is appropriate for some areas to incorporate 12-foot-wide travel lanes, for example, while others may benefit more from smaller 10-foot-wide lanes. The FHWA's Flexibility in Highway Design is a guide written for highway engineers and project managers that describes the flexibility available when designing roads and illustrates successful approaches used in other highway projects.

The "Qualities that Characterize Excellence in Transportation Design", elaborated at the Thinking Beyond the Pavement in 1998, illustrate the desired end products of the CSS process:

- The project satisfies the purpose and needs as agreed to by a full range of stakeholders. This agreement is forged in the earliest phase of the project and amended as warranted as the project develops.
- The project is a safe facility for both the user and the community.
- The project is in harmony with the community, and it preserves environmental, scenic, aesthetic, historic, and natural resource values of the area, i.e., exhibits context sensitive design.
- The project exceeds the expectations of both designers and stakeholders and achieves a level of excellence in people's minds.
- The project involves efficient and effective use of the resources (time, budget, community) of all involved parties.
- The project is designed and built with minimal disruption to the community.
- The project is seen as having added lasting value to the community.

9.4.1 Benefits of CSS

As more organizations apply CSS principles, evidence continues to grow that measurable benefits result from this broadly informed and flexible approach to all phases of transportation decision making. Involving stakeholders in decision making yields transportation solutions that balance environmental, engineering, community, mobility, funding, and safety needs with the minimum of delay and controversy. As an approach to transportation, CSS offers many important benefits[36]:

- CSS solves the right problem by broadening the definition of "the problem" that a project should solve, and by reaching consensus with all stakeholders before the design process begins.
- CSS conserves environmental and community resources. CSS facilitates and streamlines the process of NEPA compliance.
- CSS saves time. It shortens the project development process by gaining consensus early, and thereby minimizing litigation and redesign, and expediting permit approvals.
- CSS saves money. By shortening the project development process and eliminating obstacles, money as well as time is saved.
- CSS builds support from the public and from the regulators. By partnering and planning a project with the transportation agency, these parties bring full cooperation, and often additional resources as well.
- CSS helps prioritize and allocate scarce transportation funds in a cost-effective way, at a time when needs far exceed resources.
- Group decisions are generally better than individual decisions. Research supports the conclusion that decisions are more accepted and mutually satisfactory when made by all who must live with them.
- CSS is the right thing to do. It serves the public interest, helps build communities and leaves a better place behind.

9.4.2 Recommendation

It is recommended that language and themes supporting CSS be included in the LRTP. Also pertinent to the discussion would be the inherent limitations and competing factors that have to be balanced when considering CSS within the greater context of a community transportation system.

9.5 Livability

Livability is a national movement with local implications that are supported within the Greater Helena area. Providing transportation options to improve access to housing, jobs, businesses, services and social activities are fundamental desires of most transportation system user groups. Active transportation results in a physically fit population, minimizes auto emissions, extends the life of transportation infrastructure, and delays the needs for infrastructure improvements. Fostering livability in transportation projects and programs will result in improved quality of life; will create a more efficient and accessible transportation network; and will serve the mobility needs of communities, families, and businesses.

9.5.1 What is Livability?

The concept of livability, which has evolved over the years, is often used to describe a range of initiatives aimed at improving community quality of life while supporting broader sustainability goals. Livability encompasses multi-dimensional issues relative to community design, land use, environmental protection and enhancement, mobility and accessibility, public health, and economic well-being. Incorporating livability into transportation planning, programs, and projects is not a new concept. Communities, developers, advocacy groups, businesses, and neighborhood residents have been working for generations to make places more livable through transportation initiatives, with varying degrees of support from local, regional, State, and Federal agencies. These initiatives have used a range of terms to describe an overlapping set of objectives and strategies-livability, sustainability, community impact assessment, scenario planning, land use and transportation, smart growth, walkable communities, new urbanism, healthy neighborhoods, active living, transit-oriented development, complete streets, context-sensitive solutions, and many others. The key concept behind livability in transportation: transportation planning is a process that must consider broader community goals.

Livability in transportation is about integrating the quality, location, and type of transportation facilities and services available with other more comprehensive community plans and programs to help achieve broader community goals such as access to a variety of jobs, community services, affordable housing, quality schools, and safe streets. This includes:

- Addressing road safety and capacity issues through better planning, design, and construction.
- Integrating health and community design considerations into the transportation planning process to create more livable places where residents and workers have a full range of transportation choices.
- Using TDM approaches and system management and operation strategies to maximize the efficiency of transportation investments.
- Maximizing and expanding new technologies such as ITS, green infrastructure, and quiet pavements.
- Developing fast, frequent, dependable public transportation to foster economic development and accessibility to a wide range of housing choices.
- Strategically connecting the modal pieces-bikeways, pedestrian facilities, transit services, and roadways-into a truly intermodal, interconnected system.
- Enhancing the natural environment through improved storm water mitigation, enhanced air quality, and decreased greenhouse gases.

Livability provides economic benefits to communities, businesses, and consumers. In practice, livable transportation systems accommodate a range of modes (walking, bicycling, transit, and automobiles) by creating mobility choice within more balanced multimodal transportation networks. This in turn helps support more sustainable patterns of development, whether in an urban, suburban, or rural context. Livable transportation systems can provide better access to jobs, community services, affordable housing, and schools, while helping to create safe streets, reduce energy use and emissions, reduce impacts on and enhance the natural and built environment, and support more efficient land use patterns.

9.5.2 Livability Principles

In June 2009, U.S. Secretary of Transportation Ray LaHood, U.S. Secretary of Housing and Urban Development Shaun Donovan, and U.S. EPA Administrator Lisa P. Jackson announced the new Interagency Partnership for Sustainable Communities to improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment in communities nationwide. The Partnership for Sustainable Communities works to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution.

Because the concept of livability is place-based and context sensitive, its definition can differ depending on region and whether the community is an urban, suburban, exurban, or rural setting. However, the overall understanding of livability can be conveyed by five of the six principles established by the Sustainable Communities Partnership listed below. A livable community:

1. **Provides more transportation choices that are safe, reliable, and economical.** Develop transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health. This can be as simple as increasing walkability, to enable citizens to park their car once in a downtown area, and access their daily needs by foot from that location. Providing transportation to critical social services for rural residents who can't drive is another valuable livability option.
2. **Promotes equitable, affordable housing options.** Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation. This refers to an availability of location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities – like neighborhoods with mixed-use, mixed-income housing where a retired couple can live in the same community as a recent college graduate.
3. **Enhances economic competitiveness.** Through reliable and timely access to employment centers, educational opportunities, services and other basic needs, livable communities are those which have higher economic resilience and more economic opportunities. They provide expanded business access to markets – largely through increased accessibility and mobility choices.
4. **Supports and targets funding toward existing communities.** Instead of developing on new land – which can be a waste of funding and resources – livable communities target development toward such strategies as transit oriented, mixed-use development and land recycling – to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.
5. **Values communities and neighborhoods.** The purpose of livability is to enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods.

The Partnership's sixth principle addresses the alignment of federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

9.5.3 Benefits of Livability

Incorporating livability approaches into transportation, land use, and housing policies can help improve public health and safety, lower infrastructure costs, reduce combined household transportation and housing costs, reduce vehicle miles traveled, and improve air and water quality, among many other benefits.

- **Transportation, Development, and Environment:** How we plan and develop communities and choose to travel affects environmental quality. Providing more travel options in compact, connected communities leads to fewer car trips, which improve air and water quality. Developing more compactly, and reusing existing properties, can preserve rural lands and protect natural resources. Coordinating land use and development decisions with transportation investments can produce clear results.
- **Transportation and Safety:** Over the past 50 years, most roadways have been designed primarily for safer automobile and truck travel, which can make them less safe for pedestrians, older adults, children, people with disabilities, or bicyclists. More than 4,600 pedestrians and bicyclists died on U.S. roads in 2009 and more than 108,000 were injured. People who do not drive or have access to private vehicles, such as children and older adults, are disproportionately represented. Making roads safer for all users can have the added benefits of improving access jobs and services, reducing congestion, and sparking business and neighborhood investment.
- **Transportation and Health:** Communities that make it safe and easy to get around by walking, bicycling, and taking transit can generate a number of health benefits, such as reduced obesity; reduced cases of asthma/heart disease/cancer; increased safety, and improved access to schools, parks, and recreation and community facilities.
- **Transportation and Land Use:** Communities benefit when decisions about transportation and land use are made at the same time. Deciding to build houses, schools, grocery stores, employment centers, and transit stations close to one another—while providing a well-connected street network and facilities for walking or biking—provides more transportation choices and convenient access to daily activities. It also ensures community resources and services are used efficiently.
- **Transportation and Housing Costs:** Transportation is the second largest expense for most households after housing. Households living in auto-dependent locations spend 25 percent of its income on transportation costs. Housing that is located closer to employment, shopping, restaurants and other amenities can reduce household transportation costs to 9 percent of household income.
- **Transportation Management and Operations:** Transportation system management and operations (M&O) coordinates systems to make them more efficient, more convenient, more reliable, safer, and easier to use. M&O strategies make systems work better, allowing us to do more with less - less congestion, less money, less fuel, and less frustration. They support livability by increasing travel choices and efficiency—including transit, bicycling, and walking—while reducing emissions and resource use.
- **Transportation and Economic Development:** Livability and economic development are intertwined: livability draws businesses and businesses contribute to community quality of life through investments in the built environment, culture, and philanthropy. Businesses are choosing to locate in more accessible locations that combine transportation and housing choices, good schools, gathering places, and natural amenities. Targeted transportation investments can improve access to jobs, education, shopping, and goods movement, while providing construction and operations jobs.
- **Transportation and Rural Livability:** Livability in rural areas focuses on the towns, villages, working lands and natural resources that surround and connect them. Rural communities vary widely based on location, geography, economic and resource base, and other factors. "Rural" can describe farming, destination, gateway, resource-based, recreational, or other types of communities. Transportation investments that support rural livability also vary depending on location and context. For rural areas between towns or lands on the urban fringe, livability can mean safer highways and intersections, context-sensitive roadway design, multi-purpose trails, or rural on-demand transit and carpool information linked to smartphones. In small towns and villages, livability can mean a revitalized Main Street, sidewalks and improved crossings, a gateway entry, senior housing in walking distance to a redeveloped shopping district, or new neighborhoods built on the town's existing walkable street network.
- **Freight and Livability:** Getting goods to people and businesses is an essential part of building stronger regional economies, increasing community quality of life, and maintaining the nation's role in a global economy. While freight movement can impact livability and community quality of life, careful planning can help balance freight and livability needs. Communities can be aesthetically pleasing, safe, and walkable, while still providing efficient access for large trucks, rail lines, and other modes of transportation. The HUD-DOT-EPA livability principles call for enhancing economic competitiveness, through reliable and timely access to jobs and services, and expanded business access to markets, as well as for supporting existing communities and valuing communities and neighborhoods.

The FHWA has produced a series of fact sheets on each of the topics above which provide more detailed information and examples[37].

9.5.4 Livability and the LRTP

The LRTP should reflect the future transportation needs of the Greater Helena area and include recommended actions, programs and projects to improve, enhance and better manage and operate the area's transportation systems, promote alternative modes, accommodate bicyclists and pedestrians, consider other non-motorized modes of transportation, and provide freight mobility. In general, recommendations in the LRTP should also adhere to the livability principles established by the US DOT, HUD and EPA which are aimed at improving access to affordable housing, providing more transportation options, and lower transportation costs. By keeping these considerations in mind, transportation improvement programs and projects will not only accommodate existing travel, make the current transportation system more efficient, meet growing travel requirements and improve mobility, but also be a catalyst for enhancing the overall livability of the Greater Helena area.

Livability is about linking the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safe streets. This includes addressing safety and capacity issues on all roads through better planning and design, making judicious decisions about improvement projects, and expanding the use of new technologies.

The LRTP continues local efforts to make the transportation network operate as efficiently and effectively as possible and promote a balanced transportation system with alternatives to the private vehicle. The analyses conducted for the update of the LRTP show that some components of the system operate poorly and congestion occurs daily and reaches severe conditions at some locations. However, it is important to preserve and maintain essential infrastructure and services, while making the system operate as efficiently as possible. It is also equally critical to enhance the mobility of people and goods by increasing mode choice, access and convenience, and strategically expanding transportation capacity. Although the highway system dominates movement, non-highway components are equally important and provide alternatives for other system users.

9.6 School Considerations

9.6.1 Overview

The installation of sidewalks in the city, especially along arterial streets, in the proximity of schools would enhance non-motorized transportation to schools. A comprehensive system of safe walk paths may have the possibility of reducing the number of private vehicle trips to schools, which in turn may reduce some of the high volume, short duration traffic problems encountered in the vicinity of the schools.

The construction of continuous "off-street" trails in the county would promote non-motorized transport to school sites when these trails terminate at the school site. Discontinuous trails would also enhance traffic flow and safety, as they will allow the district to reduce the number of bus stops along a roadway by providing safe access to the stops for students. This would eliminate the necessity of having numerous driveway stops.

The inclusion of safe, roadside bus stops and connecting walking paths within new subdivision designs would similarly enhance traffic flow by reducing the number of stops required and pedestrian-vehicle conflicts at intersections.

The lack of sidewalks in urban areas and off street trails in rural areas tends to eliminate walking as a travel mode. Continued development within the community that does not address these items has a long-term, negative, impact on the fabric of the community.

All road construction and improvement projects should consider turning radii for the larger vehicles (such as busses), safe sight distances, driving lane and shoulder widths that meet current design standards, intersection signage and illumination, and roadway surface maintenance.

9.6.2 Guiding Principals

Every transportation project should have pedestrian and non-motorized components designed and constructed into them, as appropriate. Schools are a destination point, including times outside of the school day and academic year. Crossing guards are an enhancement to safe walkways, however they should not be considered a solution to providing safe pedestrian crosswalks. Projects adjacent to schools should consider short-duration/high-volume traffic flow problems and incorporate design elements to reduce conflicts (vehicle/vehicle & pedestrian/vehicle) into the project.

Walk zone criteria, as developed by the Helena School District, should be evaluated whenever possible with new infrastructure projects. The basic walk zone criteria are as follows:

- Focus on 1-mile radius from the school.
- Walk area considerations include:
  - Sidewalks and trails
  - Road curbs and/or shoulders
  - Road traffic volumes
  - Road Speeds
- Road Crossing Considerations
  - Road Classification (local, aerial, collector, Interstate)
    - Road traffic volumes
  - Road Speeds
    - Not allowed when speeds exceed 45 mph unless a pedestrian over or under pass is provided
  - Intersection traffic control
    - Signalized (must include pedestrian timing components and activation when they are installed)
    - Four way stop
    - Two way stop
    - Beacon
  - Marked crosswalks, signage and warning lights
  - Intersection lighting (illumination)

9.6.3 Non-motorized Corridors and Development Areas

Every transportation project should have pedestrian and non-motorized components designed and constructed into them. Improvements that should be included within roadway construction projects include, but are not limited to: construction of off-street trails, sidewalks and pedestrian crossings (timing at existing signals, refuge islands, signage, cross walk markings, warning beacons, illumination, etc.). The long-term goal is to provide continuous non-motorized pathways that will facilitate safe walk zones to schools or rural bus stops. It is anticipated that these pathways will require incremental construction with a long-term goal of obtaining continuity in the future.

9.6.4 Traffic Flow Considerations

The immediate areas around all schools experience short-duration / high-density traffic flow problems that are not typically reflected within Average Daily Traffic flow and Level-of-Service calculations. These events typically occur in the morning between 7:40 am and 8:25 am; and in the afternoon between 2:50 pm and 3:30 pm. The simultaneous movement of pedestrians, private vehicles and busses in relatively confined areas can create unsafe conditions and traffic delays.

Varying school schedules can also impact traffic flow on the community's transportation system. High school "block" schedules on Mondays that results in all students beginning the day at the same time causes a large impulse of traffic on that particular day. Observations of traffic on Roberts Street in the morning travelling to Helena High School have noted traffic backing up to Prospect Avenue and east to Harris Street, resulting in complete blockage of the Prospect Avenue northern lane (westbound direction). Future scheduling changes internal to the school district should be reviewed in consultation with the City of Helena, Lewis and Clark County, and MDT in an effort to mitigate transportation impacts as much as possible.

9.6.5 Urban and Secondary Highway Designations

The Federal-aid Highway System in the Greater Helena area consists of both urban roadways and secondary roadways. These roadways are designated through existing Montana statute, the Montana Transportation Commission, and MDT guidelines. Because these roads are Montana systems, the Federal government has no direct involvement in the designations.

Urban and secondary routes are designated by the Montana Transportation Commission, in cooperation with local governing authorities. When revisions to the system are proposed, the Transportation Commission may require when adding mileage that a reasonably equal amount of mileage be removed. This is not an absolute, and situations do exist where mileage is added without a corresponding reduction. With that in mind, to meet eligibility requirements for placement on a system of urban and secondary highways, the following criteria must be met:

- **Secondary Highways**: The route must be outside a designated urban area and must be federally-approved and functionally classified as either a rural minor arterial or major collector.
- **Urban Highways**: The route must be within a designated urban area and must be federally-approved and functionally classified by MDT as either an urban arterial or collector.

Helena and the surrounding community does have a system of urban and secondary routes in place. Those routes are shown on various maps available on the Montana Department of transportation website: (http://www.mdt.mt.gov/publications/maps.shtml).

As conditions change in the community, driven by outlying growth and travel characteristic shifts, it is advisable to revisit the urban and secondary highway classifications from time to time. To add, or delete, a route from the system, a very specific "six-step" process is in place and must be adhered to. This process is as follows:

- **Step 1**: Requests for new route designations or changes in existing designations are initiated by the local government. Requests must have the support of local elected officials and local transportation committees (if applicable).
- **Step 2**: MDT staff reviews the requests to determine whether the routes meet eligibility requirements.
- **Step 3**: If a route does not meet functional classification eligibility requirements, MDT staff advises the local government about the process for requesting a formal review of the routes functional classification.
- **Step 4**: If necessary, MDT staff advises the local government about the Montana Transportation Commission policy that requires no significant net changes in secondary and urban highway mileage within the affected county or urban area as a result of designation changes. Local governments may have to adjust their original request to comply with this requirement.
- **Step 5**: If the proposal meets all eligibility requirements and complies with Transportation Commission policy, MDT staff asks the Transportation Commission to approve the request.
- **Step 6**: If the Transportation Commission approves the request, MDT staff notifies the affected local governments and makes appropriate changes in MDT records.

If route revisions are contemplated, the local Transportation Coordinating Committee (TCC) must take formal action. If local governments do not agree on a revision request then it should not be taken to the TCC for consideration. Continuity is an important premise of the functional classification system. Note that urban funding allocation does not change with a change in mileage.

Chapter 10

FINANCIAL ANALYSIS

Transportation improvements can be implemented using Federal, State, local and private funding sources. Historically, Federal and State funding programs have been used almost exclusively to construct and upgrade the major roads in the Greater Helena area. Considering the current funding limits of these traditional programs, and the extensive list of recommended road projects, more funding will be required from local and private sources if all of the transportation network needs are to be met.

This Chapter discusses the financial plan for the 2014 LRTP, projected out to the year 2035. The financial element of the LRTP includes estimates of costs that would be required to implement the LRTP as well as estimates of existing and contemplated sources of funds available to pay for these improvements. Due to the current funding limitations of these traditional programs, and the anticipated road development needs of the community, a greater amount of financing will be required from local and private sources if these needs are to be met.

Much of the following information concerning the Federal and State funding programs was assembled with the assistance of the Statewide and Urban Planning Section of MDT. The intent was to identify traditional Federal, State and local sources of funds for transportation related projects and programs in the Greater Helena area. 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.

10.1 Overview of Traditional Funding Sources

MDT administers a number of 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.

The following list includes Federal and State funding sources developed for the distribution of Federal and State transportation funding. This includes Federal funds the State receives under the Moving Ahead for Progress in the 21st Century Act (MAP-21). The list also includes local funding sources available through the city and county, as well as private sources. It should be understood that other funding sources are possible, but those listed below reflect the most probable sources at this time. A narrative description of each source is provided in the following sections of this Chapter.

Federal Funding Sources

- NHPP - National Highway Performance Program
    - Interstate Maintenance
    - National Highway
    - Bridge
- STP - Surface Transportation Program
    - STPP – Primary Highway System
    - STPS – Secondary Highway System
    - STPU – Urban Highway System
    - STP – Bridge Program
    - STPX – Surface Transportation Program for Other Routes (Off-system)
    - UPP – Urban Pavement Preservation Program
- HSIP – Highway Safety Improvement Program
- CMAQ – Congestion Mitigation & Air Quality Improvement Program
    - CMAQ - Formula
    - Montana Air & Congestion Initiative (MACI) – Guaranteed Program
    - Montana Air & Congestion Initiative (MACI) - Discretionary Program
- TA – Transportation Alternatives Program
- FLAP – Federal Lands Highway Program
- Congressionally Directed Funds
- Transit Capital & Operating Assistance Funding
    - FTA Section 5339 (Bus and Bus Facilities)
    - FTA Section 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities
    - FTA Section 5307 (Urbanized Area Formula Grants)

State Funding Sources

- State Fuel Tax Funds - City and County
- State Funds for Transit Subsidies
- State Special Revenue/State Funded Construction
- TransADE
- Rail/Loan Funds

Local Funding Sources

- City Funds
- County Funds
- Private Funding Sources
- Future Potential Funding Sources

10.2 Federal Funding Sources

The following summary of major Federal transportation funding categories received by the State through Titles 23-49 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 State Transportation Improvement Program (STIP), where relevant.

10.2.1 National Highway Performance Program (NHPP)

The National Highway Performance Program (NHPP) provides funding for the National Highway System, including the Interstate System and National Highways system roads and bridges. The purpose of the National Highway System (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 requirement; and serve interstate and interregional travel. The National Highway System includes all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

Allocations and Matching Requirements: 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:

Interstate Maintenance

Interstate Maintenance (IM) funds are Federally-apportioned to Montana and allocated based on system performance by the Montana Transportation Commission. The Commission approves and awards projects for improvements on the Interstate Highway System which are let through a competitive bidding process. The Federal share for IM projects is 91.24% and the State is responsible for 8.76%.

National Highway

The Federal share for non-Interstate NHS projects is 86.58% and the State is responsible for the remaining 13.42%. The State share is funded through the Highway State Special Revenue Account.

Eligibility and Planning Considerations: Activities eligible for the National Highway System funding include construction, reconstruction, resurfacing, restoration, and rehabilitation of segments of the NHS roadway; construction, replacement, rehabilitation, preservation and protection of bridges on the National Highway System; and projects or part of a program supporting national goals for improving infrastructure condition, safety, mobility, or freight movements on the National Highway System. 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 National Highway System. The Transportation Commission establishes priorities for the use of National Highway Performance Program funds and projects are let through a competitive bidding process.

The Great Falls District is anticipated to receive an average of about $35 million annually of NHPP funds during the next five years. Current Great Falls District priorities already under development total an estimated construction cost of $56.91 million. 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.

NHPP Bridge

Federal and state funds under this program are used to finance bridge inspection, improvement, and replacement projects on Interstate and non-Interstate National Highway System 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% 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% 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.

10.2.2 Surface Transportation Program (STP)

Surface Transportation Program (STP) funds are Federally-apportioned to Montana and allocated by the Montana Transportation Commission to various programs including the Surface Transportation Program Primary Highways (STPP)*, Surface Transportation Program Secondary Highways (STPS)* and the Surface Transportation Program Urban Highways (STPU).* The Federal share for these projects is 86.58% with the non-Federal share typically funded through Highway State Special Revenue (HSSR).

Primary Highway System (STPP)*

The Federal and State funds available under this program are used to finance transportation projects on the state-designated Primary Highway System. The Primary Highway System includes highways that have been functionally classified by MDT as either principal or minor arterials and that have been selected by the Montana Transportation Commission to be placed on the primary highway system [MCA 60-2-125(3)].

Allocations and Matching Requirements: Primary funds are distributed statewide (MCA 60-3-205) to each of five financial districts. The Commission distributes STPP funding based on system performance. Of the total received, 86.58% is Federal and 13.42% is State funds from the Highway State Special Revenue Account.

Eligibility and Planning Considerations: STP Primary funds are eligible for a wide range of transportation improvement projects and activities, ranging from roadway reconstruction and rehabilitation, to bridge construction and inspection, to highway and transit safety infrastructure, environmental mitigation, carpooling, and bicycle and pedestrian transportation facilities.

Secondary Highway System (STPS)*

The Federal and State funds available under this program are used to finance transportation projects on the state-designated Secondary Highway System. The Secondary Highway System includes any highway that is not classified as a local route or rural minor collector and that has been selected by the Montana Transportation Commission to be placed on the Secondary Highway System. Funding is distributed by formula and is utilized to resurface, rehabilitate and reconstruct roadways and bridges on the Secondary System.

Allocations and Matching Requirements: Secondary funds are distributed statewide (MCA 60-3-206) to each of five financial districts, based on a formula, which takes into account the land area, population, road mileage and bridge square footage. Federal funds for secondary highways must be matched by non-Federal funds. Of the total received 86.58% is Federal and 13.42 % is non-Federal match. Normally, the match on these funds is from the Highway State Special Revenue Account.

Eligibility and Planning Considerations: Eligible activities for the use of Secondary funds fall under three major types of improvements: Reconstruction, Rehabilitation, and Pavement Preservation. The Reconstruction and Rehabilitation categories are allocated a minimum of 65% of the program funds with the remaining 35% dedicated to Pavement Preservation. Secondary funds can also be used for any project that is eligible for STP under Title 23, U.S.C. Priorities are identified in consultation with the appropriate local government authorizes and approved by the Montana Transportation Commission.

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 census. STPU funds are primarily used for resurfacing, rehabilitation or reconstruction of existing facilities; operational improvements; bicycle facilities; pedestrian walkways and carpool projects.

Allocations and Matching Requirements: 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% is Federal and 13.42% is non-Federal match typically provided from the Special State Revenue Account for highway projects.

Montana's urban areas are as follows:

- Anaconda
- Belgrade
- Billings
- Bozeman
- Butte
- Columbia Falls
- Glendive
- Great Falls
- Hamilton
- Havre
- Helena
- Kalispell
- Laurel
- Lewistown
- Livingston
- Miles City
- Missoula
- Sidney
- Whitefish

Eligibility and Planning Considerations: 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 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.

Bridge Program (STP)

The Federal and state funds available under this program are used to finance bridge projects for on-system and off-system routes in Montana. Title 23 U.S.C. requires that a minimum amount (equal to 15 percent of Montana's 2009 Federal Bridge Program apportionment) be set aside for off-system bridge projects. The remainder of the Bridge Program funding is established at the discretion of the state. Bridge Program funds are primarily used for bridge rehabilitation or reconstruction activities on Primary, Secondary, Urban or off-system routes. Projects are identified based on bridge condition and performance metrics.

Surface Transportation Program for Other Routes - Off-system (STPX)

The Federal and state funds available under this program are used to finance transportation projects on state-maintained highways (or in other areas) that are not located on a defined highway system.

Urban Pavement Preservation Program (UPP)*

The Urban Pavement Preservation Program (UPP) is a sub-allocation of the larger Surface Transportation Program that provides funding to urban areas with qualifying Pavement Management Systems (as determined jointly by MDT and FHWA). This sub-allocation is approved annually by the Transportation Commission and provides opportunities for pavement preservation work on urban routes (based on system needs identified by the local Pavement Management Systems).

**State funding programs developed to distribute Federal funding within Montana*

10.2.3 Highway Safety Improvement Program

HSIP funds are apportioned to Montana for allocation to safety improvement projects approved by the Commission and are consistent with the strategic highway safety improvement plan. 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 Commission approves and awards the projects which are let through a competitive bidding process. Generally, the Federal share for the HSIP projects is 90% with the non-Federal share typically funded through the HSSR account.

10.2.4 Congestion Mitigation and Air Quality Improvement Program (CMAQ)

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 carbon monoxide (CO) and particulate matter (PM10 and PM2.5).

Allocations and Matching Requirements: CMAQ funds are Federally-apportioned to Montana and allocated to various eligible programs by formula and by the 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" is primarily directed 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% is Federal and 13.42% is non-Federal match provided by the state for projects on state highways and local governments for local projects.

Eligibility and Planning Considerations: 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.

CMAQ (formula)

Mandatory CMAQ funds that come to Montana based on a Federal formula and are directed to Missoula, Montana's only classified, moderate CO non-attainment area. Not applicable to Whitefish. Projects are prioritized through the Missoula Metropolitan planning process.

Montana Air & Congestion Initiative (MACI)–Guaranteed Program (flexible)*

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

Montana Air & Congestion Initiative (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 PM10 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.

10.2.5 Transportation Alternatives Program

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

Funds may be obligated for projects submitted by:

- 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.

Eligibility and Planning Considerations: Eligible categories include:

- On-road and off-road trail facilities for pedestrians and bicyclists, including 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;
- Educations 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; and
- 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 school vicinities, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training.

Competitive Process: The State and any Metropolitan Planning Organizations required to obligate Transportation Alternative 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.

10.2.6 Federal Lands Highway Program (FLAP)

The Federal Lands Access Program was created by the "Moving Ahead for Progress in the 21st Century Act" (MAP-21) to improve access to Federal lands. Western Federal Lands administers the funds, not MDT. However, MDT is an eligible applicant for the funds.

The program is directed towards Public Highways, Roads, Bridges, Trails, and Transit systems that are under State, county, town, township, tribal, municipal, or local government jurisdiction or maintenance and provide access to Federal lands. The Federal lands access program funds improvements to transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. Program funds are subject to the overall Federal-aid obligation limitation. Funds are allocated among the states using a statutory formula based on road mileage, number of bridges, land area, and visitation.

Eligibility and Planning Considerations: The following activities are eligible for consideration on Federal Lands Access Transportation Facilities:

1. Preventive maintenance, rehabilitation, restoration, construction and reconstruction
2. Adjacent vehicular parking areas
3. Acquisition of necessary scenic easements and scenic or historic sites
4. Provisions for pedestrian and bicycles
5. Environmental mitigation in or adjacent to Federal land to improve public safety and reduce vehicle-wildlife mortality while maintaining habitat connectivity
6. Construction and reconstruction of roadside rest areas, including sanitary and water facilities.
7. Operation and maintenance of transit facilities

Proposed projects must be located on a public highway, road, bridge, trail or transit system that is located on, is adjacent to, or provides access to Federal lands for which title or maintenance responsibility is vested in a State, county, town, township, tribal, municipal, or local government.

Allocation and Matching Requirements: Projects are funded in Montana to the ratio of 87.58% federal funds and 13.42% non-federal matching funds. Funding is authorized and allocated for each state under USC, Title 23, Chapter 2, MAP-21, Division A, Title I, Subtitle A, Section 1119 distribution formula.

10.2.7 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 Congressional direction. If a local sponsored project receives these types of funds, MDT will administer the funds in accordance with the Montana Transportation Commission Policy #5 – "*Policy resolution regarding Congressionally directed funding: including Demonstration Projects, High Priority Projects, and Project Earmarks."*

10.2.8 Transit Capital and Operating Assistance Funding

The Federal Transit Administration and MDT Transit Section provide federal and state funding to eligible recipients through federal and state programs. Federal funding is provided through the Section 5310 and Section 5311 transit programs and state funding is provided through the TransADE program. The new highway bill MAP-21 incorporated the JARC and New Freedoms Programs into the Section 5311 and 5310 programs, respectively. It also created a new bus and bus facilities discretionary formula program (Section 5339) for fixed route bus operators. All projects funded must be derived from a locally developed, coordinated public transit-human services transportation plan (a "coordinated plan").

The coordinated plan must be developed through a process that includes representatives of public, private, and nonprofit transportation and human service providers and participation from the public.

Bus and Bus Facilities (Section 5339)
This program provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities. Federal funds pay 80 percent of capital costs. The remaining 20 percent must come from the local recipient. Funds are eligible to be transferred by the state to supplement urban and rural formula grant programs (5307 and 5311, respectively).

Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310)
Authorizes capital grants to eligible organizations to assist in providing transportation for the elderly and/or persons with disabilities. Federal Transit Administration (FTA) funds 80 percent of all costs for equipment, with 20 percent match provided by the local recipient. Eligible recipients for this program are private, nonprofit organizations; public bodies approved by the State to coordinate services for elderly persons and persons with disabilities; or public bodies which certify to the Governor that no nonprofit organization is readily available in a service area to provide this transportation service. Ten percent of the state's Section 5310 apportionment can be used to administer the program, to plan, and to provide technical assistance.

Urbanized Area Formula Grants (Section 5311)
This program constitutes a core investment in the enhancement and revitalization of public transportation systems in the nation's urbanized areas, which depend on public transportation to improve mobility and reduce congestion. Federal funds pay 80 percent of capital costs and 50 percent of deficit operating costs. The remaining 20 and 50 percent respectively must come from the local recipient. FTA apportions funds to designated recipients, which then suballocate funds to state and local governmental authorities, including public transportation providers.

10.3 State Funding Sources

10.3.1 State Fuel Tax
The State of Montana assesses a tax of $0.2775 per gallon on gasoline and diesel fuel used for transportation purposes (MCA Section 15-70-101). According to State law, each incorporated city and town within the State receives an allocation of the total tax funds ($10,360,000) based upon:

1. the ratio of the population within each city and town to the total population in all cities and towns in the State, and
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 ($6,306,000) based upon:

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; and
3. the ratio of the land area in each county to the total land area of the State.

For State Fiscal Year 2014, the City of Helena will receive $554,354 (MCA 15-70-101) and Lewis and Clark County will receive $274,965 (MCA 15-70-101 and MCA 7-14-102(2)) in State fuel tax funds. Of the $274,965, Lewis and Clark County received $271,733.59 for MCA 15-70-101 and $3,231.85 for MCA 7-14-102(2). 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.

10.3.2 State Funds for Transit Subsidies
The 46th Montana Legislature amended Section 7-14-102 MCA providing funds to offset up to 50 percent of the expenditures of a municipality or urban transportation district for public transportation. The allocation to operators of transit systems is based on the ratio of its local support for public transportation to the total financial support for all general purpose transportation systems in the State. Local support is defined as:

$$\text{Local Support} = \frac{\text{Expenditure for public transportation operations}}{\text{Mill value of City or urban transportation district}}$$

10.3.3 State Special Revenue/State Funded Construction

Allocations and Matching Requirements: 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.

Eligibility and Planning Considerations: 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 District's establish priorities and the Transportation Commission approves the program.

10.3.4 TransADE
The TransADE grant program offers operating assistance to eligible organizations providing transportation to the elderly and persons with disabilities.

Allocations and Matching Requirements: This is a state funding program within Montana statute. State funds pay 54.11 percent of deficit operating costs, 80 percent of administrative costs, and 80 percent of maintenance costs. The remaining 45.89, 20, and 20 percent respectively must come from the local recipient. Applicants are also eligible to use this funding as match for the Federal transit grant programs.

Eligibility and Planning Considerations: Eligible recipients of this funding are counties, incorporated cities and towns, transportation districts, or non-profit organizations. Applications are due to the MDT Transit Section by the first working day of March each year. To receive this funding the applicant is required by state law (MCA 7-14-112) to develop a strong, coordinated system in their community and/or service area.

10.3.5 Rail/Loan Funds

Administration and Matching Requirements: The Montana Rail Freight Loan Program (MRFL) is a revolving loan fund administered by the Montana Department of Transportation to encourage projects for construction, reconstruction, or rehabilitation of railroads and related facilities in the State and implements MCA 60-11-113 to MCA 60-11-115. Loans are targeted to rehabilitation and improvement of railroads and their attendant facilities, including sidings, yards, buildings, and intermodal facilities. Rehabilitation and improvement assistance projects require a 30 percent loan-to value match. Facility construction assistance projects require a 50 percent match.

Eligibility and Planning Consideration: Eligible applicants for loans under the program include railroads, cities, counties, companies, and regional rail authorities. Port authorities may also qualify, provided they have been included in the state transportation planning process. Projects must be integrally related to the railroad transportation system in the State and demonstrate that they will preserve and enhance cost-effective rail service to Montana communities and businesses.

10.4 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 and county.

10.4.1 City of Helena

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.

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 SID’s 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 an SID paying for materials.

Gas Tax Apportionment

Revenues are generated through State gasoline taxes apportioned from the State of Montana. The City’s FY 2014 state gas tax apportionment will be approximately $554,354. Transfers are made from this fund to the General Fund to reimburse expenditures for construction, reconstruction, repair and maintenance of streets.

Street Maintenance Assessment

Every parcel within the city limits is assessed for street maintenance, with a square footage cap based on the type of property (residential versus commercial). Revenues generated from the assessment fund maintenance activities on public roadways. Street maintenance includes, but is not limited to, the following: sprinkling; graveling; oiling; chip sealing; seal coating; overlaying; treating; general cleaning; sweeping; flushing; snow and ice removal; and leaf and debris removal.

Helena Parking Commission

Monthly lease rental payments and meter collections fund this program. Revenues are used to fund parking improvements in the downtown area.

10.4.2 Lewis and Clark County

Road Fund

The County Road Fund provides for the construction, maintenance, and repair of all county roads outside the corporate limits of cities and towns in Lewis and Clark County. Revenue for this fund comes from intergovernmental transfers (i.e., State gas tax apportionment and motor vehicle taxes), and a mill levy assessed against county residents living outside cities and towns. The county mill levy has a ceiling limit of 15 mills. Lewis and Clark County's FY 2014 state gas tax apportionment will add approximately $274,965 to the Road Fund.

County Road Fund monies are primarily used for maintenance with little allocated for new road construction. It should be noted that only a small percentage of the total miles on the county road system are located in the study area. Projects eligible for financing through this fund will be competing for available revenues on a county-wide basis.

Bridge Fund

The Bridge Fund provides financing for engineering services, capital outlays, and necessary maintenance for bridges on all off system and Secondary routes within the county. These monies are generated through intergovernmental fund transfers (i.e., vehicle licenses and fees), and a county wide mill levy. There is a taxable limit of four mills for this fund.

Payments in Lieu of Taxes (PILT)

"Payments in Lieu of Taxes" (PILT) are Federal payments to local governments that help offset losses in property taxes due to non-taxable Federal lands within their boundaries. The PILT funding program recognizes the inability of local governments to collect property taxes on Federally-owned land can create a financial impact. PILT payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. The payments are made annually for tax-exempt Federal lands administered by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service (all agencies of the Interior Department), the U.S. Forest Service (part of the U.S. Department of Agriculture), and for Federal water projects and some military installations.

The formula used to compute the payments is contained in the PILT Act and is based on population, receipt sharing payments, and the amount of Federal land within an affected county. PILT payments are in addition to other Federal revenues (such as oil and gas leasing, livestock grazing, and timber harvesting) the Federal Government transfers to the States. Lewis and Clark County’s most recent PILT payment, received in June 2014, was in the amount of $2,339,471 and reflected 1,082,200 acres of Federal lands within Lewis and Clark County.

Secure Rural Schools (SRS) Fund

The Secure Rural Schools and Community Self-Determination Act of 2000 allows counties across the country to count on stable and transition payments to provide funding for schools and roads, make additional investments in projects that enhance forest ecosystems, and improve cooperative relationships. On October 2, 2013 Congress passed a one year reauthorization of the Secure Rural Schools and Community Self Determination Act as part of HR 527 Helium Stewardship Act. The reauthorization extended for one year the date by which title III (County projects) must be initiated and the date by which title III funds must be obligated. The Secure Rural Schools (SRS) program expired on September 30, 2014. The program was not reauthorized by Congress, and now operates under the original 1908 Act to govern the distribution of payments to States.

Lewis and Clark County's share of Montana's total amount for fiscal year 2014 was $96,589.98.

Motor Vehicle License Fee

The fees collected by counties from the licensing of motor vehicles are available for construction, maintenance, and repair of highways and streets within the transportation study area. The revenue collected is distributed among the jurisdictional areas of the county based on vehicle registration. In 1987, the State of Montana changes its method of licensing motor vehicles of ¾ ton or less. The flat fee tax on light vehicles was replaced by a 2 percent tax on the assessed value of the vehicle, using average trade-in or wholesale value. An ad valerom tax is still issued for all vehicles in excess of ¾ ton. A use tax of 1.5% is imposed on the list price of all newly licensed vehicles. The proceeds of this tax are credited to the State highway account of the State Special Revenue Fund. The funds from the 2 percent tax are distributed in the relative proportions required by the levies for State, County, School District and municipal purposes in the same manner personal property taxes are distributed. Additionally, counties have the option of imposing a 0.5 percent local vehicle tax that is distributed, with some restrictions, in the same manner as the base vehicle tax.

Urban Transportation Districts

Urban Transportation Districts are another method of providing local funds for transportation improvements. The creation of an urban transportation district is initiated by a petition of at least 20 percent of the registered voters within the proposed district. A formal public hearing must be held after which the creation of the district is put to a vote. The county commissioners determine whether a special election is necessary, or if a vote can take place at the next general election. Urban Transportation Districts are governed by an elected board, which is responsible for all operations of the district. An example is the Great Falls Transit District, which was created under and operates under the guidelines for Urban Transportation Districts.

County Elderly Activities Tax

Counties are allowed to levy up to one mill to promote, establish, and maintain recreational, educational, and other activities of the elderly. Funds from this source could be used to match the FTA Section 5310 funds for providing transportation services to the elderly and disabled.

Special Revenue Funds

Special revenue funds may be used by the county to budget and distribute revenues legally restricted to a specific purpose. Several such funds that benefit the transportation system are discussed briefly in the following paragraphs.

Capital Improvements Fund

This fund is used to finance major capital improvements to county infrastructure. Revenues are generated by loans from other county funds, and must be repaid within ten years. Major road construction projects are eligible for this type of financing.

Rural Special Improvement District (RSID) Revolving Fund

This fund is used to administer and distribute monies for specified RSID projects. Revenue for this fund is generated primarily through a mill levy and through motor vehicle taxes and fees. A mill levy is assessed only when delinquent bond payments dictate such an action.

Special Bond Funds

A fund of this type may be established by the county on an as-needed basis for a particularly expensive project. The voters must approve authorization for a special bond fund. The county is not currently using this mechanism.

Specialized Transportation Fund

This type of fund may be established to supplement the cost of transit service to disabled or low-income county residents. The county is not currently using this mechanism.

10.4.3 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 allow for the 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 very 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 (G.O.) Bonds

The sale of general obligation bonds could be used to finance a specific set of major highway improvements. A G.O. bond sale, subject to voter approval, would provide 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 G.O. bonds. The present property tax situation in Montana, and recent adverse citizen responses to proposed tax increases by local government, would suggest that the public may not be receptive to the use of this funding alternative.

Tax Increment Financing (TIF)

Increment financing has been used in many municipalities to generate revenue for public improvements 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. A TIF is currently being utilized in downtown Bozeman. Additional TIF districts could be established in other areas of the city and county to accomplish a variety of transportation-related improvements.

Multi-Jurisdictional Service District

This funding option was authorized in 1985 by the State Legislature. This procedure requires the establishment of a special district, somewhat like an SID or RSID, 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 an RSID, 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 an RSID.

10.4.4 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 each individual 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 to be 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 method funds can be generated for transportation improvements is by assessing a fee to the developers of property based upon the impact the development is likely to have on the transportation network.

Value Capture Taxes

Value capture taxes are a means of raising revenue following the development of transportation improvements. Whereas development fees are assessed to make necessary transportation improvements, value capture taxes impose a fee to businesses which 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.

10.5 Summary of Current Financial Status

Current financial information was obtained from the MDT Statewide and Urban Planning Section to get a picture of the projected revenue available for funding transportation projects in the Greater Helena area over the next 20 years. This information is summarized in **Table 10.1**. A comparison of the estimated costs shown in **Chapter 8** for the MSN ($178,112,000), CRN ($77,077,000) and TSM ($18,369,010) projects, and the potential revenue from sources most likely to be used to fund the various projects shown in **Table 10.1**, confirms that the LRTP is <u>not fiscally constrained</u> and will encounter significant financial shortfalls over the 20-year life of the Plan. The anticipated costs for the various improvements are more than the potential revenue available over the planning horizon.

Table 10.1: Projected Funding (Estimated)

Funding Source	Current Account Balance	Current Annual Allocation (2015)	Projected Annual Allocation (per year)	Revenue Projection 2025	Revenue Projection 2035
NHPP – NH, IM *	$0	$350,000	$350,000	$3,500,000	$7,000,000
HSIP Safety *	$0	$100,000	$100,000	$1,000,000	$2,000,000
STPU – Urban	$2,456,071[a]	$1,043,290	$1,050,000	$10,500,000	$21,000,000
STPS – Secondary *	$0	$50,000	$50,000	$500,000	$1,000,000
STP – Bridge *	$0	$100,000	$100,000	$1,000,000	$2,000,000
RRS – Railroad *	$0	$50,000	$50,000	$500,000	$1,000,000
UPP – Preservation *	$0	$250,000	$250,000	$2,500,000	$5,000,000
TA		$50,000 [b]	$50,000 [b]	$500,000	$1,000,000
MACI -State Disc.		$100,000	$100,000	$1,000,000	$2,000,000
State Fuel Tax (City)		$554,354	$555,000	$5,550,000	$11,100,000
State Fuel Tax (County)		$274,965	$275,000	$2,750,000	$5,500,000
SID's / RID's[c]		VARIES	VARIES	VARIES	VARIES
FTA Sec. 5311		$636,000	$636,000	$6,360,000	$12,720,000
FTA Sec. 5310 **		$10,000	$10,000	$100,000	$200,000
Other (Private, Bonds, TIF, CBDG, etc.) Local Transit Mill Levy		$250,000	$250,000	$2,500,000	$5,000,000
TOTAL[d]				**$38,260,000**	**$76,520,000**

Notes: Although MAP-21 only provides for Federal funding through FFY2015, 2025 and 2035 projections are based on continuance of current levels of funding unless otherwise noted. It is important to note that the projected funding estimates are based on the best information available at this time and that there is no guarantee that these funding sources will be available beyond MAP-21. Estimated Federal fund allocations do not include amounts of any required local matching funds. Federal revenues, local revenues and local and state matching funds are held constant and do not inflate over time due to uncertainty with federal transportation program reauthorization. Accordingly, future year allocation for year 2025 and 2035 are based on current annual allocations being projected out to the future. Reevaluation of revenue estimation may be necessary as part of a future LRTP update if a trend of shorter authorizations continues.

[a] Only STPU – Urban is a set funding allocation; current account balance (01/2015) per MDT Statewide and Urban Planning Section.
[b] The TA (Transportation Alternatives) funding program does not have a set allocation. For purposes of estimating, an annual allocation of $50,000 was identified, assuming Helena would be successful in procuring some of the statewide TA available funding.
[c] Local SID/RIDs (Special / Rural Improvement Districts) are primarily available for "local" road projects and not on Major Street Network roadways.
[d] Totals given are not entirely available for "road" projects. For example, totals presented include FTA funds (available for transit), which are not available for road or intersection construction activities, per se.

** Estimates from MDT are based on historical obligation figures with input from district.*
*** 5310 administered by MDT for qualified providers.*

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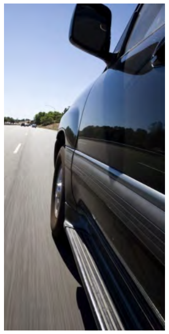
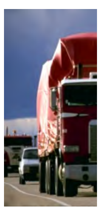
Appendix A:
Public and Stakeholder Outreach Matrix



Greater Helena Area Long Range Transportation Plan—2014 Update



City of Helena

PREPARED BY:
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APPENDIX A: PUBLIC AND STAKEHOLDER OUTREACH MATRIX

A.1 Public Comments Received After Release of Draft LRTP Report

Table A.1: Public Comments Received After Release of Draft LRTP Report

ID #	Date Received	First Name	Last Name	Full Comment Received
1.0	04/11/2015	Bill	Schneider	As far as comments from HBC, nothing really has changed for us, so please consider previous comments as applying to this report.
2.0	04/23/2015	Teresa	Kaiserski	We are happy to see that bicycling is being encouraged in Helena by BikeWalkHelena. We are grateful for the new bike path placed from Memorial Park east. We are wondering if it would be possible to put new surfacing on the bike/walk path that runs on the west side of Benton Avenue from Custer to the railroad track. It is very worn and rough and receives a lot of bicycle/walking traffic.
2.1				It would be wonderful to also pave a path on the east side of Benton Avenue from Custer to the railroad tracks. There is a short section paved now, but most of it is a narrow dirt path on that side. That side would be good for biking/walking because there are not side streets coming into it due to the Golf Course. It would also help with two way traffic that currently is a problem on the path on the west side of Benton Ave. Thanks
3.0	05/08/2015	Paul	Cartwright	Sorry we couldn't connect. The Board of Growing Friends was considering Appendix D and some more background would have been helpful. If you have time some day or after hours, I would really appreciate if you could take me around to look at possible sight obstructions. Many of the situations targeted by the Billings ordinance just don't feel dangerous in my experience as a driver or a walker, but I realize I could be missing some important aspect. At the most extreme, I can't understand why the fruit tree in your side yard is dangerous. But the same with the trees around the City-County building, the Park Avenue parking lot or the two in front of my house. (By the by, your home has space for a number of boulevard trees but we wouldn't recommend putting one right where the spruce was, so you don't have to wait on the City to stump it.) Further, can you recommend any studies that quantify the risk posed by boulevard trees in urban situations on roads 35 mph and under? I know there are all sorts of standards but I'm looking for the supporting research.

ID #	Date Received	First Name	Last Name	Full Comment Received
4.0	05/08/2015	Robert	Poirier	I am a concerned citizen, who cares about the mess. Of street alignment. I have lived here most of my 54 years, and driving has become a MAJOR problem, those ,so what officialials whom seem to want to invite all these new people here, , sure don't tell em what a mess it is to drive around town,,, and I can only think in 20 + years when Helena WILL HAVE 80, 000 PEOPLE -- JUST WAIT… so I want to throw in some imput, ? sure it won't matter, but I SO have wanted to write a editorial, in our newspaper, just to get it out there, and off my mind…. anyho, I don't even know if this is the correct contact,,? So after reading on all this school problems with this new superintendent,?—who wants change all these schools, I wonder if they even have considered working with the street planning , discussing all the problems this will cause , expanding some these schools , of what impacts it will have on traffic…..? so Helena's streets were designed back in the day with, far less people and as these outa staters keep coming, nothing hardly has been, really redesigned, in a traffic friendly, manner, MY dad was involved, at the Hghway DEPT. ,AS A CIVIL ENGINEER , AND I REMEMBER , HE DID WORK , ON THE REALIGNMENT OF BROADWAY, , and I have had a interest, in our town's traffic ever since, but – so , the problem with helena's main streets of travel, is there, is a school on almost every direct, ? or well traveled area's,,? , and your hands are tie,[as speed limit] AND, 1st of all start, EAST,- with smith school,? Did anyone, ever think to ask what the hospital- ambulance, or neibors , about the massive difference in street volume there, BESIDES THE MESS AT THE STOP LIGHT [prospect -fee,] then there's Jefferson, on broadway, a very busy street,, where I attended grade school, this so called superintendent , put almost 1 million, into an elevator, but plans to eventually, turn this into the school administration,,? , took Ray BJORKj, out of the plan,,,? NOW THAT , is best direct, school area, for traffic flow, ?--- off the hiways in—out, -- but ?? , besides one of better GYMS in town, obviously, that don't matter,, then Bryant ,-15 miles an hr. and that should turned into a main route thru to Walmart back when, if CITY WOULD THOUGHT OUT, TO BUY EASEMENTS, back when, imagine the traffic flow, there if. > so, another - one which should of ,? ? much better, traffic flow off cedar st. Lincohn, more room to expand,,? But,,? , no new MAN has his own idea's , but the biggest MAJOR problem is 4 Geirgians,,, OH YA LETS EXPAND THAT,,,? YA CAN'T EVEN GET AROUND THE CORNER OFF BENTON,, at release time,,? Cause they allowed a dropoff area,, that clogs traffic, How many times , have they spent money on studies,,, on that street –[custer] ,,, which has a high school also,,, , so this middle turn lane, is a joke,,, how much time wasted, long ago, this street should seriously be a 6 lane rd. ,[plenty of room to.] AND YES, thankyou one better thoughts you had was putting that drop off area, behind, but still not engineered correctly,,? which was way overdue, they need a overhead – people crossing there,[ha?] lets expand that school,,,

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				BENTON, should long ago been a 4 lane from , R.R. TRACKS NORTH, MORE THAN ENOUGH ACCESS , WHAT A MESS WAITING for a car to turn left,,, an forget the turn lanes,, go for traffic flow , ,, Capital hi, on Henderson, , and outa town is a school on a hiway , they want to expand,, so hopefully they will put ALL drop off behind the school, not on another main thourofare,, but,,? ,, you are the steets, in town, asking for public imput,,, also worried about walkers -, bike routes,,,,,, TURN Winne into one way eastbound, Broadway, one way westbound , from California, to Montana ave,… neigbors will complain , YES, Bozeman, Kalispell , Great falls, all have one ways in residential yes it works [GREAT,,,] South hills exit, HAS WORKED GREAT, BOTH GETTING TRAFFIC FLOW, off Capital interchange, yes,, , and an exit outa town for many commutors from the south…, but the neigbors complain,,?, ---- the overpass at custer is great til get to Mt. ave. why a two turn left,, good for an hr. in A.M. ONLY…hat a MESS , then trying to go straight,,, HELENA NEEDS, many more routes,, yes, traffic flow very poor,, yes, MONEY , biggest problem, but planning needs far better future consideration,, and schools HAS to be a big thought process , or, it’s gonna get worse , not better
5.0	05/09/2015	Michael	Speadbury	The draft transportation plan did not talk about the need for better public transportation; either by public or private means. A table indicated that between .5% and 5% take public transportation or commute by self powered means, and that Helena ranked poorly for air quality. It is up to the City of Helena and their contractor to indicate in this report that public transportation use, and future development (of that public transportation source) is needed for an area with approx. 65,000 people in the county containing the state's capital with a steadily growing population over several decades.
5.1				Stating that sidewalks are improved for pedestrians, and bicycles can be taken on a bus at all times as less than 1% of the population take does not solve this multifaceted problem. Both of you are paid well to write this report, it needs to publish recommendations for other than "more people are riding or commuting by bicycle". Helena residents do not walk or commute by bicycle in winter months for the most part. Developing, and publishing all public transportation options (public or private) is the way our limited road system in Helena will allow the projected future growth, and protect air quality at the same time.
6.0	05/11/2015	Corrina	Collins	Jonathan Burnett’s first name is misspelled, and the correct bureau title for him is Policy, Program & Performance Analysis Bureau

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7.0	05/12/2015	Paul	Cartwright	Comments from Growing Friends and myself, maybe others, are on the way. They're based only on the Appendix as submitted by the consultant--that would be you--since city staff claims no ownership and are crafted to address the decision the Commission must make to either accept or reject the Plan as submitted. The big issue is boulevard trees, something we're "discussing" with the City for other reasons as well. (And yes, in spite of the comments, we'll still plant a boulevard tree or three for you if you want.) That said, I do have some design ideas, which should be fleshed out in another forum. The national standards don't seem to match how I've experienced the road, as a driver or a pedestrian; nor do they match what analytical work I've read. However, I'd still like to do a walk about with an engineer (you?) sometime, because I just assume engineers see things that even an interested lay person will miss. I hope the city takes this up seriously. Parked cars are the big problem, especially since there's no way the city could or would stripe curbs for every sight distance triangle. I wonder if we could establish a "reasonable and prudent" standard for parking, and then give courtesy tickets for first offenders, as is done for out of towners who park illegally.

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8.0	05/12/2015	Paul	Cartwright	My comments are about Appendix D, Sight Distance Triangle Evaluation. First, the ordinance proposed in the appendix effectively curtails or eliminates the planting of boulevard trees in much of Helena, a major concern given that our urban forest will require extensive replanting in the next few years. Second, the proposed ordinance does not address the problems caused by on-street parked cars, which I was told was the main reason for preparing this appendix. The focus on trees to the exclusion of parked cars, which can create obvious and substantial visual barriers, is misplaced. Third, the appendix recommends adopting a stricter ordinance without providing any data whatsoever to substantiate the problem or the solution. Since other commenters are addressing the first two concerns, my comments are primarily about the lack of data in the appendix and some possible ways to remedy that. I also offer a few comments on urban design issues raised by the proposed ordinance. Some broad-brush data on accidents are presented in the main body of the draft plan. They show that crashes at intersections on non-arterial streets are rare and severe injury accidents are almost non-existent. This low likelihood of accidents suggests that rather than identifying specific features of specific intersections for correction, the goal of the analysis should be identifying whether the probability of accidents at one type of intersection is greater than at another one. While this is different from the approach transportation plans often take, it is not impossible. Some potential approaches suggest themselves. Perhaps the traffic analysis zones (TAZ) of the Greater Helena Transportation model are sufficiently small to allow comparisons of different neighborhoods around the town. There are significant differences between neighborhoods in the number and placement of trees at intersections. A comparison of the number of accidents at local-local and at local-collector streets, weighted by the VMT in a TAZ, might give a rough estimate of the impact of trees on intersection accidents. Obviously, while this could suggest the nature of the problem, a more detailed analysis comparing samples of intersections would be preferable. Such analysis would require gathering additional descriptions of a number of intersections, but this is work that could be done by trained volunteers. Though first harmful event data are known to have flaws, a comparison of that data by neighborhood might shed some light on another aspect of the possible problems posed by trees and other obstacles. In addition to Helena data, policy makers should be given national data and analyses. Certainly one hopes there are data supporting the sight distance triangle requirements for urban areas.

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				However, to show that trees close to high-speed rural roads, a common enough experience in previous times, are dangerous is not the same as showing how urban boulevard trees are dangerous. Boulevard trees reduce traffic speeds. What are the safety tradeoffs of reducing the number or size of boulevard trees, especially at intersections? Will this actually increase the speed of traffic through intersections and therefore the severity of accidents? Regularly spaced trees create a strobe effect on the appearance of intersecting traffic, especially at night. Some researchers believe that a blinking pattern generally is more readily perceived and safer than a steady pattern. What effect do boulevard trees have on the safety for pedestrians and on the perception of safety, which affects use of that mode? None of these are new issues. At least some of them have been simulated in transportation laboratories. Any proposal to revise the sight distance triangle ordinance should include some reference to assessments or studies done outside of Helena. Presumably, one could simply refer to "national standards" on sight distance triangle but that is not the same as actual analysis and could obscure rather than illuminate problems. First, a review of sight distance triangles regulations in Montana, and more importantly, across the country, shows a wide range of concerns and dimensions. This variation suggests that "national standards" for sight distance triangles are at best more accommodating and less certain than, say, national standards for engineering bridges. Second, "national standards" usually are standards developed in areas with far higher volumes of traffic than in Helena. Helena streets carry only a fraction of the volumes that similarly classified streets in urban areas do. (A national expert once said the volumes on some of Helena's local streets were equivalent to that of "abandoned roads" in urban areas.) This argues for some caution about how and if such standards are useful. Finally, this proposed ordinance has non-transportation impacts that should be stated clearly. The sight distance requirement for uncontrolled intersections of local streets would double minimum setback requirements for buildings. In most cases it would require a 25-foot setback or more, greater than many corner lots currently have. This could make it difficult or impossible to redevelop many parts of Helena. The proposal's impacts on walkability, on boulevard trees and on setback affect the older areas of town more than other areas. These are areas that have higher taxable valuation per square foot (see attachment). To the extent this ordinance makes those areas less desirable, it will undercut the city's tax base. The tradeoff between the ordinance and the tax base should at least be recognized and discussed. Overall, I recommend deleting this appendix from the Plan. Nonetheless, revising the sight distance triangle is a worthwhile project. I would support taking a comprehensive look at the issue.

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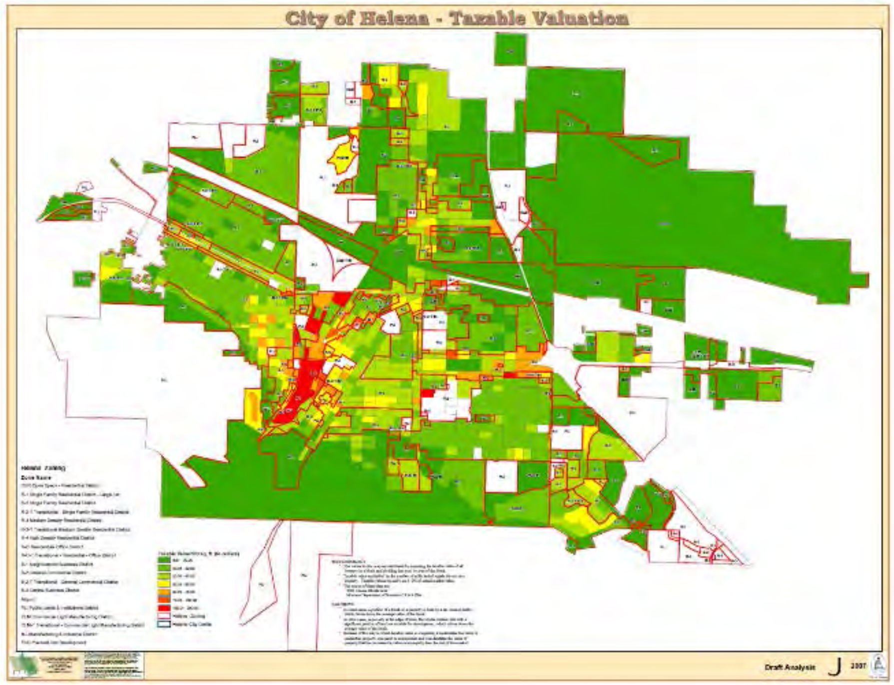
				These comments are submitted on behalf of myself. Thank you for the opportunity to comment. Attachment: Map of Taxable Valuation 

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9.0	05/12/2015	Bob	Throssell	The City of Helena released for public comment the draft transportation plan. Growing Friends of Helena offers comments on Appendix D, which proposes the city adopt a new sight distance triangle ordinance. Growing Friends asks this appendix be deleted, or not adopted as part of the transportation plan. Growing Friends was told Appendix D was requested because of concerns about cars parked near intersections. The proposed ordinance doesn't even mention on-street parking. It seems to deal solely with fixed objects. In particular, the appendix appears focused on trees, with one-third of the appendix given over to standards for trees. The ordinance proposed in the Appendix supposedly makes some allowance for trees in the sight triangle; this is an illusion when it comes to boulevard trees. Growing Friends knows of no tree species suitable for this area that grows to a foot in diameter or less and that can be limbed up 14 feet. The inclusion of this supposed concession is meaningless. Most of the existing green ash boulevard trees in town, along with the maples, lindens, and elms that Growing Friends and the City Parks Department are planting as replacement trees, would not meet the proposed ordinance. Appendix D recommends the City adopt a stricter ordinance than currently in place. It does not document a problem or explain why the proposal is a solution. Indeed, the Appendix contains absolutely no data, this even though there is accident data that would have allowed at least an estimate of the size and nature of the problem. No such estimate was made. Realizing that additional data on specific intersections might have been necessary for certain more detailed analyses, Growing Friends for months has offered volunteers to gather these data for the City or the consultant. It has yet to be taken up on its offer. Further, no data are offered from studies elsewhere that would indicate what and how big the problem might be. Finally, boulevard trees function as a traffic control device (as can other vertical features along roads); the consultant does not address the safety trade-offs of eliminating trees from sight distance triangle. While a periodic review of existing city rules and relations is generally a good idea, enforcement of those existing ones is even better. The City of Helena has a sight distance triangle regulation that is honored intermittently at best. There are plenty of spruce trees and other vegetation that need to be addressed first before vilifying deciduous trees. More importantly, the existing ordinance needs to be revised to address parked cars, trailers, campers and boats, which block a driver's view far more than trees do. Thank you for considering Growing Friends' comments.

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10.0	05/12/2015	David	Gallik	**Gallik Law Office, PLLC.** **Attorneys at Law** *1124 Billings Ave.* *Helena, MT 59601* *Phone: (406) 443-0009* *Fax: (406) 443-0609* *Email: dave@gallikaw.com* *David B. Gallik* *State Bar of Montana No. 2825* *State Bar of California No. 98583* *State Bar of Washington No. 12449* May 12, 2015 David Knoepke, P.E. Civil Engineer, City of Helena 316 N. Park Helena, MT 59601 ***Advanced Copy Via E-mail: dknoepke@helenamt.gov*** RE: Public Comment on the Greater Helena Area Long Range Transportation Plan - 2014 Update Dear Mr. Knoepke: Please accept this letter as public comment on the Greater Helena Area Long Range Transportation Plan - 2014 Update, on behalf of the Estate of William Whyte, and its Personal Representative, Shane Whyte. The Greater Helena Area Long Range Transportation Plan - 2014 Update includes a section related to the Centennial Trail Master Plan, on page E3. Although the Helena City Commission has adopted several alternatives for portions of the Centennial Trail Master Plan, some of those individualized decisions of the trail's route should be reconsidered when bringing into focus the bigger picture of non-motorized transportation as it fits into the Greater Helena Area Long Range Transportation Plan. Shane Whyte appeared at a public hearing in his capacity as Personal Representative of his father's estate to object to the Leslie Street alternative for the Centennial Trail route from Spring Meadow Park to Joslyn Street. Shane's father, Bill, passed away last December. Bill owned the property adjacent to Leslie Street where the trail route is now slated to be constructed. Bill Whyte went to his grave convinced that at one point long ago Leslie Street had been vacated where it transects his property. He even colored a map when this occurred, showing his property as a whole, with Leslie Street vacated. I'm attaching a copy of Bill's map. Leslie Street is totally undeveloped at the point it crosses the Whyte property. I'm also attaching copies of the Cadastral Mapping aerial photos of the property in this area which is owned by the Whyte estate. Drainage is a real problem that does not appear to be addressing in the Master Plan. The April 20, 2015 Centennial Trail Plan Update informs us that the Helena City Commission selected the Leslie Street route for a proposed 10 feet wide shared-use paved path from Joslyn Street to Spring Meadow Park. The selected route for this section of the Centennial Trail is to commence at the Country Club Avenue/Joslyn Street intersection where it will then turn westward and continue along Leslie Avenue to Spring Meadow Park, a distance of .78

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				David Knoepke, P.E. Civil Engineer, City of Helena May 12, 2015 Page - 2 miles. Rather than the Centennial Trail crossing the Whyte property, where it is necessary to deal with steep grades or building obstructing earthen berms, we believe the proper choice for the placement of the Centennial Trail route, from Spring Meadow Lake to Joslyn, was not one of the considered alternatives. That route would be to continue following the railroad spur to Joslyn Street which is clearly the safest, least impactful, most direct route with minimal conflicts. Concern has been voiced that the choice of the Leslie Street alternative was made because funding is available and it is the expeditious choice, in that it can meet the construction schedule for this summer. Placement of the route of the Centennial Trail along the Leslie Street alternative make steep grades an issue, and would also cause ongoing problems with the drainage in that area. The drainage will only be exacerbated if an earthen berm is constructed to eliminate the steep grades on the undeveloped portion of Leslie Street where it transects the Whyte property. This will greatly diminish the value of these undeveloped parcels. The Centennial Trail Master Plan says this route will provide for future development on Leslie Street. That certainly will not be the case for the Whyte property. Rather, the property owned by th Whyte estate will be burdened with access and drainage issues that will diminish or eliminate any future development. Thank you for allowing me the opportunity to provide these public comments on the Greater Helena Area Long Range Transportation Plan - 2014 Update, as it includes the Centennial Trail Master Plan's proposed route from Spring Meadow State Park to Joslyn Street. Should you have any questions or concerns with regard to this public comment, please let me know. Sincerely, David B. Gallik David B. Gallik Attorney for The Estate of William Whyte

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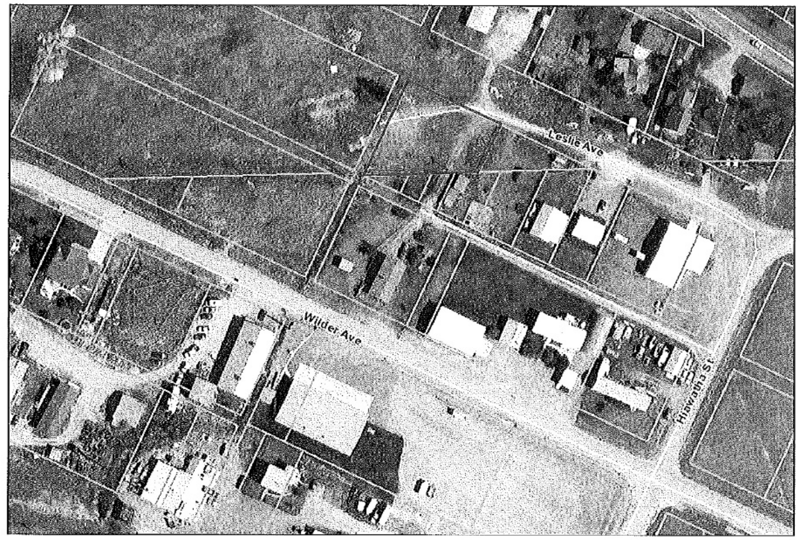
				5/5/2015 Printing: Layout Page  http://svc.mt.gov/msl/mtcadastral/layout.aspx?59 1/1

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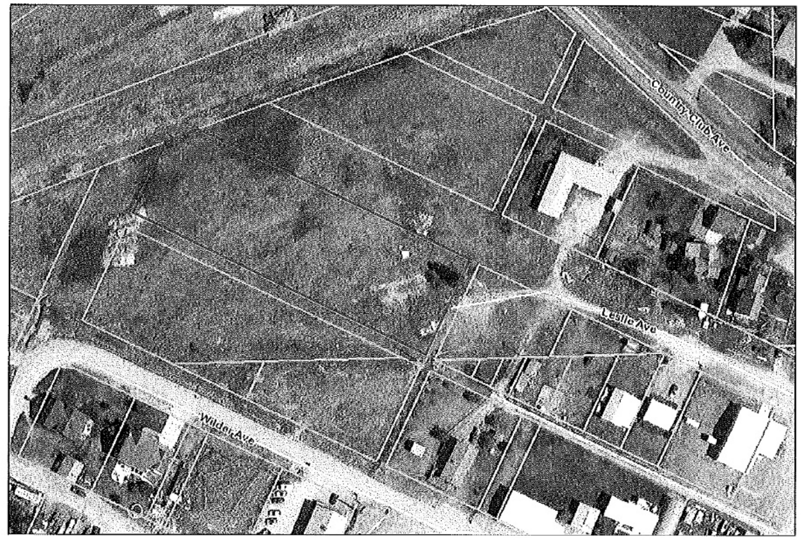
				5/5/2015 Printing: Layout Page  http://svc.mt.gov/msl/mtcadastral/layout.aspx?28 1/1

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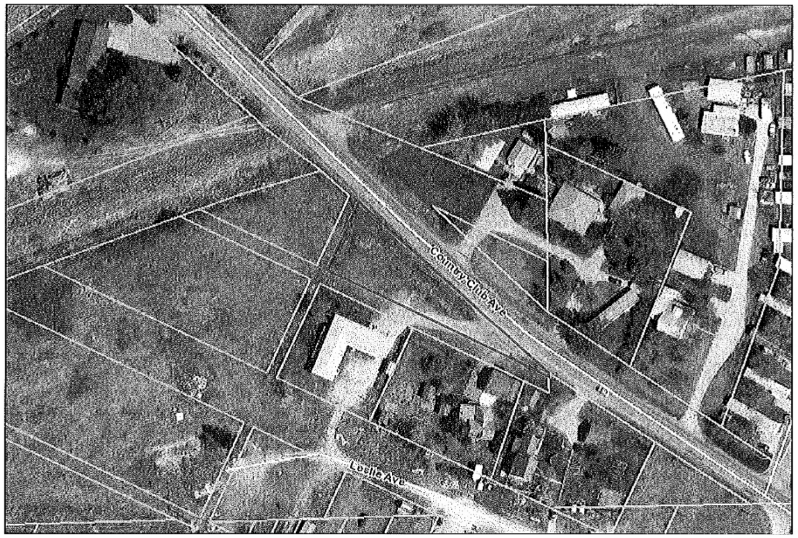
				5/5/2015 Printing: Layout Page  http://svc.mt.gov/msl/mtcadastral/layout.aspx?40 1/1

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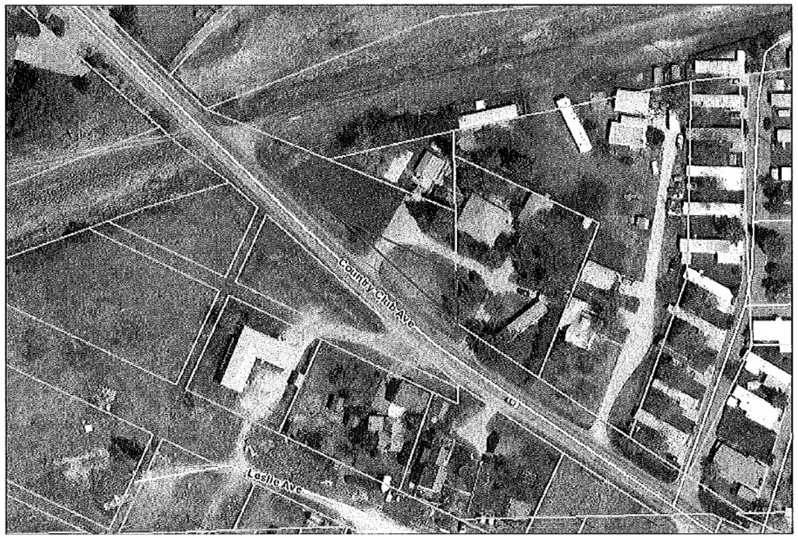
				5/6/2015 Printing: Layout Page  http://svc.mt.gov/msl/mtcadastral/layout.aspx?72 1/1

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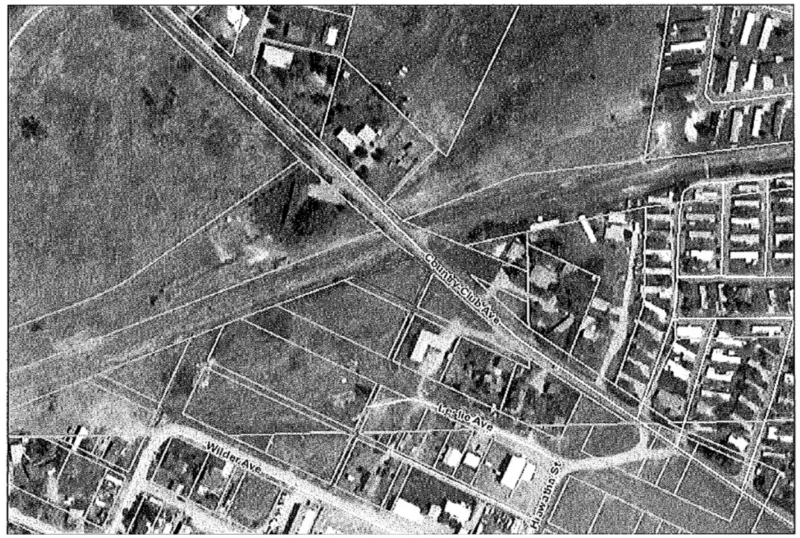
				5/6/2015 Printing: Layout Page  http://svc.mt.gov/msl/mtcadastral/layout.aspx?53 1/1

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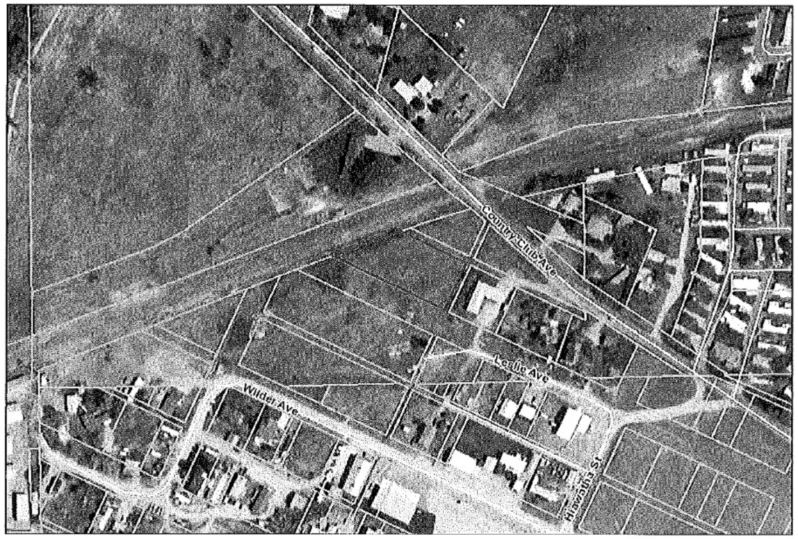
				5/5/2015 Printing: Layout Page  http://svc.mt.gov/msl/mtcadastral/layout.aspx?18 1/1

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				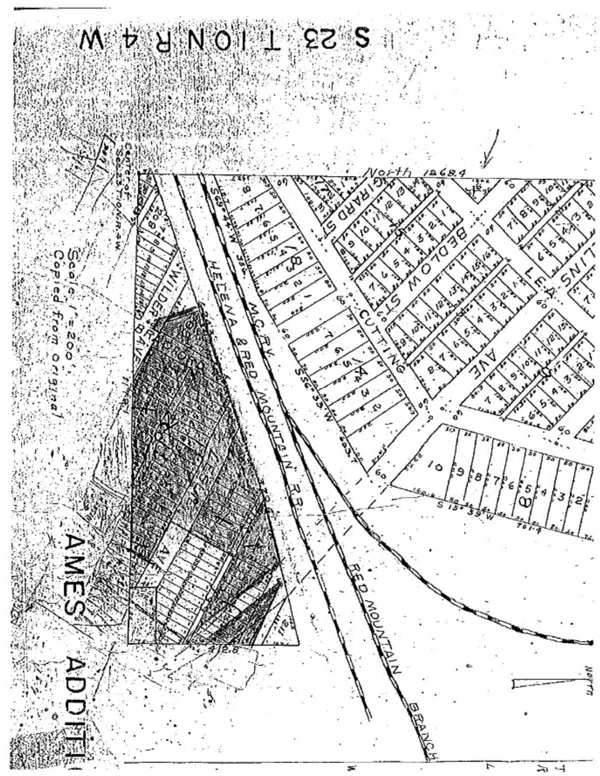

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11.0	05/15/2015	Jean	Riley	Comments: Greater Helena Area Transportation Plan
11.1				General: 1. Throughout the document there is reference to "the community or the community's" Long Range Plan. As this plan is for the Greater Helena Area that includes Helena, East Helena and areas within Lewis and Clark County, referring to "the community or the community's" infers the plan is only for Helena. If this is the case then the Plan is not for the entire area and is flawed from the beginning. The references to the community should be changed to "the Planning Area" to take into account the area that could be impacted.
11.2				2. The plan states the boundary was expanded to include areas of high growth, yet the plan stops at the county line between Lewis & Clark and Jefferson County. If the plan is to be comprehensive as it alludes too, then why stop at the county line. Neither the roads nor the traffic stops so why does the plan and the analyses stop?
11.3				3. The local plans reviewed do not include the East Helena Plans. The East Helena Growth Policy was updated in 2014 which updated the 2009 comprehensive plan. Neither of these plans are referenced, there is information that may impact the recommendations in the document.
11.4				4. As this document makes recommendations that abut Jefferson County, why weren't the Jefferson County plans reviewed. The recommendations for the roads that cross the county line should be consistent between to two counties.
11.5				5. Reviewing the costs estimates for the projects, they appear to be low when looking at right-of-way within the built areas. Utility costs may increase the estimate substantially.
11.6				6. Is the order of the recommendations the priority for the Plan? The Plan does not include when the projects may be forwarded to development.
11.7				7. Many of the recommendations indicate what should be built roundabout or type of intersection, yet there has not been an engineering analysis to determine the appropriate solution. This appears to bring solutions forward prior to understanding the full concerns and limitations for the projects.
11.8				Goals: 1. Goal 3: a. This goal only references the area immediately adjacent to the City of Helena as a potential for urban density growth. The same type of growth is occurring or has occurred adjacent to the City of East Helena. East Helena is looking at potential annexation also. This goal should be updated to include East Helena. b. There is an area where the East Helena Growth Policy and the Lewis and Clark County Growth Policy overlap. Both growth policies should be referenced in the plan.

