NOVEMBER 2021

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ENGINEERING, REIMAGINED

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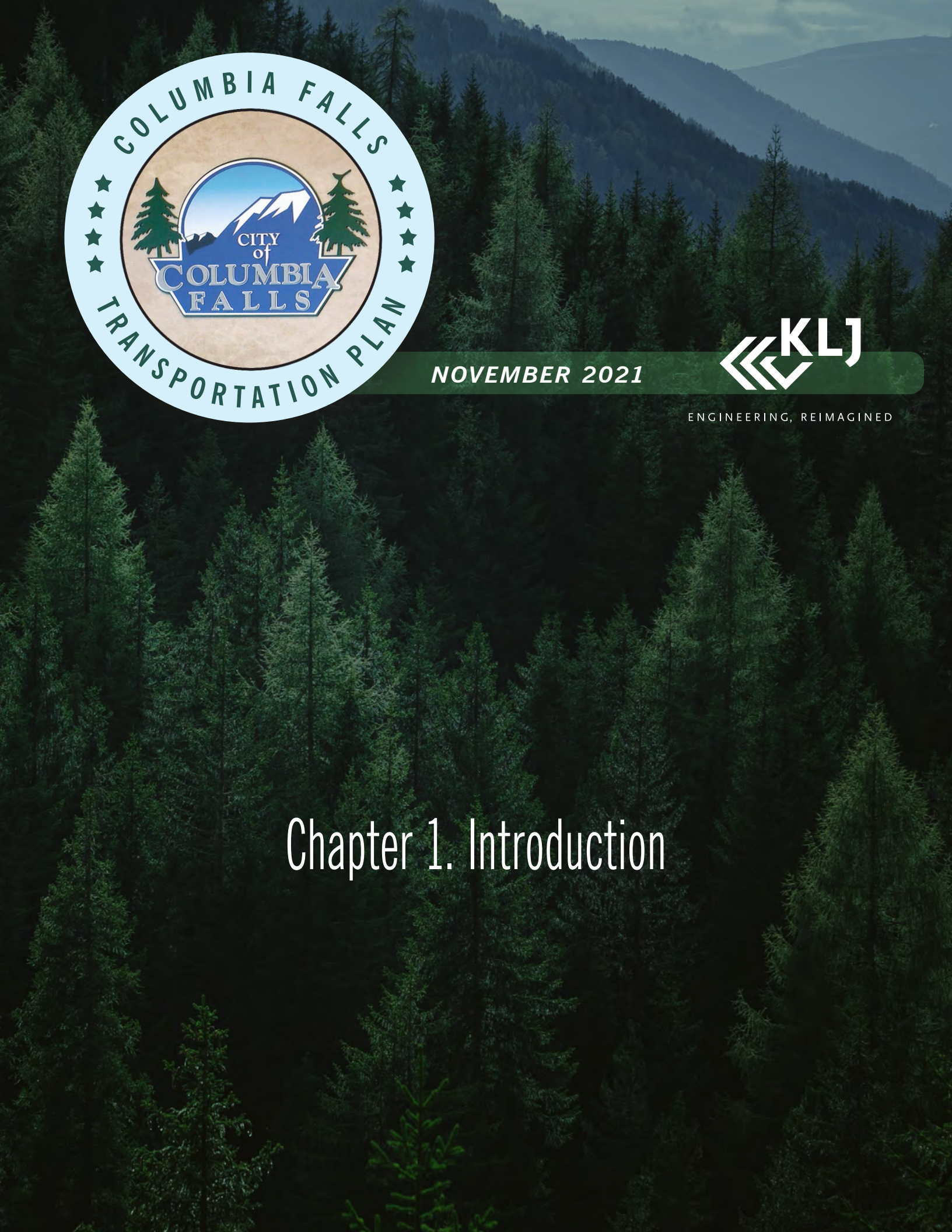

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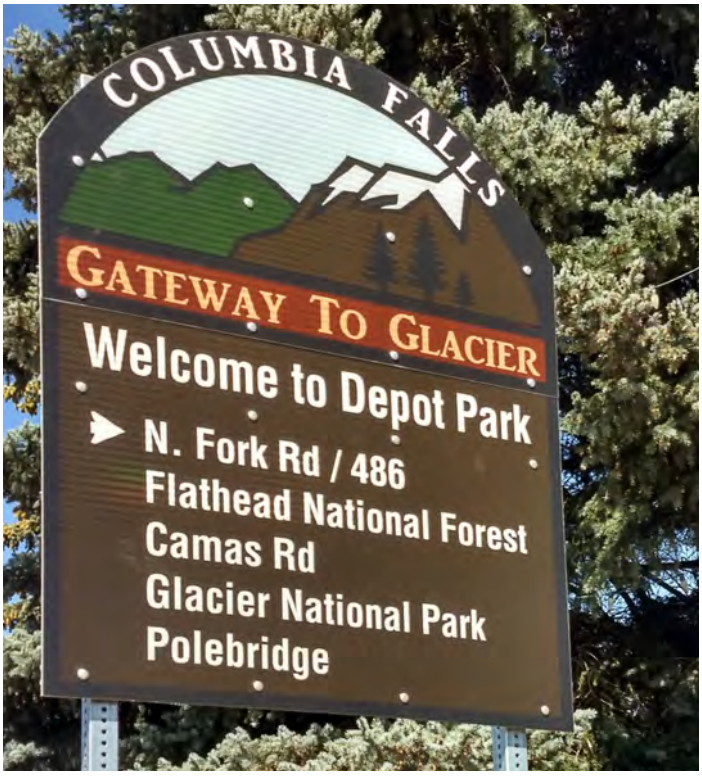
Chapter 1. Introduction



The Columbia Falls Urban Area Transportation Plan is designed to guide transportation planning activities by setting forth direction and strategies to help shape the City's and region's transportation network through the year 2040. It considers all modes of transportation including driving, walking, bicycling, transit, rail, and air to create a consolidated vision for the future. The Area Transportation Plan was developed through a collaborative approach involving stakeholders, agency partners, and community members, and maps the development of the transportation system using the community's goals and priorities as a foundation.

BACKGROUND

The City of Columbia Falls has historically served as the industrial hub of Flathead County and provides an important tourism gateway to Glacier National Park and the North Fork Valley. The City enjoys immediate access to the Flathead River, Hungry Horse Dam and Reservoir, the Bob Marshall Wilderness Complex, the Flathead National Forest, several golf courses, and the Whitefish Mountain Ski Resort.

Columbia Falls is bounded by the Flathead River to the east and south and by Burlington Northern railroad tracks to the north. These factors have somewhat restricted the urban growth in these three directions, and consequently, the City's physical expansion has been primarily towards the west. The City is located approximately 8 miles from Whitefish and 15 miles from Kalispell, being directly linked to these communities by State Highway 40 and U.S. Highway 2, respectively.

Logging was the original industry in Columbia Falls, with early logging sales dating back to the 1890s. By 1907, there were at least five lumber companies operating in the community and utilizing the railroad to log and move timber across the country. The population of Columbia Falls grew with the timber industry and, in the 1950s, was bolstered due to the opening of the Anaconda Aluminum Company Aluminum Reduction Plant two miles northeast of the city.

Once known as the "Industrial Hub of Flathead Valley", the economy of Columbia Falls is now largely service-based, following several years of decline in timber and manufacturing economic sectors and related closure of the timber mills and then the Columbia Falls Aluminum Plant in 2009. Census information, recorded over a one-hundred-year period beginning in 1910, indicates that Columbia Falls' population has continued to grow over the past several decades, even considering the overall decline in natural resource and industry-based employment.

The City of Columbia Falls, with support from Flathead County and the Montana Department of Transportation (MDT), has created a long-range transportation plan that will address the current needs of the community and chart a course for future growth. It incorporates the input collected through community engagement, as well as the policy direction put forth in local and regional planning documents.

PLANNING PROCESS

The Columbia Falls Urban Area Transportation Plan represents a collaborative effort to refine the vision of the region's transportation network and identify a coordinated set of multimodal projects to achieve this future. The plan addresses existing issues and anticipated concerns for congestion, safety, security, access, and connectivity. The planning process involved collaboration between multiple jurisdictions, key stakeholders, and citizens, and was designed to create an open dialogue within the community on transportation. The Project Advisory Committee (PAC) played a central advisory role throughout the planning process by providing direction at key decision points and helping to assure that the plan was reflective of the community's transportation priorities. Further information on the plan's public engagement component is provided in **CHAPTER 2**.

STUDY AREA

The study area for the project was established in collaboration with the City, MDT, and the PAC. It includes the census-based urban boundary, a large portion of the Growth Policy planning boundary,[1] and additional areas outside of the urban boundary.

The study area is larger than the City and its urban boundary to account for areas already developing and those areas that could see growth over the twenty-year study horizon. The larger study area allows the Columbia Falls Urban Area Transportation Plan to assess the impact of traffic generated from recent and future commercial development along US Highway 2, as well as residential development within rural and quasi-rural areas surrounding the City. Understanding the traffic impacts from both within and outside of the Columbia Falls city boundaries will allow for better planning of the future road network. **FIGURE 1.1** shows the study area.

POLICY FRAMEWORK

The Columbia Falls Urban Area Transportation Plan policy framework serves as the plan's policy foundation and charts a course for future transportation investment within the study area. The framework is designed to be long-range and comprehensive, reflecting the transportation system as a whole and incorporating the community's priorities to support current and future residents. The framework champions local needs while placing the City's transportation vision within a larger regional context.

The framework was developed in close coordination with the PAC, neighboring local governments, and MDT. It incorporates input collected through the community engagement process, as well as the policy direction put forth in local and regional planning documents.

The Policy Framework consists of three elements: Vision, Goals, and Strategies.

Vision: The transportation vision communicates the aspirations and priorities that will guide the City's transportation investments in order to achieve its desired future.

Goals: Goals are broad statements that describe a desired end state. The goals represent key priorities for desired outcomes for the transportation system, and for the well-being and prosperity of the community. Goals are visionary statements that reflect key priority areas.

Strategies: Strategies are specific statements that support the achievement of goals. Strategies "operationalize" the goals: they refine goals into discrete, policy-based actions that are used to guide decision making towards achievement of the vision. There are multiple strategies for each goal.

Transportation Vision

The transportation vision will serve as an anchor for future development of the Columbia Falls area transportation system. The transportation **vision** is as follows:

> *The City of Columbia Falls will develop a transportation system that incorporates high network connectivity, supports commerce, and provides efficient, dependable mobility for community members and visitors. The transportation system will serve as a foundation for the City's growth and prosperity, supporting a more livable, vibrant community for residents and an increasingly attractive destination for visitors.*

Goals and Strategies

The project team defined six goal areas in collaboration with the PAC, stakeholders, and the public. In addition, the goal areas presented in MDT's TranPlanMT served as a basis for the Plan goal areas. The goal areas were used to develop the final set of six Plan goals.

The public involvement process was fundamental in establishing the Plan goal areas. Input collected during engagement events allowed for the project team to craft a set of goals that closely reflect the needs, preferences, and desires of the community.

The six goal areas are shown in **TABLE 1.1**, where they are presented in relation to the MDT TranPlanMT goals. The goal areas, as presented here, do not imply an order of priority.

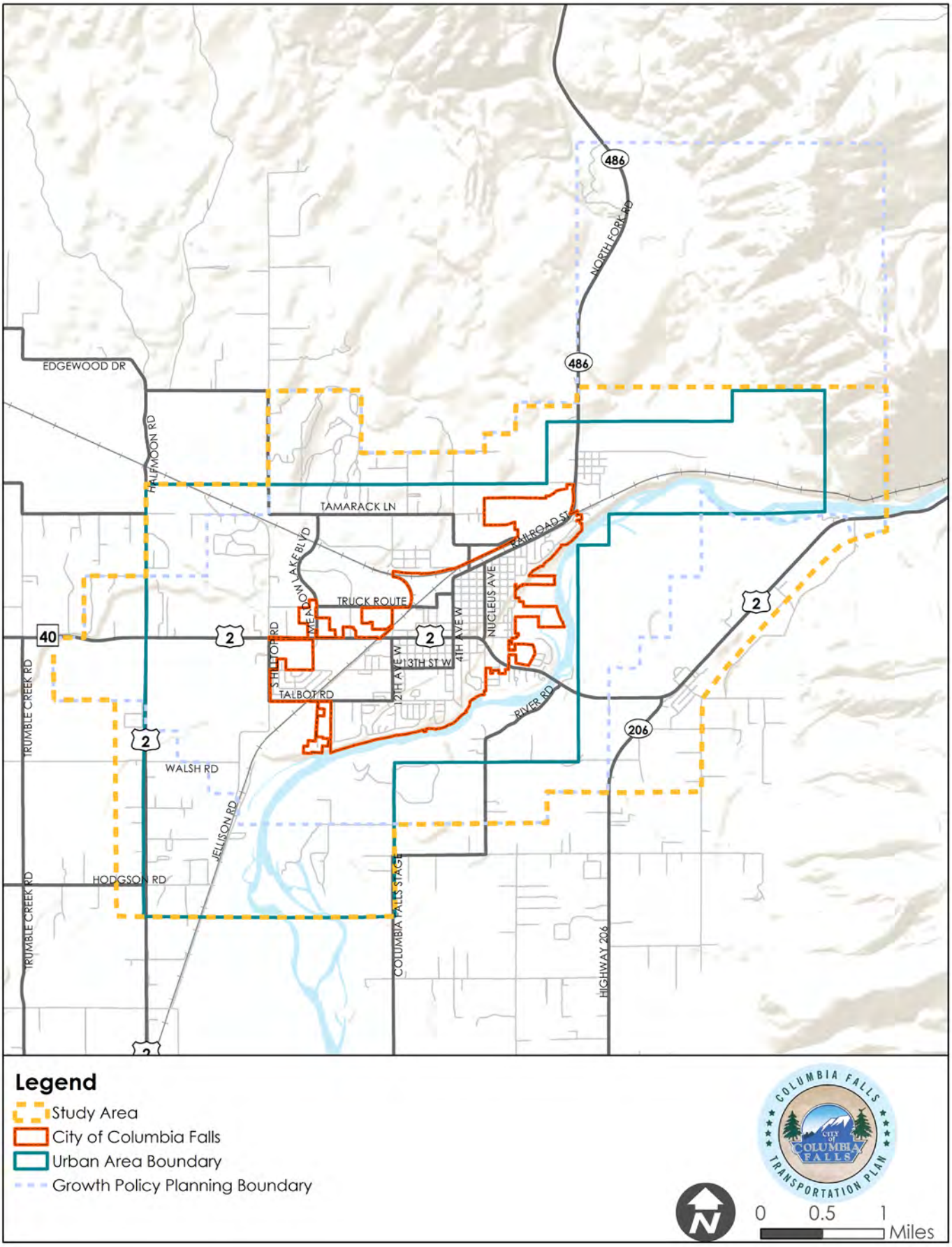
Table 1.1: Columbia Falls Urban Area Transportation Plan Goal Areas

Columbia Falls Urban Area Transportation Plan Goal Area	MDT TranPlanMT Goal
Safety and Security	Safety
Congestion Reduction	Accessibility and Connectivity
Environmental Sustainability	Environmental Stewardship
Infrastructure Condition	System Preservation and Maintenance
Reduce Project Delays	Business Operations and Management
Freight Movement/Economic Vitality	Mobility and Economic Vitality

The goal areas were used to define the final set of six Transportation Plan goals. For each goal, various strategies are defined.

1 https://www.cityofcolumbiafalls.org/sites/default/files/fileattachments/planning _ amp _ zoning/page/3331/growth-policy-2019.pdf

Figure 1.1: Columbia Falls Urban Area Transportation Plan Study Area



1. Safety and Security

GOAL: *Create a transportation system that incorporates safety and security throughout all modes and for all users.*

- Support Montana's State Highway Safety Plan "Vision Zero" as a goal to move toward zero deaths and zero serious injuries.
- Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes.
- Regularly review and update Emergency Routes, coordinating as needed with Flathead County and MDT to facilitate the rapid movement of first responders and support incident management during times of emergency.
- Target safety improvement projects to address the top 11 high crash locations, as identified in the Columbia Falls Urban Area Transportation Plan.
- Enhance crash data integration and analysis to support decision making and issue identification.
- Improve education on bike safety and increase the awareness of both bicyclists and motorists regarding bike related laws, rules, and responsibilities.
- Require that sidewalks be included on both sides of new streets in neighborhood and business districts, and that they be incorporated into major construction projects for existing streets within these districts.
- Incorporate street trees into projects to buffer pedestrians from traffic, improve community and neighborhood aesthetics, and provide shade.

2. Congestion Reduction

GOAL: *Create a transportation system that optimizes mobility and connectivity, allowing users to move from one place to another in a direct route with minimal travel times and delays.*

- Improve system-wide bicycle and pedestrian connectivity by implementing transportation investments identified within the Columbia Falls Urban Area Transportation Plan Active Transportation element.
- Implement operational improvements to optimize the efficiency of the transportation system, including geometric imrpovements, access management, and updated intersection control.
- Implement a consistent approach for investment, design, connectivity, and maintenance of pedestrian and bicycle facilities.
- Identify and consider accessibility and connectivity needs on improvement projects for roads, paths, and sidewalks.

- Utilize the development review process to require new developments to provide adequate pedestrian and bicycle access to essential services, amenities, and destinations.
- Work with Mountain Climber to improve route efficiency, promote and continue service connecting to major employment centers, education facilities, medical offices, commercial developments, and tourist destinations.
- When improving sections of street, upgrade existing pedestrian and bicycle facilities or construct such facilities if none are present.
- Provide an integrated system of bike and pedestrian trails and greenways to future neighborhoods, employment centers, and recreational amenities.
- Provide a complete system of locally-maintained pedestrian and bicycle paths along the US Highway 2 corridor.

3. Environmental Sustainability

GOAL: *Prioritize environmental stewardship in the development, maintenance, and operation of the transportation system.*

- Minimize the transportation system's impacts on the natural and built environment.
- Promote transportation investments that support infill, mixed-use development patterns.
- Provide transportation infrastructure design guidance that fits within the context of the built environment.
- Maintain a planning process that integrates and coordinates transportation planning with land use, water, and natural resource conservation.
- Foster positive working relationships with resource agencies and stakeholders through early coordination and consultation.

4. Infrastructure Condition

GOAL: *Proactively preserve and maintain existing transportation system infrastructure.*

- Continue to employ a pavement management system to inventory pavement condition, prioritize projects, allocate investment, and comply with the requirements of MDT's Urban Pavement Preservation Program (UPP).
- Seek to invest in cost-effective preventative maintenance projects to reduce the need for more costly structural improvements.
- Progressively upgrade the system of rural roads providing access to the existing rural residential development surrounding Columbia Falls. As Columbia Falls continues to grow, there will be significant cost in improving these streets to an urban standard with wider travel lanes, sidewalks, and often, paving for the first time.
- Develop a capital improvement program that implements the prioritized Transportation System Management and Major Street Network projects presented in the Columbia Falls Urban Area Transportation Plan.