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11.9				2. Goal 6: a. This goal should be rewritten to include the entire area. “Support Economic Vitality of the Planning Area.” Does the plan only want to support economic vitality in the city of Helena? Why wouldn’t the goal to be to support economic vitality of the entire planning area?
11.10				3. Goal 7: a. The language in Objective 7.4 should read “the Cities and Counties Growth Policies”. As the areas does include East Helena as a separate incorporated city, and Jefferson County Growth Policies could impact the plan all should be taken into account when coordinating local and regional land use planning.
11.11				4. Goal 8: a. Objective 8.1 references “used in similar cities”. As Helena is significantly larger than East Helena which City is being referenced here? This objective is not clear on what is being proposed.
11.12				<u>Out Reach and Public Involvement:</u> 1. Participation Procedures - The reference is the community sought input and the general community members – who is being referenced here? Were the residents of East Helena excluded?
11.13				2. Technical Work Group – The City of East Helena is not included in the Technical Working Group, yet a NGO, BikeWalk Montana, is included. Some recommendations impact East Helena; it would appear that East Helena should have been included in the Technical Work Group.
11.14				3. Transportation Coordination Committee – This committee does include representation of the city of East Helena. The language in paragraph one of the section only refers to one city not both Helena and East Helena.
11.15				4. Other Public Outreach Activities – The Helena School District was included but the East Helena School District was not. Some of the recommendations may impact how students within East Helena and the surrounding area walk and bike to school; it would appear that vetting information through the East Helena School District would have been important.
11.16				<u>Existing Transportation System:</u> 1. Major Street Network – The major street network includes streets within Helena and East Helena. The language should be “the communities’ transportation systems”. This will accurately reflect what is discussed in this section.
11.17				2. Existing Plans, Codes, and Policies – Again, the policies for East Helena should be included in the review documents.
11.18				3. Existing Facilities – Shared Use Paths – There should be a reference to the path that connects East Helena to Helena adjacent to US 12. This shared use path is maintained by MDT.

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11.19				4. Programs – overall these programs appear to be for the City of Helena only and should be referenced as such. Does East Helena have such programs? a. Bicycle Parking – City of Helena's Requirements – Is it true that the business owners must provide shelter from the weather for bicycles. This may result in owners not installing racks. The photo shown is not compliant with the policy. b. Snow Removal – The shared use path between Helena and East Helena and between Montana Avenue and Lane Avenue in East Helena adjacent to US 12 is maintained by MDT.
11.20				Projected Transportation System: 1. Socioeconomics - The 5th paragraph states "Population growth trends occurring in nearby Broadwater and Jefferson Counties were also important consideration for the LRTP." If this is an important consideration, why does the plan stop at the county line and not continue into the high growth areas within the adjacent counties?
11.21				2. Existing Land Use and Development – East Helena – If the growth that is discussed on the southwestern perimeter is the area of Mountain View Meadows that is within city limits of Helena and should be discussed as such.
11.22				3. Figure 4.2 Existing Land Use – this is not correct, please refer to the East Helena Growth Policy.
11.23				4. Recent Development Trends and Future Growth Areas – City of East Helena Future Growth Areas – Please refer to the City of East Helena Growth Policy; the EPA was only looking at potentials for the ASARCO lands not all properties within the East Helena Growth Policy boundary. This section should be updated with the correct information.
11.24				5. Population Projections for Incorporated Areas – The City of East Helena Growth Policy was adopted October 7, 2014 by Resolution No. 466.
11.25				Safety: 1. The information should be closely reviewed as the figures and the tables do not match. Figure 5.10 indicates there was a fatality at the intersection of US 12 and Lake Helena Drive, Table 5.1 indicates there were no fatalities (line 30).
11.26				Facility Recommendations: 1. MSN-1 – There is an existing separated shared use path that is well used. With the right-of-way constraints is it realistic to include bike lanes as this adds at least 10 additional feet to the right-of-way foot print.
11.27				2. MSN-2 – MDT is updating the rail grade crossing report. The language concerning what is proposed should refer to the new report as the recommendations in the report may change from the existing document.

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11.28				3. MSN-7 – This project is both within Helena, East Helena and Lewis & Clark County. Making the commitment for complete streets for the City of Helena may not be realistic and conform to the other two governmental agency standards.
11.29				4. MSN-15 – As this is a very complicated intersection and the final decision has not been determined for the intersection treatment, it would make sense to complete a feasibility study for the intersection and surrounding area to determine what treatment would be appropriate for the traffic flow and the area. This is a low income area and also has potential for Brownfields money.
11.30				5. PED-10 – This is a midblock crossing on a 35 mph roadway with higher traffic levels. As there is a recommendation for a crossing at Lake Helena Drive and Lewis where there is a 4-way stop, why would a recommendation be forwarded that could result in a safety concern for pedestrians using the crossing. Drivers will not expect pedestrians in this area.
11.31				6. Bicycle parking – Placement and Parking Area Design – This is not consistent with the city of Helena Resolution – The resolution “provide shelter from the weather for bicycles”.
11.32				7. Chapter 8 references the city of Helena and Lewis & Clark County subdivision regulations, there should also be a reference to the city of East Helena subdivision regulations.
11.33				8. Chapter 8 references the NACTO Urban Bikeway and Street Design Guides there should also be referenced to the AASHTO Guide for the Development of Bicycle Facilities as this the MDT standard and may be more appropriate for the more rural areas.
11.34				9. Figure 8.12 – HATS runs to East Helena, this should be included in the Plan.

ID #	Date Received	First Name	Last Name	Full Comment Received
12.0	05/15/2015	Bill	Schneider	HELENA BICYCLE CLUB PO Box 4682, Helena, MT 59604 May 15, 2015 David Knoepke City of Helena 316 N. Park Helena, MT 59623 Dear David: Sorry I've missed a lot of meetings, but I remain very interested in doing whatever I can on behalf of the Helena Bicycle Club to help make our community a safer and friendlier place for bicyclists. In that regard, I recently rode our major east/west "designated bicycle route," and I have a long list of recommendations that, hopefully, the city will consider implementing. I believe one of the major goals of public works departments is moving motorized traffic from point A to point B as rapidly and safely as possible. However, this is apparently not the goal when moving non-motorized traffic. This becomes very obvious when riding our designated bicycle route, which if you haven't done, I encourage you to do so. In fact, I'd welcome the opportunity to ride it with you. Getting right to the point, if this is to be our "designated bicycle route," bicyclists should have the priority, not motorists. Long ago, the Helena Bicycle Club cost-shared with the city to sign this designated route. I think we donated about $2,000 to the project. Now, however, it's obvious that having a designated bicycle route involves much more effort than simply putting up a few signs, which is basically all we have done. Right now, the priority is still moving motor vehicles along rapidly, not bicycles. Nowhere on the designated route do bicyclists get the priority over motorists. As you will see, many of my recommendations follow that logic i.e. moving bicycle traffic more rapidly and safely. If we want more people to view bicycling as a realistic alternative form of transportation and take up (and enjoy) bicycle commuting, we need to do what we can to make it faster, easier and safer, especially on our "designated" route. 1

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				I believe the city prefers to have bicycle commuters on "parallel streets," which I interpret as not on streets like 11th, 6th, Broadway and other arterials. Again, if we want this to happen (and I believe most bicyclists want this, too), we need to make it faster, easier and safer for bicyclists. I realize I am hardly the average bicyclist, having "driven" my bicycle around Helena for 40 years and become one of the "fearless," as they say. I never drive by bicycle on the designated route because it's too slow and dangerous to ride compared to thru streets like 6th and Broadway. During my recent ride, I stopped at almost every intersection and took notes, and here is what I recommend, most of which will be fairly inexpensive to implement, at least compared to any infrastructure project. The end result, I believe, will be a designated east/west route many more bicyclists would use. So I don't repeat myself, here are a couple of general recommendations: 1. Put up signs "Bicyclists (or bike icon) may use the full lane." I've seen these signs in Oregon, and I recently also saw them in Hamilton,so I know they're available. (See attached photo.) I prefer these signs over sharrows because we have to budget to re-paint them every year or two, and they get covered up with chip seal and patches. However, sharrows would better than nothing. 2. In places where the bike route turns, put the turn signs a half-block before the turn, not right at or after the turn, where they are now. Bicyclists might not see the current signs in time to avoid making a sudden, unexpected turn with no time to properly signal. 3. No intersections on a designated bicycle route should be uncontrolled. From west to east, here are the intersection-by-intersection recommendations: 1. Hauser/Henderson. Hauser is mostly what we want for a designated route (i.e. thru street, fairly low traffic), but turn the stop signs north/south on this intersection so bicyclists don't have to stop. Hauser/Dearborn. A tough call. Not a problem now for bicyclists going west-to-east, but a big problem when going east-to-west. Bicyclists should not have to stop when going north on Dearborn and turning left onto Hauser, but you can't really turn the stop signs like you can on Henderson, so perhaps we can make this a four-way stop. Right now, because of lines of parked cars, it's difficult to see cars coming from either direction when turning left onto Hauser. Also, move the bike route turn sign to before the turn, or add another bike turn sign a half-block from the turn. 2

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				Dearborn/Stuart. An uncontrolled intersection. Put east/west stop signs so bicyclists can safely ride through this intersection. Dearborn/Floweree. Turn stop signs east/west or make 4-way stop. Benton/Gilbert. Turn stop signs east/west. Benton/Placer. Remove north/south stop signs. Benton/Lawrence. Add east/west stop signs and remove the stop sign going south. Can't go straight here anyway because of the one-way parking lot. Need bike route sign on Lawrence a half-block before Benton for westbound bicyclists. Lawrence/Park, Lawrence/Fuller and Lawrence/LCG. All stop lights. Stop lights are good for bicyclists, although it'd be nice if the lights could detect bicycles, which these lights can't. I recommend putting a continuous bike lane from the entrance of the city/county building parking lot to Jackson Street (and reverse), being sure the bike lane goes through the intersections, not stopping before the intersection like our other bike lanes do. Stopping the bike lane before the intersections like the bike lanes on Helena, Benton and Lamborn do probably makes those streets more dangerous for bicyclists because beginning and intermediate bicycles (and even a few experienced riders) do not know how to safely go through a busy intersection and may cause sudden, unexpected movements as they try to figure out what to do. Lawrence/Warren. Need bike route turn sign before this intersection. 9th/Ewing and 9th/Rodney. Turn stop signs north/south to allow bicyclists to ride through without stopping. 9th/Davis and 9th/Beattie. How it should be on entire designated route. 9th/Raleigh and 9th/Hoback. Remove east/west stop signs. 9th/Montana. What to do at this intersection is clearly out of my league, but something needs to be done. Right now, it's very dangerous for bicyclists to cross here, even though it's the designated route where they should have priority. Not too scary with low traffic volume, but during high traffic times, it can be almost impossible for a bicyclist to safely cross here, only achieving it if motorists become "too courteous" and stop to allow the bicyclist to cross. Even this can be dangerous if the inside lane stops but the outside lane doesn't. Perhaps some "Yield to Bicyclists" signs--never saw such a sign, but sure seems like something they should start using, right? Another option might be a rapidfire beacon, something we could use in other major intersections in Helena, too, but it seems especially appropriate on our designated route. 3

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				9th/Washington (west). North/south yield signs. Okay, I guess. Yield signs could be used in other places on the route, too, as long as the motorist has to yield, not the bicyclist. 9th/Roberts, 9th/Sanders and 9th/Lamborn. Turn stop signs north/south. 9th/Hannaford. A confusing, uncontrolled, dog-leg intersection. How about north/south yield signs and a bike lane turning through the dog leg so bicyclists know where to go? 9th/Fee. Another uncontrolled intersection. Add north/south yield or stop signs. 9th/Washington (east). Turn stop signs north/south. 9th/Oregon. Uncontrolled. Add north/south yield or stop signs. 9th/California. OK as is, assuming this is the official end of the designated bicycle route. If not, might want to re-think what to do here. I realize that essentially making 9th a thru street might stir up local residents, probably fearing motorized traffic will increase, but with a 25 mph speed limit and more convenient thru streets on both sides (6th and 11th), I can's see much increase in motorized traffic by giving bicyclists the priority here. If we can make 9th a popular route for bicyclists, there might be so many on the street that motorists will avoid it. Again, if you want to go for a ride, I'd be up for it at your convenience. In any regard, though, please give the foregoing some consideration. Thank you, Bill Schneider, Vice-President Helena Bicycle Club CC: Randall Camp, Ryan Leland, Jeff Key, NMTAC, Karen Lane, HBC board 4

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13.0	05/26/2015	Corrina	Collins	Sorry this is so late. I received a comment from David Jacobs on the transit section of the plan. He indicated the in Section 10.2.8 the new freedoms program section 5307 should be 5311. On page 179 urbanized are formula grants again it should be 5311 not 5307.

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14.0	06/05/2015	Katherine	Haque-Hausrath	Please see attached for my comments on the draft LRTP. I focused my review on Chapter 8. Overall, I was very impressed with the draft LRTP. It was well-written and thoughtful, and the bicycle and pedestrian discussion and recommendations were quite good. My small number of comments focus on clarifying certain items and incorporating certain broader issues related to other City Commission issues. I apologize for these comments coming at this time. At a previous meeting, I had understood that there would be one additional Administrative meeting where the City Commission discussed the draft LRTP. it sounds like that is not the case, and rather it will go straight to a City Commission meeting. Please let me know if you have any questions. To my fellow Commissioners and Mayor: I request that we make a concerted effort to identify higher priority recommendations and the less-expensive bicycle and pedestrian recommendations and begin implementing them in a strategic fashion.
14.1				1. Thank you very much for the thoughtful bicycle and pedestrian recommendations.
14.2				2. How does the LRTP address the safety issues posed by oil trains?
14.3				3. How does the plan address the concept of induced demand, i.e., the fact that increasing the width of arterial streets tends to increase traffic? In particular, this issue should be addressed for the recommendation of making Custer a five-lane road, and 11th Avenue three-lane.
14.4				4. I strongly support the recommendation for a “road diet” on Montana Avenue (i.e., making Montana three lanes). Please make this recommendation clear in the LRTP.
14.5				5. Please include additional recommendations to make Cruse safer for bicyclists and pedestrians (e.g., eliminate the bypass format by squaring up the intersections, narrow the road through angled parking, install sidewalks, etc.) The City received a safety recommendation for the intersection of Cruse and Cutler on August 12, 2014 that could be evaluated.
14.6				6. Please include recommendations for traffic calming (e.g., installation of a separated bike path for Centennial Trail, bulbouts, etc.) along Boulder to disincentivize truck traffic along Boulder.
14.7				7. Page 109, MSN-15: Please confirm that the recommendations for malfunction junction meet the needs of the Caird redevelopment.

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14.8				8. Figure 8.5, Recommended truck routes: Routing trucks down Last Chance Gulch and then right onto Lyndale will make the intersection by Memorial Park, the pool, and Centennial Park even more dangerous. If we adopt this recommendation, we should pair it with additional pedestrian and bike improvements for this intersection, such as the leading pedestrian interval signal timing and/or pedestrian hybrid beacon discussed in Section 8.4.
14.9				9. Section 8.4: I appreciate the thoughtful recommendations for pedestrian improvements.
14.10				10. Section 8.4: I request that there be additional recommendations for making Montana Avenue between Cedar and 11th Avenue safer for pedestrians. Given the proposed development at Caird, the Lewis and Clark Brewery, and the additional development encouraged in the Sixth Ward, pedestrian improvements along Montana and the ability to safely cross Montana are particularly important between Cedar and malfunction junction
14.11				11. Page 129, Ped-22 and Ped-23 recommendations for Broadway and Cruse: I recommend that the LRTP include a similar fix for the northern side of 6th and Cruse.
14.12				12. Page 129, Ped-25 Recommendation for 6th and Montana: I recommend that the LRTP include similar recommendations for the Broadway and Montana intersection.
14.13				13. Page 139, BL-29: Please remove Option 1, which involves removing the boulevard strip and street trees to install bike lanes. This does not comply with the City's Complete Streets Resolution, nor does it comply with the City's Engineering Standards.
14.14				14. Page 140, BL-32: Please extend the "road diet" of reconfiguring Montana to three lanes from 11th Avenue to Cedar Avenue. In addition to allowing for bike lanes, the road diet would also have a traffic calming effect and would make any future railroad grade separation less expensive. Additionally, I recommend leaving Option 1, which involves narrowing travel lanes, but eliminating the options that discuss moving the curb and gutter to provide additional pavement width. Moving curb and gutter is likely not feasible without impacting private property and/or the sidewalks.
14.15				15. Page 143, Table 8.12: These cycle-track suggestions may not be necessary for the traffic on Fuller and Front. If the Neill intersections can be fixed to be made more pedestrian-friendly, it would seem that the concern of having a safe path between Centennial Trail and the Walking Mall could be addressed without the expense of cycle tracks.
14.16				16. Page 144, SUP-6 and SUP-11: These recommendations are no longer necessary because of the access for Centennial Trail that was recently obtained.

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15.0	06/09/2015	Matt	Elsaesser	• Priority to bypassing Malfunction/Queen City Crossing o Signal at National; Expanded Signal and roadway connection to Boulder at Livingston Signal; Safety Improvement for crossing Montana between Sixth Ward and redevelopment area towards Centennial Park.
15.1				• Shared path or other NMT conductivity using Gibbon's to connect Centennial East to East Helena Trail and Capitol Interchange ADA/Bike/Ped Bridge
15.2				• Intersection at Benton/Carroll Event Center/Transfer Station/& Tracks.....safe crossing for CTW, traffic flow from events & transfer station
15.3				• Prioritize intersection at National & Euclid; implement lighting & bulb outs for 14th & LGC......there are other exits for Great Northern
15.4				• Pavement Preservation Practices......e.g. shifting highway traffic paint on a regular basis to provide more even ware on pavement
15.5				• Lighting District for NMT projects (seek opportunities for grid-tied solar when adjacent to utilities)
15.6				• Make rail spur from MT to National a lit, NMT path as part of plans for MT Ave between Custer & Malfunction and conductivity for ADA/Bike/Ped from MT to National
15.7				• Helena South Gateway Project; Restructure Helena Bypass configuration of Cruse and Cruse approaches to make west side of Cruse non-motorized, widen east side of Cruse for two way car only traffic, (utilize median as a park) make Cutler approach nonmotorized on wings and make a three way stop configuration....green capital concepts like those for LCG from mini-malfunction to Euclid for section from Cutler
15.8				• Cook Street ramp and connection from Helena Ave to Transit Center

A.2 PUBLIC COMMENTS RECEIVED BEFORE RELEASE OF DRAFT LRTP REPORT

Table A.2: Public Comments Received Before Release of Draft LRTP Report

ID #	Date Received	First Name	Last Name	Full Comment Received
1	04/10/2014	Bill	Schneider	Dave, Please note the attached letter from HBC concerning the upcoming revision of the Greater Helena Area Transportation Plan. Thanks, Bill ______________ Bill Schneider P.O. Box 504 Helena, MT 59624 406-431-4594

ID #	Date Received	First Name	Last Name	Full Comment Received
				(letter reproduced below)

HELENA BICYCLE CLUB

April 10, 2014

Dave Knoepke
City of Helena
316 N. Park Ave.
Helena, MT 59623

Dear Dave:

Sorry I couldn't get to the meeting last Tuesday, and regrettably, I won't make the May meeting either, but please don't take this as a sign the Helena Bicycle Club isn't interested in working with you on the upcoming revision of the Greater Helena Area Transportation Plan. On the contrary, we view it as the most significant opportunity we've had in decades to make our community safer and friendlier for bicyclists. HBC would like to do as much as we can to help with the bicycle aspects of the plan.

Because my travel schedule prevents me from attending a lot of meetings, I've decided to take the time to write down a summary of our concerns and suggestions. You're already keyed into a lot of this from past discussions, but just in case here it is again. Please consider these recommendations as you and your co-workers prepare the draft plan.

I realize we could wait and submit these during the official public involvement phase, and we will do so, but we thought it might be helpful for you to have these during the early preparation phase of the draft plan.

We have some specific suggestions, but generally, HBC has four major priorities (in no order of priority): completion of the Centennial Trail, weaving the concept of Complete Streets throughout the new plan, adoption of NMTAC's Bicycle Lane Network and various actions to develop a bicyclist-friendly central business district.

GENERALLY….

Centennial Trail. This project is a high priority for almost everybody. Anything we can do to speed up the development of the trail would be a great benefit to Helena. I'm not sure how the transportation plan can address the big problem,

1

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				money, as we all know getting millions from the federal government to complete the trail is not likely to happen. **Bicycle Lanes.** Another high priority for us is incorporation of the Bike Lane Network developed two years ago by NMTAC into the plan. The NMTAC proposal basically calls for bicycle lanes on all major arterials and collectors, including the MDT routes through Helena, and we strongly support this proposal. Whenever possible, please try to avoid putting bike lanes directly adjacent to parked cars. Experienced bicycle commuters won't ride within 3 feet of parked cars (with or without a bike lane) for fear of being "doored." **Bicycle Friendly Downtown.** HBC is very interested in having a bicyclist friendly central business district, but it's almost impossible to do this with the core of our downtown, the Downtown Mall, a vial and safe travel corridor, closed to bicycles. This is a long-running issue, as you know, but still an important one for the transportation plan to address. I'm attaching two documents--the NMTAC recommendation to the City Commission and a White Paper prepared by the Downtown Business Community and HBC. Any questions you have should be answered by these two documents. **Complete Streets Policy.** As you know, the City Commission adopted the concept of Complete Streets, and we hope it can become evident throughout the plan. Generally speaking, we hope that the basic philosophy embodied in the plan calls for bicyclists to blend into normal traffic flow instead of trying to separate motorists and bicyclists. All types of infrastructure is very expensive and we'll never have enough money to build enough infrastructure to separate bicyclists and motorists, nor should we try to do this. Promoting the peaceful, courteous, safe sharing of our streets is a much better and less expensive option. **Roundabouts.** HBC supports the development of roundabouts, including major intersections such as Cruise/Neill/Helena/LCG. Roundabouts are safe and friendly for bicyclists. **Bulb-outs.** Bulb-outs and other traffic calming devices, such as those on Brady, might make roads safer for pedestrians or motorists, but they often make the roads less safe for bicyclists. If the new plan calls for more bulb-outs, we hope they can be designed with bicyclist safety in mind and done similar to the bulb-out on Henderson/Knight or at least the new bulb-outs on Park Avenue, and not like the bulb-outs on Benton by Carroll College. **SPECIFICALLY…..** **Euclid/Lyndale/Montana.** In general, we hope the City of Helena will start to look at this route as a logical bicycle commuting option instead of promoting alternatives or just assuming it will continue to be so dangerous that bicyclists won't use it. The fact is this is a fast, convenient route across town and bicyclists 2

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				will continue to use it, even if nothing changes. Also, long-distance bicycle tourists going through Helena logically take this route. Therefore, we should do what we can do to make it safer. We're fortunate to have a large shoulder on most of this route, which helps make it the easiest, flattest, fastest (but not the safest) east-west route across town for bicycle commuters. It's unsafe because of the "death trap" intersections where not a single inch has been set aside for bicyclists (even though MDT recently re-designed and re-painted two of these intersections) and because of the on-street parking on Lyndale and Euclid which forces bicyclists off the wide, safe shoulder into the traffic lane, often with heavy traffic moving at 35-45 mph or more. We realize anything on this route has to be approved by MDT, but in our talks with MDT, the state seems willing to cooperate if the City of Helena makes it part of its formal transportation plan and makes formal requests to do so. For example, MDT re-surfaced and re-striped Lyndale last year, but would not put bicycle lanes on it because the City of Helena didn't have a formal plan calling for it. **Two Way on One Ways.** In the low hanging fruit department (i.e. easy, inexpensive and shouldn't be controversial), please mark a two-way bicycle lane on the west side of the one block one-way section of South Benton behind the city-county building. This one-way street (put in with no chance for input by bicyclists) blocks a popular and safe bicycle route and forces bicyclists to either ride on sidewalks (which experienced cyclists won't do) or onto less safe Park Avenue to get around this one-block section. We have measured the street and there is plenty of room for a 3- or 4-foot bicycle lane. Ditto for the two-block one-way section of Hauser from Park to Getchell just west of the Great Northern area. **Henderson Avenue Crossing.** The Centennial Trail crossing of Henderson is currently very unsafe for bicyclists, as well as walkers and runners, Unless we're sure the Henderson pedestrian bridge will be built in the next year or two, we recommend temporary safety measures such as more signage, flashing lights, crosswalk markings and possibly a lower speed limit to, hopefully, prevent a tragedy. Another low-hanging fruit. **Two-way Traffic on Last Chance Gulch.** This question will likely come up in the plan. It isn't a major issue for HBC, but one point I'd like to make is that two-way traffic would make riding downtown safer and easier because northbound bicyclists would be less likely to use crowded sidewalks. Also, sadly, there always seems to be some bad behavior displayed by a few bicyclists who ride the wrong way on LCG when heading for points north. **Great Divide Mountain Bike Trail.** This trail, created and promoted by the Adventure Cycling Association, passes through Helena. Currently, it comes down Priest Pass into Helena on U.S. 12 and turns on Park Avenue and goes out Grizzly Gulch. HBC has had several discussions with ACA about moving the trail to Last Chance Gulch so it can go by bike shops, coffee shops, and other businesses, something both cyclists and business owners prefer. This is 3

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				something you could consider recommending in the new plan, but this idea is currently on hold because we'd like it to go through the Walking Mall, which is currently closed to bicycles. Another problem with the re-route is channeling these long-distance bicycle tourists down the very dangerous section of Lyndale mentioned earlier. Not a low-hanging fruit, but important. **Stoplights.** Most stoplights in town aren't sensitive enough to detect a bicycle and turn green when a bicyclist is stopped waiting for a green light. Actually, I'm not sure any of them do. Some seem like they do, but I've been told that might just be the normal rotation. We understand that the old magnetic loop stoplights are expensive to fix, but we certainly hope that all optical stoplights can be adjusted to detect bicycles. I've been told that they should be sensitive enough to do this. If any future construction project calls for the replacing magnetic loops with optical options, we hope it can be done in a way to detect bicycles. Transportation planners would never expect a motorist to get out of his/her car to push the button to get a green light, and we should extend the same courtesy to bicyclists. **Storm Grates.** The City has made some progress in fixing storm grates (Thank you!), but there are many more to do. Some are on MDT routes, so we might need to make a formal request to have the state fix them. **Stop Signs on Bikeways.** Please consider moving the stop signs to before instead after the bikeways on Henderson and Benton similar to the way they are placed on east Custer. Currently, motorists logically overdrive the multiuse path before stopping, which can be dangerous for bicyclists, especially beginners and kids on bicycles using the paths. These new and perhaps novice bicyclists might not be aware of the danger and ride through the intersection assuming the car will stop for them. Right now, many experienced bicyclists refuse to ride these bikeways partially because of this dangerous situation, which sort of defeats the purpose of having them. Another low-hanging fruit. **Designated Bicycle Routes.** If the new plan recommends designated bicycle routes across town, please put them on thru streets. Currently, for example, the bicycle route on Hauser/Dearborn/Lawrence/9th has way too many stoplights and stop signs, as well as more hills than necessary to get across town. In fact, a bicyclist on his/her way east on 9th from downtown has ten stops in approximately one mile--plus three uncontrolled intersections, always unsafe for both motorists and bicyclists. Ditto for the Dearborn. Again, we never would expect a motorist commuting to work to take a route with so many stops and unmarked intersections, so again, please extend the same courtesy to bicycle commuters. For example, why not turn the stop sign on Henderson/Hauser so bicyclists don't have to stop or make the Dearborn section a thru street for bicyclists? 4

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				In any case, thank you very much for including us in the process of developing the new plan, and hope these suggestions can be helpful in preparing the draft plan. Please let me know if there is anything else we can do. Regards, Bill Schneider Helena Bicycle Club cc: HBC BOD, NMTAC, Randall Camp, Karen Lane, Ben Brauner 5

ID #	Date Received	First Name	Last Name	Full Comment Received
				BICYCLES ON THE MALL ***Analysis, Concerns, Solutions, FAQs,*** Downtown business owners and managers in cooperation with the Helena Bicycle Club (HBC) prepared this document to help the Non-Motorized Travel Advisory Council (NMTAC) decide what to recommend to the city manager and city commission concerning the question of whether or not the City of Helena should lift the ban on bicycles on the Downtown Pedestrian Mall (Mall). At the August 15 administrative meeting, the city commission discussed this issue and referred it to NMTAC for consideration. Hopefully, this document answers most questions and addresses most concerns NMTAC members have. We've also tried to suggest solutions to those concerns. To answer other questions and address concerns we missed, we hope to send a small number of representatives to a future NMTAC meeting and have a face-to-face Q&A session. This will likely occur at the November 13 meeting We hope this plan for public comment and input into this proposal would be more convenient and effective for NMTAC compared to having a large number of people show up and request time to speak (and possibly covering a lot of the same points) during the limited time allotted for public comment at the end of NMTAC meetings. **THE PROPOSAL** As you know, a petition was circulated earlier this year and signed by 33 business owners/managers and around 700 individual downtown customers. In the petition, business owners/managers outlined the reasons they believe the ban on bicycles should be lifted and under what conditions it should be lifted. Here is an exact copy of the petition and list of signatories: June 4, 2012 TO: Mayor Jim Smith, City Commissioners Matt Elsaesser, Dan Ellison, Katherine Hague-Hausrath and Dick Thweatt, and City Manager Ron Alles FROM: Concerned Downtown Business Owners and Managers SUBJECT: Bicycles on the Walking Mall We, the undersigned, favor opening the Walking Mall to bicycle use for the following reasons and under the following conditions. We support this action for the following reasons: 1

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				1. It would help us get more customers because more people, namely the rapidly growing population using bicycles to get around town, would pass by our storefronts. 2. It would provide a safer, easier, more convenient route to the library (especially for kids), Neighborhood Center, Heritage/Pioneer Park and state offices than any of the current options. 3. It would be more convenient for employees who work on the walking mall and commute to work on a bicycle to reach their workplace. 4. It would allow the re-routing of the Great Divide Mountain Bike Trail from its current, less safe route on Benton and Park to Last Chance Gulch and bring these long-distance tourists by bicycle shops, coffee shops, restaurants and other businesses where they might like to stop. 5. It would promote the use of an environmentally sensitive, healthful transportation alternative to motor vehicles. 6. It would ease pressure to create more parking spaces and possibly open some parking spots used by people who might switch to bicycle commuting. 7. And finally, it would be a strong signal that the City of Helena is serious about making our community more bicyclist friendly and correct what might have been a mistake made long ago when the city commission official designated the walking mall as the only place in Helena where bicycles are banned. We favor opening the walking mall to bicycles under the following conditions: 1. Bicycles would only be allowed on the center, serpentine section or a portion of it, not on the sidewalks, with appropriate signage. 2. Appropriate signage would be added stating that bicycles must be ridden in a safe and prudent manner. As near as we can tell, the city commission has full authority to open the walking mall to bicycles, just as it did in allowing the tour train to return to the walking mall, by following the procedures for changing city code, and we encourage you to do so as soon as possible. Shalon Hastings, Taco del Sol Randall Green, Green and Green Realty Dan Stone, Hub Coffee David Barnes, Saunders Jewelry and Design Brian Ackerman, The Parrot Confectionary Billie Shepard. The Panhandler 2

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				Amy Barrett-Gilleran, Lasso the Moon Toys David Dalthorp, Gough, Shanahan, Johnson, Waterman Jan Peccia, Montana Book Company Denise Trautman, Holiday Inn Jane Anthony, Placer Condo Association Anna and John Doran, Big Dipper Ice Cream Toke Clark, Quarry Bar & Grille Patrick Cassidy, On Broadway Stephen Coen, The Garage Brenda Miller, Therapeutic Hands Massage Jim Kerns, CMS Lee Huber, Cinch Design Kelly Baraby, Dancing Lotus Center Andy Baur, Prickly Pear Land Trust Diane Gray, Helena Vision Center Dick Lewan, United Analysis Deliverables Dr. Heather Mcree, Cooperative Health Center Amber Calhoun, Montana Parent Magazine Rick Ahmann, Windermere Real Estate Amy Shepherd, Exploration Works Scott Hansing, Intermountain Chiropractic Brianne Harrington, The Painted Pot Amee Schaff, The Root Becky Shreiner, Frayed Sew Jordyn Peterson, Sweet and Savory Dick Lewan, United Analysis Deliverables No name listed, Triple E Builders In addition, at the August 15 administrative meeting several businesses and the HBC along with the Downtown BID supported lifting the bad on bicycles on the Mall. **WHAT NEEDS TO BE DONE?** In 1983, the city commission passed the following ordinance. 7-9-7: BICYCLES PROHIBITED: No person shall ride any bicycle, skateboard or other wheeled device or sled, toboggan or device on runners on the mall, except this section shall not prohibit the operation of wheelchairs by a disabled person on the mall, nor shall it prevent such activities when a permit has been obtained therefor pursuant to section 7-9-5 of this chapter. (Ord. 2295, 2-28-1983; amd. Initiative 2005-1, city election held 11-8-2005)

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				To allow bicycles on the mall, this ordinance needs to rescinded or amended. This will involve the formal process required for any changes in city code with public notices, comment periods and formal city commission vote. **HOW WOULD IT BE DONE?** Without the input of the city public works and parks departments, which would obviously be necessary, here is the current preference of the downtown businesses and HBC: 1. Install appropriate signage at all entry points to the Mall and at the Broadway crossing (yield or stop signs for bicyclists). 2. Divide the center serpentine section in half with a tasteful, non-obtrusive double line down the midline. 3. Paint directional arrows and bicycle images on the concrete showing the two-way flow of bicycles. In other words, the right-hand, uphill "lane" would go north to south and the left-hand, downhill "lane" would go south to north. **CONCERNS:** A few of the concerns that have been voiced to date and our response and/or suggested solution follow: **Concern:** Bicyclists would become a safety hazard for pedestrians. **Response:** First of all, some bicyclists already ride on the Mall, albeit illegally, and have been doing this for years. We know of no pedestrian/bicyclist accidents to date. We checked with the Helena Police Department or Montana Department of Transportation; neither had any records of pedestrian/bicyclist accidents on file for the Mall or for anywhere else in Helena. Allowing bicycles on the Mall would only emulate the situation on every sidewalk and multi-use bikeway/walkway in Helena i.e. all forms of non-motorized users peacefully, courteously and safely sharing the same space. For example, the current situation on sidewalks on the 300 and 400 blocks of Last Chance Gulch where bicyclists frequently ride even though sections of these sidewalks are narrow and frequently crowded with pedestrians. Still, there has been no bicyclist/pedestrian accidents (i.e. no accident reports on file) on the 300 or 400 blocks even though it could be easily argued that it's a more hazardous situation than that created by allowing bicycles on the Mall. The difference between the 300/400 blocks and the 100/200 blocks is that you see a lot of bicycles parked in front of businesses on those blocks, indicating that bicycle use has helped increase the number of customers for those businesses. 4

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				Solutions: There seem to be several fairly easy solutions to potential safety concerns: 1. Open only the center section of the Mall, or part of it, to bicycles and continue the prohibition on the sidewalks next to storefronts. 2. Put up appropriate signage and street markings encouraging safe and prudent riding. 3. Do public outreach to promote courteous and safe riding. 4. Also do outreach on the fact that under state law bicyclists must yield to pedestrians in all situations. 5. At the Broadway crossing, install signage requiring bicyclists to either yield to motorized traffic on Broadway (preferred by HBC) or stop (preferred by at least some downtown business people). ***Concern:*** There is no city budget allotted to this project. **Response:** This is true, but the cost should be minimal. We don't envision any additional maintenance costs for the parks department. **Solution:** The HBC and downtown businesses would step up to cover at least part of the cost and perhaps all of it. **Concern:** The city has already discussed opening the Mall to bicycles and decided not to do it. **Response:** The issue was discussed at several city admin meetings in 2004, and the Transportation Coordinating Committee did some research on the issue. At the time, based on minutes of admin meetings, the Helena Police Department and some city commissioners supported lifting the ban on bicycles. However, the big controversy over allowing motorized traffic on the Mall broke out and these discussions never came to a commission vote. Then, in 2010, the Helena Citizens Council looked at the issue and wrote a report for the city commission giving both pro and con comments from HCC members and citizens. There was no formal commission vote, but the minutes of the May 31, 2010 admin meeting indicated that there was "commission concurrence" to support the status quo i.e. no bicycles allowed. Things change. Today, more people are moving to bicycles as an alternative form of transportation, more downtown business people believe lifting the bicycle ban is important to their businesses, and the City of Helena is more interested in promoting bicycle commuting and bicyclist friendliness than ever before. Also, it seems as if a much larger majority of downtown business people and citizens frequenting the Mall support lifting the ban on bicycles. 5

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				Concern: It's a slippery slope. As soon as we allow bicycles, we will soon be allowing motor vehicles. **Response**: The following two ordinances, inserted by the people of Helena into the city code in 2005 by large voting margin (79 percent) will still be in effect and not affected by rescinding or amending HCC 7-9-7. Many business people who worked on passing these citizen's initiatives in 2005 now support opening the Mall to bicycles and would never take this position if they thought it might lead to motorized use. 7-9-2: VEHICLES PROHIBITED: Except as specifically provided herein, no motor vehicle, except a self-propelled wheelchair being used by a disabled person, may be operated, placed or maintained on the pedestrian mall. Authorized emergency vehicles, including, but not limited to, civil defense vehicles, police cars, fire engines and ambulances and city maintenance vehicles or vehicles belonging to any public utility may be driven on the mall whenever an emergency requires their presence, or whenever they are necessary in construction or maintenance of any part of the mall or any utility lines located therein. Police vehicles or vehicles used by the sheriff or his deputies may be driven on the mall for routine patrol purposes. (Ord. 2295, 2-28-1983) 7-9-6: TRAFFIC: No motor vehicle traffic, other than as allowed by sections 7-9-2 through 7-9-5 of this chapter, is allowed on the downtown pedestrian mall unless the use is first approved by a majority of voters voting in a regular or special election of the city of Helena. (Initiative 2005-1, city election held 11-8-2005) **Solution:** No real reason to be concerned about the Mall being opened to motor vehicles because such a proposal would require a public vote, which would be very unlikely to happen, and if it does, very unlikely to pass. **Concern:** Currently there are no bicycle racks on the Mall, so where do all the bicycles go. **Response:** True, but why would business owners or the City of Helena place bicycle racks when the Mall is closed to bicycles. If the Mall is opened to bicycles, business people would likely start installing racks for their customers. There is currently no reason to do this with the Mall still closed to bicycles. 6

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				Solution: Encourage business people or business associations to install bike racks. HBC and other nonprofits may be able to contribute financially to the placement of some bicycle racks. **Concern:** HCC 7-9-7 includes skateboards and rescinding the ordinance would also open the Mall to skateboarders. **Response**: True. Rescinding HCC 7-9-7 would open the Mall to skateboarders. However, downtown business community prefers to continue the ban on skateboard use, and the HBC does not have a position on skateboard use. **Solution:** Instead of completely rescinding HCC 7-9-7, the city commission can amend it to allow bicycles and continue to prohibit skateboards. This would result in the same amount of work for the commission as completely rescinding the ordinance. **Concern**: Opening the Mall to bicycles would violate ADA. **Response:** According to Lloyd Sparks of the Montana Independent Living Project, ADA compliance would not be an issue if the City of Helena opened the Mall to bicycles. The MILP did, however, point out some issues with HCC 7-9-7 unrelated to the question of allowing bicycles on the Mall. Please note the attached letter. Also, in discussing the issue with Helena's ADA coordinator, Elroy Golemon, it became clear that the key point with ADA is discrimination i.e. the city can't do anything that discriminates against people with disabilities. HCC 7-9-7 currently does not discriminate against people with disabilities i.e. no person can ride a bicycle on the Mall. If amended to allow bicycles, HCC 7-9-7 would allow all persons to ride bicycles on the Mall i.e. both people with disabilities and people without disabilities. Hence, it seems, no discrimination or no violation of the ADA. **Solution:** No solution necessary because there is no ADA issue to address. **FREQUENTLY ASKED QUESTIONS:** ***Q:*** Why was the ordinance banning bicycles passed in the first place? ***A:*** Nobody seems to know the answer to that question. ***Q:*** Since state law permits bicycles on sidewalks and says that bicyclists must yield to pedestrians on sidewalks, why doesn't this state law apply to the sidewalks on the Mall? ***A:*** City code only refers to the "pedestrian mall" or "the mall;" it does not differentiate between the center, serpentine section and the sidewalks on both 7

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				sides of it. Also, according to the Helena Police Department, a city can pass an ordinance that is more restrictive that the state law, which is the case here. The City of Helena has passed an ordinance that restricts bicycle use on the sidewalks on the Mall and this ordinance prevails over the statewide statute. **Q:** Would this mean the stores would be open at night or weekends? **A:** Each individual business owner will have to make their own decisions on the hours they open, but having more customers available, especially at off-hours, would create an incentive to stay open longer. ***Q:*** Why can't bicyclists simply walk their bicycles through the Mall or to their business destination? **A:** They can and a small number of bicyclists already do this, but there is no reason they need to. It's obviously more convenient to ride to near the front door of their business of choice, and we probably can all agree that convenience is important to shoppers. ***Q:*** Why is it safer for bicyclists to use the route through the Mall? **A:** Any route around the Mall is less safe, more difficult and less convenient for bicyclists. The three choices going north-to-south are Jackson Street, Hibbard Way and South Park. Jackson and Park involve a steep hill and two or three block detour. Jackson involves going across a heavily used street (Broadway) without a marked crosswalk (as the Mall has). Hibbard way involves a right onto Broadway and then a left (left turns always difficult and dangerous for bicyclists) onto Park and then another left to get to Pioneer Park, the library, Neighborhood Center or state office building. Park involves riding on a very heavily used street. No bike lanes on any of these streets. Going south-to-north takes Hibbard Way off the list because of the one-way section. ***Q:*** Can we do a trial period for a year or two and then make a decision? **A:** The HBC prefers not to do a trial, but would endorse it if necessary. Likewise, the downtown business community would rather not go this route, mainly because it just becomes more work for everybody. Opening the Mall to bicycles for one year would involve temporarily rescinding HCC 7-9-7, and then if the trial was successful, the city commission would have to do the same process again one or two years later to make it permanent. In other words, it seems like twice as much work. Plus, simply rescinding or amending the ordinance would be, in essence, a trial. If there are unforeseen problems, the city commission can simply pass it again. ***Q:*** Are we sure allowing bicycles on the Mall would not require a public vote? **A:** Yes. Bicycles are not motor vehicles, so they don't fall under the voter-enacted 2005 ordinances. ***Q:*** Would we have to change the name of the Mall? 8

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				A: No, Supporters of lifting the ban on bicycles see no reason to change the name of the Mall. **From:** Lloyd Sparks **Sent:** Wednesday, September 26, 2012 4:24 PM **To:** billsschneider65@gmail.com **Cc:** elroy; Bob Maffit **Subject:** ADA issues i.e. Helena pedestrian mall Dear Bill Schneider, In response to your email regarding the ADA and the Helena Bicycle Club's efforts to lift the current ban/ordinance on bicycles in the Downtown Walking Mall, I cannot see where the ADA would pass judgment on the decision to lift the ban. I have spoken with Elroy Golemon, ADA Coordinator for the City of Helena, and to his knowledge the ADA is not a concern in regards to the bicycle ban/ordinance in the Downtown Walking Mall, however Elroy did state that the ban/ordinance was put into effect well before his time with his current position, so the ADA could have been a concern during the initial discussions before implementing the ban/ordinance at that time. I will forward your questions to Elroy so he can provide any feedback he feels would be beneficial to your questions/concerns, additionally I have Cc: Elroy with this email in the event I have misquoted or left information out. I have found Elroy to be an excellent resource when addressing questions/concerns with the ADA in the Helena area. After doing some of my own research with the ADA I cannot find where Individuals with Disabilities would be effected by the reversal of the current ban with bicycles in the Downtown Walking Mall. I do want to thank you for supplying the description of the ban/ordinance as I do have some concern with the current language when exempting Individuals with Disabilities, which currently only exempts those operating a wheelchair by a disabled person. Bob Maffit, my director, has brought to my attention that we have a current member of our board that utilizes a skate board to assist him with mobility due to his disability and the current language does not exempt him from the ban/ordinance, and others alike. Thank you for bringing this to my attention, I will make myself available to the appropriate entities to assist in supplying better language to include all individuals with disabilities operating wheeled mobility equipment/devices. On behalf of Individuals with Disabilities I want to thank you and the Helena Bicycle Club for keeping equal access in consideration with your future plans. We wish you the best of luck with your efforts and please don't hesitate to contact MILP when you feel the need. Sincerely, Lloyd Sparks, Advocacy Specialist Montana Independent Living Project 113 E. Main St., White Sulphur Springs, MT 59645 Phone: (406) 547-3390, Fax: (406) 782-4835 lsparks@milp.us www.milp.us http://www.facebook.com/#!/MontanaILC 9

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				Date: April 22, 2013 To: City of Helena Commissioners, Mayor Smith, and Ron Alles, City Manager From: Non-Motorized Travel Advisory Council (NMTAC), Sarah R. Sadowski, Chair Re: NMTAC's response to request for position re: bicycles on Helena's Pedestrian Mall NMTAC's overarching priority remains the Centennial Trail project and routes that link to the Trail. NMTAC regards the upcoming update to the Greater Helena Transportation Plan as high priority. ***However, in response Commission request, this memo is intended to specifically address the matter of non-motorized travel on the Pedestrian Mall.*** Appreciating that in response to a citizen petition, July 9, 2013, NMTAC was asked by the Commission to consider giving bicyclists the permission to ride on the downtown Pedestrian Mall, we offer the following. On April 9, 2013 NMTAC passed the following motion: 1. NMTAC recommends rescinding or suspending the ordinance prohibiting bicycles, skateboards, etc. for a trial period of one year. 2. It is NMTAC's view that the downtown pedestrian mall could provide a safe and convenient route for non-motorized commuting through the highly congested downtown area. 3. It is the preference of NMTAC that all non-motorized users including walkers, cyclists, skateboarders, and roller skaters be treated equally by the policy covering the pedestrian mall. 4. NMTAC recommends designing signage to encourage slow speeds up to 10 mph, and limit wheeled use to the center section. Signage should be positive and maintain the historical character of the mall, and not imply any division of the mall by user type, or imply a restriction of access for foot traffic. Additionally, NMTAC realizes the need for public education regarding bicycle and pedestrian awareness and safety. We believe education is an essential part to any significant change downtown. Thank you for your request for input regarding riding bicycles on the Pedestrian Mall. NMTAC welcomes your questions, requests for more information and great ideas regarding riding bicycles on the Pedestrian Mall, and any matter related to non motorized travel. Sincerely, *Sarah Sadowski* Sarah R Sadowski, NMTAC, Chair Cc: NMTAC membership, and associated City & County staff members. 1

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2	05/08/2014	Anonymous	Anonymous	**COMMENT FORM** **Informational Meeting #1 – May 8, 2014** **Please Submit Your Comments:** I understand there are jurisdictional considerations/ conflicts with many streets & intersections in Helena; however, it is so dissappointing to see new construction not include bike/ped facilities - specifically one-way bike lanes (not on both sides of the street) bike lanes that are not wide enough (ie curb+gutter included in bike lane) and no accomidation for through bike traffic. Thanks for your efforts! *Please mail or email your comments to:* **Jeff Key, RPA Project Manager** Robert Peccia and Associates PO Box 5653 Helena, MT 59604 406-447-5000 Email: jeff.key@rpa-hln.com *To receive further study information, please provide your name and address:* **Name:** **Address:** **Email:**

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3	05/08/2014	Fran	Penner-Ray	**COMMENT FORM** **Informational Meeting #1 – May 8, 2014** **Please Submit Your Comments:** • All drivers become pedestrians when they park their vehicles. We need improvements in sidewalks & parking lot design to accomadate walking people and backing vehicles. • continuous sidewalks are needed along Montana Ave. - Sibs hut gap • Transportation Planning fails when bike paths end before intersections. eg - Cedar & Montana We need to solve for bikes and turning vehicles • We Need to welcome cyclists downtown. Bicyclits can share the sidewalk from Exploration works to the Library repeal the city bikes prohibited ordinance The custer interchange did a good job connecting to existing pathways & sidewalks. *Please mail or email your comments to:* **Jeff Key, RPA Project Manager** Robert Peccia and Associates PO Box 5653 Helena, MT 59604 406-447-5000 Email: jeff.key@rpa-hln.com *To receive further study information, please provide your name and address:* Name: Fran Penner-Ray Address: Email: fpr555@hotmail.com

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4	08/01/2014	Page	Atcheson	Hi Jeff and Scott, Thank you for taking the time to meet yesterday. We appreciated the chance to share our concerns, and hope that as the planning process continues we can contribute in an appropriate way to ensure that impacts from train traffic are mitigated. Attached are our comments, for the record, as well as the PDF of the letter the Helena City Commission passed in 2012, expressing concerns about increased rail traffic. Please keep SGCC apprised of any updates related to this issue. Thank you again and have a great weekend, Page -- Page Atcheson Field Organizer Northern Plains Resource Council 432 N. Last Chance Gulch, Suite H Helena, MT, 59601 Phone: 406-449-1256 Fax: 406-248-2110 page@northernplains.org www.northernplains.org

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				July 24, 2014 To: Jeff Key, Robert Peccia and Associates From: Sleeping Giant Citizens Council (432 N. Last Chance Gulch, Helena, MT) **Greater Helena Area Long Range Transportation Plan** **Concerns and Recommended Actions from Sleeping Giant Citizens Council** Rail Traffic Concerns • We expect to see a significant increase in train traffic in the next 5-10 years ○ Loaded and empty coal trains per day from the Powder River Basin to the Pacific Northwest could be as high as 27 to 36 trains/day in 5 yrs, and could reach between 47 to 63 trains/day in 10 yrs ○ Loaded and empty Bakken oil trains moving to Northwest could increase to 22 trains/day ○ Montana Rail Link (MRL) line would see, at 100% coal export capacity, about 30 additional trains/day. At 75% capacity, could expect additional 22 trains/day. ○ MRL maintains that they average 18 trains/day, 5 of which are coal trains. Their website claims that they could increase capacity for an additional 16 trains. • State and local government would likely be forced to spend hundreds of millions in infrastructure improvements to mitigate impacts of added traffic (bridges, tunnels, separated grade crossings, by-passes) Concerns • Specific Crossings of Concern: Montana Ave., Roberts, National, Henderson (underpass too narrow), Carter, Birdseye, and Joslyn – plus East Helena crossings (S. Lane Ave., others) • We are concerned about access (especially for emergency service vehicles), traffic congestion, air pollution from diesel emissions, coal dust, increased vehicle exhaust, and potential for derailments • Who will pay for necessary infrastructure (e.g. overpasses, underpasses, quiet zone)? Recommended Actions • Incorporate accurate rail traffic projections into the 2014 transportation plan • Recommend that measures are taken to mitigate impacts from increased rail traffic ○ Overpasses, underpasses, quiet zones, rerouting tracks ○ Research costs and funding sources Source: Heavy Traffic Still Ahead. Prepared for the Western Organization of Resource Councils by Terry Whiteside (Whiteside & Associates) and Gerald Fauth (G.W. Fauth & Associates, Inc.). Available online at www.heavytrafficahead.org.

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				CITY COMMISSION OFFICE City of Helena 316 N. Park Avenue Helena MT 59623 (406) 447-8410 June 7, 2012 Brigadier General John McMahon, U.S. Army Commander and Division Engineer U.S. Army Corps of Engineers Northwestern Division P.O. Box 2870 Portland, OR 97209 Subject: Request to consider potential impacts on the City of Helena during environmental review of coal export terminal projects Dear BGen McMahon: It has come to the attention of the Helena City Commission that the development of one or more proposed coal-export terminal projects in Washington or Oregon may result in a substantial increase in train traffic through our community. We respectfully request that the U.S. Army Corps of Engineers take the potential effects of this increased traffic through Helena into account when conducting an environmental review of these proposals. By way of background, Helena lies at the base of one of two rail lines that pass over the Continental Divide in the northern Rockies. The Burlington Northern Santa Fe Railroad (BNSF) railroad, more recently leased and operated by Montana Rail Link (MRL), has been a vital part of Helena for over 120 years and both have always been good neighbors in dealing with the City of Helena. However, we are concerned about our ability to accommodate a significant increase in rail traffic. We have heard varying estimates of the increases in rail traffic likely to result from the development of one or more coal ports. About 15 trains per day currently pass through Helena. While estimates of the additional rail traffic cover a wide range, any increase in rail traffic through the community will exacerbate existing problems. The BNSF/MRL railroad line bisects Helena with crossings at eight streets and Interstate 15. Only two of these crossings and the freeway have grade separations. One of Helena's busiest arterial routes, Montana Avenue, lacks a grade separation and traffic delays there have been an issue in Helena for decades. Neither the City of Helena, nor the Montana Department of Transportation, currently has the funds necessary to construct additional grade separations. A substantial increase in rail traffic would greatly exacerbate these delays and adversely affect transportation in Helena.

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				We are also concerned about possible impacts to air quality from increased rail operations and increased idling by cars and trucks waiting at the crossings lacking grade separation-especially during wintertime air inversions. Another concern is the noise from train horns. Citizens have long been complaining of train noise and requesting safety improvements to railroad crossings which would eliminate the requirement for trains to sound their horns. With a substantial increase in train traffic, this problem will significantly worsen. Again, we lack funding to address the issue. We ask the Corps to consider these potential effects on Helena in the course of evaluating the indirect and cumulative effects of the proposed coal-export facilities. The City of Helena stands ready to assist with this process in any way. Sincerely, James E. Smith Mayor Matthew Elsaesser Commissioner Daniel Ellison Commissioner Katherine Haque-Hausrath Commissioner Dick Thweatt Commissioner Courtesy copy: Governor Brian Schweitzer Senator Max Baucus Senator Jon Tester Representative Dennis Rehberg Burlington Northern Santa Fe Montana Rail Link

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5	08/05/2014	Terry	Ray	Good Morning, Last week Elroy Golemon, Mike Friend and I met with Mr. Terry Ray concerning the Midtown/6th Ward Neighborhood Streets. We discussed his concerns and we informed him that we were in process of updating the Transportation Plan. I also told him that I would forward his concerns on so that his concerns could be evaluated. Regards, David Knoepke, P.E. City of Helena Civil Engineer City-County Building, Room 410 316 North Park Avenue Helena, MT 59623 Office (406) 447-8099 DKnoepke@helenamt.gov

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				(see below)

Helena Midtown and 6th Ward Neighborhood Streets

Issue # 1. Use of local access streets in the Midtown and 6th Ward area as line-haul and freight truck through routes.

a. Background. The City commission may designate certain streets in the city as truck restricted. As of January, there were no streets in the City designated as truck restricted. "Chapter 15 Trucks. 8-15-1: Use of Certain Streets Prohibited. The Helena city commission may, from time to time, as it deems to be in the best interests of the public health, safety and welfare, designate that certain streets and avenues in the city shall not be used by any truck (freighter or over the road truck)." Extracted from the City of Helena Code.

b. Background. The streets with truck traffic issues are designated as local streets. These streets include N. Fee St., Washington St., Boulder Ave., East Lyndale Ave.. "Local Street- Comprises all facilities not included in a higher system. Its primary purpose is to permit direct access to abutting lands and connections to higher systems. Usually through-traffic movements are intentionally discouraged...." Extracted from the City of Helena Transportation Plan.

c. Concern. Local access residential streets are not designed or maintained to support routine heavy through truck traffic use. State highways and through streets are designed for this purpose. Local, residential, streets are primarily maintained by the City using City revenues, State highways are maintained by State. Heavy through truck traffic on roads not designed for this purpose will quickly deteriorate, requiring additional maintenance and expenditure of City revenue.

d. Concern. In the 1980's a citizen's group received permission to install "no trucks" signs on certain streets in the 6th Ward area. East Lyndale is one of these streets. Under current City Charter and ordnances these signs were not enforceable. The City recently removed the signs that were emplace through the efforts of the community groups. This history was discovered by Sara Elkins, the Assistant City Manager, when investigating truck traffic concerns along Boulder Ave earlier this year. Heavy truck traffic causes additional area noise, dust, and safety concerns. Regular heavy truck traffic along residential streets reduces quality of life for the residents in the area and makes the community a less desirable area to live in.

Issue # 2. An increasing amount of drivers are using routes through the Helena Midtown and 6th Ward area as a HWY 12 bypass.

a. Background. East and west bound commuter traffic is using East Lyndale or Boulder Ave and Billings Ave (behind Walmart) to avoid at least 10 traffic signals on HWY 12, and to avoid the congestion caused during rush-hour. The "by-pass" route (from Billings Ave to Boulder Ave and onward to North Montana Avenue) has no stop signs or traffic signals. By using the route behind Walmart, under Interstate 15 and through the 6th Ward, vehicle operators can save travel time due to delays caused by traffic signals and congestion along highway 12 (11th Avenue and Prospect Ave.).

b. Background. Centennial Trail will be constructed along Boulder Avenue and will continue under Interstate 15 eastward. The City should consider closing Boulder Ave. to vehicle traffic at the Interstate 15 overpass junction to help limit the amount of through traffic along the route and to prepare for construction of Centennial Trail.

c. Concern. The increasing amount of through traffic is impacting on the quality of life in the area. As the streets are local residential streets, the only painted crosswalks are near Bryant Elementary school. During certain times of the day the traffic level on Boulder reaches levels found on many of the major arteries around the city such as West Custer Ave. The extra width of Boulder Ave, and lack of stop signs or other traffic control or calming devices, results in many drivers exceeding the posted 25 mph speed limit. This creates safety concerns for families in the area, especially those with children.

Recommendations:

1. Immediately- City Commission restricts the use of trucks on local, residential, streets in the Helena Midtown and 6th Ward area and emplace appropriate signage to inform truck operators. Follow-up with appropriate law enforcement.

2. Over the next year- Install appropriate traffic calming measures along Boulder, N. Fee, Washington, and E. Lyndale in order to help reduce the amount of through traffic and to create a more safe and livable area.

3. Next 1-2 years- Close Boulder Ave at the Interstate 15 overpass in order to further reduce the amount of through traffic along Boulder Ave and to prepare for the construction and use of Centennial Trail.

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6	08/12/2014	Ryan	Kettel	Proposed Safety Modifications for the intersection of Cruse Ave. & Cutler St. Tuesday August 12, 2014 The intersection of Cruse Avenue and Cutler Street is designed to resemble a freeway interchange. Because of this design, many cars travel at relatively high rates of speed while negotiating the intersection. Visibility at this intersection is poor because of the curves and dense shrubbery on the south side of the street. Many pedestrians and bikers use this intersection to gain access to the downtown area, south hills trails, and other destinations. The combination of these factors plus the fact that there are no sidewalks makes this intersection extremely dangerous. The following proposal for City Commission consideration, would reduce this hazard to a minimum level. It is proposed that vehicular traffic be confined to the two center lanes only. One lane for east bound traffic and the other lane for west bound traffic. The stop sign should remain at the juncture of the west bound lane and Cruse Avenue. To this point, there is no physical change. The curving side lanes (see attached map) should be converted to sidewalks for pedestrian and bike use. Additional sidewalk should be constructed along the outer edge of each vehicle lane to connect with an existing sidewalk on the south side of State Street. Please note that Cutler Street actually merges with State Street at Warren Street. This can be misleading since the street sign on Cruse labels the adjoining street as "Cutler". One leaving Cruse Street actually exits the intersection on State Street.

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				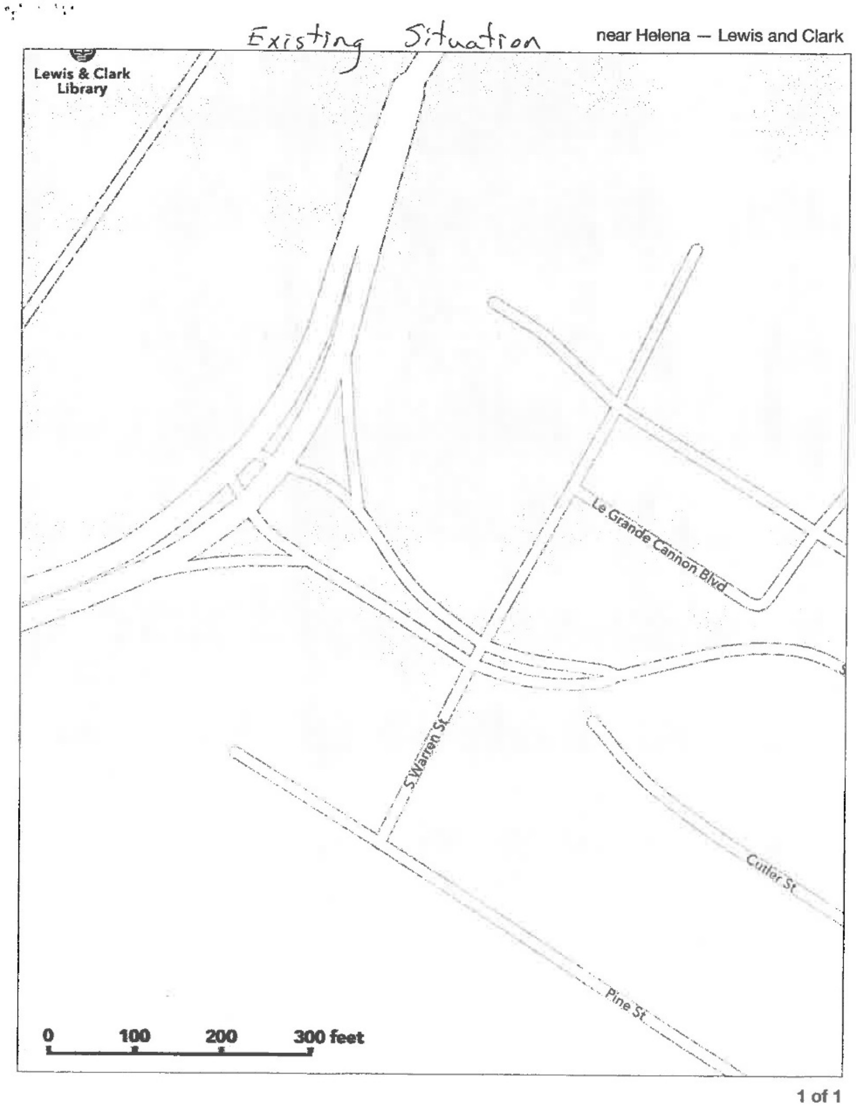

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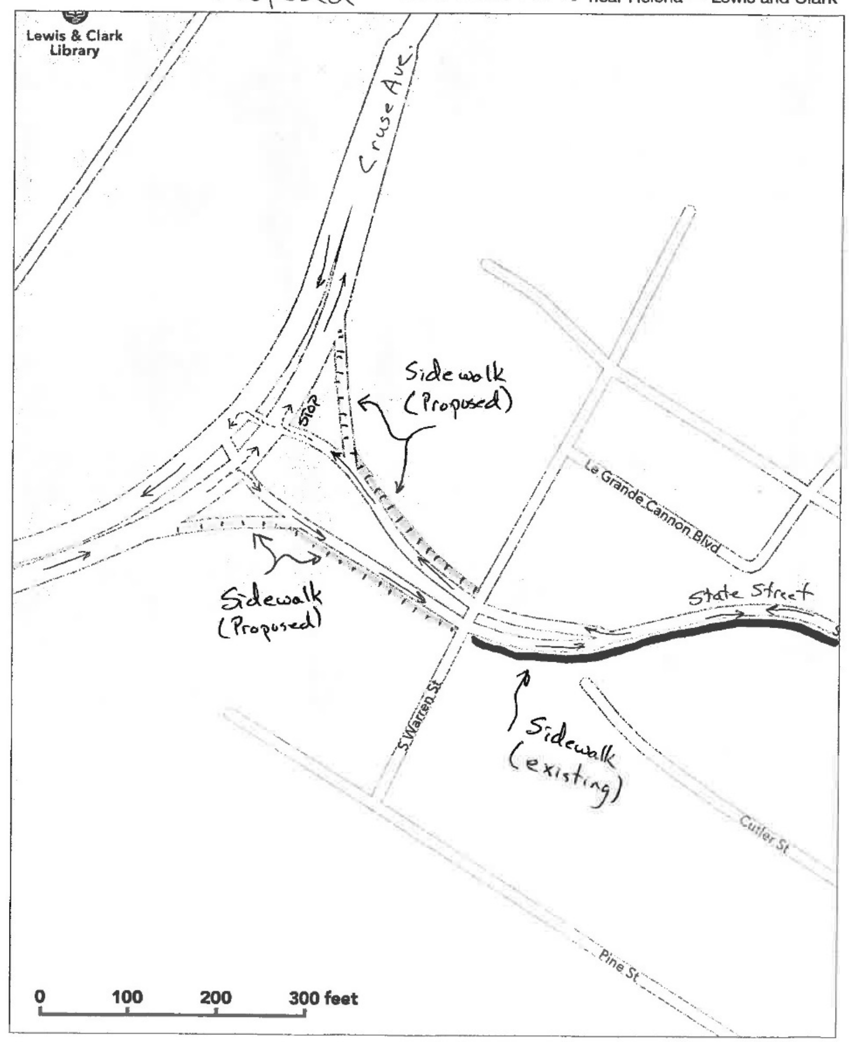
				Proposed Modifications near Helena — Lewis and Clark  1 of 1

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				HELENA BICYCLE CLUB Helena Bicycle Club PO Box 4682 Helena, MT 59604 E-Mail: president@helenabicycleclub.org July 22, 2014 Mr. Paul Pacini Helena Citizens' Advisory Committee Dear Mr. Pacini: Thank you for making the Helena Bicycle Club aware of your proposal for improvements to the intersection of Cruse and Cutler in Helena. Our club has previously identified this intersection as a "trouble spot" due to the high speed of motor traffic, and due to vegetation which makes cyclists and pedestrians difficult to see around the curved roadway. The Helena Bicycle Club Board of Directors will not meet again until August of 2014, so we can not endorse any specific proposed solution as a board. However, I can tell you that the HBC Board would likely approve of any modifications to the intersection which would result in lower speeds for automobiles, and increased visibility for cyclists and pedestrians. Thank you. Sincerely, Robert Psurny President, Helena Bicycle Club

ID #	Date Received	First Name	Last Name	Full Comment Received
				From: Matt Pettit <m.s.pettit@gmail.com> **Subject: Re: [HelenaBicycleClubMembers] Bicycle Safety** **Date:** July 17, 2014 at 8:22:40 AM MDT **To:** Rob Psurny <president@helenabicycleclub.org> Hi Rob, I live within a block of this oddball intersecton and ride/walk/drive it all the time. I agree that this is a dangerous spot, but don't see a lot of poeple zipping around those merges too fast as Paul suggests - although I don't doubt that some people do gun it through those yeilds. The most dangerous element here is that it is blind when turning onto Cutler from the south on Cruse - which pushes cyclists to the left, putting them in 20-25 mph traffic. Pedestrians have trouble here because of the divided nature of the roads, its confusing to figure out the safest way to walk against traffic anbd cross this multiheaded intersection. In addition the section of Cruse south of this specific intersection is constantly misused by cyclists (wrong side of the lane, wrong lane etc). I think that both of these issues could be resolved by replacing yield signs with stop signs, putting in painted bike paths and pedestrian cross walks. The yeilds at the base of Cutler make walking along cruse difficult, and cycling dangerous. Cruse is plenty wide enough to accept bike lanes and they will provide direction to cyclists ('in lane' bike lanes would be even easier and provide the same direction). Cross walks across the on/off ramp style intersection of Cutler and Cruse along with cross walks across Cruse on either side of the intersection would also provide walkers and drivers direction on how to cross traffic in the area. Glad this intersection is being addressed. Matt

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				Megan Wrigg 21 Carriage Lane Helena, MT 59601 July 23, 2014 To Whom It May Concern regarding the proposed change at the Cutler/Cruise intersection, I support that a change needs to happen for the safety of us all. My name is Megan Wrigg and I have a 1 year old baby that I take on runs or walks 3-4x a week. We live in Reeders Village and my in-laws and many friends live on the other side of Cruise Avenue, so this intersection is often on my path. My main concerns are: 1. The poor visibility. It is very hard to push a baby stroller in the grass in the median but I feel people cannot see me around that bush and I cannot see them making it a very dangerous situation. 2. The speed. People come flying around that corner and are often as scared to see me and my baby stroller as I am of them. They break frantically or quickly veer towards the median in response. 3. No sidewalk/pedestrian walkway. The sidewalk just ends a block up. This is very inconvenient for those of us who travel (by foot) on that road. 4. This road is very highly traveled. Every time I am on it (driving or on foot or bike) there are at least 3 other vehicles. 5. The apartment building right there has many many kids, and there is a bus that stops 1 block off that intersection picking up kids. In an area with that many children we need to make it a safer interchange. Please make the appropriate changes to make this interchange a safer place to bike, walk, run, and drive. Don't wait until someone gets hurt or killed. Sincerely, Megan Wrigg Megan Wrigg

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7	08/14/2014	Jason	Steffins	City of Helena **City of Helena** **Public Works Department** 316 N. Park Ave. Helena, MT 59623 Phone: 406-447-8431 FAX: 406-447-8442 **Request for Traffic or Intersection Evaluation** **Location for traffic or intersection evaluation:** Corner of Boulder Ave and Roberts Street **Reason for request:** I have lived at this intersection for 15 years. This intersection has produced many many bad accidents and close calls concerning kids walking to school. With the very high traffic and large foot traffic in this area, this needs to be evaluated. With 3 schools within a block of this location, kids and pedestrians are walking to and from their homes and schools continuously all day long. Vehicles are not yielding those trying to cross Boulder Ave and are always traveling at high rates of speed. It is only a matter of time before someone is killed. I strongly encourage the city to place a 4 way stop zone at this location. **Name:** Jason Steffins **Address:** 1400 Boulder Ave Helena MT 59601 **Phone number:** 406-461-4525 **Signature:** Jason Steffins **Date:** 8/14/2014 **OFFICE USE ONLY** **Date Request Received:** 8-14-2014 **Request Assigned to:** DK/TL **Action taken:** SEE EMAIL DATED SEPTEMBER 17, 2014 @ 1040 **Results of evaluation and recommendations:** H:\ENGINEERING\Traffic\Letter & Memo Templates\Traffic_Evaluation_Request_Form Revised: February 2013

ID #	Date Received	First Name	Last Name	Full Comment Received
8	09/03/2014	Paul	Pacini	**COMMENT FORM** **Informational Meeting #2 – September 3, 2014** **Please Submit Your Comments:** Traffic flow at the Cruse / Cutler intersection must be improved to increase the safety of pedestrians & bikers. There are no sidewalks and there are visual obstructions. *Please mail or email your comments to:* **Jeff Key, RPA Project Manager** Robert Peccia and Associates PO Box 5653 Helena, MT 59604 406-447-5000 Email: jeff.key@rpa-hln.com *To receive further study information, please provide your name and address:* **Name:** Paul Pacini **Address:** 303 State St. Helena, MT 59601 **Email:** ppacini47@gmail.com

ID #	Date Received	First Name	Last Name	Full Comment Received
9	09/10/2014	Rose	Casey	RECEIVED SEP 10 2014 CITY OF HELENA Engineering Division City of Helena **City of Helena** **Public Works Department** 316 N. Park Ave. Helena, MT 59623 Phone: 406-447-8431 FAX: 406-447-8442 **Request for Traffic or Intersection Evaluation** **Location for traffic or intersection evaluation:** Mt. Ave & Walnut St. and the entire 1200 Walnut St. block **Reason for request:** Walnut A few observations about this street: the 1200 block is narrower in width than the 1300, 1400, etc blocks on Walnut St.,apparantly built that way to discourage traffic in the area because of Lincoln School. At the point at which Walnut meets Mt Ave, Walnut St.also slants upwards, making it difficult to enter MT Ave in slippery conditions. Because of the many 4-plexes now on the 1200 block of Walnut St, both sides of this block are often packed with cars, trucks. IN THE WINTER, it is esp. DANGEROUS to turn east unto Walnut St. from MT Ave because if you meet a car coming towards you, you will not both be able to negotiate this street because of all the parked cars. NOW LINCOLN SCHOOL is once again a full elementary school and these children are not from the neighborhood. That means that their parents are driving all of them to school every day, making the 1200 block of Walnut St even busier with school traffic. It is crazy. There is no reason that we can't expext to be able to drive our car all the way down Walnut Street to Montana Avenue without worrying about traffic coming the other way. There is off street parking behind the 4 plexes for those residents. I propose that either the city widen the 1200 block of Walnut Street by removing the boulevard on the south side of that one block OR forbid parking on the south side of the 1200 block of Walnut Street. The city created this problem by making the 1200 block of Wanut Street excessiveily narrow. The city needs to address this hazardous condition that this narrowness has created in our neighborhooh and elementary school area. **Name:** Rose Casey **Address:** 1422 Walnut Street Helena, MT 59601 **Phone number:** 406-410-0968 **Signature:** Rose Casey **Date:** 9/8/2014 **OFFICE USE ONLY** **Date Request Received:** 9-10-14 **Request Assigned to:** DL **Action taken:** **Results of evaluation and recommendations:** H:\ENGINEERING\Traffic\Letter & Memo Templates\Traffic_Evaluation_Request_Form Revised: February 2013

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				City of Helena **Public Works Department** City of Helena 316 N. Park Ave. Helena, MT 59623 Phone: 406-447-8431 FAX: 406-447-8442 **Request for Traffic or Intersection Evaluation** **Location for traffic or intersection evaluation:** intersection of Helena Ave and Rodney St. by HMS **Reason for request:** During school hours, the westbound traffic on Helena Ave backs up at this intersection because of all the cars attempting to turn left to go to HMS. There are not two lanes on Helena Ave heading west. But if you could change the traffic light pattern at this intersection so that Helena Ave westbound traffic could go through the intersection FIRST, then it would really help the traffic flow during peak school hours. **Name:** Rose Casey **Address:** 1422 Walnut Street Helena, MT 59601 **Phone number:** 406-410-0968 **Signature:** Rose Casey **Date:** 9/8/2014 **OFFICE USE ONLY** **Date Request Received:** **Request Assigned to:** **Action taken:** **Results of evaluation and recommendations:** H:\ENGINEERING\Traffic\Letter & Memo Templates\Traffic_Evaluation_Request_Form Revised: February 2013

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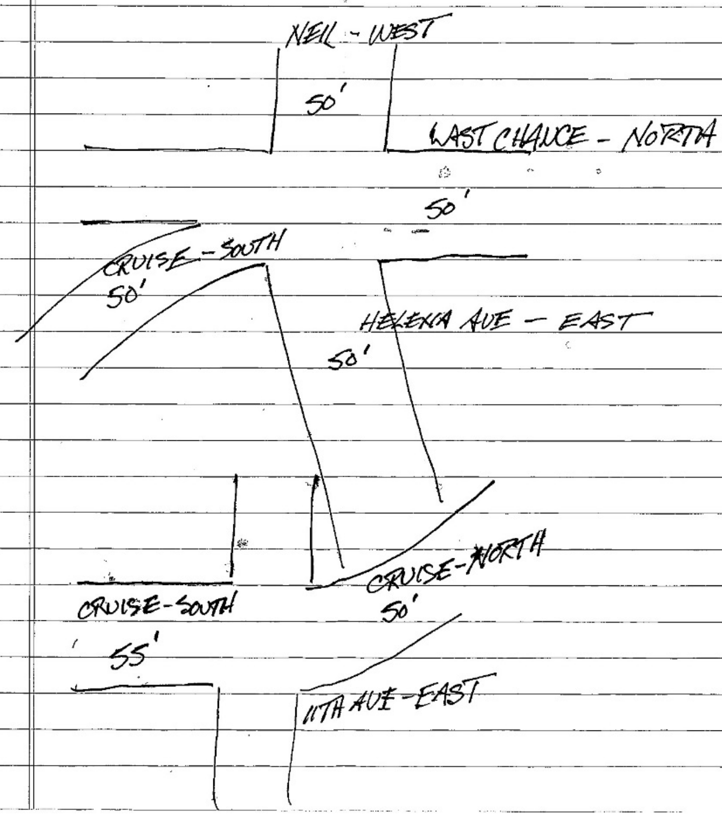
10	09/10/2014	Al	Roy	EUCLID / HENDERSON NORTH SIDE - WEST BOUND 45' 4 LANES CENTER CURBING EUCLID / BENTON SOUTH SIDE - EAST BOUND 42' 4 LANES CENTER CURBING 

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11	09/11/2014	Donovan	Lucibello	City of Helena **City of Helena** **Public Works Department** 316 N. Park Ave. Helena, MT 59623 Phone: 406-447-8431 FAX: 406-447-8442 **Request for Traffic or Intersection Evaluation** **Location for traffic or intersection evaluation:** Livingston Ave and Roberts Street ~(46.596122 , -112.016736) **Reason for request:** Request an evaluation for the traffic pattern in order to assess the need for a crosswalk across Roberts Street along the Livingston Avenue axis. Reason for request: A pedestrian starting out at the crosswalk signal across Montana Avenue in order to a reach the destination of Helena College follows the straight line route of Livingston Ave. During peak morning, lunch and afternoon hours the confluence of hurried traffic to and from Helena High School combined with Helena College traffic makes it VERY dangerous for a pedestrian to cross Roberts Street as traffic does NOT STOP along Roberts Street. Moreover, traffic is not compelled to stop because there is neither a crosswalk nor signage present to signal the presence of pedestrians. **Name:** Donovan Lucibello **Address:** 1032 Livingston Ave Helena, MT 59601 **Phone number:** 406-992-0648 **Signature:** **Date:** 11 Sep 2014 OFFICE USE ONLY **Date Request Received:** 9-11-2014 **Request Assigned to:** DK **Action taken:** **Results of evaluation and recommendations:** H:\ENGINEERING\Traffic\Letter & Memo Templates\Traffic_Evaluation_Request_Form Revised: February 2013

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12	10/01/2014 *(originally sent in May 2014)*	Bill	Schneider	Email from Bill (HBC) after our meeting: "List of marketing projects? I guess that's a little more difficult that I thought. Anyway, here are a few ideas. The basic concept, as I see it, is that we have limited funds and not a lot of high expectations to get more soft money to build things, so instead of always thinking about new or improved infrastructure to solve a problem, often at a high cost, think of things we can do to share the infrastructure we already have. We need to direct educational efforts at both bicyclists and motorists, and I happen to think directing efforts to bicyclists is the priority.; Every time you try to talk to a motorist about peaceful sharing of the road with bicyclists, they go off about some bonehead bicyclist they saw doing something stupid, unsafe or discourteous (or all three), and it's hard to get back on message after that. So, if we can clean up our own act, mainly displayed by new, beginning bicyclists who don't know the rules of the road, we'll have a head start when it comes to talking to motorists. Two ideas I have along this line is a Bicycle Ambassador Program, where after some sort of training or test, a bicyclist gets a screaming green vest with big bold letters on the back and front that say, as loudly as possible, BIKE AMBASSADOR. All the "work" they need to do is ride around town a lot doing things correctly, and the message will subliminally start to sink in--both other bicyclists and motorists. I'd also like to see the local police department become more active in what I would call "educational" programs. By this, I mean actually stopping a bicyclist riding on the wrong side of the street or doing something else illegal or discourteous, such as riding up next to a string of cars at a stop light, and talking to them about how to do it right. Not give out a ticket, just "the voice of authority" getting the point across. I have personally tried to talk to bicyclists riding on the wrong side of the street, but it never goes well. It would be a completely different story with police officers. People would listen. I think our police department is fairly well-committed to doing enforcement on bicyclists, but not sure we have this "educational policy" as part of the mix. Police officers also have a lot of other priorities, but if bicyclist education could move up on the list a bit, that would help. The City-County Health Dept and Bike Walk Helena did a decent brochure, but I'd like to see that upgraded and more work done on distribution. PSAs are always good, especially when we have a police officer giving the message, perhaps in league with local bicycling advocates or teachers. Perhaps a series of town hall type meetings for both bicyclists and motorists to discuss ways to peacefully share the streets. Actual on the bike training by experienced bicyclists.