5. Reduce Project Delays

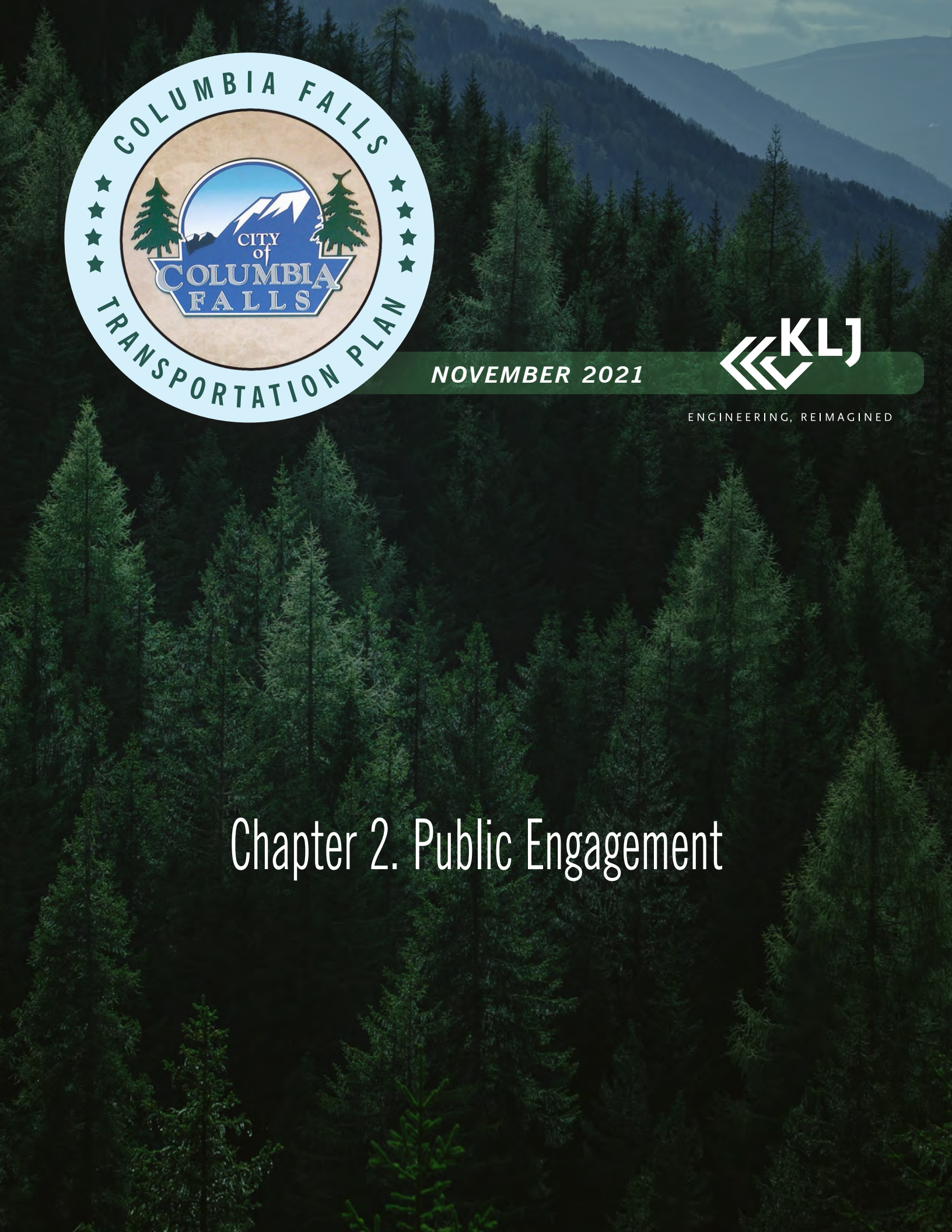
GOAL: *Provide efficient, cost-effective management and operation to accelerate transportation project delivery and ensure system reliability.*

- Use local funds and alternative funding sources leveraged with federal transportation funds to construct transportation upgrades.
- Use developer installed improvements where facilities abut or intercept proposed subdivisions or individual projects.
- Pursue all available state and federal transportation funding sources due to limited local funding sources.
- Seek out development of a formal venue to engage MDT, Flathead County, Whitefish and Kalispell in regional discussion on issues of transportation planning and programming.
- Assess the condition of subgrade water and sewer utilities in order to package utility improvements with street upgrade projects.
- Develop policies to support consistent application of development-related improvement requirements and streamlined project development.
- Invest at the appropriate level to ensure adequate funding for system maintenance and operations.
- Use the Columbia Falls Urban Area Transportation Plan list of prioritized projects to guide transportation investment and make effective use of funding when it becomes available.

6. Freight Movement/Economic Vitality

GOAL: *Create a transportation system that supports economic competitiveness, vitality, and prosperity by providing for the efficient movement of people and goods.*

- Enhance the efficient and safe movement of freight and goods by investing in congestion reduction and safety improvements on critical freight corridors.
- Promote investments in network connectivity to allow industrial areas immediate access to air, rail, and arterial or collector streets.
- Support projects that decrease travel time between major activity centers.
- Encourage public/private partnerships to leverage funding from federal, state and other sources.
- Give priority to transportation projects that improve and provide access to area tourist destinations and amenities.
- Improve right-of-way preservation and access management standards to support the reliability of collector and arterial roadway systems to efficiently distribute and move traffic.
- Improve east-west vehicle connectivity by extending streets and providing additional railway crossings at key locations.
- Enhance pedestrian and bicyclist connectivity by adding and improving crossings at key barrier points, including US Highway 2 and the Flathead River.
- Incorporate pedestrian facilities and encourage pedestrian-centered streetscape designs to support the revitalization, growth, and sense of place of the historical downtown district (Nucleus Ave).



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Chapter 2. Public Engagement

INTRODUCTION

The public engagement phase for the Columbia Falls Transportation Plan was comprised of three parts: an initial series of listening sessions at the City Fire Hall, a project website with an interactive issues map, and a final open house event at the end of the project. The initial series of listening sessions (two sessions) took place on October 15, 2020 and acted both as an opportunity to educate the public on the transportation plan and to gather open-ended input on transportation issues in the study area. The sessions were advertised through a variety of channels including the Police Department, Chamber of Commerce, posts on Facebook, an ad in *Hungry Horse News*, and an ad in the *Daily Interlake*. Due to the COVID-19 pandemic, project materials and an interactive issues map were hosted on a project website. On the website, visitors could review project documents, watch a prerecorded presentation of the project, and leave comments on the interactive map.

A final open house was held on September 27, 2021 to present the Plan results and recommendations to the public. The event consisted of a morning open house session, a midday City Council work session, and an evening open house and presentation. During the event, stakeholders and members of the public were invited to view posters presenting the Plan's recommendations, discuss Plan results with the project team, and submit any additional feedback. The final open house was advertised through a variety of traditional and digital media channels.

This public engagement summary describes the results from the listening sessions and the online open house.

PROJECT ADVISORY COMMITTEE

Development of the Columbia Falls Urban Area Transportation Plan was guided by the PAC. The PAC was formed at the onset of the planning process at the direction of the City of Columbia Falls. The PAC members included a variety of City, County, and MDT staff. The PAC played a fundamental role throughout the planning process by providing direction at key decision points and helping to ensure that the plan was reflective of the community's transportation vision. The PAC met on four occasions and included the following representatives:

- Don Barnhart – Mayor
- Mike Shepard – Councilor
- Susan Nicosia – City Manager
- Tyler Bradshaw – Public Works - City
- Dave Prunty – Public Works – County
- Eric Mulcahy – City-County Planner
- Sam Kavanagh – Planning Board
- Kelly Hamilton – Community Member
- Vicki Crnich – MDT
- James Freyholtz – MDT

ONLINE INTERACTIVE MAP

The project website was used to collect input from the community using an online interactive issues map that was open from early October until November 6th, 2020. Visitors were able to explore the study area and view comments left by others, add their own comments in discussion, and react to comments with an "up vote" or "down vote". In total, 123 comments and 362 reactions were added to the interactive map by 395 unique visitors. **FIGURE 2.1** shows share of comments by topic, as identified by the commenter.

All comments are included in **APPENDIX A: PUBLIC ENGAGEMENT SURVEY COMMENTS** with a unique identifier that corresponds to the numbers shown on the maps in **FIGURE 2.2** through **FIGURE 2.4**. In each map, the top 10 most reacted-to comments are highlighted.

Figure 2.1: Interactive Map Comment Types

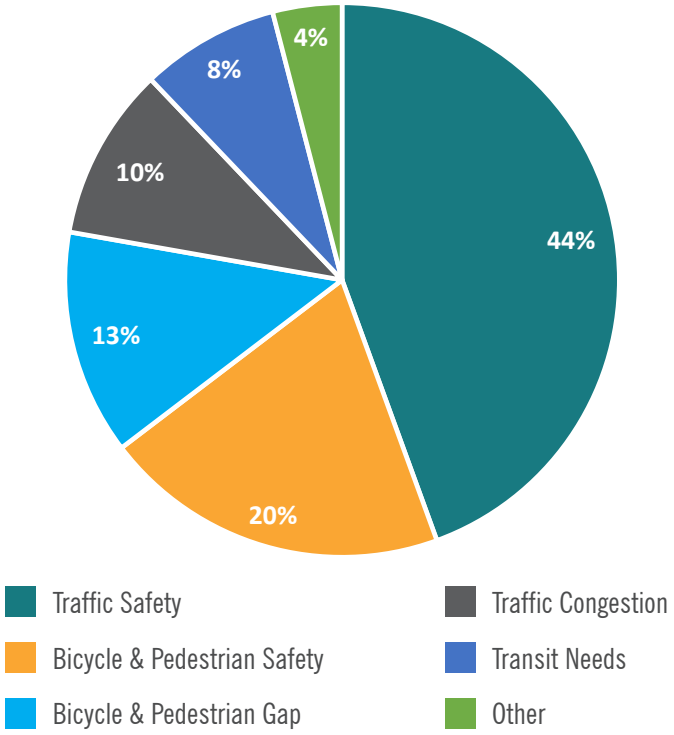


Figure 2.2: Bike/Ped-Related Comments

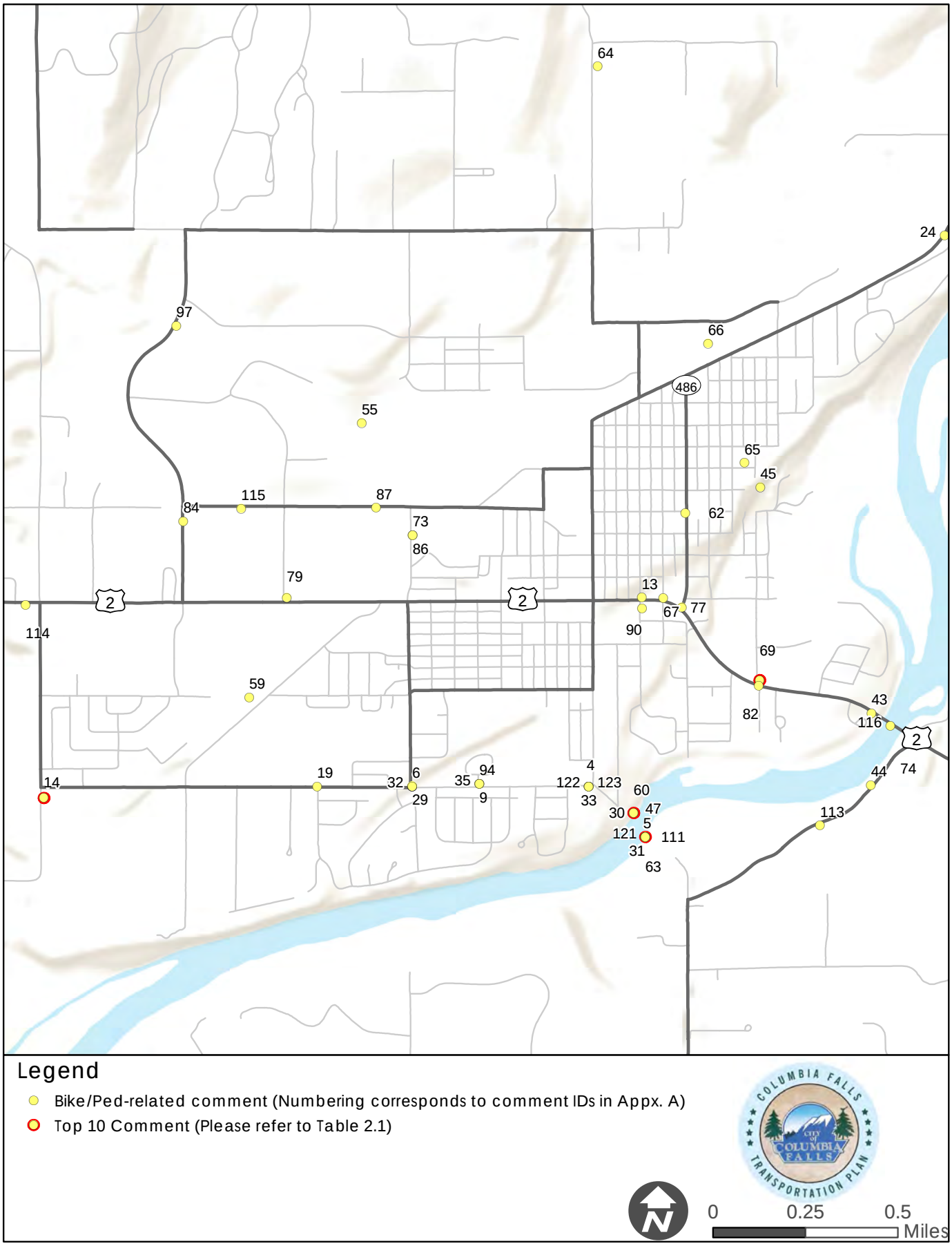


Figure 2.3: Traffic-Related Comments

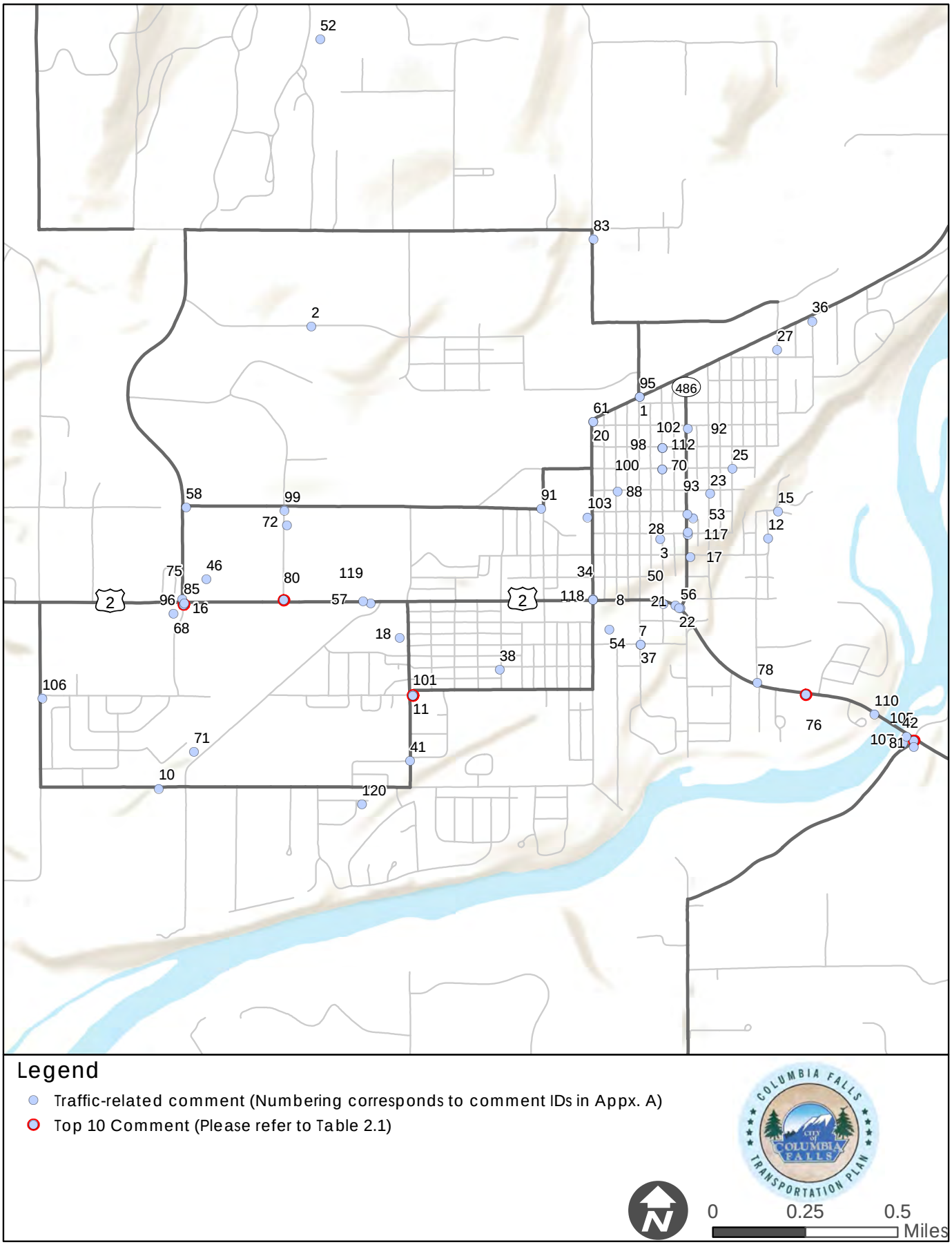
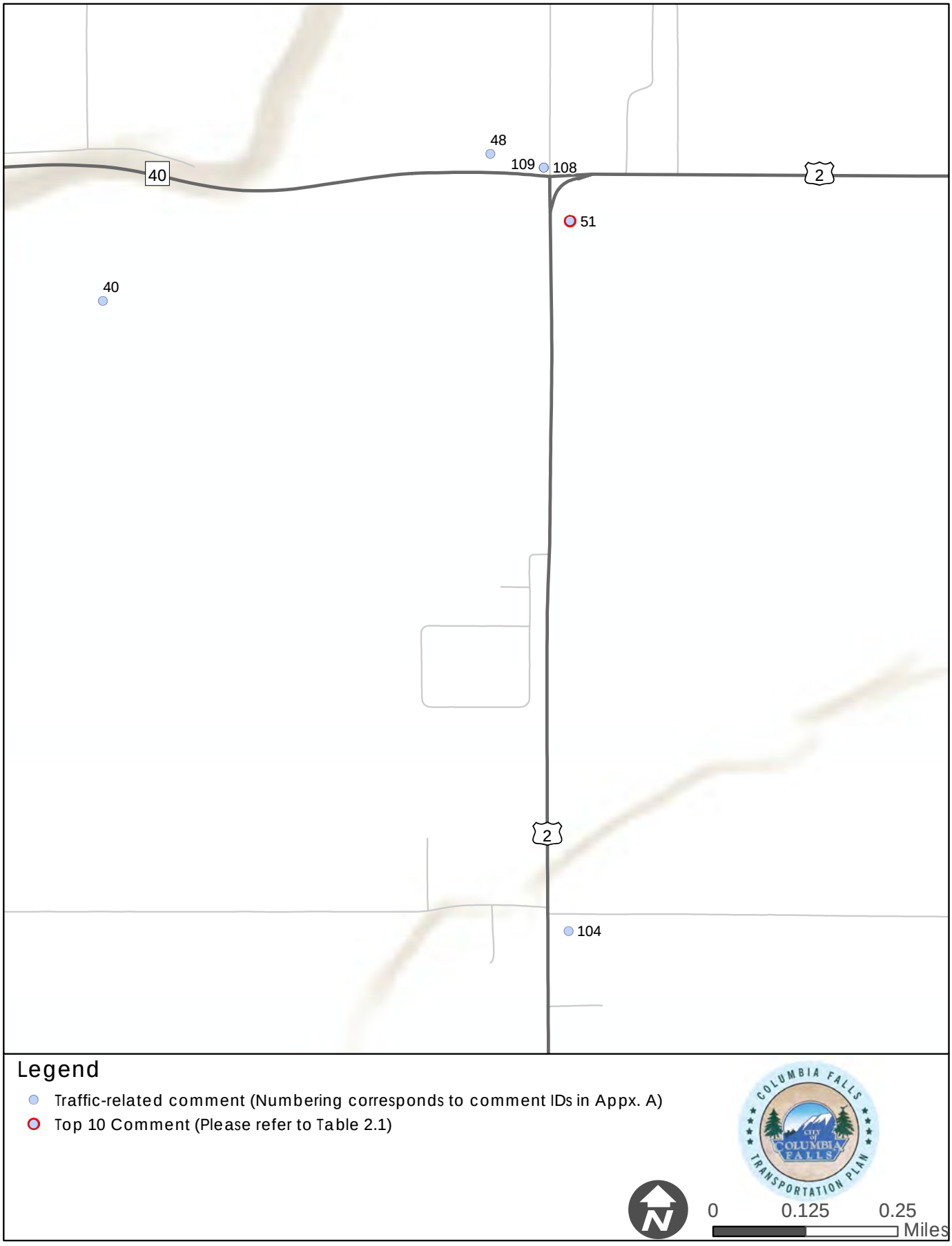


Figure 2.4: Traffic-Related Comments (US Highway 2 & MT 40)



Comment Clusters

Many of the comments on the interactive map were related to other comments in content or geographic location. When posting a comment, community members had the option to either choose a location on the map to post a comment or post a response to an existing comment. If a new comment was posted in response to an existing comment, the two comments would share a geographic location. After reviewing the location and content of each comment added to the map, clusters were identified to highlight common concerns among community members. **TABLE 2.1** shows the top ten clusters by total number of reactions. The total number of up votes and down votes from the comments within each cluster were aggregated.

Table 2.1: Top 10 Comment Clusters

Comment IDs	Cluster Name Primary Concern	Up Votes	Down Votes
21, 22, 42, 50, 56, 76, 78, 81, 105, 107, 110	**US Hwy 2 (East of Nucleus Avenue)** Traffic congestion and safety	50	18
43, 67, 69, 71, 74, 77, 82, 90, 116	**US Hwy 2 (East of Nucleus Avenue)** Bike/ped safety	49	5
14, 45, 49, 59, 64, 65, 66, 84, 86, 87, 97, 115	**New Bike/Ped Facilities (several locations)** Desire for new dedicated paths	39	0
5, 30, 47, 60, 63, 111, 113, 121	**Old Red Bridge Restoration** Desire for bike/ped connection	28	1
68, 75, 85, 96	**Meadow Lake Blvd and 9th Street West** Intersection safety	27	1
72, 80, 99	**Truck Route** Traffic congestion	20	1
17, 28, 53, 62, 92, 93, 117	**Nucleus Avenue** Intersection safety and congestion	12	6
48, 51, 108, 109	**US Hwy 2 and MT Hwy 40** Intersection safety	16	0
1, 10, 57, 95, 119	**Railroad Crossings** Traffic delay	7	2
4, 6, 9, 19, 29, 32, 33, 35, 94, 123	**Talbot Road** Bike/ped safety	4	4

COLUMBIA FALLS TRANSPORTATION PLAN

NOVEMBER 2021

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Chapter 3. Existing Conditions

INTRODUCTION

The City of Columbia Falls is a vibrant community and regional leader in lumber production and manufacturing. Planning for future transportation needs requires an understanding of the city's assets as well as the unique challenges facing the community. The following chapter describes the existing conditions in Flathead County and Columbia Falls. A summary of demographics, economic trends, and travel trends is provided, followed by an overview of existing transportation infrastructure for all modes and an analysis of crash trends within the study area.

BACKGROUND

In 2010 the City of Columbia Falls exceeded a population of 5,000, giving the city Urban designation as defined by FHWA. The City of Columbia Falls is growing and is part of a growing region, increasing the need for the community to develop a long range transportation plan. This transportation plan considers changes in population and economic trends within the larger study area, including the Flathead Valley. Localized conditions, coupled with larger regional trends, have a combined measurable impact on transportation within the City of Columbia Falls.

The Columbia Falls Transportation Plan has a 20-year planning horizon and evaluates growth to the year 2040. Projections to the year 2040 point to continued growth and development within Columbia Falls and throughout Flathead County. This plan will establish a set of recommended goals, initiatives, and projects to address projected needs facing the City of Columbia Falls to the year 2040.

EXISTING CONDITIONS

An understanding of the existing conditions is required to plan for the long-range transportation needs of a growing community and region. The following section describes the demographics, housing, and economic trends of Columbia Falls, Flathead County, and the State of Montana.

Demographics Overview

Flathead County is the fifth-fastest-growing county in Montana since 2010, adding nearly 13,500 desidents over the last decade. The total population of Flathead County grew from 51,966 in 1980 to 104,357 in 2020, for an increase of 52,391 residents or 101 percent. Overall population trends during the last 50 years indicate steady growth in the county, punctuated by short periods of slow or no growth associated with regional and national economic downturns.

Between 2010 and 2020, the population in Columbia Falls increased by 22 percent, considerably faster than the county's population growth of 15 percent over the same period. **TABLE 3.1** shows a population growth comparison of Columbia Falls and the surrounding area over the last 40 years.

Table 3.1: Regional Population Growth

	Flathead County	City of Columbia Falls	City of Whitefish	City of Kalispell
1980	51,966	3,112	3,703	10,648
1990	59,518	2,942	4,368	11,917
2000	74,471	3,645	5,032	14,223
2010	90,928	4,688	6,352	19,927
2020	104,357	5,308	7,751	24,558
Average Annual Change	2.5%	1.8%	2.7%	3.3%

Population Dynamics

The population of Columbia Falls was relatively stagnate between 1980 and 2000, but has since grown at a similar rate to that of Whitefish and Kalispell. The demographic composition of Columbia Falls has varied more widely than the surrounding region since 2000. Between 2010 and 2018, the median age in Columbia Falls increased dramatically from 31.4 to 42.6 years old. Some of this change can be explained by the completion of the 60-unit Timber Creek Assisted Living Facility and the 46-unit Bee Hive Assisted Living Facility during the seven year period. Additionally, Columbia Falls lost some manufacturing jobs in 2009 with the closure of the Columbia Falls Aluminum Plant. More recently, demographics within Columbia Falls have been similar to Flathead County and the State of Montana. **TABLE 3.2** provides details on the population of Columbia Falls and the greater region.

Table 3.2: Population Age Cohorts

Area	2000	2010	2018 ACS
CITY OF COLUMBIA FALLS			
Median Age	35.7	31.4	42.6
Younger than 18	28.3%	29.7%	21.1%
18 to 64	58.3%	60.3%	63.5%
Greater than 64	13.4%	10.0%	15.4%
FLATHEAD COUNTY			
Median Age	39.0	41.2	42.4
Younger than 18	25.9%	23.4%	21.7%
18 to 64	61.1%	62.2%	58.1
Greater than 64	13.0%	14.4%	20.2%
STATE OF MONTANA			
Median Age	37.5	39.8	40.1
Younger than 18	25.5%	22.6%	21.6%
18 to 64	61.1%	62.6%	59.6%
Greater than 64	13.4%	14.8%	18.8%

(ACS: American Community Survey)

Housing

A survey administered to Columbia Falls residents as a part of the 2019 Growth Policy planning process found housing to be the second most important issue facing the community. Housing is the bedrock of a community and can determine transportation needs and economic conditions. Housing type and variety are important considerations in local land-use and transportation decision-making processes. **TABLE 3.3** shows the estimated number of households, average household size in 2018, and annual average percent change in number of units.

Table 3.3: Housing Stock

	City of Columbia Falls	Flathead County
2000	1,470	34,773
2010	1,816	46,963
2018 ACS	2,368	49,088
Avg. Annual Change	3.4%	2.3%
Persons per Household	2.06	2.12
Owner-occupied	70.5%	72.1%
Renter-occupied	29.5%	27.9%
Median price	$192,800	$320,400
Median Household Income	$47,716	$53,193

Economic Trends

Columbia Falls is a wood products hub of Flathead County hosting two lumber companies, Weyerhaeuser and Stoltze, and several smaller associated timber enterprises. Significant commercial expansion has occurred along the US Highway 2 corridor, and the historic downtown district along Nucleus Avenue continues to experience new growth and revitalization.

Healthcare, retail trade, and accommodation and food services are the three largest industries in Flathead County, employing nearly 20,000 people. **TABLE 3.4** shows the largest industries in the county as well as their average employment.

Table 3.4: Largest Employers in Flathead County

Employer
MORE THAN 1,000 EMPLOYEES
Kalispell Regional Medical Center
500–999 EMPLOYEES
Weyerhaeuser
250–499 EMPLOYEES
AON Service Corporation
Applied Materials Inc.
Glacier Bank
Health Center Northwest
Immanuel Lutheran Home
North Valley Hospital
Super 1 Foods
Teletech
Wal-Mart
Whitefish Mountain Resort
100–249 EMPLOYEES
A Plus Healthcare
Brendan House
Costco
L C Staffing Service
Lodge at Whitefish Lake
McDonalds
Smith's Food and Drug
Summit Medical Fitness Center

According to the Montana Department of Labor & Industry's Local Area Profile for Flathead County, the county represents a tourism hotspot in Montana due to Glacier National Park, Flathead Lake, the local ski industry at Whitefish Mountain Resort and Blacktail Mountain Ski Area, and the Bob Marshall Wilderness. The tourism economy offers significant employment opportunities, although much of this sector of the County's economy is centered on service industry jobs which typically represent lower wage earners.

The county's labor force was estimated to be 47,793 in 2018, according to local area employment statistics (this number has not been seasonally adjusted). While county unemployment rates have been on a steady decline since the 2008 recession, the current unemployment rate sits at 4.8 percent, over a percentage point higher than the state average unemployment rate of 3.7 percent.

According to the 2017 ACS Community Profile narratives for both Columbia Falls and Flathead County:

- Flathead County's federal, state, and local government sector employment represents 13.4 percent of the workforce in the county. Nearly 80 percent of the workforce is in private industry.
- Key industries in Flathead County are educational services, health care and social assistance (23.5 percent); retail trade (13.8 percent); arts, entertainment and recreation (10.9 percent); and professional, scientific and tech services (9.8 percent).
- In Columbia Falls, federal, state, and local government sector employment is around 19 percent of the workforce in the city. About 77 percent of the workforce is in private industry.
- Key industries in Columbia Falls are educational services, health care and social assistance (23.4 percent); Retail Trade (16.3 percent); and Manufacturing (9.5 percent).

Table 3.5: Largest Industries in Flathead County

Industry	Average Employment
Health Care and Social Assistance	7,157
Retail Trade	6,366
Accommodation and food Services	6,130
Government – All Levels	4,976
Food Services and Drinking Places	4,352
Construction	3,296
Manufacturing	2,837
Ambulatory Health Care Services	2,215
Professional and Technical Services	2,042
Specialty Trade Contractors	2,024
Finance and Insurance	1,839

Travel Trends

The vast majority of workers in the City of Columbia Falls drive to work alone. Compared to the rest of the region, Columbia Falls residents drive alone in higher proportion than residents of neighboring cities and the State of Montana. **TABLE 3.6** shows the regional mode share recorded during the 2017 American Community Survey. In Columbia Falls, a smaller percent of residents work from home than the comparison regions, and a much smaller percent walk to work.

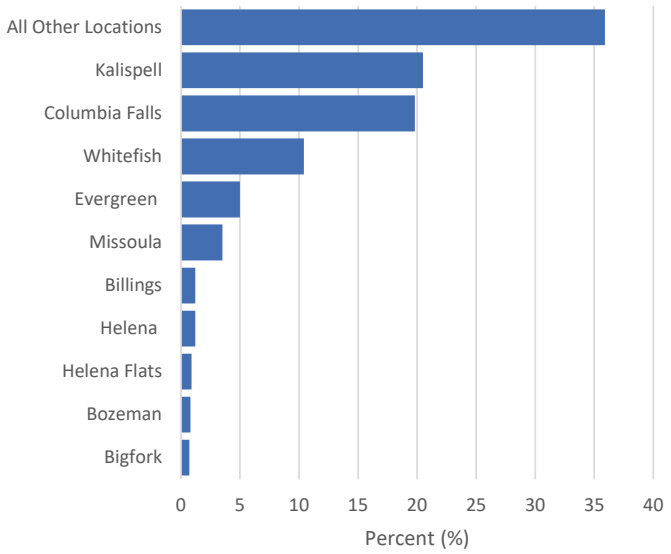
Job Inflow/Outflow

FIGURE 3.1 shows the commute patterns to and from the city of Columbia Falls. These numbers were determined using the city limits and the total number of jobs recorded in the 2017 American Community Survey. It is likely that many of the workers in the first column live within the study area but outside of the city limits. Among the employed population that lived within the city limits, about 80 percent commuted to a job outside of the city limits. Because an individual can hold multiple jobs, these numbers are meant to approximate commuter behavior.

Figure 3.1: Job Inflow/Outflow (2017 ACS)

FIGURE 3.2 shows the work locations of employed individuals that live within the Columbia Falls city limits. In 2017, 393 workers commuted to Kalispell, 200 commuted to Whitefish, and 379 stayed in Columbia Falls for their work. These numbers indicate that many residents have chosen to live in Columbia Falls despite their job being located elsewhere.

Figure 3.2: Commute Destinations from Columbia Falls



Household Income

According to the 2018 American Community Survey, the median household income for families living in Columbia Falls was $47,716 annually. About 13 percent of individuals living in the city were determined to have an income below the poverty level. In comparison, residents of Kalispell had a median annual income of $47,362 and a poverty rate of 14.8 percent, while Whitefish had a median annual income of $51,059 and poverty rate of 9.9 percent.

Table 3.6: Commute Mode (ACS 2017)

	Columbia Falls	Whitefish	Kalispell	Flathead County	Montana
Drove alone	88.9%	74.9%	82.8%	81.4%	75.6%
Carpooled	4.3%	6.8%	6.6%	6.9%	9.7%
Transit	0.0%	1.1%	1.6%	0.8%	0.8%
Walked	0.7%	9.7%	2.4%	3.3%	5.1%
Other	3.2%	2.9%	2.0%	1.9%	2.4%
Worked at home	2.8%	4.5%	4.6%	5.8%	6.4%
Average commute time	18.4 minutes	16.4 minutes	15.4 minutes	19.1 minutes	17.8 minutes

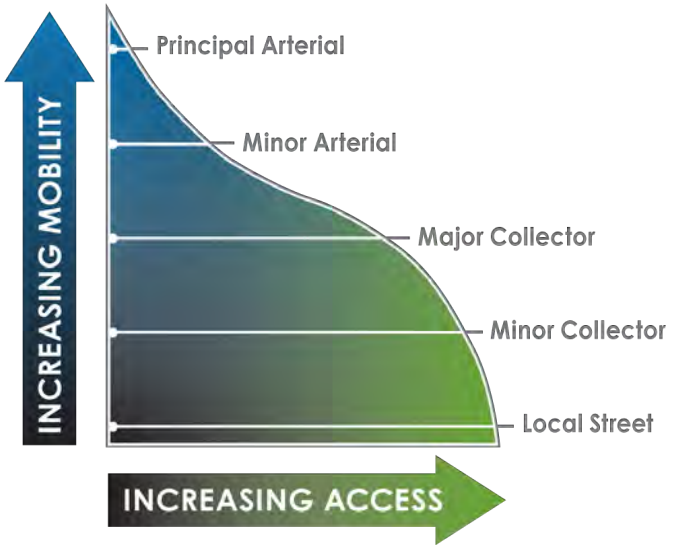
EXISTING TRANSPORTATION CONDITIONS

The existing transportation system was analyzed to establish baseline traffic conditions and evaluate existing and future issues. This data was provided by MDT, City of Columbia Falls, and Flathead County. The analysis includes all modes of transportation, including personal automobile, bicycle, pedestrian, transit, truck freight, rail, and air.

Functional Class

The operation of a community's road network is defined by functional classification of the roadway system. These classifications define the service each road segment plays in serving the flow of traffic through the street network. By utilizing this classification system, the operation of traffic can be designed to work in a logical and efficient manner. In Columbia Falls, the roadways are grouped into a hierarchy of five general functional classifications. **FIGURE 3.3** demonstrates the relationship between access and mobility for each functional classification.

Figure 3.3: Functional Class Access and Mobility



Explanation

Most streets and highways have a predominant function: either to provide the motorist with access to abutting land or to allow movement through an area. Traffic that gains access to abutting land is considered "local" whereas all other traffic is considered "through." Through traffic neither originates nor terminates within a designated area, but simply passes through. On the other hand, local traffic has origins or destinations within the designated area.

Urban and rural areas have different characteristics as to density and types of land use, nature of travel patterns, density of street and highway networks, and the way in which all these elements are related to highway function. Federal guidelines recognize these differences through separate urban and rural functional classification systems and associated criteria.

Functional Class Definitions

Below is a definition of each of the functional classifications. Functionally classified roadways in the study area are shown in **FIGURE 3.4** and **FIGURE 3.5**.

PRINCIPAL ARTERIALS

Arterials provide the means of regional and interstate transportation of people and goods. This is done by having roads which have the highest speed and uninterrupted trips and broken into principal and minor arterial routes. In urban areas they serve as corridors with the highest traffic volume and carry the most trips through urban areas.

MINOR ARTERIALS

The minor arterial routes in the street system provide connections and support the principal arterial system. The trips are generally shorter in nature and spread out over a smaller geographic area.

MAJOR AND MINOR COLLECTORS

Collectors serve a critical role in the roadway network by gathering traffic from local roads and funneling them to the arterial network. Within the context of functional classification, Collectors are broken down into two categories: major collectors and minor collectors.

The distinctions between major collectors and minor collectors are often subtle. Generally, major collector routes are longer in length, have higher access control, have higher speed limits, have higher annual average traffic volumes, and may have more travel lanes than minor collectors. In general, major collectors offer more mobility, while minor collectors provide more access.

LOCAL STREETS

Local streets are all streets not defined above in the hierarchy with the purpose to provide basic access between residential and commercial properties. These streets are generally slower and have the addition of traffic calming measures. These are the largest element in the American public road network in terms of mileage.

Highway Systems in Montana

For the purpose of allocating state and federal highway funds, Montana's public highways and streets are placed on systems based in part on the functional classification system. It is important to note that changes to functional classification and highway system designation do not

Figure 3.4: Functionally Classified Roadways in the Study Area

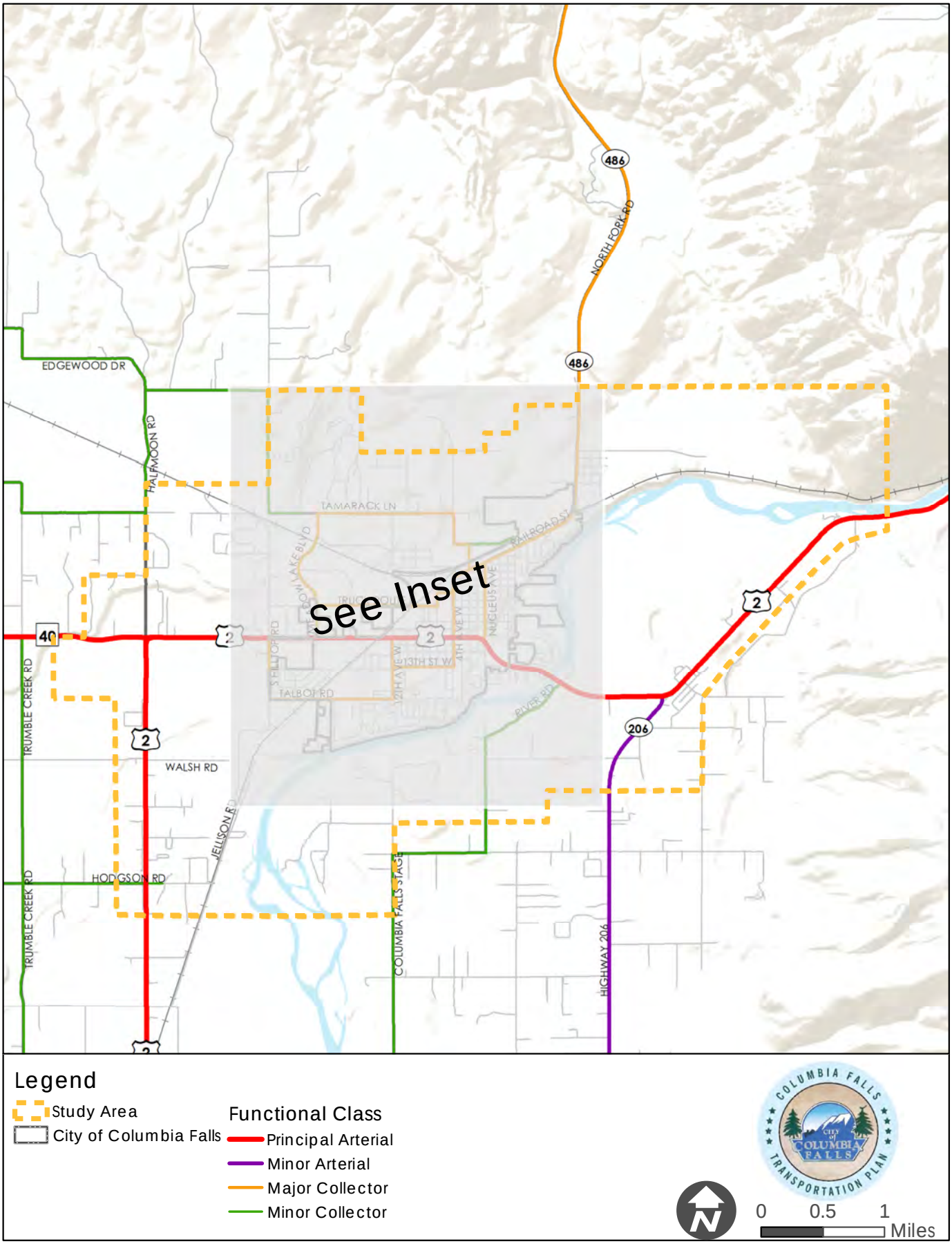
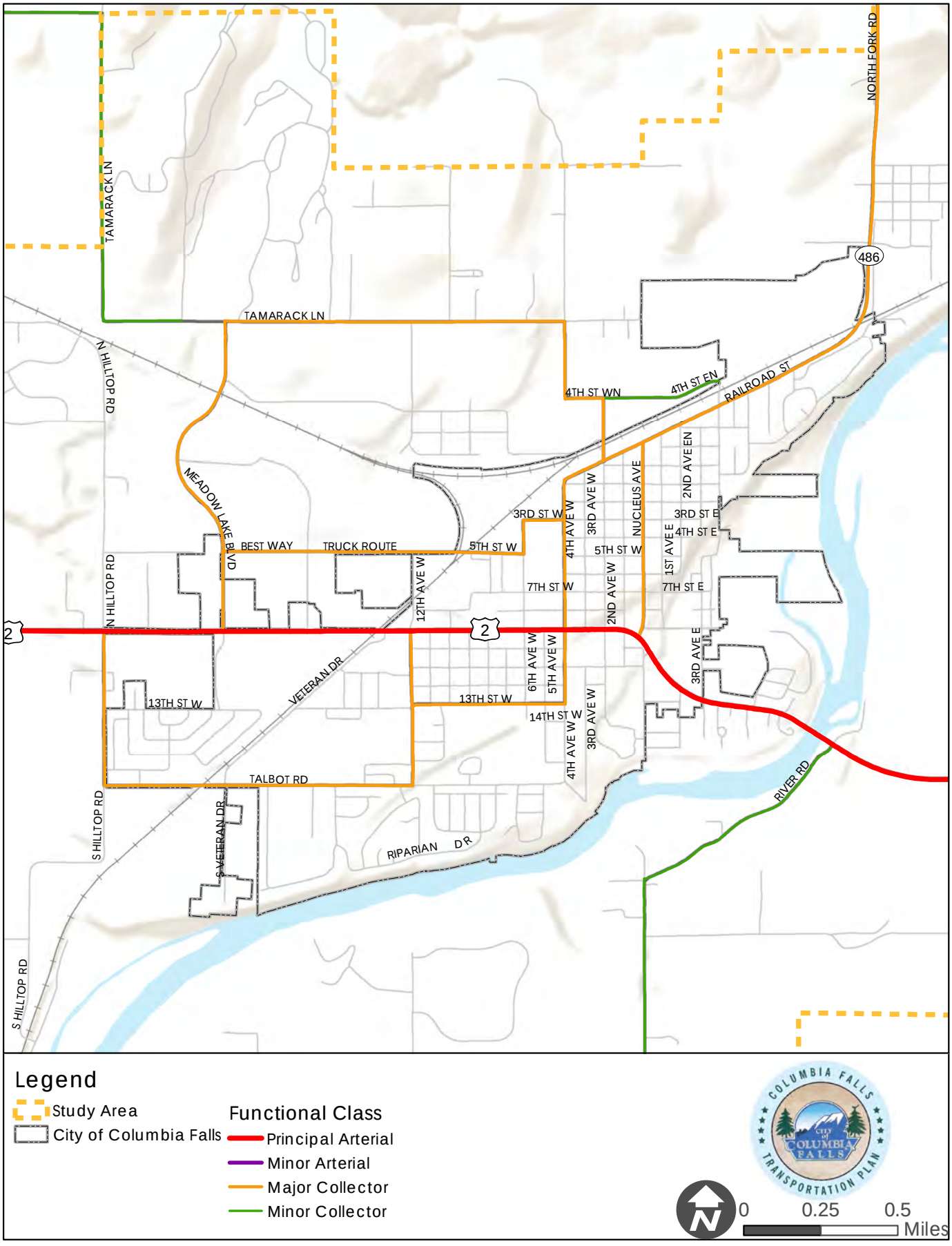


Figure 3.5: Functionally Classified Roadways in the Study Area Inset



automatically lead to increased funding for improvements. Factors such as funding availability, project eligibility, and project prioritization are equally important considerations. The following system designations are used in Montana to assist with programming and funding of roadways. Specific designations of these roadways within the study area are shown in **FIGURE 3.6**.