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				Share the Road signs. I've managed to get these up in the rural areas around Helena, but not in the city limits. And lastly, It would be nice to see the city government set a good example by encourage all employees to ride bicycles to work. And then, contact the media about it. So much to do, eh? I believe that HBC would be willing to partner up with the City to do all or most of these educational programs, plus others I'm sure I've forgotten to mention.

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13	09/29/2014	Dalynn	Townsend	>>> "Townsend, Dalynn" <DTownsend@mt.gov> 9/29/2014 2:59 PM >>> To Whom it May Concern: How does one go about requesting that a crosswalk be put in across Last Chance Gulch where 14th St intersects? Last Chance Gulch can be very busy at this location and trying to get from one side of the street to the other can be challenging at times. It's the main crossing from the Central area neighborhood to the Great Northern Town Center which contains the movie theatre, Carousel, Exploration Works, access to Centennial Park (without having to cross the very busy Lyndale/Last Chance Gulch intersection), and many other popular businesses. I believe that it's challenging for both people commuting to work as well as families going to the Great Northern to get from one side of the street to the other safely. Please let me know who I should contact with this request. Thank you – Dalynn Townsend

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14	10/06/2014	Loraine	Wodnik	RECEIVED OCT 06 2014 CITY OF HELENA Engineering Division City of Helena City of Helena Public Works Department 316 N. Park Ave. Helena, MT 59623 Phone: 406-447-8431 FAX: 406-447-8442 \# Request for Crosswalk. **Request for Traffic or Intersection Evaluation** Location for traffic or intersection evaluation: Broadway & Jackson OR Broadway & Cruse Reason for request: Heavy pedestrian traffic crossing Broadway from the parking lot #7 and the buildings on that side of Broadway across Broadway to businesses and parking lots on the other side of Broadway. I have witnessed many near accidents. Name: Loraine Wodnik, Deputy Director, Dept of Corrections Address: 5 S. Last Chance Gulch Helena, MT 59601 Phone number: 444-0406 Signature: Loraine Wodnik Date: 9-19-14 OFFICE USE ONLY Date Request Received: 10-6-2014 Request Assigned to: TRANSPORTATION PLAN UPDATE Action taken: CALLED ON 10-3-14 @ 1455. LEFT MESSAGE. SHE CALLED ON 10-6-14 @ 1505 & EXPLAINED TO HER THAT WE WOULD FORWARD TO RPA TO INCLUDE IN TRANSPORTATION PLAN COMMENTS Results of evaluation and recommendations: H:\ENGINEERING\Traffic\Letter & Memo Templates\Traffic_Evaluation_Request_Form Revised: February 2013

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15	01/05/2015	Paul	Pacini	From: Paul Pacini To: Jeff Key Cc: Judy Garrity Subject: LRTP Date: Monday, January 05, 2015 11:03:54 AM Jeff, I am writing to simply re-emphasize the importance of some safety improvements on the Cruse-Cutler Intersection. I feel that this is necessary because this intersection is very functional for traffic flow but simultaneously offers serious, life threatening, safety hazards for pedestrians and bikers, as we have discussed. It could, as a result, be easily under prioritized. Sincerely, Paul Pacini HCC, District #1

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16	01/05/2015	Eric	Kohring	**From:** Eric Kohring **To:** Jeff Key **Subject:** Snow Removal and accessible routes as part of the LRTP **Date:** Monday, January 05, 2015 2:14:16 PM Jeff, I've not been very involved in the LRTP, but recently I was asked to give some input. I work for MILP, sit as chair of the City's Accessibility Compliance Committee and participate in the Safe Routes to School group. The Accessibility Compliance Committee made recommendation to the snow removal ordinance to address the "reasonable amount of time" for snow removal along with better enforcement and a program to remove snow when a homeowner refuses or is unable to remove the snow themselves. We had hoped this would get resolved before this snow season began, but were told at best an ordinance change like this takes at least 120 days however the agenda item was not addressed at the December Admin meeting and the City Manager appears to have excluded it from the January Admin meeting. We believe this is part of a bigger picture of how the City has been reluctant to address accessibility as any other basic civil right including equal access to public routes, accessible rights-of-way and their resistance to adopt the Access Board's Public Rights-of-Way Accessibility Guidelines. What can we do to help get these comments officially added into the LRTP? Thanks, Eric **Eric Kohring** Accessibility Home Modification IL Specialist Montana Independent Living Project 825 Great Northern Blvd. Suite 105 Helena, Montana 59601 406-442-5755 (ext 2504) or Fax: 406-442-1612 www.milp.us

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17	01/07/2015	Brian	Ahern	**From:** Matthew Elsaesser **To:** David Knoepke; Jeff Key **Subject:** Fwd: Brian Ahern - 218 Miller Street 442-2337 **Date:** Wednesday, January 07, 2015 10:28:32 AM Item Type: Phone Caller: Brian Ahern - 218 Miller Street Phone: 442-2337 [X] Telephoned [ ] Please Call [ ] Will Call Again [ ] Returned Your Call [ ] Wants to See You [ ] Came to See You [ ] Urgent Transportation related comment. >>> Debbie Havens 12/30/14 3:59 PM >>> Mr. Ahern called to express his frustration that Miller Street is not one-way and there continues to be many "incidents" where the police have to be called. He stated that two or three years ago he met with city staff (could not remember the name) and was told that Miller Street would be made one-way. He is very frustrated and did not specifically ask for a return call but wants something done. Debbie Debbie Havens, City Clerk City of Helena 316 N. Park Avenue Helena MT 59623 406.447.8410

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18	01/08/2015	Charlie	Adams	**From:** Charlie Adams **To:** Jeff Key **Subject:** Transportation Plan **Date:** Thursday, January 08, 2015 9:37:00 AM I strongly oppose bikes on the walking mall. It's hard enough to dodge the skateboarders and bicyclists who fly by the signs as is. I've worked down here on the gulch for years, ride my bike to work quite a bit, and I'm perfectly happy with having to avoid the walking mall to get to and from work. It's not an impediment. Thanks. Charlie Adams Keller Law Firm 50 S. Last Chance Gulch Helena, MT 59601 (406)442-0230 Fax: (406) 449-2256

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19	01/13/2015 *(attached letter dated 04/10/2014*)	Bill	Schneider	**From:** Bill Schneider **To:** Jeff Key **Subject:** Re: Informational meeting to discuss the Greater Helena Area Long Range Transportation Plan (LRTP) - 2014 **Date:** Tuesday, January 13, 2015 10:11:54 AM **Attachments:** HBC and GHATP.doc Jeff, I will not be able to make it to the meeting, but on behalf of the Helena Bicycle Club, please enter our attached letter into the official record for the draft plan. We see these comments a reflective of what the final plan should include to make the streets of Helena safer and friendlier for bicyclists and to move forward in our efforts to encourage bicycling as an alternative form of transportation. Bill Schneider Vice-president Helena Bicycle Club _____________ *Bill Schneider* *P.O. Box 504* *Helena, MT 59624* *406-431-4594* On Tue, Dec 30, 2014 at 3:10 PM, Jeff Key <Jeff.Key@rpa-hln.com> wrote: December 30, 2014 **FOR IMMEDIATE RELEASE** For more information: Jeff Key, Project Manager, RPA, (406) 447-5000 Informational meeting to discuss the Greater Helena Area Long Range Transportation Plan (LRTP) – City of Helena & Lewis and Clark County Helena – The City of Helena, Lewis and Clark County, and the Montana Department of Transportation (MDT) have initiated a community transportation planning process to update their existing Long Range Transportation Plan (LRTP). The Plan provides a blueprint for guiding transportation infrastructure investments

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				based on identified needs. The third informational meeting will be held on **Tuesday, January 13, 2015 at the Helena Regional Airport, 2850 Mercer Loop, 2nd Floor Reception Room, in Helena, MT**. Please use the airport long-term parking lot for this meeting. The meeting will begin with a presentation at 6:00 p.m., followed by a question and answer period. Time for informal discussions with the project team will be available after the conclusion of the question and answer period. The purpose of the meeting is to present preliminary transportation system recommendations and provide a status update of the LRTP planning process. The LRTP is intended to facilitate community goals and improve the transportation infrastructure and services within the Greater Helena area to meet the needs of existing and future demands. Beginning on January 13, 2015, the draft LRTP Facility Recommendations memorandum may be viewed at: http://www.helenaarealrtp.com/ Participation is a very important part of the process, and citizens are encouraged to attend the meeting and participate. Opinion, comments and concerns may be submitted in writing at the meeting, by mail to Jeff Key, Project Manager, Robert Peccia and Associates, PO Box 5653, Helena, MT. 59604, or by email to jeff.key@rpa-hln.com Please indicate comments are for the Greater Helena Area LRTP. Comments are due by 5:00 pm on Monday, January 26, 2015. The City of Helena, Lewis and Clark County, MDT and RPA attempt to provide accommodations for any known disability that may interfere with a person participating in this meeting. Alternative accessible formats of information presented at the meeting can be provided upon request. Accommodation requests are encouraged at least 48 hours prior to the meeting. For further information, call (406) 447-5000 or (406) 447-8099. ---------END---------- Project name: Greater Helena Area Long Range Transportation Plan (LRTP) - 2014 City of Helena & Lewis and Clark County

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				HELENA BICYCLE CLUB April 10, 2014 Dave Knoepke City of Helena 316 N. Park Ave. Helena, MT 59623 Dear Dave: Sorry I couldn't get to the meeting last Tuesday, and regrettably, I won't make the May meeting either, but please don't take this as a sign the Helena Bicycle Club isn't interested in working with you on the upcoming revision of the Greater Helena Area Transportation Plan. On the contrary, we view it as the most significant opportunity we've had in decades to make our community safer and friendlier for bicyclists. HBC would like to do as much as we can to help with the bicycle aspects of the plan. Because my travel schedule prevents me from attending a lot of meetings, I've decided to take the time to write down a summary of our concerns and suggestions. You're already keyed into a lot of this from past discussions, but just in case here it is again. Please consider these recommendations as you and your co-workers prepare the draft plan. I realize we could wait and submit these during the official public involvement phase, and we will do so, but we thought it might be helpful for you to have these during the early preparation phase of the draft plan. We have some specific suggestions, but generally, HBC has four major priorities (in no order of priority): completion of the Centennial Trail, weaving the concept of Complete Streets throughout the new plan, adoption of NMTAC's Bicycle Lane Network and various actions to develop a bicyclist-friendly central business district. **GENERALLY….** **Centennial Trail.** This project is a high priority for almost everybody. Anything we can do to speed up the development of the trail would be a great benefit to Helena. I'm not sure how the transportation plan can address the big problem, 1

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				money, as we all know getting millions from the federal government to complete the trail is not likely to happen. **Bicycle Lanes.** Another high priority for us is incorporation of the Bike Lane Network developed two years ago by NMTAC into the plan. The NMTAC proposal basically calls for bicycle lanes on all major arterials and collectors, including the MDT routes through Helena, and we strongly support this proposal. Whenever possible, please try to avoid putting bike lanes directly adjacent to parked cars. Experienced bicycle commuters won't ride within 3 feet of parked cars (with or without a bike lane) for fear of being "doored." **Bicycle Friendly Downtown.** HBC is very interested in having a bicyclist friendly central business district, but it's almost impossible to do this with the core of our downtown, the Downtown Mall, a vial and safe travel corridor, closed to bicycles. This is a long-running issue, as you know, but still an important one for the transportation plan to address. I'm attaching two documents--the NMTAC recommendation to the City Commission and a White Paper prepared by the Downtown Business Community and HBC. Any questions you have should be answered by these two documents. **Complete Streets Policy.** As you know, the City Commission adopted the concept of Complete Streets, and we hope it can become evident throughout the plan. Generally speaking, we hope that the basic philosophy embodied in the plan calls for bicyclists to blend into normal traffic flow instead of trying to separate motorists and bicyclists. All types of infrastructure is very expensive and we'll never have enough money to build enough infrastructure to separate bicyclists and motorists, nor should we try to do this. Promoting the peaceful, courteous, safe sharing of our streets is a much better and less expensive option. **Roundabouts.** HBC supports the development of roundabouts, including major intersections such as Cruise/Neill/Helena/LCG. Roundabouts are safe and friendly for bicyclists. **Bulb-outs.** Bulb-outs and other traffic calming devices, such as those on Brady, might make roads safer for pedestrians or motorists, but they often make the roads less safe for bicyclists. If the new plan calls for more bulb-outs, we hope they can be designed with bicyclist safety in mind and done similar to the bulb-out on Henderson/Knight or at least the new bulb-outs on Park Avenue, and not like the bulb-outs on Benton by Carroll College. **SPECIFICALLY.....** **Euclid/Lyndale/Montana.** In general, we hope the City of Helena will start to look at this route as a logical bicycle commuting option instead of promoting alternatives or just assuming it will continue to be so dangerous that bicyclists won't use it. The fact is this is a fast, convenient route across town and bicyclists 2

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				will continue to use it, even if nothing changes. Also, long-distance bicycle tourists going through Helena logically take this route. Therefore, we should do what we can do to make it safer. We're fortunate to have a large shoulder on most of this route, which helps make it the easiest, flattest, fastest (but not the safest) east-west route across town for bicycle commuters. It's unsafe because of the "death trap" intersections where not a single inch has been set aside for bicyclists (even though MDT recently re-designed and re-painted two of these intersections) and because of the on-street parking on Lyndale and Euclid which forces bicyclists off the wide, safe shoulder into the traffic lane, often with heavy traffic moving at 35-45 mph or more. We realize anything on this route has to be approved by MDT, but in our talks with MDT, the state seems willing to cooperate if the City of Helena makes it part of its formal transportation plan and makes formal requests to do so. For example, MDT re-surfaced and re-striped Lyndale last year, but would not put bicycle lanes on it because the City of Helena didn't have a formal plan calling for it. **Two Way on One Ways.** In the low hanging fruit department (i.e. easy, inexpensive and shouldn't be controversial), please mark a two-way bicycle lane on the west side of the one block one-way section of South Benton behind the city-county building. This one-way street (put in with no chance for input by bicyclists) blocks a popular and safe bicycle route and forces bicyclists to either ride on sidewalks (which experienced cyclists won't do) or onto less safe Park Avenue to get around this one-block section. We have measured the street and there is plenty of room for a 3- or 4-foot bicycle lane. Ditto for the two-block one-way section of Hauser from Park to Getchell just west of the Great Northern area. **Henderson Avenue Crossing.** The Centennial Trail crossing of Henderson is currently very unsafe for bicyclists, as well as walkers and runners, Unless we're sure the Henderson pedestrian bridge will be built in the next year or two, we recommend temporary safety measures such as more signage, flashing lights, crosswalk markings and possibly a lower speed limit to, hopefully, prevent a tragedy. Another low-hanging fruit. **Two-way Traffic on Last Chance Gulch.** This question will likely come up in the plan. It isn't a major issue for HBC, but one point I'd like to make is that two-way traffic would make riding downtown safer and easier because northbound bicyclists would be less likely to use crowded sidewalks. Also, sadly, there always seems to be some bad behavior displayed by a few bicyclists who ride the wrong way on LCG when heading for points north. **Great Divide Mountain Bike Trail.** This trail, created and promoted by the Adventure Cycling Association, passes through Helena. Currently, it comes down Priest Pass into Helena on U.S. 12 and turns on Park Avenue and goes out Grizzly Gulch. HBC has had several discussions with ACA about moving the trail to Last Chance Gulch so it can go by bike shops, coffee shops, and other businesses, something both cyclists and business owners prefer. This is 3

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				something you could consider recommending in the new plan, but this idea is currently on hold because we'd like it to go through the Walking Mall, which is currently closed to bicycles. Another problem with the re-route is channeling these long-distance bicycle tourists down the very dangerous section of Lyndale mentioned earlier. Not a low-hanging fruit, but important. **Stoplights.** Most stoplights in town aren't sensitive enough to detect a bicycle and turn green when a bicyclist is stopped waiting for a green light. Actually, I'm not sure any of them do. Some seem like they do, but I've been told that might just be the normal rotation. We understand that the old magnetic loop stoplights are expensive to fix, but we certainly hope that all optical stoplights can be adjusted to detect bicycles. I've been told that they should be sensitive enough to do this. If any future construction project calls for the replacing magnetic loops with optical options, we hope it can be done in a way to detect bicycles. Transportation planners would never expect a motorist to get out of his/her car to push the button to get a green light, and we should extend the same courtesy to bicyclists. **Storm Grates.** The City has made some progress in fixing storm grates (Thank you!), but there are many more to do. Some are on MDT routes, so we might need to make a formal request to have the state fix them. **Stop Signs on Bikeways.** Please consider moving the stop signs to before instead after the bikeways on Henderson and Benton similar to the way they are placed on east Custer. Currently, motorists logically overdrive the multiuse path before stopping, which can be dangerous for bicyclists, especially beginners and kids on bicycles using the paths. These new and perhaps novice bicyclists might not be aware of the danger and ride through the intersection assuming the car will stop for them. Right now, many experienced bicyclists refuse to ride these bikeways partially because of this dangerous situation, which sort of defeats the purpose of having them. Another low-hanging fruit. **Designated Bicycle Routes.** If the new plan recommends designated bicycle routes across town, please put them on thru streets. Currently, for example, the bicycle route on Hauser/Dearborn/Lawrence/9th has way too many stoplights and stop signs, as well as more hills than necessary to get across town. In fact, a bicyclist on his/her way east on 9th from downtown has ten stops in approximately one mile--plus three uncontrolled intersections, always unsafe for both motorists and bicyclists. Ditto for the Dearborn. Again, we never would expect a motorist commuting to work to take a route with so many stops and unmarked intersections, so again, please extend the same courtesy to bicycle commuters. For example, why not turn the stop sign on Henderson/Hauser so bicyclists don't have to stop or make the Dearborn section a thru street for bicyclists? 4

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				In any case, thank you very much for including us in the process of developing the new plan, and hope these suggestions can be helpful in preparing the draft plan. Please let me know if there is anything else we can do. Regards, Bill Schneider Helena Bicycle Club cc: HBC BOD, NMTAC, Randall Camp, Karen Lane, Ben Brauner 5

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20	01/13/2015	Eric	Kohring	**From:** Eric Kohring **To:** Jeff Key **Subject:** RE: Snow Removal and accessible routes as part of the LRTP **Date:** Tuesday, January 13, 2015 11:58:14 AM The NMTAC had made recommendations to the City in February 2014 and the Accessibility Compliance Committee made similar recommendations in September to the City Commission for revisions to the current snow ordinance. The City Commission agreed with the recommendations and instructed the City Manager to move forward with looking into modifying the current snow removal ordinance in accordance with the recommendations. The City Manager instructed the City Attorney to draft the revisions to the existing ordinance. The agenda for the December Administrative meeting included the discussion on the revised snow removal ordinance to be presented by the City Attorney, but it was not addressed because of lack of time. I have been told the Commission requested to move the snow removal ordinance discussion to the February Administrative meeting. At the Accessibility Compliance Committee meeting in December, the City Attorney and City Engineer expressed they are working closely with Bozeman on problems they are experiencing regarding Bozeman's recent revisions to their snow removal ordinance. Because of the manner in which the City implied problems Bozeman was having, it is my concern the City will use Bozeman's experience to diminish the recommendations, but my hope is the City will use Bozeman's experience to improve upon the recommendations to ensure these accessible routes are maintained in a timely fashion that would be acceptable to any individual dependent on those accessible routes to get to daily activities. The main intent is to get the snow off the sidewalk for people to walk on them daily, so they can get to school, work, services, etc. One recommendation made was to utilize the Helena Police Volunteers, currently citing people for parking violations, to cite people for accessible route violations like snow removal. This would alleviate the concern of currently having only one individual designated to enforce snow removal. One concern based on the "draft" snow removal ordinance is in regards to the portion that addresses removal of snow from sidewalks where the owner/tenant have not removed the snow in a timely fashion. This portion is not specific enough to enforce, stating the Public Works Director "may" chose to have the snow removed when "practicable." We would recommend a more specific timeline to have snow removed before the Director "would" have the snow removed by snow removal contractors at the owners expense. The original recommendations should be available in the meeting minutes and if you believe it would be appropriate, I think they should be documented in the LRTP as well. Thank You, Eric

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21	01/13/2015	Anonymous	Anonymous	**COMMENT FORM** **Informational Meeting #3 – January 13, 2015** **Please Submit Your Comments:** Thanks for your thoughtful efforts on outreach. I support bikes on pedestrian mall and a strong yield to pedestrians focus for the city. [illegible] use paths + sidewalks [illegible] cyclists. The city needs to repeal their Bicycles Prohibited [illegible] This will remove a barrier in our existing network to bikes downtown + through neighborhoods We need improved connectivity from the library to exploration works for pedestrians and bicyclists. Please mail or email your comments to: **Jeff Key, RPA Project Manager** Robert Peccia and Associates PO Box 5653 Helena, MT 59604 406-447-5000 Email: jeff.key@rpa-hln.com To receive further study information, please provide your name and address: Name: Address: 59601 Email:

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22	01/13/2015	Terry	Ray	**COMMENT FORM** **Informational Meeting #3 – January 13, 2015** **Please Submit Your Comments:** The essence of any city is its residents and neighborhoods. What is not evident is how the interests of the people that live in Helena, and their community (neighborhoods), impacted on the recommendations. Traffic (drivers) find the easiest way to get to a destination, especially if they drive to the same location on a regular basis. Many drivers use neighborhood streets to bypass congestion on the main roads. What is being done to either force drivers on the main roads or to make the neighborhood streets less appealing to through traffic. The proposed truck route in the last plan was never adopted by the TCC or city commission. 1st why was it not adopted and 2nd will the route be adopted this go around? Close underpass under I 15 at Boulder. Close Roberts Crossing if a grade sep. is approved/funded. Please mail or email your comments to: **Jeff Key, RPA Project Manager** Robert Peccia and Associates PO Box 5653 Helena, MT 59604 406-447-5000 Email: jeff.key@rpa-hln.com To receive further study information, please provide your name and address: Name: Terry Ray Address: [illegible] Boulder Ave Helena, MT 59601 Email: raytst14@gmail.com

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23	01/13/2015	Mark	Lauburg	**COMMENT FORM** **Informational Meeting #3 – January 13, 2015** **Please Submit Your Comments:** MARKLAUBURG@REMAX.NET RE: TRAFFIC COUNTS VIA WEB SITE RE: HELENA AVE INTERCHANGE *Please mail or email your comments to:* **Jeff Key, RPA Project Manager** Robert Peccia and Associates PO Box 5653 Helena, MT 59604 406-447-5000 Email: jeff.key@rpa-hln.com *To receive further study information, please provide your name and address:* Name: Address: Email:

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24	01/14/2015	Richard	Schuette	>>> Richard Schuette <raschuette@q.com> 09:30 January 14, 2015 >>> Dave Knoepke, I attended the meeting at the Helena Regional Airport last night, where I heard you say that you favored turning Helena Ave, at the Montana Ave - Lyndale Ave junction, into a culdesac. If that were to become a reality would that not shift a lot of the Helena Ave traffic to North Rodney St, between Helena Ave and Lyndale Ave? In my opinion, that would be a bad alternative. This section of N. Rodney St. already handles considerable traffic from the Helena Middle School and the congestion would be much worse with the closing of Helena Ave at Malfunction Junction. In essence N. Rodney St at Lyndale Ave would then become the new "Malfunction Junction". If that is the only alternative, I prefer keeping Helena Ave open. Respectfully, Richard A. Schuette

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25	01/14/2015	Mark	Lauburg	From: Mark Lauburg To: Jeff Key Subject: Traffic Counts Date: Wednesday, January 14, 2015 1:40:54 PM Mark Lauburg **Phone Number** Cell: 406-202-5894 Office: 406-442-1900 Office Fax: 406-442-2077 **Email Address** marklauburg@remax.net **Web Site** www.marklauburg.com **Mobile Search** m.marklauburg.com **Mailing Address** RE/MAX OF HELENA 1060 Helena Ave Helena MT 59601 Jeff, First of all, I want you to know how much I enjoyed the presentation and the information last night. Being able to participate in the process is critically important. Second, as I stated last night, you are in an unenviable position of doing the impossible which is keeping everyone happy. While it is easy to say "you can't keep everyone happy," balancing the community's current and future needs with the the citizen's current needs, future needs and vested interests must be terribly daunting. So, I commend you and your team for stepping up to the tasks at hand for our community. Finally, I have spoken with my office mates and I will present comments to you as you requested. Our other REALTORS® may have additional input as well. Please keep me in the loop and let me know how I may assist. Best regards, Mark Mark Lauburg, REALTOR® REMAX of Helena 1060 Helena Ave. Helena, MT 59601 Cell 406-202-5894 Office 406-442-1900 Fax 406-442-2077 www.marklauburg.com marklauburg@remax.net This email is intended for a recipient with an existing business relationship with the sender. The source email server is managed by Reliance Network, LLC. If abuse is suspected, please contact Reliance Network via the following URL: http://www.reliancenetwork.com/reliancenetwork/index.asp?p=emailAbuse

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26	01/14/2015	Kit	Johnson	**From:** Kit **To:** Jeff Key; DKnoepke@helenamt.gov **Subject:** Helena Greater Area Transportation Plan comments **Date:** Wednesday, January 14, 2015 4:18:03 PM Gentlemen, I would like to take a few seconds of your time and comment on the LRTP that is under the public comment and review period. Thank you for your work on this extensive and crucial document and for requesting public comment. I have some comments on the LRTP that I was hoping you would entertain since I deal with the traffic flow daily; I own a business in East Helena and have been a long time resident. I see the LRTP includes plans to address Valley Drive and Wylie Drive, both of which are widely used feeder routes into and through the City of East Helena. Unfortunately the MSN and CRN recommendations (fig 1-1) shows the recommendations do not include continuing through East Helena to the terminus with Highway 12. Both of these streets, especially Montana avenue from Lewis street south to 12 are in need of major attention, and will continue to degrade with the additional traffic that will come from improving the routes up to them. The intersection of Main and Montana is also a problem due to shortened site lines. I would like to suggest extending the no-parking area on Montana Avenue to improve the sight line to the West when approaching Main street from the north and possible a four way stop sign. In addition, the stretch of Lane Avenue (hwy 518) from highway 12 north to main street (old hwy 12) should also be addressed. The traffic is atrocious during heavy load hours. Lane Avenue needs left and right turn or a center turn lane, a three way stop sign at Lane and Main and a crosswalk at Porter plus the continuation of sidewalks to the south of J4 Automotive on 3 south Lane Avenue. (I installed a sidewalk there in 2010) I understand that the LRTP for the greater Helena area is unique in that no other LRTP encompasses two separate incorporated municipalities. I understand Helena and the valley area are large players, demanding attention and resources, however I encourage you to not allow East Helena to fall through the cracks. The underlying current in this community is one of growth, a separate culture and or own identity. Thank you very much for your attention to this matter. Sincerely, Kit Johnson J4 Automotive East Helena, Montana 406-227-8622 Kit@J4automotive.com

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27	01/14/2015	Don	Dahl	**From:** Don Dahl **To:** Jeff Key **Subject:** Helena area plan **Date:** Wednesday, January 14, 2015 7:14:15 PM I have a couple of suggestions 1- Work on Montana ave. in East Helena should extend to highway 12 2- Wylie dr. should extend to highway 12 3- Lane ave. at the intersection of old highway 12 should be looked at as it is turning into a bottle neck with traffic to and from work and at school times. Thank you for your consideration of this matter. Don Dahl Box 863 East Helena, MT 59635 ddahl863@gmail.com

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28	01/15/2015	Bill	Schneider	>>> Bill Schneider Bill Schneider <billschneider65@gmail.com> 11:28 AM January 15, 2015 >>> Jeff, I've read through the bicycling section of the draft plan, and it seems like a lot of great thought and work went into it. with a few exceptions, HBC strongly supports the recommendations outlined in the plan. I only hope as many as possible actually become reality in future years. In addition to the sweeping comments we have already submitted for the official record for the draft transportation plan, please enter the following additional comments into the record. Thank you. Bill Schneider Vice-President Helena Bicycle Club ______________ Bill Schneider P.O. Box 504 Helena, MT 59624 406-431-4594

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				DETAILED COMMENTS FROM THE HELENA BICYCLE CLUB ON THE DRAFT GREATER HELENA TRANSPORTATION PLAN: Unless specifically suggested otherwise below, HBC agrees with the draft recommendations. Our suggested modifications follow: 1. **N. Benton Avenue from W. Lawrence to Clarke on west side of City-County Building.** Install a two-way bicycle lane on west side of street so bicyclists can resume using the popular route continuing south from Clarke Avenue until it turns to South Benton Avenue (closed to motor vehicles) and out Reeders Alley to South Park Avenue. The current one-way forces bicyclists on sidewalks or into heavy traffic on Park Ave to get to points south of Helena. 2. **Ninth Avenue from LCG to California.** This is a "designated" bike route, but it has too many stop signs, which discourages bicycle commuters from using it. Remove as many stop signs as possible. 3. **Hauser Avenue at Henderson intersection.** Turn stop sign so north-south traffic must stop and east-west traffic does not have to stop. This will encourage instead of discourage bicycle commuting on Hauser, a "designated" bike route. 4. **Granite Street in front of Kessler School**. Remove or significantly reduce the size of extremely dangerous bulb-out on steep downhill grade on east side of street. 5. **Henderson Street from Euclid to La Grande Cannon.** Only need bike lane on the downhill (east side). 6. **Intersections Lamborn/!1th, Lamborn/Prospect, Lyndale/LCG, and Benton/Lyndale, Helena/Neill/Cruise, Helena/Montana and several other major intersections.** The bike lanes must continue through the intersection. It can't abruptly stop. This causes unsafe indecision by bicyclists and motorists. Most beginning bicyclists do not know what to do in these situations. The HBC plans some education, but it would be much better to have the bike lane continue through the intersection.

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				7. **Brady Street from Henderson to Joslyn.** It would be better to remove these "traffic calming" devices instead of trying to modify them. 8. **Joslyn/Country Club intersection.** A very dangerous intersection for bicyclists that needs extensive re-construction including marked bike lanes going both east-west and north-south through the intersection. 9. **LCG from Neill to Broadway.** We suggest prohibiting bicycling on sidewalks in this section of downtown. 10. **Cruise Avenue.** Stop signs should be turned to make this a through street for north-south traffic, both bicyclists and motorists. Right now the Broadway, Sixth, Lawrence and 11th crossings are difficult and dangerous for bicyclists. 11. **East Lyndale Avenue.** Agree with recommendation, but only possible if parking is prohibited on both sides of street. It is our understanding that Carroll College would support prohibiting parking on Lyndale. 12. **Henderson Ave, Euclid to Custer.** As you mention, many bicyclists prefer not to use the shared use path. If you want bicyclists to use this path, move the stop signs so motorists must stop before the bike path and yield to bicyclists traveling the bike path. Same recommendation for the **Benton Ave** bike path (RR tracks to Custer). Please not that this has been done on the **Custer** shared use path, so there should not be a problem doing it on Benton ahd Henderson.

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29	01/17/2015	Bill	Schneider	>>> Bill Schneider Bill Schneider <billschneider65@gmail.com> 12:03 PM January 17, 2015 >>> Jeff, One more comment for the official record. The Helena Bicycle Club opposes the closing of the Roberts Street railroad crossing. Roberts Street is a key north-south bicycle route. If closed at the railroad tracks, bicyclists would be forced to take a big detour and probably ride on Montana to get over the tracks. I don't think the City of Helena or the architects of the new transportation plan, want to encourage more bicycle traffic on Montana in its current condition. Later, perhaps, when bicycle safety improvements are made to this primary thoroughfare, but not now. Bill Schneider Helena Bicycle Club ____________ Bill Schneider P.O. Box 504 Helena, MT 59624 406-431-4594

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30	01/18/2015	Eloise	Kendy	**From:** Eloise Kendy **To:** DKnoepke@helenamt.gov; Jeff Key **Cc:** Jim Barnes **Subject:** Comments on Helena transportation plan **Date:** Sunday, January 18, 2015 12:44:19 PM Dear Dave and Jeff, I was fortunate to attend your excellent presentations at the Helena Regional Airport last week, and would like to comment, as you requested. My comments are not prioritized; all are important. I will my preface my comments with an important observation : the location of the meeting on that mid-winter night was basically inaccessible to Helena residents who depend on walking, bicycling, or public transportation. Additional outreach specifically to that segment is highly warranted. There is a strong link between transportation and public health that the plan partially addresses, but could do more. Air quality in the Helena valley at times is terrible and getting worse, and auto emissions are largely to blame. Steps to reverse this trend include: -- Discouraging car-dependent suburban sprawl by keeping highways small and slow. Unfortunately, the draft plan strives to do the opposite. -- Encouraging use of public and non-motorized transportation. The draft plan gives excellent consideration to the latter. -- Promoting policies that reduce emissions, including periodic emissions testing as prerequisites for vehicle license renewal; and education, outreach, and enforceable laws to prohibit engine idling. As a pedestrian, I often have to walk through clouds of auto emissions in the winter when inadequately dressed people sit inside idling cars or when drivers leave their engines running while they wait for their cars to warm up -- which is unnecessary for modern vehicles. I didn't see this addressed in the plan (although I could have missed it). -- Making it safer to walk in Helena by strictly enforcing the sidewalk snow shoveling ordinance. Most of my neighbors drive the 4 blocks to downtown -- or skip the trip altogether -- rather than risk slipping on chronically icy sidewalks in our neighborhood. As a bicycle rider, I greatly appreciate the careful attention the plan gives to making our city more bike-friendly for daily commuting, and not just for recreation. With people's lives getting busier, leaving less time for exercise for exercise's sake, pedestrian and bicycle commuting seamlessly incorporate exercise into a healthy lifestyle. Clearly, the authors are well familiar with best practices and attempted to apply them to Helena. Along those lines, if you have not seen this video on bicycling in US cities from a Dutch perspective, I encourage you to view it: https://www.youtube.com/watch?v=m2THe_10dYs; it made me realize just how far we still have to go, even in our country's most bike-friendly cities. As a start on catching up, I strongly support buffered bike lanes and shared bike lanes. As the plan recognizes, bike parking is also important and still sadly lacking in Helena. THANK YOU also for recommending the removal of bump-out curbs in bike lanes - - I was shocked when those dangerous features were installed.

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				Finally, I want to express my strong support for completing the rails-to-trails project connecting Helena to Great Falls via the railroad grade along the Missouri River. I want to be the first person to ride it! I hope these comments are helpful. Thank you for considering them. Sincerely, Eloise Kendy 415 Monroe Ave. Helena, MT 59601

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31	01/20/2015	Paul	Cartwright	**From:** Paul Cartwright **To:** Jeff Key; Ryan Leland **Cc:** Ron Alles **Subject:** what to do with N. Montana **Date:** Tuesday, January 20, 2015 11:59:33 AM Have you considered making N. Montana between Malfunction Junction and Cedar three lanes with a two-lane underpass? I heard MRL was offering to throw in some for the crossing, but I'd be surprised if it was all that much or worth losing the Roberts/Sanders north-south route for cars or the pedestrian route for the Sixth Ward and the Lincoln and Bryant schools. And we for sure would have to pay as much as what a two-lane underpass would cost no matter what, so it's not as if going it alone need cost us more. Anyway, the projected loads for that segment keep dropping with each new Plan update and I'm wondering if once the area east of South Interchange develops, that segment of N. Montana will end up on the seam between two major nodes and not see much increase in traffic at all. Design speculation aside, do you guys remember the history of how that segment became four lanes? About 20 years ago, Jason Girard snuck in the widening as a maintenance project. It caused a big stink at MDT headquarters. More to the point, the project didn't go through all the review processes or have all the features an official rebuild would. So whatever you decide to do with that segment, heads up that there could be some surprises left from when it was widened. Paul

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32	01/23/2015	Jean	Riley	**From:** Riley, Jean **To:** Jeff Key; DKnoepke@helenamt.gov **Subject:** Greater Helena Area - Long Range Transportation Plan - Draft Facility Recommendations **Date:** Friday, January 23, 2015 11:25:45 AM I thank you for the opportunity to comment on the Draft Facility Recommendations for the Greater Helena Area – Long Range Transportation Plan. I am responding as a resident of Eastgate Subdivision, east of East Helena. I have reviewed the entire document and would like to submit the following comments. If you have any questions concerning my comments you may contact me. General Comments: 1. The title for the long range plan is misleading to many readers. There should be a reference that this plan also includes East Helena as East Helena is an incorporated City. The citizens of East Helena and the surrounding area may not have understood that this plan could affect them and therefore, full public input may not have been received. 2. The timing of the public meetings has not considered the scheduled meetings of the East Helena Commission nor the East Helena Planning Board. This prevents East Helena Commissioners from attending meetings. 3. Throughout the document there is reference to the “Helena Area”. This is confusing as some places it appears that the document is only discussing the City of Helena and not Lewis and Clark County or East Helena, yet in other sections it appears that this referenced is to the larger area that includes East Helena and Lewis and Clark County. 4. When discussing improvements there should be some indication if the location is within Helena, East Helena, or Lewis & Clark County. Helena and East Helena have duplication on street names (i.e. Montana, Oak, Washington, Lewis, etc.). Designating the location within each community or county will allow the reader to better understand where the improvement is located and who may be responsible. 5. There are references to the City of Helena and Lewis and Clark County Growth Policies and subdivision regulations. These sections should also review the East Helena Growth Policy and Subdivision Regulations. If appropriate, these documents should also be referenced. 6. The document states cost estimates are “planning level costs”. What does this mean? Do these costs include right-of-way, utility moves, design, etc. or are these estimates for construction only? 7. Language should be included that when development occurs, that the developer will be responsible for implementing the recommendations of the plan. This will reduce the cost to all parties (Helena, East Helena, and Lewis & Clark County). Comments on Document 1. Page ii, CRN is not defined.

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				2. Page 3 MSN-2 – This route is on the NHS (National Highway System). How do these recommendations align with the requirements that must be met by NHS routes? 3. Page 4, MSN-3 – The recommendation includes aesthetic treatments. As this plan is for roadway improvements, who is responsible for picking up the cost of aesthetic treatments and what is being anticipated? 4. Page 5, MSN-7 – This extension will cross multiple Montana Environmental Trust Group (METG) lands that have high levels of soil contamination. Were remediation costs taken into account? The East Helena School Board is looking at purchasing land along Valley Drive. Was this considered during the development of this recommendation? 5. Page 9, CRN-2 – The recommendation does not evaluate the condition of Wiley Drive from Canyon Ferry to US 12. There are sections of Wiley Drive that do not meet standards and have substantially more traffic than the section from Canyon Ferry to York Road (US 12 to Canyon Ferry – 4,630 AADT, Canyon Ferry to Howard Road – 2,770 AADT, and Howard Road to York Road – 830 AADT). This recommendation should include all of Wiley Drive from US 12 to York Road. With the sections of Wiley carrying substantially different traffic, the roadway width should be adjusted appropriately. 6. Page 10, CRN-3 – The recommendation to terminate this improvement at Lewis Street in East Helena does not take into account that Valley Drive becomes Montana Ave in East Helena and Montana Ave is substandard also. This improvement should extend through the City of East Helena and terminate at US 12. Montana Avenue in East Helena has 2,790 AADT compared to north of Canyon Ferry with 1,180 AADT. 7. Page 13 CRN-19 – The recommendation of a 32-foot top width for the entire roadway should be revisited. The route has different volumes of traffic depending on where you are located (i.e. from US 12 to Canyon Ferry – 3,070 AADT, Canyon Ferry to York Road – 1,570 AADT, York Road to Diehl Lane – 1,910 AADT, and Diehl Lane to Lincoln Road – 850 AADT). It would be more appropriate to have recommendations for each section. 8. In the Transportation System Management Improvements section, was the intersection of Montana Ave and Main Street in East Helena evaluated? During certain times of the day, this intersection functions very poorly. 9. Page 22, TSM-28 – This recommendation refers to the "Community Transportation Safety Plan". Is this is the City of Helena's plan, if so it should be referenced as such? 10. Page 27, Section 3.1.2.1 Needs of Pedestrians with Disabilities only makes reference to Helena's Committee. This would appear to be over reaching this committees' area of influence into East Helena and the County. This section should look to each of the governing bodies for recommendations. 11. Page 29, PED-9 – This recommendation puts a pathway directly into a home on the west

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				side of Lake Helena Drive. Have these recommendations be vetted through the subdivisions residents? 12. Page 29, PED-10 – As with the previous recommendation, this recommendation should be vetted through the subdivision residences. The proposed location for this pathway has significant issues. There is a drainage ditch that routinely floods and during runoff events experiences very high flows. There is a high pressure gas main for the entire route. Lastly, this is private right-of-way. 13. Page 29-30, Table 3-1 – Many of the proposals include adding crosswalks and traffic control on MDT routes. Has MDT been contacted to determine if these meet warrants? 14. Page 31, Section 3.1.5 Pedestrian Program and Policy Recommendations – This section continually references "the City". If these recommendations include East Helena then the reference should be "the Cities". 15. Page 33, Figure 3-1 – The figure appears to have a sidewalk or path on Clinton Street from Lake Helena Drive to Oak Street (near the East Valley Middle School). This is not included in the recommendation table, yet it is shown as a "Missing – Priority". 16. Page 38, Table 4-3 Bicycle Lanes – Many of the recommendations include wider shoulders, are the costs just for shoulder widening? The recommendations discuss that these improvements should be done when the roadway is reconstructed. Many of the roadways discussed are also recommended for improvements elsewhere. Is this cost added to the roadway reconstruction or is it being duplicated? 17. Page 49, SUP-12 – The proposed location for this pathway has significant issues. There is a drainage ditch that routinely floods and during runoff events experiences very high flows. There is a high pressure gas main for the entire route. Lastly, this is private right-of-way. 18. Page 59-60, Section 4.1.3 Bicycle Program and Policy Recommendations – Again this is written as if to exclude East Helena. Was that the intent? 19. Page 64 – Why are the East Helena Subdivision Regulations and the Lewis and Clark County Subdivision Regulations not referenced? I understand that the Draft Facility Recommendations does not discuss how the recommendations will be funded. However, with the urban area boundary expanding to include a much larger area of the County and the City of East Helena, is there going to be discussion on reprioritizing funding for roadways that are now included within the urban boundary? Would there be federal funding available for roads such as Lake Helena Drive, Wiley Drive and Valley Drive-Montana Ave in East Helena? Please add me to your contact list. Again, thank you for the opportunity to comment on the Draft Facility Recommendations.

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				Jean A. Riley, P.E. 2675 Colt Drive East Helena, MT 59635 406-431-1734 Member of East Helena Planning Board Vice Chair Eastgate Water Sewer Association Member Eastgate Road Committee

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33	01/23/2015	Terence	Ray	**From:** Terence Ray **To:** Jeff Key **Subject:** input **Date:** Friday, January 23, 2015 3:50:57 PM > In the interest of Helena's neighborhood residents actions must be taken to protect the City's neighborhoods from the impacts of non-functioning road network designs or the effects of deferred road improvement projects. I recommend the City investigate and implement comprehensive measures that minimizes traffic impact on quality of life in our residential neighborhoods. As an initial step in this process, the LRTP should be designed under the premise that city roads are placed in a hierarchy system based on a road's intended use, not the road's vehicle count which is current practice. The LTRP should recommend measures to ensure a road's use remains within its intended purpose. If a caregory of a road needs to change, similar to zoning, a public meeting and commission action must occur. We need to focus on a "comprehensive" plan which is missing in the LRTP. I see no linkage between the LRTP and an overall City Comprehensive Plan that considers neighborhood quality of life, economic development, historic preservation, etc. > > > >

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34	01/24/2015	Terence	Ray	**From:** Terry Ray **To:** Jeff Key **Subject:** Input for LRTP **Date:** Saturday, January 24, 2015 5:33:08 PM Jeff, Below are additional comments on the LRTP. **Use of local access streets as line-haul and freight truck through routes.** The City commission may designate certain streets in the city as truck restricted. As of January 2015, there were no streets in the City designated as truck restricted. "Chapter 15 Trucks. 8-15-1: Use of Certain Streets Prohibited. The Helena city commission may, from time to time, as it deems to be in the best interests of the public health, safety and welfare, designate that certain streets and avenues in the city shall not be used by any truck (freighter or over the road truck)." Extracted from the City of Helena Code. I recommend that the LRTP consider of the Commission's authority to restrict trucks on local streets and recommend the Commission use their authority, in an effort to encourage to use preferred routs or "Local Truck Routes". The City can not limit trucks on State highways or NHS routes but it can influence truck operators on local or collector streets. Specifically I have monitored excessive truck traffic on N. Fee St., Boulder Ave., and East Lyndale Ave. In a petition to the City the many residents requested the City to do something about the truck traffic. This petition was submitted in October 2014, as of January 2015 no action has been taken by the TCC, City Commission, or City Staff. "Local Street- Comprises all facilities not included in a higher system. Its primary purpose is to permit direct access to abutting lands and connections to higher systems. Usually through-traffic movements are intentionally discouraged…." Extracted from the City of Helena Transportation Plan. There are no actions recommended in the LRTP update that "intentionally discourage" through traffic (commuters, local commercial vehicles routes through town, etc.) on local streets. The current plan update does not address this as a problem in the city when clearly it is a problem in certain areas. Local access residential streets are not designed or maintained to support routine heavy through truck traffic use. State highways and through streets are designed for this purpose. Local, residential, streets are primarily maintained by the City using City revenues, State highways are maintained by State. Heavy through truck traffic on roads not designed for this purpose will quickly deteriorate, requiring additional maintenance and expenditure of City revenue. **An increasing amount of drivers are using local and collector streets through the city's traditional grid neighborhood system to bypass non-functioning arterials or to save time due to no traffic control devices.** Again, this issue is not address as a current problem or potential future problem in the current revision of the LRTP, even though the situation exists in many parts of the city, and the urban planning industry acknowledges this as one of the most significant problems with "new urbanism" or the traditional neighborhood grid system design. An example of this situation is the east and west bound commuter traffic using East Lyndale or Boulder Ave and Billings Ave (behind Walmart) to avoid at least 10 traffic signals on HWY 12, and to avoid the congestion caused during rush-hour. The "by-pass" route (from Billings Ave to Boulder Ave and onward to North Montana Avenue) has no stop signs or traffic signals. By using the route behind Walmart, under Interstate 15 and through the 6th Ward, vehicle operators can save travel time due to delays caused by traffic signals and congestion along highway 12 (11th Avenue and Prospect Ave.). The increasing amount of through traffic is impacting on the quality of life in the area. The LRTP must be linked to the City's Comprehensive plan in that it prioritizes the protection of neighborhood quality of life over efficient vehicle movement. Most of Helena's neighborhoods are designed using the traditional grid system. This is a good system, or configuration, for community life. Local neighborhood street use by out of neighborhood drivers as a cut-through negates the benefits of the traditional grid system. For this very reason, the contemporary sub-division transportation/streets design was created which include off-set streets, curves, and limited entrances and exits. If the City's plans do not address the systemic issues created by the traditional grid neighborhood system, the quality of life in our city neighborhoods will diminish and other problems arise as the city's neighborhoods become places less desirable to live. Our neighborhood residents will become increasing less connected and individuals will not feel like stake-holders in their community which results in un-maintained properties as one possible consequence. Respectfully, Terry Ray

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35	01/25/2015	Bill	Schneider	>>> Bill Schneider Bill Schneider <billschneider65@gmail.com> 12:01 PM January 25, 2015 >>> One last comment for the official record. From one our members. On our "designated bicycle route," the Deerborn/Stuart intersection should have stop signs on Stuart to make it safer for bicyclists. On Deerborn/Floweree where the bucycle route turns left there should also be stop signs on Floweree again to make it safer for bicyclists. After all this is a designated route for bicyclists so bicyclists should have top priority. Thank you Bill Schneider Helena Bicycle Club

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36	01/25/2015	Nigel	Mends	**From:** N Mends **To:** Jeff Key **Subject:** Comments on the Facility Recommendations - Long Range Transportation Plan **Date:** Sunday, January 25, 2015 2:51:37 PM **Attachments:** Comments.docx, Comments.docx Jeff, First of all, thank you again for the opportunity to comment on this plan. I think you've done an amazing job here, providing a wealth of information that paints a clear picture of what Helena plans to do in the future. I'm also impressed that the city inaugurated this process, giving the citizens of Helena the chance to see where the transportation system will go. Please note that I made a few comments on typos and such. I hope you won't find them annoying, but it looked like you'd done such a thorough job of proof-reading the report that I thought you'd want to know about them. Feel free to ask me about any of the comments if you have questions about what I wrote. Thanks again. You've done a terrific job! Nigel

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				Facility Recommendations The comments below address specifics of the report. Taken together, though, they address two main concerns: where will the money come from and how will the city prioritize the spending? The City of Helena recently reported the need for $25 million in street reconstruction, while it has $500,000. The city obviously faces some serious budget problems, of which this situation is only an indicator. This raises two questions; first, what is the city's financial situation with respect to roads, second what is the process for prioritizing projects? The city has urban routes, state highways for which the state provides some level of funding, which funding can be spent only on those routes. How much is the annual allotment to the city of Helena? How much does Helena have on hand from this funding source? What commitments has it made for that money? Then there are all the rest of the streets. How much money does the city have on hand for them? Does it have funding sources other than taxes? How much of city taxes pays for the streets? What commitments has it made for these funds? What priorities has it already established? How will it go about establishing priorities for all the projects this report lists? The CRN acronym used later in the report does not appear in the table of acronyms and abbreviations. Given those financial considerations, is the expense for building Custer and Benton wide enough to have a bicycle lane on each side a good use of funds when there's a dedicated bicycle path there already? Eleventh Avenue already has an on-street bicycle lane in the eastbound direction on the northern portion of the facility between Montana Avenue and I-15. Does the report mean to refer to something else? Where the report proposes a project to reconstruct Eleventh Avenue between Cruse Avenue and Montana Avenue, does the city intend to meet all the requirements here for bicycle lanes and buffer strips, curbs and gutters? Is the city willing to take out all the boulevard trees to accomplish that task? If not, will there be criteria the citizens of Helena can use as a reference to determine when and where the city will require a full build-out of those facilities and where it won't? Has it discussed that proposal with the landowners? Will the construction of Montana Avenue between Custer and Cedar to accommodate five lanes of traffic and two bicycle lanes mean businesses losing their buildings or their parking? How will it all fit? The "signal timings" (pg. 18) have been "upgraded". Does that mean that the lights are synchronized from intersection to intersection, or that the times in different directions were changed, or something else? Pg. 19, TSM-1, "Vehicles parked to close", should be "too close". Pg. 21, TSM-20. Has there been any consideration of a truck bypass that connects Wylie Drive in East Helena with Canyon Ferry Road, Custer Avenue and Joslyn Street? Such a bypass would remove heavy

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				trucks from city traffic. If implemented in the near future, right-of-way costs might be lower than building up the facilities through the city to accommodate those same trucks. Curb bulb-outs into the street may improve conditions for pedestrians, but they also create an obstacle in the roadway for bicyclists and a hazard, by forcing the bicyclist out into the lane with vehicles. The one on Benton is an example of that situation. Will the plan address that aspect of them? Providing totals for the construction proposed would be helpful in the tables on pedestrian and bicycle facilities costs. The high costs for the bicycle facilities, for example, total to around $27 million, a number that the public perhaps should know before agreeing to this plan. Given the limited funds for the facilities the city has now, what will be the process for determining which of these projects should be built and when? Will the public have any voice in the decision of whether to re-construct facilities the city already has before building new ones? What other projects will have to wait for funding while these are built? Would the city consider reducing design requirements, say, to a four-foot bicycle path instead of over six feet wide, in order to reduce costs? Pg. 31 talks about snow clearing on sidewalks, while many landowners ignore the regulations, in many places the city and/or state plow snow from the street onto the sidewalks (because they have nowhere else to put it), and Chinooks melt snow that freezes into a sheet of glazed ice. Walking in much of the western part of the city, if nowhere else, becomes difficult and hazardous this time of year. At the risk of repetition, should we address the facilities we have before spending millions building more? How should the snowplows avoid berms in the proposed bicycle lanes (pg. 62)? Were businesses consulted in the preparation of this plan? For example the proposal for a roundabout at Last Chance Gulch and Neill Avenues generated protest from the surrounding businesses who would lose customer access and property to the roundabout, causing the shelving of that project. How much planning should the city finish while leaving out a significant sector of the community, one that may later object to the point of killing projects, and at a cost of how much money? Pg. 36. Does the city intend to force bicycle boulevards on neighborhoods that don't want them? What will the process be for their implementation? "complimenting" should be "complementing". The plan proposes to ban parking on streets to accommodate bicyclists. Has there been any attempt to invite the landowners affected by these proposals to comment on it? Bozeman increased the number of bicycle trips. At what cost? How much total and how much per bicyclist-mile traveled? Pg. 47 and pg. 51. Please consider providing costs per mile for maintenance of bicycle paths. A discussion of how those costs were determined would be helpful, too. For example, the bicycle path between East Helena and Helena was allowed to deteriorate for years with no maintenance before it was reconstructed, to the point that bicyclists stopped using it, as it was so uneven due to cracks, blisters, and potholes. The one along Benton, although there has been some effort at crack sealing it, is in similar condition today. If facilities like that were used as the basis for annual maintenance costs, they may be artificially low, as there were none.

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				If bicyclist are "typically at fault in a majority of crashes", (Non-Motorized Existing Conditions report) would putting a lot more emphasis on changing bicyclists' behavior reduce the number of crashes while being a lot cheaper than spending millions on constructing facilities? Allowing bicyclists on the walking mall downtown on the assumption that they will ride slowly seems a little unrealistic. Some of them already shoot through there in spite of being prohibited on the mall for decades. Expecting that skateboarders will stay out after bicyclists are allowed seems similarly unrealistic. The sections on traffic regulation talk about police regulation of bicyclists, but do they? In at least some cases the police have refused to ticket bicyclists, even when the latter were in clear violation of the law, even when they have caused a vehicle collision. Bicyclists shoot through intersections, ride the wrong way on one-way streets, ride several abreast and blocking traffic, and so on, right in front of police who ignore them. How many citations per year have the Helena police issued to bicyclists? Pg. 65. How much does the transit system cost, both overall and per mile traveled? How many passengers does it carry? How many trips does it make? How much does each passenger cost the city? How much revenue does each generate? Are there means by which the city could reduce those costs? Are the sources of its funding affected by expenditures on the other facilities proposed in the report? Pg. 35. The City Commission recently tried to get taxpayers to approve an additional tax to support building bicycle and pedestrian facilities. It was voted down. The funding source for the bicycle recommendations in the face of the taxpayers' rejection of that tax seems unclear. The Non-Motorized Existing Conditions report gives no clear figures on how many bicyclists use the facilities we have in Helena, nor how far they go. Shouldn't the taxpayers have a chance to review the numbers that justify the expenditures this large, as large as the ones the city already cannot meet to fix the infrastructure it has? Do the taxpayers who rejected paying for these kinds of facilities have voice in this discussion? The Non-Motorized Existing Conditions report on which the bicycle recommendations are based, left some questions unanswered. In particular: • Who performs the American Community Survey? Who pays for it and how? Is a copy of the survey available to the public for review, especially given the narrow time window for comments on the draft plan? • Repeat all those questions for the National Household Travel Survey. In addition, how does the NHTS apply in Montana? Do our smaller population, greater distances between towns, and harsh winters have any effect when attempting to apply its conclusions here? • How many bicyclists are there in Helena? How much will the city spend per bicyclist, per bicyclist-mile traveled under this plan? • *"41 percent of bike trips counted by NHTS are return home trips indicating many bicyclists perform part of their round trip by other means.* " What are "return home trips" and how are they completed "by other means"? • How was the public survey in section 7.3 executed? Is it a statistically representative sample of the population of the Helena area? A selective subset of the population? How were they sampled?

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				Where? The report says that 25 percent of men ride in the winter, but since it does not provide the number of men and women in the sample of 928, how many people that would be? Finally, as a bicyclist myself, one who rides several hundred miles a year in and around Helena, I'd like to comment that I don't find getting around Helena all that difficult. There are some rough spots here and there, mostly at intersections, where negotiating a path through can be a little tricky, but overall I think riding around town is fairly pleasant. And some of the streets have wide shoulders or bicycle lanes that provide plenty of room, while others have low traffic volumes, so the hazard is low. For me the dangerous riding is outside of town, on Country Club Lane, Birdseye, Lincoln Road, Green Meadow Drive (except for the first mile or two south of Lincoln Road where the shoulder is wide), and Montana Avenue, where the shoulders are only inches wide if they exist at all.

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37	01/25/2015	Bob	Filipovich	**From:** bob filipovich **To:** Jeff Key; DKnoepke@helenamt.gov **Subject:** Comments on LRTP draft **Date:** Sunday, January 25, 2015 4:45:03 PM Besides a lay reader's problems such as: what does "CRN" mean? (It's not on the abbreviations page of the draft plan) Or CTSM? and that figures 1-1 and 1-2 and 2-1's numbers are nearly impossible to read, thus discouraging attempts to comment, the "document" draft on the helenaareaLRTP home page had this message on Sunday, 1 25, 3:50PM when I clicked on the draft document plan: "The file is damaged and could not be repaired. Local\EWH-4660-2" I'd started reading this draft recently and could access it, but I wanted to get my comments in before the 5 PM deadline Monday. Now I can't or anyone can't if they can't access it. I don't want to slow down the process, but I do want citizen involvement. It's their city.

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38	01/25/2015	Dan	Norris	**From:** Dan **To:** DKnoepke@helenamt.gov **Cc:** Jeff Key **Subject:** Comments on draft Facility Recommendations Technical Memorandum - Greater Helena Area Long Range Transportation Plan **Date:** Sunday, January 25, 2015 7:29:40 PM **Attachments:** 2015-01-25 Ltr Re Helena Transportation.pdf Mr. Knoepke and Mr. Key, I have attached a PDF copy of a letter providing official comments in response to the draft Facility Recommendations Technical Memorandum - Greater Helena Area Long Range Transportation Plan. Please feel free to contact me by e-mail or mail if you have any questions regarding my comments. Thank you, Dan Norris

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				Mr. Daniel F. Norris 3103 Vigilante Drive, Apt. A Helena, MT 59602-0257 Via e-mail attachment to: Dave Knoepke, P.E. Civil Engineer City of Helena City-County Building, Room 410 316 North Park Avenue Helena, MT 59623 January 25, 2015 Dear Mr. Knoepke, I am writing to provide formal comments on the draft Facility Recommendations Technical Memorandum, Greater Helena Area Long Range Transportation Plan - 2014, dated January 13, 2015. I have broken my comments down into a section with comments regarding specific projects, and have also provided several general comments regarding the overall transportation plan. **Specific Project Comments** **Project MSN-1 Custer Avenue 5 Lane Arterial** – I live at the corner of Custer Avenue and Cooney Drive, directly facing Custer Avenue out my front window. I agree that the current configuration of Custer avenue is unsustainable and will cause significant traffic congestion in the future. I do hope that for whichever plan is adopted for this stretch of road, noise and lighting impacts are factored strongly so that future impacts to me and my neighbors may be minimized. Minimally disruptive, direct downward street lighting will help to preserve Helena's night sky and minimally impact neighboring properties. Likewise, I hope that the amount of lighting is rational and minimizes light produced, while providing ample light for traffic safety purposes. I would also prefer that construction activities take place all at once, to the extent possible. I think it would be much more productive to entirely close the segment of road and conduct all construction activities to completion, rather than having the road open and conducting piecemeal construction activities. I believe piecemeal construction would cause disruption over a longer period of time. I understand that there are complicating factors with a project such as this that may make one construction period impossible, but hopefully activities can be grouped to an extent. This project cites a "...lack of on-street bicycle facilities" as a problem. I wanted to point out that there currently is a separate shared use path along the south side of Custer Avenue along much of the proposed project corridor (from the fairgrounds east to National Avenue). When planning for a road upgrade in this area, it is important that a shared use path serving this area be maintained or enhanced. Such paths are much more useful than bike lanes or sidewalks that directly abut the road.

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				Project BL-13 Custer Avenue Bike Lanes – Related to my last comment above, I agree that this segment of roadway is in need of improvements for all modes of transportation. However, it is concerning to me that there is no reference to a shared use path here or in the Shared Use Path section of the draft memorandum for this section of road. As a walker and a bicyclist, adding bike lanes is not particularly helpful. Removing any shared use path in this area would be a mistake, as these paths are commonly used by both residents and students at the Four Georgians School. Resources should be devoted to maintaining or enhancing a shared use path along the Custer Avenue project, rather than adding bike lanes or small sidewalks in similar areas. **Project MSN-2 Railroad Grade Separation at Montana Avenue** – I am supportive of a grade separation as discussed in the draft Facility Recommendations Technical Memorandum. I echo the concern for aesthetics mentioned in the document, but believe that regardless of the crossing option selected, having a grade separation at this intersection is essential. **General Comments** I formerly lived in Jefferson City, Missouri. The City Parks and Recreation department worked closely with city planners to develop an excellent network of shared use paths (https://www.jeffcitymo.org/parks/greenwaytrailsmaps.html). Again, as a bicyclist, bike lanes are essentially useless to me, as they present significant challenges and provide no error room. I advocate that a better use of development funds would be to enhance the network of shared use paths within the City of Helena. Such paths are generally situated away from, or set back from, roads and allow for a much more pleasant experience, while minimizing conflicts for driver, bike rider, and pedestrian alike. Along this note, I point out that sidewalks are much more likely to be used by pedestrians when they are not directly attached to a road, so as to provide a slight buffer. I also have noticed that many of the traffic lights in Helena use the newer type of overhead sensors that can better sense traffic flow and respond accordingly. This is certainly a step in the right direction. However, I believe that there is room for improvement by having the smartlights communicate with each other and respond better with their timing. Before moving to Montana, I was amazed by how much traffic the Missouri Department of Transportation was able to efficiently get through very small intersections using their smartlight system. Investments in sophisticated smartlight technologies clearly have the ability to more than pay for themselves by offsetting the cost of major intersection improvements. As someone who lives directly facing one of the major street network projects, I hope that you keep me informed of future planning meetings or proposals as things progress so that I may provide feedback. I can be reached via e-mail at toxicresearch@gmail.com I thank you and those working on transportation improvements for the Helena area. Sincerely, Daniel Norris c: Jeff Key, Senior Project Manager, Robert Peccia and Associates (via e-mail attachment)

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39	01/26/2015	Eliza	Wiley	**From:** David Knoepke
				To: Jeff Key
				Subject: Fwd: Miller Street issues
				Date: Monday, January 26, 2015 9:23:16 AM
				
				FYI
				
				Regards,
				David Knoepke, P.E.
				City of Helena
				Civil Engineer
				City-County Building, Room 410
				316 North Park Avenue
				Helena, MT 59623
				Office (406) 447-8099
				DKnoepke@helenamt.gov
				
				>>> Ryan Leland 12:53 January 23, 2015 >>>
				
				>>> Eliza Wiley <elizawiley@gmail.com> 1/23/2015 12:10 PM >>>
				Hello Ryan,
				
				I own property located at 321 Miller Street. This letter is to request a change in traffic direction for this narrow alley like street. At this time traffic is allowed to go up and down hill though there is parking on right hand side, the down hill side. I have witnessed many dangerous encounters with pedestrians/bikers vs. automobiles as many residents use this as a walk/bike through way. The winter is especially bad as the street is on the north side and ice really builds up. Vehicles will often come up the hill at high rates of speed in an attempt to make it out on to Rodney without getting stuck which usually means blindly flying through the stop sign to keep their momentum going. If it were to be a one way (downhill only) it would still allow for parking on the block but would be much easier to accommodate the pedestrian traffic and vehicle traffic safely.
				
				I am available for comment should you need my testimony.
				
				Thanks, Eliza Wiley

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40	01/26/2015	Paul	Johnson	**From:** Johnson, Paul **To:** Jeff Key; DKnoepke@helenamt.gov **Cc:** bapcobiz@gmail.com; Riley, Jean; Cohenour, Jill (Sen) **Subject:** Helena Area LRTP Comments - Eastgate Subdivision **Date:** Monday, January 26, 2015 1:42:14 PM **Attachments:** Eastgate LRTP Comments.pdf Gentlemen, Attached find comments on the Greater Helena Long Range Transportation Plan from Eastgate subdivision. If it is not too much trouble, please pass along confirmation that you have received these comments. Additionally, if you have questions regarding these comments, please feel free to contact me at any time. Thanks ... *Paul Johnson* *President – Eastgate Water & Sewer Association* *President – Eastgate I Homeowner's Association* *Member – Eastgate Roads Board*

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				Eastgate Village Water & Sewer Association, Inc. P.O. Box 1220 – East Helena, MT 59635 Phone (406) 449-1015 or (406) 227-7033 January 24, 2015 **Robert Peccia & Associates** **825 W. Custer Avenue** **Helena MT 59602** Subject: Greater Helena Area Long Range Transportation Plan – 2014 To Whom It May Concern, Historically, East Helena interests have been underrepresented in the development of the Greater Helena Area Long Range Transportation Plan. While significantly smaller than the City of Helena, the East Helena area is home to well over 5,000 residents – the minimum threshold to be considered an Urban area in the State of Montana. Projecting forward, that number looks to grow substantially over the next decade as plans for major developments move forward. Given the growth trends in the area, community leaders would respectfully request a seat at the table as planning efforts move forward. Local input can be extremely helpful when developing long-range planning documents. As illustrated in our comments below, local officials possess key knowledge on a wide variety of transportation-related issues. Without this information, decision-makers risk making poor choices that are not locally supported. While the comments listed below are being advanced by Eastgate (population – 2,000), they give consideration to entirety of the East Helena community: **Comment 1 – Lake Helena Drive** Lake Helena Drive is one of three north-south corridors that extend across the Helena Valley (from US 12 to Lincoln Road). Additionally, Lake Helena Drive is the only major north-south corridor in the eastern part of the Helena Valley. Lake Helena Drive, via the Causeway, provides the only access around Lake Helena / across Hauser Lake – thus making it a critical passage point for traffic in the northeast portion of the Helena Valley. Between US 12 and Canyon Ferry Road, there is substantial truck traffic generated by the Helena Sand & Gravel facility. Further, there are severe congestion issues near the Eastgate School during peak hours. Adding to these issues, there has been an increase in through-traffic (both large trucks and passenger vehicles) since the completion of improvements to Canyon Ferry Road / Custer Avenue. At present, our information suggests that this section of roadway (US 12 to Canyon Ferry Road) is now functioning as a minor arterial (rather than a minor collector as stated in the document).

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				Looking forward, the conditions will likely only get worse along Lake Helena Drive. Major residential developments, additional gravel mining operations and expanded schools are all being considered in the area. Area residents are concerned that these issues have not been adequately captured in the Greater Helena Area LRTP. **Comment 2 – Wylie Drive** Why does the plan only evaluate Wylie Drive from Canyon Ferry Drive to York Road? AADT numbers and truck traffic are much higher from US 12 to Canyon Ferry Road. Is it assumed that all needs have been met in this section? Along those lines, have any bridge evaluations been completed for this corridor? **Comment 3 – Valley Drive** Why does the plan not include the section of Valley Drive from US 12 to Lewis Street. Is it assumed that all needs have been met in this section? Have any bridge evaluations been completed for this corridor? **Comment 4 – Truck Route System** Area residents support the development of a Freight Network / Truck Route System in the East Helena area. At present, some routes cannot handle larger trucks due to bridge weight limits and/or roadway geometric issues. Increased clarity on preferred routes would be helpful to truckers and area residents. **Comment 5 – Lake Helena Drive Sidewalks** Sidewalk improvement projects in the Eastgate area should be developed with input from area residents and local officials. As currently proposed, there are conflicts with private residences, utilities and stormwater drainage features that render these two projects unfeasible. In the future, it would be advisable to get local concurrence before advancing these types of projects. **Comment 6 – Traffic Data & Functional Class Information** What are your sources for Traffic Data and Functional Class information? Some of this information seems to be a little dated. **Comment 7 – Traffic Modeling** The plan doesn't appear to mention traffic modeling specifically. Typically, Urban areas use traffic modeling techniques to assess future roadway needs – particularly those related to growth. Were traffic models utilized in the development of any portions of the plan? **Comment 8 – Preliminary Engineering Reports** The plan relies heavily on Preliminary Engineering Reports for specific project recommendations. What types of informational sources contribute to these reports? Can you outline the public involvement process associated with the development of these reports? Are local entities (residents, homeowner's associations, water/sewer districts) contacted during project development? Is there any opportunity for public comment on these reports?

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				Comment 9 - Other Project Considerations The plan routinely mentions pavement and safety issues that are to be addressed by each project. However, there are a number of other important project considerations that are not discussed – such as bridge conditions, environmental considerations, etc… Please give consideration to providing additional information on these items as relevant. The Eastgate community respectfully submits these comments for your consideration. Sincerely, Paul Johnson President – Eastgate Water & Sewer Association President – Eastgate I Homeowner's Association Member – Eastgate Roads Committee

ID #	Date Received	First Name	Last Name	Full Comment Received
41	01/26/2015	Jim	Wilbur	**From:** James Wilbur **To:** Jeff Key **Cc:** Kathy Moore **Subject:** Comments regarding Long Range Transportation Plan **Date:** Monday, January 26, 2015 2:12:44 PM **Attachments:** Tenmile floodplain roads.pdf Greetings; I would like to make a few comments regarding the GREATER HELENA AREA TRANSPORTATION PLAN 2014 UPDATE draft document. I attended the January 13th public meeting and reviewed portions of the document online. My comments are about some of the recommended County Road Network (CRN) projects and Major Street Network (MSN) projects listed below. CRN-9: Alfalfa Road extension (Green Meadow Drive to McHugh Lane) CRN-10: Franklin Mine Road extension (Green Meadow Drive to McHugh Lane) MSN-18: Benton Avenue North Extension (Andesite Avenue to Mill Road) MSN-19: Cooney Drive North Extension (Custer Avenue to Mill Road)] MSN-7: Airport Road (Future Extension from "B" Street to Valley Drive) The extensions of Benton Avenue and Cooney Drive from Custer Avenue northward toward Tenmile Creek are not problematic from our vantage point, however extending them north across Tenmile Creek and up to Mill Road are very problematic. These actions would require two new bridges across the Tenmile and the Helena Valley Irrigation District Main Canal. These would be very expensive projects to build and current county bridges are lacking in maintenance funding (i.e. McHugh). This area is of Tenmile Creek is the site of significant flooding and obstacles to passage of floodwaters which would be detrimentally affected by new roadways and bridges. Also extending the roads listed (Benton, Cooney, Franklin Mine Road, and Alfalfa Road) north and south and east and west across the area of the valley north of Tenmile Creek and Mill Road and between Green Meadow Drive and McHugh Lane are not something we can support. This area is primarily within the floodplain of Tenmile Creek and the sheet flooding that regularly occurs there (see attached map). Adding a road network to this area to encourage development is irresponsible as evidenced by the expense and problems cause by the development just east of this area between McHugh and Montana Ave. The millions of dollars that are needed to rectify the problems caused by suburban development (County Mitigation Plan of $13 million) in this floodplain should in not way be repeated and by constructing these propose roadways in the area north of Tenmile Creek should not be done with public funding to create more problems from inappropriate development within the valley floodplain. The construction of the roads themselves with negatively impact the function of the floodplain by their presence and fill necessary to build and limit the flows of these floodwaters and connection of the creek to its floodplain. Our concern with the extension of Airport Road eastward to Valley Drive is of similar nature. Building a road from B street to Wylie Drive is not as problematic if careful consideration in the design is given to proximity to Prickly Pear Creek. But again building the road east from Wylie Dr to Valley Drive is totally inappropriate from its impacts to the floodplain of the creek and crossing of Prickly Pear Creek in a area with very sensitive riparian area, public recreation, ecological and floodplain functions. Therefore, our comments would suggest that these projects not be recommended in the final version of this plan. I believe if these remain recommended road improvements, the Lewis & Clark County Water Quality Protection District may take action to officially come out in opposition to this plan as it stands.