Federally Designated Highway Systems

NATIONAL HIGHWAY SYSTEM (NHS)

A federal system of public highways as defined in Title 23, USC and designated by Congress or the Secretary of Transportation that includes the Interstate System as well as other roads important to the nation's economy, defense, and mobility.

Interstate NHS

The Dwight D. Eisenhower National System of Interstate and Defense Highways consists of routes of highest importance to the nation, which connect, as directly as practicable, the principal metropolitan areas, cities, and industrial centers including important routes into, though, and around urban areas, serve the national defense and, to the greatest extent possible, connect at suitable border points with routes of continental importance in Canada and Mexico

Non-Interstate NHS

Principal arterials other than the Interstate that serve major travel destinations and transportation needs, connectors to major transportation terminals, the Strategic Highway Network and connectors, and high priority corridors identified by law.

State Designated Highway Systems (MCA 60-2-125(6))

PRIMARY HIGHWAY SYSTEM

Highways that have been functionally classified by FHWA as either principal or minor arterials and that have been selected by the Transportation Commission to be placed on the Primary Highway System. There are no primary highways within the study area.

SECONDARY HIGHWAY SYSTEM

Highways that have been functionally classified by MDT as either minor arterials or major collectors and that have been selected by the Transportation Commission, in cooperation with the boards of county commissioners, to be placed on the Secondary Highway System. North Fork Road and Secondary Hwy 206 are examples of secondary highways within the study area.

URBAN HIGHWAY SYSTEM

Highways and streets in and near incorporated cities with populations of over 5,000 and within urban boundaries established by the Department, that have been functionally classified as either urban arterials or collectors, and that have been selected by the Transportation Commission, in cooperation with local government authorities, to be placed on the Urban Highway System.

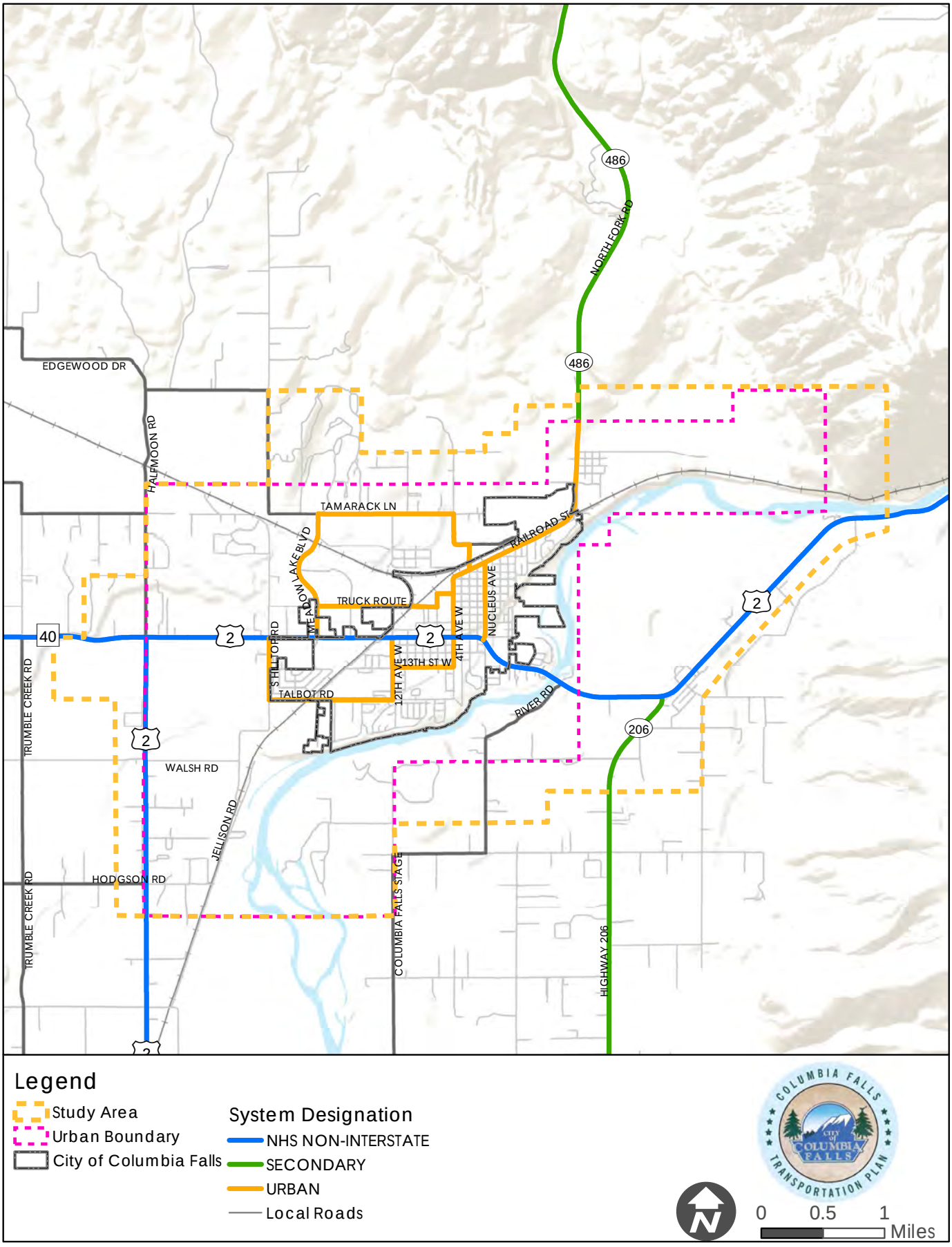
Evaluation of Existing Functional Class in Study Area

TABLE 3.7 shows the total road miles by classification using the FHWA system. These numbers were evaluated against current FHWA guidelines for recommended percentages for each functional classified roadway. The rural classification recommendations are presented given that Montana is considered a rural state for the purpose of these guidelines (rural states are those with a maximum of 75 percent of their population in urban centers). Principal arterials are near the high end of the rural recommended range, likely as a result of US Highway 2 running the full extent of the study area. Minor arterials are below the FHWA recommendation due to the rural nature of the community. Finally, minor collectors are on the low end of the recommended range, but can be increased to meet rural standards through an evaluation of the local road mileage.

CHANGING FUNCTIONAL CLASSIFICATION

Local governments may request functional classification changes at any time significant changes in operating characteristics occur. After receiving a request, MDT staff analyzes the route in accordance with FHWA guidelines to determine if the proposed change is justified and makes a recommendation to the Montana Transportation Commission. If approved by the Commission, it goes to FHWA for final approval.

Figure 3.6: Highway Systems in the Study Area



Maintenance Responsibility

Roadways in the study area are maintained by different agencies. MDT maintains US Highways such as US Highway 2. MDT is also responsible for State Highways and designated Primary and Secondary roadways such as Secondary Highway 206, Secondary Highway 486, and Highway 40. Flathead County maintains several roads throughout the study area. The remaining roads are maintained by the City of Columbia Falls.

FIGURE 3.7 demonstrates identified roadway maintenance obligations according to MDT.

Traffic Volumes

Annual average daily traffic (AADT) volumes show the number of vehicles that travel on a road segment per day, averaged across an entire year. The project team assembled traffic volume information provided by MDT for roadway segments within the study area. All traffic data represents 2018 counts.

The highest recorded traffic volumes are found on state highway system facilities, including US Highway 2, MT 40, Secondary Highway 486, and Secondary Highway 206. Within the city boundaries, various count locations on US Highway 2 demonstrated AADT volumes greater than 15,000. On city-maintained roadways, the highest volumes were found on higher-classed facilities and designated freight routes. The most traveled city-maintained facilities include Railroad Street (3,102), Truck Route (2,342), and 6th Avenue West (2,285) running along the BNSF mainline on the north of the city. Traffic count locations within the study area are shown in **FIGURE 3.8** and **FIGURE 3.9**.

Table 3.7: Existing Functional Classification Mileage and FHWA Recommended Ranges

Functional Class	Miles	% of Total	FHWA Rural Recommendation	Within Range
Principal Arterial	9.94	8.4%	4% to 9%	Yes
Minor Arterial	0.94	0.8%	7% to 14%	No
Major Collector	10.03	8.4%	3% to 16%	Yes
Minor Collector	4.37	3.7%	3% to 16%	Yes
Local Streets	93.46	78.7%	62% to 74%	No
TOTAL	**118.73**	**100.0%**		

Figure 3.7: Roadway Maintenance in Study Area

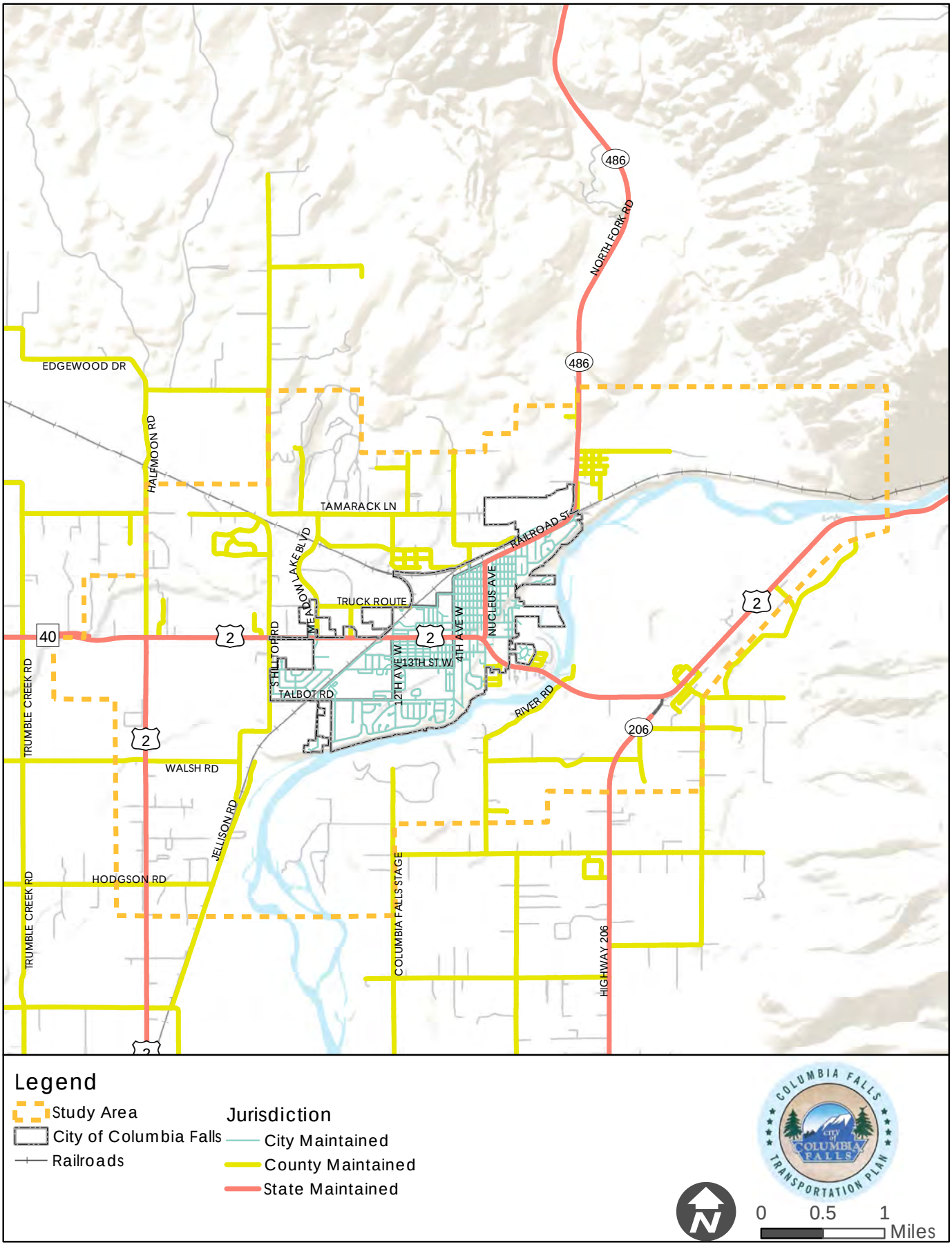


Figure 3.8: 2018 Traffic Counts

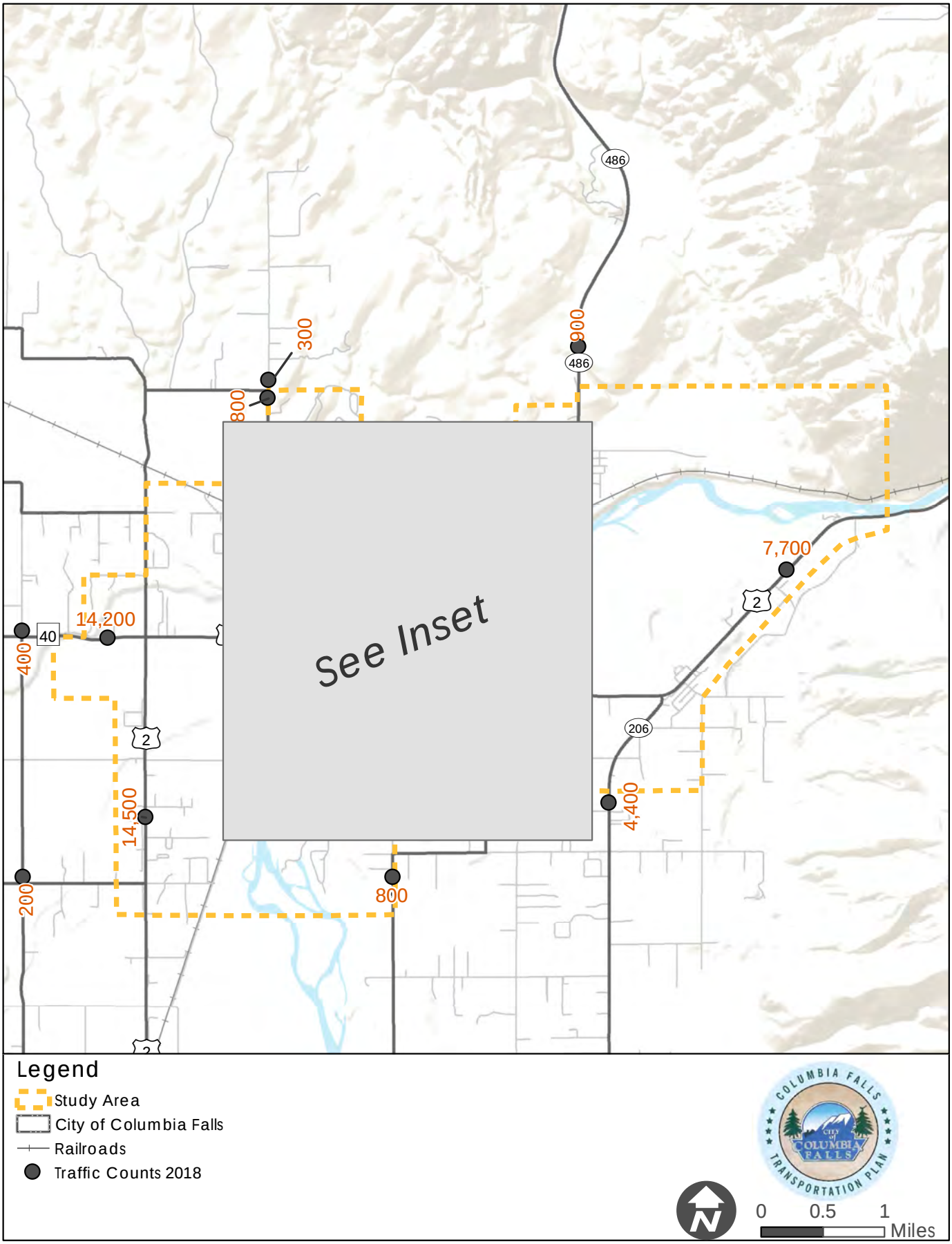
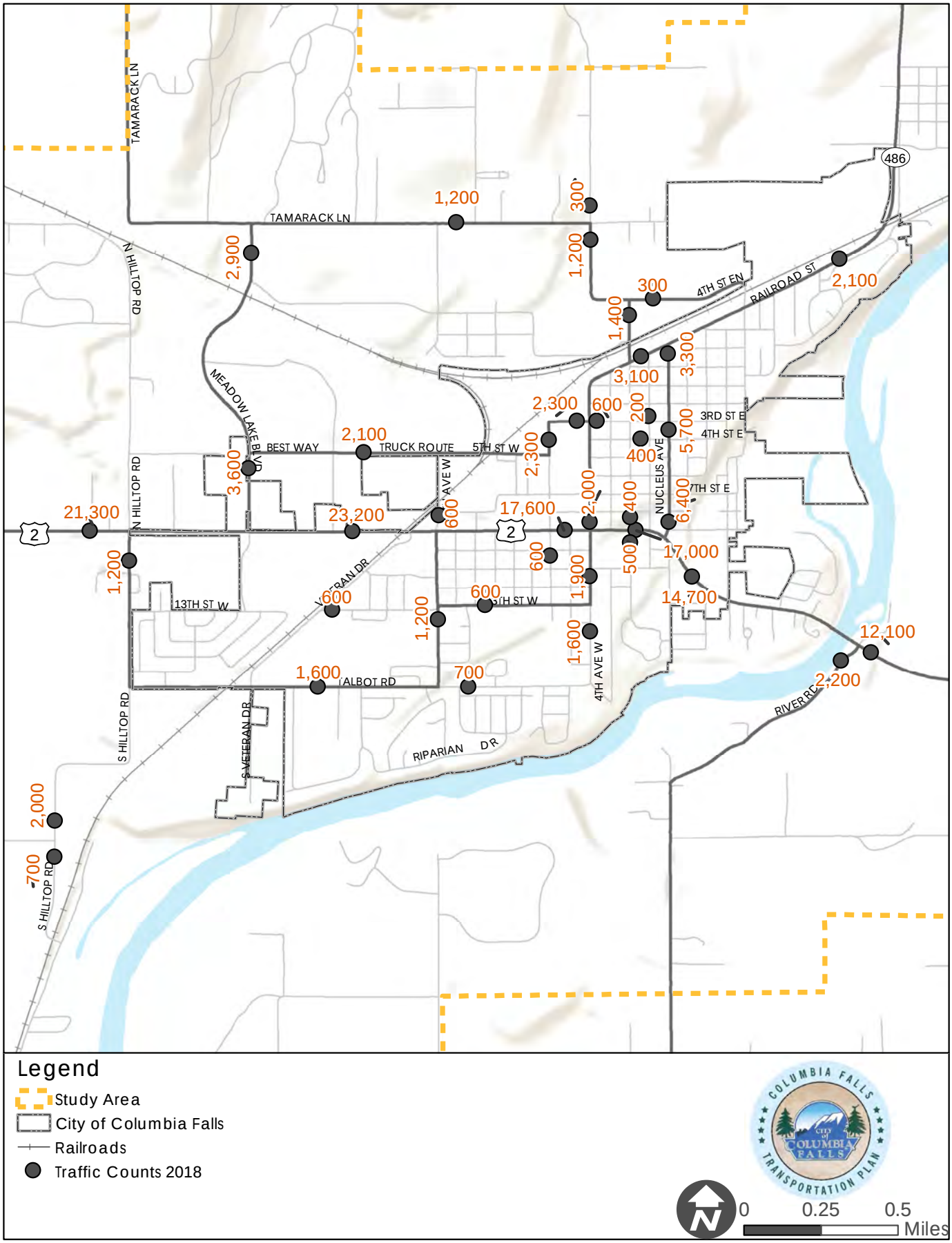


Figure 3.9: 2018 Traffic Counts Inset



SAFETY ANALYSIS

Transportation safety is an essential component of the transportation planning process supporting the Columbia Falls Transportation Plan. 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. The objective of the safety analysis is to improve the safety and well-being of all users of the transportation system and work towards MDT's Vision Zero initiative to achieve zero deaths and zero injuries on Montana roads.

Crash Analysis

Crash data between 2014 and 2018 data was provided by MDT Traffic and Safety Bureau to investigate the traffic crash trends in the study area. Between 2014 and 2018, there were 635 crashes reported in the study area. This corresponds to 127 crashes per year. The high-level trends are discussed below with more detailed information later in this section.

- There were three crashes that resulted in a fatality, and 24 crashes that resulted in serious injury.
- There were six pedestrian involved crashes, including one crash that resulted in serious injury.
- There were six bicycle involved crashes.
- About 36 percent of crashes occurred at intersections.
- The largest number of crashes occurred on roads with greatest miles traveled, such as US Highway 2 and MT Hwy 40.
- Nearly 10 percent of crashes involved a collision with an animal.
- Nearly eight percent crashes involved impaired drivers.

The crash data included the spatial records which were analyzed to understand patterns of existing motorized vehicular crashes and identify high-risk areas. This was done through a hot-spot analysis which identifies clusters of dense accident occurrence, as shown in **FIGURE 3.12 ON PAGE 34**.

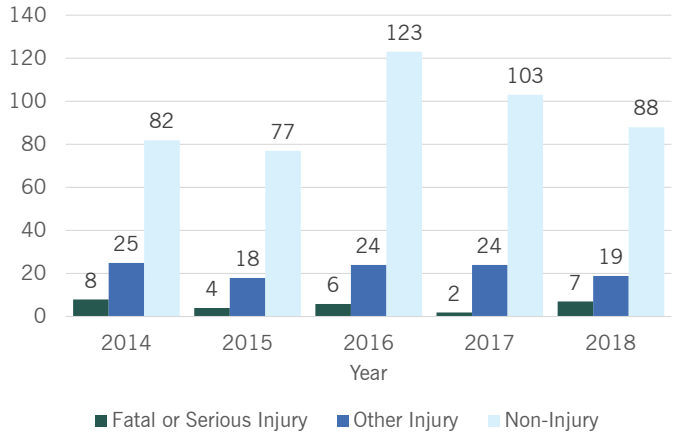
Crash Severity

Crash severity is very important for implementation of safety related counter measures needed to compare and assess the roadway. The crash data categorized the crashes by the following severity levels:

- Fatal Crash
- Suspected Serious Injury Crash
- Suspected Minor Injury Crash
- Possible Injury Crash
- Property Damage Only Crash

Crash severity is categorized based on the most severe injury of the crash. For example, if a crash involved two vehicles that resulted in one serious injury and two possible injury crash, the crash is reported as suspected serious injury crash. A Suspected Serious Injury crash is defined as an injury, other than fatal which prevents the injured individual from walking, driving, or normally continuing the activities they could perform before the injury. There were three crashes reported that resulted in death, 24 crashes that resulted in serious injury, 110 crashes that resulted in non-serious injury, 473 crashes that resulted in property damage only, and 25 unknown severity type crashes. **FIGURE 3.10** shows the number of injury and non-injury crashes by severity type during the analysis period. **FIGURE 3.12** shows the location of fatal and incapacitating injury crashes.

Figure 3.10: Crashes by Severity (2014–2018)



Crash Type

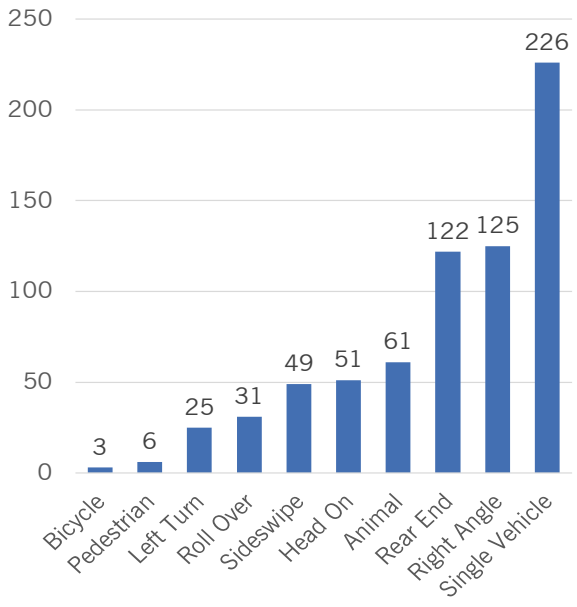
Identifying crash type at roadways assists in developing counter measures to mitigate or minimize the crash type. During the analysis period, single vehicle related (226), right angle (125), and rear-end (122) crashes represented the typical crash types in the study area. **FIGURE 3.11** shows the crashes by crash type during the analysis period.

Crash Occurrence Period

Typically, traffic varies significantly by time of day and day of the week, particularly during weekday peak hours. Crash data for the study area was evaluated based on the period of occurrence on the crash with respect to time of the day, day of the week, and month.

- The most common time for crashes (17 percent) was 3 PM.
- 76 percent of crashes occurred during weekdays. The fewest crashes occurred on Sundays.
- November through January generally experienced more vehicular crashes (34 percent). November is the peak month for crash frequency. Challenging winter road conditions including snow, sleet, and ice can contribute to the higher number of crashes.

Figure 3.11: Crashes by Type (2014–2018)



Crashes involving Impaired Drivers

Montana has one of the highest fatality rates in the nation for number of deaths caused by impaired drivers per vehicle mile traveled. The statewide data from 2018 indicates that 64 percent of all fatalities statewide were the result of impaired driving. This is up from 61 percent in 2017. Within the study area, there were 48 crashes (13 percent) involving impaired drivers. Of these crashes, two crashes resulted in fatality, and nine crashes resulted in serious injury.

Crashes Involving Animals

From 2014 to 2018, there were 61 crashes (9.6 percent) that involved collision with wild animals, which corresponds to 12.2 crashes per year. This is likely understated as many animal-vehicle collisions go unreported if the crash does not involve property damage or injury. Of these animal-vehicle collisions, 80 percent occurred on high-volume, high-speed roadways like US Highway 2 and Secondary Highway 486.

Intersection and Segment Crash Evaluation

To assess the intersections and segments safety performances, two methods were applied: Crash Rate and Severity Rate. These methods apply an easy-to-use statistical test to determine whether the crash rate and severity rate for a location is significantly higher than the average crash rate and severity rate for other locations in the jurisdiction (or region) having similar characteristics.

- The crash rate is calculated as the number of crashes per million entering vehicles for intersections and the number of crashes per million vehicle miles traveled for segments.
- The severity rate applies a weight to crashes based on severity, including 5.0 for fatal crashes, 4.0 for incapacitating injury crashes, 3.0 for non-incapacitating injury crashes, 2.0 for possible injury crashes, and 1.0 for property damage only crashes.

For each intersection, a critical severity rate is determined based on the number of entering vehicles, which represents a severity rate that would be unusually high for the given intersection. In **TABLE 3.8**, an intersection's severity rate is highlighted red if greater than or equal to the critical rate, and yellow if the severity rate is below the critical rate.

If a location is identified as a high crash rate or high severity location, additional evaluation should be used to assess the needs of the location.

Eleven intersections were identified with the highest number of crashes in the area. **TABLE 3.8** summarizes the crash rate and severity rates of the intersections. The location of the intersections is shown in **FIGURE 3.13**. The larger the circle, the more crashes that occurred at that intersection.

Table 3.8: High Crash Intersections (2014–2018)

Intersection (shown in FIGURE 3.13)		Entering vehicles during study period (million)	Crashes			Crash Rate	Severity Rate
			Injury	Non-Injury	Total		
1	US 2 & MT Hwy 40	46.2	8	27	**35**	0.76	1.08
2	US 2 & Meadow Lake Blvd	47.2	9	13	**22**	0.47	0.85
3	US 2 & Hodgson Rd	27.8	5	7	**12**	0.43	0.79
4	9th St W & 12th Ave W	47.1	2	6	**8**	0.17	0.21
5	9th St W & 6th Ave W	43.3	1	7	**8**	0.18	0.21
6	9th St W & Truck Route Rd	46.3	3	4	**7**	0.15	0.24
7	9th St W & Hilltop Rd	41.3	2	4	**6**	0.15	0.22
8	9th St W & Nucleus Ave	43.7	2	4	**6**	0.14	0.21
9	2nd Ave W & 4th St W	1.4	1	4	**5**	3.53	4.95
10	US 2 & River Rd	38.2	2	3	**5**	0.13	0.26
11	Nucleus Ave & 5th St W	19.0	2	3	**5**	0.26	0.42

Figure 3.12: Crash Density and Severity (2014–2018)

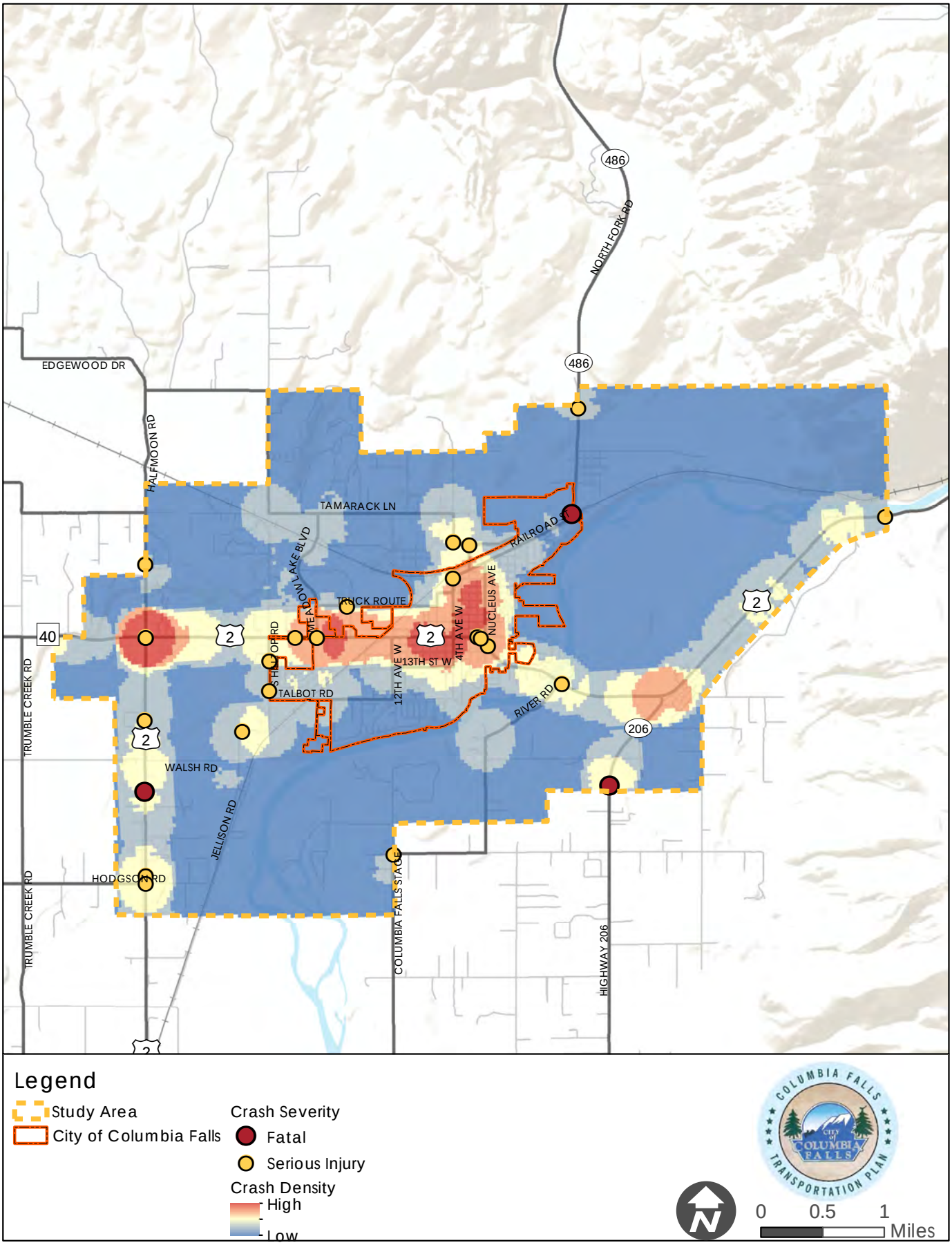
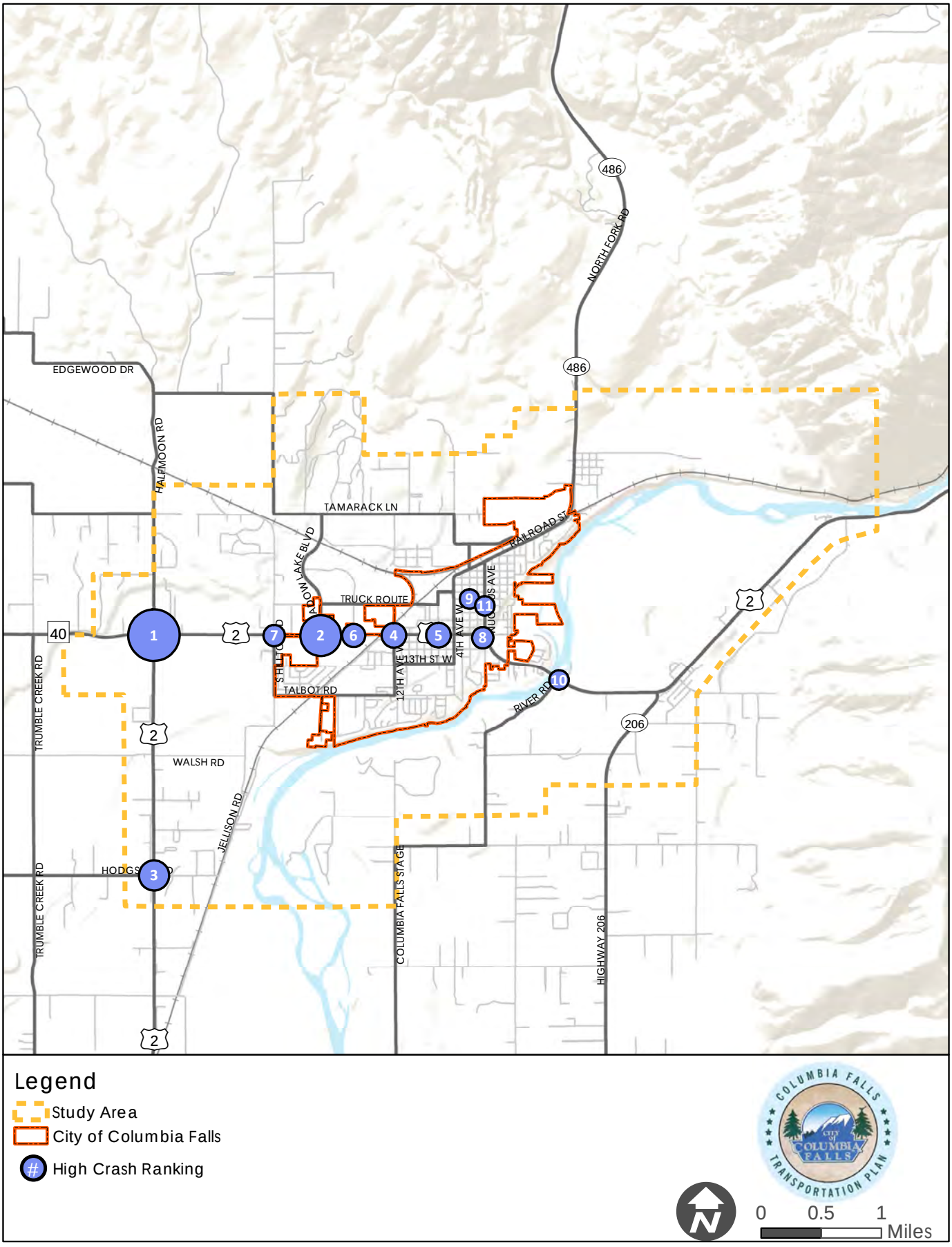


Figure 3.13: Crashes by Intersection (2014-2018)



FREIGHT SYSTEMS

Columbia Falls is served by US Highway 2 which connects the city to regional and national trade routes. The stretch of highway through town presents challenges in balancing freight traffic with local automobile, pedestrian, and bicycle traffic. Because truck activity centers can influence the entire network by slowing down traffic and creating safety hazards, it is important to document high activity centers within the study area. **FIGURE 3.15** shows the primary truck routes and generators in the study area.

As of 2016, approximately 16 percent of the labor force in Columbia Falls works in basic industries, or industries that export a majority of their products. Flathead County is historically the largest timber-related employer in the State of Montana. While Columbia Falls is a center for industrial activity, of the 500 acres of industrially developed land within one mile of the city, only 190 acres are inside the city limits. This strains the city's tax base and causes the city to function more closely to a bedroom community than an industrial hub. In planning the transportation system, understanding and balancing the needs of freight and local traffic will be critical to effectively serve the community.

Rail Systems

Columbia Falls sits on the main line of the Burlington Northern Santa Fe (BNSF) Railroad. The railroad tracks run east-west along the northern boundary of the city limits, and has at-grade crossings at 2nd Avenue and 4th Avenue. Within the city limits, a spur line of the railroad track begins and continues southwest towards Kalispell. This line has four crossings within the city limits: US Highway 2, Talbot Road, the Truck Route, and 12th Avenue. **FIGURE 3.16** shows the railroad alignment and crossings within the study area.

The BNSF Railroad is an important part of the local economy, connecting local manufacturing to national shipping routes. It also creates challenges for the transportation network by blocking access from parts of the city on one side of the tracks to the other. In the 2019 Growth Policy Plan, the construction of a railroad crossing on 13th Street West was listed as a critical infrastructure need.

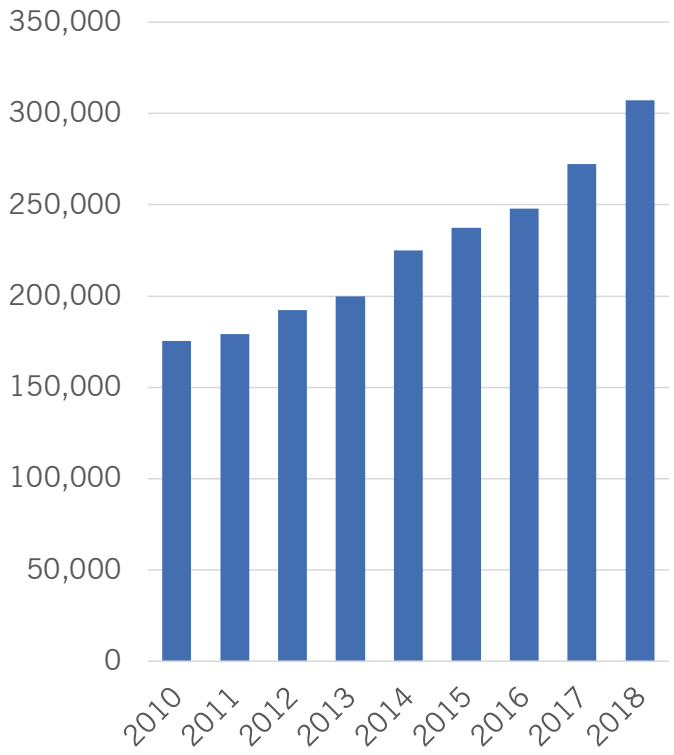
The City of Columbia Falls has expressed an interest in developing a quiet zone along the BNSF mainline through the northern part of the community. The project will require coordination with BNSF, Cedar Creek Industrial Park and other adjacent property owners. The effort would look to consolidate, close and better coordinate existing at grade crossings to support development of a quiet zone. The effort will also need to improve access north of the tracks back to the North Fork Road/State Secondary 486 and improve access to Cedar Creek Industrial Park. More detailed evaluation of a quiet zone will take place at later stages in the planning process.

Air Transportation

Kalispell-Glacier International Airport

The Kalispell-Glacier Park International Airport lies southwest of Columbia Falls on US Highway 2. Alaska Airlines, Allegiant, American Airlines, Delta, and United provide regular scheduled commercial flights. These airlines provided flights to 306,487 passengers in 2018, the highest passenger volume ever recorded at the airport. Over the past five years the airport has seen a 33 percent increase in passenger volume and a 75 percent increase since 2010 as seen in **FIGURE 3.14**. Starting in 2020, the airport is expanding by 40,000 square feet to keep up with growing passenger volumes.