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				Thank you for the opportunity to comment on this effort. Contact me if you have any questions or need to see mapping of these areas and the floodplain issues discussed. Jim Wilbur Water Quality District Coordinator Lewis and Clark County Water Quality Protection District **316 N. Park Avenue, Room 224** **Helena, MT 59623** (406) 457-8927 Fax: (406) 447-8398 E-mail: jwilbur@lccountymt.gov

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				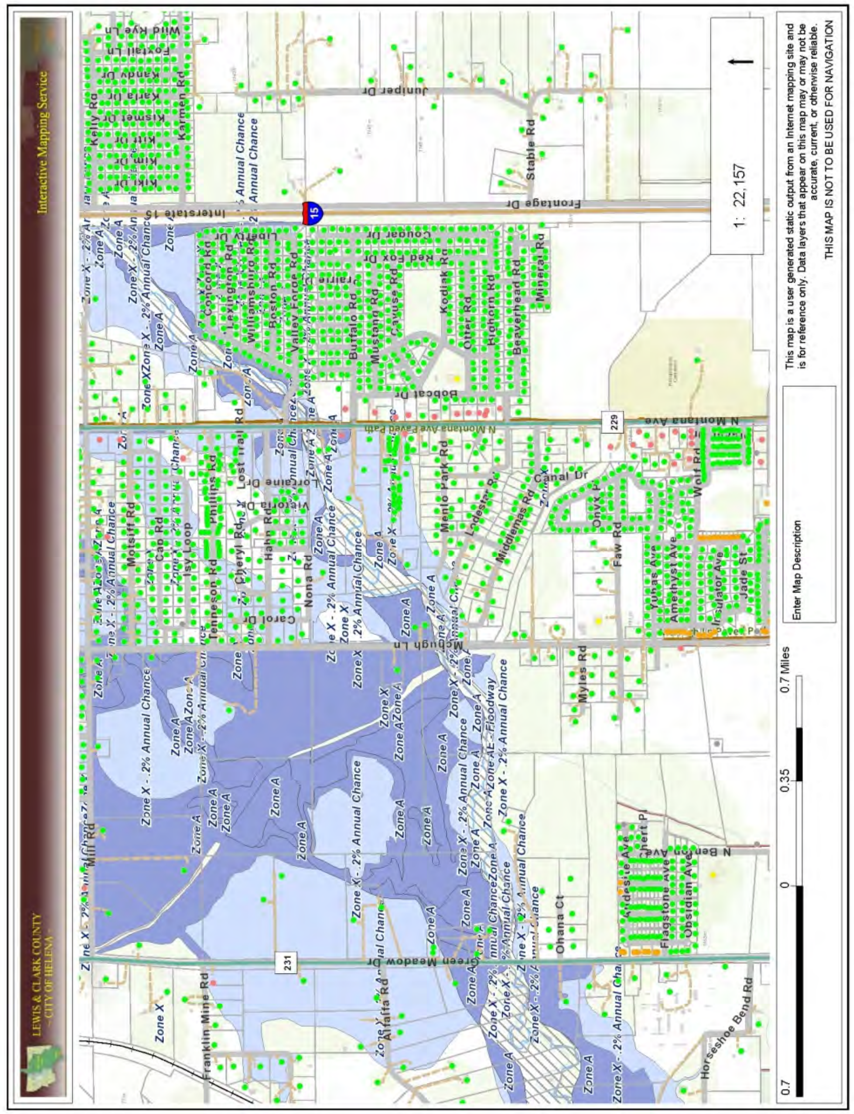

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42	01/26/2015	Lois	Olsen	RE: Helena Long Range Transportation Plan Comment January 26, 2015 Thank you for the opportunity to comment on the planning. My husband and I attended a meeting in January at the airport. The meeting was well attended and well run by the contractors. **MSN-22**, the lowering of the railroad underpass on Henderson is of primary concern to me. This route was used during the summer/fall of 2014 by sand and gravel trucks that could fit under the crossing. The trucks traveled at least 30 miles per hour. Henderson Street is crossed by children and adults on all intersections from Hudson to Wilder. These six blocks are difficult to cross safely with regular vehicle traffic, let alone semi trucks. If the crossing is lowered to allow full size semis, I am concerned that more trucks will use this route, endangering more children. The large vehicles that can use it now are limited to half size trucks, such as sand and gravel. They run primarily during the construction season; if larger trucks are allowed access they will use Henderson through the school year as well. The traffic congestion during peak school hours is quite high now. This route could easily become an alternate truck route if the crossing is lowered. If the improvememt does happen, please do not allow large trucks to use this route. Please limit the size of trucks allowed on this route whether the crossing is lowered or not. It is extremely dangerous to put even more traffic on this route. Children need to cross this street safely. More controls are needed to handle the current amount of traffic to allow safe crossing. The 2004 transportation plan addressed the possibility of extending Custer Avenue to the west, and connecting to Joslyn and then Euclid. This could be established with a minimal effect to neighborhoods. We brought this up at the meeting and were told this was not being considered. I believe that is a mistake. Routing truck traffic away from neighborhoods is very important, and a route that extended past the ballparks to the west should be examined. We were also told tradeoffs need to be made. Increasing heavy truck traffic on a street like Henderson which runs through large neighborhoods and not commercial property increases the danger to the public and should be avoided. Please examine alternatives to this, or limit the size of vehicles that can use Henderson. **TSM-9**--the roundabout at Custer and Henderson. This seems like a good solution to the traffic congestion during events, although it doesn't seem to me to be a high priority if Custer is not extended to the west. **Malfunction Junction**—Helena Ave, Euclid and Montana. I would favor leaving this intersection alone, with some improvements to allow safer pedestrian crossing. I do not favor closing any streets or creating one ways at this intersection. I believe the vehicle traffic flows quite smoothly here.

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				The intersection of Joslyn, Leslie and Country Club definitely needs more signing. This intersection might lend itself well to a roundabout. People do not understand who has the right of way here, and it is amazing there aren't more accidents. I believe a left turn lane is proposed for eastbound Country Club and that may improve the situation somewhat. This is a dangerous, almost blind turn for the eastbound traffic turning left from the north bound traffic off Euclid. I think it may still be unclear to southbound traffic from Joslyn what to do when an eastbound car is in the turn lane on Country Club. **Closing of Roberts St Crossing:** This may be a benefit for the neighborhoods between the railroad and Last Chance. Traffic has increased a lot there in the past few years. It will be inconvenient for traffic that uses that route for quick access to Sanders or Harris, but it seems a safer traffic pattern than that which is developing. **Underpass or Overpass for Montana Ave:** I think this is far overdue and should be a priority for the plan. Thank you for the opportunity to comment. Please add me, and my husband Bob, to your mailing list. Lois Olsen 1424 Peosta Ave. Helena, MT 59601 Phone: 406-459-2542 Email: bobandfuzzy@gmail.com

ID #	Date Received	First Name	Last Name	Full Comment Received
43	01/26/2015	James	Schell	(letter reproduced below)

City of East Helena

Mayor
James Schell

Council Members
Terrie Casey
Don Dahl
Kit Johnson
Judy Leland

City Attorney
Mike Rieley

City Clerk
Sandra Milsten

Deputy Clerk
Susan Spotorno

Public Works Director
Scott St. Clair

Chief of Police
Dale Aschim

Fire Chief
Elroy Golemon

City Judge
Dennis Loveless

P.O. Box 1170
East Helena
Montana 59635

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Police Admin.
406-227-8686

January 26, 2015

Jeff Key
Senior Project Manager
Robert Peccia and Associates
P.O. Box 5653
Helena, MT 59604
Jeff.key@rpa-hln.com

Subject: Public Comments - Draft Facility Recommendations – Technical Memorandum

Mr. Key,
The City of East Helena Mayor, City Council, and Planning Board (COEH) submit the following comments with regards to the Draft Facility Recommendations - Technical Memorandum of the Greater Helena Area Long Range Transportation Plan (LRTP) – 2014, dated January 13, 2015.

To support future inter-city and county wide east / west connectivity traffic and future land use development on current Montana Environmental Trust Group land, the COEH supports the following recommended Major Street Network (MSN) improvement projects contained in the Draft Facility Recommendations - Technical Memorandum:
MSN-6: Airport Road – Washington Street to "B" Street
MSN-7: Airport Road – Future Extension from "B" Street to Valley Drive

To support future city and county wide north / south connectivity traffic and future land use development on current Montana Environmental Trust Group land, the COEH supports the following recommended County Road Network (CRN) improvement projects contained in the Draft Facility Recommendations - Technical Memorandum:
CRN-2: Wylie Drive - Canyon Ferry Road to York Road
CRN-3: Valley Drive – Lewis Street to York Road
With the support of CRN-2 the COEH strongly urges the inclusion of the portion of Wylie Drive through the rest of Lewis and Clark County and the City of East Helena to U.S. Highway 12 to complete the arterial and needed road improvements required for future growth.
Additionally, with the support of CRN-3 the COEH strongly urges the inclusion of the portion of Valley Drive (Montana Avenue) through the City of East Helena to U.S. Highway 12 to complete the arterial and needed road improvements required for future growth.

To support future county wide traffic safety improvements the COEH supports the following recommended Transportation System Management (TSM) improvement projects contained in the Draft Facility Recommendations - Technical Memorandum:
TSM-1: Sight Distance Triangle at Intersecting Roads
TSM-13: Countywide Shoulder Striping – Major Roadways
TSM-28: Planning Area - Future safety concerns on high travel corridors
With the support of TSM-1 the COEH will continue to review and request review of intersections such as has been done for the MDT Main Street / Montana Avenue intersection, which the COEH would like included in your recommendations, and for other areas identified with these types of road safety issues.
With the support of TSM-13 the COEH would like to add Wylie Drive, as well as Valley Drive into the list of future roads identified for shoulder striping as well as future road improvements in other areas included in the LRTP if not already added.
With the support of TSM-28 the COEH would like you to consider adding Highway 282 road improvements in your recommendations due to its importance in City of Helena, Lewis and Clark County, and City of East Helena connectivity to Highway 15 and south Helena.

We Support Fair Housing

Equal Opportunity Employer

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				(letter reproduced below)

City of East Helena

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To support future county wide pedestrian and ADA transportation enhancements the COEH supports the following recommended Pedestrian Improvements (PED) projects contained in the Draft Facility Recommendations - Technical Memorandum:
PED-16: Main St & Proposed East Airport to East Helena Trail
PED-20: Riggs St & Proposed East Airport to East Helena Trail
With the support of PED-16 and PED-20, the COEH would like additional PED projects considered including a pedestrian crossing across Main Street (MDT) at or near Thurman Avenue as well as across Main Street at 1st Street. Another very well used area where pedestrian access is required is across Lane Ave (MDT) at the Porter Avenue intersection, please consider adding a crosswalk at these additional locations in your recommendations.

To support future county wide bicycle transportation enhancements the COEH supports the following recommended Bicycle Boulevards (BB) and Bike Lane (BL) projects contained in the Draft Facility Recommendations - Technical Memorandum:
BB-14: Lewis St (From Valley Dr to Kalispell Ave)
BB-16: E Clinton St (From Thurman Ave to Kalispell Ave)
BL-2: Airport Road Extension (From B St to Valley Dr)
BL-3: Airport Road (From Washington St to B St)
BL-23: Kalispell Ave (From Main St to Lewis St)
BL-26: Main St (From 4th St to Kalispell Ave)

To support future county wide shared use transportation enhancements the COEH supports the following recommended Shared Use Paths (SUP) projects contained in the Draft Facility Recommendations - Technical Memorandum:
SUP-1: Airport Road 1 (Airport Rd & Washington St)
SUP-2: Airport Road 2 (B St)
SUP-9: East Airport to East Helena Trail (From Skyway Dr. to Main St between Morton Ave & Harrison Ave)
SUP-12: Lewis St West (From Kalispell Ave to Lake Helena Dr)
SUP-13: Lewis St. East (From Proposed East Airport Trail to Valley Dr)

The COEH supports the following recommendation from the Helena Inclusive Transit Planning (Grant 1) Project for improved Bus Transit Improvements contained in the Draft Facility Recommendations - Technical Memorandum:
Objective 1, Action 1.7: Pursue funding from the county for North Valley and improved East Helena deviated fixed route service.

Thank you for all of your hard work and thank you for your attention to these comments; the COEH looks forward to reviewing a copy of the DRAFT Greater Helena Area Long Range Transportation Plan - 2014.

Sincerely,

James Schell

James Schell
City of East Helena Mayor
Cc: City Clerk, City Council, Planning Board

We Support Fair Housing — Equal Opportunity Employer

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<tr><th>ID #</th><th>Date Received</th><th>First Name</th><th>Last Name</th><th>Full Comment Received</th></tr>
<tr><td>44</td><td>01/27/2015</td><td>Gretchen</td><td>Krumm</td><td>>>> Blair and Gretchen Krumm <bgkrumm@bresnan.net> 7:36 PM January 27, 2015 >>>

Mr. Key,

I am sorry that I have not been able to participate in the public meetings and discussions to-date about the transportation you have been working on, but I have taken a little bit of time to look through the document you produced. My interest is simply in the non-motorized transportation sections of the document.
I must say that I peer with excitement at the network of proposed pedestrian and bicycle infrastructure for the City. I only hope that the document actually spurs these infrastructure improvements to become a reality. It's a very exciting proposition.

I have only the following comments and questions related to what I see:

1) Sidewalks in the vicinity of CR Anderson Middle School have recently risen to the top of my priority list since my daughter moved up to 6th grade this year. After 6 years of easily walking to Hawthorne on sidewalks, she is now faced with a shorter, but much more treacherous walk to and from school. I see that your plan identifies sidewalks along Knight Street as a priority, which is fantastic, but I think there is need to include many more of the feeder streets that are lacking sidewalks in this area on the priority list. Especially as the school district begins to consider possibly transitioning this building into elementary school services, these sidewalks will become even more critical. I think that all missing sidewalks within a 1/4 mile radius of a school should make it on the priority list for sidewalk installation.

2) I understand and commend the desire to have a "high level" bicycle infrastructure connecting the Centennial Trail to downtown, but I'm confused by the use of a "cycle track" in the areas identified. It seems to me that the higher level protection provided by a "cycle track" should be used where traffic is moving quickly and that is not the case along the routes identified for this cycle track on the plan. I love bicycle infrastructure of all types, but frankly it seems like a waste of money to put in a cycle track along Front Street where I bicycle often and the street is plenty wide and there is very little traffic. I would love a designated bicycle lane there, but I definitely do not feel threatened along this route. On the other hand, I fearfully bicycle along Euclid, Lyndale, Custer and completely avoid Montana Ave. I would think these routes (Euclid, Lyndale, Custer and Montana) would be very worthy of the protections offered by a "cycle track" or "protected bike lane". In fact, a good friend was struck just this morning while cycling along Euclid.

I think the amount of bicycle lanes and shared paths identified throughout the valley is fantastic. I would love to see this network of routes for recreational purposes and would hope that, once in place, they would also encourage more far-flung commuters to leave their cars at home occasionally!

Thanks for all of your efforts on the document. There is clearly a tremendous amount of thoughtful work provided within it.

Gretchen Krumm</td></tr>
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ID #	Date Received	First Name	Last Name	Full Comment Received
45	02/03/2015	Melinda	Barnes	(see email below)

From: Melinda Barnes
To: Jeff Key
Cc: David Knoepke; Joe Gilpin; Matthew A. Elsaesser; ahunthausen@lccountymt.gov
Subject: RE: Greater Helena Area LRTP - Feb 3 TWG Meeting Materials
Date: Tuesday, February 03, 2015 10:21:20 AM

Jeff,

Thank you for sending these out. Unfortunately, I will be unable to make the meeting this afternoon due to a work obligation so would like to provide a few comments in advance based on the comments you received since the public meeting and from reviewing the draft recommendations again.

- I agree that truck traffic needs to be minimized through neighborhoods and especially on Boulder Ave. where there is also an elementary school. Perhaps this can be mitigated through the adoption of a truck route plan or perhaps in the design under MSN-14.
- While there seems to be some difference of opinions on bicycle lanes vs. paths and facilities from community members, I think it's important to remember that there are different types of cyclists at different comfort levels who desire different types of facilities and different options. Ultimately, due to costs and geographic barriers, it is going to need to be a mix of on-street and off-street facilities and I think Joe has done a fantastic job of laying all of those options out.
- Under BB-8, is it worth mentioning some modification/removal of stop signs along 9th St.?
- Lyndale between Last Chance Gulch and Montana Ave. – 6' bicycle lanes are recommended (BL-14). According to the ADT in another document, it seems like this could have a 3-lane road diet done, allowing for boulevard sidewalks and bicycle lanes, rather than curbside sidewalks which are very difficult to keep snow removed in the winter or if it is, it would end up in the bike lane. Can we pursue doing this. With the turn lanes at each end of this section, it seems like traffic could be directed through signage and turn lanes. This section of roadway will be having maintenance done and it is a prime opportunity. Much of the traffic congestion on this stretch is from no middle turn-lane.
- Helena Ave. – is there room to make the bicycle lanes buffered when they are re-striped next? Narrowing the traffic lanes on this street would help to slow traffic and make even more people comfortable using the bicycle lanes. While many people do use the bike lanes, there are still many who ride on the sidewalk.
- Is a shared-use path along Birdseye – at least out to the Fort a possibility? I have heard the Fort is very interested in this as well. Can this be an additional recommendation?
- There are sharrows for a couple of blocks on Prospect just west of I-15, which is incredibly dangerous to bicyclists. Can there be a recommendation to 1)ideally, reduce this to two-lanes of traffic (which ADT supports) and a bicycle lane on both sides or 2) reduce travel lanes to allow for a dedicated bicycle lane. It is very hard for cyclists to cross three lanes of traffic if they need to turn south.
- Can the bicycle lanes on Prospect and 11th east of Montana Ave. be turned into protected bicycle lanes to be safer for bicycles?
- Can a bicycle lane also be considered for the south side of 11th Ave east of Montana? Some cyclists turn south to go to the Capitol Complex or out Colonial Ave. but is very

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				difficult to cross traffic if you are in the bicycle lane. While bicyclists can still legally ride on the south shoulder, it provides potential conflict with motorists who believe that bicyclists should be in the bicycle lane. • Can one of the multi-modal policy recommendations (or somewhere else that makes sense) be to work towards minimizing traffic speeds within urban boundaries? At Henderson headed west, the speed increases to either 40 or 45 when that is still within city limits and there have been public comments on that in the past because of Kessler Elementary and pedestrian traffic. Custer is also 40, I believe, even though that goes in front of a school. Speed is a factor in crashes and the severity of crashes, especially with bike/ped. Reducing travel lane width, road diets, and designing roads for slower speeds would help but it needs to become a priority to work with MDT on this. I feel that mentioning that somehow in this report would help that to happen. Our main arterials are designed for speeds greater than 35mph, so how can we put some focus on controlling speed outside of just enforcement and education? It seems like lowering speeds would support Helena's Safety Plan and make our community safer overall. Thanks and I apologize for getting these comments submitted so soon before the meeting. Melinda

A.3 Stakeholder Outreach Summary

Table A.3: Stakeholder Outreach Summary

Stakeholder Group	Date of Activity	Summary of Comments Received

Stakeholder Group	Date of Activity	Summary of Comments Received
Helena Citizens Council	03/26/2014	• Walkability • Neighborhood connectivity o Especially around elementary and middle schools • Capital complex employees should be engaged • St. Peters Hospital employees should be engaged • Plans for area by Caird Re-development o Make pedestrian and bicycle friendly • Studying five-point intersection by Starbucks? o No, previously studied o Recommendations to be brought into LRTP
Rural Fire Districts	04/07/2014	• Concern over increase in rail traffic o City response movements (south-to-north) • Opticom systems function well • Pavement conditions (~rideability) • Single-lane roundabouts o Delay in response time? o Vehicles in roundabout during response? • Sharp curves and geometrics; identify problem areas • General sight distance concerns
Non-Motorized Technical Advisory Committee	04/08/2014	• Focus on an integrated LRTP • Hold non-motorized considerations on the same level as motorized • Not separate chapters in report o Integrate throughout • Bicycle traffic on the walking mall • Centennial Trail priorities • Non-motorized facilities are a destination • Parking areas for the trail system • Getting people from neighborhoods to the trail system
ADA Committee	05/07/2014	• Rachel Peura, Chair, ADA Stakeholder Committee, City of Helena o Would like to have including the recognition of the variety and breadth of disabilities (not just wheelchair-bound folks) o Especially vision-impaired users o The impacts to the community when sidewalks are not required o Bus stops are useless without sidewalks o Catching up with all of the time lost without requiring sidewalks o People are usually against more taxes, except they agree to pay more for what matters most to them • Al Tompkins, ADA o When you make things safe for those with disabilities, you make it great for everyone. No one is left

Stakeholder Group	Date of Activity	Summary of Comments Received
		out. o Best crosswalks is on north end of Last Chance Gulch at Lawrence ➢ Good raises and truncated domes o Worst are the curb cuts that lead you into the middle of the intersection o No uniformity of design, changes street to street o 11th & Lamborn traffic control ➢ 1 solution: cross on west side of intersection ➢ 2 solution: make the crosswalk light coincide with the light on Lamborn • George McCaluey, ADA • Les Clark, MT Independent Living Project o Sidewalks and curb cuts at transit stops o Seems like ADA has been overlooked over and over again • Marty Krenin, ADA • Lloyd Sparks, MT ILP o Sidewalks and curb cuts at transit stops o Let's go above the minimum and above mediocre. The bottom line is not good for our community ➢ Example: Custer & Montana – no chirp sounds, not enough time to cross ➢ Example: curb cuts without sidewalks behind them ➢ Example: reconstruction of Euclid without sidewalks at all (MDT) ➢ Example: curb cuts angled for the existing radius and not improved when radius is changed ➢ Will invite the lawsuits (from ADA folks) in the future o PROWEG (?) will be signed into law in 2015 (?) ➢ But City hasn't adopted it into their Engineering Standards o Again, the curb cuts that lead users out into the middle of the intersection • Elroy, ADA Coordinator for City of Helena o Developing a better communication and coordination link between agencies and between interested groups • Bus system is HATS – Helena Area Transit • Integrating transit planning into the plan (that was one criticism of the 2004 plan)

Stakeholder Group	Date of Activity	Summary of Comments Received
SRTS Committee	05/07/2014	• MC Beeby, Chair o 1st grant 4 years ago came though the district o Most have been about training and education – Montana Journey from Home o Bike Rodeos ➢ Just having the police come in and educate wasn't enough ➢ Got a grant for a trailer and smaller bikes and JFH programs o Health Dept submitted from applications ➢ How much healthier kids are when they walk and bike to school ➢ How much better they learn once they get to school o The SRTS Committee has really taken a look at the sidewalk assessment and the networks that lead to schools o Pilot plan at Broadwater ES ➢ Concerned about lack of sidewalks ➢ A lot of kids live across Henderson and have to both cross and go without sidewalks o Communication between agencies, construction and planning folks, and the property owners who really do want sidewalks, etc. o Sidewalk inventory o Very supportive of the education and programs component o PRIORITY: sidewalks within 1 mile radius of each school o Building large, new schools in the outskirts of town and closing 5 schools that are in the city's neighborhoods o ALTA NEEDS: All of the schools' SRTS plans • Britney, BookMobile o Bike rodeos o Has a good relationship with the schools • Eliza Prescott, SRTS Coordinator, County • Laura, County Grants Coordinator • Alison Batch, AMERICORPS Vista • Peggy Strainer, Helena Bike Club
Running Groups (Running Freaks, Tread Lightly, Helena Vigilante Runners, HURL)	05/07/2014	*No Summary Available*
Bike Shops/Team (Team Great Divide, Big Sky Cyclery, BSC Race Team, Great Divide Cyclery, The	05/07/2014	*No Summary Available*

Stakeholder Group	Date of Activity	Summary of Comments Received
Garage, Icthus Cycle Works, Helena Dynamos, MT Velo Race Team)		
Trails & Open Space Committee	05/08/2014	• Amy Teegarden (Parks and Rec) and Andy Bauer (Prickly Pear Land Trust) • Prickly Pear o 1996 o Open space and trails system in South Hills area o Have acquired 1,000 acres of land for the trails system • TO DO: Consolidate them all into singletrack, dirt trails • Helena Valley Heritage o Protect agriculture land o Focus on creek corridors o Trails ➢ Where are they appropriate? • East Helena Smelter clean up o Redevelop o Clean it up o Only 4 landowners (industrial owner, develop, Montana Environmental Trust, Airport) out there and they're all supportive of trails and connecting the communities • Prickly Pear's proposed extension of trail system along Prickly Pear Creek to East Helena and Montana City o Trying to get funding from the NRD program to plan and construct for this corridor • Amy: Parks is trying to get a Parks and Rec District that manages trails, rec facilities, parks, etc. in area with Southern Lewis and Clark County, Helena City, East Helena, and north Jefferson County o Initial planning effort is online on their website o They are onto phase 2 right now o 10 mile radius from downtown for this District o Would have to go out to a vote, in 2016 • During public involvement by Parks and Rec in 2011 and 2012, they found out that people: o Don't know how to find their way to the trail or from the interstate to the trails (uniform wayfinding system) ➢ Parks and Rec, Prickly Pear, and Tourism Alliance are working together on wayfinding system ➢ MDT restricts signage on their posts very heavily ➢ Prickly Pear and Parks and Rec LOVE what Joe is going with signage in Missoula. They would like that in Helena. ➢ Include things about economic benefits o Cannot come to town safely and take advantage of the recreational programs and facilities • Prescription trails – prescribed by doctors

Stakeholder Group	Date of Activity	Summary of Comments Received
		o Route in Centennial Park is one o Dr. Richard Sergeant at Sage Medical o There are more opportunities to have more of these o Beth Shumate, Trails Coordinator, from State Parks, Wildlife, Fish: More info ➢ Designate certain locations in a city to work with ➢ BikeWalk Montana is spearheading it right now ❖ Melinda developed a guide/map of possible routes o First in Missoula, then in Helena. Others: Butte, Livingston, Lake Fish, Kalispell, Miles City, Poulson ➢ Helena's county health department championed it ➢ Was a no brainer o Realized that statewide doesn't work; takes a community and champion healthcare provide/physicians to make it work o Numbers and stats for L&C County: Karen Lean (W: 406-457-8960; C: 406-459-9486) ➢ Only over last year ➢ Set up in medical record screens ➢ Cooperative Health Clinic (all incomes) (1930 9th Ave) ❖ A lot of buy in from staff ❖ A lot of staff turnover, however, so it might affect numbers ❖ Waiting for report ➢ Sage Clinic ❖ N Montana Ave ❖ Private physician office ❖ Cardiac expert on staff ❖ No results from them yet but anecdotal buy-in o Link it with Health Dept o Postcards that Amy gave us • Last Chance Gulch from Memorial Park and Centennial Park, between the Y and the water park o Underpass o Steep bank o Now that Centennial Park is being developed, there will be even more foot traffic o Mid-block crossing is an issue/example of a lack of park and trail connectivity o MDT said that it suffices because of the crossing by the Donut Hole and the underpass. • No bikes on ped mall o Parks and Rec maintains the walking mall o Possibly opening it up to cars again (BID might want this) • We SHOULD ADD the trails and trailheads on BLM land in the north of the study area • County is the holder of the GIS data and would be the people to get the most updated South Hills trails data from • How to get bicycles out to the Fort • Trails along riparian corridors? Yes, if they're a transportation corridor/connector • BLM or PP can get us data for the mountain bike trails out on South Scratchgravel Hill

Stakeholder Group	Date of Activity	Summary of Comments Received
Helena Tourism Alliance & Helena Tourism Business Improvement District	05/08/2014	• Pat Doyle • Different way to collect taxes (bed tax – hotel $1/room/night) to improve bicycling and business stuff o 19 properties in Helena City • Can't use it for infrastructure; it's for marketing, signage, etc. • Just under $300,000 per year • Only states with TBIDs are Montana, California, and (?)Washington • Launched BikeHelena May 2013 • Mostly online marketing, not a lot of print • Mobile and web app for facilities and trails • Historic walking tours of Downtown Helena, surrounding neighborhoods, hikes, 95 destinations • Survey o Could we piggyback on their survey efforts? o 1000 in four days o Data collection live on the trails with iPads and Carol College students • Geocaching Capital o 800 within 30 mile radius of Helena o Rent GPS units to visitors and those without smart phones • Signage for downtown isn't obvious (it says Historic Last Chance Gulch, not downtown, on I-15) • Downtown to the Trails connectivity and signage/wayfinding is very poor o Only one sign downtown that leads to one trailhead (of eight) • No parking at many trailheads o Problems with having enough public parking o People are parking on private property • Downtown pedestrian wayfinding signage o Signs are not on the very frequented streets • BikeWalk Helena (NMTAC subcommittee) produced a map and Prickly Pear Land Trust produced an $8 trails-only map that shows trailheads (but does it show the connections to and from the City?) • Directed mostly at mountain biking
Helena Bicycle Club	05/09/2014	• Traditionally, Helena has been fairly anti-bicycling • There is still a lot of political barriers for doing things for bicycling, especially if it is at the expense of traffic or parking • New Public Works Director, Randall Camp • Previous PWD was very anti-bike o "Not in TMP? We don't care then" The traditional response to requested projects that weren't in the TMP • State highways need bicycle facilities o Been repaved many times and many opportunities to put bike facilities on them, but haven't

Stakeholder Group	Date of Activity	Summary of Comments Received

		• Are they destinations bicyclists want to access already on the left side of 11th?
		  o Mall, stores?
		  o But there are also a lot of destinations (hospital, other development) that are on the right
		  o Hard to cross 2-3 lanes of traffic from the left-side bike lane
		  o On the left because of ped bridge
		  o Bill thinks it would be better on the right and then cross on crosswalk
		• More interested in education and encouragement programs than infrastructure
		  o Limited funding
		  o Where is it going to be most effective?
		  o Classes, sessions for bicyclists and motorists
		  o PSAs
		  o Educate the Police Dept
		    ➢ No training currently on bicycling in the Academy
		    ➢ Some are good, but there isn't an agency-wide education
		• New Million dollar interchange
		  o Substandard width bike lanes
		  o East to west on this new interchange is difficult
		  o West to East is okay, but not great
		  o Can be fixed easily next time it is restriped

Stakeholder Group	Date of Activity	Summary of Comments Received
Downtown BID Board of Directors	05/13/2014	• Make downtown more pedestrian and bicycle friendly • Discourage thru-traffic on 11th and Neill Avenues • Neill Avenue acts as a barrier; cuts downtown into pieces • Want to introduce congestion to slow traffic down • Encourage traffic to use Lyndale and Euclid as "thru" routes
Transit Technical Advisory Committee	05/20/2014	• What is appropriate role of TAC? o Experience in other cities regarding influence and responsibilities • LRTP should weigh in on senior and mobility issues relative to housing and available transportation • East Valley bus route most pressing (affordable housing in East Helena) o Funding options for route in LRTP? • Bus stops – locations, infrastructure, shelters, etc. • Park & Ride in North Valley part of LRTP?
Fort William H. Harrison	06/25/2014	• Make Fort Harrison and VA more prominent throughout LRTP • Country Club Avenue; number 1 priority • Country Club Avenue intersections o Joslyn Street o Head Lane o Williams Street • Non-motorized facility on Country Club Avenue • New east-west route north of Custer • Possible extension of Custer • Pave Franklin Mine Road; Head Lane • How do projects get prioritized and funded? • How do we elevate Country Club Avenue to decision makers? • Flood waters on Country Club Avenue during certain times o Elevate roadway during design?
Helena School District	06/30/2014	• Increasing focus on "walk zones" o Giving students and parents options other than private vehicles and busing o Reducing the "moving bus train" – i.e. school bus on arterials stopping every few blocks with flashing lights o Examples: Green Meadow Drive, Montana Avenue, Canyon Ferry Road • Continuous sidewalks desirable to promote walkability • Custer Avenue BIG concern o Discharging 1,600 students onto Custer Avenue between Four Georgians and Capital HS o What is long-term remedy? o Extension of Custer to Williams or Country Club or Head Lane? o Expansion of Custer to 4 or 5-lanes

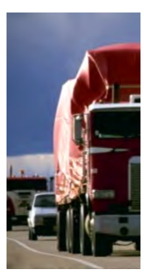
Stakeholder Group	Date of Activity	Summary of Comments Received
		o New east-west parallel route to the north? • Front drive approach will be eliminated if expansion; all traffic onto McHugh o Concerns about queuing on Custer/McHugh • Flow around schools always a concern • Width of streets; parking for staff and visitors; bus drop-off/pick-up; etc. • Future connectivity from southeast development areas under I-15 • York Road concerns near Warren School – will not allow students to cross; likely will bus across York Road • Area around Helena HS, Helena College, etc. a concern –conflicts overall • At-grade railroad crossing always a concern; changes could affect school traffic flow • “Around-the-block” traffic flow not possible at many sites • Will be evaluating Central School traffic flow in the future • Crossing of arterials always a concern (Montana, Euclid, Benton, etc.) • Plan for continuous trail up North Montana; possibly Green Meadow in the future?

<table>
<tr><th>Stakeholder Group</th><th>Date of Activity</th><th>Summary of Comments Received</th></tr>
<tr><td>East Helena City Council</td><td>07/01/2014</td><td>Main Street and Montana Avenue
Consider traffic signal
Consider truck “bypass” around Helena; perhaps connecting to Airport Road?
Skeptical of special-interest , non-statistically valid surveys (i.e. non-motorized)
How much is the study? Are County tax-payer funds being used?
Will money be available in the future for urban roads in East Helena? Main Street?</td></tr>
<tr><td>Helena / Lewis and Clark County Parks Board</td><td>07/02/2014</td><td>Applaud comprehensive planning process
Examine ways to connect parks as destinations
Minimize any potential impacts to existing and/or planned parks
Reference to baseball fields near Fairgrounds
Custer Avenue congestion
Parks are an asset to the community
Need an accessible network to get users to/from destinations</td></tr>
<tr><td>Northern Plains Resource Council</td><td>07/24/2014</td><td>Drop in discussion at RPA office
Primary concern related to increasing coal trains and impacts to Helena community
Recommendation Actions
Incorporate accurate rail traffic projections into the 2014 LRTP
Recommend that measures are taken to mitigate impacts from increased rail traffic
Overpasses, underpasses, quiet zones, rerouting tracks
Research costs and funding sources</td></tr>
<tr><td>Helena / Lewis and Clark County Consolidated Planning Board</td><td>08/07/2014</td><td>Discussed cost of development differences between City and County
Suggestion that LRTP strongly recommend “urban” features in County developments to attain parity between jurisdictions
Get away from focus on moving cars; focus on moving people and providing choices
Suggest that LRTP quantify “induced demand” resulting from road improvements</td></tr>
<tr><td>Helena Housing Authority</td><td>08/08/2014</td><td>HHA facilities located throughout the planning area
Special interest in area next to Caird site
What are short- and long-term fixes for the intersection of Montana and Euclid?
Numerous clients cross at the intersection to get to transit, Helena Industries, schools, etc.
Are there ways to reduce crossing distances and make less complicated?
Support efforts to promote walkability and bikeability</td></tr>
<tr><td>Helena Area Chamber of Commerce Transportation Committee / Helena Regional Airport</td><td>08/26/2014</td><td>East Helena – Transitions at the east end of town in merge/diverge areas
East Helena – Speeds through city limits on US 12
Speeds near intersection of Washington and Canyon Ferry Road – especially east-to-west
Congestion near Four G’s and Capital HS
Darkness on Custer Ave beginning west of Montana Ave</td></tr>
</table>

Stakeholder Group	Date of Activity	Summary of Comments Received
Authority		• Safety at Lake Helena Dr / York Rd • Southbound right-turns at intersection of Washington St and Canyon Ferry Road

Appendix B:
Intersection Level of Service (Detail)

Greater Helena Area Long Range Transportation Plan—2014 Update



City of Helena

PREPARED BY:
Robert Peccia & Associates
ALTA Planning + Design

APPENDIX B: INTERSECTION LEVEL OF SERVICE (DETAIL)

B.1 Existing Conditions

Table B.1: Existing Signalized Intersection LOS (Detail)

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
1	**11th Ave and Fee St**	**24.3**	**C**	**24.1**	**C**
	Southbound Left	*19.2*	*B*	*18.6*	*B*
	Southbound Thru	*11.35*	*B*	*19.9*	*B*
	Eastbound Left	*26.6*	*C*	*23.2*	*C*
	Eastbound Thru	*26.8*	*C*	*23.4*	*C*
	Northwestbound Thru	*25.1*	*C*	*27.2*	*C*
	Northwestbound Right	*25.6*	*C*	*31.5*	*C*
2	**11th Ave and Lamborn St**	**13.5**	**B**	**14.8**	**B**
	Northbound Thru	*17.4*	*B*	*24.3*	*C*
	Northbound Right	*18.35*	*B*	*31.6*	*C*
	Southbound Left	*20.7*	*C*	*30.2*	*C*
	Southbound Thru	*24.4*	*C*	*25.8*	*C*
	Eastbound Left	*8.5*	*A*	*8.9*	*A*
	Eastbound Thru	*8.5*	*A*	*8.8*	*A*
	Eastbound Right	*8.6*	*A*	*8.9*	*A*
3	**11th Ave and Roberts St**	**12.1**	**B**	**12.0**	**B**
	Northbound Thru	*18.9*	*B*	*17.7*	*B*
	Northbound Right	*18.6*	*B*	*17.4*	*B*
	Southbound Left	*23.0*	*C*	*23.5*	*C*
	Southbound Thru	*22.4*	*C*	*16.9*	*B*
	Eastbound Left	*8.6*	*A*	*9.4*	*A*
	Eastbound Thru	*8.6*	*A*	*9.5*	*A*
	Eastbound Right	*8.6*	*A*	*9.5*	*A*
10	**Cleveland St and Euclid Ave**	**12.6**	**B**	**11.3**	**B**
	Northeastbound Left	*23.2*	*C*	*23.5*	*C*
	Northeastbound Thru	*23.2*	*C*	*23.5*	*C*
	Northeastbound Right	*23.2*	*C*	*23.5*	*C*
	Southwestbound Left	*24.2*	*C*	*24.4*	*C*
	Southwestbound Thru	*24.2*	*C*	*24.4*	*C*
	Southwestbound Right	*24.2*	*C*	*24.4*	*C*
	Northwestbound Left	*18.5*	*B*	*14.6*	*B*
	Northwestbound Thru	*9.7*	*A*	*10.5*	*B*
	Northwestbound Right	*9.6*	*A*	*10.4*	*B*
	Southeastbound Left	*13.6*	*B*	*15.7*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southeastbound Thru	*11.4*	*B*	*10.0*	*B*
	Southeastbound Right	*11.3*	*B*	*10.0*	*A*
13	**Custer Ave and Benton Ave**	**24.7**	**C**	**22.6**	**C**
	Northbound Left	*41.7*	*D*	*37.9*	*D*
	Northbound Thru	*34.0*	*C*	*30.6*	*C*
	Northbound Right	*23.8*	*C*	*18.4*	*B*
	Southbound Left	*40.8*	*D*	*35.4*	*D*
	Southbound Thru	*36.0*	*D*	*29.8*	*C*
	Southbound Right	*36.0*	*D*	*29.8*	*C*
	Eastbound Left	*33.3*	*C*	*40.1*	*D*
	Eastbound Thru	*28.7*	*C*	*30.0*	*C*
	Eastbound Right	*22.7*	*C*	*21.3*	*C*
	Westbound Left	*20.6*	*C*	*17.9*	*B*
	Westbound Thru	*15.5*	*B*	*14.9*	*B*
	Westbound Right	*15.5*	*B*	*14.9*	*B*
14	**Custer Ave and Cooney Dr**	**11.3**	**B**	**12.9**	**B**
	Southbound Left	*22.1*	*C*	*22.4*	*C*
	Southbound Right	*22.1*	*C*	*22.4*	*C*
	Eastbound Left	*17.5*	*B*	*22.5*	*C*
	Eastbound Thru	*10.4*	*B*	*10.9*	*B*
	Westbound Thru	*10.4*	*B*	*13.8*	*B*
	Westbound Right	*10.4*	*B*	*13.8*	*B*
15	**Custer Ave and Green Meadow Dr**	**29.1**	**C**	**29.3**	**C**
	Northbound Left	*41.4*	*D*	*32.6*	*C*
	Northbound Thru	*23.1*	*C*	*28.8*	*C*
	Northbound Right	*23.1*	*C*	*28.8*	*C*
	Southbound Left	*34.8*	*C*	*39.8*	*D*
	Southbound Thru	*32.4*	*C*	*27.9*	*C*
	Southbound Right	*32.4*	*C*	*27.9*	*C*
	Eastbound Left	*19.9*	*B*	*25.9*	*C*
	Eastbound Thru	*25.9*	*C*	*25.3*	*C*
	Eastbound Right	*25.9*	*C*	*25.3*	*C*
	Westbound Left	*17.1*	*B*	*14.9*	*B*
	Westbound Thru	*29.7*	*C*	*32.9*	*C*
	Westbound Right	*29.7*	*C*	*32.9*	*C*
16	**Custer Ave and McHugh**	**24.1**	**C**	**22.4**	**C**
	Northbound Left	*34.7*	*C*	*32.2*	*C*
	Northbound Thru	*24.4*	*C*	*23.9*	*C*
	Northbound Right	*24.4*	*C*	*23.9*	*C*
	Southbound Left	*32.0*	*C*	*31.8*	*C*
	Southbound Thru	*27.4*	*C*	*26.0*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Right	*27.4*	*C*	*26.0*	*C*
	Eastbound Left	*13.1*	*B*	*14.0*	*B*
	Eastbound Thru	*26.1*	*C*	*17.9*	*B*
	Eastbound Right	*26.1*	*C*	*17.9*	*B*
	Westbound Left	*15.1*	*B*	*13.0*	*B*
	Westbound Thru	*20.9*	*C*	*24.3*	*C*
	Westbound Right	*20.9*	*C*	*24.3*	*C*
17	**Custer Ave and Sanders St**	**26.7**	**C**	**25.4**	**C**
	Northbound Left	*40.1*	*D*	*27.6*	*C*
	Northbound Thru	*35.9*	*D*	*21.9*	*C*
	Northbound Right	*28.3*	*C*	*13.4*	*B*
	Southbound Left	*41.9*	*D*	*38.0*	*D*
	Southbound Thru	*36.2*	*D*	*22.0*	*C*
	Southbound Right	*28.7*	*C*	*15.2*	*B*
	Eastbound Left	*15.8*	*B*	*27.1*	*C*
	Eastbound Thru	*26.3*	*C*	*27.9*	*C*
	Eastbound Right	*21.0*	*C*	*19.3*	*B*
	Westbound Left	*17.1*	*B*	*15.9*	*B*
	Westbound Thru	*19.9*	*B*	*24.9*	*C*
	Westbound Right	*20.6*	*C*	*22.0*	*C*
19	**Gretchell and Lyndale Ave**	**10.9**	**B**	**13.0**	**B**
	Northbound Left	*23.4*	*C*	*20.7*	*C*
	Northbound Thru	*23.4*	*C*	*20.7*	*C*
	Northbound Right	*22.9*	*C*	*20.3*	*C*
	Southbound Left	*23.0*	*C*	*25.3*	*C*
	Southbound Thru	*23.0*	*C*	*25.3*	*C*
	Southbound Right	*23.0*	*C*	*25.3*	*C*
	Eastbound Left	*16.3*	*B*	*18.7*	*B*
	Eastbound Thru	*9.6*	*A*	*10.0*	*B*
	Eastbound Right	*9.5*	*A*	*10.0*	*A*
	Westbound Left	*19.7*	*B*	*16.2*	*B*
	Westbound Thru	*9.7*	*A*	*11.6*	*B*
	Westbound Right	*9.1*	*A*	*11.1*	*B*
27	**Harris St and Cedar St**	**13.9**	**B**	**11.7**	**B**
	Northbound Left	*26.7*	*C*	*23.7*	*C*
	Northbound Thru	*26.7*	*C*	*23.7*	*C*
	Northbound Right	*26.7*	*C*	*23.7*	*C*
	Southbound Left	*25.6*	*C*	*19.3*	*B*
	Southbound Thru	*25.6*	*C*	*19.3*	*B*
	Southbound Right	*32.7*	*C*	*8.1*	*A*
	Eastbound Left	*8.3*	*A*	*6.1*	*A*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Thru	*7.2*	*A*	*7.3*	*A*
	Eastbound Right	*7.1*	*A*	*7.3*	*A*
	Westbound Left	*14.5*	*B*	*9.6*	*A*
	Westbound Thru	*14.1*	*B*	*11.3*	*B*
	Westbound Right	*13.6*	*B*	*11.3*	*B*
31	**Highway 12 and Lane/Route 518**	**15.8**	**B**	**14.9**	**B**
	Northbound Left	*15.0*	*B*	*22.8*	*C*
	Northbound Thru	*15.0*	*B*	*22.8*	*C*
	Northbound Right	*15.0*	*B*	*22.8*	*C*
	Southbound Left	*15.0*	*B*	*24.1*	*C*
	Southbound Thru	*15.0*	*B*	*24.1*	*C*
	Southbound Right	*24.1*	*C*	*24.2*	*C*
	Eastbound Left	*22.8*	*C*	*16.2*	*B*
	Eastbound Thru	*8.6*	*A*	*11.4*	*B*
	Eastbound Right	*7.6*	*A*	*7.6*	*A*
	Westbound Left	*11.2*	*B*	*16.9*	*B*
	Westbound Thru	*13.1*	*B*	*9.0*	*A*
	Westbound Right	*7.7*	*A*	*7.6*	*A*
37	**Last Chance Gulch and 6th Ave**	**12.4**	**B**	**12.2**	**B**
	Northeastbound Right	*10.9*	*B*	*10.6*	*B*
	Southwestbound Left	*13.0*	*B*	*12.7*	*B*
	Southwestbound Thru	*13.0*	*B*	*12.7*	*B*
	Sothwestbound Right	*11.6*	*B*	*11.5*	*B*
	Northwestbound Left	*12.4*	*B*	*12.7*	*B*
	Northwestboiund Thru	*12.4*	*B*	*12.7*	*B*
	Southeastbound Thru	*12.5*	*B*	*11.7*	*B*
	Southeastbound Right	*12.5*	*B*	*11.7*	*B*
38	**Lawrence and Last Chance Gulch**	**12.1**	**B**	**12.0**	**B**
	Southbound Left	*11.4*	*B*	*11.5*	*B*
	Southbound Thru	*11.4*	*B*	*11.6*	*B*
	Southbound Right	*11.5*	*B*	*11.9*	*B*
	Eastbound Thru	*12.7*	*B*	*12.5*	*B*
	Eastbound Right	*12.7*	*B*	*12.5*	*B*
	Westbound Left	*12.6*	*B*	*12.0*	*B*
	Westbound Thru	*12.6*	*B*	*12.0*	*B*
39	**Lawrence St and Park Ave**	**16.0**	**B**	**17.6**	**B**
	Northbound Left	*20.8*	*C*	*19.8*	*B*
	Northbound Thru	*12.2*	*B*	*17.4*	*B*
	Northbound Right	*12.2*	*B*	*17.4*	*B*
	Southbound Left	*16.5*	*B*	*27.1*	*C*
	Southbound Thru	*14.2*	*B*	*13.5*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Right	*14.2*	*B*	*13.5*	*B*
	Eastbound Left	*20.3*	*C*	*17.6*	*B*
	Eastbound Thru	*21.3*	*C*	*17.6*	*B*
	Eastbound Right	*21.3*	*C*	*17.6*	*B*
	Westbound Left	*28.3*	*C*	*27.3*	*C*
	Westbound Thru	*28.3*	*C*	*27.3*	*C*
	Westbound Right	*28.3*	*C*	*27.3*	*C*
47	**Montana Ave and Lodestar Rd**	**14.6**	**B**	**14.7**	**B**
	Northbound Left	*22.6*	*C*	*13.8*	*B*
	Northbound Thru	*9..0.*	*A*	*17.1*	*B*
	Northbound Right	*7.7*	*A*	*7.9*	*A*
	Southbound Left	*11.3*	*B*	*26.9*	*C*
	Southbound Thru	*14.5*	*B*	*9.8*	*A*
	Southbound Right	*14.5*	*B*	*9.8*	*A*
	Eastbound Left	*21.6*	*C*	*22.8*	*C*
	Eastbound Thru	*21.6*	*C*	*22.8*	*C*
	Eastbound Right	*21.6*	*C*	*22.8*	*C*
	Westbound Left	*25.0*	*C*	*24.3*	*C*
	Westbound Thru	*25.0*	*C*	*24.3*	*C*
	Westbound Right	*25.0*	*C*	*24.3*	*C*
49	**Montana Ave and Partridge Pl**	**10.2**	**B**	**14.4**	**B**
	Northbound Left	*23.3*	*C*	*18.1*	*B*
	Northbound Thru	*4.9*	*A*	*13.6*	*B*
	Northbound Right	*3.9*	*A*	*6.2*	*A*
	Southbound Left	*7.2*	*A*	*25.0*	*C*
	Southbound Thru	*9.0*	*A*	*9.1*	*A*
	Southbound Right	*4.0*	*A*	*5.9*	*A*
	Eastbound Left	*24.3*	*C*	*25.1*	*C*
	Eastbound Thru	*21.9*	*C*	*17.7*	*B*
	Eastbound Right	*24.0*	*C*	*19.5*	*B*
	Westbound Left	*24.0*	*C*	*22.5*	*C*
	Westbound Thru	*21.8*	*C*	*18.6*	*B*
	Westbound Right	*21.8*	*C*	*18.6*	*B*
51	**Montana Ave/Helena Ave/ Lyndale**	**24.8**	**C**	**22.8**	**C**
	Northbound Left	*27.0*	*C*	*28.0*	*C*
	Northbound Thru	*5.4*	*A*	*5.8*	*A*
	Northbound Right	*5.2*	*A*	*5.7*	*A*
	Southbound Left	*25.6*	*C*	*26.5*	*C*
	Southbound Thru	*25.7*	*C*	*26.6*	*C*
	Southbound Right	*26.0*	*C*	*26.9*	*C*
	Southbound Right2	*26.0*	*C*	*26.9*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Right	*29.0*	*C*	*28.1*	*C*
	Eastbound Right2	*29.0*	*C*	*28.1*	*C*
	Northeastbound Left	*39.6*	*D*	*29.0*	*C*
	Northeastbound Thru	*32.4*	*C*	*27.9*	*C*
	Northeastbound Right	*23.4*	*C*	*27.9*	*C*
	Southwestbound Left	*31.5*	*C*	*27.0*	*C*
	Southwestbound Thru	*31.5*	*C*	*27.0*	*C*
	Southwestbound Right	*31.5*	*C*	*27.0*	*C*
	Sotuhwestbound Right2	*31.5*	*C*	*27.0*	*C*
56	**Park Ave and 6th Ave**	**14.0**	**B**	**18.2**	**B**
	Northbound Thru	*17.0*	*B*	*24.7*	*C*
	Northbound Right	*13.5*	*B*	*13.4*	*B*
	Southbound Left	*10.2*	*B*	*12.2*	*B*
	Southbound Thru	*12.8*	*B*	*12.6*	*B*
	Northwestbound Left	*16.3*	*B*	*16.8*	*B*
	Northwestbound Right	*16.3*	*B*	*16.8*	*B*
57	**Park Ave/Neil Ave/Benton**	**23.9**	**C**	**28.1**	**C**
	Northbound Left	*23.7*	*C*	*26.3*	*C*
	Northbound Thru	*26.4*	*C*	*28.7*	*C*
	Northbound Right	*26.4*	*C*	*28.7*	*C*
	Southbound Left	*23.9*	*C*	*22.6*	*C*
	Southbound Thru	*23.9*	*C*	*22.6*	*C*
	Southbound Right	*23.9*	*C*	*22.6*	*C*
	Eastbound Left	*21.8*	*C*	*29.0*	*C*
	Eastbound Thru	*21.8*	*C*	*21.5*	*C*
	Eastbound Right	*18.5*	*B*	*29.5*	*C*
	Westbound Left	*23.7*	*C*	*28.9*	*C*
	Westbound Thru	*23.8*	*C*	*29.2*	*C*
	Westbound Right	*24.0*	*C*	*29.9*	*C*
58	**Prospect Ave and 18th St**	**28.6**	**C**	**27.1**	**C**
	Northbound Left	*40.4*	*D*	*43.8*	*D*
	Northbound Thru	*28.9*	*C*	*20.5*	*C*
	Northbound Right	*28.8*	*C*	*20.5*	*C*
	Southbound Left	*32.0*	*C*	*26.5*	*C*
	Southbound Thru	*30.7*	*C*	*23.2*	*C*
	Southbound Right	*30.7*	*C*	*23.2*	*C*
	Eastbound Left	*20.4*	*C*	*16.6*	*B*
	Eastbound Thru	*29.8*	*C*	*28.4*	*C*
	Eastbound Right	*26.8*	*C*	*25.4*	*C*
	Westbound Left	*19.9*	*B*	*19.4*	*B*
	Westbound Thru	*28.1*	*C*	*23.6*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Westbound Right	*26.8*	*C*	*23.7*	*C*
59	**Prospect Ave and Fee St**	**20.6**	**C**	**22.9**	**C**
	Northbound Left	*37.5*	*D*	*36.4*	*D*
	Northbound Thru	*37.3*	*D*	*36.3*	*D*
	Southbound Thru	*39.2*	*D*	*36.6*	*D*
	Southbound Right	*39.2*	*D*	*36.6*	*D*
	Westbound Left	*18.0*	*B*	*18.3*	*B*
	Westbound Thru	*17.9*	*B*	*18.4*	*B*
	Westbound Right	*18.0*	*B*	*18.4*	*B*
60	**Prospect Ave and Roberts St**	**11.1**	**B**	**10.8**	**B**
	Northbound Left	*27.8*	*C*	*23.7*	*C*
	Northbound Thru	*22.7*	*C*	*17.1*	*B*
	Southbound Thru	*25.9*	*C*	*18.1*	*B*
	Southbound Right	*25.3*	*C*	*17.2*	*B*
	Westbound Left	*8.6*	*A*	*7.5*	*A*
	Westbound Thru	*8.7*	*A*	*7.5*	*A*
	Westbound Right	*8.7*	*A*	*7.5*	*A*
63	**Rodney St and Helena Ave**	**12.4**	**B**	**11.5**	**B**
	Northbound Left	*24.8*	*C*	*24.8*	*C*
	Northbound Thru	*24.8*	*C*	*24.8*	*C*
	Northbound Right	*24.8*	*C*	*24.8*	*C*
	Southbound Left	*22.3*	*C*	*22.6*	*C*
	Southbound Thru	*22.3*	*C*	*22.6*	*C*
	Southbound Right	*22.3*	*C*	*22.6*	*C*
	Northeastbound Left	*6.4*	*A*	*7.1*	*A*
	Northeastbound Thru	*6.4*	*A*	*7.1*	*A*
	Northeastbound Right	*6.4*	*A*	*7.1*	*A*
	Southwestbound Left	*7.6*	*A*	*7.1*	*A*
	Southwestbound Thru	*7.6*	*A*	*7.1*	*A*
	Southwestbound Right	*7.6*	*A*	*7.1*	*A*
69	**Washington St and Skyway Dr**	**10.8**	**B**	**12.9**	**B**
	Northbound Left	*11.5*	*B*	*11.3*	*B*
	Northbound Thru	*8.5*	*A*	*9.7*	*A*
	Northbound Right	*8.4*	*A*	*9.2*	*A*
	Southbound Left	*10.8*	*B*	*13.9*	*B*
	Southbound Thru	*8.8*	*A*	*8.3*	*A*
	Southbound Right	*8.7*	*A*	*8.2*	*A*
	Eastbound Left	*26.4*	*C*	*22.8*	*C*
	Eastbound Thru	*24.4*	*C*	*18.3*	*B*
	Eastbound Right	*24.4*	*C*	*18.3*	*B*
	Westbound Left	*29.3*	*C*	*25.1*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Westbound Thru	*24.3*	*C*	*18.5*	*B*
	Westbound Right	*24.3*	*C*	*18.5*	*B*
70	**Williams St and Highway 12**	**12.0**	**B**	**13.1**	**B**
	Northeastbound Left	*14.8*	*B*	*10.6*	*B*
	Northeastbound Thru	*8.3*	*A*	*8.2*	*A*
	Northeastbound Right	*8.2*	*A*	*8.2*	*A*
	Southeastbound Left	*0.0*	*A*	*10.0*	*A*
	Southwestbound Thru	*8.5*	*A*	*8.5*	*A*
	Southwestbound Right	*10.4*	*B*	*8.5*	*A*
	Northwestbound Left	*23.7*	*C*	*17.6*	*B*
	Northwestbound Thru	*23.7*	*C*	*17.6*	*B*
	Northwestbound Right	*23.7*	*C*	*17.6*	*B*
	Southeastbound Left	*26.8*	*C*	*23.2*	*C*
	Southeastbound Thru	*26.8*	*C*	*23.2*	*C*
	Southeastbound Right	*26.8*	*C*	*23.2*	*C*
Intersections Counted by MDT					
M.1	**11th Ave and Montana Ave**	**11.4**	**B**	**13.6**	**B**
	Northbound Thru	*15.6*	*B*	*17.5*	*B*
	Northbound Right	*15.6*	*B*	*17.9*	*B*
	Southbound Left	*9.3*	*A*	*14.4*	*A*
	Southbound Thru	*8.4*	*A*	*6.6*	*A*
	Southbound Right	*6.9*	*A*	*5.6*	*A*
	Eastbound Left	*16.0*	*B*	*17.4*	*B*
	Eastbound Thru	*16.0*	*B*	*17.4*	*B*
	Eastbound Right	*16.1*	*B*	*17.5*	*B*
M.2	***Cedar St and Montana Ave***	**29.1**	**C**	**32.5**	**C**
	Northbound Left	*21.9*	*C*	*21.4*	*C*
	Northbound Thru	*32.2*	*C*	*36.3*	*D*
	Northbound Right	*21.6*	*C*	*21.4*	*C*
	Southbound Left	*23.8*	*C*	*25.5*	*D*
	Southbound Thru	*28.7*	*C*	*28.1*	*D*
	Southbound Right	*15.5*	*B*	*14.8*	*B*
	Eastbound Left	*39.9*	*D*	*48.7*	*D*
	Eastbound Thru	*22.2*	*C*	*30.2*	*C*
	Eastbound Right	*22.2*	*C*	*30.3*	*C*
	Westbound Left	*16.2*	*B*	*19.2*	*B*
	Westbound Thru	*40.1*	*D*	*40.1*	*D*
	Westbound Right	*34.3*	*C*	*35.0*	*C*
M.3	**Custer Ave and Montana Ave**	**31.3**	**C**	**30.7**	**C**
	Northbound Left	*21.5*	*C*	*23.3*	*C*
	Northbound Thru	*30.9*	*C*	*37.3*	*D*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Northbound Right	*20.6*	*C*	*20.1*	*C*
	Southbound Left	*20.5*	*C*	*21.2*	*C*
	Southbound Thru	*35.8*	*D*	*30.5*	*C*
	Southbound Right	*23.6*	*C*	*24.8*	*C*
	Eastbound Left	*24.9*	*C*	*28.5*	*C*
	Eastbound Thru	*28.5*	*C*	*29.3*	*C*
	Eastbound Right	*16.5*	*B*	*18.3*	*B*
	Westbound Left	*55.2*	*E*	*45.1*	*D*
	Westbound Thru	*43.6*	*D*	*42.3*	*D*
	Westbound Right	*13.9*	*B*	*20.2*	*C*
M.4	**Henderson St and Euclid Ave**	**16.0**	**B**	**16.1**	**B**
	Southbound Left	*19.5*	*B*	*20.6*	*C*
	Southbound Thru	*21.1*	*C*	*23.1*	*C*
	Southbound Right	*21.1*	*C*	*23.1*	*C*
	Northeastbound Left	*35.8*	*D*	*36.0*	*D*
	Northeastbound Thru	*26.9*	*C*	*26.9*	*C*
	Northeastbound Right	*26.9*	*C*	*26.9*	*C*
	Northwestbound Left	*24.2*	*C*	*23.9*	*C*
	Northwestbound Thru	*16.2*	*B*	*16.8*	*B*
	Northwestbound Right	*14.2*	*B*	*15.0*	*B*
	Southeastbound Left	*10.8*	*B*	*11.9*	*B*
	Southeastbound Thru	*12.3*	*B*	*10.8*	*B*
	Southeastbound Right	*11.6*	*B*	*9.9*	*A*
M.6	**Highway 12 and Highway 282**	**20.5**	**C**	**21.8**	**C**
	Northbound Left	*36.4*	*D*	*31.6*	*C*
	Northbound Thru	*36.4*	*D*	*31.6*	*C*
	Northbound Right	*37.8*	*D*	*39.3*	*D*
	Southbound Left	*35.3*	*D*	*39.9*	*D*
	Southbound Thru	*35.3*	*D*	*39.9*	*D*
	Southbound Right	*41.0*	*D*	*39.6*	*D*
	Eastbound Left	*29.8*	*C*	*15.9*	*B*
	Eastbound Thru	*14.9*	*B*	*14.7*	*B*
	Eastbound Right	*14.9*	*B*	*14.6*	*B*
	Westbound Left	*20.4*	*C*	*17.1*	*B*
	Westbound Thru	*19.6*	*B*	*14.1*	*B*
	Westbound Right	*18.2*	*B*	*14.1*	*B*
M.12	**Josyln St and Euclid Ave**	**12.0**	**B**	**11.4**	**B**
	Northeastbound Left	*17.5*	*B*	*22.1*	*C*
	Northeastbound Thru	*17.5*	*B*	*22.1*	*C*
	Northeastbound Right	*17.5*	*B*	*22.1*	*C*
	Southwestbound Left	*23.5*	*C*	*26.1*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southwestbound Thru	23.5	C	26.1	C
	Southwestbound Right	23.5	C	26.1	C
	Northwestbound Left	11.8	B	12.3	B
	Northwestbound Thru	8.94	A	8.7	A
	Northwestbound Right	8.2	A	8.6	A
	Southeastbound Left	12.0	B	11.4	B
	Southeastbound Thru	8.9	A	9.1	A
	Southeastbound Right	8.9	A	9.0	A
M.13	**Last Chance Gulch and Lyndale Ave**	**30.9**	**C**	**34.8**	**C**
	Eastbound Left	41.9	D	46.9	D
	Eastbound Thru	22.5	C	22.8	C
	Eastbound Right	22.5	C	22.8	C
	Westbound Left	16.4	B	16.7	B
	Westbound Thru	34.2	C	37.7	D
	Westbound Right	33.0	C	36.8	D
	Northeastbound Left	26.1	C	29.1	C
	Northeastbound Thru	27.1	C	44.9	D
	Northeastbound Right	26.6	C	42.0	D
	Southwestbound Left	21.4	C	30.8	C
	Southwestbound Thru	47.2	D	40.1	D
	Southwestbound Right	14.5	B	13.8	B
M.19	**Montana Ave and Billings Ave**	**16.1**	**B**	**17.9**	**B**
	Northbound Left	20.6	C	22.2	C
	Northbound Thru	17.6	B	20.3	C
	Northbound Right	17.6	B	20.2	C
	Southbound Left	11.7	B	12.9	B
	Southbound Thru	12.8	B	12.7	B
	Southbound Right	12.7	B	12.5	B
	Eastbound Left	33.1	C	31.5	C
	Eastbound Thru	33.1	C	31.5	C
	Eastbound Right	33.1	C	31.5	C
	Westbound Left	33.5	C	32.3	C
	Westbound Thru	33.5	C	32.3	C
	Westbound Right	33.5	C	32.3	C
M.20	**Montana Ave and Tara Court**	**11.1**	**B**	**13.5**	**B**
	Northbound Left	15.0	B	17.4	B
	Northbound Thru	8.6	A	11.6	B
	Northbound Right	8.4	A	11.0	B
	Southbound Left	11.4	B	22.2	C
	Southbound Thru	9.9	A	10.1	B
	Southbound Right	9.7	A	9.7	A

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Left	*24.5*	*C*	*25.5*	*C*
	Eastbound Thru	*24.5*	*C*	*25.5*	*C*
	Eastbound Right	*24.5*	*C*	*25.5*	*C*
	Westbound Left	*23.3*	*C*	*18.9*	*B*
	Westbound Thru	*23.3*	*C*	*18.9*	*B*
	Westbound Right	*22.7*	*C*	*19.3*	*B*
M.21	**Prospect Ave and Lamborn St**	**10.9**	**B**	**9.7**	**A**
	Northbound Left	*25.2*	*C*	*24.2*	*C*
	Northbound Thru	*20.7*	*C*	*20.4*	*C*
	Southbound Thru	*21.6*	*C*	*20.6*	*C*
	Southbound Right	*21.0*	*C*	*20.1*	*C*
	Westbound Left	*9.8*	*A*	*7.7*	*A*
	Westbound Thru	*9.9*	*A*	*7.7*	*A*
	Westbound Right	*9.9*	*A*	*7.7*	*A*
M.22	**Prospect Ave and Montana Ave**	**20.8**	**C**	**22.8**	**C**
	Northbound Thru	*17.5*	*B*	*19.5*	*B*
	Southbound Thru	*20.5*	*C*	*23.7*	*C*
	Southbound Right	*20.5*	*C*	*23.7*	*C*
	Eastbound Right	*89.0*	*F*	*91.4*	*F*
	Westbound Left	*17.1*	*B*	*13.8*	*B*
	Westbound Right	*26.4*	*C*	*31.3*	*C*

Table B.2: Existing Unsignalized Intersection LOS (Detail)

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
4	**Applegate Dr and John G Mine Rd**	**7.2**	**A**	**7.4**	**A**
	Northbound Left/Thru/Right	*7.2*	*A*	*7.3*	*A*
	Southbound Left/Thru/Right	*7.0*	*A*	*7.2*	*A*
	Eastbound Left/Thru/Right	*7.3*	*A*	*7.3*	*A*
	Westbound Left/Thru/Right	*7.4*	*A*	*7.6*	*A*
5	**Applegate Dr and Norris Rd**	**9.7**	**A**	**9.7**	**A**
	Northbound Left/Thru/Right	*3.6*	*A*	*5.1*	*A*
	Southbound Left/Thru/Right	*0.0*	*A*	*0.0*	*A*
	Eastbound Left/Thru/Right	*8.8*	*A*	*8.8*	*A*
	Westbound Left/Thru/Right	*8.4*	*A*	*9.1*	*A*
6	**Boulder Ave and Sanders St**	**13.1**	**B**	**11.1**	**B**
	Northbound Left/Thru/Right	*11.9*	*B*	*10.5*	*B*
	Southbound Left/Thru/Right	*12.0*	*B*	*10.5*	*B*
	Eastbound Left/Thru/Right	*0.5*	*A*	*0.9*	*A*
	Westbound Left/Thru/Right	*0.1*	*A*	*0.4*	*A*
7	**Broadway and Colonial**	**72.9**	**F**	**30.4**	**D**
	Eastbound Left/Thru/Right	*34.4*	*D*	*16.1*	*C*
	Westbound Left/Thru/Right	*36.9*	*E*	*18.8*	*C*
8	**Broadway and Park**	**11.8**	**B**	**17.5**	**C**
	Northeastbound Thru/Right	*9.9*	*A*	*16.5*	*C*
	Southeastbound Left/Thru	*12.7*	*B*	*18.0*	*C*
	Northwestbound Left/Right	*11.4*	*B*	*17.7*	*C*
9	**California and Colonial**	**19.4**	**C**	**27.8**	**D**
	Northbound Left/Right	*18.5*	*C*	*27.4*	*D*
11	**Country Club and Joslyn**	**20.5**	**C**	**22.5**	**C**
	Westbound Left/Thru/Right	*15.9*	*C*	*16.4*	*C*
	Southwestbound Left/Thru/Right	*17.6*	*C*	*18.3*	*C*
12	**Country Club and Williams**	**17.1**	**C**	**12.6**	**B**
	Northbound Thru/Right	*13.2*	*B*	*10.7*	*B*
18	**Custer Ave and Villard**	**89.5**	**F**	**179.6**	**F**
	Northbound Left/Right	*68.9*	*F*	*124.9*	*F*
20	**Granite and Highway 12**	**32.3**	**D**	**44.7**	**E**
	Northbound Left/Thru/Right	*17.5*	*C*	*22.2*	*C*
	Southbound Left/Thru/Right	*31.1*	*D*	*38.0*	*E*
21	**Green Meadow Dr and Brookfield**	**16.2**	**C**	**13.8**	**B**
	Westbound Left/Right	*16.2*	*C*	*12.6*	*B*
22	**Green Meadow Dr and Forestvale**	**16.1**	**C**	**13.5**	**B**
	Westbound Left/Right	*14.3*	*C*	*11.7*	*B*
23	**Green Meadow Dr and Franklin Mine Rd**	**18.3**	**C**	**15.7**	**C**

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Left/Right	*16.2*	*C*	*13.5*	*B*
24	**Green Meadow Dr and Mill Rd**	**20.7**	**C**	**15.7**	**C**
	Westbound Left/Right	*20.0*	*C*	*14.1*	*B*
25	**Green Meadow Dr and Sierra Rd**	**13.4**	**B**	**9.3**	**A**
	Northbound Thru/Right	*8.7*	*A*	*10.3*	*B*
	Southbound Left/Thru	*15.4*	*C*	*9.0*	*A*
	Westbound Left/Right	*10.0*	*A*	*8.7*	*A*
26	**Green Meadow Dr and Norris Rd**	**15.3**	**C**	**12.5**	**B**
	Eastbound Left/Thru/Right	*11.8*	*B*	*9.0*	*A*
	Westbound Left/Thru/Right	*15.3*	*C*	*12.4*	*B*
28	**Head Ln and Country Club Ave**	**14.6**	**B**	**12.9**	**B**
	Southbound Left/Right	*13.3*	*B*	*11.1*	*B*
29	**Henderson St and Custer Ave**	**31.0**	**D**	**38.4**	**E**
	Southbound Left/Thru/Right	*19.0*	*C*	*26.9*	*D*
	Eastbound Left/Thru/Right	*17.5*	*C*	*23.7*	*C*
30	**Highway 12 and Lake Helena Dr**	**26.9**	**D**	**35.4**	**E**
	Southeastbound Left/Right	*22.0*	*C*	*18.4*	*C*
32	**Highway 12 and Valley Dr**	**67.2**	**F**	**48.6**	**E**
	Southbound Left/Right	*41.3*	*E*	*18.6*	*C*
33	**Lake Helena Dr and Deal Ln**	**9.2**	**A**	**9.5**	**A**
	Westbound Left/Right	*8.9*	*A*	*9.0*	*A*
34	**Lake Helena Dr and Lewis St**	**27.3**	**D**	**14.7**	**B**
	Northbound Left/Thru/Right	*10.9*	*B*	*12.7*	*B*
	Southbound Left/Thru/Right	*25.3*	*D*	*11.4*	*B*
35	**Lake Helena Dr and Old Highway 12**	**38.7**	**E**	**23.4**	**C**
	Southbound Left/Right	*37.2*	*E*	*19.5*	*C*
36	**Last Chance Gulch and 14th St**	**31.2**	**D**	**104.0**	**F**
	Northwestbound Left/Thru/Right	*19.9*	*C*	*21.2*	*C*
	Southeastbound Left/Thru/Right	*27.5*	*D*	*93.8*	*F*
40	**Lincoln Rd and Glass Dr**	**13.0**	**B**	**11.7**	**B**
	Northbound Left/Thru/Right	*11.0*	*B*	*11.4*	*B*
	Southbound Left/Thru/Right	*12.6*	*B*	*10.3*	*B*
41	**McHugh and Mill Rd**	**12.0**	**B**	**13.0**	**B**
	Eastbound Left/Thru/Right	*10.8*	*B*	*11.7*	*B*
	Westbound Left/Thru/Right	*11.5*	*B*	*11.8*	*B*
42	**McHugh and Road Runner**	**16.0**	**C**	**16.6**	**C**
	Eastbound Left/Thru/Right	*13.0*	*B*	*13.8*	*B*
	Westbound Left/Thru/Right	*15.7*	*C*	*15.3*	*C*
43	**McHugh and Sierra Rd**	**10.9**	**B**	**10.9**	**B**
	Northbound Left/Right	*9.3*	*A*	*9.7*	*A*
44	**Montana and 6th Ave**	**15.2**	**C**	**17.5**	**C**

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Northbound Left/Thru/Right	*14.8*	*B*	*19.8*	*C*
	Southbound Left/Thru/Right	*16.7*	*C*	*16.9*	*C*
	Eastbound Left/Thru/Right	*13.0*	*B*	*13.3*	*B*
	Westbound Left/Thru/Right	*11.4*	*B*	*15.8*	*C*
45	**Montana Ave and Broadway St**	**22.6**	**C**	**27.3**	**D**
	Northbound Left/Thru/Right	*18.2*	*C*	*19.8*	*C*
	Southbound Left/Thru/Right	*16.0*	*C*	*16.9*	*C*
	Eastbound Left/Thru/Right	*28.9*	*E*	*13.3*	*B*
	Westbound Left/Thru/Right	*16.5*	*C*	*15.8*	*C*
46	**Montana Ave and Forestvale Rd**	**16.1**	**C**	**25.0**	**C**
	Eastbound Left/Thru/Right	*12.9*	*B*	*15.5*	*C*
	Westbound Left/Thru/Right	*14.2*	*B*	*19.8*	*C*
48	**Montana Ave and Mill Rd**	**19.6**	**C**	**44.8**	**E**
	Eastbound Left/Thru/Right	*14.0*	*B*	*38.2*	*E*
	Westbound Left/Thru/Right	*19.3*	*C*	*26.5*	*D*
50	**Montana Ave and Sierra Rd**	**13.7**	**B**	**18.5**	**C**
	Northbound Left/Thru/Right	*11.7*	*B*	*25.4*	*D*
	Southbound Left/Thru/Right	*15.0*	*C*	*13.9*	*B*
	Eastbound Left/Thru/Right	*11.5*	*B*	*13.4*	*B*
	Westbound Left/Thru/Right	*14.0*	*B*	*13.7*	*B*
52	**Montana Ave and Prairie Rd**	**9.5**	**A**	**11.5**	**B**
	Eastbound Left/Right	*9.1*	*A*	*9.1*	*A*
53	**Montana Ave and Valley Forge Rd**	**21.5**	**C**	**31.1**	**D**
	Westbound Left/Right	*19.5*	*C*	*29.4*	*D*
54	**Montana Ave and Valley View Rd**	**13.4**	**B**	**13.6**	**B**
	Eastbound Left/Right	*11.8*	*B*	*9.6*	*A*
55	**Montana Ave and Buffalo Rd**	**25.5**	**D**	**37.9**	**E**
	Eastbound Left/Thru/Right	*17.9*	*C*	*25.7*	*D*
	Westbound Left/Thru/Right	*21.8*	*C*	*29.1*	*D*
61	**Road Runner Dr and Dredge Dr**	**12.4**	**B**	**18.2**	**C**
	Eastbound Left/Thru/Right	*10.6*	*B*	*13.7*	*B*
	Westbound Left/Thru/Right	*11.6*	*B*	*16.1*	*C*
62	**Broadway St and Rodney St**	**16.4**	**C**	**19.0**	**C**
	Northbound Left/Thru/Right	*11.5*	*B*	*12.6*	*B*
	Southbound Left/Thru/Right	*11.6*	*B*	*15.1*	*C*
	Eastbound Left/Thru/Right	*21.0*	*C*	*23.1*	*C*
	Westbound Left/Thru/Right	*13.9*	*B*	*19.3*	*C*
64	**Runkle Parkway and Highway 282**	**10.5**	**B**	**10.6**	**B**
	Eastbound Left/Right	*10.0*	*A*	*9.0*	*A*
65	**Saddle Dr and Colonial**	**12.8**	**B**	**14.2**	**B**
	Northbound Left/Thru/Right	*5.3*	*A*	*18.8*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Left/Thru/Right	*11.7*	*B*	*7.9*	*A*
	Eastbound Left/Thru/Right	*6.1*	*A*	*15.3*	*C*
	Westbound Left/Thru/Right	*18.2*	*C*	*6.4*	*A*
66	**Sanders St and Cedar St**	**94.6**	**F**	**187.2**	**F**
	Northbound Left/Thru/Right	*65.7*	*F*	*94.4*	*F*
	Southbound Left/Thru/Right	*40.8*	*E*	*129.5*	*F*
67	**Villard and Last Chance Gulch**	**265.1**	**F**	**3,187.9**	**F**
	Northbound Left/Thru/Right	*254.6*	*F*	*1,637.3*	*F*
	Southbound Left/Thru/Right	*158.1*	*F*	*2,406.2*	*F*
68	**Washington and Cromwell Dixon**	**20.3**	**C**	**65.2**	**F**
	Eastbound Left/Thru/Right	*16.9*	*C*	*45.5*	*E*
	Westbound Left/Thru/Right	*12.4*	*B*	*29.2*	*D*
71	**York Rd and Lake Helena Dr**	**15.3**	**C**	**14.1**	**B**
	Northbound Left/Thru/Right	*12.5*	*B*	*12.7*	*B*
	Southbound Left/Thru/Right	*11.8*	*B*	*11.0*	*B*
72	**York Rd and Valley Dr**	**12.9**	**B**	**12.0**	**B**
	Northbound Left/Thru/Right	*12.2*	*B*	*11.1*	*B*
	Southbound Left/Thru/Right	*10.5*	*B*	*9.7*	*A*
73	**York Rd and Helberg Dr/Herrin Rd**	**18.7**	**C**	**14.8**	**B**
	Southbound Left/Thru/Right	*12.1*	*B*	*10.3*	*B*
	Northwestbound Left/Thru/Right	*18.7*	*C*	*13.6*	*B*
74	**York Rd and Tizer Rd**	**23.5**	**C**	**13.8**	**B**
	Northbound Left/Right	*20.6*	*C*	*12.9*	*B*
75	**York Rd and Wylie Dr**	**14.9**	**B**	**12.7**	**B**
	Northbound Left/Thru/Right	*12.4*	*B*	*10.2*	*B*
	Southbound Left/Thru/Right	*14.8*	*B*	*12.5*	*B*
Intersections Counted by MDT					
M.5	**Highway 12 and Elaine St**	**15.5**	**C**	**97.5**	**F**
	Northbound Left/Right	*12.9*	*B*	*80.2*	*F*
M.7	**Highway 12 and Lola St**	**28.6**	**D**	**209.2**	**F**
	Northbound Left/Right	*22.7*	*C*	*203.4*	*F*
M.8	**Highway 12 and N Side Frontage Rd Access**	**349.5**	**F**	**36.4**	**E**
	Southbound Left/Right	*161.5*	*F*	*21.8*	*C*
M.9	**Highway 12 and Nicole St**	**102.3**	**F**	**39.5**	**E**
	Southbound Left/Right	*32.1*	*D*	*15.2*	*C*
M.10	**Highway 12 and S Side Frontage Rd Access**	**36.5**	**E**	**25.2**	**D**
	Northbound Left/Right	*10.2*	*B*	*16.4*	*C*
M.11	**Highway 12 and Wylie Dr**	**151.0**	**F**	**106.9**	**F**
	Southwestbound Left/Right	*132.8*	*F*	*58.5*	*F*
M.14	**Lincoln Rd and Green Meadow Dr**	**15.0**	**B**	**13.3**	**B**
	Northbound Left/Thru/Right	*12.4*	*B*	*12.1*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Left/Thru/Right	*14.7*	*B*	*12.4*	*B*
M.15	**Lincoln Rd and I-15 NB Ramps**	**13.9**	**B**	**79.3**	**F**
	Northbound Left/Thru/Right	*12.7*	*B*	*78.4*	*F*
M.16	**Lincoln Rd and I-15 SB Ramps**	**66.4**	**F**	**30.3**	**D**
	Southbound Left/Thru/Right	*19.7*	*C*	*17.9*	*C*
M.17	**Lincoln Rd and Montana Ave**	**29.5**	**D**	**19.3**	**C**
	Northbound Left/Thru/Right	*13.1*	*B*	*15.5*	*C*
	Southbound Left/Thru/Right	*41.0*	*E*	*14.8*	*B*
	Eastbound Left/Thru/Right	*27.7*	*D*	*14.0*	*B*
	Westbound Left/Thru/Right	*13.8*	*B*	*26.0*	*D*
M.18	**Lincoln Rd and Mountain Heritage Rd**	**9.6**	**A**	**9.8**	**A**
	Southbound Left/Right	*9.1*	*A*	*9.0*	*A*