Figure 3.14: Passenger Volumes at Kalispell-Glacier Park International Airport



The following are the major destinations and air carriers of the airport:

- Delta: Salt Lake City, Minneapolis, St. Paul, Atlanta (Seasonal), and Los Angeles (Seasonal)
- United: Denver and Chicago (Seasonal)
- Alaska: Seattle and Portland (Seasonal)
- Allegiant Air: Las Vegas, Phoenix, Oakland (Seasonal), Los Angeles (Seasonal)
- American Airlines: Chicago (Seasonal), Dallas (Seasonal), Los Angeles (Seasonal)

Figure 3.15: Truck Traffic Volumes and Major Routes

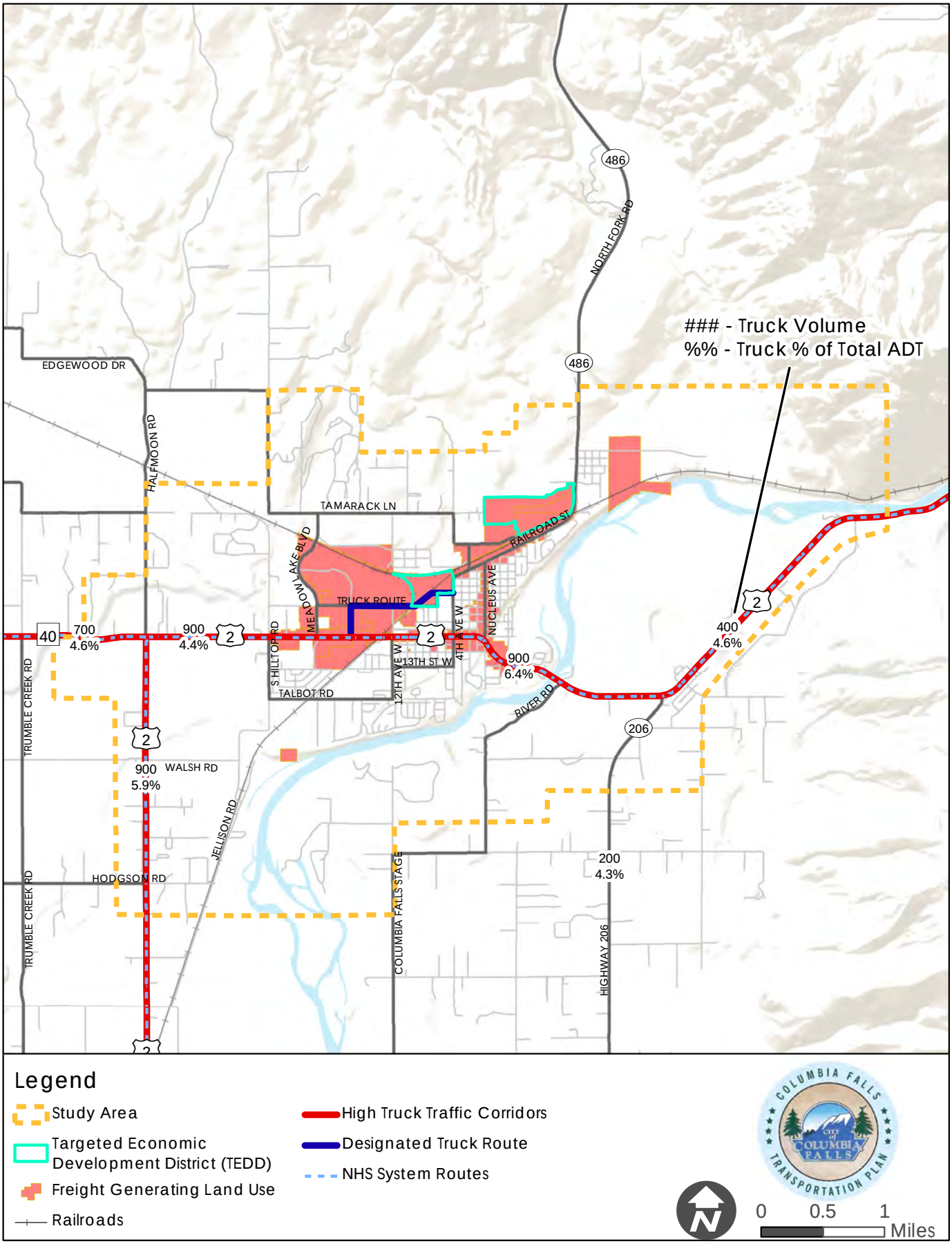
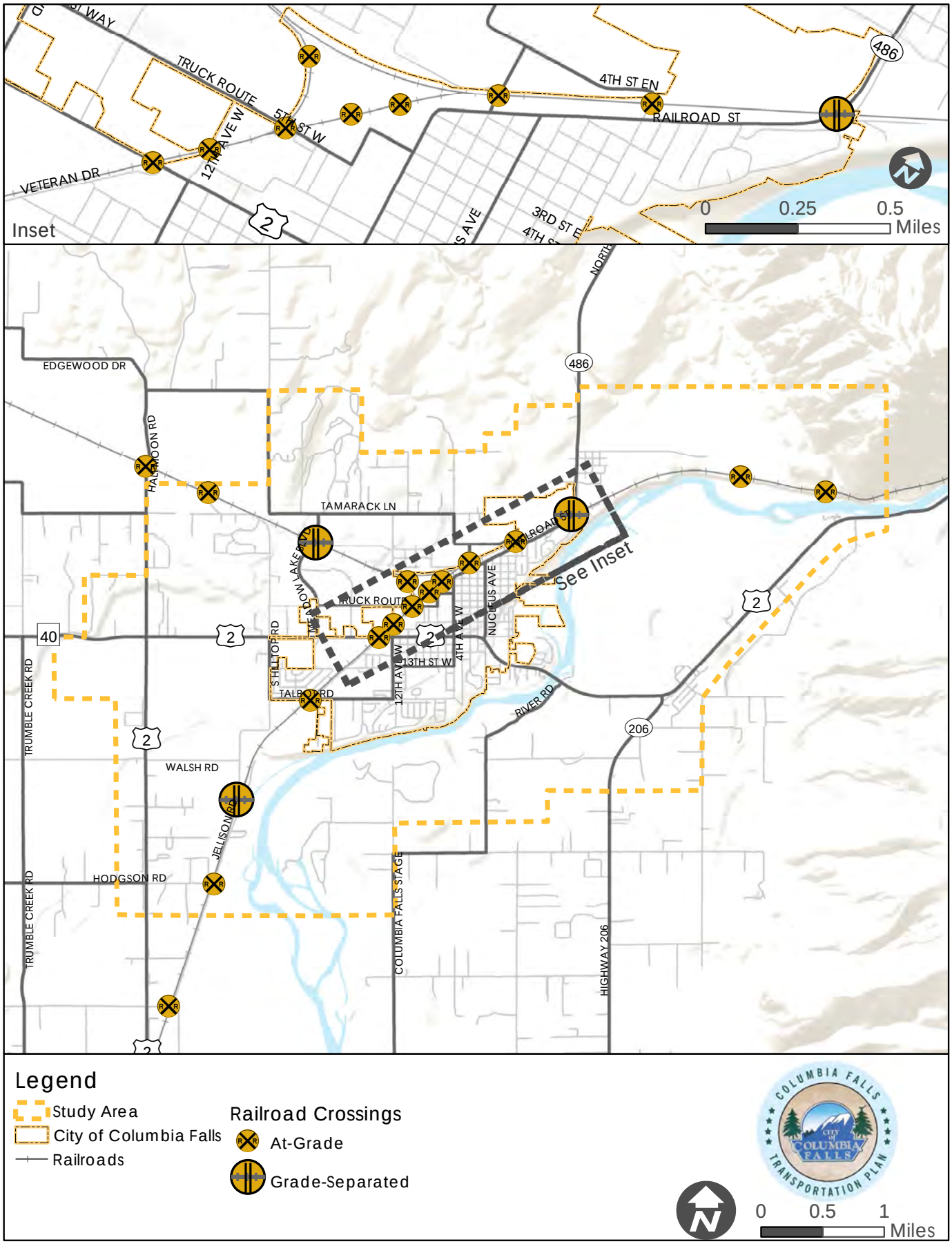


Figure 3.16: Railroad Crossings in the Study Area



BICYCLE AND PEDESTRIAN SYSTEM

The 2019 Columbia Falls Growth Policy Plan identified the development and expansion of the existing trail system as a key opportunity for future development. Additionally, the lack of curbs and sidewalks/bike paths are highlighted as weaknesses of the community. **TABLE 3.9** summarizes the existing facilities in the study area and examples are shown in **FIGURE 3.17**. Each facility type is described below.

- Asphalt paths – shared-use pedestrian and bicycle facilities.
- Sidewalks – pedestrian paths along the side of a roadway.
- Primitive trails – unpaved paths primarily used by pedestrians.

Table 3.9: Existing Multimodal Facilities

Facility	Length (miles)
Asphalt Path	4.44
Sidewalk	16.37
Primitive Trail	0.09

The future bicycle and pedestrian network should plan to address gaps within the existing facilities and expand pedestrian and bicycle facilities to rural developments that surround the urban area. For community members, the existence of these facilities is both a matter of access and safety. To improve accessibility, the 2019 Growth Plan, discussed later in this chapter, warns against the construction of new cul-de-sacs. To address safety, the Plan states that sidewalks are necessary on both sides of all neighborhood and business district streets and all neighborhoods should be served by bike paths.

Figure 3.17: Facility Types in Columbia Falls

Bicycle and Pedestrian Crashes

Between 2014 to 2018, there were six pedestrian and three bicycle related crashes, as shown in **FIGURE 3.18**. Minor crashes that do not involve injury or significant property damage are often left unreported, making it possible that pedestrian and bicycle crash numbers are higher than the data suggests.

Among the six pedestrian crashes within the study area, there was one serious injury, two minor injuries, and three possible injury type crashes. One serious injury crash involving a pedestrian occurred near the intersection of S Hilltop Road and Bethany Street during dark conditions (2014). Among the three bicycle crashes, one was minor and two resulted in possible injury.

During the study period, no clear trends emerged to aid in determining the most dangerous locations or facilities for pedestrians and cyclists. One pedestrian crash occurred at an intersection, one occurred at a driveway, and the rest along roadways. Notably, no pedestrian crashes occurred on shared-use paths or sidewalks. Among the bicycle crashes, one occurred at an intersection, one on a shared-use path, and the third along a roadway.

Safe Routes to School

Safe routes to school is an important component of the bicycle and pedestrian system. Over the past several years, the city has been proactive with new crosswalk striping and pedestrian signage. **FIGURE 3.19** shows the locations of the four schools in Columbia Falls and the existing network of sidewalks and trails.

TRANSIT

Mountain Climber provides fixed, fixed-deviated, and paratransit public transportation in Flathead County for the cities of Kalispell, Whitefish, and Columbia Falls.[1] It is operated by Flathead County and the Area IX Agency on Aging. Transit service and investment is guided through the planning efforts in the 2021 Transportation Coordination Plan (TCP), which was adopted in February 2020. Below is a summary of the transit existing conditions. **FIGURE 3.20** shows the fixed-route stops as well as the paratransit service area.

The City of Columbia Falls contributes $5,500 annually to Mountain Climber to support public transportation services. Mountain Climber operates three routes that serve Columbia Falls: the Columbia Falls Express, the Tri-City Commuter, and the Columbia Falls City Bus. The Tri-City Commuter operates Monday through Friday and offers two morning rides and one evening ride to Whitefish and Kalispell. The Columbia Falls Express makes one morning trip from Kalispell to Columbia Falls and one afternoon trip from Columbia Falls to Kalispell. Ridership across all Mountain Climber routes and services increased 36 percent between 2017 and 2019, from 85,305 rides during the 2017 fiscal year to 116,017 rides during the 2019 fiscal year. Ridership is highest during the summer months, and disabled and elderly riders make up 72 percent of total ridership year-round.

Paratransit Service

The Columbia Falls City Bus is a fixed/deviated route that runs Monday through Friday between 10:00 AM and 2:00 PM. Between 10:00 AM and 11:00 AM, the bus exclusively serves dial-a-ride passengers. The service is curb-to-curb, or door-to-door on request, and is available by appointment during the same hours the city bus operates. The Americans with Disabilities Act requires fixed route operators to provide paratransit within a three-quarter mile radius of fixed route service. In Columbia Falls, the combined fixed/deviated route uses a 15-passenger vehicle, and makes 13 fixed stops, shown in **FIGURE 3.20**. During the 2019 fiscal year, the City Bus provided 4,288 rides, which was a 35 percent increase over the 2018 fiscal year.

Table 3.10: Mountain Climber Service Indicators

Paratransit Service Indicator	FY 2018
Passenger Trips	31,659
Operating Costs	$525,160
Passengers per Revenue Hour	2.25
Passengers per Revenue Mile	0.23
Cost per Passenger	$16.59
Cost per Revenue Hour	$37.40
Farebox Recovery Ratio	3.54%

Table 3.11: Transit Ridership by Route

Route	FY 2018	FY 2019	FY 2020
Whitefish City Bus	4,336	6,390	5,792
Columbia Falls City Bus	3,185	4,288	3,024
Tri-City Commuter	9,103	5,771	4,540

1 Due to impacts related to COVID-19 Mountain Climber is currently restructuring its services. This data reflects operational conditions as of 7/1/2020, as well as historical conditions.