B.2 Projected Conditions

Table B.3: Projected Signalized Intersection LOS (Detail)

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
1	**11th Ave and Fee St**	**24.7**	**C**	**24.2**	**C**
	Southbound Left	*22.2*	*C*	*18.6*	*B*
	Southbound Thru	*11.4*	*B*	*19.9*	*B*
	Eastbound Left	*26.0*	*C*	*22.5*	*C*
	Eastbound Thru	*26.1*	*C*	*22.7*	*C*
	Northwestbound Thru	*25.5*	*C*	*27.9*	*C*
	Northwestbound Right	*26.0*	*C*	*35.5*	*D*
2	**11th Ave and Lamborn St**	**16.0**	**B**	**15.3**	**B**
	Northbound Thru	*18.5*	*B*	*23.8*	*C*
	Northbound Right	*19.6*	*B*	*31.7*	*C*
	Southbound Left	*22.0*	*C*	*30.3*	*C*
	Southbound Thru	*25.5*	*C*	*25.4*	*C*
	Eastbound Left	*11.7*	*B*	*9.7*	*A*
	Eastbound Thru	*11.7*	*B*	*9.7*	*A*
	Eastbound Right	*11.8*	*B*	*9.8*	*A*
3	**11th Ave and Roberts St**	**12.4**	**B**	**14.9**	**B**
	Northbound Thru	*18.9*	*B*	*18.6*	*B*
	Northbound Right	*18.6*	*B*	*18.4*	*B*
	Southbound Left	*23.2*	*C*	*25.6*	*C*
	Southbound Thru	*22.8*	*C*	*17.7*	*B*
	Eastbound Left	*8.8*	*A*	*12.9*	*B*
	Eastbound Thru	*8.8*	*A*	*12.9*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Right	*8.9*	*A*	*13.0*	*B*
10	**Cleveland and Euclid**	**12.9**	**B**	**12.2**	**B**
	Northeastbound Left	*23.4*	*C*	*23.1*	*C*
	Northeastbound Thru	*23.4*	*C*	*23.1*	*C*
	Northeastbound Right	*23.4*	*C*	*23.1*	*C*
	Southwestbound Left	*25.1*	*C*	*24.2*	*C*
	Southwestbound Thru	*25.1*	*C*	*24.2*	*C*
	Southwestbound Right	*25.1*	*C*	*24.2*	*C*
	Northwestbound Left	*22.5*	*C*	*17.1*	*B*
	Northwestbound Thru	*9.6*	*A*	*11.7*	*B*
	Northwestbound Right	*9.3*	*A*	*11.5*	*B*
	Southeastbound Left	*14.5*	*B*	*18.9*	*B*
	Southeastbound Thru	*11.9*	*B*	*10.9*	*B*
	Southeastbound Right	*11.8*	*B*	*10.8*	*B*
13	**Custer Ave and Benton Ave**	**26.4**	**C**	**20.4**	**C**
	Northbound Left	*41.2*	*D*	*36.6*	*D*
	Northbound Thru	*32.6*	*C*	*28.6*	*C*
	Northbound Right	*21.9*	*C*	*16.1*	*B*
	Southbound Left	*40.1*	*D*	*33.7*	*C*
	Southbound Thru	*34.8*	*C*	*27.7*	*C*
	Southbound Right	*34.8*	*C*	*27.7*	*C*
	Eastbound Left	*36.4*	*D*	*40.4*	*D*
	Eastbound Thru	*33.8*	*C*	*26.8*	*C*
	Eastbound Right	*23.1*	*C*	*17.8*	*B*
	Westbound Left	*26.0*	*C*	*18.7*	*B*
	Westbound Thru	*15.4*	*B*	*11.9*	*B*
	Westbound Right	*15.4*	*B*	*11.9*	*B*
14	**Custer Ave and Cooney Dr**	**15.6**	**B**	**10.6**	**B**
	Southbound Left	*27.8*	*C*	*22.3*	*C*
	Southbound Right	*27.8*	*C*	*22.3*	*C*
	Eastbound Left	*27.3*	*C*	*21.3*	*C*
	Eastbound Thru	*14.5*	*B*	*7.9*	*A*
	Westbound Thru	*14.5*	*B*	*11.9*	*B*
	Westbound Right	*14.5*	*B*	*11.9*	*B*
15	**Custer Ave and Green Meadow Dr**	**29.5**	**C**	**25.2**	**C**
	Northbound Left	*40.9*	*D*	*32.1*	*C*
	Northbound Thru	*20.0*	*C*	*28.7*	*C*
	Northbound Right	*20.0*	*C*	*28.7*	*C*
	Southbound Left	*32.6*	*C*	*40.9*	*D*
	Southbound Thru	*31.4*	*C*	*27.7*	*C*
	Southbound Right	*31.4*	*C*	*27.7*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Left	*22.0*	*C*	*33.2*	*C*
	Eastbound Thru	*26.0*	*C*	*18.1*	*B*
	Eastbound Right	*26.0*	*C*	*18.1*	*B*
	Westbound Left	*16.5*	*B*	*10.8*	*B*
	Westbound Thru	*33.1*	*C*	*24.5*	*C*
	Westbound Right	*33.1*	*C*	*24.5*	*C*
16	**Custer Ave and McHugh**	**27.5**	**C**	**28.1**	**C**
	Northbound Left	*41.4*	*D*	*37.8*	*D*
	Northbound Thru	*26.1*	*C*	*26.4*	*C*
	Northbound Right	*26.1*	*C*	*26.4*	*C*
	Southbound Left	*36.9*	*D*	*37.2*	*D*
	Southbound Thru	*29.9*	*C*	*29.1*	*C*
	Southbound Right	*29.9*	*C*	*29.1*	*C*
	Eastbound Left	*15.8*	*B*	*3.8*	*A*
	Eastbound Thru	*32.4*	*C*	*21.8*	*C*
	Eastbound Right	*32.4*	*C*	*21.8*	*C*
	Westbound Left	*20.8*	*C*	*4.0*	*A*
	Westbound Thru	*21.0*	*C*	*33.6*	*C*
	Westbound Right	*21.0*	*C*	*33.6*	*C*
17	**Custer Ave and Sanders St**	**26.0**	**C**	**23.9**	**C**
	Northbound Left	*37.9*	*D*	*29.6*	*C*
	Northbound Thru	*32.9*	*C*	*21.4*	*C*
	Northbound Right	*24.8*	*C*	*12.0*	*B*
	Southbound Left	*40.5*	*D*	*126.5*	*F*
	Southbound Thru	*33.3*	*C*	*21.7*	*C*
	Southbound Right	*25.2*	*C*	*14.0*	*B*
	Eastbound Left	*12.6*	*B*	*2.8*	*A*
	Eastbound Thru	*27.1*	*C*	*17.0*	*B*
	Eastbound Right	*18.2*	*B*	*9.4*	*A*
	Westbound Left	*16.9*	*B*	*2.6*	*A*
	Westbound Thru	*16.9*	*B*	*8.7*	*A*
	Westbound Right	*17.7*	*B*	*9.0*	*A*
19	**Gretchell and Lyndale**	**12.3**	**B**	**11.1**	**B**
	Northbound Left	*38.7*	*D*	*17.4*	*B*
	Northbound Thru	*38.7*	*D*	*17.4*	*B*
	Northbound Right	*37.1*	*D*	*16.9*	*B*
	Southbound Left	*39.7*	*D*	*22.4*	*C*
	Southbound Thru	*39.7*	*D*	*22.4*	*C*
	Southbound Right	*39.7*	*D*	*22.4*	*C*
	Eastbound Left	*20.6*	*C*	*18.3*	*B*
	Eastbound Thru	*9.5*	*A*	*8.2*	*A*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Right	*9.4*	*A*	*8.2*	*A*
	Westbound Left	*29.0*	*C*	*15.5*	*B*
	Westbound Thru	*9.8*	*A*	*10.0*	*B*
	Westbound Right	*9.9*	*A*	*9.4*	*A*
27	**Harris St and Cedar St**	**23.3**	**C**	**25.5**	**C**
	Northbound Left	*40.0*	*D*	*130.3*	*F*
	Northbound Thru	*40.0*	*D*	*130.3*	*F*
	Northbound Right	*40.0*	*D*	*103.3*	*F*
	Southbound Left	*37.7*	*D*	*20.7*	*C*
	Southbound Thru	*37.7*	*D*	*20.7*	*C*
	Southbound Right	*48.6*	*D*	*5.3*	*A*
	Eastbound Left	*16.4*	*B*	*6.1*	*A*
	Eastbound Thru	*10.5*	*B*	*8.1*	*A*
	Eastbound Right	*10.2*	*B*	*8.1*	*A*
	Westbound Left	*21.2*	*C*	*9.7*	*A*
	Westbound Thru	*25.7*	*C*	*12.7*	*B*
	Westbound Right	*22.3*	*C*	*12.4*	*B*
31	**Highway 12 and Lane/Route 518**	**46.3**	**D**	**21.8**	**C**
	Northbound Left	*21.9*	*C*	*33.1*	*C*
	Northbound Thru	*21.9*	*C*	*33.1*	*C*
	Northbound Right	*21.9*	*C*	*33.1*	*C*
	Southbound Left	*22.0*	*C*	*50.7*	*D*
	Southbound Thru	*22.0*	*C*	*50.7*	*D*
	Southbound Right	*118.7*	*F*	*23.3*	*C*
	Eastbound Left	*47.5*	*D*	*27.5*	*C*
	Eastbound Thru	*8.9*	*A*	*15.5*	*B*
	Eastbound Right	*7.5*	*A*	*7.9*	*A*
	Westbound Left	*14.6*	*B*	*26.6*	*C*
	Westbound Thru	*22.0*	*C*	*10.1*	*B*
	Westbound Right	*7.6*	*A*	*7.9*	*A*
37	**Last Chance Gulch and 6th Ave**	**12.3**	**B**	**12.4**	**B**
	Northeastbound Right	*10.7*	*B*	*10.5*	*B*
	Southwestbound Left	*12.9*	*B*	*12.9*	*B*
	Southwestbound Thru	*12.9*	*B*	*12.9*	*B*
	Sothwestbound Right	*11.4*	*B*	*11.6*	*B*
	Northwestbound Left	*12.3*	*B*	*13.0*	*B*
	Northwestboiund Thru	*12.3*	*B*	*13.0*	*B*
	Southeastbound Thru	*12.4*	*B*	*11.8*	*B*
	Southeastbound Right	*12.4*	*B*	*11.8*	*B*
38	**Lawrence and Last Chance Gulch**	**12.0**	**B**	**12.0**	**B**
	Southbound Left	*11.4*	*B*	*11.6*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Thru	*11.4*	*B*	*11.7*	*B*
	Southbound Right	*11.5*	*B*	*12.0*	*B*
	Eastbound Thru	*12.6*	*B*	*12.4*	*B*
	Eastbound Right	*12.6*	*B*	*12.4*	*B*
	Westbound Left	*12.4*	*B*	*11.9*	*B*
	Westbound Thru	*12.4*	*B*	*11.9*	*B*
39	**Lawrence St and Park Ave**	**16.2**	**B**	**18.0**	**B**
	Northbound Left	*22.1*	*C*	*20.3*	*C*
	Northbound Thru	*12.4*	*B*	*18.7*	*B*
	Northbound Right	*12.4*	*B*	*18.7*	*B*
	Southbound Left	*17.1*	*B*	*28.8*	*C*
	Southbound Thru	*14.7*	*B*	*13.4*	*B*
	Southbound Right	*14.7*	*B*	*13.4*	*B*
	Eastbound Left	*19.9*	*B*	*17.1*	*B*
	Eastbound Thru	*20.9*	*C*	*17.0*	*B*
	Eastbound Right	*20.9*	*C*	*17.0*	*B*
	Westbound Left	*27.9*	*C*	*26.9*	*C*
	Westbound Thru	*27.9*	*C*	*26.9*	*C*
	Westbound Right	*27.9*	*C*	*26.9*	*C*
47	**Montana Ave and Lodestar Rd**	**16.5**	**B**	**12.9**	**B**
	Northbound Left	*26.6*	*C*	*11.4*	*B*
	Northbound Thru	*8.8*	*A*	*15.2*	*B*
	Northbound Right	*7.3*	*A*	*5.9*	*A*
	Southbound Left	*11.4*	*B*	*26.5*	*C*
	Southbound Thru	*17.6*	*B*	*7.6*	*A*
	Southbound Right	*17.6*	*B*	*7.6*	*A*
	Eastbound Left	*21.3*	*C*	*22.5*	*C*
	Eastbound Thru	*21.3*	*C*	*22.5*	*C*
	Eastbound Right	*21.3*	*C*	*22.5*	*C*
	Westbound Left	*25.3*	*C*	*24.2*	*C*
	Westbound Thru	*25.3*	*C*	*24.2*	*C*
	Westbound Right	*25.3*	*C*	*24.2*	*C*
49	**Montana Ave and Partridge Pl**	**17.9**	**B**	**13.1**	**B**
	Northbound Left	*39.1*	*D*	*16.3*	*B*
	Northbound Thru	*6.4*	*A*	*12.4*	*B*
	Northbound Right	*5.1*	*A*	*4.6*	*A*
	Southbound Left	*8.9*	*A*	*24.7*	*C*
	Southbound Thru	*17.2*	*B*	*7.2*	*A*
	Southbound Right	*5.2*	*A*	*4.4*	*A*
	Eastbound Left	*38.5*	*D*	*24.8*	*C*
	Eastbound Thru	*36.0*	*D*	*16.8*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Right	*40.9*	*D*	*18.7*	*B*
	Westbound Left	*37.9*	*D*	*21.8*	*C*
	Westbound Thru	*35.8*	*D*	*17.8*	*B*
	Westbound Right	*35.8*	*D*	*17.8*	*B*
51	**Montana Ave/Helena Ave/ Lyndale**	**25.8**	**C**	**23.7**	**C**
	Northbound Left	*28.0*	*C*	*29.4*	*C*
	Northbound Thru	*5.6*	*A*	*6.0*	*A*
	Northbound Right	*5.3*	*A*	*5.9*	*A*
	Southbound Left	*26.3*	*C*	*27.5*	*C*
	Southbound Thru	*26.4*	*C*	*27.6*	*C*
	Southbound Right	*26.8*	*C*	*28.0*	*C*
	Southbound Right2	*26.8*	*C*	*28.0*	*C*
	Eastbound Right	*30.8*	*C*	*29.6*	*C*
	Eastbound Right2	*30.8*	*C*	*29.6*	*C*
	Northeastbound Left	*41.0*	*D*	*29.5*	*C*
	Northeastbound Thru	*32.8*	*C*	*28.2*	*C*
	Northeastbound Right	*32.8*	*C*	*28.2*	*C*
	Southwestbound Left	*21.8*	*C*	*27.2*	*C*
	Southwestbound Thru	*31.8*	*C*	*27.2*	*C*
	Southwestbound Right	*31.8*	*C*	*27.2*	*C*
	Southwestbound Right2	*31.8*	*C*	*27.3*	*C*
56	**Park Ave and 6th Ave**	**14.4**	**B**	**18.2**	**B**
	Northbound Thru	*17.0*	*B*	*25.2*	*C*
	Northbound Right	*13.5*	*B*	*15.6*	*B*
	Southbound Left	*10.4*	*B*	*12.0*	*B*
	Southbound Thru	*13.3*	*B*	*11.8*	*B*
	Northwestbound Left	*16.2*	*B*	*17.0*	*B*
	Northwestbound Right	*16.2*	*B*	*17.0*	*B*
57	**Park Ave/Neil Ave/Benton**	**22.6**	**C**	**24.3**	**C**
	Northbound Left	*18.6*	*B*	*20.8*	*C*
	Northbound Thru	*25.2*	*C*	*23.8*	*C*
	Northbound Right	*25.2*	*C*	*23.8*	*C*
	Southbound Left	*25.7*	*C*	*23.9*	*C*
	Southbound Thru	*25.7*	*C*	*23.9*	*C*
	Southbound Right	*25.7*	*C*	*23.9*	*C*
	Eastbound Left	*21.9*	*C*	*22.7*	*C*
	Eastbound Thru	*22.0*	*C*	*21.9*	*C*
	Eastbound Right	*11.7*	*B*	*24.7*	*C*
	Westbound Left	*26.8*	*C*	*25.1*	*C*
	Westbound Thru	*26.9*	*C*	*25.8*	*C*
	Westbound Right	*27.2*	*C*	*27.1*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
58	**Prospect Ave and 18th St**	**25.5**	**C**	**34.9**	**C**
	Northbound Left	*38.9*	*D*	*152.0*	*F*
	Northbound Thru	*25.7*	*C*	*20.6*	*C*
	Northbound Right	*25.6*	*C*	*20.6*	*C*
	Southbound Left	*28.8*	*C*	*29.1*	*C*
	Southbound Thru	*27.6*	*C*	*24.4*	*C*
	Southbound Right	*276*	*C*	*24.4*	*C*
	Eastbound Left	*22.3*	*C*	*13.3*	*B*
	Eastbound Thru	*26.5*	*C*	*25.6*	*C*
	Eastbound Right	*22.9*	*C*	*20.7*	*C*
	Westbound Left	*18.5*	*B*	*18.0*	*B*
	Westbound Thru	*24.6*	*C*	*18.3*	*B*
	Westbound Right	*22.9*	*C*	*18.3*	*B*
59	**Prospect Ave and Fee St**	**19.2**	**B**	**23.5**	**C**
	Northbound Left	*37.0*	*D*	*36.1*	*D*
	Northbound Thru	*36.8*	*D*	*36.0*	*D*
	Southbound Thru	*38.2*	*D*	*36.4*	*D*
	Southbound Right	*38.2*	*D*	*36.4*	*D*
	Westbound Left	*16.8*	*B*	*19.1*	*B*
	Westbound Thru	*16.5*	*B*	*19.2*	*B*
	Westbound Right	*16.6*	*B*	*19.2*	*B*
60	**Prospect Ave and Roberts St**	**14.6**	**B**	**10.7**	**B**
	Northbound Left	*30.3*	*C*	*23.1*	*C*
	Northbound Thru	*24.4*	*C*	*15.7*	*B*
	Southbound Thru	*28.0*	*C*	*16.6*	*B*
	Southbound Right	*27.3*	*C*	*15.8*	*B*
	Westbound Left	*12.3*	*B*	*7.8*	*A*
	Westbound Thru	*12.4*	*B*	*7.8*	*A*
	Westbound Right	*12.5*	*B*	*7.8*	*A*
63	**Rodney St and Helena Ave**	**12.6**	**B**	**11.6**	**B**
	Northbound Left	*23.3*	*C*	*23.9*	*C*
	Northbound Thru	*23.3*	*C*	*23.9*	*C*
	Northbound Right	*23.3*	*C*	*23.9*	*C*
	Southbound Left	*20.4*	*C*	*21.2*	*C*
	Southbound Thru	*20.4*	*C*	*21.2*	*C*
	Southbound Right	*20.4*	*C*	*21.2*	*C*
	Northeastbound Left	*6.7*	*A*	*7.6*	*A*
	Northeastbound Thru	*6.7*	*A*	*7.6*	*A*
	Northeastbound Right	*6.7*	*A*	*7.6*	*A*
	Southwestbound Left	*8.8*	*A*	*7.6*	*A*
	Southwestbound Thru	*8.8*	*A*	*7.6*	*A*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southwestbound Right	*8.8*	*A*	*7.6*	*A*
69	**Washington St and Skyway Dr**	**11.7**	**B**	**13.8**	**B**
	Northbound Left	*15.9*	*B*	*15.8*	*B*
	Northbound Thru	*9.6*	*A*	*13.6*	*B*
	Northbound Right	*9.3*	*A*	*11.4*	*B*
	Southbound Left	*13.9*	*B*	*23.9*	*C*
	Southbound Thru	*10.2*	*B*	*9.0*	*A*
	Southbound Right	*10.0*	*A*	*8.9*	*A*
	Eastbound Left	*22.4*	*C*	*17.7*	*B*
	Eastbound Thru	*20.4*	*C*	*11.8*	*B*
	Eastbound Right	*20.4*	*C*	*11.8*	*B*
	Westbound Left	*26.5*	*C*	*21.5*	*C*
	Westbound Thru	*20.4*	*C*	*12.1*	*B*
	Westbound Right	*20.4*	*C*	*12.1*	*B*
70	**Williams St and Highway 12**	**12.4**	**B**	**12.8**	**B**
	Northeastbound Left	*17.6*	*B*	*11.3*	*B*
	Northeastbound Thru	*8.5*	*A*	*8.4*	*A*
	Northeastbound Right	*8.4*	*A*	*8.4*	*A*
	Southeastbound Left	*0.0*	*A*	*10.5*	*B*
	Southwestbound Thru	*8.8*	*A*	*8.8*	*A*
	Southwestbound Right	*11.6*	*B*	*8.8*	*A*
	Northwestbound Left	*22.1*	*C*	*15.0*	*B*
	Northwestbound Thru	*22.1*	*C*	*15.0*	*B*
	Northwestbound Right	*22.1*	*C*	*15.0*	*B*
	Southeastbound Left	*25.7*	*C*	*21.5*	*C*
	Southeastbound Thru	*25.7*	*C*	*21.5*	*C*
	Southeastbound Right	*25.7*	*C*	*21.5*	*C*
Intersections Counted by MDT					
M.1	**11th Ave and Montana Ave**	**11.6**	**B**	**14.4**	**B**
	Northbound Thru	*15.8*	*B*	*18.1*	*B*
	Northbound Right	*16.0*	*B*	*18.7*	*B*
	Southbound Left	*10.0*	*A*	*17.3*	*B*
	Southbound Thru	*8.3*	*A*	*6.2*	*A*
	Southbound Right	*6.6*	*A*	*5.2*	*A*
	Eastbound Left	*16.4*	*B*	*18.0*	*B*
	Eastbound Thru	*16.4*	*B*	*18.1*	*B*
	Eastbound Right	*16.4*	*B*	*18.2*	*B*
M.2	***Cedar St and Montana Ave***	**19.3**	**B**	**22.3**	**C**
	Northbound Left	*14.1*	*B*	*13.4*	*B*
	Northbound Thru	*22.8*	*C*	*26.5*	*C*
	Northbound Right	*13.5*	*B*	*13.2*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Left	*15.5*	*B*	*18.1*	*B*
	Southbound Thru	*19.9*	*B*	*19.0*	*B*
	Southbound Right	*8.7*	*A*	*7.3*	*A*
	Eastbound Left	*31.3*	*C*	*38.2*	*D*
	Eastbound Thru	*15.6*	*B*	*20.0*	*C*
	Eastbound Right	*15.6*	*B*	*20.0*	*C*
	Westbound Left	*10.0*	*B*	*9.8*	*A*
	Westbound Thru	*26.8*	*C*	*25.4*	*C*
	Westbound Right	*26.8*	*C*	*25.4*	*C*
M.3	**Custer Ave and Montana Ave**	**27.1**	**C**	**26.4**	**C**
	Northbound Left	*19.0*	*B*	*22.3*	*C*
	Northbound Thru	*24.2*	*C*	*34.0*	*C*
	Northbound Right	*14.6*	*B*	*15.7*	*B*
	Southbound Left	*15.2*	*B*	*18.6*	*B*
	Southbound Thru	*34.8*	*C*	*26.6*	*C*
	Southbound Right	*18.6*	*B*	*20.2*	*C*
	Eastbound Left	*13.6*	*B*	*11.5*	*B*
	Eastbound Thru	*21.2*	*C*	*21.1*	*C*
	Eastbound Right	*19.8*	*B*	*20.6*	*C*
	Westbound Left	*47.6*	*D*	*29.5*	*C*
	Westbound Thru	*37.3*	*D*	*26.0*	*C*
	Westbound Right	*18.6*	*B*	*27.1*	*C*
M.4	**Henderson St and Euclid Ave**	**16.0**	**B**	**16.5**	**B**
	Southbound Left	*17.8*	*B*	*19.8*	*B*
	Southbound Thru	*19.3*	*B*	*22.7*	*C*
	Southbound Right	*19.3*	*B*	*22.7*	*C*
	Northeastbound Left	*35.4*	*D*	*35.3*	*D*
	Northeastbound Thru	*25.2*	*C*	*26.5*	*C*
	Northeastbound Right	*25.2*	*C*	*26.5*	*C*
	Northwestbound Left	*27.3*	*C*	*26.0*	*C*
	Northwestbound Thru	*16.8*	*B*	*17.7*	*B*
	Northwestbound Right	*14.4*	*B*	*15.3*	*B*
	Southeastbound Left	*11.5*	*B*	*13.5*	*B*
	Southeastbound Thru	*12.7*	*B*	*10.9*	*B*
	Southeastbound Right	*11.8*	*B*	*9.7*	*A*
M.6	**Highway 12 and Highway 282**	**23.2**	**C**	**21.5**	**C**
	Northbound Left	*44.2*	*D*	*29.3*	*C*
	Northbound Thru	*44.2*	*D*	*29.3*	*C*
	Northbound Right	*47.0*	*D*	*37.5*	*D*
	Southbound Left	*41.1*	*D*	*38.6*	*D*
	Southbound Thru	*41.1*	*D*	*38.6*	*D*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Right	*48.1*	*D*	*38.4*	*D*
	Eastbound Left	*40.9*	*D*	*16.4*	*B*
	Eastbound Thru	*13.9*	*B*	*15.1*	*B*
	Eastbound Right	*13.8*	*B*	*15.0*	*B*
	Westbound Left	*21.8*	*C*	*18.1*	*B*
	Westbound Thru	*23.0*	*C*	*14.2*	*B*
	Westbound Right	*18.8*	*C*	*14.2*	*B*
M.12	**Josyln St and Euclid Ave**	**11.9**	**B**	**11.7**	**B**
	Northeastbound Left	*14.6*	*B*	*19.7*	*B*
	Northeastbound Thru	*14.6*	*B*	*19.7*	*B*
	Northeastbound Right	*14.6*	*B*	*19.7*	*B*
	Southwestbound Left	*21.4*	*C*	*24.7*	*C*
	Southwestbound Thru	*21.4*	*C*	*24.7*	*C*
	Southwestbound Right	*21.4*	*C*	*24.7*	*C*
	Northwestbound Left	*13.2*	*B*	*14.2*	*B*
	Northwestbound Thru	*9.5*	*A*	*9.1*	*A*
	Northwestbound Right	*8.4*	*A*	*9.0*	*A*
	Southeastbound Left	*13.7*	*B*	*12.8*	*B*
	Southeastbound Thru	*9.5*	*A*	*9.7*	*A*
	Southeastbound Right	*9.4*	*A*	*9.6*	*A*
M.13	**Last Chance Gulch and Lyndale Ave**	**23.4**	**C**	**26.1**	**C**
	Eastbound Left	*31.3*	*C*	*33.4*	*C*
	Eastbound Thru	*13.4*	*B*	*12.7*	*B*
	Eastbound Right	*13.4*	*B*	*12.7*	*B*
	Westbound Left	*8.7*	*A*	*8.3*	*A*
	Westbound Thru	*24.1*	*C*	*26.9*	*C*
	Westbound Right	*23.1*	*C*	*26.1*	*C*
	Northeastbound Left	*14.2*	*B*	*21.2*	*C*
	Northeastbound Thru	*18.9*	*B*	*34.7*	*C*
	Northeastbound Right	*18.4*	*B*	*32.2*	*C*
	Southwestbound Left	*13.7*	*B*	*23.1*	*C*
	Southwestbound Thru	*34.7*	*C*	*30.8*	*C*
	Southwestbound Right	*20.6*	*C*	*19.0*	*B*
M.19	**Montana Ave and Billings Ave**	**16.3**	**B**	**18.2**	**B**
	Northbound Left	*20.9*	*C*	*22.6*	*C*
	Northbound Thru	*17.9*	*B*	*20.8*	*C*
	Northbound Right	*17.8*	*B*	*20.7*	*C*
	Southbound Left	*17.8*	*B*	*13.2*	*B*
	Southbound Thru	*12.9*	*B*	*12.8*	*B*
	Southbound Right	*12.8*	*B*	*12.6*	*B*
	Eastbound Left	*33.0*	*C*	*31.4*	*C*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Thru	*33.0*	*C*	*31.4*	*C*
	Eastbound Right	*33.0*	*C*	*31.4*	*C*
	Westbound Left	*33.4*	*C*	*32.3*	*C*
	Westbound Thru	*33.4*	*C*	*32.3*	*C*
	Westbound Right	*33.4*	*C*	*32.3*	*C*
M.20	**Montana Ave and Tara Court**	**11.5**	**B**	**11.2**	**B**
	Northbound Left	*16.8*	*B*	*15.2*	*B*
	Northbound Thru	*8.7*	*A*	*8.9*	*A*
	Northbound Right	*8.6*	*A*	*8.3*	*A*
	Southbound Left	*12.0*	*B*	*20.7*	*C*
	Southbound Thru	*10.5*	*B*	*7.5*	*A*
	Southbound Right	*10.2*	*B*	*7.2*	*A*
	Eastbound Left	*24.6*	*C*	*25.7*	*C*
	Eastbound Thru	*24.6*	*C*	*25.7*	*C*
	Eastbound Right	*24.6*	*C*	*25.7*	*C*
	Westbound Left	*23.1*	*C*	*17.8*	*B*
	Westbound Thru	*23.1*	*C*	*17.8*	*B*
	Westbound Right	*22.3*	*C*	*18.1*	*B*
M.21	**Prospect Ave and Lamborn St**	**11.9**	**B**	**12.4**	**B**
	Northbound Left	*25.3*	*C*	*26.8*	*C*
	Northbound Thru	*20.4*	*C*	*22.5*	*C*
	Southbound Thru	*21.4*	*C*	*22.7*	*C*
	Southbound Right	*20.7*	*C*	*22.1*	*C*
	Westbound Left	*10.9*	*B*	*10.5*	*B*
	Westbound Thru	*11.0*	*B*	*10.5*	*B*
	Westbound Right	*11.0*	*B*	*10.5*	*B*
M.22	**Prospect Ave and Montana Ave**	**20.5**	**C**	**23.3**	**C**
	Northbound Thru	*17.7*	*B*	*19.9*	*B*
	Southbound Thru	*21.0*	*C*	*24.9*	*C*
	Southbound Right	*21.0*	*C*	*24.9*	*C*
	Eastbound Right	*89.0*	*F*	*98.6*	*F*
	Westbound Left	*16.0*	*B*	*12.6*	*B*
	Westbound Right	*25.5*	*C*	*32.2*	*C*

Table B.4: Projected Unsignalized Intersection LOS (Detail)

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
4	**Applegate Dr and John G Mine Rd**	**7.8**	**A**	**8.0**	**A**
	Northbound Left/Thru/Right	*7.9*	*A*	*7.9*	*A*
	Southbound Left/Thru/Right	*7.4*	*A*	*7.8*	*A*
	Eastbound Left/Thru/Right	*7.8*	*A*	*8.1*	*A*
	Westbound Left/Thru/Right	*7.8*	*A*	*8.3*	*A*
5	**Applegate Dr and Norris Rd**	**10.4**	**B**	**10.5**	**B**
	Northbound Left/Thru/Right	*3.7*	*A*	*5.2*	*A*
	Southbound Left/Thru/Right	*0.0*	*A*	*0.0*	*A*
	Eastbound Left/Thru/Right	*9.3*	*A*	*9.2*	*A*
	Westbound Left/Thru/Right	*8.5*	*A*	*9.6*	*A*
6	**Boulder Ave and Sanders St**	**13.2**	**B**	**11.1**	**B**
	Northbound Left/Thru/Right	*11.9*	*B*	*10.5*	*B*
	Southbound Left/Thru/Right	*12.1*	*B*	*10.5*	*B*
	Eastbound Left/Thru/Right	*0.5*	*A*	*0.9*	*A*
	Westbound Left/Thru/Right	*0.1*	*A*	*0.4*	*A*
7	**Broadway and Colonial**	**478.2**	**F**	**74.9**	**F**
	Eastbound Left/Thru/Right	*186.1*	*F*	*27.4*	*D*
	Westbound Left/Thru/Right	*123.0*	*F*	*45.8*	*E*
8	**Broadway and Park**	**12.6**	**B**	**20.8**	**C**
	Northeastbound Thru/Right	*10.3*	*B*	*19.5*	*C*
	Southeastbound Left/Thru	*13.7*	*B*	*21.3*	*C*
	Northwestbound Left/Right	*12.2*	*B*	*21.2*	*C*
9	**California and Colonial**	**27.8**	**D**	**56.2**	**F**
	Northbound Left/Right	*26.0*	*D*	*55.2*	*F*
11	**Country Club and Joslyn**	**186.0**	**F**	**225.2**	**F**
	Westbound Left/Thru/Right	*29.9*	*D*	*41.4*	*E*
	Southwestbound Left/Thru/Right	*179.9*	*F*	*211.8*	*F*
12	**Country Club and Williams**	**38.2**	**E**	**18.3**	**C**
	Northbound Thru/Right	*26.6*	*D*	*15.2*	*C*
18	**Custer Ave and Villard**	**333.6**	**F**	**654.3**	**F**
	Northbound Left/Right	*295.3*	*F*	*536.6*	*F*
20	**Granite and Highway 12**	**72.9**	**F**	**190.6**	**F**
	Northbound Left/Thru/Right	*41.7*	*E*	*62.4*	*F*
	Southbound Left/Thru/Right	*72.9*	*F*	*175.9*	*F*
21	**Green Meadow Dr and Brookfield**	**20.3**	**C**	**16.0**	**C**
	Westbound Left/Right	*20.3*	*C*	*14.2*	*B*
22	**Green Meadow Dr and Forestvale**	**23.8**	**C**	**17.3**	**C**
	Westbound Left/Right	*20.5*	*C*	*14.0*	*B*
23	**Green Meadow Dr and Franklin Mine Rd**	**25.0**	**C**	**19.7**	**C**

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Eastbound Left/Right	*21.6*	*C*	*16.5*	*C*
24	**Green Meadow Dr and Mill Rd**	**40.4**	**E**	**22.1**	**C**
	Westbound Left/Right	*39.2*	*E*	*19.6*	*C*
25	**Green Meadow Dr and Sierra Rd**	**56.6**	**F**	**14.4**	**B**
	Northbound Thru/Right	*10.6*	*B*	*17.3*	*C*
	Southbound Left/Thru	*79.7*	*F*	*11.3*	*B*
	Westbound Left/Right	*12.7*	*B*	*10.5*	*B*
26	**Green Meadow Dr and Norris Rd**	**29.1**	**D**	**16.4**	**C**
	Eastbound Left/Thru/Right	*15.3*	*C*	*9.3*	*A*
	Westbound Left/Thru/Right	*29.1*	*D*	*16.4*	*C*
28	**Head Ln and Country Club Ave**	**32.0**	**D**	**21.0**	**C**
	Southbound Left/Right	*28.1*	*D*	*16.2*	*C*
29	**Henderson St and Custer Ave**	**41.5**	**E**	**58.5**	**F**
	Southbound Left/Thru/Right	*22.8*	*C*	*41.3*	*E*
	Eastbound Left/Thru/Right	*20.1*	*C*	*33.9*	*D*
30	**Highway 12 and Lake Helena Dr**	**110.1**	**F**	**102.9**	**F**
	Southeastbound Left/Right	*100.6*	*F*	*62.3*	*F*
32	**Highway 12 and Valley Dr**	**480.6**	**F**	**181.2**	**F**
	Southbound Left/Right	*395.7*	*F*	*87.0*	*F*
33	**Lake Helena Dr and Deal Ln**	**9.5**	**A**	**10.3**	**B**
	Westbound Left/Right	*9.25*	*A*	*9.5*	*A*
34	**Lake Helena Dr and Lewis St**	**186.3**	**F**	**22.4**	**C**
	Northbound Left/Thru/Right	*13.3*	*B*	*18.6*	*C*
	Southbound Left/Thru/Right	*181.9*	*F*	*14.6*	*B*
35	**Lake Helena Dr and Old Highway 12**	**324.1**	**F**	**165.0**	**F**
	Southbound Left/Right	*321.4*	*F*	*156.1*	*F*
36	**Last Chance Gulch and 14th St**	**36.7**	**E**	**163.6**	**F**
	Northwestbound Left/Thru/Right	*21.7*	*C*	*23.2*	*C*
	Southeastbound Left/Thru/Right	*32.3*	*D*	*151.6*	*F*
40	**Lincoln Rd and Glass Dr**	**17.8**	**C**	**14.5**	**B**
	Northbound Left/Thru/Right	*13.2*	*B*	*13.8*	*B*
	Southbound Left/Thru/Right	*16.9*	*C*	*11.1*	*B*
41	**McHugh and Mill Rd**	**18.3**	**C**	**22.7**	**C**
	Eastbound Left/Thru/Right	*14.4*	*B*	*17.7*	*C*
	Westbound Left/Thru/Right	*16.2*	*C*	*18.3*	*C*
42	**McHugh and Road Runner**	**101.3**	**F**	**171.0**	**F**
	Eastbound Left/Thru/Right	*25.3*	*D*	*39.1*	*E*
	Westbound Left/Thru/Right	*99.4*	*F*	*165.2*	*F*
43	**McHugh and Sierra Rd**	**28.9**	**D**	**37.2**	**E**
	Northbound Left/Right	*16.6*	*C*	*29.3*	*D*
44	**Montana and 6th Ave**	**18.3**	**C**	**21.7**	**C**

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Northbound Left/Thru/Right	*17.5*	*C*	*25.9*	*D*
	Southbound Left/Thru/Right	*20.9*	*C*	*20.5*	*C*
	Eastbound Left/Thru/Right	*14.0*	*B*	*14.4*	*B*
	Westbound Left/Thru/Right	*12.2*	*B*	*18.5*	*C*
45	**Montana Ave and Broadway St**	**34.5**	**D**	**42.7**	**E**
	Northbound Left/Thru/Right	*22.1*	*C*	*17.2*	*C*
	Southbound Left/Thru/Right	*18.8*	*C*	*27.9*	*D*
	Eastbound Left/Thru/Right	*75.0*	*F*	*94.1*	*F*
	Westbound Left/Thru/Right	*19.9*	*C*	*25.6*	*D*
46	**Montana Ave and Forestvale Rd**	**20**	**C**	**37.3**	**E**
	Eastbound Left/Thru/Right	*15.0*	*C*	*21.0*	*C*
	Westbound Left/Thru/Right	*17.1*	*C*	*28.1*	*D*
48	**Montana Ave and Mill Rd**	**23.6**	**C**	**89.0**	**F**
	Eastbound Left/Thru/Right	*15.7*	*C*	*79.9*	*F*
	Westbound Left/Thru/Right	*23.1*	*C*	*35.2*	*E*
50	**Montana Ave and Sierra Rd**	**66.0**	**F**	**151.7**	**F**
	Northbound Left/Thru/Right	*24.2*	*C*	*307.0*	*F*
	Southbound Left/Thru/Right	*103.4*	*F*	*46.4*	*E*
	Eastbound Left/Thru/Right	*22.4*	*C*	*32.7*	*D*
	Westbound Left/Thru/Right	*56.7*	*F*	*40.3*	*E*
52	**Montana Ave and Prairie Rd**	**9.5**	**A**	**11.6**	**B**
	Eastbound Left/Right	*9.1*	*A*	*9.1*	*A*
53	**Montana Ave and Valley Forge Rd**	**26.7**	**D**	**42.8**	**E**
	Westbound Left/Right	*24.3*	*C*	*40.7*	*E*
54	**Montana Ave and Valley View Rd**	**14.4**	**B**	**14.7**	**B**
	Eastbound Left/Right	*12.5*	*B*	*9.7*	*A*
55	**Montana Ave and Buffalo Rd**	**33.3**	**D**	**54.2**	**F**
	Eastbound Left/Thru/Right	*20.4*	*C*	*32.2*	*D*
	Westbound Left/Thru/Right	*28.5*	*D*	*41.7*	*E*
61	**Road Runner Dr and Dredge Dr**	**22.9**	**C**	**231.4**	**F**
	Eastbound Left/Thru/Right	*14.0*	*B*	*37.7*	*E*
	Westbound Left/Thru/Right	*20.1*	*C*	*218.7*	*F*
62	**Broadway St and Rodney St**	**19.4**	**C**	**23.8**	**C**
	Northbound Left/Thru/Right	*12.2*	*B*	*13.8*	*B*
	Southbound Left/Thru/Right	*12.5*	*B*	*17.1*	*C*
	Eastbound Left/Thru/Right	*26.3*	*D*	*30.7*	*D*
	Westbound Left/Thru/Right	*15.6*	*C*	*24.0*	*C*
64	**Runkle Parkway and Highway 282**	**36.8**	**E**	**26.8**	**D**
	Eastbound Left/Right	*33.5*	*D*	*14.0*	*B*
65	**Saddle Dr and Colonial**	**144.5**	**F**	**173.6**	**F**
	Northbound Left/Thru/Right	*7.7*	*A*	*259.0*	*F*

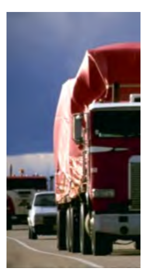
ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Left/Thru/Right	*92.3*	*F*	*18.2*	*C*
	Eastbound Left/Thru/Right	*9.9*	*A*	*230.7*	*F*
	Westbound Left/Thru/Right	*276.8*	*F*	*10.4*	*B*
66	**Sanders St and Cedar St**	**(a)**	**F**	**(a)**	**F**
	Northbound Left/Thru/Right	*831.5*	*F*	*(a)*	*F*
	Southbound Left/Thru/Right	*(a)*	*F*	*(a)*	*F*
67	**Villard and Last Chance Gulch**	**(a)**	**F**	**(a)**	**F**
	Northbound Left/Thru/Right	*(a)*	*F*	*(a)*	*F*
	Southbound Left/Thru/Right	*1,186.3*	*F*	*(a)*	*F*
68	**Washington and Cromwell Dixon**	**572.2**	**F**	**(a)**	**F**
	Eastbound Left/Thru/Right	*383.3*	*F*	*6,585.9*	*F*
	Westbound Left/Thru/Right	*30.8*	*D*	*3,408.0*	*F*
71	**York Rd and Lake Helena Dr**	**19.0**	**C**	**16.9**	**C**
	Northbound Left/Thru/Right	*14.7*	*B*	*14.6*	*B*
	Southbound Left/Thru/Right	*13.5*	*B*	*12.0*	*B*
72	**York Rd and Valley Dr**	**17.1**	**C**	**14.6**	**B**
	Northbound Left/Thru/Right	*15.8*	*C*	*13.2*	*B*
	Southbound Left/Thru/Right	*11.7*	*B*	*10.2*	*B*
73	**York Rd and Helberg Dr/Herrin Rd**	**26.3**	**D**	**16.4**	**C**
	Southbound Left/Thru/Right	*13.1*	*B*	*10.9*	*B*
	Northwestbound Left/Thru/Right	*26.3*	*D*	*15.6*	*C*
74	**York Rd and Tizer Rd**	**38.6**	**E**	**16.0**	**C**
	Northbound Left/Right	*34.3*	*D*	*14.8*	*B*
75	**York Rd and Wylie Dr**	**20.5**	**C**	**15.6**	**C**
	Northbound Left/Thru/Right	*16.1*	*C*	*11.3*	*B*
	Southbound Left/Thru/Right	*19.5*	*C*	*14.9*	*B*
Intersections Counted by MDT					
M.5	**Highway 12 and Elaine St**	**24.2**	**C**	**1,553.2**	**F**
	Northbound Left/Right	*18.4*	*C*	*1,465.2*	*F*
M.7	**Highway 12 and Lola St**	**69.4**	**F**	**2,449.9**	**F**
	Northbound Left/Right	*57.2*	*F*	*2,425.9*	*F*
M.8	**Highway 12 and N Side Frontage Rd Access**	**4,930.1**	**F**	**102.5**	**F**
	Southbound Left/Right	*2,685.1*	*F*	*61.2*	*F*
M.9	**Highway 12 and Nicole St**	**1,019.5**	**F**	**119.4**	**F**
	Southbound Left/Right	*331.3*	*F*	*38.4*	*E*
M.10	**Highway 12 and S Side Frontage Rd Access**	**101.4**	**F**	**54.8**	**F**
	Northbound Left/Right	*11.57*	*B*	*30.2*	*D*
M.11	**Highway 12 and Wylie Dr**	**810.7**	**F**	**1,444.8**	**F**
	Southwestbound Left/Right	*758.9*	*F*	*1,238.5*	*F*
M.14	**Lincoln Rd and Green Meadow Dr**	**17.0**	**C**	**14.5**	**B**
	Northbound Left/Thru/Right	*13.7*	*B*	*13.2*	*B*

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (Sec)	LOS	Delay (Sec)	LOS
	Southbound Left/Thru/Right	*16.8*	*C*	*13.4*	*B*
M.15	**Lincoln Rd and I-15 NB Ramps**	**18.7**	**C**	**343.7**	**F**
	Northbound Left/Thru/Right	*17.1*	*C*	*342.7*	*F*
M.16	**Lincoln Rd and I-15 SB Ramps**	**139.3**	**F**	**41.5**	**E**
	Southbound Left/Thru/Right	*28.6*	*D*	*22.99*	*C*
M.17	**Lincoln Rd and Montana Ave**	**144.7**	**F**	**121.8**	**F**
	Northbound Left/Thru/Right	*18.7*	*C*	*41.3*	*E*
	Southbound Left/Thru/Right	*234.8*	*F*	*34.4*	*D*
	Eastbound Left/Thru/Right	*131.2*	*F*	*32.2*	*D*
	Westbound Left/Thru/Right	*20.1*	*C*	*248.2*	*F*
M.18	**Lincoln Rd and Mountain Heritage Rd**	**9.8**	**A**	**10.0**	**B**
	Southbound Left/Right	*9.2*	*A*	*9.09*	*A*

(a) Delay exceeds software limits

Appendix C:
Priority Sidewalk Segments

Greater Helena Area Long Range Transportation Plan—2014 Update



PREPARED BY:
Robert Peccia & Associates
ALTA Planning + Design

APPENDIX C: PRIORITY SIDEWALK SEGMENTS

C.1 CITY OF HELENA

Table C.1: Priority Sidewalk Segments (City of Helena)

GIS OBJECT ID	Length (feet)	Road_Name	Road_Side	Block_Num
1	202.3	Euclid	North	1600
2	187.6	Broadway	North	2100
3	401.5	Stuart St	North	200
4	480.4	N Montana Ave	West	2300
5	104.1	Livingston Ave	South	1600
6	1268.1	Custer Ave	North	600
7	372.8	Sanders St	East	2100
8	98.6	Broadway	North	1600
9	95.9	Clooney Dr	West	3200
10	949.2	Green Meadow Dr	East	3100
11	411.4	Euclid	South	1500
12	172.5	Cooke St	East	2200
13	58.3	Hoback St	West	600
14	223.9	Madison Ave	East	1400
15	402.7	Euclid	North	1900
16	851.1	Custer Ave	North	800
17	209.6	Dearborn Ave	West	1000
18	400.5	Peosta Ave	North	1700
19	124.9	Cooke St	East	2100
20	428.1	6th Ave	North	2000
21	171.7	Euclid	North	600
22	203.1	Peosta Ave	North	1000
23	216.1	Russel Ln	North	400
24	101.3	Townsend Ave	South	1700
25	152.2	Lamborn St	West	1100
26	411.6	Euclid	South	600
27	406.5	Euclid	South	500
28	182.3	Billings Ave	South	1200
29	135.7	Euclid	North	1700
30	296.0	Prospect Ave	South	2000
31	626.9	Davis St	East	600
32	264.6	Cole Ave	South	1200
33	59.5	Choteau St	South	1400
34	100.9	Cherry Ave	North	900

35	622.3	Townsend Ave	North	1600
36	603.2	California St	East	300
37	77.5	Butte Ave	South	1500
38	1420.2	Hauser Blvd	South	2300
39	191.8	Peosta Ave	North	1400
40	404.5	Peosta Ave	North	1600
41	171.8	Peosta Ave	North	1000
42	811.2	Custer Ave	North	400
43	385.0	Prospect Ave	South	1800
44	160.2	Livingston Ave	South	1700
45	122.1	Cherry Ave	North	800
46	134.2	Vigilante Dr	West	3100
47	226.6	N Montana Ave	East	2900
48	269.3	N Montana Ave	West	2400
49	447.2	Peosta Ave	North	1300
50	316.9	Villard Ave	East	2200
51	276.5	Joslyn St	West	900
52	963.5	California St	East	300
53	290.1	Joslyn St	West	1100
54	665.9	N Montana Ave	West	1400
55	114.0	Leslie Ave	North	400
56	153.7	Stuart St	North	2100
57	209.9	Getchell St	East	900
58	276.6	Joslyn St	West	1200
59	273.5	N Montana Ave	West	2600
60	124.7	Cooke St	East	2500
61	388.5	Elm St	North	1400
62	144.3	Leslie Ave	South	900
63	135.4	Fee St	West	600
64	109.8	Broadway	South	1700
65	271.4	Cannon St	North	1400
66	517.1	N Montana Ave	West	1700
67	128.7	Wedgewood Ln	South	100
68	281.8	Villard Ave	East	2700
69	368.6	Livingston Ave	South	1500
70	347.7	Garfield St	East	1300
71	636.8	N Montana Ave	West	1600
72	398.7	Euclid	North	2100
73	137.7	Cooke St	East	700
74	421.0	6th Ave	North	2100
75	135.2	Cherry Ave	North	1000
76	148.0	Knight St	South	700
77	194.9	Highland Ave	North	1100

78	213.3	Clooney Dr	West	3100
79	402.7	Euclid	North	2000
80	153.9	N Montana Ave	West	2800
81	445.6	Roberts St	West	2400
82	166.9	Hannaford St	West	100
83	916.6	Poplar St	North	1100
84	412.5	Broadway	North	2200
85	102.0	Medical Park Dr	South	100
86	73.0	Peosta Ave	North	1500
87	633.4	Davis St	East	800
88	191.5	Davis St	East	200
89	270.4	Cherry Ave	North	700
90	275.2	N Montana Ave	West	2700
91	104.5	Cherry Ave	North	700
92	918.6	Chestnut St	North	1100
93	87.0	Tracy Dr	South	100
94	123.9	Fee St	East	600
95	204.4	Broadway	South	1700
96	403.6	Euclid	North	1800
97	147.1	Knight St	South	900
98	166.0	Harris St	East	1200
99	205.1	Euclid	South	1700
100	83.6	California St	East	500
101	872.5	Russel Ln	South	400
102	554.2	Missoula Ave	North	1500
103	245.2	Highland Ave	North	1200
104	302.9	Villard Ave	East	2400
105	328.4	Euclid	South	1800
106	80.8	Peosta Ave	North	1500
107	53.7	Butte Ave	North	900
108	279.3	Villard Ave	East	2600
109	367.2	Clooney Dr	West	3200
110	410.1	Peosta Ave	North	1200
111	417.3	Choteau St	North	2100
112	1651.4	Custer Ave	North	300
113	94.7	Getchell St	West	900
114	132.9	Lincoln	East	1700
115	306.3	5th Ave	South	1900
116	1073.4	California St	East	500
117	260.2	N Montana Ave	East	2000
118	145.1	Garfield	West	1500
119	418.2	Knight St	South	1100
120	96.0	Dakota St	West	300

121	105.6	Billings Ave	South	1100
122	146.4	California St	East	100
123	157.3	Broadway	North	2100
124	163.3	N Montana Ave	East	1900
125	147.8	3rd St	South	1100
126	141.3	N Montana Ave	East	1700
127	152.1	Wilder Ave	South	500
128	143.5	N Montana Ave	East	1800
129	766.7	Silverette St	West	1000
130	313.9	Villard Ave	East	2000
131	412.3	Euclid	North	1300
132	374.8	Chestnut St	North	900
133	505.9	3rd St	North	500
134	200.7	Wedgewood Ln	North	100
135	184.1	Villard Ave	East	2800
136	164.7	Hollins Ave	South	400
137	709.9	Silverette St	West	900
138	609.7	Wolf Rd	North	1100
139	650.3	Euclid	North	300
140	412.5	Euclid	South	2100
141	288.6	Euclid	South	1000
142	108.7	Livingston Ave	North	1600
143	402.6	Euclid	South	2000
144	312.7	Aspen St	South	1500
145	411.0	Euclid	North	1200
146	50.7	Ewing St	West	100
147	934.9	Euclid	North	900
148	109.0	Hannaford St	West	1100
149	231.0	Townsend Ave	South	1700
150	80.8	Hoback St	West	500
151	2486.2	N Montana Ave	West	3700
152	211.5	S Montana Ave	West	200
153	131.7	Cole Ave	North	1500
154	423.3	5th Ave	South	2200
155	636.6	Elm St	South	1200
156	426.1	Knight St	North	1900
157	281.6	Villard Ave	East	2500
158	407.3	Euclid	North	1500
159	469.5	Hoback St	West	800
160	310.7	Lamborn St	West	100
161	151.4	Euclid	South	1700
162	97.5	Peosta Ave	North	1500
163	655.4	N Montana Ave	West	3600

164	379.8	Euclid	North	1100
165	97.0	Alta St	East	100
166	405.0	Knight St	North	1700
167	336.4	Knight St	South	300
168	358.5	15th St	South	400
169	76.0	Broadway	North	2300
170	416.4	6th Ave	North	2200
171	138.1	Stuart St	North	2200
172	140.3	Harrison Ave	East	1300
173	13.7	Hoback St	East	600
174	91.5	Oakes St	West	2100
175	222.1	S Montana Ave	West	200
176	415.0	Broadway	North	1900
177	147.6	N Montana Ave	West	2900
178	304.4	Broadway	North	1800
179	120.3	Getchell St	East	800
180	405.4	Knight St	North	1800
181	355.3	Townsend Ave	South	1100
182	134.9	Choteau St	North	1400
183	338.8	Knight St	South	400
184	216.6	Ridgewood Ln	South	100
185	418.5	Highland Ave	North	1300
186	98.8	Cole Ave	North	1400
187	160.0	Alta St	East	100
188	87.1	Euclid	South	1900
189	365.1	N Montana Ave	West	2500
190	204.1	Euclid	South	1600
191	210.7	Hannaford St	East	600
192	316.4	Villard Ave	East	2100
193	213.9	S Montana Ave	West	100
194	310.1	Villard Ave	East	2300
195	304.2	Euclid	South	300
196	164.8	Knight St	South	500
197	262.1	Elm St	North	1200
198	203.8	Lamborn St	West	100
199	241.0	Knight St	North	1600
200	109.1	Ewing St	West	100
201	101.6	Euclid	North	1400
202	712.8	N Montana Ave	East	1600
203	88.2	Leslie Ave	South	900
204	160.2	Lincoln St	East	1200
205	222.8	Butte Ave	South	1100
206	56.8	Elmwood Ln	North	100

207	80.0	Cannon St	North	1000
208	219.3	Dakota St	West	200
209	248.9	12th St	North	800
210	285.3	N Montana Ave	East	3000
211	362.8	Euclid	South	900
212	144.0	N Montana Ave	East	2700
213	124.7	Russel Ln	South	400
214	167.7	Hannaford St	West	100
215	684.5	Green Meadow Dr	East	3200
216	49.8	Lamborn St	West	100
217	128.4	Warren St	East	1400
218	421.4	5th Ave	South	2000
219	282.4	Joslyn St	West	1000
220	145.1	Chestnut St	North	800
221	53.8	Peosta Ave	North	1400
222	175.5	Hannaford St	West	100
223	74.9	Knight St	South	600
224	212.6	Choteau St	North	2200
225	80.1	Cherry Ave	North	1000
226	197.3	Knight St	South	1000
227	98.7	Highland Ave	North	1100
228	151.8	Elmwood Ln	South	100
229	516.9	Euclid	North	1000
230	96.4	Hannaford St	West	100
231	215.2	Lockey Ave	South	1700
232	32.4	Leslie Ave	South	400
233	614.8	Custer Ave	North	400
234	399.9	Peosta Ave	North	1700
235	403.5	N Montana Ave	East	2600
236	340.6	Peosta Ave	North	1100
237	482.3	Choteau St	North	2200
238	405.1	Euclid	South	1100
239	282.4	Idaho St	East	900
240	424.0	6th Ave	North	1900
241	471.7	3rd St	South	1000
242	239.1	Broadway	North	2000
243	556.2	Cole Ave	South	1500
244	772.8	Wolf Rd	South	1100
245	233.1	Townsend Ave	North	1700
246	505.0	Meadow Dr	South	100
247	116.0	Knight St	South	900
248	289.8	Custer Ave	North	700

249	400.9	Choteau St	North	2000
250	105.7	Butte Ave	South	1000
251	86.6	Hauser Blvd	South	2100
252	119.4	Hannaford St	West	100
253	319.1	5th Ave	South	2100
254	846.1	Russel Ln	South	400
255	134.6	Cooke St	East	2400
256	95.4	Cooke St	West	700
257	95.2	Broadway	North	2000
258	55.3	5th Ave	South	2100
259	113.5	Sanders St	West	2100
260	332.7	Hauser Blvd	South	100
261	443.4	Livingston Ave	North	1700
262	330.5	Davis St	East	400
263	177.4	Euclid	South	1000
264	331.6	Highland Ave	North	1200
265	113.9	Poplar St	North	1000
266	157.9	Ewing St	West	100
267	347.7	Euclid	North	600
268	766.7	Knight St	North	2400
269	1420.2	Silverette St	East	800
270	1420.2	Stuart St	North	2300
271	288.6	Grant St	East	1200
272	405.1	Grant St	West	1200
273	516.9	Lincoln St	West	1300
274	934.9	Lincoln St	East	1300
275	934.9	Garfield St	West	1300
276	332.7	Getchell St	West	800
277	401.5	N Park Ave	West	800
278	388.5	Roberts St	East	2300
279	556.2	Harris St	West	2300
280	636.6	Cooke St	West	2200
281	916.6	N Montana Ave	West	2000
282	312.7	Sanders St	East	2000
283	918.6	N Montana Ave	West	1900
284	665.9	Helena Ave	North	1300
285	365.1	Cherry Ave	North	1100
286	365.1	Orange Ave	South	1100
287	480.4	Cole Ave	South	1100
288	916.6	Aspen St	South	1100
289	918.6	Poplar St	South	1100
290	403.5	Birch Ave	South	1200
291	260.2	Poplar St	North	1200

292	445.6	Cole Ave	North	1300
293	372.8	Aspen St	North	1500
294	1651.4	Benton Ave	West	3100
295	846.1	Bridger Dr	East	3100
296	872.5	Bridger Dr	West	3100
297	846.1	Vigilante Dr	West	3100
298	846.1	Vigilante Dr	North	400
299	216.1	Vigilante Dr	East	3100
300	811.2	Clooney Dr	West	3100
301	216.6	Briarwood Ln	West	100
302	128.7	Short St	East	100
303	151.8	Fairway Dr	East	100
304	603.2	Winne Ave	North	2300
305	215.2	Carson St	East	100
306	385.0	Hannaford St	West	600
307	622.3	Harris St	East	1100
308	233.1	Lamborn St	West	1100
309	443.4	Lamborn St	West	1200
310	282.4	Billings Ave	South	1000
311	626.9	12th St	North	700
312	358.5	Davis St	West	800
313	469.5	15th St	South	400
314	194.9	S Montana Ave	West	100
315	331.6	S Montana Ave	East	100
316	471.7	S Montana Ave	West	400
317	160.0	Alta St	South	100

C.2 CITY OF EAST HELENA

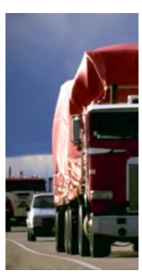
Table C.2: Priority Sidewalk Segments (City of East Helena)

GIS OBJECT ID	Length (feet)	Road_Name	Road_Side	Block_Num
1	771.6	E Lewis St	South	3800
2	500.7	Connector 1	None	0
3	733.7	Connector 2	None	0
4	1020.2	Kalispell Ave	East	400
5	897.9	Thurman Ave	East	400
6	308.7	E Riggs St	North	200
7	412.9	E Clark St	North	100
8	524.8	E Riggs St	South	200
9	420.2	E Main	North	700
10	513.8	Lane Ave	East	100
11	97.1	Lane Ave	East	10
12	223.5	Montana Ave	West	100
13	124.7	Montana Ave	West	100
14	342.1	Montana Ave	West	200
15	437.9	E Clark St	North	300
16	51.9	E Riggs St	North	10
17	108.0	E Riggs St	North	10
18	72.4	E Riggs St	North	10
19	125.3	W Riggs St	North	10
20	345.7	Main St	North	400
21	566.9	E Clinton St	North	1100
22	590.1	E Clinton St	North	1200
23	1069.1	E Clinton St	North	3700
24	364.2	Connector 3	None	0
25	140.2	Connector 4	None	0
26	888.4	Connector 5	None	0
27	382.3	E Clinton St	South	100
28	203.9	Grand Ave	West	200
29	407.6	W Riggs St	South	300
30	143.2	W Riggs St	South	200
31	187.4	W Riggs St	South	100
32	362.4	W Riggs St	South	10
33	72.4	E Riggs St	South	10
34	220.6	E Riggs St	South	10
35	112.2	E Riggs St	South	100
36	216.9	Wylie Dr	East	300
37	127.0	Helena Ave	East	400

38	346.5	Prickly Pear Ave	West	600
39	409.9	E King St	North	700
40	158.0	E King St	North	600
41	216.9	W Riggs St	South	400
42	412.9	Thurman Ave	West	200
43	342.1	E Main St	South	300
44	364.2	Buckboard Dr	East	200
45	364.2	Lake Helena Dr	West	200
46	346.5	E King St	South	500
47	524.8	Helena Ave	West	300
48	437.9	Helena Ave	East	200

Appendix D:
Sight Distance Triangle Evaluation

Greater Helena Area Long Range Transportation Plan—2014 Update



City of Helena

THE SEAL OF LEWIS & CLARK COUNTY STATE OF MONTANA

MONTANA MDT DEPARTMENT OF TRANSPORTATION

RPA

alta PLANNING + DESIGN

PREPARED BY:
Robert Peccia & Associates
ALTA Planning + Design

APPENDIX D: SIGHT DISTANCE TRIANGLE EVALUATION

D.1 RECOMMENDATION FOR REVISIONS TO HELENA'S SIGHT DISTANCE TRIANGLE

All intersections and nonresidential driveways should have an unobstructed sight distance along their approaches via a vision clearance triangle (also known as a sight distance triangle). The distance along the triangles should be sufficient such that all approaching or departing vehicles traveling at or less than the maximum speed limit can avoid vehicle conflicts.

The American Association of State Highway and Transportation Officials (AASHTO) Edition of "A Policy on Geometric Design of Highways and Streets" provides guidance on sight distance triangles by presenting minimum dimensions for the triangle based on the speed limit of the roadway(s), the width of the roadway(s) and resultant calculations for a vehicle to stop by accounting for perception and reaction times.

In many cases, communities will adopt the minimum guidance provided by AASHTO. More typical, though, is for individual communities to use the AASHTO guidance as a starting point. Refinements to the AASHTO guidance will be made into a simpler set of guidance such that the general public and elected officials can more easily understand the requirements at intersections, alleys and driveways. The guidance can be developed based on functional classification of the road, speed limit of the road, or even a "catch-all" distance requirement for all roads.

Currently, the City of Helena sight distance triangle ordinance strives to distinguish triangle offsets by correlation to the type of traffic control at an intersection. Types of intersection traffic control are categorized as uncontrolled, partially controlled, and fully controlled. Additionally, for partially controlled intersections, speeds come into the offset guidance for those speed limits that exceed 35 mph (i.e. the offset grows from 50 feet to 100 feet on the uncontrolled leg of an intersection if the speed limit exceeds 35 mph). In comparison to the major Montana communities reviewed for sight distance triangle guidance (Bozeman, Missoula, Billings, Kalispell, Butte-Silver Bow, and Great Falls), the current Helena guidance appears to be more restrictive than some (Kalispell, Butte-Silver Bow and Great Falls) and less restrictive than others (Billings).

It is recommended that Helena pursue revisions to the sight distance guidance such that it is patterned off something similar to the City of Billings. The City of Billings is a good example as it is very specific for a variety of conditions (central business district, road classifications, form of intersection control, etc.). With the revisions, sight distance triangle distances would be more tailored to differing circumstances (refer to **Table D.1** and **Section D.3**).

D.2 SIGHT DISTANCE TRIANGLE SUMMARY

Table D.1: Montana Community Sight Distance Triangle Summary

Community	Max. Height	Height of Tree Canopy	Offsets

Helena	30 inches	8 feet	• Uncontrolled Intersection
			  o 50 feet on both legs
			• Partially Controlled Intersection
			  o 50 feet on uncontrolled, 15 feet on controlled
			  o 100 feet on uncontrolled, 15 feet on controlled if speed limit exceeds 35 mph
			• Fully Controlled Intersection
			  o 15 feet on both legs
			• Alleys and Driveways
			  o 10 feet on both legs

Bozeman	30 inches	10 feet	• Arterial Streets
			  o 50 feet on both legs
			• Collector and Local Streets
			  o 40 feet on both legs
			• Alleys and Driveways
			  o 15 feet on either side of alley or driveway and 10 feet on the alley or driveway

Missoula	30 inches	8 feet	• General
			  o 50 feet on both legs
			• Speed limit less than 35 mph (all legs)
			  o 15 feet on minor street, 75 feet on intersecting arterial or collector
			• Speed limit is greater than 35 mph (any leg)
			  o 15 feet on minor street, 120 on intersecting arterial street
			• Alleys and Driveways
			  o 10 feet on both legs

Billings	30 inches	8 feet	• Minor Street Stop
			  o Entering a local street
			    ▪ 10 feet on stopping leg, 55 feet on free leg
			  o Entering a collector street
			    ▪ 10 feet on stopping leg, 75 feet on free leg
			  o Entering Arterial Street
			    ▪ 10 feet on stopping leg, 95 feet on free leg
			• All-way Stop
			  o 20 feet on both legs
			• Yield
			  o 25 feet on yield leg, 60 feet on free leg
			• Traffic Signals
			  o Same as minor street looking toward approaching traffic in nearest travel lanes; same as all-way stop looking in opposite direction

<table>
<tr><th>Community</th><th>Max. Height</th><th>Height of Tree Canopy</th><th>Offsets</th></tr>
<tr><td></td><td></td><td></td><td>

Uncontrolled Intersection

4-legged
110 feet on both legs
2-legged (right angle curve)
80 feet on both legs
“T” intersection
25 feet on stem, 60 feet on “T”

Alleys and Driveways

Entering local street
14 feet on alley, 175 feet on street
Entering collector street
14 feet on alley, 250 feet on street
Entering Arterial Street
14 feet on alley, 315 feet on street

Central Business District

Stop or Signal Controlled

Entering 25 mph street
14 feet on stop leg, 205 feet on cross street
Entering 35 mph street
14 feet on stop leg, 290 feet on cross street
Entering >35 mph street
Engineering review

Yield
Engineering review
Uncontrolled
Engineering review
Alleys and Driveways

Entering 25 mph street
14 feet on alley, 175 feet on cross street
Entering 35 mph street
14 feet on alley, 250 feet on cross street
Entering >35 mph street
Engineering review

</td></tr>
<tr><td>Kalispell</td><td>36 inches</td><td>8 feet</td><td>
General Guidance
80 feet on both legs
</td></tr>
<tr><td>Butte – Silver Bow</td><td>36 inches</td><td>10 feet</td><td>
General Guidance
25 feet on both legs
Alleys and Driveways
10 feet on alley, 20 feet on cross street
</td></tr>
<tr><td>Great Falls</td><td>30 inches</td><td>8 feet</td><td>
Street intersections
45 feet on both legs
Alleys
10 feet on both legs
Driveways
15 feet on both legs
</td></tr>
</table>

D.3 SPECIFIC SIGHT DISTANCE GUIDANCE FOR MONTANA COMMUNITIES RESEARCHED FOR COMPARISON

CITY OF HELENA

- General Guidance
  - Measured from the projected intersection of curbs or if no curbs exist, the curb line is assumed to be 20 feet from the centerline of the right of way.
  - No buildings, structures, off street parking spaces, fences, walls, or landscaping may be between a height of 30 inches and 10 feet above the grade of the projected curb intersection.
- Uncontrolled Intersections
  - 50 feet on both legs
- Partially Controlled Intersection
  - 50 feet on the uncontrolled street, 15 feet on the controlled street.
  - If the uncontrolled street has a speed limit exceeding 35 miles per hour than 100 feet on the uncontrolled street and 15 feet on the controlled street.
- Fully Controlled Intersection
  - Both sides 15 feet
- Alleyways
  - Both sides 10 feet
  - Max height is 30 inches, minimum height is eight feet
- Exemptions
  - Trees that have a single trunk trimmed to a least eight feet above the curb
  - Fire hydrants, public utility poles, street signs, and traffic control devices
  - Existing permanent buildings
  - Existing grades which, by reason of natural topography, exceed 30 inches above the curb
  - Signs mounted eight feet or more above the curb whose supports do not exceed 18 inches in diameter

CITY OF BOZEMAN

- General Guidance
  - Measured from the projected intersection of curbs or if no curbs exist, the measurement shall be taken from a line 11 feet inside of the right of way or from the edge of pavement if closer than 11 feet.
  - Nothing shall exceed 30 inches above the street centerline grades. Trees must be maintained such that mature trees do not significantly affect safe driving conditions and are maintained such that no canopy foliage exists below a height of 10 feet above the centerline of the intersection.
- Arterial Streets
  - 50 feet on both legs
- Collector and Local Streets
  - 40 feet on both legs
- Driveways and Alleys
  - Area defined by two point on the right of way line
  - 15 feet on each side of the driveway or alley and 10 feet on the driveway or alley center line outside the right of way

City of Missoula

- General Guidance
  - Signs, fences, hedges, walls, shrubbery, natural growth, or other obstructions to the view, whether movable or stationary exclusive of motor vehicles shall be higher than 30 inches above the established top of street curb grade.
  - Measured along the curb line
  - 50-foot isosceles triangle
- Speed limits less than 35 miles per hour (all legs)
  - 15 feet on minor street, 75 feet on the intersecting arterial or collector
- Speed limits greater than 35 miles per hour (any leg)
  - 15 feet on minor street, 120 feet on intersecting arterial street
- Alleyways and driveways
  - 10-foot isosceles triangle along the right of way line of an alley or along the edge line of a private drive and along the inside line of the sidewalk or if there is no sidewalk, the curb line
- Exemptions
  - Trees trimmed to the trunk to a least eight feet above the level of the curb and that are planted so as to leave a clear unobstructed cross view.
  - Fire hydrants, public utility poles, street markers, traffic control devices, existing permanent buildings, existing grades, and signs mounted eight feet or more above the curb and whose supports higher than 30 inches do not exceed 12 inches in diameter.

City of Billings

- General Guidance
  - On corner lots at the intersection of all streets, except those intersections which are controlled by stop signs, yield signs or traffic signals, no fence, hedge, wall, shrub, structure or vision impediment over 30 inches in height above an established top of curb shall be within the sight triangle.
  - Trees with a maximum trunk diameter of one foot measured four feet above the ground line, and trimmed of all branches between the ground line and eight feet in height
- Minor Street Stop
  - Entering a local street
    - 10 foot by 55 foot along property lines
  - Entering a collector street
    - 10 foot by 75 foot along property lines
  - Entering Arterial Street
    - 10 foot by 95 foot along property lines
- All-way Stop
  - 20 foot by 20 foot along property lines
- Yield
  - 25 foot by 60 foot along property lines
- Traffic Signals
  - Same as minor street stop looking toward approaching traffic in nearest travel lanes; Same as all-way stop looking opposite direction
- Uncontrolled intersections
  - 4-legged
    - 110 foot by 110 foot along street centerlines
  - 2-legged (right angle curve with street centerline radius of 100 feet or less)
    - 80 foot by 80 foot along street centerlines (extended)

    - “t” intersection
        - 25 foot along stem by 60 foot along top of “t” measured along property lines
- Driveways and Alleys
    - Entering local street
        - 14 feet on alley centerline by 175 feet along curb line extension
    - Entering collector street
        - 14 feet on alley centerline by 250 feet along curb line extension
    - Entering arterial street
        - 14 feet on alley centerline by 315 feet along curb line extension
- Central Business District
    - Stop sign or traffic signal
        - Entering 25 mph street
            - 14 feet along centerline on the stop controlled approach 205 feet along curb line on the cross street
        - Entering 35 mph street
            - 14 feet along centerline on the stop controlled approach 290 feet along curb line on the cross street
        - Enter street with speed limit above 35 mph
            - The required clear vision area will be based on an engineering review subject to approval by the city traffic engineer.
    - Yield
        - The required clear vision area will be based on an engineering review subject to approval by the city traffic engineer.
    - Uncontrolled
        - The required clear vision area will be based on an engineering review subject to approval by the city traffic engineer.
    - Alleys and Driveways
        - Entering 25 mph street
            - 14 feet along centerline of alley by 175 feet along the curb line of the cross street
        - Entering 35 mph street
            - 14 feet along centerline of alley by 250 feet along the curb line of the cross street
        - Entering street with speed limit above 35 mph
            - The required clear vision area will be based on an engineering review subject to approval by the city traffic engineer.
        - Exemptions
            - The clear vision area for alleys and driveways shall not apply to buildings or pertinent part thereof within the central business district.
- Exceptions
    - In cases where there is a curve coming into the intersection of the street alignment near the intersection deviates by more than five degrees from tangent may be subject to increased (additional) restrictions based on technical review by the city traffic engineer.
    - Along arterial and collector streets where the “major” street curb line is more than 20 feet from the property line, the clear vision area may be reduced to that provided for a stop controlled local street intersection.
    - For minor street stop entering a street with a posted speed limit greater than 45 miles per hour, the required clear vision area will be based on an engineering review subject to approval by the city traffic engineer.

- Along private streets where there is no property line, controlled intersection areas shall be measured as through there is a property line 12 feet behind the curb line of the private street.

City of Kalispell

- General Guidance
    - No bushes, shrubs, evergreen trees or hedges to exceed a height of 36 inches from the ground.
    - 80 foot by 80 foot measured at the centerline of the intersecting roads
    - Trees must be trimmed up to 8 feet in height

Butte-Silver Bow County

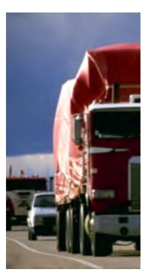
- General Guidance
    - No wall, fence, or other structure shall be erected, and no hedge, shrub, tree or other growth shall be maintained which will materially impede vision between a height of three and 10 feet above the centerline grades.
    - 25 feet by 25 feet measured along the property line.
- Alleyways and driveways
    - 10 feet parallel to the driveway or alley and 20 parallel to the public right of way.
- Exceptions
    - Open wire fences may be four feet tall

City of Great Falls

- General Guidance
    - Any signs, fences, plant material, or other items placed in this area shall provide an unobstructed cross visibility at a level between 30 inches and eight feet.
- Street intersections
    - 45 feet by 45 feet measured along the curb line
- Alleys
    - 10 feet by 10 feet measured along the curb line
- Driveways
    - 15 feet by 15 feet measured along the curb line
- Exceptions
    - Properties in the C-4 Central Business district are required to comply with the provision in this section unless compliance is not possible due to the setback of the building.

Appendix E:
Non-Motorized Plans, Codes, Policies and Surveys

Greater Helena Area Long Range Transportation Plan—2014 Update



City of Helena

PREPARED BY:
Robert Peccia & Associates
ALTA Planning + Design

APPENDIX E: NON-MOTORIZED PLANS, CODES, POLICIES AND SURVEYS

The following plans, codes, and policies were found to directly affect non-motorized modes within the study area. The descriptions given in this section focus on non-motorized aspects of the respective documents.

E.1 PLANS, STUDIES, AND SURVEYS

The following plans, studies, and surveys, while non-regulatory, provide information that can be used to inform the policy making process.

2004 Helena Area Transportation Plan

One of the goals of the 2004 Helena Area Transportation Plan is to increase transportation options by making non-motorized travel modes viable alternatives to private automobiles for travel in and around the Helena area. In order to achieve this, the 2004 Helena Area Transportation Plan (referred to as "Plan" or "the Plan" in this section) recommends improving safe pedestrian and bicycle access and consideration, providing dedicated facilities where possible and wide shoulders where they may not be feasible, creating walkable neighborhoods, and implementing safer roadway crossings. Bicycling and walking and their associated traffic-calming benefits are also included in the Plan as traffic demand management strategies as they may be used to substitute for single occupancy vehicle trips.

- **Chapter 6: Non-Motorized Transportation –** Chapter 6 of the Plan is dedicated to non-motorized transportation modes, including walking and bicycling. Non-motorized user types that are not included in the analysis of this plan include cross country skiers, equestrians, in-line skaters, and skateboarders. The Montana State Statute 61-8-602 M.C.A. defines bicyclists as legitimate road users. This is important because it adds legitimacy to the planning and implementation of on- and off-street bicycle facilities.

  The overriding goal of Chapter 6 is to develop a plan that helps to create and maintain safe, effective, and inviting corridors for users of non-motorized transportation modes, either for travel or for recreation, and to inform and educate all users in how to safely and respectfully share the road and other corridors. Minor goals include improving the planning process, developing a network of facilities, promoting education and safety programs, and implementing the recommendations made in the plan as well as those made in the future.

  The recommendations made for trails, bike lanes, and "share the road" routes (which are defined as roads that do not have sufficient space for dedicated bicycle facilities, but which are key connectors or popular routes) focus on the Helena area as a whole and at the downtown area specifically as the center of activity. As of 2004, about 2.35 miles and $180,000 in trail improvements were funded. An additional 12.55 miles and $150,000 (est.) in bike lanes, 74.8 miles and $270,000 (est.) in "share the road" routes, and an additional 67.5 miles and $5,800,000 (est.) in off-street paths and trails were recommended in the Plan. Out of the hundreds of projects, 18 priority projects and 11 key corridors and development areas are outlined in order to give the City some direction and priority on which projects to choose, either "low hanging fruit", those to which design is critical, or those whose implementation would be most beneficial.