Figure 3.18: Bicycle and Pedestrian Facilities and Crashes

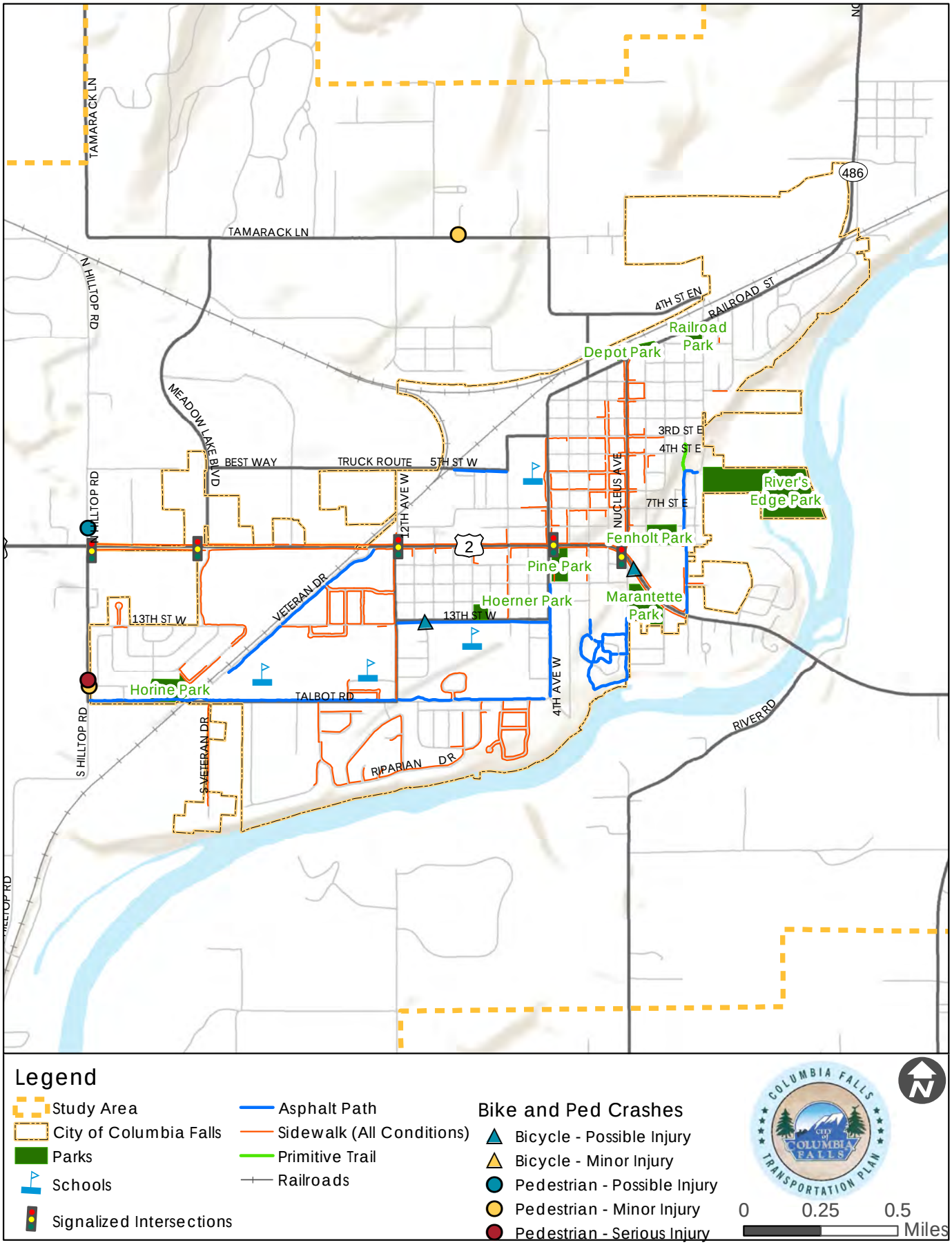


Figure 3.19: Columbia Falls Schools

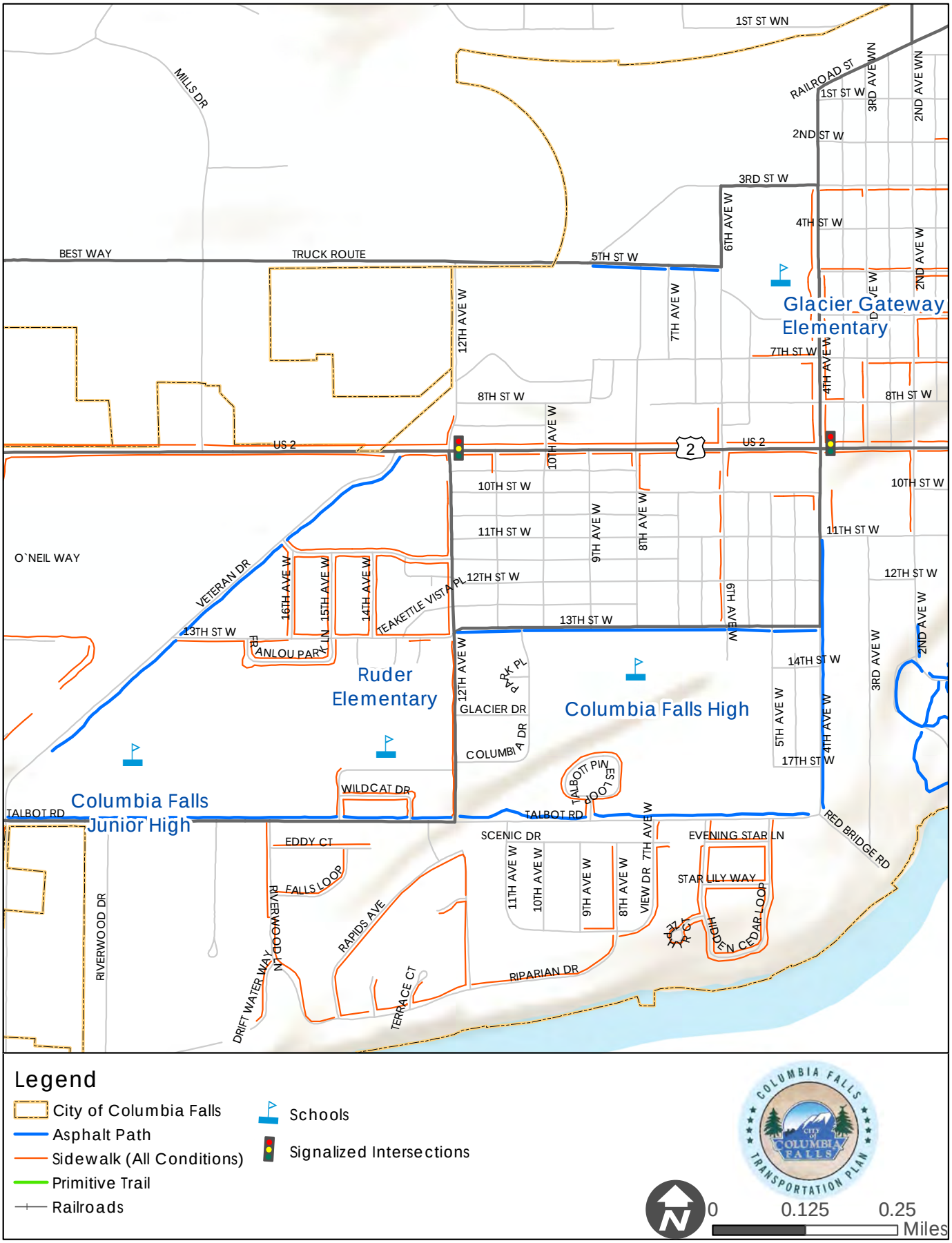
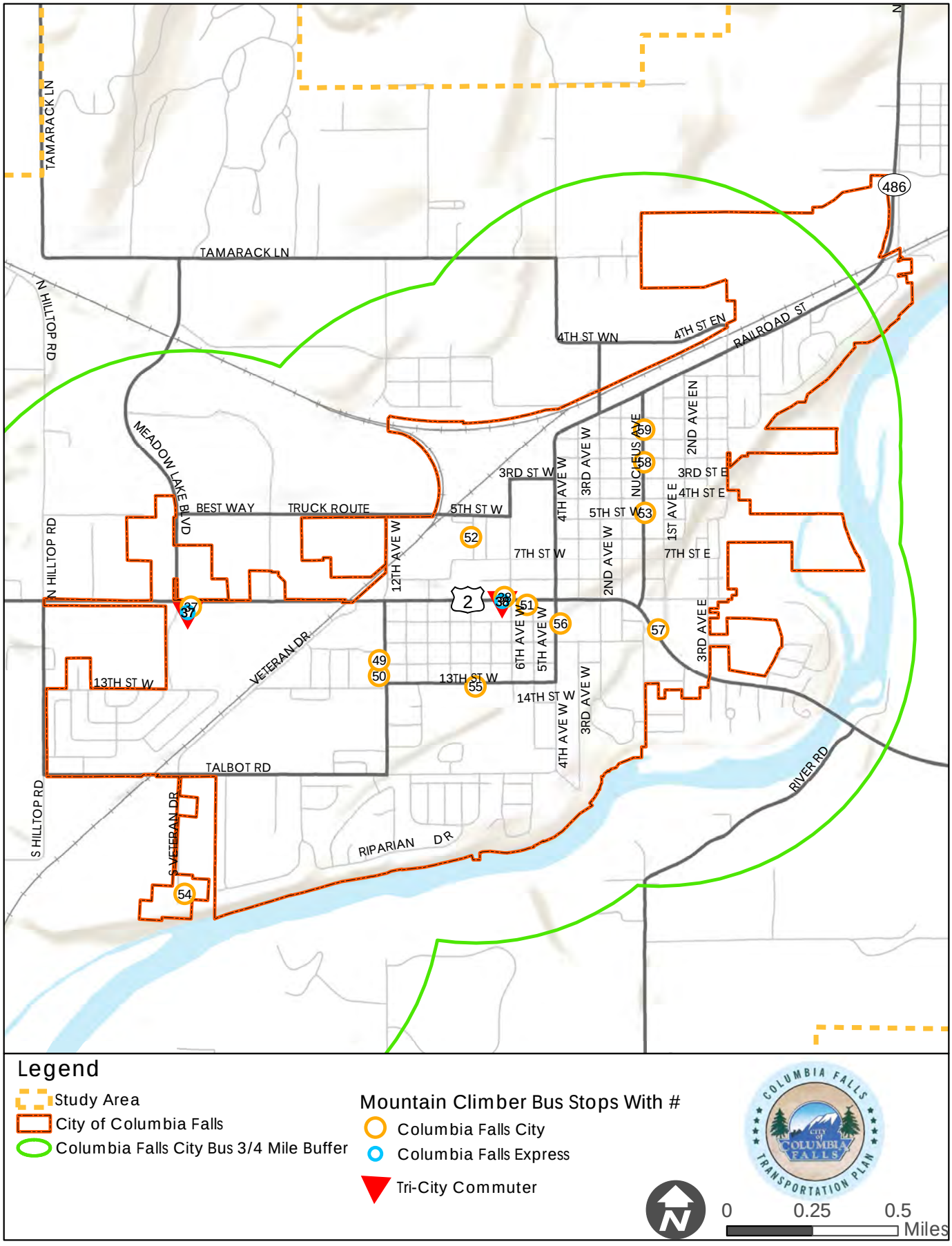
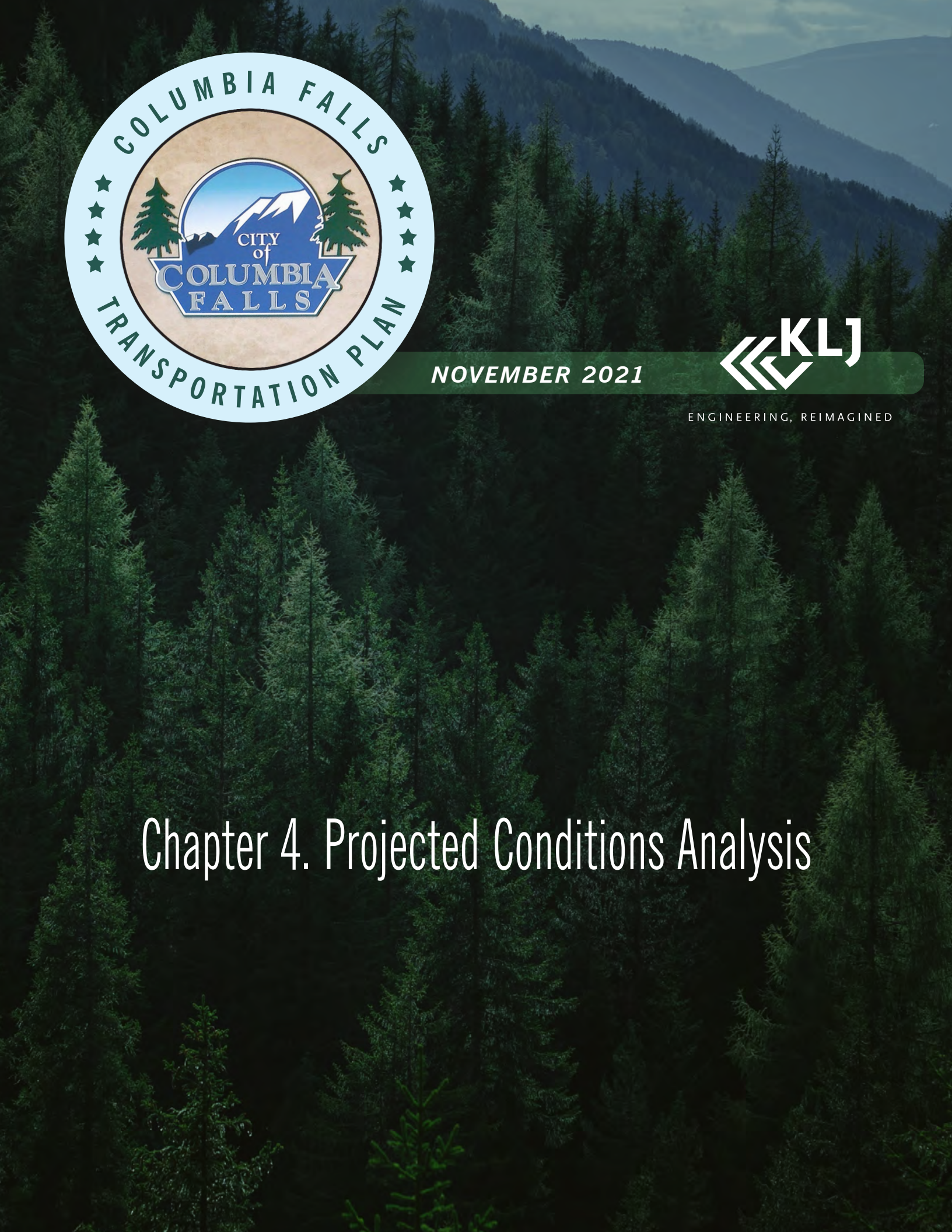


Figure 3.20: Mountain Climber Bus Stops





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Chapter 4. Projected Conditions Analysis

BACKGROUND

As part of the Columbia Falls Transportation Plan, a projected conditions analysis was performed for the plan study area. The analysis incorporated recent traffic data as well as population and employment information in order to glean an understand of the community's future transportation needs. The project team conducted the projected conditions analysis in coordination with the PAC, City staff, and MDT.

PROJECTED TRAFFIC VOLUMES

The project team projected traffic volumes for the study area roadway system based on growth rates developed in collaboration with City staff, MDT and the PAC. The stakeholders agreed that a rate of 1.5 percent would be applied to state highway volumes, including US Highway 2, MT 40 and Secondary Hwy 486. For all other corridors, volumes were projected using a growth rate of 1.1 percent. The 1.5 percent and 1.1 percent rates are based on historical growth in traffic volume for State Highways and local roadways within the study area. The project team used pre-COVID 19 data to calculate historical growth rates.

This analysis highlighted various future traffic volume trends within the study area. The 20 highest count locations by 2040 annual average daily traffic (AADT) estimate can be seen in **TABLE 4.1**. A list of all 50 count locations can be seen in **APPENDIX B: STUDY AREA TRAFFIC COUNTY LOCATIONS**.

Most traffic is expected to accumulate on the major highways, including U.S. 2, MT 40, and Secondary Hwy 486. Some count locations on River Road, Hilltop Road, a portion of 4th Avenue W, Tamarack Lane, and Columbia Falls Stage Road are expected to have AADT greater than 1,000 by 2040. However, this growth in not anticipated to result in capacity issues by 2040.

AADTs for 2018 and 2040 can be seen in **FIGURE 4.1** and **FIGURE 4.2**.

Table 4.1: Twenty Highest Count Locations by 2040 AADT Estimate

Site ID	Corridor	Terminus 1	Terminus 2	AADT 2018	2040 Estimate
15-4A-028	US 2	12th Ave W	Meadow Lake Blvd	23,200	32,200
15-4A-012	US 2	Meadow Lake Blvd	JCT MT 40	21,300	29,500
15-4A-029	US 2	4th Ave W	12th Ave W	17,600	24,400
15-4A-030	US 2	4th Ave W	Secondary Hwy 486	17,000	23,600
15-4A-031	US 2	Secondary Hwy 486	Flathead River	14,700	20,400
15-4A-014	US 2	JCT MT 40	Limit of Study Area	14,500	20,100
15-4A-011	MT 40	JCT US 2	Limit of Study Area	14,200	18,900
15-4A-013	US 2	Flathead River	JCT MT 206	12,100	16,800
15-4A-002	US 2	JCT MT 206	Limit of Study Area	7,700	10,700
15-4A-032	Secondary Hwy 486	US 2	6th St	6,400	8,900
15-4A-033	Secondary Hwy 486	6th St	2nd St	5,700	7,900
15-4A-001	Secondary Hwy 206	JCT US 2	Limit of Study Area	4,400	6,100
15-4A-055	Meadow Lake Blvd	Truck Route	US 2	3,600	4,500
15-4A-034	Secondary Hwy 486	Railroad St	2nd St	3,300	4,500
15-4A-063	Railroad St	Nucleus Ave	2nd Ave W	3,100	3,900
15-4A-056	Meadow Lake Blvd	Tamarack Ln	Truck Route	2,900	3,700
15-4A-062	3rd St W	4th Ave W	6th Ave W	2,300	3,000
15-4A-061	6th Ave W	3rd St W	5th St W	2,300	2,900
15-4A-035	Secondary Hwy 486	Nucleus Ave	Railroad Tracks	2,100	2,900
15-4A-039	River Rd	Columbia Falls Stage	US 2	2,200	2,800

POPULATION PROJECTIONS

Population projections for the City of Columbia Falls were completed for the 2040 horizon year. Population totals were extrapolated through the year 2040 by applying a linear growth rate based on the City's population growth from 2000 to 2020. The City's 2020 Census totals served as a base for the projection. According to this methodology, a per-decade linear growth rate of 22.8 percent (2.3 percent annual growth) was applied to the base 2020 population total through the horizon year. Population projections can be seen in **TABLE 4.2**.

TRAFFIC OPERATIONS

Existing traffic operations were evaluated at eleven study intersections using methodologies from the *Highway Capacity Manual*. The intersections were selected based on the availability of recent turning movement data. Peak hour turning movement counts were sourced from counts provided by MDT and the City of Columbia Falls.

Traffic operations are described in terms of Level of Service (LOS), with levels of service ranging from LOS A to LOS F, as described below. The LOS calculations incorporate traffic volumes, intersection geometry, signal timing, and other parameters to estimate the delay per vehicle at the intersection. LOS A indicates near free-flow traffic conditions with little delay and LOS F indicates breakdown of traffic flow with very high amounts of delay. At oversaturated intersections and approaches, the delay may only reflect the vehicles that can be processed in the analysis period and not the total delay for that intersection, thus underreporting the actual delay experienced by drivers.

LOS C or better is considered acceptable. The LOS thresholds for intersection delay are shown in **TABLE 4.3**.

Table 4.2: Population Projections

	2000	2010	2016	2020	2025	2030	2040
City of Columbia Falls	3,645	4,688	4,960	5,308	6,593	6,519	7,730

Table 4.3: Level of Service Thresholds by Intersection Delay

Level of Service	Average Delay (Seconds per Vehicle)		Description
	Unsignalized Intersection	Signalized Intersection	
A	≤ 10	≤ 10	Near free-flow traffic
B	> 10 and ≤ 15	> 10 and ≤ 20	Minor delays
C	> 15 and ≤ 25	> 20 and ≤ 35	Some delays, but not resulting in significant traffic congestion
D	> 25 and ≤ 35	> 35 and ≤ 55	Delays with some traffic congestion
E	> 35 and ≤ 50	> 55 and ≤ 80	Significant delays with significant traffic congestion, approaching capacity
F	> 50	> 80	Breakdown of traffic flow, major traffic congestion

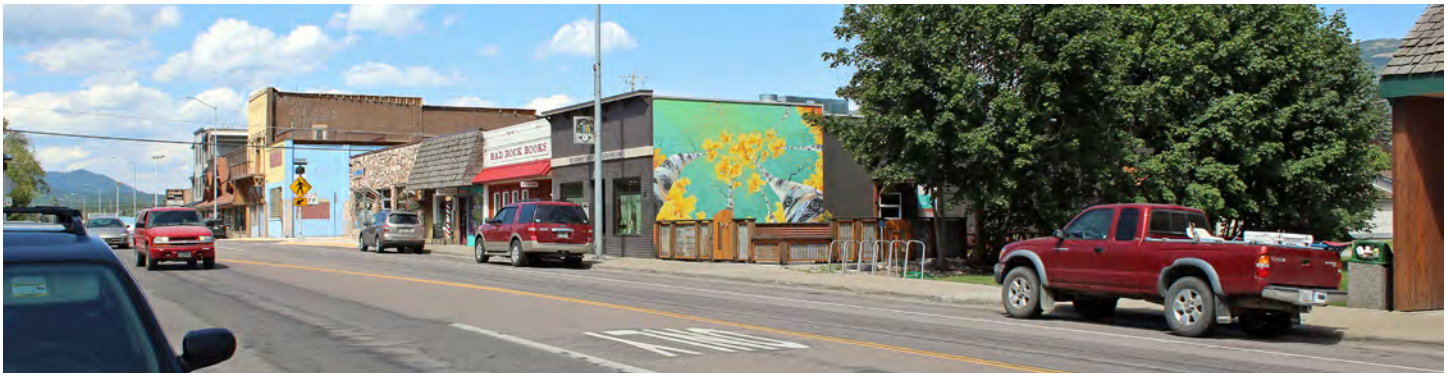


Figure 4.1: 2040 AADT Growth

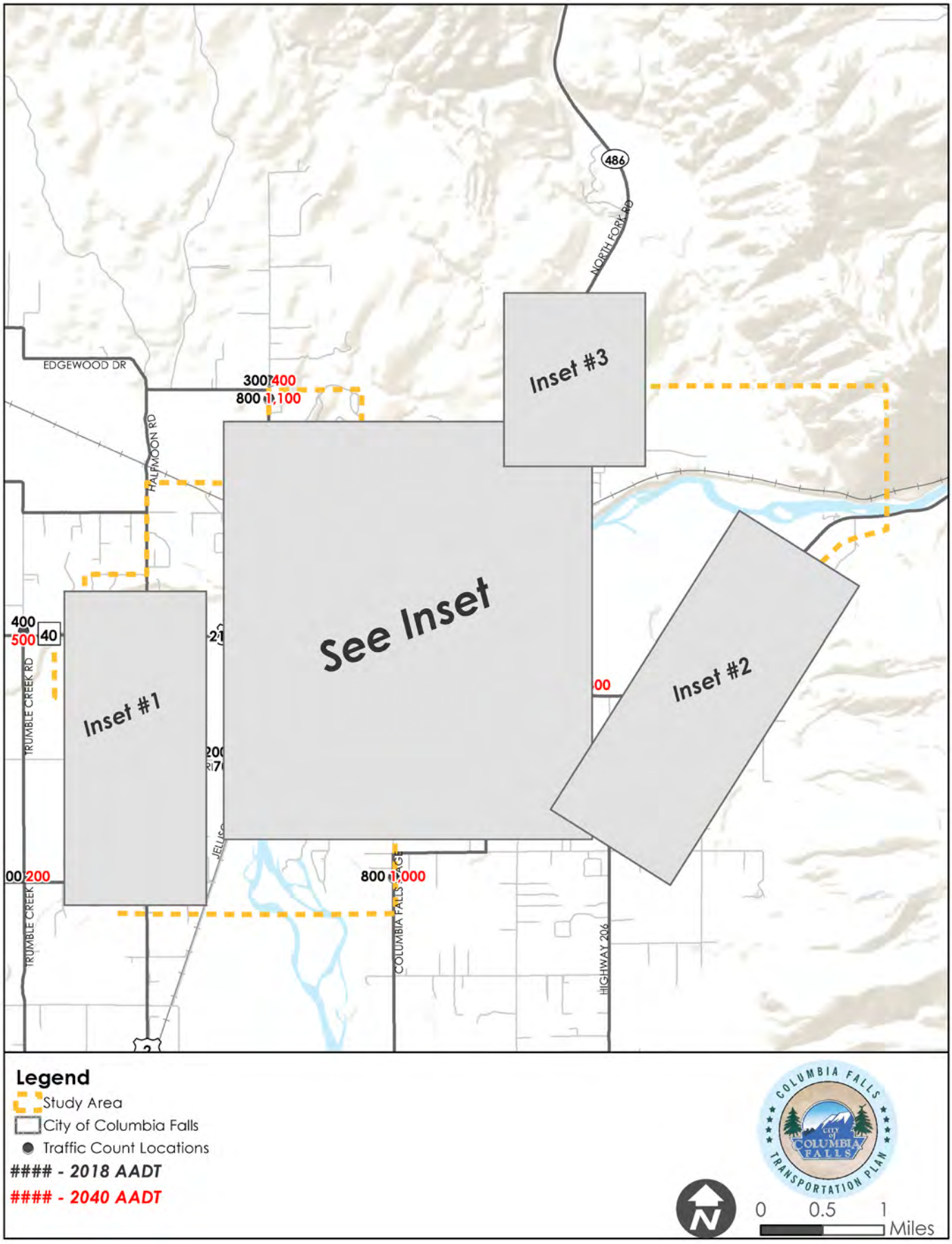
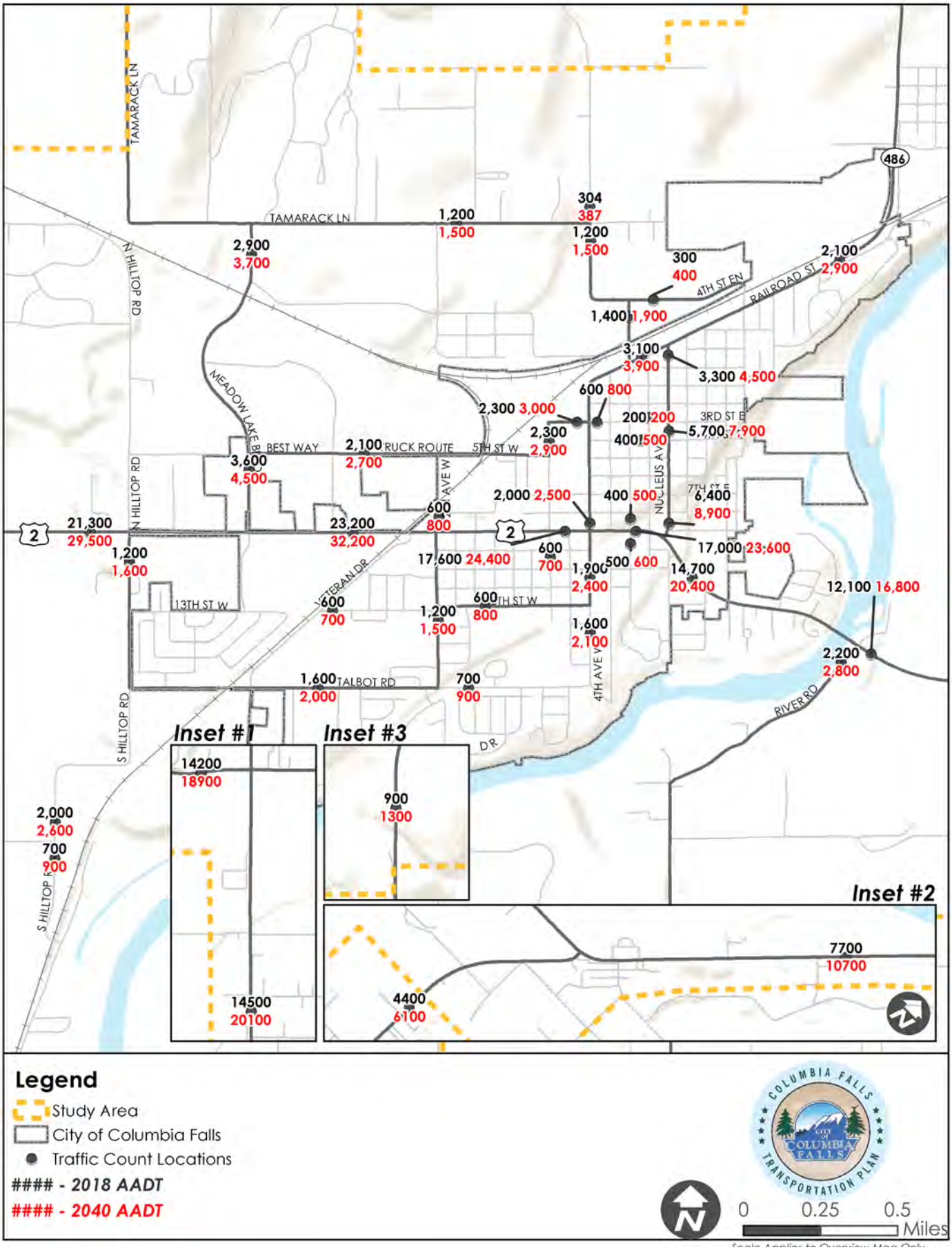


Figure 4.2: 2040 AADT (inset)



Existing Traffic Operation Results

Intersection LOS analysis was performed for eleven intersections within the study area based on existing conditions. Most study intersections operate effectively at LOS C or better during both peak hours, as shown in **TABLE 4.4** and **FIGURE 4.3 ON PAGE 53**. However, there are a few intersections that experience acceptable overall intersection levels of service but deficient approach levels of service during one or both peak hours. These include:

- The southbound approach of MT Highway 40 and US Highway 2 intersection operates at LOS D during the PM peak.
- The northbound approach of 12th Avenue W and US Highway 2 intersection operates at LOS D during the AM peak.
- The northbound approach of 6th Avenue W and US Highway 2 intersection operates at LOS D during the AM and PM peak.
- At the intersection of Truck Route and US Highway 2, the northbound and southbound approaches operate at LOS E during the AM peak.