The Transportation Choices Committee (TCC2), a sub-committee of the Transportation Coordinating Committee at the time of the 2004 planning effort, developed the following four "policy type" directives as part of the 2004 Plan process:

1. Accomplish safe and low cost projects first;
2. Create safe and effective connections between destinations, trails, and county roads;
3. Adopt a policy to capture future opportunities for bike and pedestrian projects in association with major construction or development; and
4. Develop and promote incentives and other forms of encouragement for major employers and customers of businesses

2013 Regional Parks, Recreation, and Trails District Feasibility Study

The 2013 Regional Parks, Recreation, and Trails District Feasibility Study indicates that Helena has 68 parks totaling 2,227 acres, an estimated 1,871 acres of which are open lands, such as Mt. Helena City Park and several other trail and trailhead areas. The study also includes information at the regional level that includes county and school district parks and trails that are not maintained by the Parks Department. The study area for a proposed regional parks and trails district has more than 118 miles of existing on and off-street paths, trails, and sidewalks around parks, 63 miles of which are natural surface trails (most of which exist in open lands in Helena). The City of Helena maintains 7.4 miles of sidewalk adjacent to and within city parks. MDT has built and currently maintains nearly three miles of shared use paths connecting Helena and East Helena (on the north side of Highway 12). There are about seven miles of previously proposed shared use paths within the proposed district boundaries, the majority of which would ultimately connect Montana City (Jefferson County) and East Helena.

2010 Helena Parks, Recreation, and Open Space Plan

The Parks, Recreation, and Open Space Plan was adopted in October 2010 as an update to the previous 1998 plan of the same name. As part of the plan update, two public surveys were conducted. The first, which was directed to all county residents and addressed residents' use and needs for parks and recreation, garnered over 800 responses during January 2009. The most commonly used park sites were trails; the second most desired amenity not currently available in the respondent's area was trails; and the third and fourth most needed recreation facilities were connected non-motorized trails and exercise circuit trails, respectively. The second survey was a recreation program needs survey that received more than 1,600 responses. Hiking and bicycling were included in the top eight sports activities that respondents and/or their families participated in currently or in the past. Walking and/or bicycling programs through the Parks and Recreation Department were not particularly desirable to survey respondents.

The purpose of the goals and recommendations of this plan is to set an achievable vision. Since the 1998 plan, the following previous goals and recommendations that apply directly to bicycling and walking have been completed:

- Acquisition of approximately 1,000 acres of open lands in the south hills and
- Building of new trails along Henderson Street, Custer Avenue, Nature Park, LeGrande Cannon Boulevard, and Benton Avenue

Goal 5 seeks to improve trails and greenways by "providing the community with a linear park trails system that enhances overall community connections and access by supporting non-motorized connections, eliminating access barriers, and beautifying or visually-enhancing the existing trail system". The recommendations that will lead to accomplishing this goal are utilizing the most recent Area Transportation Plan and working with the appropriate agencies and parties to promote, develop, build, and maintain connections to community resources and the regional trail network. Trails that connect parks, services, schools, and other highly used areas are a high priority.

The 2010 Helena Parks, Recreation, and Open Space Plan also recommends developing more trails within the Helena Open Lands (HOL) system, which is comprised of approximately over 1,700 acres in 35 parcels of land adjacent to the southern boundary of the City, where many trails currently exist. The goal of the HOL trails program is to provide Helena with sustainable active transportation and recreation opportunities that are easily accessible from the southern end of the City and can be maintained using available resources. Smaller objectives for trail development in the HOL system include working with the Helena National Forest in order to maintain trails, protect wildlife, reclaim poor or unsustainable trails, create new trail connections to popular destinations, increase accessibility, create trailheads with Helena identity, and expand popular trails and areas.

Centennial Trail Master Plan

In process for more than ten years, the Centennial Trail Master Plan was created in 2009 in order to provide analysis and alternatives designs for the 5.02 mile corridor from Spring Meadow Lake State Park on the west to the intersection of 18th Street at Highway 12 on the east. The purpose of the plan is to "enhance and expand the walkability and bikeability of Helena through the development of a safe, convenient and accessible network of corridors that serves to improve connectivity, promote alternatives to motorized travel, and enhance Helena's appeal as a healthy, walking and bicycling-friendly place to live and play."

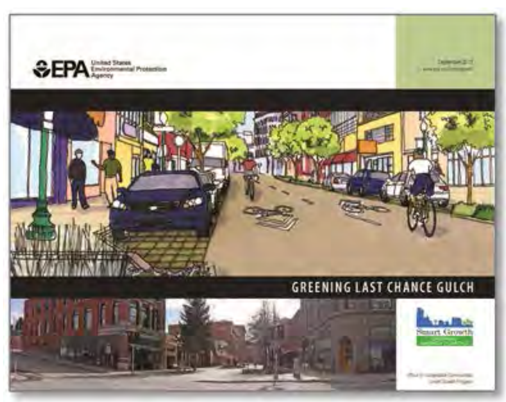
The major crossings that will be required in order to construct a complete trail are Country Club Avenue, Joslyn Street, Henderson Street, Benton Avenue, and North Montana Avenue. Cost estimates and aerial drawings for all alternatives, temporary routes, and all seven sections of the trail are included in the plan.

The recommended trail construction was separated into three tiers of quality: decomposed granite surface trail, "no frills" 10' asphalt trail, or a standard 10' asphalt trail.

In July 2014, an approximately one mile portion base bid (North Last Chance Gulch to National Avenue) and four additive alternates (National Avenue to Hannaford Street) were advertised for bids as Phase I of the Centennial Trail system. The additive alternates included a crossing of North Montana Avenue. After receiving the bids, only the base bid was awarded.

Greening America's Capitals: Greening Last Chance Gulch

Greening America's Capitals is an Environmental Protection Agency (EPA) program to help state capitals develop environmentally-friendly neighborhoods that incorporate innovative green infrastructure and Complete Streets strategies, which encourage safer and more inviting sidewalks and crossings, cycle tracks, paths, bike lanes, and other active transportation facility designs to be included in the design of all streets.



The EPA created the Greening Last Chance Gulch (GLCG) plan in September 2013 to improve the artistic and commercial center of Montana's capital. The study area is bounded, for the most part, by Lyndale Avenue on the north, Benton Avenue on the west, Warren Street on the east, and Cruse Avenue on the southeast. The focus sites and proposed recommendations are:

- Shared lane markings, a two-way street conversion, and loading zones for delivery vehicles on Last Chance Gulch between 6th Avenue and Neill Avenue;
- Extend the pedestrian mall character into the Last Chance Gulch and 6th Ave intersection by raising it and using colored pavement to indicate a pedestrian-dominant area;
- Introducing bike lanes, bike boxes, wide sidewalks, left turn lanes, mid-block crossings, trees, and improved drainage and removing parking at intersections on Last Chance Gulch between 13th and 14th Avenues;
- Widening sidewalks and introducing a landscape median, turn pockets, improved crossings, bike lanes, colored pavement, and raising intersections at the Neill Avenue & Front/Fuller Street intersections; and
- Redesigning the five-point intersection including Neill Avenue, Helena Avenue, Last Chance Gulch, 11th Avenue, and Cruse Avenue to include bike boxes, green pavement markings, a roundabout, wider sidewalks, and a landscape buffer.

In addition to these sites, the plan also recommends a sustainable transportation network of complete and green streets that meet the needs of bicyclists of all experience levels and create a connective network in Helena, even outside of downtown.

One of the City's goals for Last Chance Gulch was to improve bicycle, pedestrian, transit and vehicular facilities and circulation. The GLCG incorporated feedback from a three-day workshop that included public concerns about a lack of safe pedestrian crossings, sidewalks maintenance, and bicycle safety, into the overall analysis and recommendations. Many workshop participants agreed that downtown, of all places, should support a mix of many uses and that this can be achieved by providing convenient walking and bicycling routes. During the workshop, the bicycling community communicated their collective desire to improve bicycle access along Last Chance Gulch to downtown and to mountain biking trails in the surrounding hills.

The GLCG plan references the 2004 Helena Area Transportation Plan, emphasizing that most of that plan's recommendations are "share the road" routes. Since the 2004 Plan, however, Helena Avenue (a proposed "share the road" route) has had bike lanes installed.

The plan suggests improvements to the pedestrian environment and accompanying signage. This will help visitors and patrons find and take advantage of existing parking options so that building more parking will not be necessary. Additionally, walking between destinations instead of leaving a parking space, driving, and parking again, will save time, money, and space.

Helena Bicycle Friendly Communities (BFC) Application Feedback, Fall 2013

Following a Fall 2013 application, the League of American Bicyclists designated the City of Helena as a Bicycle Friendly Community at the bronze level and published the Helena Bicycle Friendly Communities Application Feedback report. Helena exhibits a "sustained commitment to cycling", and although there is still room to grow, notable steps in the right direction have been and are being made. Application reviewers also provided feedback in the form of short- and long-term recommendations that Helena can use in order to improve Helena's bicycle friendliness. Recommendations made in the previous application feedback report (Fall 2012) that were repeated again included:

- Calm traffic speeds to allow bicyclists of all ages and abilities to feel more comfortable, especially on roads leading to major trail heads (i.e. Grizzly Gulch and Davis Gulch);
- On road with speed limits above 35 mph, the League recommends protected infrastructure (i.e. cycle tracks, buffered bike lanes, or parallel paths);
- Consider in-street bike corrals downtown and at other highly-traffic destinations;
- Strengthen the Complete Streets resolution as policy with design and implementation guidance;
- Expand public education campaign;
- Offer skills and commuting classes more frequently and encourage a non-profit or bike shop to host and teach the classes;
- Bicycle safety education in schools and outside of schools, the latter via neighborhoods, bike rodeos, youth classes, etc.;
- Create a winter maintenance plan to ensure bicycle lanes and paths are clear and accessible in the winter;
- Ongoing training for city planning and engineering staff;
- Pass a bicycle parking requirements policy or ordinance that conforms with APBP bicycle parking guidelines and encourages high quality bike parking;
- Install a bicycle wayfinding system;
- Bicyclist and motorist ticket diversion program;
- Ensure visitors and residents alike are able to rent bicycles in the community;
- Develop a series of short loop routes around the community to encourage tourism and recreation riding;
- Ensure that police officers are educated regularly on the "Share the Road" message and traffic laws that apply to both bicyclists and motorists;
- Conduct routine pre and post evaluations of bicycle-related projects using a standard metric in order to build public and political support for the future and to study the change in use, speeds, and crashes;
- Adopt a target level of bicycle use (i.e. percent of trips) and ensure data collection necessary to monitor progress;
- Measure the Bicycle Level of Service on roads and at intersections;
- Marketing to identify and support current and potential bike commuters;
- Mechanism to ensure facilities and programs are implemented in underserved neighborhoods;
- Increase opportunities for single track riding within the community;
- Install permanent counters on trails and bike lanes;
- Road diets;
- Broad policies and programs;
- Maintenance and reporting mechanism;
- Education and ambassador programs (involve the Police Department);
- Bike Month;
- Bike tourism (in conjunction with Adventure Cycling Association);
- Bicycle Friendly Business and Bicycle Friendly University programs;
- Land use policies to facilitate bicycling;

- Solve issues with physical barriers;
- Conform with guidance published by the National Association of City Transportation Officials (NACTO);
- Improve intersection safety and comfort;
- Create a mountain bike park;
- Enact and enforce laws that protect bicyclists and pedestrians;
- Create a Bicycle & Pedestrian Coordinator position;
- Develop a comprehensive bike plan;
- Expand the bike network to include bike lanes, bicycle boulevards, cycle tracks, and shared lane markings;
- Ensure on-street and off-street facilities complement one another;
- Host active transportation socials or community events; and
- Host a League Certified Instructor seminar.

The City of Helena has completed two of the long term recommendations from the 2012 feedback report: 1) conforming to the AASHTO guidelines and 2) stating that they will require bicycle facilities on collectors and arterials (see “Engineering Standards”). The latter, however, will be heeded by the City only if recommendations on collectors and arterials are specifically made in the most recent update of the Transportation Plan. A mountain bike park is also presently in development.

WALC Institute Walkability Workshop

Dan Burden and Kelly Morphy (WALC Institute) sent a memo to the City of Helena summarizing key issues addressed during their site visit. Many of the needs they identified are also identified in plans previously addressed in this document. The foci of their memo were redesigning the five-point intersection, traffic calming on unsafe neighborhood streets, continue Safe Routes to Schools work, improve pedestrian conditions on sidewalks, at intersections, and at crossings.

They paid particular attention to the Mid-Towne/6th Ward area identified needs, and suggested organizing a community group to achieve goals, reducing lane widths and turn radii to calm traffic, and fix and/or install sidewalks.

City of Helena Code

The City Code contains ordinances that guide the structure of the built environment in the City of Helena, like building and traffic regulations, utilities, and zoning.

Title 7: Public Ways and Property

- **Chapter 4: Sidewalks, Curbs, and Gutters –** Chapter 4 addresses sidewalk ownership, responsibility to build and maintain, and the proper placement of sidewalks on the public right of way. Sidewalks should be placed one foot from the property line to provide for space for sidewalk maintenance and to allow for any measuring or plat inaccuracies. In new subdivisions, the location of sidewalks is determined when the preliminary plat is developed. Additionally, sidewalks must be a part of the building permit issued for any principal structure.

  The remaining right-of-way space to the curb line should be developed as a boulevard (vegetated area) between the sidewalk and the curb, maintained in a neat and orderly manner by the adjacent property owner, and should reflect the character of the neighborhood. The minimum width of the boulevard is seven feet. The height and shape of plants in the boulevard shall not obstruct sight lines or create an unsafe condition to those in the right-of-way. Obstructions that are not specifically allowed by the city in the sidewalk right-of-way shall be removed and replaced at the cost of the property owner.

In the area bounded by Hayes Street, the 800 block of Holter Street and Clarke Street, Benton Avenue, and Hauser Boulevard, existing brick sidewalks shall be maintained by the property owner. This maintenance includes leveling, repairing, resetting, removing snow, cleaning, trimming grass, and controlling root growth to deter upheaval. The brick sidewalks cannot be replaced with concrete sidewalks unless the public works director has been notified.

- **Chapter 5: Construction of Curb Cuts –** Construction of curb cuts is given in Chapter 5. Minimum curb cut length in any zone is 12 feet and where maximum lengths are identified, they range from 24 feet to 40 feet. Curb openings are prohibited between the points of curvature of any curvature at intersections, closer than 10 feet from said points, or between points of curvature of any curb return of short radius if it is deemed hazardous by the city engineer. In short, all curb cuts shall be made to accommodate the vehicles and uses common to each zone (semi-trucks in industrial zones, private automobiles and light trucks in residential zones).
- **Chapter 9: Pedestrian Mall –** Chapter 9 addresses the pedestrian mall. The pedestrian mall in Downtown Helena is generally the portion of Last Chance Gulch between 6th Avenue and Broadway Street. Motor vehicles are generally prohibited, with exception to maintenance, construction, or emergency vehicles. Riding a bicycle, skateboard or other wheeled device on the mall is always prohibited. Restrictions on prohibited vehicles may be removed if approved by a majority of voters in a regular or special City election.

- **Chapter 10: Trees –** Regulation of trees is presented in Chapter 10. Trees can provide useful shade for pedestrians. Property owners are responsible for planting trees that provide 60 percent live vegetative coverage (50 percent if the trees are native to the region and do not require supplemental water), landscaping in the boulevard between the sidewalk and the street, and maintaining all trees and landscaping according to the Helena Arboricultural Standards.

  Landscaping should not create any unsafe conditions for pedestrians, bicyclists, or other users in the public right-of-way. When there is curb or curb-type sidewalk only and portions of the right-of-way are between the sidewalk and property line, the property owner must provide landscaping and maintenance.
- **Chapter 13: Use of Public Rights-of-Way –** The public right of way in the City of Helena includes the space dedicated for use by pedestrians and its regulation is given in Chapter 13. Among the list of allowed encroachments are bicycle racks available for public use and walkways from the curb to the sidewalk which are allowed only on the portion of public right-of-way that is not needed for installation of curbs, gutters, sidewalks, street paving, or driving surfaces; and as long as they do not cause a hazard. The nonexclusive use of public right-of-way must allow public pedestrian access across it.

  Bicycle racks and walkways from the curb to the sidewalk are permitted encroachments in the public right-of-way, including right-of-ways used exclusively for pedestrian use.

Title 8: Traffic Regulations

- **Chapter 7: Accidents and Accident Reports –** Chapter 7 presents the standard accident reporting methods. There is no particular mention of standard operating procedure in the case of an automobile-bicycle or automobile-pedestrian collision.

- **Chapter 8: Traffic Regulations –** Part 5 of Chapter 8 addresses pedestrian traffic specifically. When traffic controls are not in place or not in operation, pedestrians in a crosswalk always have the right-of-way over motor vehicles. Pedestrians crossing the roadway at any place except within a marked crosswalk or unmarked crosswalk at an intersection must yield the right-of-way to all vehicles on the roadway. Between intersections where traffic control is in operation, pedestrians cannot cross at any place except in a marked crosswalk. Where sidewalks exist, pedestrians cannot be in the roadway; where they do not exist, pedestrians may only walk on the left side of the roadway or shoulder facing oncoming traffic.

  Part 6 of Chapter 8 address bicycle traffic in that it states that application for a bicycle license or license plates must be on a City-issued form, a fee paid, and submitted to the chief of police. It does not, however, state that the license is mandatory in order to ride a bicycle.

Title 11: City of Helena Zoning Ordinance

Title 11 is a blueprint for the development of the City. The zoning ordinance determines the size, use, and location and character of buildings in the City; limits or prescribes certain densities; and is a key tool to carry out the Growth Policy.

- **Chapter 22: Off-Street Parking –** Chapter 22 establishes the regulations for off-street parking. Pedestrian pathways are required through parking areas to provide the shortest feasible connection from parking to building entrances, sidewalks, and transit stops, and must meeting the following criteria:
  - Limit conflicts between pedestrians and motor vehicle traffic
  - Be clearly delineated with contrasting materials, colors, textures, striping, etc., from vehicle travel lanes
  - Minimum of five (5) feet wide
  - Vehicle stops present to prevent vehicles from encroaching over sidewalks, pathways, entrances, driveways, streets, and alleys

Title 12: City of Helena Subdivision Regulations

- **Chapter 4: Public Improvements –**Chapter 4 addresses public improvements. Subdivision streets must be designed according to the City's standards and requirements, which include Resolution 19799, Helena's Complete Streets policy, which requires that all streets be planned, designed, and constructed with the goal of accommodating all users, regardless or mode of travel.

City of Helena Engineering Standards

The current engineering standards for the City of Helena were approved by the City Commission on June 10, 2013. The standards provide baseline minimums for all transportation engineering projects, including travel lane and bike lane widths, trail surface materials, and more.

In Section 5.2.3, it is stated that the design of any street shall conform to the most recent update of the Helena Transportation Plan and shall follow the design guidance given in the American Association of State Highway and Transportation Officials' (AASHTO) Development of Bicycle Facilities Guidelines. The

Engineering Standards require bike lanes to be installed and maintained on all major collector or higher-classified streets, unless specifically excluded from the recommendations of the most recent update of the Transportation Plan or other commission-approved plan. Bike lanes are discouraged from all non-collector classified streets or lower unless specifically recommended in the Transportation Plan.

The minimum design standards for bicycling and walking facilities are:

Bike lanes

- Width – 5 feet (on space-restricted streets without adjacent on-street parking, this may include the gutter pan width)

Paths

- Width – 10 feet; 5 feet more on each side the path replaces the sidewalk
- Inside radius – at least 15 feet
- Asphalt thickness – 3 inches
- High quality untreated aggregate base – 6 inches

Sidewalks

- Width – 5 feet
- Use of sidewalk chases is discouraged

As long as the designs are in compliance with these standards, the document states that "all newly and reconstructed roadways shall be designed to accommodate and coordinate all modes of transportation, both motorized and non-motorized, and people of all ages and abilities." When space is restricted, the following roadway features may be exempted in this order:

1. Narrow boulevard to not less than 4 feet (local street) or 5 feet (all other streets)
2. Eliminate on-street parking on one or both sides of the street
3. Narrow travel and/or center turning lanes on collectors/arterials to 10 feet
4. Eliminate bike lane on collectors/arterials
5. Eliminate boulevard (Commission approval required)
6. Eliminate sidewalk on one side (Commission approval required)
7. The minimum right of way widths for existing streets will be evaluated on a case-by-case basis

E.2 POLICIES

2011 City of Helena Growth Policy

In the first pages of the 2011 City of Helena Growth Policy, the goals and objectives express the City's desire to create a multi-modal transportation system that places equal emphasis on meeting current and future transportation needs while minimizing demand for and negative effects and emissions from petroleum products. Through the Growth Policy, the City hopes to improve public health by facilitating and encouraging walking, bicycling, and other healthy, active transportation choices that will allow safe and efficient travel; minimize vehicle miles traveled (VMT); implement policies to ensure that bicyclists and pedestrians can use and cross major roadways and highways leading out of Helena; design and implement safe, comfortable, integrated, and convenient facilities so that every age and ability can feel safe using every travel mode; and promote compact development.

Additionally, one of the Policy's land use objectives is using pedestrian and bicycle trails in order to minimize the impact on open space. The trails would also foster open space connectivity throughout the city to link parks, open spaces, and water bodies.

- **Chapter 6: Transportation** – The Growth Policy recognizes the need to include facilities for safe travel by pedestrians and bicyclists in street improvement projects and developing areas.

  Planning for walking trips is commonly overlooked, yet it is an essential part of nearly all trips. Chapter 6 discusses the City's Complete Streets policy, which dictates a multi-modal approach that accomplishes most of the goals outlined above.

  Bicycling plays a role in reducing general congestion. It also helps to reduce seasonal congestion due to bicycle ridership typically being higher during the warmer months, the same time that automobile traffic volume is highest.

  Public comments during the Growth Policy development process indicate that there is a strong need for better connectivity for pedestrians, complete streets, a more pedestrian-friendly environment, better non-motorized transportation-related law enforcement, public outreach, education, more sidewalks, accessible design, maintenance of existing infrastructure, seasonal maintenance, and removing major barriers to walking.

- **Chapter 7: Environment** – The Policy states that improving bicycle and pedestrian connectivity, coordinating traffic signal timing, and reducing traffic congestion can help air quality, reduce energy use, and maintain individual health.

2004 Lewis and Clark County Growth Policy

Under "Transportation", Issue D, the 2004 Lewis and Clark County Growth Policy states that there is benefit in providing and accommodating bicycle and pedestrian travel in Lewis and Clark County, including developed, recreational, and tourist areas. The policy's goals include:

- Establishing safe pedestrian and bicycle access in designated areas of the county as part of the non-motorized network
- Encouraging the provision for non-motorized and pedestrian features in the design of roadway and bridge projects
- Providing for improvement and dedication of bikeways and pedestrian paths through developing areas
- Providing wide shoulders, preferably with physical separation between motorized and non-motorized traffic
- Establishing standards for widened shoulders for pedestrians and bicyclists
- Exploring opportunities for shared use paths to natural and scenic areas

In addition to the goals and policies above, the Helena Valley Planning Area set forth additional priorities and action items that pertain to bicycling and walking. These include:

- Consideration during planning and design
- Improvements to and dedication of bikeways and walking paths through developed areas
- Encouraging mixed use development that reduces the need for automobile trips
- Creating additional connections between the trails and open space systems in Helena and East Helena to Lewis and Clark County as a whole

City of Helena Complete Streets Policy

The City of Helena Complete Streets Policy requires the planning, design, construction, and maintenance of streets to work toward the goal of making them complete streets that have "appropriate street features to accommodate and coordinate all modes of transportation, both motorized and non-motorized, and people of all ages and abilities, with special consideration to optimize safety, interconnectivity, compatibility, and convenience." Elements of complete streets defined in the Policy are: sidewalks; bike lanes; motor vehicle lanes; shared use lanes and paths; paved shoulders; street trees and other landscaping; planting strips (boulevards); curbs and gutters; accessible curb ramps; crosswalks; refuge islands; pedestrian and traffic signals; directional signs; street furniture; bicycle parking facilities; public transportation stops and facilities; transit priority signalization; traffic calming devices such as rotary circles and curb bulb outs; surface treatments such as paving blocks, textured asphalt, and concrete; narrow vehicle lanes; raised medians; and dedicated transit lanes.

It also states that the City Code and the revised Engineering Standards should reflect the spirit of complete streets and this Policy. Coordination between transportation agencies outside of Helena City boundaries is recommended so that the projects with complete streets goals and features can extend beyond the City's corporate limits.

Helena Snow Policy, Procedures, Plan, Codes, and Comparison (Winter 2013-2014)

The Helena Snow Policy, Procedures, Plan, Codes, and Comparison document provides insight into the complexity of snow and ice control operations and summarizes policies and procedures that City personnel follow. The Helena area receives approximately 35 inches of snow per year, December being the snowiest month. In Helena's cold, icy, and snowy climate, tradeoffs and compromises are made in order to provide the best possible and practical outcomes. The document sets out how to address roadway level of service, priorities, operations, procedures, and special requests in a safe, predictable, and uniform manner. The stated primary objectives of the Street Division are to provide for the safe and orderly movement of vehicular traffic, with higher priority given to arterial and other collector streets, and to keep all lanes of traffic moving during all weather.

Ord. 3146, 11-7-2011 defines vehicles (and thus, vehicular traffic) as any motorized vehicle, electric personal assistive mobility device, or bicycle. The Snow Policy document does not make specific reference to bicycles on the road or bicycle lanes; however, if bicycles are vehicles, the purpose of this document should be understood to include bicycles and bicycle traffic on public roads.

- **Method** – All plowing is done by pushing snow toward the curb and leaving the berm approximately two feet from the curb. The act of plowing snow to the center of the street where it is loaded into a truck by frontend loaders is limited due to high cost and manpower demands. It is done selectively if it allows for greater access to parking, additional snow storage, or facilitates traffic movements.

Chemical deicer is used in anticipation of heavy snowfall or freezing in lieu of straight road salt. Some salt, however, is added to all sanding materials at a 3 percent salt to sand ratio, which prevents the sand from freezing and becoming unworkable.

- **Priority** – The following street classifications are prioritized for snow removal in this order: emergency snow routes, major arterials, selected collector streets, hospital and public accesses, business districts, and finally residential streets. It normally takes a minimum of two days after a storm to plow all of the above street classifications. The City of Helena's snow plow area map can be found on their website (http://www.helenamt.gov/fileadmin/user_upload/City_Public_Works/streets/Documents/SnowPlowAreas.pdf).

  Special requests are logged in the order they are received and are cleared after residential streets have been plowed and sanded. The special request process can be sped up by submitting photos, a detailed description of the location of the violation, and a completed Sidewalk Complaint Form (found on the Code Enforcement web page on the City's website).

- **Sidewalks, Driveways, and Curb Ramps** – The Streets Division's snow removal machine operators take care to not block driveways, curb ramps, or sidewalks, but the Division Supervisor recognizes that this is not always possible and subsequently there is not a specific requirement in the policy to do so. Additionally, due to the large area over which the Street Division has responsibility and the limitations on manpower and equipment, the Division cannot clear sidewalks, dig out private driveways, nor sand or plow on- or off-street parking or alleys.

  The policy document states that it is the responsibility of residents and business owners to remove snow on sidewalks and driveways (Ord. 2025, 1-24-1977). Per this ordinance, the property owner, lessee, or occupant shall "remove said snow, ice, or obstruction *within a reasonable time* after the snow has been deposited" on the sidewalk [emphasis added]. The language requiring timely snow removal is less clear than in other Montana cities (**Table E.1**).

Table E.1: Sidewalk Snow Removal Policies in Montana Cities

City	Business Districts	Residential Areas
Billings	Within 24 Hours	
Bozeman	9 AM following day or within 4 Hours	With 24 hours
Butte	Before 12 PM	
Great Falls	Before 11 AM	Within 24 Hours
Havre	Within 24 hours	
Missoula	9 AM following day	
Helena	Within reasonable time	

Snow from sidewalks and driveways is not allowed to be pushed into the public right-of-way or be shoveled, plowed, or placed on sidewalks in a manner that creates a hazard for pedestrians (Ord. 2309, 7-11-1983). In order to maintain adequate sight lines at intersections, snow may not be piled in excess of 2.5 feet in height from the street grade within 50 feet of an intersection. The Street Division also provides assistance to those who are not physically able to remove the snow berms that can be left in front of private driveways.

- **Equipment and Personnel** – The Helena Street Division maintains several pieces of equipment that are small enough to be used to clear bicycle and pedestrian infrastructure: two single axle, 4WD trucks with plows and sanders, and one snow blower.

  When compared with the six other major cities in Montana, Helena has the second highest number of miles of roadway per operator to plow and sand (21.1 miles). This means that roads are cleared more slowly than Kalispell, for example, which has the same number of operators on staff but fewer miles of paved streets to clear.

E.3 SURVEYS

2014 Helena Transportation Plan Bicycling and Walking Survey

A public survey was created as part of the active transportation section of this Plan in order to collect information about the preferences, demographic information, and key identifiers of people involved or interested in bicycling in the Helena area. Questions were typically either walking or bicycling specific, although a few of the questions, like those that discussed funding, infrastructure and construction requirements, targeted both walking and bicycling. From March 24th to July 1st, 2014, 928 people took the survey. Not all 928 respondents answered all 29 questions in the survey.

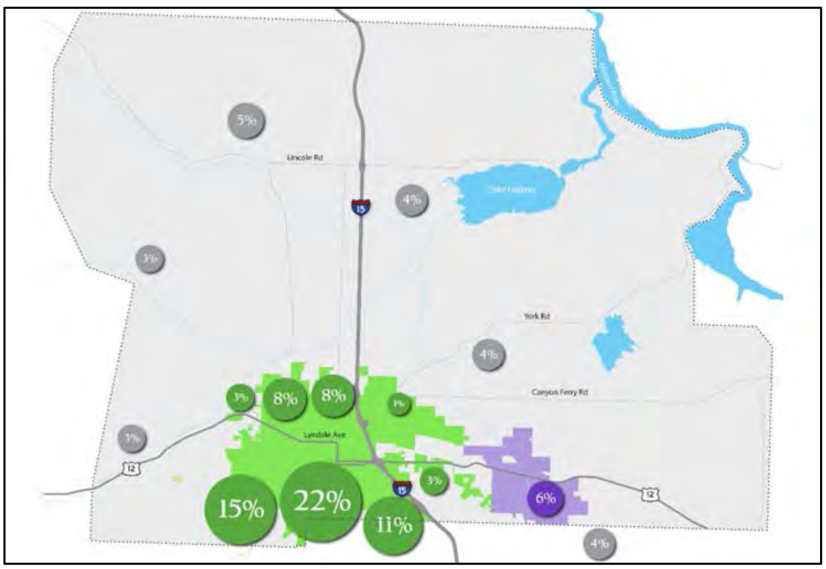


Figure E.1: Survey Respondents by Location

DEMOGRAPHICS

57 percent of respondents were female and 43 percent were male. The majority of survey respondents (51 percent) are between the ages of 45 and 69. The next largest respondent age groups were 26 to 44 years old (38 percent), 19 to 25 years old (8 percent), over 70 (2.5 percent), and finally 18 and under (0.5 percent).

The percentage of responses from each area of the study area boundary is shown **in Figure E.1**. Green response rates are from areas in the City of Helena, purple from the City of East Helena, and gray from areas in unincorporated Lewis & Clark County or Montana City (Jefferson County). 75 percent of respondents to the survey live within the city boundaries of Helena proper, while the remaining 25 percent are fairly evenly distributed between other areas that were included as options in the survey. 88 percent of respondents work in the City of Helena, 73 percent of which also live in the City.

Types of Bicyclists

It is important to consider bicyclists of all skill levels when creating a non-motorized plan or project. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people.

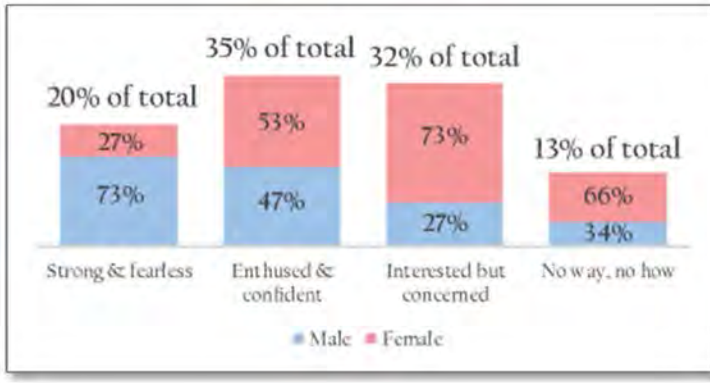


Figure E.2: Four Types of Bicyclists Overall and by Gender

The bicycle planning and engineering professions currently use several systems to classify the population, which can assist in understanding the characteristics and infrastructure preferences of different bicyclists. The most conventional framework classifies the "design cyclist" as *'Experienced and Confident' or 'Casual and Less Confident'*.[i] A more detailed understanding of the US population as a whole was developed by planners in Portland, OR[ii] and supported by data collected nationally since 2005. This classification provides the following alternative categories to address varying attitudes towards bicycling in the US. Note that **Figure E.2** reflects the results of the surveyed Greater Helena area population, while **Figure E.3** depicts the typical distribution of bicycle types in the United States.

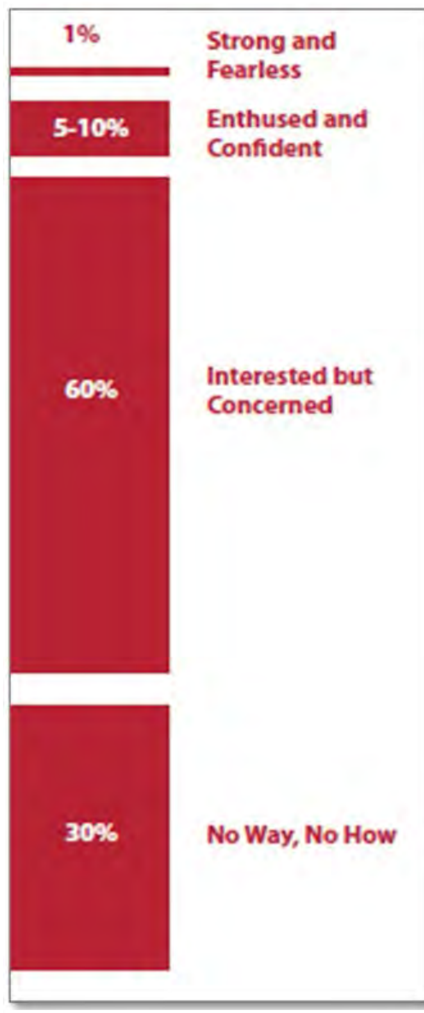


Figure E.3: Typical Distribution of Bicyclists Types in the U.S.

Strong and Fearless (approximately 1 percent of population nationally)

Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections – even if shared with vehicles – over separate bikeways such as shared use paths.

Because many of those who are interested and involved in bicycling tend to be more confident and experienced, bicycling survey respondents tend to shift the national average figures toward the stronger and more fearless kind of rider. In Helena, 160 survey respondents (20 percent) identified themselves are "Strong and Fearless. 73 percent of these were male and only 27 percent were female, even though 56 percent of those who completed the self-selection were female. This indicates that three times more male than female respondents consider themselves more confident riders who don't need dedicated infrastructure, programs, or incentives to ride. Male riders are also currently riding a bike more often than women, as indicated by 53 percent of male respondents saying they ride a few to 5+ times per week; 26 percent of women say that they ride a few to 5+ times per week. Conversely, 74 percent of women say they never ride or ride only a few times per month, while 47 percent of men do not ride or very rarely ride.

Enthused and Confident (5-10 percent of population nationally)

This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type.

The most common type of self-identified bicyclist in the Helena area was "Enthused and Confident" (35 percent of total).

Interested but Concerned (approximately 60 percent of population nationally)

This user type comprises the bulk of the population nationally and represents bicyclists who typically only ride on low traffic streets or shared use paths under favorable weather conditions. These people perceive significant barriers to increased bicycling, specifically sensitivity to vehicle traffic and other perceived safety issues. These people may become "Enthused and Confident" with lower-stress bicycle facility development, encouragement, education, and experience.

Recent developments in bicycle facility planning and design have focused largely on one principle: lowering the perceived level of traffic stress by providing separation from traffic where possible. This separation often surrounds physical space on the road dedicated to bicyclists such as bike lanes, or protected facilities that go further by providing a physical barrier to automobile traffic. Additionally, bicyclists have also responded well to travelling on local roadways with low volumes of traffic traveling at low speeds. This focus stems from the popularity of national programs such as Rails to Trails, planning research of bicycle-friendly cities in Europe and Canada, and from the common finding that fear is the number one reason people do not bicycle more in the U.S.

32 percent of survey respondents in the Helena area self-identified as "Interested but Concerned". Unlike the "Strong and Fearless" and "Enthused and Confident" groups, respondents who were interested in riding a bike but had concerns about safety and traffic were predominantly female (73 percent). Women are more likely to start riding or feel safer riding if dedicated and/or protected facilities are present.

No Way, No How (approximately 30 percent of population nationally)

Persons in this category are not bicyclists either because they perceive severe safety issues with riding in traffic or for other reasons. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people, however, will not ride a bicycle under any circumstances.

13 percent of those who took the survey identified themselves as not being interested in riding a bicycle, of which 66 percent were female and 34 percent were male.

Reasons to Ride

Survey respondents were asked how often they ride a bike for several different reasons (see **Figure E.4**). Even though recreation and fun received the highest overall score, it was not the highest ranking reason for daily trips. 10 percent of respondents travel to work and school daily by bike, compared to 6 percent for recreation and fun. Additionally, female respondents indicated that they ride for exercise, fitness, and to do errands much more often than males.

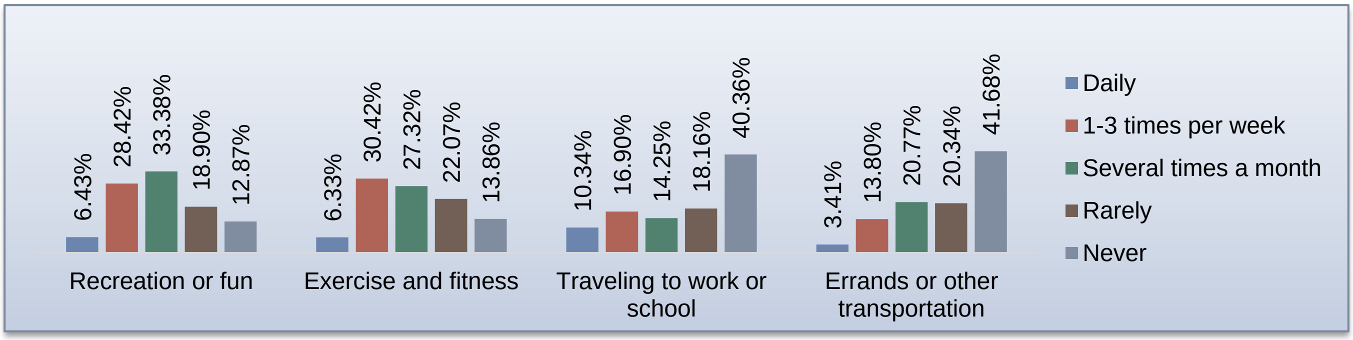


Figure E.4: Bike Trip Purpose and Frequency

Overall Bicycling Conditions

Survey respondents were asked to rate the existing overall bicycling conditions in both Helena and Lewis and Clark County. Their responses are summarized in **Figure E.5**. Despite significant "Fair" and "Poor" ratings, nearly 70 percent of survey respondents believe that bicycling infrastructure has improved over the last five years.

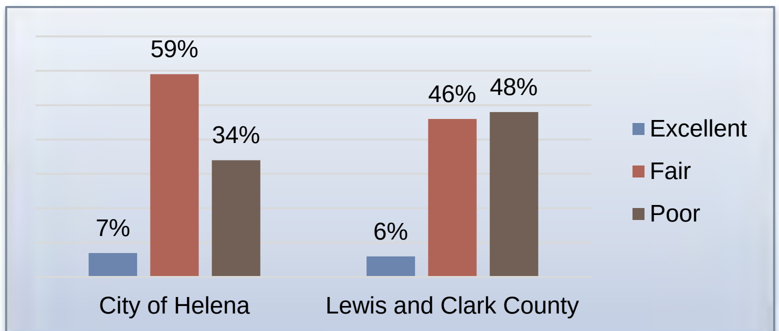


Figure E.5: Overall Bicycling Conditions

Preferred Bicycling Facilities

Survey respondents were given the chance to select which facilities and types of bikeways they preferred or wished to have in their community (on a scale of 1-5, with one being least desirable and five being the most). The results show that they survey respondents prefer more separated facilities ranging from shared use paths down to a conventional bike lane. The only difference in ranking when separated out by gender was that males tended to prefer buffered and normal bike lanes more than cycle tracks. Male respondents also gave protected facilities a slightly lower score overall than women did.

Bicycling Destinations

When asked to where they would like to ride a bicycle from home, respondents answered that their top 5 most desired destinations were:

- Work
- Paved off-street paths
- Downtown
- Parks, swimming pools, and other community centers
- Neighborhood stores and shopping

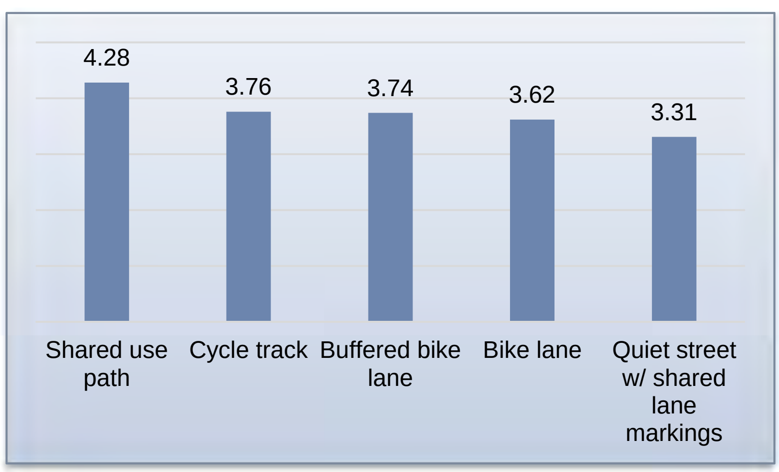


Figure E.6: Bicycle Facilities' Potential to Make You Ride More Often

Existing Obstacles to Bicycling

When asked what obstacles and/or concerns prevented them from bicycling more frequently, survey respondents cited the lack of bike lanes or existing paths that are in poor condition as the top reason (62 percent). The second most common answer was that there are too many cars and/or that motorists drive too fast (51 percent). Other reasons or obstacles that hinder people from riding more are inclement weather like snow and ice (46 percent), having to carry things to and from work or shopping (32 percent), and destinations being too far away (28 percent).

Only 5 percent of female respondents said that they do or would ride a bike during the winter. However, nearly 25 percent of male respondents said that they do or would ride during the winter.

Overall Walking Conditions

Overall, most men and women who took the survey rated the City of Helena's existing infrastructure as "Fair", with 14 percent agreeing that it was "Excellent" and 13 percent that it was "Poor". 57 percent of respondents rated walking conditions in Lewis and Clark County as "Fair", with 35 agreeing that it was "Poor". Only 8 percent of respondents agreed that it was excellent. Despite the "Fair" and "Poor" ratings, nearly 70 percent of survey respondents believe that walking infrastructure, like sidewalks, crosswalks, and trails, has improved over the last five years.

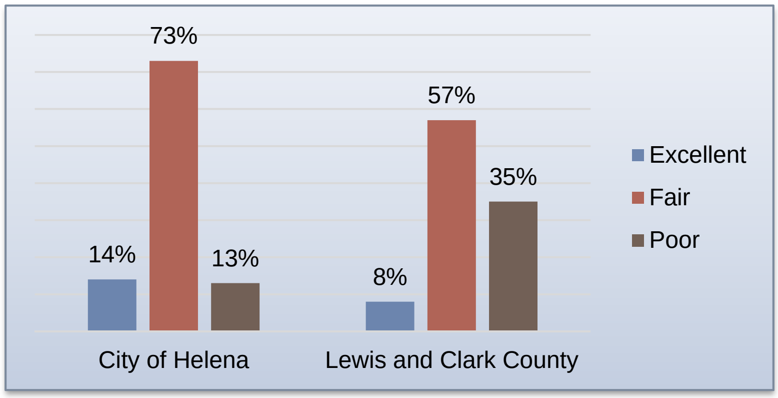


Figure E.7: Overall Walking Conditions

Walking Habits

In addition to demographic information, respondents were also asked about their walking habits. 72 percent of respondents walk a few to 5+ times per week while the remaining 28 percent walk only a few times a month or never walk.

More people walk than ride a bicycle during winter months (62 percent vs. 14 percent), but winter is still the least popular season to walk in the Helena area.

Sidewalk Network

About one fifth of those surveyed believe that the sidewalk network near their home is complete. Many more say that it is almost complete but that there are gaps (32 percent), that sidewalks are spotty at best (17 percent), or that there are no sidewalks at all where they live (30 percent).

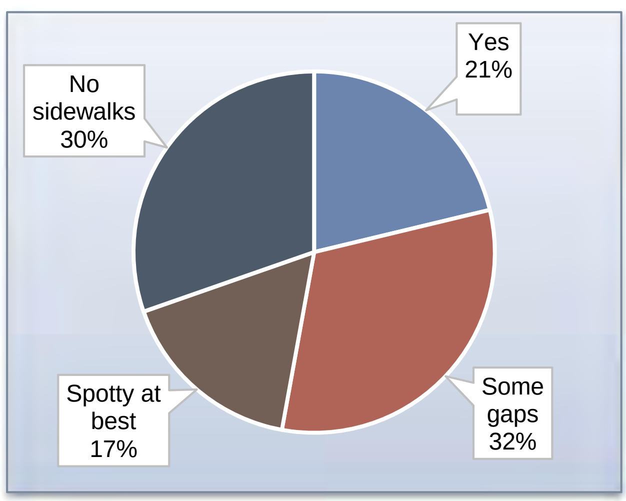


Figure E.8: Sidewalk Network Rating

Priority Walking Facilities and Programs

When asked to rate several focus areas that could be implemented in order to improve walking conditions in the Helena area, respondents, as a whole, answered that their five highest priorities (those given high or moderate priority) are:

1. Focus on Safe Routes to School improvements
2. New and improved sidewalks
3. Improve sidewalks for disabled access (Note: Nearly twice as many female respondents, by percentage, gave this the “high priority” ranking as men).
4. New and improved crossings at signalized intersections
5. Education or promotional programs for motorists (note: the same type of programs for pedestrians received the lowest priority score of all options)

The most opposed (only 6 percent) program was traffic calming and reducing vehicle speeds.

Walking Destinations

When asked to where they would like to walk from home, respondents answered that their top 5 most desired destinations were:

- Downtown
- Paved off-street multi-use paths
- Work
- Neighborhood stores and shopping
- Parks, swimming pools, and other community centers

Existing Obstacles to Walking

When asked what obstacles and/or concerns prevented them from walking more frequently, survey respondents cited the lack of adequate sidewalks and/or trails more than any other reason. The second most common answer was that destinations are too far away to reasonably reach on foot. Other popular reasons or obstacles that hinder people from walking more are inclement weather (snow and ice), the presence of too many cars or motorists driving too fast, having to carry things to and from work or shopping, and not having enough time.

Walking and Bicycling Funding

The City of Helena has considered the creation of a non-motorized district to pay for the upkeep of non-motorized infrastructure. When asked whether they would support the creation of this type of district, 79 percent said yes. Note that subsequent to the survey the Helena City Commission made a decision to not proceed with the creation of a non-motorized district and instead continue to consider funding non-motorized projects along with other types of transportation through the annual budget process.

Commuter Challenge

Since 2011, Helena area commuters participated in a month-long challenge that provided motivation to ride, walk, or take the bus during the month of May, which is also National Bike Month.

In 2013 Commuter Challenge volunteers asked participants about their experience with the Challenge and bicycling and walking in general. When asked why they chose to participate in the challenge, 150 participants surveyed responded emphatically as a whole that competition, health, and exercise were some of their main motivations. Statistics in this section are based on responses from those 150 participants.

In addition to asking for feedback on the challenge itself, survey facilitators also asked other questions related to bicycling, walking, and transit.

- 99.3 percent (all but one respondent) agreed that bicyclists, under the Montana Vehicle Code, have the same rights and responsibilities as drivers of motor vehicles
- 63 percent said that the Commuter Challenge helped them to increase the amount of days a month that they walked, biked, or took the bus to work
- 30 percent commuted from Downtown, 26 percent from the west side, 23 percent from the east side, and 10 percent from north of Custer Avenue/Valley; remaining commuters were from other areas
- 93 percent were somewhat to very satisfied with the Helena Commuter Challenge
- 95 percent were somewhat to very likely to participate again in 2014

Open House Survey

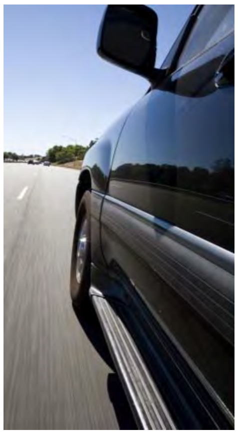
In 2011, NMTAC agreed that they needed to present information about their work because it seemed the general public was not aware of the committee or their efforts to improve bicycling and walking in Helena. In October of that year, the committee hosted an open house at Helena High School and invited the public to attend. There were information tables on various non-motorized efforts in the area and a public survey and many attendees provided preference survey responses to survey questions. General sentiment showed that those at the meeting wanted more bike lanes and sidewalks; better education for motorists and bicyclists alike; a handheld cell phone ban for motorists; and street and sidewalk maintenance, especially around ADA ramps. Attendees suggested many ways to improve education and communication, including billboards, flyers, ads in the newspaper, on television, and on the radio, and incorporate better education materials into drivers' education courses for young drivers. They were also asked several specific questions. The attendees' top three answers were:

- Which streets need bike lanes?
    1. Montana Ave (21 votes)
    2. Broadway (19 votes)
    3. Euclid/Lyndale (17 votes)
- Where is secure bicycle parking needed most?
    1. Civic Center (8)
    2. Cinemark Theater (5)
    3. Downtown (tie with Great Northern Town Centre) (4)
- Which streets that don't currently have sidewalks need them?
    1. Montana Ave (18)
    2. Broadway (10)
    3. Euclid (6)
- Which sidewalks need repair?
    1. Mansion District (6)
    2. Jackson St (1)
    3. 6th Ave to Placer (1)
- Where are marked and/or signalized crossings needed?
    1. LCG & 14th (4)
    2. Hauser & Benton (4)
    3. (Eight-way tie for 3rd) (2)
- Which signalized intersections need to have timing changes?
    1. Lyndale & Montana (14)
    2. Benton & Euclid (6)
    3. 11th & Montana (5)

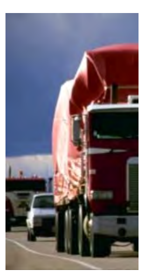
[i] *Guide for the Development of Bicycle Facilities, 4th Edition. (2012). AASHTO.*
[ii] *Four Types of Cyclists. (2009). Roget Geller, City of Portland Bureau of Transportation.* *http://www.portlandonline.com/transportation/index.cfm?&a=237507*

Appendix F:

Estimated Planning Level Costs



Greater Helena Area Long Range Transportation Plan—2014 Update



City of Helena

THE SEAL OF LEWIS & CLARK COUNTY STATE OF MONTANA

MONTANA MDT DEPARTMENT OF TRANSPORTATION

RPA

alta PLANNING + DESIGN

PREPARED BY:
Robert Peccia & Associates
ALTA Planning + Design

Greater Helena Area Long Range Transportation Plan - 2014
Estimated Planning Level Cost Summary (MSN PROJECTS)

Adjusted for Inflation

Project ID	Location	ROUNDED (2014) Estimated Planning Level Cost	ADJUSTED TO YEAR 2015 (3% per year)	ADJUSTED TO YEAR 2020 (3% per year)	ADJUSTED TO YEAR 2025 (3% per year)	ADJUSTED TO YEAR 2030 (3% per year)	ADJUSTED TO YEAR 2025 (3% per year)
MSN-1	Custer Avenue – Montana Avenue to Green Meadow Drive	$7,865,000	$8,100,950	$9,391,221	$10,886,999	$12,621,016	$14,631,217
MSN-2	Montana Avenue – Railroad Grade Separation	$21,780,000	$22,433,400	$26,006,459	$30,148,614	$34,950,506	$40,517,216
MSN-3	Neill Avenue – Park Avenue to North Last Chance Gulch	$968,000	$997,040	$1,155,843	$1,339,938	$1,553,356	$1,800,765
MSN-4	Country Club Avenue	$5,324,000	$5,483,720	$6,357,134	$7,369,661	$8,543,457	$9,904,208
MSN-5	McHugh Lane - City Limits to Sierra Road	$6,534,000	$6,730,020	$7,801,938	$9,044,584	$10,485,152	$12,155,165
MSN-6	Airport Road – Washington Street to "B" Street	$1,331,000	$1,370,930	$1,589,284	$1,842,415	$2,135,864	$2,476,052
MSN-7	Airport Road – Future Extension from "B" Street to Wylie Drive	$6,534,000	$6,730,020	$7,801,938	$9,044,584	$10,485,152	$12,155,165
MSN-8	Sanders Street – Future Extension from Lowes Property to North Montana Avenue	$3,751,000	$3,863,530	$4,478,890	$5,192,261	$6,019,254	$6,977,965
MSN-9	11th Avenue – Montana Avenue to Interstate 15	$3,146,000	$3,240,380	$3,756,489	$4,354,800	$5,048,406	$5,852,487
MSN-10	East Side Loop Road – South Helena Interchange to Crossroads Parkway	$4,235,000	$4,362,050	$5,056,811	$5,862,230	$6,795,932	$7,878,348
MSN-11	East Side Frontage Road – South Helena Interchange to 18th Street	$4,719,000	$4,860,570	$5,634,733	$6,532,200	$7,572,610	$8,778,730
MSN-12	Alice Street – 18th Street to East Side Loop Road	$4,356,000	$4,486,680	$5,201,292	$6,029,723	$6,990,101	$8,103,443
MSN-13	Montana Avenue – Custer Avenue to Cedar Street	$3,872,000	$3,988,160	$4,623,370	$5,359,754	$6,213,423	$7,203,061
MSN-14	Boulder Avenue Connections – North Hannaford Street to Blaine Street	$2,299,000	$2,367,970	$2,745,126	$3,182,354	$3,689,220	$4,276,817
MSN-15	Montana Avenue / Lyndale Avenue / Helena Avenue Intersection	$6,050,000	$6,231,500	$7,224,016	$8,374,615	$9,708,474	$11,254,782
MSN-16	Williams Street – Ten Mile Creek Bridge to Barrett Road	$2,541,000	$2,617,230	$3,034,087	$3,517,338	$4,077,559	$4,727,009
MSN-17	Horseshoe Bend Road / Wolf Road – Green Meadow Drive to McHugh Lane	$2,178,000	$2,243,340	$2,600,646	$3,014,861	$3,495,051	$4,051,722
MSN-18	Kelleher Drive extension – Canyon Ferry Road to new East / West route	$1,936,000	$1,994,080	$2,311,685	$2,679,877	$3,106,712	$3,601,530
MSN-19	Cooney Drive (north extension) – Custer Avenue to Mill Road	$2,783,000	$2,866,490	$3,323,048	$3,852,323	$4,465,898	$5,177,200
MSN-20	Andesite Avenue / Faw Road extension – east of Benton Avenue to McHugh Lane	$1,210,000	$1,246,300	$1,444,803	$1,674,923	$1,941,695	$2,250,956
MSN-21	Benton Avenue – MRL Railroad Crossing to Custer Avenue	$1,815,000	$1,869,450	$2,167,205	$2,512,384	$2,912,542	$3,376,435
MSN-22	Henderson Street Railroad Crossing	$2,904,000	$2,991,120	$3,467,528	$4,019,815	$4,660,067	$5,402,295
MSN-23	Benton Avenue Railroad Grade Separation	$5,929,000	$6,106,870	$7,079,536	$8,207,123	$9,514,304	$11,029,687
MSN-24	Lincoln Road – North Montana Avenue to Interstate 15 NB Ramp	$11,616,000	$11,964,480	$13,870,111	$16,079,261	$18,640,270	$21,609,182
MSN-25	Joslyn Street – Hauser Boulevard to US Highway 12 (Euclid Avenue)	$1,210,000	$1,246,300	$1,444,803	$1,674,923	$1,941,695	$2,250,956
MSN-26	Joslyn Street – US Highway 12 (Euclid Avenue) to Country Club Avenue / Leslie Avenue	$363,000	$373,890	$433,441	$502,477	$582,508	$675,287
MSN-27	6th Avenue – Cruse Avenue to Montana Avenue	$2,299,000	$2,367,970	$2,745,126	$3,182,354	$3,689,220	$4,276,817
MSN-28	11th Avenue – Cruse Avenue to Montana Avenue	$2,178,000	$2,243,340	$2,600,646	$3,014,861	$3,495,051	$4,051,722
MSN-29	Carter Drive – Prospect Avenue to Billings Avenue	$968,000	$997,040	$1,155,843	$1,339,938	$1,553,356	$1,800,765
MSN-30	Wylie Drive – East Helena City Limits to US Highway 12 (EAST HELENA)	$2,541,000	$2,617,230	$3,034,087	$3,517,338	$4,077,559	$4,727,009
MSN-31	Montana Avenue – Lewis Street to US Highway 12 (EAST HELENA)	$1,452,000	$1,495,560	$1,733,764	$2,009,908	$2,330,034	$2,701,148
MSN-32	Lane Avenue – Main Street to US Highway 12 (EAST HELENA)	$605,000	$623,150	$722,402	$837,461	$970,847	$1,125,478
MSN-33	Capital Interchange - Reconstruct as per EIS	$50,820,000	$52,344,600	$60,681,738	$70,346,765	$81,551,181	$94,540,170
	TOTAL MSN PROJECTS	$178,112,000	$183,455,360	$212,675,043	$246,548,663	$285,817,473	$331,340,787

Greater Helena Area Long Range Transportation Plan - 2014
Estimated Planning Level Cost Summary (MSN PROJECTS)

Project ID	Location	2004 Update Costs	PER Costs	MDT PET Cost [1]	Other Sources Cost [2]	2004 Update Costs (Adjusted) [3]	ROUNDED (2014) Construction Cost [4]	ASSUMED Right-of-Way Cost (10% ADDED)	ASSUMED Utility Relocation Cost (10% ADDED)	ROUNDED (2014) Estimated Planning Level Cost
MSN-1	Custer Avenue – Montana Avenue to Green Meadow Drive	$4,500,000		$6,436,443		$6,229,052	**$6,500,000**	**$7,150,000**	**$7,865,000**	**$7,865,000**
MSN-2	Montana Avenue – Railroad Grade Separation	$13,000,000				$17,995,040	**$18,000,000**	**$19,800,000**	**$21,780,000**	**$21,780,000**
MSN-3	Neill Avenue – Park Avenue to North Last Chance Gulch	$375,000		$779,949		$519,088	**$800,000**	**$880,000**	**$968,000**	**$968,000**
MSN-4	Country Club Avenue	$1,800,000		$4,394,240		$2,491,621	**$4,400,000**	**$4,840,000**	**$5,324,000**	**$5,324,000**
MSN-5	McHugh Lane - City Limits to Sierra Road		$2,713,801	$5,323,910		$2,965,444	**$5,400,000**	**$5,940,000**	**$6,534,000**	**$6,534,000**
MSN-6	Airport Road – Washington Street to "B" Street	$500,000		$1,015,711		$692,117	**$1,100,000**	**$1,210,000**	**$1,331,000**	**$1,331,000**
MSN-7	Airport Road – Future Extension from "B" Street to Wylie Drive	$4,062,500		$5,389,644		$5,623,450	**$5,400,000**	**$5,940,000**	**$6,534,000**	**$6,534,000**
MSN-8	Sanders Street – Future Extension from Lowes Property to North Montana Avenue	$1,562,500		$3,025,574		$2,162,865	**$3,100,000**	**$3,410,000**	**$3,751,000**	**$3,751,000**
MSN-9	11th Avenue – Montana Avenue to Interstate 15	$1,500,000		$2,561,554		$2,076,351	**$2,600,000**	**$2,860,000**	**$3,146,000**	**$3,146,000**
MSN-10	East Side Loop Road – South Helena Interchange to Crossroads Parkway	$2,100,000		$3,409,276		$2,906,891	**$3,500,000**	**$3,850,000**	**$4,235,000**	**$4,235,000**
MSN-11	East Side Frontage Road – South Helena Interchange to 18th Street	$2,250,000		$3,829,295		$3,114,526	**$3,900,000**	**$4,290,000**	**$4,719,000**	**$4,719,000**
MSN-12	Alice Street – 18th Street to East Side Loop Road	$1,500,000		$3,562,116		$2,076,351	**$3,600,000**	**$3,960,000**	**$4,356,000**	**$4,356,000**
MSN-13	Montana Avenue – Custer Avenue to Cedar Street	$1,500,000		$3,138,241		$2,076,351	**$3,200,000**	**$3,520,000**	**$3,872,000**	**$3,872,000**
MSN-14	Boulder Avenue Connections – North Hannaford Street to Blaine Street	$1,000,000		$1,883,814		$1,384,234	**$1,900,000**	**$2,090,000**	**$2,299,000**	**$2,299,000**
MSN-15	Montana Avenue / Lyndale Avenue / Helena Avenue Intersection	$3,600,000				$4,983,242	**$5,000,000**	**$5,500,000**	**$6,050,000**	**$6,050,000**
MSN-16	Williams Street – Ten Mile Creek Bridge to Barrett Road	$2,000,000		$2,090,005		$2,768,468	**$2,100,000**	**$2,310,000**	**$2,541,000**	**$2,541,000**
MSN-17	Horseshoe Bend Road / Wolf Road – Green Meadow Drive to McHugh Lane	$937,500		$1,757,745		$1,297,719	**$1,800,000**	**$1,980,000**	**$2,178,000**	**$2,178,000**
MSN-18	Kelleher Drive extension – Canyon Ferry Road to new East / West route			$1,501,159		$0	**$1,600,000**	**$1,760,000**	**$1,936,000**	**$1,936,000**
MSN-19	Cooney Drive (north extension) – Custer Avenue to Mill Road	$1,500,000		$2,242,779		$2,076,351	**$2,300,000**	**$2,530,000**	**$2,783,000**	**$2,783,000**
MSN-20	Andesite Avenue / Faw Road extension – east of Benton Avenue to McHugh Lane	$500,000		$964,337		$692,117	**$1,000,000**	**$1,100,000**	**$1,210,000**	**$1,210,000**
MSN-21	Benton Avenue – MRL Railroad Crossing to Custer Avenue	$1,050,000				$1,453,446	**$1,500,000**	**$1,650,000**	**$1,815,000**	**$1,815,000**
MSN-22	Henderson Street Railroad Crossing	$1,700,000				$2,353,198	**$2,400,000**	**$2,640,000**	**$2,904,000**	**$2,904,000**
MSN-23	Benton Avenue Railroad Grade Separation	$3,500,000				$4,844,819	**$4,900,000**	**$5,390,000**	**$5,929,000**	**$5,929,000**
MSN-24	Lincoln Road – North Montana Avenue to Interstate 15 NB Ramp				$9,300,000	$0	**$9,600,000**	**$10,560,000**	**$11,616,000**	**$11,616,000**
MSN-25	Joslyn Street – Hauser Boulevard to US Highway 12 (Euclid Avenue)	$312,500		$910,700		$432,573	**$1,000,000**	**$1,100,000**	**$1,210,000**	**$1,210,000**
MSN-26	Joslyn Street – US Highway 12 (Euclid Avenue) to Country Club Avenue / Leslie Avenue	$187,500		$284,466		$259,544	**$300,000**	**$330,000**	**$363,000**	**$363,000**
MSN-27	6th Avenue – Cruse Avenue to Montana Avenue	$1,062,500		$1,808,334		$1,470,748	**$1,900,000**	**$2,090,000**	**$2,299,000**	**$2,299,000**
MSN-28	11th Avenue – Cruse Avenue to Montana Avenue	$1,000,000		$1,721,710		$1,384,234	**$1,800,000**	**$1,980,000**	**$2,178,000**	**$2,178,000**
MSN-29	Carter Drive – Prospect Avenue to Billings Avenue	$250,000		$793,625		$346,058	**$800,000**	**$880,000**	**$968,000**	**$968,000**
MSN-30	Wylie Drive – East Helena City Limits to US Highway 12 (EAST HELENA)			$2,012,768		$0	**$2,100,000**	**$2,310,000**	**$2,541,000**	**$2,541,000**
MSN-31	Montana Avenue – Lewis Street to US Highway 12 (EAST HELENA)			$1,183,315		$0	**$1,200,000**	**$1,320,000**	**$1,452,000**	**$1,452,000**
MSN-32	Lane Avenue – Main Street to US Highway 12 (EAST HELENA)			$445,759		$0	**$500,000**	**$550,000**	**$605,000**	**$605,000**
MSN-33	Capital Interchange - Reconstruct as per EIS	$30,000,000				$41,527,016	**$42,000,000**	**$46,200,000**	**$50,820,000**	**$50,820,000**
	TOTAL MSN PROJECTS						$147,200,000	$161,920,000	$178,112,000	$178,112,000

NOTES:

(shaded)	*Denotes cost estimate source utilized*
1	*MDT PET worksheets attached (Appendix F)*
2	*Lincoln Interchange / Montana Avenue Traffic Study*
3	*2004 LRTP costs updated to year 2014 by inflationary adjustment of 3 percent per year*
4	*Does not include right-of-way or utility relocation costs*

MSN-1 Custer Avenue - Montana Avenue to Green Meadow Drive				$ 6,500,000 TOT
		LENGTH (FT)	6494.4	
		WIDTH (FT)	80	
		SURFACING (IN)	3	
		CRUSHED TOP (IN)	6	
		GRANULAR BASE (IN)	10	
TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK	UNIT	$ 1.00	30750.00	$ 30,750
FINISH GRADE CONTROL	CRFT	$ 0.63	12988.80	$ 8,183
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	18459.76	$ 80,300
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	1845.98	$ 9,396
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	922.99	$ 7,430
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	11044.61	$ 44,841
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	11757.55	$ 255,021
COVER - TYPE 1	SQYD	$ 0.54	97169.00	$ 52,471
BLOTTER MATERIAL	TON	$ 30.51	286.90	$ 8,753
TRAFFIC GRAVEL	CUYD	$ 14.61	2549.65	$ 37,250
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	12516.88	$ 384,769
HYDRATED LIME	TON	$ 192.18	177.00	$ 34,016
ASPHALT CEMENT PG 64-28	TON	$ 685.62	675.91	$ 463,419
EMULS ASPHALT CRS-2P	TON	$ 613.48	173.60	$ 106,500
COLD MILLING	SQYD	$ 1.42	25977.60	$ 36,888
SIDEWALK-CONCRETE 4"	SQYD	$ 57.78	5772.80	$ 333,552
SIDEWALK-CONCRETE 6"	SQYD	$ 66.91	1443.20	$ 96,565
CURB AND GUTTER-CONC	LNFT	$ 18.15	12988.80	$ 235,747
SEEDING AREA NO 1	ACRE	$ 361.26	12.23	$ 4,417
SEEDING AREA NO 2	ACRE	$ 1,523.04	3.42	$ 5,214
SEEDING AREA NO 3	ACRE	$ 252.38	4.89	$ 1,234
FERTILIZING AREA NO 1	ACRE	$ 100.70	12.23	$ 1,231
FERTILIZING AREA NO 2	ACRE	$ 93.64	3.42	$ 321
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	17.12	$ 1,907
MULCH	ACRE	$ 6,142.57	3.42	$ 21,028
Signs - Urban	MILE	$ 52,000.00	1.23	$ 63,960
Striping & Pavement Markings - Urban	MILE	$ 20,000.00	1.23	$ 24,600
Drainage Pipe - Urban	MILE	$ 240,000.00	1.23	$ 295,200
Signals	LS	$ 225,000.00	6.00	$ 1,350,000
Lights - Urban	MILE	$ 175,000.00	1.23	$ 215,250
Traffic Control			5%	$ 211,011
Subtotal 1				*$ 4,431,224*
Mobilization			10%	$ 443,122
Subtotal 2				*$ 4,874,346*
Contingencies			10%	$ 487,435
Subtotal 3				*$ 5,361,781*
Long-term Inflation	% PER YEAR	3%	0	$ -
Subtotal 4				*$ 5,361,781*
Construction Engineering (CE)			10%	$ 536,178
Subtotal 5				*$ 5,897,959*
Indirect Costs (IDC)			9.13%	$ 538,484
Total				**$ 6,436,443**

MSN-2 Montana Avenue - Railroad Grade Separation					$ -	TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**	
MISCELLANEOUS WORK		UNIT	$ 1.00	0.00	$ -	
FINISH GRADE CONTROL		CRFT	$ 0.63	0.00	$ -	
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	0.00	$ -	
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	0.00	$ -	
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	0.00	$ -	
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	0.00	$ -	
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	0.00	$ -	
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	0.00	$ -	
TOP SURF 3/4 IN GR 2A		CUYD	$ -	0.00	$ -	
COVER - TYPE 1		SQYD	$ 0.54	0.00	$ -	
BLOTTER MATERIAL		TON	$ 30.51	0.00	$ -	
TRAFFIC GRAVEL		CUYD	$ 14.61	0.00	$ -	
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	0.00	$ -	
HYDRATED LIME		TON	$ 192.18	0.00	$ -	
ASPHALT CEMENT PG 64-28		TON	$ 685.62	0.00	$ -	
LIQUID ASPHALT MC-70		TON	$ -	0.00	$ -	
EMULS ASPHALT CRS-2P		TON	$ 613.48	0.00	$ -	
COLD MILLING		SQYD	$ 1.42	0.00	$ -	
PORT CEM CONC PAVEMENT		SQYD	$ 131.10	0.00	$ -	
GUARD RAIL-STEEL		LNFT	$ 16.51	0.00	$ -	
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	0.00	$ -	
GUARD RAIL-STL/BR APPR-TY 1		EACH	$ 2,301.05	0.00	$ -	
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	0.00	$ -	
FARM FENCE-TYPE F5W & F5M		LNFT	$ -	0.00	$ -	
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	0.00	$ -	
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	0.00	$ -	
CURB AND GUTTER-CONC		LNFT	$ 18.15	0.00	$ -	
SEEDING AREA NO 1		ACRE	$ 361.26	0.00	$ -	
SEEDING AREA NO 2		ACRE	$ 1,523.04	0.00	$ -	
SEEDING AREA NO 3		ACRE	$ 252.38	0.00	$ -	
FERTILIZING AREA NO 1		ACRE	$ 100.70	0.00	$ -	
FERTILIZING AREA NO 2		ACRE	$ 93.64	0.00	$ -	
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	0.00	$ -	
MULCH		ACRE	$ 6,142.57	0.00	$ -	
Signs - Rural		MILE	$ 8,000.00	0.00	$ -	
Signs - Urban		MILE	$ 52,000.00	0.00	$ -	
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	0.00	$ -	
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.00	$ -	
Drainage Pipe - Rural		MILE	$ 82,000.00	0.00	$ -	
Drainage Pipe - Urban		MILE	$ 240,000.00	0.00	$ -	
Concrete Roundabouts - One Lane		EACH	$ 425,000.00	0.00	$ -	
Concrete Roundabouts - Two Lanes		EACH	$ 575,000.00	0.00	$ -	
New Interchange - Rural		LS	$ 1,800,000.00	0.00	$ -	
New Interchange - Urban/Interstate		LS	$ 7,900,000.00	0.00	$ -	
Remove Rural Interchange		LS	$ 60,000.00	0.00	$ -	
Remove Urban/Interstate Interchange		LS	$ 450,000.00	0.00	$ -	
New Bridge 100 lineal feet or less		SQFT	$ 120.00	0.00	$ -	
New Bridge larger than 100 lineal feet		SQFT	$ 114.00	0.00	$ -	
Remove small single span bridge		LS	$ 20,000.00	0.00	$ -	
Remove large multiple span bridge		LS	$ 132,000.00	0.00	$ -	
Railroad - new track only (no xings, signals, etc.)		MILE	$ 155,000.00	0.00	$ -	
Signals		LS	$ 225,000.00	0.00	$ -	
Lights - Urban		MILE	$ 175,000.00	0.00	$ -	
Traffic Control				5%	$ -	
	Subtotal 1				*$ -*	
Mobilization				10%	$ -	
	Subtotal 2				*$ -*	
Contingencies				10%	$ -	
	Subtotal 3				*$ -*	
Long-term Inflation		% PER YEAR	3%	0	$ -	
	Subtotal 4				*$ -*	
Construction Engineering (CE)				10%	$ -	
	Subtotal 5				*$ -*	
Indirect Costs (IDC)				9.13%	$ -	
	Total				**$ -**	

MSN-3 Neil Avenue - Park Avenue to North Last Chance Gulch					$	800,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	5000.00	$	5,000
COVER - TYPE 1		SQYD	$ 0.54	5398.00	$	2,915
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	866.95	$	26,650
HYDRATED LIME		TON	$ 192.18	13.00	$	2,498
ASPHALT CEMENT PG 64-28		TON	$ 685.62	46.82	$	32,097
EMULS ASPHALT CRS-2P		TON	$ 613.48	9.70	$	5,951
COLD MILLING		SQYD	$ 1.42	4224.00	$	5,998
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.20	$	4,000
Signals		LS	$ 225,000.00	2.00	$	450,000
Traffic Control				5%	$	1,853
	Subtotal 1				*$*	*536,963*
Mobilization				10%	$	53,696
	Subtotal 2				*$*	*590,659*
Contingencies				10%	$	59,066
	Subtotal 3				*$*	*649,725*
Long-term Inflation		% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*649,725*
Construction Engineering (CE)				10%	$	64,972
	Subtotal 5				*$*	*714,697*
Indirect Costs (IDC)				9.13%	$	65,252
	Total				**$**	**779,949**

MSN-4 Country Club Avenue					$	4,400,000 TOT
			LENGTH (FT)	4000		
			WIDTH (FT)	12		
			SURFACING (IN)	5		
			BASE (IN)	18		
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	45750.00	$	45,750
FINISH GRADE CONTROL		CRFT	$ 0.63	19324.80	$	12,175
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	6570.25	$	28,581
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	657.02	$	3,344
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	328.51	$	2,645
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	16432.22	$	66,715
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$	10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	11034.22	$	239,332
COVER - TYPE 1		SQYD	$ 0.54	35429.00	$	19,132
BLOTTER MATERIAL		TON	$ 30.51	265.80	$	8,110
TRAFFIC GRAVEL		CUYD	$ 14.61	2361.92	$	34,508
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	5690.75	$	174,934
HYDRATED LIME		TON	$ 192.18	80.00	$	15,374
ASPHALT CEMENT PG 64-28		TON	$ 685.62	307.30	$	210,691
EMULS ASPHALT CRS-2P		TON	$ 613.48	63.30	$	38,833
COLD MILLING		SQYD	$ 1.42	25766.40	$	36,588
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	8588.80	$	496,261
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	2147.20	$	143,669
CURB AND GUTTER-CONC		LNFT	$ 18.15	19324.80	$	350,745
SEEDING AREA NO 1		ACRE	$ 361.26	18.19	$	6,571
SEEDING AREA NO 2		ACRE	$ 1,523.04	5.09	$	7,757
SEEDING AREA NO 3		ACRE	$ 252.38	7.28	$	1,836
FERTILIZING AREA NO 1		ACRE	$ 100.70	18.19	$	1,832
FERTILIZING AREA NO 2		ACRE	$ 93.64	5.09	$	477
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	25.47	$	2,838
MULCH		ACRE	$ 6,142.57	5.09	$	31,285
Signs - Urban		MILE	$ 52,000.00	1.83	$	95,160
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	1.83	$	36,600
Drainage Pipe - Urban		MILE	$ 240,000.00	1.83	$	439,200
Lights - Urban		MILE	$ 175,000.00	1.83	$	320,250
Traffic Control				5%	$	144,060
	Subtotal 1				*$*	*3,025,252*
Mobilization				10%	$	302,525
	Subtotal 2				*$*	*3,327,777*
Contingencies				10%	$	332,778
	Subtotal 3				*$*	*3,660,555*
Long-term Inflation		% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*3,660,555*
Construction Engineering (CE)				10%	$	366,055
	Subtotal 5				*$*	*4,026,610*
Indirect Costs (IDC)				9.13%	$	367,630
	Total				**$**	**4,394,240**

MSN-5 McHugh Lane - City Limits to Sierra Road					$ 5,400,000 TOT
			LENGTH (FT)	12144	
			WIDTH (FT)	36	
			SURFACING (IN)	3	
			BASE (IN)	10	
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	57500.00	$ 57,500
FINISH GRADE CONTROL		CRFT	$ 0.63	24288.00	$ 15,301
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	8257.69	$ 35,921
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	825.77	$ 4,203
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	412.88	$ 3,324
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	20652.52	$ 83,849
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	15000.00	$ 15,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	13868.15	$ 300,800
COVER - TYPE 1		SQYD	$ 0.54	44528.00	$ 24,045
BLOTTER MATERIAL		TON	$ 30.51	334.00	$ 10,190
TRAFFIC GRAVEL		CUYD	$ 14.61	2968.53	$ 43,370
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	7152.31	$ 219,862
HYDRATED LIME		TON	$ 192.18	101.00	$ 19,410
ASPHALT CEMENT PG 64-28		TON	$ 685.62	386.22	$ 264,803
EMULS ASPHALT CRS-2P		TON	$ 613.48	79.50	$ 48,772
COLD MILLING		SQYD	$ 1.42	32384.00	$ 45,985
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	10794.67	$ 623,716
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	2698.67	$ 180,568
CURB AND GUTTER-CONC		LNFT	$ 18.15	24288.00	$ 440,827
SEEDING AREA NO 1		ACRE	$ 361.26	22.86	$ 8,259
SEEDING AREA NO 2		ACRE	$ 1,523.04	6.40	$ 9,749
SEEDING AREA NO 3		ACRE	$ 252.38	9.14	$ 2,308
FERTILIZING AREA NO 1		ACRE	$ 100.70	22.86	$ 2,302
FERTILIZING AREA NO 2		ACRE	$ 93.64	6.40	$ 599
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	32.01	$ 3,567
MULCH		ACRE	$ 6,142.57	6.40	$ 39,320
Signs - Urban		MILE	$ 52,000.00	2.30	$ 119,600
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	2.30	$ 46,000
Drainage Pipe - Urban		MILE	$ 240,000.00	2.30	$ 552,000
Lights - Urban		MILE	$ 175,000.00	2.30	$ 402,500
Traffic Control				5%	$ 41,639
	Subtotal 1				*$ 3,665,291*
Mobilization				10%	$ 366,529
	Subtotal 2				*$ 4,031,820*
Contingencies				10%	$ 403,182
	Subtotal 3				*$ 4,435,002*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 4,435,002*
Construction Engineering (CE)				10%	$ 443,500
	Subtotal 5				*$ 4,878,502*
Indirect Costs (IDC)				9.13%	$ 445,407
	Total				**$ 5,323,910**

MSN-6 Airport Road - Washington Street to "B" Street					$ 1,100,000 TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			BASE (IN)		
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	34250.00	$ 34,250
COVER - TYPE 1		SQYD	$ 0.54	28935.00	$ 15,625
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4647.59	$ 142,867
HYDRATED LIME		TON	$ 192.18	66.00	$ 12,684
ASPHALT CEMENT PG 64-28		TON	$ 685.62	250.97	$ 172,070
EMULS ASPHALT CRS-2P		TON	$ 613.48	51.70	$ 31,717
COLD MILLING		SQYD	$ 1.42	19289.60	$ 27,391
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	1.37	$ 27,400
Signals		LS	$ 225,000.00	1.00	$ 225,000
Traffic Control				5%	$ 10,271
	Subtotal 1				*$ 699,275*
Mobilization				10%	$ 69,927
	Subtotal 2				*$ 769,202*
Contingencies				10%	$ 76,920
	Subtotal 3				*$ 846,123*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 846,123*
Construction Engineering (CE)				10%	$ 84,612
	Subtotal 5				*$ 930,735*
Indirect Costs (IDC)				9.13%	$ 84,976
	Total				**$ 1,015,711**

MSN-7 Airport Road - Future Extension from "B" Street to Wylie Drive **$ 5,400,000 TOT**

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
BASE (IN)

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	57500.00	$ 57,500
FINISH GRADE CONTROL		CRFT	$ 0.63	24288.00	$ 15,301
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	24773.07	$ 107,763
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	2477.31	$ 12,609
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	1238.65	$ 9,971
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	20652.52	$ 83,849
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	15000.00	$ 15,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	13868.15	$ 300,800
COVER - TYPE 1		SQYD	$ 0.54	44528.00	$ 24,045
BLOTTER MATERIAL		TON	$ 30.51	334.00	$ 10,190
TRAFFIC GRAVEL		CUYD	$ 14.61	2968.53	$ 43,370
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	7152.31	$ 219,862
HYDRATED LIME		TON	$ 192.18	101.00	$ 19,410
ASPHALT CEMENT PG 64-28		TON	$ 685.62	386.22	$ 264,803
EMULS ASPHALT CRS-2P		TON	$ 613.48	79.50	$ 48,772
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	10794.67	$ 623,716
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	2698.67	$ 180,568
CURB AND GUTTER-CONC		LNFT	$ 18.15	24288.00	$ 440,827
SEEDING AREA NO 1		ACRE	$ 361.26	22.86	$ 8,259
SEEDING AREA NO 2		ACRE	$ 1,523.04	6.40	$ 9,749
SEEDING AREA NO 3		ACRE	$ 252.38	9.14	$ 2,308
FERTILIZING AREA NO 1		ACRE	$ 100.70	22.86	$ 2,302
FERTILIZING AREA NO 2		ACRE	$ 93.64	6.40	$ 599
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	32.01	$ 3,567
MULCH		ACRE	$ 6,142.57	6.40	$ 39,320
Signs - Urban		MILE	$ 52,000.00	2.30	$ 119,600
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	2.30	$ 46,000
Drainage Pipe - Urban		MILE	$ 240,000.00	2.30	$ 552,000
Lights - Urban		MILE	$ 175,000.00	2.30	$ 402,500
Traffic Control				5%	$ 45,984
	Subtotal 1				*$ 3,710,546*
Mobilization				10%	$ 371,055
	Subtotal 2				*$ 4,081,601*
Contingencies				10%	$ 408,160
	Subtotal 3				*$ 4,489,761*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 4,489,761*
Construction Engineering (CE)				10%	$ 448,976
	Subtotal 5				*$ 4,938,737*
Indirect Costs (IDC)				9.13%	$ 450,907
	Total				**$ 5,389,644**

MSN-8 Sanders Street - Future Extension from Lowe's Property to North Montana Avenue					$ 3,100,000 TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			BASE (IN)		
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	25250.00	$ 25,250
FINISH GRADE CONTROL		CRFT	$ 0.63	10665.60	$ 6,719
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	10878.61	$ 47,322
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	1087.86	$ 5,537
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	543.93	$ 4,379
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	9069.15	$ 36,821
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	6089.93	$ 132,090
COVER - TYPE 1		SQYD	$ 0.54	19554.00	$ 10,559
BLOTTER MATERIAL		TON	$ 30.51	146.70	$ 4,476
TRAFFIC GRAVEL		CUYD	$ 14.61	1303.57	$ 19,045
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	3140.80	$ 96,548
HYDRATED LIME		TON	$ 192.18	44.00	$ 8,456
ASPHALT CEMENT PG 64-28		TON	$ 685.62	169.60	$ 116,283
EMULS ASPHALT CRS-2P		TON	$ 613.48	35.00	$ 21,472
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	4740.27	$ 273,893
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	1185.07	$ 79,293
CURB AND GUTTER-CONC		LNFT	$ 18.15	10665.60	$ 193,581
SEEDING AREA NO 1		ACRE	$ 361.26	10.04	$ 3,627
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.81	$ 4,281
SEEDING AREA NO 3		ACRE	$ 252.38	4.02	$ 1,013
FERTILIZING AREA NO 1		ACRE	$ 100.70	10.04	$ 1,011
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.81	$ 263
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	14.05	$ 1,566
MULCH		ACRE	$ 6,142.57	2.81	$ 17,267
Signs - Urban		MILE	$ 52,000.00	1.01	$ 52,520
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	1.01	$ 20,200
Drainage Pipe - Urban		MILE	$ 240,000.00	1.01	$ 242,400
Signals		LS	$ 225,000.00	2.00	$ 450,000
Lights - Urban		MILE	$ 175,000.00	1.01	$ 176,750
Traffic Control				5%	$ 20,360
	Subtotal 1				*$ 2,082,982*
Mobilization				10%	$ 208,298
	Subtotal 2				*$ 2,291,280*
Contingencies				10%	$ 229,128
	Subtotal 3				*$ 2,520,409*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 2,520,409*
Construction Engineering (CE)				10%	$ 252,041
	Subtotal 5				*$ 2,772,449*
Indirect Costs (IDC)				9.13%	$ 253,125
	Total				**$ 3,025,574**

MSN-9 11th Avenue - Montana Avenue to Interstate 15					$	2,600,000	TOT
			LENGTH (FT)				
			WIDTH (FT)				
			SURFACING (IN)				
			BASE (IN)				
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**	
MISCELLANEOUS WORK		UNIT	$ 1.00	23000.00	$	23,000	
COVER - TYPE 1		SQYD	$ 0.54	25908.00	$	13,990	
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4161.34	$	127,920	
HYDRATED LIME		TON	$ 192.18	59.00	$	11,339	
ASPHALT CEMENT PG 64-28		TON	$ 685.62	224.71	$	154,067	
EMULS ASPHALT CRS-2P		TON	$ 613.48	46.30	$	28,404	
COLD MILLING		SQYD	$ 1.42	19430.40	$	27,591	
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.92	$	18,400	
Signals		LS	$ 225,000.00	6.00	$	1,350,000	
Traffic Control				5%	$	8,812	
	Subtotal 1				*$*	*1,763,524*	
Mobilization				10%	$	176,352	
	Subtotal 2				*$*	*1,939,876*	
Contingencies				10%	$	193,988	
	Subtotal 3				*$*	*2,133,864*	
Long-term Inflation		% PER YEAR	3%	0	$	-	
	Subtotal 4				*$*	*2,133,864*	
Construction Engineering (CE)				10%	$	213,386	
	Subtotal 5				*$*	*2,347,250*	
Indirect Costs (IDC)				9.13%	$	214,304	
	Total				**$**	**2,561,554**	

MSN-10 East Side Loop Road - South Helena Interchange to Crossroads Parkway **$ 3,500,000 TOT**

LENGTH (FT)	
WIDTH (FT)	
SURFACING (IN)	
BASE (IN)	

TYPE		UNITS		UNIT PRICE	QUANTITY		COST
MISCELLANEOUS WORK		UNIT	$	1.00	29750.00	$	29,750
FINISH GRADE CONTROL		CRFT	$	0.63	12566.40	$	7,917
EXCAVATION-UNCLASSIFIED		CUYD	$	4.35	12817.37	$	55,756
EXCAVATION-UNCLASS BORROW		CUYD	$	5.09	1281.74	$	6,524
SPECIAL BORROW-EXCAVATION		CUYD	$	8.05	640.87	$	5,159
TOPSOIL-SALVAGING AND PLACING		CUYD	$	4.06	10685.43	$	43,383
TEMPORARY EROSION CONTROL		UNIT	$	1.00	10000.00	$	10,000
CRUSHED AGGREGATE COURSE		CUYD	$	21.69	7175.26	$	155,631
COVER - TYPE 1		SQYD	$	0.54	23039.00	$	12,441
BLOTTER MATERIAL		TON	$	30.51	172.80	$	5,272
TRAFFIC GRAVEL		CUYD	$	14.61	1535.89	$	22,439
PLANT MIX BIT SURF GR S-3/4 IN		TON	$	30.74	3700.54	$	113,755
HYDRATED LIME		TON	$	192.18	52.00	$	9,993
ASPHALT CEMENT PG 64-28		TON	$	685.62	199.83	$	137,007
EMULS ASPHALT CRS-2P		TON	$	613.48	41.20	$	25,275
SIDEWALK-CONCRETE 4"		SQYD	$	57.78	5585.07	$	322,705
SIDEWALK-CONCRETE 6"		SQYD	$	66.91	1396.27	$	93,424
CURB AND GUTTER-CONC		LNFT	$	18.15	12566.40	$	228,080
SEEDING AREA NO 1		ACRE	$	361.26	11.83	$	4,273
SEEDING AREA NO 2		ACRE	$	1,523.04	3.31	$	5,044
SEEDING AREA NO 3		ACRE	$	252.38	4.73	$	1,194
FERTILIZING AREA NO 1		ACRE	$	100.70	11.83	$	1,191
FERTILIZING AREA NO 2		ACRE	$	93.64	3.31	$	310
CONDITION SEEDBED SURFACE		ACRE	$	111.44	16.56	$	1,845
MULCH		ACRE	$	6,142.57	3.31	$	20,344
Signs - Urban		MILE	$	52,000.00	1.19	$	61,880
Striping & Pavement Markings - Urban		MILE	$	20,000.00	1.19	$	23,800
Drainage Pipe - Urban		MILE	$	240,000.00	1.19	$	285,600
Concrete Roundabouts - One Lane		EACH	$	425,000.00	1.00	$	425,000
Lights - Urban		MILE	$	175,000.00	1.19	$	208,250
Traffic Control					5%	$	23,901
	Subtotal 1					*$*	*2,347,145*
Mobilization					10%	$	234,715
	Subtotal 2					*$*	*2,581,860*
Contingencies					10%	$	258,186
	Subtotal 3					*$*	*2,840,045*
Long-term Inflation		% PER YEAR		3%	0	$	-
	Subtotal 4					*$*	*2,840,045*
Construction Engineering (CE)					10%	$	284,005
	Subtotal 5					*$*	*3,124,050*
Indirect Costs (IDC)					9.13%	$	285,226
	Total					**$**	**3,409,276**

MSN-11 East Side Loop Road - South Helena Interchange to 18th Street **$ 3,900,000 TOT**

LENGTH (FT)	
WIDTH (FT)	
SURFACING (IN)	
BASE (IN)	

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	34250.00	$ 34,250
FINISH GRADE CONTROL		CRFT	$ 0.63	14467.20	$ 9,114
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	14756.13	$ 64,189
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	1475.61	$ 7,511
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	737.81	$ 5,939
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	12301.72	$ 49,945
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	8260.59	$ 179,172
COVER - TYPE 1		SQYD	$ 0.54	26524.00	$ 14,323
BLOTTER MATERIAL		TON	$ 30.51	199.00	$ 6,071
TRAFFIC GRAVEL		CUYD	$ 14.61	1768.21	$ 25,834
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4260.29	$ 130,961
HYDRATED LIME		TON	$ 192.18	60.00	$ 11,531
ASPHALT CEMENT PG 64-28		TON	$ 685.62	230.06	$ 157,731
EMULS ASPHALT CRS-2P		TON	$ 613.48	47.40	$ 29,079
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	6429.87	$ 371,518
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	1607.47	$ 107,556
CURB AND GUTTER-CONC		LNFT	$ 18.15	14467.20	$ 262,580
SEEDING AREA NO 1		ACRE	$ 361.26	13.62	$ 4,919
SEEDING AREA NO 2		ACRE	$ 1,523.04	3.81	$ 5,807
SEEDING AREA NO 3		ACRE	$ 252.38	5.45	$ 1,375
FERTILIZING AREA NO 1		ACRE	$ 100.70	13.62	$ 1,371
FERTILIZING AREA NO 2		ACRE	$ 93.64	3.81	$ 357
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	19.06	$ 2,125
MULCH		ACRE	$ 6,142.57	3.81	$ 23,421
Signs - Urban		MILE	$ 52,000.00	1.37	$ 71,240
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	1.37	$ 27,400
Drainage Pipe - Urban		MILE	$ 240,000.00	1.37	$ 328,800
Concrete Roundabouts - One Lane		EACH	$ 425,000.00	1.00	$ 425,000
Lights - Urban		MILE	$ 175,000.00	1.37	$ 239,750
Traffic Control				5%	$ 27,442
	Subtotal 1				*$ 2,636,311*
Mobilization				10%	$ 263,631
	Subtotal 2				*$ 2,899,942*
Contingencies				10%	$ 289,994
	Subtotal 3				*$ 3,189,936*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 3,189,936*
Construction Engineering (CE)				10%	$ 318,994
	Subtotal 5				*$ 3,508,930*
Indirect Costs (IDC)				9.13%	$ 320,365
	Total				**$ 3,829,295**

MSN-12 Alice Street - 18th Street to East Side Loop Road **$ 3,600,000 TOT**

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
BASE (IN)

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	38000.00	$ 38,000
FINISH GRADE CONTROL		CRFT	$ 0.63	16051.20	$ 10,112
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	16371.77	$ 71,217
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	1637.18	$ 8,333
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	818.59	$ 6,590
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	13648.62	$ 55,413
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	9165.04	$ 198,790
COVER - TYPE 1		SQYD	$ 0.54	29428.00	$ 15,891
BLOTTER MATERIAL		TON	$ 30.51	220.80	$ 6,737
TRAFFIC GRAVEL		CUYD	$ 14.61	1961.81	$ 28,662
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4726.74	$ 145,300
HYDRATED LIME		TON	$ 192.18	67.00	$ 12,876
ASPHALT CEMENT PG 64-28		TON	$ 685.62	255.24	$ 175,001
EMULS ASPHALT CRS-2P		TON	$ 613.48	52.60	$ 32,269
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	7133.87	$ 412,195
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	1783.47	$ 119,332
CURB AND GUTTER-CONC		LNFT	$ 18.15	16051.20	$ 291,329
SEEDING AREA NO 1		ACRE	$ 361.26	15.11	$ 5,458
SEEDING AREA NO 2		ACRE	$ 1,523.04	4.23	$ 6,443
SEEDING AREA NO 3		ACRE	$ 252.38	6.04	$ 1,525
FERTILIZING AREA NO 1		ACRE	$ 100.70	15.11	$ 1,521
FERTILIZING AREA NO 2		ACRE	$ 93.64	4.23	$ 396
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	21.15	$ 2,357
MULCH		ACRE	$ 6,142.57	4.23	$ 25,985
Signs - Urban		MILE	$ 52,000.00	1.52	$ 79,040
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	1.52	$ 30,400
Drainage Pipe - Urban		MILE	$ 240,000.00	1.52	$ 364,800
Lights - Urban		MILE	$ 175,000.00	1.52	$ 266,000
Traffic Control				5%	$ 30,396
	Subtotal 1				*$ 2,452,369*
Mobilization				10%	$ 245,237
	Subtotal 2				*$ 2,697,606*
Contingencies				10%	$ 269,761
	Subtotal 3				*$ 2,967,367*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 2,967,367*
Construction Engineering (CE)				10%	$ 296,737
	Subtotal 5				*$ 3,264,103*
Indirect Costs (IDC)				9.13%	$ 298,013
	Total				**$ 3,562,116**

MSN-13 Montana Avenue - Custer Avenue to Cedar Street					$	3,200,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	17000.00	$	17,000
FINISH GRADE CONTROL		CRFT	$ 0.63	7180.80	$	4,524
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	5144.12	$	22,377
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	514.41	$	2,618
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	257.21	$	2,071
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	6105.96	$	24,790
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$	5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	9086.59	$	197,088
COVER - TYPE 1		SQYD	$ 0.54	31116.00	$	16,803
BLOTTER MATERIAL		TON	$ 30.51	224.40	$	6,846
TRAFFIC GRAVEL		CUYD	$ 14.61	1994.67	$	29,142
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4998.01	$	153,639
HYDRATED LIME		TON	$ 192.18	71.00	$	13,645
ASPHALT CEMENT PG 64-28		TON	$ 685.62	269.89	$	185,044
EMULS ASPHALT CRS-2P		TON	$ 613.48	55.70	$	34,171
COLD MILLING		SQYD	$ 1.42	19148.80	$	27,191
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	3191.47	$	184,403
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	797.87	$	53,385
CURB AND GUTTER-CONC		LNFT	$ 18.15	7180.80	$	130,332
SEEDING AREA NO 1		ACRE	$ 361.26	6.76	$	2,442
SEEDING AREA NO 2		ACRE	$ 1,523.04	1.89	$	2,882
SEEDING AREA NO 3		ACRE	$ 252.38	2.70	$	682
FERTILIZING AREA NO 1		ACRE	$ 100.70	6.76	$	681
FERTILIZING AREA NO 2		ACRE	$ 93.64	1.89	$	177
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	9.46	$	1,055
MULCH		ACRE	$ 6,142.57	1.89	$	11,625
Signs - Urban		MILE	$ 52,000.00	0.68	$	35,360
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.68	$	13,600
Drainage Pipe - Urban		MILE	$ 240,000.00	0.68	$	163,200
Signals		LS	$ 225,000.00	3.00	$	675,000
Lights - Urban		MILE	$ 175,000.00	0.68	$	119,000
Traffic Control				5%	$	24,777
	Subtotal 1				*$*	*2,160,549*
Mobilization				10%	$	216,055
	Subtotal 2				*$*	*2,376,604*
Contingencies				10%	$	237,660
	Subtotal 3				*$*	*2,614,264*
Long-term Inflation		% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*2,614,264*
Construction Engineering (CE)				10%	$	261,426
	Subtotal 5				*$*	*2,875,691*
Indirect Costs (IDC)				9.13%	$	262,551
	Total				**$**	**3,138,241**

MSN-14 Boulder Avenue Connections - North Hannaford Street to Blaine Street					$ 1,900,000	TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	20500.00	$ 20,500
FINISH GRADE CONTROL		CRFT	$ 0.63	8659.20	$ 5,455
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	2944.05	$ 12,807
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	294.40	$ 1,499
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	147.20	$ 1,185
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	7363.07	$ 29,894
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	4944.30	$ 107,242
COVER - TYPE 1		SQYD	$ 0.54	15876.00	$ 8,573
BLOTTER MATERIAL		TON	$ 30.51	119.10	$ 3,634
TRAFFIC GRAVEL		CUYD	$ 14.61	1058.35	$ 15,462
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	2549.95	$ 78,386
HYDRATED LIME		TON	$ 192.18	36.00	$ 6,918
ASPHALT CEMENT PG 64-28		TON	$ 685.62	137.70	$ 94,408
EMULS ASPHALT CRS-2P		TON	$ 613.48	28.40	$ 17,423
COLD MILLING		SQYD	$ 1.42	4857.60	$ 6,898
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	3848.53	$ 222,368
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	962.13	$ 64,376
CURB AND GUTTER-CONC		LNFT	$ 18.15	8659.20	$ 157,164
SEEDING AREA NO 1		ACRE	$ 361.26	8.15	$ 2,944
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.28	$ 3,476
SEEDING AREA NO 3		ACRE	$ 252.38	3.26	$ 823
FERTILIZING AREA NO 1		ACRE	$ 100.70	8.15	$ 821
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.28	$ 214
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	11.41	$ 1,272
MULCH		ACRE	$ 6,142.57	2.28	$ 14,018
Signs - Urban		MILE	$ 52,000.00	0.82	$ 42,640
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.82	$ 16,400
Drainage Pipe - Urban		MILE	$ 240,000.00	0.82	$ 196,800
Lights - Urban		MILE	$ 175,000.00	0.82	$ 143,500
Traffic Control				5%	$ 14,828
	Subtotal 1				*$ 1,296,928*
Mobilization				10%	$ 129,693
	Subtotal 2				*$ 1,426,621*
Contingencies				10%	$ 142,662
	Subtotal 3				*$ 1,569,283*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,569,283*
Construction Engineering (CE)				10%	$ 156,928
	Subtotal 5				*$ 1,726,211*
Indirect Costs (IDC)				9.13%	$ 157,603
	Total				**$ 1,883,814**

MSN-15 Montana Avenue / Lyndale Avenue / Helena Avenue Intersection				$ -	TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			BASE (IN)		
TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**	
MISCELLANEOUS WORK	UNIT	$ 1.00	0.00	$ -	
FINISH GRADE CONTROL	CRFT	$ 0.63	0.00	$ -	
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	0.00	$ -	
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	0.00	$ -	
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	0.00	$ -	
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	0.00	$ -	
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	0.00	$ -	
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	0.00	$ -	
TOP SURF 3/4 IN GR 2A	CUYD	$ -	0.00	$ -	
COVER - TYPE 1	SQYD	$ 0.54	0.00	$ -	
BLOTTER MATERIAL	TON	$ 30.51	0.00	$ -	
TRAFFIC GRAVEL	CUYD	$ 14.61	0.00	$ -	
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	0.00	$ -	
HYDRATED LIME	TON	$ 192.18	0.00	$ -	
ASPHALT CEMENT PG 64-28	TON	$ 685.62	0.00	$ -	
LIQUID ASPHALT MC-70	TON	$ -	0.00	$ -	
EMULS ASPHALT CRS-2P	TON	$ 613.48	0.00	$ -	
COLD MILLING	SQYD	$ 1.42	0.00	$ -	
PORT CEM CONC PAVEMENT	SQYD	$ 131.10	0.00	$ -	
GUARD RAIL-STEEL	LNFT	$ 16.51	0.00	$ -	
GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	0.00	$ -	
GUARD RAIL-STL/BR APPR-TY 1	EACH	$ 2,301.05	0.00	$ -	
GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	0.00	$ -	
FARM FENCE-TYPE F5W & F5M	LNFT	$ -	0.00	$ -	
SIDEWALK-CONCRETE 4"	SQYD	$ 57.78	0.00	$ -	
SIDEWALK-CONCRETE 6"	SQYD	$ 66.91	0.00	$ -	
CURB AND GUTTER-CONC	LNFT	$ 18.15	0.00	$ -	
SEEDING AREA NO 1	ACRE	$ 361.26	0.00	$ -	
SEEDING AREA NO 2	ACRE	$ 1,523.04	0.00	$ -	
SEEDING AREA NO 3	ACRE	$ 252.38	0.00	$ -	
FERTILIZING AREA NO 1	ACRE	$ 100.70	0.00	$ -	
FERTILIZING AREA NO 2	ACRE	$ 93.64	0.00	$ -	
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	0.00	$ -	
MULCH	ACRE	$ 6,142.57	0.00	$ -	
Signs - Rural	MILE	$ 8,000.00	0.00	$ -	
Signs - Urban	MILE	$ 52,000.00	0.00	$ -	
Striping & Pavement Markings - Rural	MILE	$ 8,000.00	0.00	$ -	
Striping & Pavement Markings - Urban	MILE	$ 20,000.00	0.00	$ -	
Drainage Pipe - Rural	MILE	$ 82,000.00	0.00	$ -	
Drainage Pipe - Urban	MILE	$ 240,000.00	0.00	$ -	
Concrete Roundabouts - One Lane	EACH	$ 425,000.00	0.00	$ -	
Concrete Roundabouts - Two Lanes	EACH	$ 575,000.00	0.00	$ -	
New Interchange - Rural	LS	$ 1,800,000.00	0.00	$ -	
New Interchange - Urban/Interstate	LS	$ 7,900,000.00	0.00	$ -	
Remove Rural Interchange	LS	$ 60,000.00	0.00	$ -	
Remove Urban/Interstate Interchange	LS	$ 450,000.00	0.00	$ -	
New Bridge 100 lineal feet or less	SQFT	$ 120.00	0.00	$ -	
New Bridge larger than 100 lineal feet	SQFT	$ 114.00	0.00	$ -	
Remove small single span bridge	LS	$ 20,000.00	0.00	$ -	
Remove large multiple span bridge	LS	$ 132,000.00	0.00	$ -	
Railroad - new track only (no xings, signals, etc.)	MILE	$ 155,000.00	0.00	$ -	
Signals	LS	$ 225,000.00	0.00	$ -	
Lights - Urban	MILE	$ 175,000.00	0.00	$ -	
Traffic Control			5%	$ -	
Subtotal 1				*$ -*	
Mobilization			10%	$ -	
Subtotal 2				*$ -*	
Contingencies			10%	$ -	
Subtotal 3				*$ -*	
Long-term Inflation	% PER YEAR	3%	0	$ -	
Subtotal 4				*$ -*	
Construction Engineering (CE)			10%	$ -	
Subtotal 5				*$ -*	
Indirect Costs (IDC)			9.13%	$ -	
Total				**$ -**	

MSN-16 Williams Street - Ten Mile Creek Bridge to Barrett Road					$ 2,100,000 TOT
		LENGTH (FT)			
		WIDTH (FT)			
		SURFACING (IN)			
		BASE (IN)			

TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	47500.00	$ 47,500
FINISH GRADE CONTROL		CRFT	$ 0.63	20064.00	$ 12,640
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	13643.14	$ 59,348
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	1364.31	$ 6,944
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	682.16	$ 5,491
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	17060.78	$ 69,267
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	13974.62	$ 303,109
COVER - TYPE 1		SQYD	$ 0.54	40128.00	$ 21,669
BLOTTER MATERIAL		TON	$ 30.51	329.60	$ 10,056
TRAFFIC GRAVEL		CUYD	$ 14.61	2675.20	$ 39,085
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	6752.17	$ 207,562
HYDRATED LIME		TON	$ 192.18	95.00	$ 18,257
ASPHALT CEMENT PG 64-28		TON	$ 685.62	364.62	$ 249,989
EMULS ASPHALT CRS-2P		TON	$ 613.48	71.70	$ 43,987
COLD MILLING		SQYD	$ 1.42	26752.00	$ 37,988
GUARD RAIL-STEEL		LNFT	$ 16.51	501.60	$ 8,281
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	50.16	$ 2,419
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	1.53	$ 3,935
SEEDING AREA NO 1		ACRE	$ 361.26	18.89	$ 6,823
SEEDING AREA NO 2		ACRE	$ 1,523.04	5.29	$ 8,054
SEEDING AREA NO 3		ACRE	$ 252.38	7.55	$ 1,907
FERTILIZING AREA NO 1		ACRE	$ 100.70	18.89	$ 1,902
FERTILIZING AREA NO 2		ACRE	$ 93.64	5.29	$ 495
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	26.44	$ 2,946
MULCH		ACRE	$ 6,142.57	5.29	$ 32,482
Signs - Rural		MILE	$ 8,000.00	1.90	$ 15,200
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	1.90	$ 15,200
Drainage Pipe - Rural		MILE	$ 82,000.00	1.90	$ 155,800
Traffic Control				5%	$ 40,546
	Subtotal 1				*$ 1,438,882*
Mobilization				10%	$ 143,888
	Subtotal 2				*$ 1,582,770*
Contingencies				10%	$ 158,277
	Subtotal 3				*$ 1,741,047*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,741,047*
Construction Engineering (CE)				10%	$ 174,105
	Subtotal 5				*$ 1,915,152*
Indirect Costs (IDC)				9.13%	$ 174,853
	Total				**$ 2,090,005**

MSN-17 Horseshow Bend Road / Wolf Road - Green Meadow Driver to McHugh Lane **$ 1,800,000 TOT**

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
BASE (IN)

TYPE		UNITS	UNIT PRICE		QUANTITY	COST	
MISCELLANEOUS WORK		UNIT	$	1.00	18750.00	$	18,750
FINISH GRADE CONTROL		CRFT	$	0.63	7920.00	$	4,990
EXCAVATION-UNCLASSIFIED		CUYD	$	4.35	8078.18	$	35,140
EXCAVATION-UNCLASS BORROW		CUYD	$	5.09	807.82	$	4,112
SPECIAL BORROW-EXCAVATION		CUYD	$	8.05	403.91	$	3,251
TOPSOIL-SALVAGING AND PLACING		CUYD	$	4.06	6734.52	$	27,342
TEMPORARY EROSION CONTROL		UNIT	$	1.00	5000.00	$	5,000
CRUSHED AGGREGATE COURSE		CUYD	$	21.69	4522.22	$	98,087
COVER - TYPE 1		SQYD	$	0.54	14520.00	$	7,841
BLOTTER MATERIAL		TON	$	30.51	108.90	$	3,323
TRAFFIC GRAVEL		CUYD	$	14.61	968.00	$	14,142
PLANT MIX BIT SURF GR S-3/4 IN		TON	$	30.74	2332.28	$	71,694
HYDRATED LIME		TON	$	192.18	33.00	$	6,342
ASPHALT CEMENT PG 64-28		TON	$	685.62	125.94	$	86,349
EMULS ASPHALT CRS-2P		TON	$	613.48	26.00	$	15,950
SIDEWALK-CONCRETE 4"		SQYD	$	57.78	3520.00	$	203,386
SIDEWALK-CONCRETE 6"		SQYD	$	66.91	880.00	$	58,881
CURB AND GUTTER-CONC		LNFT	$	18.15	7920.00	$	143,748
SEEDING AREA NO 1		ACRE	$	361.26	7.45	$	2,693
SEEDING AREA NO 2		ACRE	$	1,523.04	2.09	$	3,179
SEEDING AREA NO 3		ACRE	$	252.38	2.98	$	753
FERTILIZING AREA NO 1		ACRE	$	100.70	7.45	$	751
FERTILIZING AREA NO 2		ACRE	$	93.64	2.09	$	195
CONDITION SEEDBED SURFACE		ACRE	$	111.44	10.44	$	1,163
MULCH		ACRE	$	6,142.57	2.09	$	12,822
Signs - Urban		MILE	$	52,000.00	0.75	$	39,000
Striping & Pavement Markings - Urban		MILE	$	20,000.00	0.75	$	15,000
Drainage Pipe - Urban		MILE	$	240,000.00	0.75	$	180,000
Lights - Urban		MILE	$	175,000.00	0.75	$	131,250
Traffic Control					5%	$	15,001
	Subtotal 1					*$*	*1,210,134*
Mobilization					10%	$	121,013
	Subtotal 2					*$*	*1,331,148*
Contingencies					10%	$	133,115
	Subtotal 3					*$*	*1,464,262*
Long-term Inflation		% PER YEAR		3%	0	$	-
	Subtotal 4					*$*	*1,464,262*
Construction Engineering (CE)					10%	$	146,426
	Subtotal 5					*$*	*1,610,689*
Indirect Costs (IDC)					9.13%	$	147,056
	Total					**$**	**1,757,745**

MSN-18 Kelleher Drive extension - Canyon Ferry Road to new East / West route (CRN-9) **$ 1,600,000 TOT**

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
BASE (IN)

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	12500.00	$ 12,500
FINISH GRADE CONTROL		CRFT	$ 0.63	5280.00	$ 3,326
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	5385.45	$ 23,427
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	538.55	$ 2,741
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	269.27	$ 2,168
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	4489.68	$ 18,228
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	3014.81	$ 65,391
COVER - TYPE 1		SQYD	$ 0.54	9680.00	$ 5,227
BLOTTER MATERIAL		TON	$ 30.51	72.60	$ 2,215
TRAFFIC GRAVEL		CUYD	$ 14.61	645.33	$ 9,428
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	1554.85	$ 47,796
HYDRATED LIME		TON	$ 192.18	22.00	$ 4,228
ASPHALT CEMENT PG 64-28		TON	$ 685.62	83.96	$ 57,566
EMULS ASPHALT CRS-2P		TON	$ 613.48	17.30	$ 10,613
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	2346.67	$ 135,590
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	586.67	$ 39,254
CURB AND GUTTER-CONC		LNFT	$ 18.15	5280.00	$ 95,832
SEEDING AREA NO 1		ACRE	$ 361.26	4.97	$ 1,795
SEEDING AREA NO 2		ACRE	$ 1,523.04	1.39	$ 2,119
SEEDING AREA NO 3		ACRE	$ 252.38	1.99	$ 502
FERTILIZING AREA NO 1		ACRE	$ 100.70	4.97	$ 500
FERTILIZING AREA NO 2		ACRE	$ 93.64	1.39	$ 130
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	6.96	$ 775
MULCH		ACRE	$ 6,142.57	1.39	$ 8,548
Signs - Urban		MILE	$ 52,000.00	0.50	$ 26,000
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.50	$ 10,000
Drainage Pipe - Urban		MILE	$ 240,000.00	0.50	$ 120,000
Signals		LS	$ 225,000.00	1.00	$ 225,000
Lights - Urban		MILE	$ 175,000.00	0.50	$ 87,500
Traffic Control				5%	$ 10,084
	Subtotal 1				*$ 1,033,486*
Mobilization				10%	$ 103,349
	Subtotal 2				*$ 1,136,834*
Contingencies				10%	$ 113,683
	Subtotal 3				*$ 1,250,518*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,250,518*
Construction Engineering (CE)				10%	$ 125,052
	Subtotal 5				*$ 1,375,569*
Indirect Costs (IDC)				9.13%	$ 125,589
	Total				**$ 1,501,159**

MSN-19 Cooney Drive (north extension) - Custer Avenue to Andesite Avenue / Faw Road extension **$ 2,300,000 TOT**

		LENGTH (FT)		
		WIDTH (FT)		
		SURFACING (IN)		
		BASE (IN)		

TYPE	UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK	UNIT	$ 1.00	20250.00	$ 20,250
FINISH GRADE CONTROL	CRFT	$ 0.63	8553.60	$ 5,389
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	8724.43	$ 37,951
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	872.44	$ 4,441
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	436.22	$ 3,512
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	7273.28	$ 29,530
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	4884.00	$ 105,934
COVER - TYPE 1	SQYD	$ 0.54	15682.00	$ 8,468
BLOTTER MATERIAL	TON	$ 30.51	117.70	$ 3,591
TRAFFIC GRAVEL	CUYD	$ 14.61	1045.44	$ 15,274
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	2518.86	$ 77,430
HYDRATED LIME	TON	$ 192.18	36.00	$ 6,918
ASPHALT CEMENT PG 64-28	TON	$ 685.62	136.02	$ 93,257
EMULS ASPHALT CRS-2P	TON	$ 613.48	28.10	$ 17,239
COLD MILLING	SQYD	$ 1.42	5068.80	$ 7,198
SIDEWALK-CONCRETE 4"	SQYD	$ 57.78	3801.60	$ 219,656
SIDEWALK-CONCRETE 6"	SQYD	$ 66.91	950.40	$ 63,591
CURB AND GUTTER-CONC	LNFT	$ 18.15	8553.60	$ 155,248
SEEDING AREA NO 1	ACRE	$ 361.26	8.05	$ 2,909
SEEDING AREA NO 2	ACRE	$ 1,523.04	2.25	$ 3,433
SEEDING AREA NO 3	ACRE	$ 252.38	3.22	$ 813
FERTILIZING AREA NO 1	ACRE	$ 100.70	8.05	$ 811
FERTILIZING AREA NO 2	ACRE	$ 93.64	2.25	$ 211
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	11.27	$ 1,256
MULCH	ACRE	$ 6,142.57	2.25	$ 13,847
Signs - Urban	MILE	$ 52,000.00	0.81	$ 42,120
Striping & Pavement Markings - Urban	MILE	$ 20,000.00	0.81	$ 16,200
Drainage Pipe - Urban	MILE	$ 240,000.00	0.81	$ 194,400
Signals	LS	$ 225,000.00	1.00	$ 225,000
Lights - Urban	MILE	$ 175,000.00	0.81	$ 141,750
Traffic Control			5%	$ 16,434
Subtotal 1				*$ 1,544,061*
Mobilization			10%	$ 154,406
Subtotal 2				*$ 1,698,467*
Contingencies			10%	$ 169,847
Subtotal 3				*$ 1,868,313*
Long-term Inflation	% PER YEAR	3%	0	$ -
Subtotal 4				*$ 1,868,313*
Construction Engineering (CE)			10%	$ 186,831
Subtotal 5				*$ 2,055,145*
Indirect Costs (IDC)			9.13%	$ 187,635
Total				**$ 2,242,779**

MSN-20 Andesite Avenue / Faw Road extension - east of Benton Avenue to McHugh Lane **$ 1,000,000 TOT**

LENGTH (FT)		
WIDTH (FT)		
SURFACING (IN)		
BASE (IN)		

TYPE		UNITS	UNIT PRICE		QUANTITY	COST	
MISCELLANEOUS WORK		UNIT	$	1.00	10250.00	$	10,250
FINISH GRADE CONTROL		CRFT	$	0.63	4329.60	$	2,728
EXCAVATION-UNCLASSIFIED		CUYD	$	4.35	4416.07	$	19,210
EXCAVATION-UNCLASS BORROW		CUYD	$	5.09	441.61	$	2,248
SPECIAL BORROW-EXCAVATION		CUYD	$	8.05	220.80	$	1,777
TOPSOIL-SALVAGING AND PLACING		CUYD	$	4.06	3681.54	$	14,947
TEMPORARY EROSION CONTROL		UNIT	$	1.00	5000.00	$	5,000
CRUSHED AGGREGATE COURSE		CUYD	$	21.69	2472.15	$	53,621
COVER - TYPE 1		SQYD	$	0.54	7938.00	$	4,287
BLOTTER MATERIAL		TON	$	30.51	59.60	$	1,818
TRAFFIC GRAVEL		CUYD	$	14.61	529.17	$	7,731
PLANT MIX BIT SURF GR S-3/4 IN		TON	$	30.74	1274.98	$	39,193
HYDRATED LIME		TON	$	192.18	18.00	$	3,459
ASPHALT CEMENT PG 64-28		TON	$	685.62	68.85	$	47,204
EMULS ASPHALT CRS-2P		TON	$	613.48	14.20	$	8,711
SIDEWALK-CONCRETE 4"		SQYD	$	57.78	1924.27	$	111,184
SIDEWALK-CONCRETE 6"		SQYD	$	66.91	481.07	$	32,188
CURB AND GUTTER-CONC		LNFT	$	18.15	4329.60	$	78,582
SEEDING AREA NO 1		ACRE	$	361.26	4.08	$	1,472
SEEDING AREA NO 2		ACRE	$	1,523.04	1.14	$	1,738
SEEDING AREA NO 3		ACRE	$	252.38	1.63	$	411
FERTILIZING AREA NO 1		ACRE	$	100.70	4.08	$	410
FERTILIZING AREA NO 2		ACRE	$	93.64	1.14	$	107
CONDITION SEEDBED SURFACE		ACRE	$	111.44	5.71	$	636
MULCH		ACRE	$	6,142.57	1.14	$	7,009
Signs - Urban		MILE	$	52,000.00	0.41	$	21,320
Striping & Pavement Markings - Urban		MILE	$	20,000.00	0.41	$	8,200
Drainage Pipe - Urban		MILE	$	240,000.00	0.41	$	98,400
Lights - Urban		MILE	$	175,000.00	0.41	$	71,750
Traffic Control					5%	$	8,313
	Subtotal 1					*$*	*663,906*
Mobilization					10%	$	66,391
	Subtotal 2					*$*	*730,297*
Contingencies					10%	$	73,030
	Subtotal 3					*$*	*803,327*
Long-term Inflation		% PER YEAR		3%	0	$	-
	Subtotal 4					*$*	*803,327*
Construction Engineering (CE)					10%	$	80,333
	Subtotal 5					*$*	*883,659*
Indirect Costs (IDC)					9.13%	$	80,678
	Total					**$**	**964,337**

MSN-21 Benton Avenue - MRL Railroad Crossing to Custer Avenue				$	-	TOT

		LENGTH (FT)		
		WIDTH (FT)		
		SURFACING (IN)		
		BASE (IN)		

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	0.00	$ -
FINISH GRADE CONTROL		CRFT	$ 0.63	0.00	$ -
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	0.00	$ -
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	0.00	$ -
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	0.00	$ -
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	0.00	$ -
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	0.00	$ -
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	0.00	$ -
TOP SURF 3/4 IN GR 2A		CUYD	$ -	0.00	$ -
COVER - TYPE 1		SQYD	$ 0.54	0.00	$ -
BLOTTER MATERIAL		TON	$ 30.51	0.00	$ -
TRAFFIC GRAVEL		CUYD	$ 14.61	0.00	$ -
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	0.00	$ -
HYDRATED LIME		TON	$ 192.18	0.00	$ -
ASPHALT CEMENT PG 64-28		TON	$ 685.62	0.00	$ -
LIQUID ASPHALT MC-70		TON	$ -	0.00	$ -
EMULS ASPHALT CRS-2P		TON	$ 613.48	0.00	$ -
COLD MILLING		SQYD	$ 1.42	0.00	$ -
PORT CEM CONC PAVEMENT		SQYD	$ 131.10	0.00	$ -
GUARD RAIL-STEEL		LNFT	$ 16.51	0.00	$ -
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	0.00	$ -
GUARD RAIL-STL/BR APPR-TY 1		EACH	$ 2,301.05	0.00	$ -
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	0.00	$ -
FARM FENCE-TYPE F5W & F5M		LNFT	$ -	0.00	$ -
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	0.00	$ -
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	0.00	$ -
CURB AND GUTTER-CONC		LNFT	$ 18.15	0.00	$ -
SEEDING AREA NO 1		ACRE	$ 361.26	0.00	$ -
SEEDING AREA NO 2		ACRE	$ 1,523.04	0.00	$ -
SEEDING AREA NO 3		ACRE	$ 252.38	0.00	$ -
FERTILIZING AREA NO 1		ACRE	$ 100.70	0.00	$ -
FERTILIZING AREA NO 2		ACRE	$ 93.64	0.00	$ -
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	0.00	$ -
MULCH		ACRE	$ 6,142.57	0.00	$ -
Signs - Rural		MILE	$ 8,000.00	0.00	$ -
Signs - Urban		MILE	$ 52,000.00	0.00	$ -
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	0.00	$ -
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.00	$ -
Drainage Pipe - Rural		MILE	$ 82,000.00	0.00	$ -
Drainage Pipe - Urban		MILE	$ 240,000.00	0.00	$ -
Concrete Roundabouts - One Lane		EACH	$ 425,000.00	0.00	$ -
Concrete Roundabouts - Two Lanes		EACH	$ 575,000.00	0.00	$ -
New Interchange - Rural		LS	$ 1,800,000.00	0.00	$ -
New Interchange - Urban/Interstate		LS	$ 7,900,000.00	0.00	$ -
Remove Rural Interchange		LS	$ 60,000.00	0.00	$ -
Remove Urban/Interstate Interchange		LS	$ 450,000.00	0.00	$ -
New Bridge 100 lineal feet or less		SQFT	$ 120.00	0.00	$ -
New Bridge larger than 100 lineal feet		SQFT	$ 114.00	0.00	$ -
Remove small single span bridge		LS	$ 20,000.00	0.00	$ -
Remove large multiple span bridge		LS	$ 132,000.00	0.00	$ -
Railroad - new track only (no xings, signals, etc.)		MILE	$ 155,000.00	0.00	$ -
Signals		LS	$ 225,000.00	0.00	$ -
Lights - Urban		MILE	$ 175,000.00	0.00	$ -
Traffic Control				5%	$ -
	Subtotal 1				*$* -
Mobilization				10%	$ -
	Subtotal 2				*$* -
Contingencies				10%	$ -
	Subtotal 3				*$* -
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$* -
Construction Engineering (CE)				10%	$ -
	Subtotal 5				*$* -
Indirect Costs (IDC)				9.13%	$ -
	Total				**$ -**

MSN-22 Henderson Street Railroad Crossing				$ -	TOT

	LENGTH (FT)	
	WIDTH (FT)	
	SURFACING (IN)	
	BASE (IN)	

TYPE	UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK	UNIT	$ 1.00	0.00	$ -
FINISH GRADE CONTROL	CRFT	$ 0.63	0.00	$ -
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	0.00	$ -
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	0.00	$ -
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	0.00	$ -
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	0.00	$ -
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	0.00	$ -
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	0.00	$ -
TOP SURF 3/4 IN GR 2A	CUYD	$ -	0.00	$ -
COVER - TYPE 1	SQYD	$ 0.54	0.00	$ -
BLOTTER MATERIAL	TON	$ 30.51	0.00	$ -
TRAFFIC GRAVEL	CUYD	$ 14.61	0.00	$ -
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	0.00	$ -
HYDRATED LIME	TON	$ 192.18	0.00	$ -
ASPHALT CEMENT PG 64-28	TON	$ 685.62	0.00	$ -
LIQUID ASPHALT MC-70	TON	$ -	0.00	$ -
EMULS ASPHALT CRS-2P	TON	$ 613.48	0.00	$ -
COLD MILLING	SQYD	$ 1.42	0.00	$ -
PORT CEM CONC PAVEMENT	SQYD	$ 131.10	0.00	$ -
GUARD RAIL-STEEL	LNFT	$ 16.51	0.00	$ -
GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	0.00	$ -
GUARD RAIL-STL/BR APPR-TY 1	EACH	$ 2,301.05	0.00	$ -
GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	0.00	$ -
FARM FENCE-TYPE F5W & F5M	LNFT	$ -	0.00	$ -
SIDEWALK-CONCRETE 4"	SQYD	$ 57.78	0.00	$ -
SIDEWALK-CONCRETE 6"	SQYD	$ 66.91	0.00	$ -
CURB AND GUTTER-CONC	LNFT	$ 18.15	0.00	$ -
SEEDING AREA NO 1	ACRE	$ 361.26	0.00	$ -
SEEDING AREA NO 2	ACRE	$ 1,523.04	0.00	$ -
SEEDING AREA NO 3	ACRE	$ 252.38	0.00	$ -
FERTILIZING AREA NO 1	ACRE	$ 100.70	0.00	$ -
FERTILIZING AREA NO 2	ACRE	$ 93.64	0.00	$ -
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	0.00	$ -
MULCH	ACRE	$ 6,142.57	0.00	$ -
Signs - Rural	MILE	$ 8,000.00	0.00	$ -
Signs - Urban	MILE	$ 52,000.00	0.00	$ -
Striping & Pavement Markings - Rural	MILE	$ 8,000.00	0.00	$ -
Striping & Pavement Markings - Urban	MILE	$ 20,000.00	0.00	$ -
Drainage Pipe - Rural	MILE	$ 82,000.00	0.00	$ -
Drainage Pipe - Urban	MILE	$ 240,000.00	0.00	$ -
Concrete Roundabouts - One Lane	EACH	$ 425,000.00	0.00	$ -
Concrete Roundabouts - Two Lanes	EACH	$ 575,000.00	0.00	$ -
New Interchange - Rural	LS	$ 1,800,000.00	0.00	$ -
New Interchange - Urban/Interstate	LS	$ 7,900,000.00	0.00	$ -
Remove Rural Interchange	LS	$ 60,000.00	0.00	$ -
Remove Urban/Interstate Interchange	LS	$ 450,000.00	0.00	$ -
New Bridge 100 lineal feet or less	SQFT	$ 120.00	0.00	$ -
New Bridge larger than 100 lineal feet	SQFT	$ 114.00	0.00	$ -
Remove small single span bridge	LS	$ 20,000.00	0.00	$ -
Remove large multiple span bridge	LS	$ 132,000.00	0.00	$ -
Railroad - new track only (no xings, signals, etc.)	MILE	$ 155,000.00	0.00	$ -
Signals	LS	$ 225,000.00	0.00	$ -
Lights - Urban	MILE	$ 175,000.00	0.00	$ -
Traffic Control			5%	$ -
Subtotal 1				*$ -*
Mobilization			10%	$ -
Subtotal 2				*$ -*
Contingencies			10%	$ -
Subtotal 3				*$ -*
Long-term Inflation	% PER YEAR	3%	0	$ -
Subtotal 4				*$ -*
Construction Engineering (CE)			10%	$ -
Subtotal 5				*$ -*
Indirect Costs (IDC)			9.13%	$ -
Total				**$ -**

MSN-23 Benton Avenue Railroad Grade Separation				$ -	TOT
		LENGTH (FT)			
		WIDTH (FT)			
		SURFACING (IN)			
		BASE (IN)			
TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**	
MISCELLANEOUS WORK	UNIT	$ 1.00	0.00	$ -	
FINISH GRADE CONTROL	CRFT	$ 0.63	0.00	$ -	
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	0.00	$ -	
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	0.00	$ -	
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	0.00	$ -	
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	0.00	$ -	
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	0.00	$ -	
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	0.00	$ -	
TOP SURF 3/4 IN GR 2A	CUYD	$ -	0.00	$ -	
COVER - TYPE 1	SQYD	$ 0.54	0.00	$ -	
BLOTTER MATERIAL	TON	$ 30.51	0.00	$ -	
TRAFFIC GRAVEL	CUYD	$ 14.61	0.00	$ -	
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	0.00	$ -	
HYDRATED LIME	TON	$ 192.18	0.00	$ -	
ASPHALT CEMENT PG 64-28	TON	$ 685.62	0.00	$ -	
LIQUID ASPHALT MC-70	TON	$ -	0.00	$ -	
EMULS ASPHALT CRS-2P	TON	$ 613.48	0.00	$ -	
COLD MILLING	SQYD	$ 1.42	0.00	$ -	
PORT CEM CONC PAVEMENT	SQYD	$ 131.10	0.00	$ -	
GUARD RAIL-STEEL	LNFT	$ 16.51	0.00	$ -	
GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	0.00	$ -	
GUARD RAIL-STL/BR APPR-TY 1	EACH	$ 2,301.05	0.00	$ -	
GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	0.00	$ -	
FARM FENCE-TYPE F5W & F5M	LNFT	$ -	0.00	$ -	
SIDEWALK-CONCRETE 4"	SQYD	$ 57.78	0.00	$ -	
SIDEWALK-CONCRETE 6"	SQYD	$ 66.91	0.00	$ -	
CURB AND GUTTER-CONC	LNFT	$ 18.15	0.00	$ -	
SEEDING AREA NO 1	ACRE	$ 361.26	0.00	$ -	
SEEDING AREA NO 2	ACRE	$ 1,523.04	0.00	$ -	
SEEDING AREA NO 3	ACRE	$ 252.38	0.00	$ -	
FERTILIZING AREA NO 1	ACRE	$ 100.70	0.00	$ -	
FERTILIZING AREA NO 2	ACRE	$ 93.64	0.00	$ -	
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	0.00	$ -	
MULCH	ACRE	$ 6,142.57	0.00	$ -	
Signs - Rural	MILE	$ 8,000.00	0.00	$ -	
Signs - Urban	MILE	$ 52,000.00	0.00	$ -	
Striping & Pavement Markings - Rural	MILE	$ 8,000.00	0.00	$ -	
Striping & Pavement Markings - Urban	MILE	$ 20,000.00	0.00	$ -	
Drainage Pipe - Rural	MILE	$ 82,000.00	0.00	$ -	
Drainage Pipe - Urban	MILE	$ 240,000.00	0.00	$ -	
Concrete Roundabouts - One Lane	EACH	$ 425,000.00	0.00	$ -	
Concrete Roundabouts - Two Lanes	EACH	$ 575,000.00	0.00	$ -	
New Interchange - Rural	LS	$ 1,800,000.00	0.00	$ -	
New Interchange - Urban/Interstate	LS	$ 7,900,000.00	0.00	$ -	
Remove Rural Interchange	LS	$ 60,000.00	0.00	$ -	
Remove Urban/Interstate Interchange	LS	$ 450,000.00	0.00	$ -	
New Bridge 100 lineal feet or less	SQFT	$ 120.00	0.00	$ -	
New Bridge larger than 100 lineal feet	SQFT	$ 114.00	0.00	$ -	
Remove small single span bridge	LS	$ 20,000.00	0.00	$ -	
Remove large multiple span bridge	LS	$ 132,000.00	0.00	$ -	
Railroad - new track only (no xings, signals, etc.)	MILE	$ 155,000.00	0.00	$ -	
Signals	LS	$ 225,000.00	0.00	$ -	
Lights - Urban	MILE	$ 175,000.00	0.00	$ -	
Traffic Control			5%	$ -	
Subtotal 1				*$* -	
Mobilization			10%	$ -	
Subtotal 2				*$* -	
Contingencies			10%	$ -	
Subtotal 3				*$* -	
Long-term Inflation	% PER YEAR	3%	0	$ -	
Subtotal 4				*$* -	
Construction Engineering (CE)			10%	$ -	
Subtotal 5				*$* -	
Indirect Costs (IDC)			9.13%	$ -	
Total				**$ -**	

MSN-24 Lincoln Road - North Montana Avenue to Interstate 15 NB Ramp					$ -	TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**	
MISCELLANEOUS WORK		UNIT	$ 1.00	0.00	$ -	
FINISH GRADE CONTROL		CRFT	$ 0.63	0.00	$ -	
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	0.00	$ -	
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	0.00	$ -	
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	0.00	$ -	
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	0.00	$ -	
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	0.00	$ -	
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	0.00	$ -	
TOP SURF 3/4 IN GR 2A		CUYD	$ -	0.00	$ -	
COVER - TYPE 1		SQYD	$ 0.54	0.00	$ -	
BLOTTER MATERIAL		TON	$ 30.51	0.00	$ -	
TRAFFIC GRAVEL		CUYD	$ 14.61	0.00	$ -	
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	0.00	$ -	
HYDRATED LIME		TON	$ 192.18	0.00	$ -	
ASPHALT CEMENT PG 64-28		TON	$ 685.62	0.00	$ -	
LIQUID ASPHALT MC-70		TON	$ -	0.00	$ -	
EMULS ASPHALT CRS-2P		TON	$ 613.48	0.00	$ -	
COLD MILLING		SQYD	$ 1.42	0.00	$ -	
PORT CEM CONC PAVEMENT		SQYD	$ 131.10	0.00	$ -	
GUARD RAIL-STEEL		LNFT	$ 16.51	0.00	$ -	
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	0.00	$ -	
GUARD RAIL-STL/BR APPR-TY 1		EACH	$ 2,301.05	0.00	$ -	
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	0.00	$ -	
FARM FENCE-TYPE F5W & F5M		LNFT	$ -	0.00	$ -	
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	0.00	$ -	
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	0.00	$ -	
CURB AND GUTTER-CONC		LNFT	$ 18.15	0.00	$ -	
SEEDING AREA NO 1		ACRE	$ 361.26	0.00	$ -	
SEEDING AREA NO 2		ACRE	$ 1,523.04	0.00	$ -	
SEEDING AREA NO 3		ACRE	$ 252.38	0.00	$ -	
FERTILIZING AREA NO 1		ACRE	$ 100.70	0.00	$ -	
FERTILIZING AREA NO 2		ACRE	$ 93.64	0.00	$ -	
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	0.00	$ -	
MULCH		ACRE	$ 6,142.57	0.00	$ -	
Signs - Rural		MILE	$ 8,000.00	0.00	$ -	
Signs - Urban		MILE	$ 52,000.00	0.00	$ -	
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	0.00	$ -	
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.00	$ -	
Drainage Pipe - Rural		MILE	$ 82,000.00	0.00	$ -	
Drainage Pipe - Urban		MILE	$ 240,000.00	0.00	$ -	
Concrete Roundabouts - One Lane		EACH	$ 425,000.00	0.00	$ -	
Concrete Roundabouts - Two Lanes		EACH	$ 575,000.00	0.00	$ -	
New Interchange - Rural		LS	$ 1,800,000.00	0.00	$ -	
New Interchange - Urban/Interstate		LS	$ 7,900,000.00	0.00	$ -	
Remove Rural Interchange		LS	$ 60,000.00	0.00	$ -	
Remove Urban/Interstate Interchange		LS	$ 450,000.00	0.00	$ -	
New Bridge 100 lineal feet or less		SQFT	$ 120.00	0.00	$ -	
New Bridge larger than 100 lineal feet		SQFT	$ 114.00	0.00	$ -	
Remove small single span bridge		LS	$ 20,000.00	0.00	$ -	
Remove large multiple span bridge		LS	$ 132,000.00	0.00	$ -	
Railroad - new track only (no xings, signals, etc.)		MILE	$ 155,000.00	0.00	$ -	
Signals		LS	$ 225,000.00	0.00	$ -	
Lights - Urban		MILE	$ 175,000.00	0.00	$ -	
Traffic Control				5%	$ -	
	Subtotal 1				*$* -	
Mobilization				10%	$ -	
	Subtotal 2				*$* -	
Contingencies				10%	$ -	
	Subtotal 3				*$* -	
Long-term Inflation		% PER YEAR	3%	0	$ -	
	Subtotal 4				*$* -	
Construction Engineering (CE)				10%	$ -	
	Subtotal 5				*$* -	
Indirect Costs (IDC)				9.13%	$ -	
	Total				**$ -**	

MSN-25 Joslyn Street - Hauser Boulevard to US Highway 12 (Euclid Avenue)					$	1,000,000	TOT

		LENGTH (FT)		
		WIDTH (FT)		
		SURFACING (IN)		
		BASE (IN)		

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	6250.00	$ 6,250
FINISH GRADE CONTROL		CRFT	$ 0.63	2640.00	$ 1,663
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	897.58	$ 3,904
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	89.76	$ 457
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	44.88	$ 361
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	2244.84	$ 9,114
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	1507.41	$ 32,696
COVER - TYPE 1		SQYD	$ 0.54	4840.00	$ 2,614
BLOTTER MATERIAL		TON	$ 30.51	36.30	$ 1,108
TRAFFIC GRAVEL		CUYD	$ 14.61	322.67	$ 4,714
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	777.43	$ 23,898
HYDRATED LIME		TON	$ 192.18	11.00	$ 2,114
ASPHALT CEMENT PG 64-28		TON	$ 685.62	41.98	$ 28,783
EMULS ASPHALT CRS-2P		TON	$ 613.48	8.70	$ 5,337
COLD MILLING		SQYD	$ 1.42	3520.00	$ 4,998
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	1173.33	$ 67,795
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	293.33	$ 19,627
CURB AND GUTTER-CONC		LNFT	$ 18.15	2640.00	$ 47,916
SEEDING AREA NO 1		ACRE	$ 361.26	2.48	$ 898
SEEDING AREA NO 2		ACRE	$ 1,523.04	0.70	$ 1,060
SEEDING AREA NO 3		ACRE	$ 252.38	0.99	$ 251
FERTILIZING AREA NO 1		ACRE	$ 100.70	2.48	$ 250
FERTILIZING AREA NO 2		ACRE	$ 93.64	0.70	$ 65
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	3.48	$ 388
MULCH		ACRE	$ 6,142.57	0.70	$ 4,274
Signs - Urban		MILE	$ 52,000.00	0.25	$ 13,000
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.25	$ 5,000
Drainage Pipe - Urban		MILE	$ 240,000.00	0.25	$ 60,000
Signals		LS	$ 225,000.00	1.00	$ 225,000
Lights - Urban		MILE	$ 175,000.00	0.25	$ 43,750
Traffic Control				5%	$ 4,695
	Subtotal 1				*$ 626,979*
Mobilization				10%	$ 62,698
	Subtotal 2				*$ 689,677*
Contingencies				10%	$ 68,968
	Subtotal 3				*$ 758,645*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 758,645*
Construction Engineering (CE)				10%	$ 75,865
	Subtotal 5				*$ 834,510*
Indirect Costs (IDC)				9.13%	$ 76,191
	Total				**$ 910,700**

MSN-26 Josylin Street - US Highway 12 (Euclid Avenue) to Country Club Avenue / Leslie Avenue **$ 300,000 TOT**

LENGTH (FT)	
WIDTH (FT)	
SURFACING (IN)	
BASE (IN)	

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	3000.00	$ 3,000
FINISH GRADE CONTROL		CRFT	$ 0.63	1267.20	$ 798
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	430.84	$ 1,874
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	43.08	$ 219
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	21.54	$ 173
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	1077.52	$ 4,375
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	723.56	$ 15,694
COVER - TYPE 1		SQYD	$ 0.54	2324.00	$ 1,255
BLOTTER MATERIAL		TON	$ 30.51	17.50	$ 534
TRAFFIC GRAVEL		CUYD	$ 14.61	154.88	$ 2,263
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	373.16	$ 11,471
HYDRATED LIME		TON	$ 192.18	6.00	$ 1,153
ASPHALT CEMENT PG 64-28		TON	$ 685.62	20.15	$ 13,816
EMULS ASPHALT CRS-2P		TON	$ 613.48	4.20	$ 2,577
COLD MILLING		SQYD	$ 1.42	1689.60	$ 2,399
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	563.20	$ 32,542
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	140.80	$ 9,421
CURB AND GUTTER-CONC		LNFT	$ 18.15	1267.20	$ 23,000
SEEDING AREA NO 1		ACRE	$ 361.26	1.19	$ 431
SEEDING AREA NO 2		ACRE	$ 1,523.04	0.33	$ 509
SEEDING AREA NO 3		ACRE	$ 252.38	0.48	$ 120
FERTILIZING AREA NO 1		ACRE	$ 100.70	1.19	$ 120
FERTILIZING AREA NO 2		ACRE	$ 93.64	0.33	$ 31
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	1.67	$ 186
MULCH		ACRE	$ 6,142.57	0.33	$ 2,051
Signs - Urban		MILE	$ 52,000.00	0.12	$ 6,240
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.12	$ 2,400
Drainage Pipe - Urban		MILE	$ 240,000.00	0.12	$ 28,800
Lights - Urban		MILE	$ 175,000.00	0.12	$ 21,000
Traffic Control				5%	$ 2,390
	Subtotal 1				*$ 195,843*
Mobilization				10%	$ 19,584
	Subtotal 2				*$ 215,427*
Contingencies				10%	$ 21,543
	Subtotal 3				*$ 236,970*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 236,970*
Construction Engineering (CE)				10%	$ 23,697
	Subtotal 5				*$ 260,667*
Indirect Costs (IDC)				9.13%	$ 23,799
	Total				**$ 284,466**

MSN-27 6th Avenue - Cruse Avenue to Montana Avenue **$ 1,900,000 TOT**

		LENGTH (FT)		
		WIDTH (FT)		
		SURFACING (IN)		
		BASE (IN)		

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	20750.00	$ 20,750
FINISH GRADE CONTROL		CRFT	$ 0.63	8764.80	$ 5,522
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	7452.87	$ 30,259
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	4193.04	$ 90,947
COVER - TYPE 1		SQYD	$ 0.54	13148.00	$ 7,100
BLOTTER MATERIAL		TON	$ 30.51	98.70	$ 3,011
TRAFFIC GRAVEL		CUYD	$ 14.61	876.48	$ 12,805
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	2111.77	$ 64,916
HYDRATED LIME		TON	$ 192.18	30.00	$ 5,765
ASPHALT CEMENT PG 64-28		TON	$ 685.62	114.04	$ 78,185
EMULS ASPHALT CRS-2P		TON	$ 613.48	23.50	$ 14,417
COLD MILLING		SQYD	$ 1.42	11686.40	$ 16,595
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	3895.47	$ 225,080
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	973.87	$ 65,161
CURB AND GUTTER-CONC		LNFT	$ 18.15	8764.80	$ 159,081
SEEDING AREA NO 1		ACRE	$ 361.26	8.25	$ 2,980
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.31	$ 3,518
SEEDING AREA NO 3		ACRE	$ 252.38	3.30	$ 833
FERTILIZING AREA NO 1		ACRE	$ 100.70	8.25	$ 831
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.31	$ 216
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	11.55	$ 1,287
MULCH		ACRE	$ 6,142.57	2.31	$ 14,189
Signs - Urban		MILE	$ 52,000.00	0.83	$ 43,160
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.83	$ 16,600
Drainage Pipe - Urban		MILE	$ 240,000.00	0.83	$ 199,200
Lights - Urban		MILE	$ 175,000.00	0.83	$ 145,250
Traffic Control				5%	$ 12,304
	Subtotal 1				*$ 1,244,963*
Mobilization				10%	$ 124,496
	Subtotal 2				*$ 1,369,459*
Contingencies				10%	$ 136,946
	Subtotal 3				*$ 1,506,405*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,506,405*
Construction Engineering (CE)				10%	$ 150,641
	Subtotal 5				*$ 1,657,046*
Indirect Costs (IDC)				9.13%	$ 151,288
	Total				**$ 1,808,334**

MSN-28 11th Avenue - Cruse Avenue to Montana Avenue					$	1,800,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			
TYPE	**UNITS**		**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK	UNIT	$	1.00	19750.00	$	19,750
FINISH GRADE CONTROL	CRFT	$	0.63	8342.40	$	5,256
TOPSOIL-SALVAGING AND PLACING	CUYD	$	4.06	7093.69	$	28,800
TEMPORARY EROSION CONTROL	UNIT	$	1.00	5000.00	$	5,000
CRUSHED AGGREGATE COURSE	CUYD	$	21.69	3990.96	$	86,564
COVER - TYPE 1	SQYD	$	0.54	12514.00	$	6,758
BLOTTER MATERIAL	TON	$	30.51	93.90	$	2,865
TRAFFIC GRAVEL	CUYD	$	14.61	834.24	$	12,188
PLANT MIX BIT SURF GR S-3/4 IN	TON	$	30.74	2010.00	$	61,787
HYDRATED LIME	TON	$	192.18	29.00	$	5,573
ASPHALT CEMENT PG 64-28	TON	$	685.62	108.54	$	74,417
EMULS ASPHALT CRS-2P	TON	$	613.48	22.40	$	13,742
COLD MILLING	SQYD	$	1.42	11123.20	$	15,795
SIDEWALK-CONCRETE 4"	SQYD	$	57.78	3707.73	$	214,233
SIDEWALK-CONCRETE 6"	SQYD	$	66.91	926.93	$	62,021
CURB AND GUTTER-CONC	LNFT	$	18.15	8342.40	$	151,415
SEEDING AREA NO 1	ACRE	$	361.26	7.85	$	2,837
SEEDING AREA NO 2	ACRE	$	1,523.04	2.20	$	3,349
SEEDING AREA NO 3	ACRE	$	252.38	3.14	$	793
FERTILIZING AREA NO 1	ACRE	$	100.70	7.85	$	791
FERTILIZING AREA NO 2	ACRE	$	93.64	2.20	$	206
CONDITION SEEDBED SURFACE	ACRE	$	111.44	10.99	$	1,225
MULCH	ACRE	$	6,142.57	2.20	$	13,506
Signs - Urban	MILE	$	52,000.00	0.79	$	41,080
Striping & Pavement Markings - Urban	MILE	$	20,000.00	0.79	$	15,800
Drainage Pipe - Urban	MILE	$	240,000.00	0.79	$	189,600
Lights - Urban	MILE	$	175,000.00	0.79	$	138,250
Traffic Control				5%	$	11,727
Subtotal 1					*$*	*1,185,326*
Mobilization				10%	$	118,533
Subtotal 2					*$*	*1,303,859*
Contingencies				10%	$	130,386
Subtotal 3					*$*	*1,434,245*
Long-term Inflation	% PER YEAR		3%	0	$	-
Subtotal 4					*$*	*1,434,245*
Construction Engineering (CE)				10%	$	143,424
Subtotal 5					*$*	*1,577,669*
Indirect Costs (IDC)				9.13%	$	144,041
Total					**$**	**1,721,710**

MSN-29 Carter Drive - Prospect Avenue to Billings Avenue **$ 800,000 TOT**

LENGTH (FT)	
WIDTH (FT)	
SURFACING (IN)	
BASE (IN)	

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	5000.00	$ 5,000
FINISH GRADE CONTROL		CRFT	$ 0.63	2112.00	$ 1,331
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	478.71	$ 2,082
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	47.87	$ 244
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	23.94	$ 193
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	1795.87	$ 7,291
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	1205.93	$ 26,157
COVER - TYPE 1		SQYD	$ 0.54	3872.00	$ 2,091
BLOTTER MATERIAL		TON	$ 30.51	29.10	$ 888
TRAFFIC GRAVEL		CUYD	$ 14.61	258.13	$ 3,771
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	621.94	$ 19,118
HYDRATED LIME		TON	$ 192.18	9.00	$ 1,730
ASPHALT CEMENT PG 64-28		TON	$ 685.62	33.58	$ 23,026
EMULS ASPHALT CRS-2P		TON	$ 613.48	7.00	$ 4,294
COLD MILLING		SQYD	$ 1.42	2816.00	$ 3,999
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	938.67	$ 54,236
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	234.67	$ 15,702
CURB AND GUTTER-CONC		LNFT	$ 18.15	2112.00	$ 38,333
SEEDING AREA NO 1		ACRE	$ 361.26	1.99	$ 718
SEEDING AREA NO 2		ACRE	$ 1,523.04	0.56	$ 848
SEEDING AREA NO 3		ACRE	$ 252.38	0.80	$ 201
FERTILIZING AREA NO 1		ACRE	$ 100.70	1.99	$ 200
FERTILIZING AREA NO 2		ACRE	$ 93.64	0.56	$ 52
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	2.78	$ 310
MULCH		ACRE	$ 6,142.57	0.56	$ 3,419
Signs - Urban		MILE	$ 52,000.00	0.20	$ 10,400
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.20	$ 4,000
Drainage Pipe - Urban		MILE	$ 240,000.00	0.20	$ 48,000
Signals		LS	$ 225,000.00	1.00	$ 225,000
Lights - Urban		MILE	$ 175,000.00	0.20	$ 35,000
Traffic Control				5%	$ 3,745
	Subtotal 1				*$ 546,378*
Mobilization				10%	$ 54,638
	Subtotal 2				*$ 601,016*
Contingencies				10%	$ 60,102
	Subtotal 3				*$ 661,117*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 661,117*
Construction Engineering (CE)				10%	$ 66,112
	Subtotal 5				*$ 727,229*
Indirect Costs (IDC)				9.13%	$ 66,396
	Total				**$ 793,625**

MSN-30 Wylie Drive - East Helena City Limits to US Highway 12 (East Helena)					$ 2,100,000 TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			BASE (IN)		
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	21750.00	$ 21,750
FINISH GRADE CONTROL		CRFT	$ 0.63	9187.20	$ 5,788
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	3123.56	$ 13,587
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	312.36	$ 1,590
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	156.18	$ 1,257
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	7812.04	$ 31,717
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	5245.78	$ 113,781
COVER - TYPE 1		SQYD	$ 0.54	16844.00	$ 9,096
BLOTTER MATERIAL		TON	$ 30.51	126.40	$ 3,856
TRAFFIC GRAVEL		CUYD	$ 14.61	1122.88	$ 16,405
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	2705.44	$ 83,165
HYDRATED LIME		TON	$ 192.18	38.00	$ 7,303
ASPHALT CEMENT PG 64-28		TON	$ 685.62	146.09	$ 100,165
EMULS ASPHALT CRS-2P		TON	$ 613.48	30.10	$ 18,466
COLD MILLING		SQYD	$ 1.42	12249.60	$ 17,394
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	4083.20	$ 235,927
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	1020.80	$ 68,302
CURB AND GUTTER-CONC		LNFT	$ 18.15	9187.20	$ 166,748
SEEDING AREA NO 1		ACRE	$ 361.26	8.65	$ 3,124
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.42	$ 3,688
SEEDING AREA NO 3		ACRE	$ 252.38	3.46	$ 873
FERTILIZING AREA NO 1		ACRE	$ 100.70	8.65	$ 871
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.42	$ 227
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	12.11	$ 1,349
MULCH		ACRE	$ 6,142.57	2.42	$ 14,873
Signs - Urban		MILE	$ 52,000.00	0.87	$ 45,240
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.87	$ 17,400
Drainage Pipe - Urban		MILE	$ 240,000.00	0.87	$ 208,800
Lights - Urban		MILE	$ 175,000.00	0.87	$ 152,250
Traffic Control				5%	$ 15,715
	Subtotal 1				*$ 1,385,707*
Mobilization				10%	$ 138,571
	Subtotal 2				*$ 1,524,278*
Contingencies				10%	$ 152,428
	Subtotal 3				*$ 1,676,706*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,676,706*
Construction Engineering (CE)				10%	$ 167,671
	Subtotal 5				*$ 1,844,376*
Indirect Costs (IDC)				9.13%	$ 168,392
	Total				**$ 2,012,768**

MSN-31 Montana Avenue - Lewis Street to US Highway 12 (East Helena)					$ 1,200,000 TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			BASE (IN)		
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	12750.00	$ 12,750
FINISH GRADE CONTROL		CRFT	$ 0.63	5385.60	$ 3,393
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	1831.05	$ 7,965
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	183.11	$ 932
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	91.55	$ 737
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	4579.47	$ 18,593
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	3075.11	$ 66,699
COVER - TYPE 1		SQYD	$ 0.54	9874.00	$ 5,332
BLOTTER MATERIAL		TON	$ 30.51	74.10	$ 2,261
TRAFFIC GRAVEL		CUYD	$ 14.61	658.24	$ 9,617
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	1585.95	$ 48,752
HYDRATED LIME		TON	$ 192.18	23.00	$ 4,420
ASPHALT CEMENT PG 64-28		TON	$ 685.62	85.64	$ 58,717
EMULS ASPHALT CRS-2P		TON	$ 613.48	17.70	$ 10,859
COLD MILLING		SQYD	$ 1.42	7180.80	$ 10,197
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	2393.60	$ 138,302
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	598.40	$ 40,039
CURB AND GUTTER-CONC		LNFT	$ 18.15	5385.60	$ 97,749
SEEDING AREA NO 1		ACRE	$ 361.26	5.07	$ 1,831
SEEDING AREA NO 2		ACRE	$ 1,523.04	1.42	$ 2,162
SEEDING AREA NO 3		ACRE	$ 252.38	2.03	$ 512
FERTILIZING AREA NO 1		ACRE	$ 100.70	5.07	$ 510
FERTILIZING AREA NO 2		ACRE	$ 93.64	1.42	$ 133
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	7.10	$ 791
MULCH		ACRE	$ 6,142.57	1.42	$ 8,719
Signs - Urban		MILE	$ 52,000.00	0.51	$ 26,520
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	0.51	$ 10,200
Drainage Pipe - Urban		MILE	$ 240,000.00	0.51	$ 122,400
Lights - Urban		MILE	$ 175,000.00	0.51	$ 89,250
Traffic Control				5%	$ 9,323
	Subtotal 1				*$ 814,663*
Mobilization				10%	$ 81,466
	Subtotal 2				*$ 896,130*
Contingencies				10%	$ 89,613
	Subtotal 3				*$ 985,743*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 985,743*
Construction Engineering (CE)				10%	$ 98,574
	Subtotal 5				*$ 1,084,317*
Indirect Costs (IDC)				9.13%	$ 98,998
	Total				**$ 1,183,315**

MSN-32 Lane Avenue - Main Street to US Highway 12 (East Helena)					$	500,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			BASE (IN)			
TYPE	**UNITS**		**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK	UNIT	$	1.00	4750.00	$	4,750
FINISH GRADE CONTROL	CRFT	$	0.63	2006.40	$	1,264
EXCAVATION-UNCLASSIFIED	CUYD	$	4.35	682.16	$	2,967
EXCAVATION-UNCLASS BORROW	CUYD	$	5.09	68.22	$	347
SPECIAL BORROW-EXCAVATION	CUYD	$	8.05	34.11	$	275
TOPSOIL-SALVAGING AND PLACING	CUYD	$	4.06	1706.08	$	6,927
TEMPORARY EROSION CONTROL	UNIT	$	1.00	5000.00	$	5,000
CRUSHED AGGREGATE COURSE	CUYD	$	21.69	1145.63	$	24,849
COVER - TYPE 1	SQYD	$	0.54	3679.00	$	1,987
BLOTTER MATERIAL	TON	$	30.51	27.60	$	842
TRAFFIC GRAVEL	CUYD	$	14.61	245.23	$	3,583
PLANT MIX BIT SURF GR S-3/4 IN	TON	$	30.74	590.84	$	18,163
HYDRATED LIME	TON	$	192.18	9.00	$	1,730
ASPHALT CEMENT PG 64-28	TON	$	685.62	31.91	$	21,875
EMULS ASPHALT CRS-2P	TON	$	613.48	6.60	$	4,049
COLD MILLING	SQYD	$	1.42	2675.20	$	3,799
SIDEWALK-CONCRETE 4"	SQYD	$	57.78	891.73	$	51,524
SIDEWALK-CONCRETE 6"	SQYD	$	66.91	222.93	$	14,916
CURB AND GUTTER-CONC	LNFT	$	18.15	2006.40	$	36,416
SEEDING AREA NO 1	ACRE	$	361.26	1.89	$	682
SEEDING AREA NO 2	ACRE	$	1,523.04	0.53	$	805
SEEDING AREA NO 3	ACRE	$	252.38	0.76	$	191
FERTILIZING AREA NO 1	ACRE	$	100.70	1.89	$	190
FERTILIZING AREA NO 2	ACRE	$	93.64	0.53	$	50
CONDITION SEEDBED SURFACE	ACRE	$	111.44	2.64	$	295
MULCH	ACRE	$	6,142.57	0.53	$	3,248
Signs - Urban	MILE	$	52,000.00	0.19	$	9,880
Striping & Pavement Markings - Urban	MILE	$	20,000.00	0.19	$	3,800
Drainage Pipe - Urban	MILE	$	240,000.00	0.19	$	45,600
Lights - Urban	MILE	$	175,000.00	0.19	$	33,250
Traffic Control				5%	$	3,634
Subtotal 1					*$*	*306,887*
Mobilization				10%	$	30,689
Subtotal 2					*$*	*337,576*
Contingencies				10%	$	33,758
Subtotal 3					*$*	*371,333*
Long-term Inflation	% PER YEAR		3%	0	$	-
Subtotal 4					*$*	*371,333*
Construction Engineering (CE)				10%	$	37,133
Subtotal 5					*$*	*408,466*
Indirect Costs (IDC)				9.13%	$	37,293
Total					**$**	**445,759**

MSN-33 Capital Interchange - Reconstruct as per EIS **$ - TOT**

LENGTH (FT)	
WIDTH (FT)	
SURFACING (IN)	
BASE (IN)	

TYPE	UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK	UNIT	$ 1.00	0.00	$ -
FINISH GRADE CONTROL	CRFT	$ 0.63	0.00	$ -
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	0.00	$ -
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	0.00	$ -
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	0.00	$ -
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	0.00	$ -
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	0.00	$ -
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	0.00	$ -
TOP SURF 3/4 IN GR 2A	CUYD	$ -	0.00	$ -
COVER - TYPE 1	SQYD	$ 0.54	0.00	$ -
BLOTTER MATERIAL	TON	$ 30.51	0.00	$ -
TRAFFIC GRAVEL	CUYD	$ 14.61	0.00	$ -
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	0.00	$ -
HYDRATED LIME	TON	$ 192.18	0.00	$ -
ASPHALT CEMENT PG 64-28	TON	$ 685.62	0.00	$ -
LIQUID ASPHALT MC-70	TON	$ -	0.00	$ -
EMULS ASPHALT CRS-2P	TON	$ 613.48	0.00	$ -
COLD MILLING	SQYD	$ 1.42	0.00	$ -
PORT CEM CONC PAVEMENT	SQYD	$ 131.10	0.00	$ -
GUARD RAIL-STEEL	LNFT	$ 16.51	0.00	$ -
GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	0.00	$ -
GUARD RAIL-STL/BR APPR-TY 1	EACH	$ 2,301.05	0.00	$ -
GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	0.00	$ -
FARM FENCE-TYPE F5W & F5M	LNFT	$ -	0.00	$ -
SIDEWALK-CONCRETE 4"	SQYD	$ 57.78	0.00	$ -
SIDEWALK-CONCRETE 6"	SQYD	$ 66.91	0.00	$ -
CURB AND GUTTER-CONC	LNFT	$ 18.15	0.00	$ -
SEEDING AREA NO 1	ACRE	$ 361.26	0.00	$ -
SEEDING AREA NO 2	ACRE	$ 1,523.04	0.00	$ -
SEEDING AREA NO 3	ACRE	$ 252.38	0.00	$ -
FERTILIZING AREA NO 1	ACRE	$ 100.70	0.00	$ -
FERTILIZING AREA NO 2	ACRE	$ 93.64	0.00	$ -
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	0.00	$ -
MULCH	ACRE	$ 6,142.57	0.00	$ -
Signs - Rural	MILE	$ 8,000.00	0.00	$ -
Signs - Urban	MILE	$ 52,000.00	0.00	$ -
Striping & Pavement Markings - Rural	MILE	$ 8,000.00	0.00	$ -
Striping & Pavement Markings - Urban	MILE	$ 20,000.00	0.00	$ -
Drainage Pipe - Rural	MILE	$ 82,000.00	0.00	$ -
Drainage Pipe - Urban	MILE	$ 240,000.00	0.00	$ -
Concrete Roundabouts - One Lane	EACH	$ 425,000.00	0.00	$ -
Concrete Roundabouts - Two Lanes	EACH	$ 575,000.00	0.00	$ -
New Interchange - Rural	LS	$ 1,800,000.00	0.00	$ -
New Interchange - Urban/Interstate	LS	$ 7,900,000.00	0.00	$ -
Remove Rural Interchange	LS	$ 60,000.00	0.00	$ -
Remove Urban/Interstate Interchange	LS	$ 450,000.00	0.00	$ -
New Bridge 100 lineal feet or less	SQFT	$ 120.00	0.00	$ -
New Bridge larger than 100 lineal feet	SQFT	$ 114.00	0.00	$ -
Remove small single span bridge	LS	$ 20,000.00	0.00	$ -
Remove large multiple span bridge	LS	$ 132,000.00	0.00	$ -
Railroad - new track only (no xings, signals, etc.)	MILE	$ 155,000.00	0.00	$ -
Signals	LS	$ 225,000.00	0.00	$ -
Lights - Urban	MILE	$ 175,000.00	0.00	$ -
Traffic Control			5%	$ -
Subtotal 1				$ -
Mobilization			10%	$ -
Subtotal 2				$ -
Contingencies			10%	$ -
Subtotal 3				$ -
Long-term Inflation	% PER YEAR	3%	0	$ -
Subtotal 4				$ -
Construction Engineering (CE)			10%	$ -
Subtotal 5				$ -
Indirect Costs (IDC)			9.13%	$ -
Total				**$ -**

Greater Helena Area Long Range Transportation Plan - 2014
Estimated Planning Level Cost Summary (CRN PROJECTS)

Adjusted for Inflation

Project ID	Location	ROUNDED (2014) Estimated Planning Level Cost	ADJUSTED TO YEAR 2015 (3% per year)	ADJUSTED TO YEAR 2020 (3% per year)	ADJUSTED TO YEAR 2025 (3% per year)	ADJUSTED TO YEAR 2030 (3% per year)	ADJUSTED TO YEAR 2025 (3% per year)
CRN-1	Birdseye Road - Barrett Road to Lincoln Road	$17,666,000	$18,195,980	$21,094,128	$24,453,876	$28,348,744	$32,863,964
CRN-2	Wylie Drive - Canyon Ferry Road to York Road	$3,630,000	$3,738,900	$4,334,410	$5,024,769	$5,825,084	$6,752,869
CRN-3	Valley Drive – Lewis Street to York Road	$5,445,000	$5,608,350	$6,501,615	$7,537,153	$8,737,627	$10,129,304
CRN-4	Applegate Drive (north of Lincoln Road)	$3,993,000	$4,112,790	$4,767,851	$5,527,246	$6,407,593	$7,428,156
CRN-5	John G. Mine Road – North Montana Avenue to Green Meadow Drive	$1,936,000	$1,994,080	$2,311,685	$2,679,877	$3,106,712	$3,601,530
CRN-6	North Montana Avenue (north of Lincoln Road)	$6,776,000	$6,979,280	$8,090,898	$9,379,569	$10,873,491	$12,605,356
CRN-7	Head Lane – Country Club Avenue to Franklin Mine Road	$2,178,000	$2,243,340	$2,600,646	$3,014,861	$3,495,051	$4,051,722
CRN-8	Franklin Mine Road – Head Lane to Green Meadow Drive	$2,178,000	$2,243,340	$2,600,646	$3,014,861	$3,495,051	$4,051,722
CRN-9	New East / West collector – Frontage Road to York Road	$3,751,000	$3,863,530	$4,478,890	$5,192,261	$6,019,254	$6,977,965
CRN-10	Wylie Drive – Canyon Ferry Road to East Helena City limits	$2,057,000	$2,118,710	$2,456,166	$2,847,369	$3,300,881	$3,826,626
CRN-11	Mill Road – Green Meadow Drive to Montana Avenue	$1,452,000	$1,495,560	$1,733,764	$2,009,908	$2,330,034	$2,701,148
CRN-12	Forestvale Road – Green Meadow Drive to Montana Avenue	$1,573,000	$1,620,190	$1,878,244	$2,177,400	$2,524,203	$2,926,243
CRN-13	Sierra Road – Green Meadow Drive to Montana Avenue	$1,815,000	$1,869,450	$2,167,205	$2,512,384	$2,912,542	$3,376,435
CRN-14	Green Meadow Drive - north of Lincoln Road	$3,509,000	$3,614,270	$4,189,930	$4,857,277	$5,630,915	$6,527,774
CRN-15	Prairie Road - North Montana Avenue to Buffalo Horn Drive	$2,904,000	$2,991,120	$3,467,528	$4,019,815	$4,660,067	$5,402,295
CRN-16	Valley View Road - North Montana Avenue to Applegate Drive	$968,000	$997,040	$1,155,843	$1,339,938	$1,553,356	$1,800,765
CRN-17	Brookings Road - Applegate Drive to Green Meadow Drive	$968,000	$997,040	$1,155,843	$1,339,938	$1,553,356	$1,800,765
CRN-18	Woodland Hills Road - Green Meadow Drive to Lone Mountain Drive	$968,000	$997,040	$1,155,843	$1,339,938	$1,553,356	$1,800,765
CRN-19	Lake Helena Drive - old US Highway 12 (E. Main Street in East Helena) to Lincoln Road East	$13,310,000	$13,709,300	$15,892,836	$18,424,153	$21,358,643	$24,760,521
	TOTAL CRN PROJECTS	$77,077,000	$79,389,310	$92,033,969	$106,692,594	$123,685,958	$143,385,925

Greater Helena Area Long Range Transportation Plan - 2014
Estimated Planning Level Cost Summary **(CRN PROJECTS)**

Project ID	Location	2004 Update Costs	PER Costs [1]	MDT PET Cost [2]	Other Sources Cost [3]	PER Costs (Adjusted) [4]	ROUNDED (2014) Construction Cost [5]	ASSUMED Right-of-Way Cost (10% ADDED)	ASSUMED Utility Relocation Cost (10% ADDED)	ROUNDED (2014) Estimated Planning Level Cost
CRN-1	Birdseye Road - Barrett Road to Lincoln Road		$13,312,850	$11,108,025		$14,547,311	**$14,600,000**	**$16,060,000**	**$17,666,000**	**$17,666,000**
CRN-2	Wylie Drive - Canyon Ferry Road to York Road		$2,662,858	$2,545,915		$2,909,777	**$3,000,000**	**$3,300,000**	**$3,630,000**	**$3,630,000**
CRN-3	Valley Drive – Lewis Street to York Road		$4,040,457	$4,264,741		$4,415,116	**$4,500,000**	**$4,950,000**	**$5,445,000**	**$5,445,000**
CRN-4	Applegate Drive (north of Lincoln Road)		$2,999,835	$3,383,012		$3,278,001	**$3,300,000**	**$3,630,000**	**$3,993,000**	**$3,993,000**
CRN-5	John G. Mine Road – North Montana Avenue to Green Meadow Drive		$604,420	$1,548,330		$0	**$1,600,000**	**$1,760,000**	**$1,936,000**	**$1,936,000**
CRN-6	North Montana Avenue (north of Lincoln Road)		$4,616,171	$4,503,925		$5,511,950	**$5,600,000**	**$6,160,000**	**$6,776,000**	**$6,776,000**
CRN-7	Head Lane – Country Club Avenue to Franklin Mine Road	$2,000,000		$1,771,450		$0	**$1,800,000**	**$1,980,000**	**$2,178,000**	**$2,178,000**
CRN-8	Franklin Mine Road – Head Lane to Green Meadow Drive	$1,800,000		$1,744,255		$0	**$1,800,000**	**$1,980,000**	**$2,178,000**	**$2,178,000**
CRN-9	New East / West collector – Frontage Road to York Road	$1,662,500		$3,016,073		$0	**$3,100,000**	**$3,410,000**	**$3,751,000**	**$3,751,000**
CRN-10	Wylie Drive – Canyon Ferry Road to East Helena City limits	$1,464,572		$1,624,814		$0	**1,700,000**	**$1,870,000**	**$2,057,000**	**$2,057,000**
CRN-11	Mill Road – Green Meadow Drive to Montana Avenue	$1,300,000		$1,108,691		$0	**$1,200,000**	**$1,320,000**	**$1,452,000**	**$1,452,000**
CRN-12	Forestvale Road – Green Meadow Drive to Montana Avenue	$1,350,000		$1,209,755		$0	**$1,300,000**	**$1,430,000**	**$1,573,000**	**$1,573,000**
CRN-13	Sierra Road – Green Meadow Drive to Montana Avenue	$1,400,000		$1,466,253		$0	**$1,500,000**	**$1,650,000**	**$1,815,000**	**$1,815,000**
CRN-14	Green Meadow Drive - north of Lincoln Road			$2,805,920	$2,425,738	$0	**$2,900,000**	**$3,190,000**	**$3,509,000**	**$3,509,000**
CRN-15	Prairie Road - North Montana Avenue to Buffalo Horn Drive			$2,312,429	$1,719,590	$0	**$2,400,000**	**$2,640,000**	**$2,904,000**	**$2,904,000**
CRN-16	Valley View Road - North Montana Avenue to Applegate Drive			$739,835	$573,197	$0	**$800,000**	**$880,000**	**$968,000**	**$968,000**
CRN-17	Brookings Road - Applegate Drive to Green Meadow Drive			$792,253	$573,197	$0	**$800,000**	**$880,000**	**$968,000**	**$968,000**
CRN-18	Woodland Hills Road - Green Meadow Drive to Lone Mountain Drive			$777,224	$573,197	$0	**$800,000**	**$880,000**	**$968,000**	**$968,000**
CRN-19	Lake Helena Drive - old US Highway 12 (E. Main Street in East Helena) to Lincoln Road East		$9,013,043	$8,701,045		$10,762,045	**$11,000,000**	**$12,100,000**	**$13,310,000**	**$13,310,000**
	TOTAL CRN PROJECTS						**$63,700,000**	**$70,070,000**	**$77,077,000**	**$77,077,000**

NOTES:

	Denotes cost estimate source utilized
1	*Lewis & Clark County Preliminary Engineering Reports (PERs) - various years*
2	*MDT PET worksheets attached (Appendix F)*
3	*North Valley Infrastructure Study*
4	*PER costs updated to year 2014 by inflationary adjustment of 3 percent per year*
5	*Does not include right-of-way or utility relocation costs*

CRN-1	Birdseye Road - Barrett Road to Lincoln Road				$ 11,200,000 TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			CRUSHED TOP (IN)		
			GRANULAR BASE (IN)		
	TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
	MISCELLANEOUS WORK	UNIT	$ 1.00	250750.00	$ 250,750
	FINISH GRADE CONTROL	CRFT	$ 0.63	158875.20	$ 100,091
	EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	84262.70	$ 366,543
	EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	8426.27	$ 42,890
	SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	4213.13	$ 33,916
	TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	90062.95	$ 365,656
	TEMPORARY EROSION CONTROL	UNIT	$ 1.00	55000.00	$ 55,000
	CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	49305.25	$ 1,069,431
	COVER - TYPE 1	SQYD	$ 0.54	235371.00	$ 127,100
	BLOTTER MATERIAL	TON	$ 30.51	1916.50	$ 58,472
	TRAFFIC GRAVEL	CUYD	$ 14.61	15691.38	$ 229,251
	PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	39425.00	$ 1,211,925
	HYDRATED LIME	TON	$ 192.18	552.00	$ 106,083
	ASPHALT CEMENT PG 64-28	TON	$ 685.62	2128.95	$ 1,459,651
	EMULS ASPHALT CRS-2P	TON	$ 613.48	420.20	$ 257,784
	COLD MILLING	SQYD	$ 1.42	141011.20	$ 200,236
	GUARD RAIL-STEEL	LNFT	$ 16.51	2647.92	$ 43,717
	GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	264.79	$ 12,771
	GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	8.07	$ 20,773
	SEEDING AREA NO 1	ACRE	$ 361.26	99.70	$ 36,016
	SEEDING AREA NO 2	ACRE	$ 1,523.04	27.91	$ 42,515
	SEEDING AREA NO 3	ACRE	$ 252.38	39.88	$ 10,065
	FERTILIZING AREA NO 1	ACRE	$ 100.70	99.70	$ 10,039
	FERTILIZING AREA NO 2	ACRE	$ 93.64	27.91	$ 2,614
	CONDITION SEEDBED SURFACE	ACRE	$ 111.44	139.57	$ 15,554
	MULCH	ACRE	$ 6,142.57	27.91	$ 171,469
	Signs - Rural	MILE	$ 8,000.00	10.03	$ 80,240
	Striping & Pavement Markings - Rural	MILE	$ 8,000.00	10.03	$ 80,240
	Drainage Pipe - Rural	MILE	$ 82,000.00	10.03	$ 822,460
	Traffic Control			5%	$ 364,163
	Subtotal 1				*$ 7,647,414*
	Mobilization			10%	$ 764,741
	Subtotal 2				*$ 8,412,156*
	Contingencies			10%	$ 841,216
	Subtotal 3				*$ 9,253,371*
	Long-term Inflation	% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 9,253,371*
	Construction Engineering (CE)			10%	$ 925,337
	Subtotal 5				*$ 10,178,709*
	Indirect Costs (IDC)			9.13%	$ 929,316
	Total				**$ 11,108,025**

CRN-2	Wylie Drive - Canyon Ferry Road to Lincoln Road				$ 2,600,000 TOT

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
CRUSHED TOP (IN)
GRANULAR BASE (IN)

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	49750.00	$ 49,750
FINISH GRADE CONTROL		CRFT	$ 0.63	31521.60	$ 19,859
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	16718.12	$ 72,724
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	1671.81	$ 8,510
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	835.91	$ 6,729
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	17868.92	$ 72,548
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	9782.40	$ 212,180
COVER - TYPE 1		SQYD	$ 0.54	46699.00	$ 25,217
BLOTTER MATERIAL		TON	$ 30.51	380.30	$ 11,603
TRAFFIC GRAVEL		CUYD	$ 14.61	3113.24	$ 45,485
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	7822.11	$ 240,452
HYDRATED LIME		TON	$ 192.18	110.00	$ 21,140
ASPHALT CEMENT PG 64-28		TON	$ 685.62	422.39	$ 289,602
EMULS ASPHALT CRS-2P		TON	$ 613.48	83.40	$ 51,164
COLD MILLING		SQYD	$ 1.42	28019.20	$ 39,787
GUARD RAIL-STEEL		LNFT	$ 16.51	525.36	$ 8,674
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	52.54	$ 2,534
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	1.60	$ 4,121
SEEDING AREA NO 1		ACRE	$ 361.26	19.78	$ 7,146
SEEDING AREA NO 2		ACRE	$ 1,523.04	5.54	$ 8,435
SEEDING AREA NO 3		ACRE	$ 252.38	7.91	$ 1,997
FERTILIZING AREA NO 1		ACRE	$ 100.70	19.78	$ 1,992
FERTILIZING AREA NO 2		ACRE	$ 93.64	5.54	$ 519
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	27.69	$ 3,086
MULCH		ACRE	$ 6,142.57	5.54	$ 34,020
Signs - Rural		MILE	$ 8,000.00	1.99	$ 15,920
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	1.99	$ 15,920
Drainage Pipe - Rural		MILE	$ 82,000.00	1.99	$ 163,180
Signals		LS	$ 225,000.00	1.00	$ 225,000
Traffic Control				5%	$ 83,465
	Subtotal 1				*$ 1,752,757*
Mobilization				10%	$ 175,276
	Subtotal 2				*$ 1,928,032*
Contingencies				10%	$ 192,803
	Subtotal 3				*$ 2,120,836*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 2,120,836*
Construction Engineering (CE)				10%	$ 212,084
	Subtotal 5				*$ 2,332,919*
Indirect Costs (IDC)				9.13%	$ 212,996
	Total				**$ 2,545,915**

CRN-3	Valley Drive - Lewis Street to York Road					$	4,300,000	TOT

			LENGTH (FT)	
			WIDTH (FT)	
			SURFACING (IN)	
			CRUSHED TOP (IN)	
			GRANULAR BASE (IN)	

TYPE		UNITS		UNIT PRICE	QUANTITY		COST
MISCELLANEOUS WORK		UNIT	$	1.00	88500.00	$	88,500
FINISH GRADE CONTROL		CRFT	$	0.63	56073.60	$	35,326
EXCAVATION-UNCLASSIFIED		CUYD	$	4.35	29739.78	$	129,368
EXCAVATION-UNCLASS BORROW		CUYD	$	5.09	2973.98	$	15,138
SPECIAL BORROW-EXCAVATION		CUYD	$	8.05	1486.99	$	11,970
TOPSOIL-SALVAGING AND PLACING		CUYD	$	4.06	31786.92	$	129,055
TEMPORARY EROSION CONTROL		UNIT	$	1.00	20000.00	$	20,000
CRUSHED AGGREGATE COURSE		CUYD	$	21.69	17401.85	$	377,446
COVER - TYPE 1		SQYD	$	0.54	83072.00	$	44,859
BLOTTER MATERIAL		TON	$	30.51	676.40	$	20,637
TRAFFIC GRAVEL		CUYD	$	14.61	5538.13	$	80,912
PLANT MIX BIT SURF GR S-3/4 IN		TON	$	30.74	13914.71	$	427,738
HYDRATED LIME		TON	$	192.18	195.00	$	37,475
ASPHALT CEMENT PG 64-28		TON	$	685.62	751.39	$	515,171
EMULS ASPHALT CRS-2P		TON	$	613.48	148.30	$	90,979
COLD MILLING		SQYD	$	1.42	49843.20	$	70,777
GUARD RAIL-STEEL		LNFT	$	16.51	934.56	$	15,430
GD RAIL-STL INT RDWY TERM SECT		LNFT	$	48.23	93.46	$	4,507
GUARD RAIL-OPTIONAL TERM SECT		EACH	$	2,574.32	2.85	$	7,331
SEEDING AREA NO 1		ACRE	$	361.26	35.19	$	12,712
SEEDING AREA NO 2		ACRE	$	1,523.04	9.85	$	15,005
SEEDING AREA NO 3		ACRE	$	252.38	14.07	$	3,552
FERTILIZING AREA NO 1		ACRE	$	100.70	35.19	$	3,543
FERTILIZING AREA NO 2		ACRE	$	93.64	9.85	$	923
CONDITION SEEDBED SURFACE		ACRE	$	111.44	49.26	$	5,490
MULCH		ACRE	$	6,142.57	9.85	$	60,518
Signs - Rural		MILE	$	8,000.00	3.54	$	28,320
Striping & Pavement Markings - Rural		MILE	$	8,000.00	3.54	$	28,320
Drainage Pipe - Rural		MILE	$	82,000.00	3.54	$	290,280
Signals		LS	$	225,000.00	1.00	$	225,000
Traffic Control					5%	$	139,814
	Subtotal 1					*$*	*2,936,098*
Mobilization					10%	$	293,610
	Subtotal 2					*$*	*3,229,707*
Contingencies					10%	$	322,971
	Subtotal 3					*$*	*3,552,678*
Long-term Inflation		% PER YEAR		3%	0	$	-
	Subtotal 4					*$*	*3,552,678*
Construction Engineering (CE)					10%	$	355,268
	Subtotal 5					*$*	*3,907,946*
Indirect Costs (IDC)					9.13%	$	356,795
	Total					**$**	**4,264,741**

CRN-4	Applegate Drive (north of Lincoln Road)					$	3,400,000	TOT

LENGTH (FT)			
WIDTH (FT)			
SURFACING (IN)			
CRUSHED TOP (IN)			
GRANULAR BASE (IN)			

TYPE		UNITS	UNIT PRICE		QUANTITY		COST
MISCELLANEOUS WORK		UNIT	$	1.00	76250.00	$	76,250
FINISH GRADE CONTROL		CRFT	$	0.63	48312.00	$	30,437
EXCAVATION-UNCLASSIFIED		CUYD	$	4.35	25623.25	$	111,461
EXCAVATION-UNCLASS BORROW		CUYD	$	5.09	2562.33	$	13,042
SPECIAL BORROW-EXCAVATION		CUYD	$	8.05	1281.16	$	10,313
TOPSOIL-SALVAGING AND PLACING		CUYD	$	4.06	27387.04	$	111,191
TEMPORARY EROSION CONTROL		UNIT	$	1.00	20000.00	$	20,000
CRUSHED AGGREGATE COURSE		CUYD	$	21.69	14993.12	$	325,201
COVER - TYPE 1		SQYD	$	0.54	71574.00	$	38,650
BLOTTER MATERIAL		TON	$	30.51	582.80	$	17,781
TRAFFIC GRAVEL		CUYD	$	14.61	4771.56	$	69,712
PLANT MIX BIT SURF GR S-3/4 IN		TON	$	30.74	11988.66	$	368,531
HYDRATED LIME		TON	$	192.18	168.00	$	32,286
ASPHALT CEMENT PG 64-28		TON	$	685.62	647.39	$	443,862
EMULS ASPHALT CRS-2P		TON	$	613.48	127.80	$	78,403
COLD MILLING		SQYD	$	1.42	42944.00	$	60,980
GUARD RAIL-STEEL		LNFT	$	16.51	805.20	$	13,294
GD RAIL-STL INT RDWY TERM SECT		LNFT	$	48.23	80.52	$	3,883
GUARD RAIL-OPTIONAL TERM SECT		EACH	$	2,574.32	2.45	$	6,317
SEEDING AREA NO 1		ACRE	$	361.26	30.32	$	10,952
SEEDING AREA NO 2		ACRE	$	1,523.04	8.49	$	12,928
SEEDING AREA NO 3		ACRE	$	252.38	12.13	$	3,060
FERTILIZING AREA NO 1		ACRE	$	100.70	30.32	$	3,053
FERTILIZING AREA NO 2		ACRE	$	93.64	8.49	$	795
CONDITION SEEDBED SURFACE		ACRE	$	111.44	42.44	$	4,730
MULCH		ACRE	$	6,142.57	8.49	$	52,142
Signs - Rural		MILE	$	8,000.00	3.05	$	24,400
Striping & Pavement Markings - Rural		MILE	$	8,000.00	3.05	$	24,400
Drainage Pipe - Rural		MILE	$	82,000.00	3.05	$	250,100
Traffic Control					5%	$	110,908
	Subtotal 1					*$*	*2,329,064*
Mobilization					10%	$	232,906
	Subtotal 2					*$*	*2,561,970*
Contingencies					10%	$	256,197
	Subtotal 3					*$*	*2,818,167*
Long-term Inflation		% PER YEAR		3%	0	$	-
	Subtotal 4					*$*	*2,818,167*
Construction Engineering (CE)					10%	$	281,817
	Subtotal 5					*$*	*3,099,984*
Indirect Costs (IDC)					9.13%	$	283,029
	Total					**$**	**3,383,012**

CRN-5	John G. Mine Road - North Montana Avenue to Green Meadow Drive					$ 1,600,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	40750.00	$ 40,750
FINISH GRADE CONTROL		CRFT	$ 0.63	25819.20	$ 16,266
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	7283.56	$ 31,684
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	728.36	$ 3,707
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	364.18	$ 2,932
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	14636.35	$ 59,424
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	6737.70	$ 146,141
COVER - TYPE 1		SQYD	$ 0.54	30601.00	$ 16,525
BLOTTER MATERIAL		TON	$ 30.51	254.10	$ 7,753
TRAFFIC GRAVEL		CUYD	$ 14.61	2040.04	$ 29,805
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	5178.25	$ 159,179
HYDRATED LIME		TON	$ 192.18	73.00	$ 14,029
ASPHALT CEMENT PG 64-28		TON	$ 685.62	279.63	$ 191,717
EMULS ASPHALT CRS-2P		TON	$ 613.48	54.70	$ 33,557
COLD MILLING		SQYD	$ 1.42	22950.40	$ 32,590
GUARD RAIL-STEEL		LNFT	$ 16.51	430.32	$ 7,105
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	43.03	$ 2,075
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	1.31	$ 3,376
SEEDING AREA NO 1		ACRE	$ 361.26	16.20	$ 5,853
SEEDING AREA NO 2		ACRE	$ 1,523.04	4.54	$ 6,909
SEEDING AREA NO 3		ACRE	$ 252.38	6.48	$ 1,636
FERTILIZING AREA NO 1		ACRE	$ 100.70	16.20	$ 1,632
FERTILIZING AREA NO 2		ACRE	$ 93.64	4.54	$ 425
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	22.68	$ 2,528
MULCH		ACRE	$ 6,142.57	4.54	$ 27,866
Signs - Rural		MILE	$ 8,000.00	1.63	$ 13,040
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	1.63	$ 13,040
Drainage Pipe - Rural		MILE	$ 82,000.00	1.63	$ 133,660
Traffic Control				5%	$ 50,760
	Subtotal 1				*$ 1,065,961*
Mobilization				10%	$ 106,596
	Subtotal 2				*$ 1,172,557*
Contingencies				10%	$ 117,256
	Subtotal 3				*$ 1,289,813*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,289,813*
Construction Engineering (CE)				10%	$ 128,981
	Subtotal 5				*$ 1,418,794*
Indirect Costs (IDC)				9.13%	$ 129,536
	Total				**$ 1,548,330**

CRN-6	North Montana Avenue (north of Lincoln Road)					$	4,600,000 TOT

		LENGTH (FT)				
		WIDTH (FT)				
		SURFACING (IN)				
		CRUSHED TOP (IN)				
		GRANULAR BASE (IN)				
TYPE		**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK		UNIT	$ 1.00	87000.00	$	87,000
FINISH GRADE CONTROL		CRFT	$ 0.63	55123.20	$	34,728
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	29235.71	$	127,175
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	2923.57	$	14,881
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	1461.79	$	11,767
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	31248.16	$	126,868
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	20000.00	$	20,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	17106.91	$	371,049
COVER - TYPE 1		SQYD	$ 0.54	81664.00	$	44,099
BLOTTER MATERIAL		TON	$ 30.51	665.00	$	20,289
TRAFFIC GRAVEL		CUYD	$ 14.61	5444.27	$	79,541
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	13678.86	$	420,488
HYDRATED LIME		TON	$ 192.18	192.00	$	36,899
ASPHALT CEMENT PG 64-28		TON	$ 685.62	738.66	$	506,439
EMULS ASPHALT CRS-2P		TON	$ 613.48	145.80	$	89,445
COLD MILLING		SQYD	$ 1.42	48998.40	$	69,578
GUARD RAIL-STEEL		LNFT	$ 16.51	918.72	$	15,168
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	91.87	$	4,431
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	2.80	$	7,207
SEEDING AREA NO 1		ACRE	$ 361.26	34.59	$	12,496
SEEDING AREA NO 2		ACRE	$ 1,523.04	9.69	$	14,751
SEEDING AREA NO 3		ACRE	$ 252.38	13.84	$	3,492
FERTILIZING AREA NO 1		ACRE	$ 100.70	34.59	$	3,483
FERTILIZING AREA NO 2		ACRE	$ 93.64	9.69	$	907
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	48.43	$	5,397
MULCH		ACRE	$ 6,142.57	9.69	$	59,493
Signs - Rural		MILE	$ 8,000.00	3.48	$	27,840
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	3.48	$	27,840
Drainage Pipe - Rural		MILE	$ 82,000.00	3.48	$	285,360
Concrete Roundabouts - One Lane		EACH	$ 425,000.00	1.00	$	425,000
Traffic Control				5%	$	147,656
	Subtotal 1				*$*	*3,100,766*
Mobilization				10%	$	310,077
	Subtotal 2				*$*	*3,410,842*
Contingencies				10%	$	341,084
	Subtotal 3				*$*	*3,751,927*
Long-term Inflation		% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*3,751,927*
Construction Engineering (CE)				10%	$	375,193
	Subtotal 5				*$*	*4,127,119*
Indirect Costs (IDC)				9.13%	$	376,806
	Total				**$**	**4,503,925**

CRN-7	Head Lane - Country Club Avenue to Franklin Mine Road				$	1,800,000 TOT

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
CRUSHED TOP (IN)
GRANULAR BASE (IN)

TYPE		UNITS		UNIT PRICE	QUANTITY		COST
MISCELLANEOUS WORK		UNIT	$	1.00	48250.00	$	48,250
FINISH GRADE CONTROL		CRFT	$	0.63	30571.20	$	19,260
EXCAVATION-UNCLASSIFIED		CUYD	$	4.35	8624.10	$	37,515
EXCAVATION-UNCLASS BORROW		CUYD	$	5.09	862.41	$	4,390
SPECIAL BORROW-EXCAVATION		CUYD	$	8.05	431.20	$	3,471
TOPSOIL-SALVAGING AND PLACING		CUYD	$	4.06	17330.16	$	70,360
TEMPORARY EROSION CONTROL		UNIT	$	1.00	10000.00	$	10,000
CRUSHED AGGREGATE COURSE		CUYD	$	21.69	7977.76	$	173,038
COVER - TYPE 1		SQYD	$	0.54	36233.00	$	19,566
BLOTTER MATERIAL		TON	$	30.51	300.90	$	9,180
TRAFFIC GRAVEL		CUYD	$	14.61	2415.50	$	35,290
PLANT MIX BIT SURF GR S-3/4 IN		TON	$	30.74	6131.30	$	188,476
HYDRATED LIME		TON	$	192.18	86.00	$	16,527
ASPHALT CEMENT PG 64-28		TON	$	685.62	331.09	$	227,002
EMULS ASPHALT CRS-2P		TON	$	613.48	64.70	$	39,692
GUARD RAIL-STEEL		LNFT	$	16.51	509.52	$	8,412
GD RAIL-STL INT RDWY TERM SECT		LNFT	$	48.23	50.95	$	2,457
GUARD RAIL-OPTIONAL TERM SECT		EACH	$	2,574.32	1.55	$	3,997
SEEDING AREA NO 1		ACRE	$	361.26	19.18	$	6,930
SEEDING AREA NO 2		ACRE	$	1,523.04	5.37	$	8,181
SEEDING AREA NO 3		ACRE	$	252.38	7.67	$	1,937
FERTILIZING AREA NO 1		ACRE	$	100.70	19.18	$	1,932
FERTILIZING AREA NO 2		ACRE	$	93.64	5.37	$	503
CONDITION SEEDBED SURFACE		ACRE	$	111.44	26.86	$	2,993
MULCH		ACRE	$	6,142.57	5.37	$	32,995
Signs - Rural		MILE	$	8,000.00	1.93	$	15,440
Striping & Pavement Markings - Rural		MILE	$	8,000.00	1.93	$	15,440
Drainage Pipe - Rural		MILE	$	82,000.00	1.93	$	158,260
Traffic Control					5%	$	58,075
	Subtotal 1					*$*	*1,219,570*
Mobilization					10%	$	121,957
	Subtotal 2					*$*	*1,341,527*
Contingencies					10%	$	134,153
	Subtotal 3					*$*	*1,475,680*
Long-term Inflation		% PER YEAR		3%	0	$	-
	Subtotal 4					*$*	*1,475,680*
Construction Engineering (CE)					10%	$	147,568
	Subtotal 5					*$*	*1,623,248*
Indirect Costs (IDC)					9.13%	$	148,203
	Total					**$**	**1,771,450**

CRN-8	Franklin Mine Road - Head Lane to Green Meadow Drive				$	1,800,000 TOT

			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			
TYPE	**UNITS**		**UNIT PRICE**	**QUANTITY**		**COST**
MISCELLANEOUS WORK	UNIT	$	1.00	47500.00	$	47,500
FINISH GRADE CONTROL	CRFT	$	0.63	30096.00	$	18,960
EXCAVATION-UNCLASSIFIED	CUYD	$	4.35	8490.04	$	36,932
EXCAVATION-UNCLASS BORROW	CUYD	$	5.09	849.00	$	4,321
SPECIAL BORROW-EXCAVATION	CUYD	$	8.05	424.50	$	3,417
TOPSOIL-SALVAGING AND PLACING	CUYD	$	4.06	17060.78	$	69,267
TEMPORARY EROSION CONTROL	UNIT	$	1.00	10000.00	$	10,000
CRUSHED AGGREGATE COURSE	CUYD	$	21.69	7853.76	$	170,348
COVER - TYPE 1	SQYD	$	0.54	35670.00	$	19,262
BLOTTER MATERIAL	TON	$	30.51	296.20	$	9,037
TRAFFIC GRAVEL	CUYD	$	14.61	2377.96	$	34,742
PLANT MIX BIT SURF GR S-3/4 IN	TON	$	30.74	6036.00	$	185,547
HYDRATED LIME	TON	$	192.18	85.00	$	16,335
ASPHALT CEMENT PG 64-28	TON	$	685.62	325.94	$	223,474
EMULS ASPHALT CRS-2P	TON	$	613.48	63.70	$	39,079
GUARD RAIL-STEEL	LNFT	$	16.51	501.60	$	8,281
GD RAIL-STL INT RDWY TERM SECT	LNFT	$	48.23	50.16	$	2,419
GUARD RAIL-OPTIONAL TERM SECT	EACH	$	2,574.32	1.53	$	3,935
SEEDING AREA NO 1	ACRE	$	361.26	18.89	$	6,823
SEEDING AREA NO 2	ACRE	$	1,523.04	5.29	$	8,054
SEEDING AREA NO 3	ACRE	$	252.38	7.55	$	1,907
FERTILIZING AREA NO 1	ACRE	$	100.70	18.89	$	1,902
FERTILIZING AREA NO 2	ACRE	$	93.64	5.29	$	495
CONDITION SEEDBED SURFACE	ACRE	$	111.44	26.44	$	2,946
MULCH	ACRE	$	6,142.57	5.29	$	32,482
Signs - Rural	MILE	$	8,000.00	1.90	$	15,200
Striping & Pavement Markings - Rural	MILE	$	8,000.00	1.90	$	15,200
Drainage Pipe - Rural	MILE	$	82,000.00	1.90	$	155,800
Traffic Control				5%	$	57,183
Subtotal 1					*$*	*1,200,847*
Mobilization				10%	$	120,085
Subtotal 2					*$*	*1,320,932*
Contingencies				10%	$	132,093
Subtotal 3					*$*	*1,453,025*
Long-term Inflation	% PER YEAR		3%	0	$	-
Subtotal 4					*$*	*1,453,025*
Construction Engineering (CE)				10%	$	145,303
Subtotal 5					*$*	*1,598,328*
Indirect Costs (IDC)				9.13%	$	145,927
Total					**$**	**1,744,255**

CRN-9	New East / West collector - Frontage Road to York Road				$	3,100,000	TOT

		LENGTH (FT)	
		WIDTH (FT)	
		SURFACING (IN)	
		CRUSHED TOP (IN)	
		GRANULAR BASE (IN)	

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	32500.00	$ 32,500
FINISH GRADE CONTROL		CRFT	$ 0.63	13728.00	$ 8,649
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	8823.10	$ 38,380
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	882.31	$ 4,491
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	441.16	$ 3,551
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	11673.16	$ 47,393
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	4703.11	$ 102,010
COVER - TYPE 1		SQYD	$ 0.54	25168.00	$ 13,591
BLOTTER MATERIAL		TON	$ 30.51	188.80	$ 5,760
TRAFFIC GRAVEL		CUYD	$ 14.61	1677.87	$ 24,514
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4042.61	$ 124,270
HYDRATED LIME		TON	$ 192.18	57.00	$ 10,954
ASPHALT CEMENT PG 64-28		TON	$ 685.62	218.30	$ 149,671
EMULS ASPHALT CRS-2P		TON	$ 613.48	45.00	$ 27,607
SIDEWALK-CONCRETE 4"		SQYD	$ 57.78	6101.33	$ 352,535
SIDEWALK-CONCRETE 6"		SQYD	$ 66.91	1525.33	$ 102,060
CURB AND GUTTER-CONC		LNFT	$ 18.15	13728.00	$ 249,163
SEEDING AREA NO 1		ACRE	$ 361.26	12.92	$ 4,668
SEEDING AREA NO 2		ACRE	$ 1,523.04	3.62	$ 5,510
SEEDING AREA NO 3		ACRE	$ 252.38	5.17	$ 1,304
FERTILIZING AREA NO 1		ACRE	$ 100.70	12.92	$ 1,301
FERTILIZING AREA NO 2		ACRE	$ 93.64	3.62	$ 339
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	18.09	$ 2,016
MULCH		ACRE	$ 6,142.57	3.62	$ 22,224
Signs - Urban		MILE	$ 52,000.00	1.30	$ 67,600
Striping & Pavement Markings - Urban		MILE	$ 20,000.00	1.30	$ 26,000
Drainage Pipe - Urban		MILE	$ 240,000.00	1.30	$ 312,000
Lights - Urban		MILE	$ 175,000.00	1.30	$ 227,500
Traffic Control				5%	$ 98,878
	Subtotal 1				*$ 2,076,442*
Mobilization				10%	$ 207,644
	Subtotal 2				*$ 2,284,086*
Contingencies				10%	$ 228,409
	Subtotal 3				*$ 2,512,494*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 2,512,494*
Construction Engineering (CE)				10%	$ 251,249
	Subtotal 5				*$ 2,763,744*
Indirect Costs (IDC)				9.13%	$ 252,330
	Total				**$ 3,016,073**

CRN-10	Wylie Drive - Canyon Ferry Road to East Helena City Limits				$	1,700,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			
	TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
	MISCELLANEOUS WORK	UNIT	$ 1.00	30000.00	$	30,000
	FINISH GRADE CONTROL	CRFT	$ 0.63	19008.00	$	11,975
	EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	10081.28	$	43,854
	EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	1008.13	$	5,131
	SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	504.06	$	4,058
	TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	10775.23	$	43,747
	TEMPORARY EROSION CONTROL	UNIT	$ 1.00	10000.00	$	10,000
	CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	5898.93	$	127,948
	COVER - TYPE 1	SQYD	$ 0.54	28160.00	$	15,206
	BLOTTER MATERIAL	TON	$ 30.51	229.30	$	6,996
	TRAFFIC GRAVEL	CUYD	$ 14.61	1877.33	$	27,428
	PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	4716.85	$	144,996
	HYDRATED LIME	TON	$ 192.18	67.00	$	12,876
	ASPHALT CEMENT PG 64-28	TON	$ 685.62	254.71	$	174,634
	EMULS ASPHALT CRS-2P	TON	$ 613.48	50.30	$	30,858
	COLD MILLING	SQYD	$ 1.42	17036.80	$	24,192
	GUARD RAIL-STEEL	LNFT	$ 16.51	316.80	$	5,230
	GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	31.68	$	1,528
	GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	0.97	$	2,485
	SEEDING AREA NO 1	ACRE	$ 361.26	11.93	$	4,309
	SEEDING AREA NO 2	ACRE	$ 1,523.04	3.34	$	5,087
	SEEDING AREA NO 3	ACRE	$ 252.38	4.77	$	1,204
	FERTILIZING AREA NO 1	ACRE	$ 100.70	11.93	$	1,201
	FERTILIZING AREA NO 2	ACRE	$ 93.64	3.34	$	313
	CONDITION SEEDBED SURFACE	ACRE	$ 111.44	16.70	$	1,861
	MULCH	ACRE	$ 6,142.57	3.34	$	20,515
	Signs - Rural	MILE	$ 8,000.00	1.20	$	9,600
	Striping & Pavement Markings - Rural	MILE	$ 8,000.00	1.20	$	9,600
	Drainage Pipe - Rural	MILE	$ 82,000.00	1.20	$	98,400
	Signals	LS	$ 225,000.00	1.00	$	225,000
	Traffic Control			5%	$	18,385
	Subtotal 1				*$*	*1,118,617*
	Mobilization			10%	$	111,862
	Subtotal 2				*$*	*1,230,479*
	Contingencies			10%	$	123,048
	Subtotal 3				*$*	*1,353,527*
	Long-term Inflation	% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*1,353,527*
	Construction Engineering (CE)			10%	$	135,353
	Subtotal 5				*$*	*1,488,879*
	Indirect Costs (IDC)			9.13%	$	135,935
	Total				**$**	**1,624,814**

CRN-11	Mill Road - Green Meadow Drive to Montana Avenue				$	1,200,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			
	TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
	MISCELLANEOUS WORK	UNIT	$ 1.00	30250.00	$	30,250
	FINISH GRADE CONTROL	CRFT	$ 0.63	19166.40	$	12,075
	EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	5406.82	$	23,520
	EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	540.68	$	2,752
	SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	270.34	$	2,176
	TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	10865.02	$	44,112
	TEMPORARY EROSION CONTROL	UNIT	$ 1.00	10000.00	$	10,000
	CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	5001.60	$	108,485
	COVER - TYPE 1	SQYD	$ 0.54	22716.00	$	12,267
	BLOTTER MATERIAL	TON	$ 30.51	188.70	$	5,757
	TRAFFIC GRAVEL	CUYD	$ 14.61	1514.38	$	22,125
	PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	3843.98	$	118,164
	HYDRATED LIME	TON	$ 192.18	54.00	$	10,378
	ASPHALT CEMENT PG 64-28	TON	$ 685.62	207.57	$	142,317
	EMULS ASPHALT CRS-2P	TON	$ 613.48	40.60	$	24,907
	COLD MILLING	SQYD	$ 1.42	17036.80	$	24,192
	GUARD RAIL-STEEL	LNFT	$ 16.51	319.44	$	5,274
	GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	31.94	$	1,541
	GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	0.97	$	2,506
	SEEDING AREA NO 1	ACRE	$ 361.26	12.03	$	4,345
	SEEDING AREA NO 2	ACRE	$ 1,523.04	3.37	$	5,129
	SEEDING AREA NO 3	ACRE	$ 252.38	4.81	$	1,214
	FERTILIZING AREA NO 1	ACRE	$ 100.70	12.03	$	1,211
	FERTILIZING AREA NO 2	ACRE	$ 93.64	3.37	$	315
	CONDITION SEEDBED SURFACE	ACRE	$ 111.44	16.84	$	1,876
	MULCH	ACRE	$ 6,142.57	3.37	$	20,686
	Signs - Rural	MILE	$ 8,000.00	1.21	$	9,680
	Striping & Pavement Markings - Rural	MILE	$ 8,000.00	1.21	$	9,680
	Drainage Pipe - Rural	MILE	$ 82,000.00	1.21	$	99,220
	Traffic Control			5%	$	7,133
	Subtotal 1				*$*	*763,288*
	Mobilization			10%	$	76,329
	Subtotal 2				*$*	*839,617*
	Contingencies			10%	$	83,962
	Subtotal 3				*$*	*923,578*
	Long-term Inflation	% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*923,578*
	Construction Engineering (CE)			10%	$	92,358
	Subtotal 5				*$*	*1,015,936*
	Indirect Costs (IDC)			9.13%	$	92,755
	Total				**$**	**1,108,691**

CRN-12	**Forestvale Road - Green Meadow Drive to Montana Avenue**				**$ 1,300,000 TOT**

LENGTH (FT)
WIDTH (FT)
SURFACING (IN)
CRUSHED TOP (IN)
GRANULAR BASE (IN)

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	31750.00	$ 31,750
FINISH GRADE CONTROL		CRFT	$ 0.63	20116.80	$ 12,674
EXCAVATION-UNCLASSIFIED		CUYD	$ 4.35	5674.92	$ 24,686
EXCAVATION-UNCLASS BORROW		CUYD	$ 5.09	567.49	$ 2,889
SPECIAL BORROW-EXCAVATION		CUYD	$ 8.05	283.75	$ 2,284
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	11403.78	$ 46,299
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	5249.62	$ 113,864
COVER - TYPE 1		SQYD	$ 0.54	23843.00	$ 12,875
BLOTTER MATERIAL		TON	$ 30.51	198.00	$ 6,041
TRAFFIC GRAVEL		CUYD	$ 14.61	1589.48	$ 23,222
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	4034.59	$ 124,023
HYDRATED LIME		TON	$ 192.18	57.00	$ 10,954
ASPHALT CEMENT PG 64-28		TON	$ 685.62	217.87	$ 149,375
EMULS ASPHALT CRS-2P		TON	$ 613.48	42.60	$ 26,134
COLD MILLING		SQYD	$ 1.42	17881.60	$ 25,392
GUARD RAIL-STEEL		LNFT	$ 16.51	335.28	$ 5,535
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	33.53	$ 1,617
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	1.02	$ 2,630
SEEDING AREA NO 1		ACRE	$ 361.26	12.62	$ 4,560
SEEDING AREA NO 2		ACRE	$ 1,523.04	3.53	$ 5,383
SEEDING AREA NO 3		ACRE	$ 252.38	5.05	$ 1,274
FERTILIZING AREA NO 1		ACRE	$ 100.70	12.62	$ 1,271
FERTILIZING AREA NO 2		ACRE	$ 93.64	3.53	$ 331
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	17.67	$ 1,969
MULCH		ACRE	$ 6,142.57	3.53	$ 21,711
Signs - Rural		MILE	$ 8,000.00	1.27	$ 10,160
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	1.27	$ 10,160
Drainage Pipe - Rural		MILE	$ 82,000.00	1.27	$ 104,140
Traffic Control				5%	$ 39,660
	Subtotal 1				*$ 832,866*
Mobilization				10%	$ 83,287
	Subtotal 2				*$ 916,153*
Contingencies				10%	$ 91,615
	Subtotal 3				*$ 1,007,768*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,007,768*
Construction Engineering (CE)				10%	$ 100,777
	Subtotal 5				*$ 1,108,545*
Indirect Costs (IDC)				9.13%	$ 101,210
	Total				**$ 1,209,755**

CRN-13	Sierra Road - Green Meadow Drive to Montana Avenue				$ 1,500,000 TOT

LENGTH (FT)	
WIDTH (FT)	
SURFACING (IN)	
CRUSHED TOP (IN)	
GRANULAR BASE (IN)	

TYPE	UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK	UNIT	$ 1.00	33000.00	$ 33,000
FINISH GRADE CONTROL	CRFT	$ 0.63	20908.80	$ 13,173
EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	11089.41	$ 48,239
EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	1108.94	$ 5,645
SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	554.47	$ 4,463
TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	11852.75	$ 48,122
TEMPORARY EROSION CONTROL	UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	6488.83	$ 140,743
COVER - TYPE 1	SQYD	$ 0.54	30976.00	$ 16,727
BLOTTER MATERIAL	TON	$ 30.51	252.30	$ 7,698
TRAFFIC GRAVEL	CUYD	$ 14.61	2065.07	$ 30,171
PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	5188.53	$ 159,496
HYDRATED LIME	TON	$ 192.18	73.00	$ 14,029
ASPHALT CEMENT PG 64-28	TON	$ 685.62	280.18	$ 192,098
EMULS ASPHALT CRS-2P	TON	$ 613.48	55.30	$ 33,925
COLD MILLING	SQYD	$ 1.42	18585.60	$ 26,392
GUARD RAIL-STEEL	LNFT	$ 16.51	348.48	$ 5,753
GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	34.85	$ 1,681
GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	1.06	$ 2,734
SEEDING AREA NO 1	ACRE	$ 361.26	13.12	$ 4,740
SEEDING AREA NO 2	ACRE	$ 1,523.04	3.67	$ 5,595
SEEDING AREA NO 3	ACRE	$ 252.38	5.25	$ 1,325
FERTILIZING AREA NO 1	ACRE	$ 100.70	13.12	$ 1,321
FERTILIZING AREA NO 2	ACRE	$ 93.64	3.67	$ 344
CONDITION SEEDBED SURFACE	ACRE	$ 111.44	18.37	$ 2,047
MULCH	ACRE	$ 6,142.57	3.67	$ 22,566
Signs - Rural	MILE	$ 8,000.00	1.32	$ 10,560
Striping & Pavement Markings - Rural	MILE	$ 8,000.00	1.32	$ 10,560
Drainage Pipe - Rural	MILE	$ 82,000.00	1.32	$ 108,240
Traffic Control			5%	$ 48,069
Subtotal 1				*$ 1,009,454*
Mobilization			10%	$ 100,945
Subtotal 2				*$ 1,110,400*
Contingencies			10%	$ 111,040
Subtotal 3				*$ 1,221,440*
Long-term Inflation	% PER YEAR	3%	0	$ -
Subtotal 4				*$ 1,221,440*
Construction Engineering (CE)			10%	$ 122,144
Subtotal 5				*$ 1,343,584*
Indirect Costs (IDC)			9.13%	$ 122,669
Total				**$ 1,466,253**

CRN-14	Green Meadow Drive - north of Lincoln Road				$ 2,900,000 TOT
			LENGTH (FT)		
			WIDTH (FT)		
			SURFACING (IN)		
			CRUSHED TOP (IN)		
			GRANULAR BASE (IN)		
	TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**	**COST**
	MISCELLANEOUS WORK	UNIT	$ 1.00	76250.00	$ 76,250
	FINISH GRADE CONTROL	CRFT	$ 0.63	48312.00	$ 30,437
	EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	13628.76	$ 59,285
	EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	1362.88	$ 6,937
	SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	681.44	$ 5,486
	TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	27387.04	$ 111,191
	TEMPORARY EROSION CONTROL	UNIT	$ 1.00	20000.00	$ 20,000
	CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	12607.34	$ 273,453
	COVER - TYPE 1	SQYD	$ 0.54	57259.00	$ 30,920
	BLOTTER MATERIAL	TON	$ 30.51	475.50	$ 14,508
	TRAFFIC GRAVEL	CUYD	$ 14.61	3817.24	$ 55,770
	PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	9689.37	$ 297,851
	HYDRATED LIME	TON	$ 192.18	136.00	$ 26,136
	ASPHALT CEMENT PG 64-28	TON	$ 685.62	523.23	$ 358,734
	EMULS ASPHALT CRS-2P	TON	$ 613.48	102.30	$ 62,759
	GUARD RAIL-STEEL	LNFT	$ 16.51	805.20	$ 13,294
	GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	80.52	$ 3,883
	GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	2.45	$ 6,317
	SEEDING AREA NO 1	ACRE	$ 361.26	30.32	$ 10,952
	SEEDING AREA NO 2	ACRE	$ 1,523.04	8.49	$ 12,928
	SEEDING AREA NO 3	ACRE	$ 252.38	12.13	$ 3,060
	FERTILIZING AREA NO 1	ACRE	$ 100.70	30.32	$ 3,053
	FERTILIZING AREA NO 2	ACRE	$ 93.64	8.49	$ 795
	CONDITION SEEDBED SURFACE	ACRE	$ 111.44	42.44	$ 4,730
	MULCH	ACRE	$ 6,142.57	8.49	$ 52,142
	Signs - Rural	MILE	$ 8,000.00	3.05	$ 24,400
	Striping & Pavement Markings - Rural	MILE	$ 8,000.00	3.05	$ 24,400
	Drainage Pipe - Rural	MILE	$ 82,000.00	3.05	$ 250,100
	Traffic Control			5%	$ 91,989
	Subtotal 1				*$ 1,931,760*
	Mobilization			10%	$ 193,176
	Subtotal 2				*$ 2,124,936*
	Contingencies			10%	$ 212,494
	Subtotal 3				*$ 2,337,429*
	Long-term Inflation	% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 2,337,429*
	Construction Engineering (CE)			10%	$ 233,743
	Subtotal 5				*$ 2,571,172*
	Indirect Costs (IDC)			9.13%	$ 234,748
	Total				**$ 2,805,920**

CRN-15	Prairie Road - North Montana Avenue to Buffalo Horn Drive					$ 2,400,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	76000.00	$ 76,000
FINISH GRADE CONTROL		CRFT	$ 0.63	48153.60	$ 30,337
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	27297.24	$ 110,827
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	20000.00	$ 20,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	10188.05	$ 220,979
COVER - TYPE 1		SQYD	$ 0.54	42804.00	$ 23,114
BLOTTER MATERIAL		TON	$ 30.51	366.90	$ 11,194
TRAFFIC GRAVEL		CUYD	$ 14.61	2853.55	$ 41,690
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	7365.84	$ 226,426
HYDRATED LIME		TON	$ 192.18	104.00	$ 19,987
ASPHALT CEMENT PG 64-28		TON	$ 685.62	397.76	$ 272,709
EMULS ASPHALT CRS-2P		TON	$ 613.48	76.50	$ 46,931
COLD MILLING		SQYD	$ 1.42	5139.20	$ 7,298
GUARD RAIL-STEEL		LNFT	$ 16.51	802.56	$ 13,250
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	80.26	$ 3,871
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	2.45	$ 6,296
SEEDING AREA NO 1		ACRE	$ 361.26	30.22	$ 10,916
SEEDING AREA NO 2		ACRE	$ 1,523.04	8.46	$ 12,886
SEEDING AREA NO 3		ACRE	$ 252.38	12.09	$ 3,050
FERTILIZING AREA NO 1		ACRE	$ 100.70	30.22	$ 3,043
FERTILIZING AREA NO 2		ACRE	$ 93.64	8.46	$ 792
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	42.30	$ 4,714
MULCH		ACRE	$ 6,142.57	8.46	$ 51,971
Signs - Rural		MILE	$ 8,000.00	3.04	$ 24,320
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	3.04	$ 24,320
Drainage Pipe - Rural		MILE	$ 82,000.00	3.04	$ 249,280
Traffic Control				5%	$ 75,810
	Subtotal 1				*$ 1,592,012*
Mobilization				10%	$ 159,201
	Subtotal 2				*$ 1,751,213*
Contingencies				10%	$ 175,121
	Subtotal 3				*$ 1,926,334*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 1,926,334*
Construction Engineering (CE)				10%	$ 192,633
	Subtotal 5				*$ 2,118,967*
Indirect Costs (IDC)				9.13%	$ 193,462
	Total				**$ 2,312,429**

CRN-16	Valley View Road - North Montana Avenue to Applegate Drive				$ 800,000	TOT
				LENGTH (FT)		
				WIDTH (FT)		
				SURFACING (IN)		
				CRUSHED TOP (IN)		
				GRANULAR BASE (IN)		

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	24500.00	$ 24,500
FINISH GRADE CONTROL		CRFT	$ 0.63	15523.20	$ 9,780
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	8799.77	$ 35,727
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	5000.00	$ 5,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	3284.31	$ 71,237
COVER - TYPE 1		SQYD	$ 0.54	13799.00	$ 7,451
BLOTTER MATERIAL		TON	$ 30.51	118.30	$ 3,609
TRAFFIC GRAVEL		CUYD	$ 14.61	919.89	$ 13,440
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	2374.52	$ 72,993
HYDRATED LIME		TON	$ 192.18	34.00	$ 6,534
ASPHALT CEMENT PG 64-28		TON	$ 685.62	128.22	$ 87,913
EMULS ASPHALT CRS-2P		TON	$ 613.48	24.70	$ 15,153
GUARD RAIL-STEEL		LNFT	$ 16.51	258.72	$ 4,271
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	25.87	$ 1,248
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	0.79	$ 2,030
SEEDING AREA NO 1		ACRE	$ 361.26	9.74	$ 3,519
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.73	$ 4,154
SEEDING AREA NO 3		ACRE	$ 252.38	3.90	$ 983
FERTILIZING AREA NO 1		ACRE	$ 100.70	9.74	$ 981
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.73	$ 255
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	13.64	$ 1,520
MULCH		ACRE	$ 6,142.57	2.73	$ 16,754
Signs - Rural		MILE	$ 8,000.00	0.98	$ 7,840
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	0.98	$ 7,840
Drainage Pipe - Rural		MILE	$ 82,000.00	0.98	$ 80,360
Traffic Control				5%	$ 24,255
	Subtotal 1				*$ 509,346*
Mobilization				10%	$ 50,935
	Subtotal 2				*$ 560,280*
Contingencies				10%	$ 56,028
	Subtotal 3				*$ 616,309*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 616,309*
Construction Engineering (CE)				10%	$ 61,631
	Subtotal 5				*$ 677,939*
Indirect Costs (IDC)				9.13%	$ 61,896
	Total				**$ 739,835**

CRN-17	Brookings Road - Applegate Drive to Green Meadow Drive					$	800,000	TOT

		LENGTH (FT)	
		WIDTH (FT)	
		SURFACING (IN)	
		CRUSHED TOP (IN)	
		GRANULAR BASE (IN)	

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	26000.00	$ 26,000
FINISH GRADE CONTROL		CRFT	$ 0.63	16473.60	$ 10,378
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	9338.53	$ 37,914
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	3485.39	$ 75,598
COVER - TYPE 1		SQYD	$ 0.54	14644.00	$ 7,908
BLOTTER MATERIAL		TON	$ 30.51	125.50	$ 3,829
TRAFFIC GRAVEL		CUYD	$ 14.61	976.21	$ 14,262
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	2519.89	$ 77,462
HYDRATED LIME		TON	$ 192.18	36.00	$ 6,918
ASPHALT CEMENT PG 64-28		TON	$ 685.62	136.07	$ 93,295
EMULS ASPHALT CRS-2P		TON	$ 613.48	26.20	$ 16,073
GUARD RAIL-STEEL		LNFT	$ 16.51	274.56	$ 4,533
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	27.46	$ 1,324
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	0.84	$ 2,154
SEEDING AREA NO 1		ACRE	$ 361.26	10.34	$ 3,734
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.89	$ 4,408
SEEDING AREA NO 3		ACRE	$ 252.38	4.13	$ 1,044
FERTILIZING AREA NO 1		ACRE	$ 100.70	10.34	$ 1,041
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.89	$ 271
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	14.47	$ 1,613
MULCH		ACRE	$ 6,142.57	2.89	$ 17,779
Signs - Rural		MILE	$ 8,000.00	1.04	$ 8,320
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	1.04	$ 8,320
Drainage Pipe - Rural		MILE	$ 82,000.00	1.04	$ 85,280
Traffic Control				5%	$ 25,973
	Subtotal 1				*$ 545,433*
Mobilization				10%	$ 54,543
	Subtotal 2				*$ 599,977*
Contingencies				10%	$ 59,998
	Subtotal 3				*$ 659,974*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 659,974*
Construction Engineering (CE)				10%	$ 65,997
	Subtotal 5				*$ 725,972*
Indirect Costs (IDC)				9.13%	$ 66,281
	Total				**$ 792,253**

CRN-18	Woodland Hills Road - Green Meadow Drive to Lone Mountain Drive				$	800,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			

TYPE		UNITS	UNIT PRICE	QUANTITY	COST
MISCELLANEOUS WORK		UNIT	$ 1.00	25500.00	$ 25,500
FINISH GRADE CONTROL		CRFT	$ 0.63	16156.80	$ 10,179
TOPSOIL-SALVAGING AND PLACING		CUYD	$ 4.06	9158.94	$ 37,185
TEMPORARY EROSION CONTROL		UNIT	$ 1.00	10000.00	$ 10,000
CRUSHED AGGREGATE COURSE		CUYD	$ 21.69	3418.36	$ 74,144
COVER - TYPE 1		SQYD	$ 0.54	14362.00	$ 7,755
BLOTTER MATERIAL		TON	$ 30.51	123.10	$ 3,756
TRAFFIC GRAVEL		CUYD	$ 14.61	957.44	$ 13,988
PLANT MIX BIT SURF GR S-3/4 IN		TON	$ 30.74	2471.43	$ 75,972
HYDRATED LIME		TON	$ 192.18	35.00	$ 6,726
ASPHALT CEMENT PG 64-28		TON	$ 685.62	133.46	$ 91,501
EMULS ASPHALT CRS-2P		TON	$ 613.48	25.70	$ 15,766
GUARD RAIL-STEEL		LNFT	$ 16.51	269.28	$ 4,446
GD RAIL-STL INT RDWY TERM SECT		LNFT	$ 48.23	26.93	$ 1,299
GUARD RAIL-OPTIONAL TERM SECT		EACH	$ 2,574.32	0.82	$ 2,112
SEEDING AREA NO 1		ACRE	$ 361.26	10.14	$ 3,663
SEEDING AREA NO 2		ACRE	$ 1,523.04	2.84	$ 4,324
SEEDING AREA NO 3		ACRE	$ 252.38	4.06	$ 1,024
FERTILIZING AREA NO 1		ACRE	$ 100.70	10.14	$ 1,021
FERTILIZING AREA NO 2		ACRE	$ 93.64	2.84	$ 266
CONDITION SEEDBED SURFACE		ACRE	$ 111.44	14.19	$ 1,582
MULCH		ACRE	$ 6,142.57	2.84	$ 17,438
Signs - Rural		MILE	$ 8,000.00	1.02	$ 8,160
Striping & Pavement Markings - Rural		MILE	$ 8,000.00	1.02	$ 8,160
Drainage Pipe - Rural		MILE	$ 82,000.00	1.02	$ 83,640
Traffic Control				5%	$ 25,480
	Subtotal 1				*$ 535,087*
Mobilization				10%	$ 53,509
	Subtotal 2				*$ 588,595*
Contingencies				10%	$ 58,860
	Subtotal 3				*$ 647,455*
Long-term Inflation		% PER YEAR	3%	0	$ -
	Subtotal 4				*$ 647,455*
Construction Engineering (CE)				10%	$ 64,745
	Subtotal 5				*$ 712,200*
Indirect Costs (IDC)				9.13%	$ 65,024
	Total				**$ 777,224**

CRN-19	Lake Helena Drive - old US Highway 12 (E. Main Street in East Helana) to Lincoln Road				$	8,800,000 TOT
			LENGTH (FT)			
			WIDTH (FT)			
			SURFACING (IN)			
			CRUSHED TOP (IN)			
			GRANULAR BASE (IN)			
	TYPE	**UNITS**	**UNIT PRICE**	**QUANTITY**		**COST**
	MISCELLANEOUS WORK	UNIT	$ 1.00	212250.00	$	212,250
	FINISH GRADE CONTROL	CRFT	$ 0.63	134481.60	$	84,723
	EXCAVATION-UNCLASSIFIED	CUYD	$ 4.35	37937.09	$	165,026
	EXCAVATION-UNCLASS BORROW	CUYD	$ 5.09	3793.71	$	19,310
	SPECIAL BORROW-EXCAVATION	CUYD	$ 8.05	1896.85	$	15,270
	TOPSOIL-SALVAGING AND PLACING	CUYD	$ 4.06	76234.74	$	309,513
	TEMPORARY EROSION CONTROL	UNIT	$ 1.00	45000.00	$	45,000
	CRUSHED AGGREGATE COURSE	CUYD	$ 21.69	35093.89	$	761,186
	COVER - TYPE 1	SQYD	$ 0.54	159386.00	$	86,068
	BLOTTER MATERIAL	TON	$ 30.51	1323.40	$	40,377
	TRAFFIC GRAVEL	CUYD	$ 14.61	10625.71	$	155,242
	PLANT MIX BIT SURF GR S-3/4 IN	TON	$ 30.74	26971.38	$	829,100
	HYDRATED LIME	TON	$ 192.18	378.00	$	72,644
	ASPHALT CEMENT PG 64-28	TON	$ 685.62	1456.45	$	998,574
	EMULS ASPHALT CRS-2P	TON	$ 613.48	284.60	$	174,596
	COLD MILLING	SQYD	$ 1.42	119539.20	$	169,746
	GUARD RAIL-STEEL	LNFT	$ 16.51	2241.36	$	37,005
	GD RAIL-STL INT RDWY TERM SECT	LNFT	$ 48.23	224.14	$	10,810
	GUARD RAIL-OPTIONAL TERM SECT	EACH	$ 2,574.32	6.83	$	17,583
	SEEDING AREA NO 1	ACRE	$ 361.26	84.39	$	30,486
	SEEDING AREA NO 2	ACRE	$ 1,523.04	23.63	$	35,988
	SEEDING AREA NO 3	ACRE	$ 252.38	33.76	$	8,519
	FERTILIZING AREA NO 1	ACRE	$ 100.70	84.39	$	8,498
	FERTILIZING AREA NO 2	ACRE	$ 93.64	23.63	$	2,213
	CONDITION SEEDBED SURFACE	ACRE	$ 111.44	118.14	$	13,166
	MULCH	ACRE	$ 6,142.57	23.63	$	145,142
	Signs - Rural	MILE	$ 8,000.00	8.49	$	67,920
	Striping & Pavement Markings - Rural	MILE	$ 8,000.00	8.49	$	67,920
	Drainage Pipe - Rural	MILE	$ 82,000.00	8.49	$	696,180
	Concrete Roundabouts - One Lane	EACH	$ 425,000.00	1.00	$	425,000
	Traffic Control			5%	$	285,253
	Subtotal 1				*$*	*5,990,309*
	Mobilization			10%	$	599,031
	Subtotal 2				*$*	*6,589,340*
	Contingencies			10%	$	658,934
	Subtotal 3				*$*	*7,248,274*
	Long-term Inflation	% PER YEAR	3%	0	$	-
	Subtotal 4				*$*	*7,248,274*
	Construction Engineering (CE)			10%	$	724,827
	Subtotal 5				*$*	*7,973,101*
	Indirect Costs (IDC)			9.13%	$	727,944
	Total				**$**	**8,701,045**

Greater Helena Area Long Range Transportation Plan - 2014
Estimated Planning Level Cost Summary (TSM PROJECTS)

Adjusted for Inflation

Project ID	Location	ROUNDED (2014) Estimated Planning Level Cost	ADJUSTED TO YEAR 2015 (3% per year)	ADJUSTED TO YEAR 2020 (3% per year)	ADJUSTED TO YEAR 2025 (3% per year)	ADJUSTED TO YEAR 2030 (3% per year)	ADJUSTED TO YEAR 2025 (3% per year)
TSM-1	Citywide Sight Distance Triangle Policy Evaluation	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown
TSM-2	Williams Street & Country Club Avenue	$464,640	$478,579	$554,804	$643,170	$745,611	$864,367
TSM-3	Country Club Avenue / Leslie Street & Joslyn Street	$371,470	$382,614	$443,555	$514,201	$596,100	$691,044
TSM-4	Prospect Avenue & Fee Street	$45,980	$47,359	$54,903	$63,647	$73,784	$85,536
TSM-5	Euclid Avenue & Henderson Street	$1,395,130	$1,436,984	$1,665,858	$1,931,186	$2,238,774	$2,595,353
TSM-6	York Road / Herrin Road / Helberg Drive	$371,470	$382,614	$443,555	$514,201	$596,100	$691,044
TSM-7	York Road / Wylie Drive	$55,660	$57,330	$66,461	$77,046	$89,318	$103,544
TSM-8	York Road / Lake Helena Drive	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-9	Henderson Street / Custer Avenue	$1,115,620	$1,149,089	$1,332,109	$1,544,279	$1,790,243	$2,075,382
TSM-10	York Road / Tizer Road	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-11	York Road / Hart Lane	$6,050	$6,232	$7,224	$8,375	$9,708	$11,255
TSM-12	Green Meadow Drive – Intersection Lighting	$93,170	$95,965	$111,250	$128,969	$149,510	$173,324
TSM-13	Countywide Shoulder Striping – Major Roadways	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown
TSM-14	California and Colonial Drive	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-15	Broadway and Colonial Drive	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-16	Last Chance Gulch and 14th Street	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-17	Custer Avenue and Villard Avenue	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-18	Montana Avenue and Broadway	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-19	Villard Avenue and Last Chance Gulch	$130,680	$134,600	$156,039	$180,892	$209,703	$243,103
TSM-20	Truck Route System	$65,340	$67,300	$78,019	$90,446	$104,852	$121,552
TSM-21	US Highway 12 Signals – Lola Street and Crossroads Parkway	$1,301,960	$1,341,019	$1,554,608	$1,802,217	$2,089,264	$2,422,029
TSM-22	Neill Avenue / Helena Avenue / Cruse Avenue / Last Chance Gulch	$4,719,000	$4,860,570	$5,634,733	$6,532,200	$7,572,610	$8,778,730
TSM-23	Valley Drive Signing	$3,630	$3,739	$4,334	$5,025	$5,825	$6,753
TSM-24	Sierra Road – McHugh Lane and Frontage Road Intersections	$37,510	$38,635	$44,789	$51,923	$60,193	$69,780
TSM-25	Lake Helena Drive – Chevron Signing at Deal Lane	$6,050	$6,232	$7,224	$8,375	$9,708	$11,255
TSM-26	Sierra Road and North Montana Avenue	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-27	Valley Forge Road and North Montana Avenue	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
TSM-28	Planning Area RSAs	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown	Cost Unknown
TSM-29	North Montana Avenue & Custer Avenue	$464,640	$478,579	$554,804	$643,170	$745,611	$864,367
TSM-30	Henderson Street and Brady	$186,340	$191,930	$222,500	$257,938	$299,021	$346,647
TSM-31	Cutler and Cruse	$93,170	$95,965	$111,250	$128,969	$149,510	$173,324
TSM-32	Montana and Main	$744,150	$766,475	$888,554	$1,030,078	$1,194,142	$1,384,338
	TOTAL TSM PROJECTS	$18,369,010	$18,920,080	$21,933,559	$25,427,006	$29,476,869	$34,171,770

Greater Helena Area Long Range Transportation Plan - 2014
Estimated Planning Level Cost Summary (TSM PROJECTS)

Project ID	Location	2004 Update Costs	PER Costs	Other Sources Cost [1]	2004 Update Costs (Adjusted) [2]	ROUNDED (2014) Construction Cost	ROUNDED (2014) Construction Cost [3, 4]	ASSUMED Right-of-Way Cost (10% ADDED)	ASSUMED Utility Relocation Cost (10% ADDED)	ROUNDED (2014) Estimated Planning Level Cost
TSM-1	Citywide Sight Distance Triangle Policy Evaluation	Cost Unknown		Cost Unknown	Cost Unknown	Cost Unknown	**Cost Unknown**	**Cost Unknown**	**Cost Unknown**	**Cost Unknown**
TSM-2	Williams Street & Country Club Avenue	$100,000		$250,000	$138,423	$250,000	**$384,000**	**$422,400**	**$464,640**	**$464,640**
TSM-3	Country Club Avenue / Leslie Street & Joslyn Street	$135,000			$186,872	$200,000	**$307,000**	**$337,700**	**$371,470**	**$371,470**
TSM-4	Prospect Avenue & Fee Street			Cost Unknown		$25,000	**$38,000**	**$41,800**	**$45,980**	**$45,980**
TSM-5	Euclid Avenue & Henderson Street	$80,000		$750,000		$750,000	**$1,153,000**	**$1,268,300**	**$1,395,130**	**$1,395,130**
TSM-6	York Road / Herrin Road / Helberg Drive	$135,000			$186,872	$200,000	**$307,000**	**$337,700**	**$371,470**	**$371,470**
TSM-7	York Road / Wylie Drive	$20,000			$27,685	$30,000	**$46,000**	**$50,600**	**$55,660**	**$55,660**
TSM-8	York Road / Lake Helena Drive	$35,000		$400,000	$48,448	$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-9	Henderson Street / Custer Avenue			$600,000		$600,000	**$922,000**	**$1,014,200**	**$1,115,620**	**$1,115,620**
TSM-10	York Road / Tizer Road			$400,000		$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-11	York Road / Hart Lane	$2,500			$3,461	$3,500	**$5,000**	**$5,500**	**$6,050**	**$6,050**
TSM-12	Green Meadow Drive – Intersection Lighting	$30,000			$41,527	$50,000	**$77,000**	**$84,700**	**$93,170**	**$93,170**
TSM-13	Countywide Shoulder Striping – Major Roadways	Cost Unknown		Cost Unknown	Cost Unknown	Cost Unknown	**Cost Unknown**	**Cost Unknown**	**Cost Unknown**	**Cost Unknown**
TSM-14	California and Colonial Drive			$400,000		$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-15	Broadway and Colonial Drive			$400,000		$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-16	Last Chance Gulch and 14th Street			$400,000		$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-17	Custer Avenue and Villard Avenue	$180,000		$400,000	$249,162	$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-18	Montana Avenue and Broadway	$200,000		$400,000	$276,847	$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-19	Villard Avenue and Last Chance Gulch	$45,000			$62,291	$70,000	**$108,000**	**$118,800**	**$130,680**	**$130,680**
TSM-20	Truck Route System	$25,000			$34,606	$35,000	**$54,000**	**$59,400**	**$65,340**	**$65,340**
TSM-21	US Highway 12 Signals – Lola Street and Crossroads Parkway	$500,000			$692,117	$700,000	**$1,076,000**	**$1,183,600**	**$1,301,960**	**$1,301,960**
TSM-22	Neill Avenue / Helena Avenue / Cruse Avenue / Last Chance Gulch			$3,550,000	$3,879,181	$3,900,000	**$3,900,000**	**$4,290,000**	**$4,719,000**	**$4,719,000**
TSM-23	Valley Drive Signing	$1,000			$1,384	$2,000	**$3,000**	**$3,300**	**$3,630**	**$3,630**
TSM-24	Sierra Road – McHugh Lane and Frontage Road Intersections	$12,000			$16,611	$20,000	**$31,000**	**$34,100**	**$37,510**	**$37,510**
TSM-25	Lake Helena Drive – Chevron Signing at Deal Lane	$2,500			$3,461	$3,500	**$5,000**	**$5,500**	**$6,050**	**$6,050**
TSM-26	Sierra Road and North Montana Avenue			$400,000	$0	$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-27	Valley Forge Road and North Montana Avenue			$400,000		$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
TSM-28	Planning Area RSAs	Cost Unknown		Cost Unknown	Cost Unknown	Cost Unknown	**Cost Unknown**	**Cost Unknown**	**Cost Unknown**	**Cost Unknown**
TSM-29	North Montana Avenue & Custer Avenue			$250,000		$250,000	**$384,000**	**$422,400**	**$464,640**	**$464,640**
TSM-30	Henderson Street and Brady			$100,000		$100,000	**$154,000**	**$169,400**	**$186,340**	**$186,340**
TSM-31	Cutler and Cruse			$50,000		$50,000	**$77,000**	**$84,700**	**$93,170**	**$93,170**
TSM-32	Montana and Main			$400,000		$400,000	**$615,000**	**$676,500**	**$744,150**	**$744,150**
	TOTAL TSM PROJECTS						$15,181,000	$16,699,100	$18,369,010	$18,369,010

NOTES:

Denotes cost estimate source utilized

1 *Costs assume $400k for new traffic signal; $400k for rural roundabout; & $600k for urban roundabout. TSM-22 from Dowl Study in 09/2012 and adjusted up for inflation*

2 *PER costs updated to year 2014 by inflationary adjustment of 3 percent per year*

3 *Costs adjusted as follows: traffic control (5%), mobilization (10%), contingency (10%) long-term inflation (3% per year) NOT USED, CE (10%), and IDC (9.13%).*

4 *Does not include right-of-way or utility relocation costs*