2040 Traffic Operation Results

Projections for intersection traffic volumes were made for the eleven intersections. These projections were based on the same annual growth rate assumptions used to project corridor volumes. A growth rate of 1.5 percent was used for state highways, while a growth rate of 1.1 percent was used for all other roadway types. 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 **TABLE 4.5** and **FIGURE 4.4 ON PAGE 54** for the intersections, respectively.

Most study intersections and their approaches operate effectively at LOS C or better during both peak hours, except for a few. These include:

Table 4.4: 2020 AM and PM Peak Hour Intersection Level of Service

ID	Intersection	Traffic Control	Peak	Level of Service				
				EB	WB	NB	SB	Int
1	MT Hwy 40 & US 2	Signal	AM	B	B	B	C	B
			PM	C	C	B	D	C
2	Hilltop Rd & US 2	Signal	AM	A	A	C	B	A
			PM	A	A	B	C	A
3	Meadowlake Rd & US 2	TWSC	AM	A	A	B	A	A
			PM	B	A	C	B	B
4	12th Ave W & US 2	TWSC	AM	A	A	D	B	A
			PM	B	A	C	C	B
5	6th Ave W & US 2	TWSC	AM	A	A	D	C	A
			PM	A	A	D	C	A
6	4th Ave W & US 2	TWSC	AM	A	A	C	B	A
			PM	A	A	C	B	A
7	Nucleus Ave & US 2	Signal	AM	A	A	–	B	A
			PM	A	B	–	C	B
8	MT 206 & US 2	TWSC	AM	A	B	B	–	B
			PM	A	B	B	–	B
9	Truck Route & US–2	TWSC	AM	A	A	E	E	C
			PM	A	A	C	C	B
10	3rd Ave & US 2	TWSC	AM	A	A	B	–	A
			PM	A	A	C	–	B
11	Nucleus Ave & 9th Ave	TWSC	AM	–	B	A	A	A
			PM	–	B	A	A	B

Table 4.5: 2040 AM and PM Peak Hour Intersection Level of Service

ID	Intersection	Traffic Control	Peak	Level of Service				
				EB	WB	NB	SB	Int
1	MT Hwy 40 & US 2	Signal	AM	C	C	B	C	B
			PM	D	D	C	D	D
2	Hilltop Rd & US 2	Signal	AM	A	A	C	B	A
			PM	B	A	C	C	B
3	Meadowlake Rd & US 2	Signal	AM	A	A	B	B	A
			PM	D	C	D	D	C
4	12th Ave W & US 2	Signal	AM	A	A	D	B	B
			PM	C	B	D	D	C
5	6th Ave W & US 2	Signal	AM	A	A	D	C	A
			PM	A	A	D	B	A
6	4th Ave W & US 2	Signal	AM	A	A	C	B	A
			PM	A	B	C	C	B
7	Nucleus Ave & US 2	Signal	AM	A	A	–	B	B
			PM	B	C	–	C	B
8	MT 206 & US 2	Signal	AM	B	B	C	–	B
			PM	B	D	C	–	C
9	Truck Route & US 2	TWSC	AM	A	A	F	F	F
			PM	A	A	E	F	C
10	3rd Ave & US 2	TWSC	AM	A	A	B	-	A
			PM	A	A	C	-	C
11	Nucleus Ave & 9th Ave	TWSC	AM	-	B	A	A	B
			PM	-	A	A	A	A

- The intersection of MT Highway 40 and US Highway 2 operates at LOS D during the PM Peak.
- The intersection of Truck Route and US Highway 2 operates at LOS F during the AM Peak. The overall intersection operates at acceptable LOS during the PM peak, but the northbound and southbound approaches operate at LOS E and LOS F, respectively.
- The northbound, southbound, and eastbound approaches of the Meadow Lake Road and US Highway 2 intersection operate at LOS D during the PM peak.
- The northbound approach of the 12th Avenue W and US Highway 2 intersection operates at LOS D during the AM and PM peak, while the southbound approach operates at LOS D during the PM peak.
- The northbound approach of the 6th Avenue W and US Highway 2 intersection operates at LOS D during the AM and PM peak.

Figure 4.3: Existing Intersection Level of Service

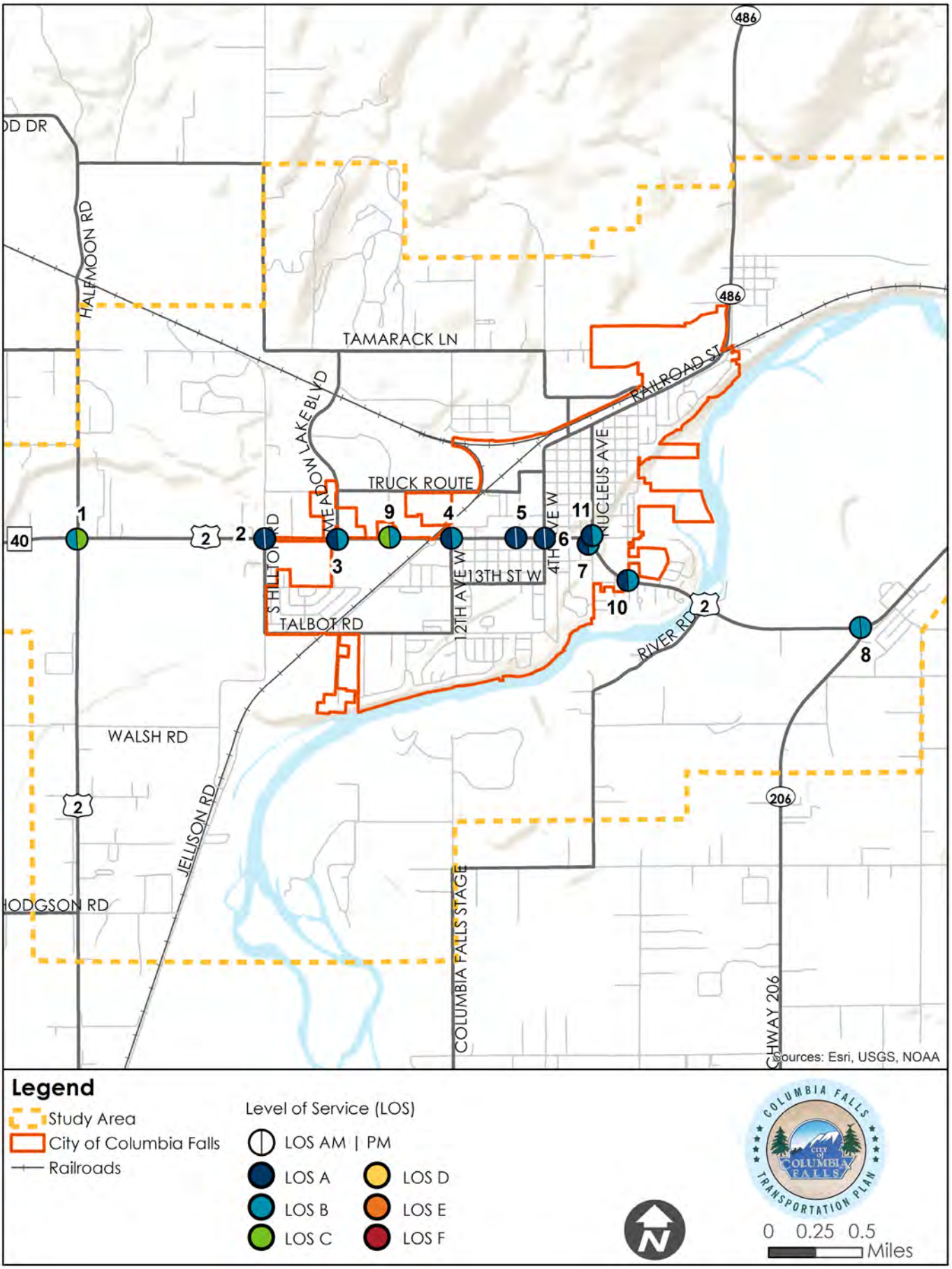
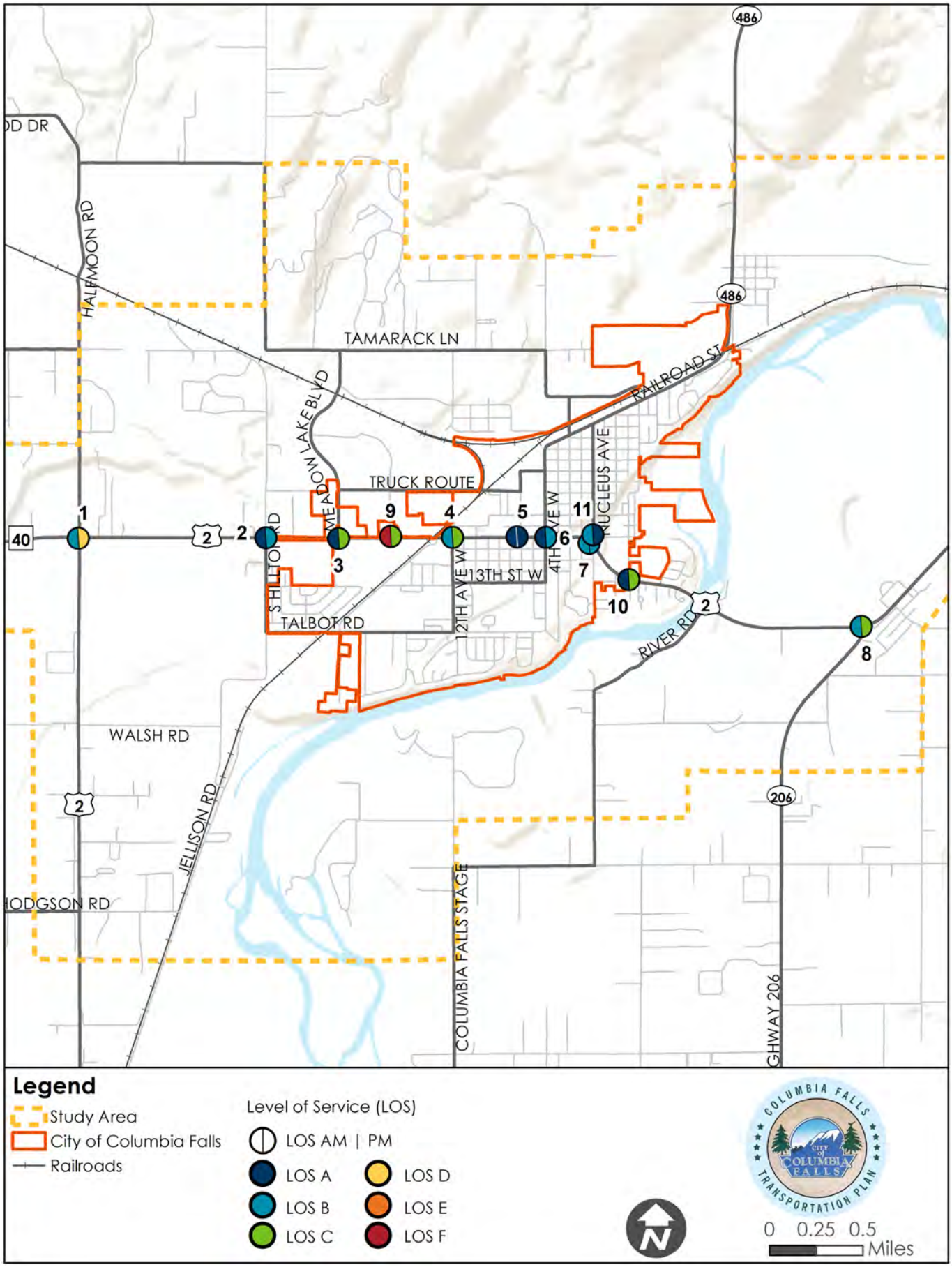


Figure 4.4: 2040 Intersection Level of Service



COLUMBIA FALLS TRANSPORTATION PLAN

NOVEMBER 2021

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Chapter 5. Pavement Management

BACKGROUND

Since 2004, the City of Columbia Falls (City) has employed Iworq Systems Inc.'s (Iworq) pavement management software to inventory the condition of its roadway system. The software allows tracking of roadway pavement maintenance and improvements and provides recommended future treatments for local roadways at intervals based on industry standards, traffic volumes and ongoing visual inspection. In July of 2019, the City contracted Iworq to perform an on-site inventory of street conditions throughout the city to update the condition ratings and Remaining Service Life (RSL) of all roadway segments within the software program. Appropriate pavement treatments were then recommended for each roadway segment based on its corresponding RSL range. This dataset, as well as an initial approach for prioritizing and programming projects, was presented in the 2019 memo entitled *City Streets – Pavement Evaluations Summary and Public Works Recommendations Report*. Both the dataset and 2019 memo serve as the basis for development of the Pavement Management element of the Columbia Falls Urban Area Transportation Plan.

An effective pavement management program (PMP) consists of three general components:

1. Inventory all local roads and streets
2. Periodically evaluate the condition of all pavements
3. Use the condition evaluations and other factors to set properties for projects

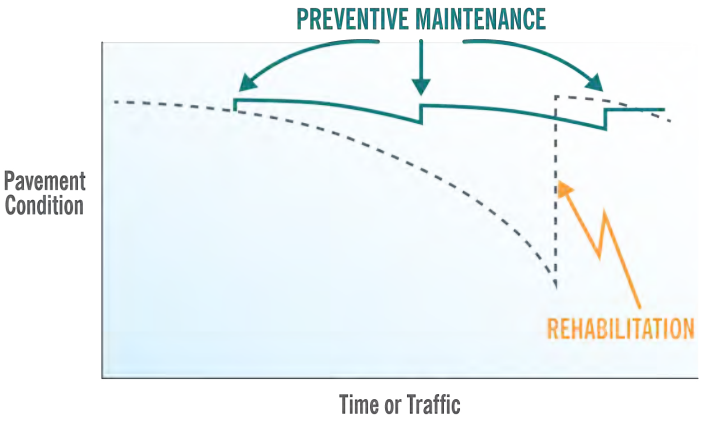
The City addresses the first two components with the aid of Iworq software and through periodic assessments of all paved streets. A framework for the third component was developed as part of the Plan. The framework lays out an approach for implementing preventative maintenance and addressing larger rehabilitation and reconstruction capital projects on a cyclical basis. Details of the framework are presented within the Pavement Management Program Definition section.

This framework is designed to aid the city in prioritizing and addressing pavement needs on a continuous basis, with emphasis on preventative maintenance that will reduce the need for expensive structural improvements in the future. This approach is further discussed below.

Pavement Preservation Approach

The output of the Iworq road condition assessment allows the city to understand which of its roadway segments are of highest priority and plan appropriately to address these needs according to its budget. Research suggests that it is more cost-effective to keep a road in good operating condition than to repair a road that has deteriorated past a certain point. By prioritizing investment in preventative maintenance such as crack sealing, chip sealing, etc., a roadway's life can be extended at a far lower cost than waiting until structural improvements are required (overlays, milling, reconstruction, etc.). As illustrated in **FIGURE 5.1**, pavement condition does not decline at a constant rate, but rather, deterioration accelerates over time. Roads left to deteriorate can soon require expensive corrective and emergency repairs. Maintaining a roadway at an acceptable pavement condition will result in less repair costs over the long run.

Figure 5.1: Pavement Condition – Preventative Maintenance vs. Rehabilitation



BASELINE CONDITIONS

The City maintains approximately 39 miles of roadways and alleyways, approximately 30 miles of which are paved and were evaluated by Iworq in 2019. For each segment of roadway, typically delineated by block, the assessment provides RSL estimates based on current conditions and assuming no maintenance action will be taken. **FIGURE 5.2** presents the distribution of paved roadways by RSL.

A pavement treatment was recommended for each segment based on its RSL. Treatments include routine maintenance, such as crack sealing and patching, as well as more extensive treatments such as chip seal, overlays and reconstruction, which can significantly increase service life. **TABLE 5.1** shows the recommended pavement treatments, their general RSL ranges[1], and the number of roadway miles for which each treatment was recommended.

Based on current conditions, approximately 12 percent or 3.4 miles of roadways are in need of rehabilitation/reconstruction treatment, such as overlays, rebuilds and complete structural reconstruction. Chip sealing is recommended for nearly 8 miles or roughly 26 percent of system roadways. Finally, roughly 62 percent of the system currently only requires ongoing preventative maintenance through regularly scheduled patching and crack sealing, or requires no maintenance at this time. Using this initial assessment and set of baseline conditions, a more detailed set of system

1 While there are some exceptions, most roadway segments for which these treatments have been recommended fall within the indicated RSL ranges.

Figure 5.2: Distribution of Paved Roadways by RSL

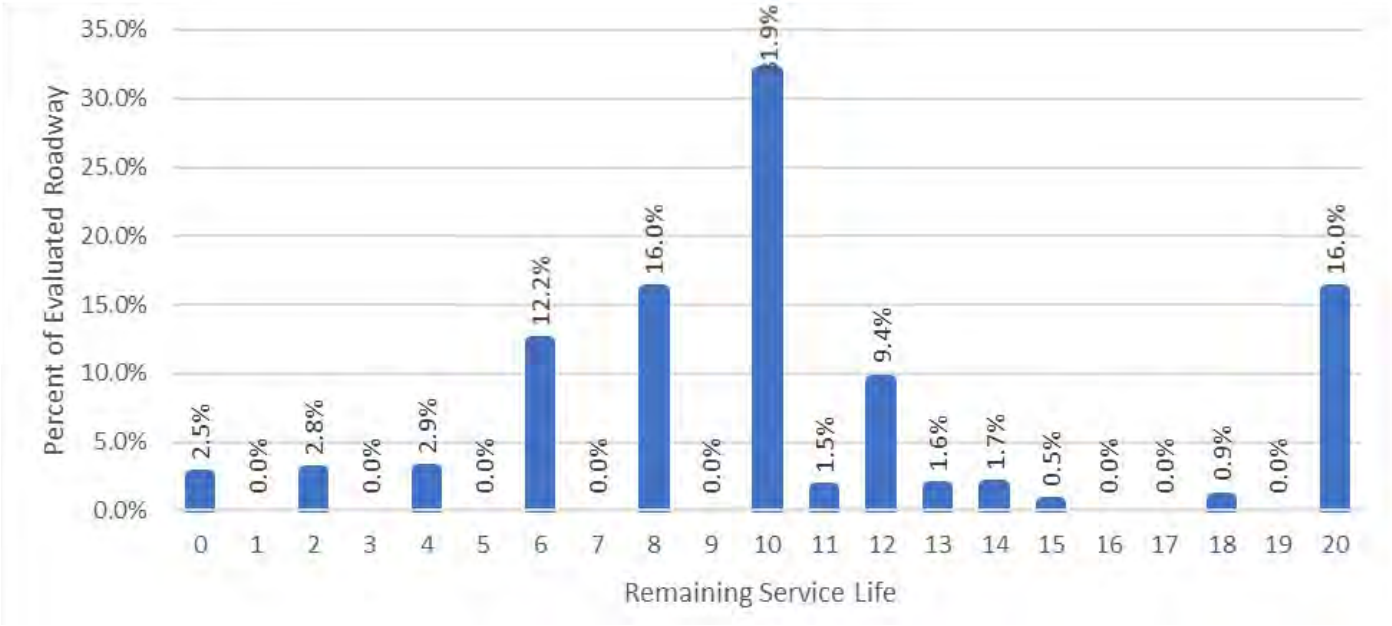


Table 5.1: Roadway System Miles by Recommended Treatment

Recommended Treatment	RSL Range	Roadway Miles
No maintenance	10+	13.4
Crack seal	10	3.3
Patching	6–10	1.8
Chip seal	6–10	7.7[1]
Overlay – 2 inch thick	6	1.0
Rebuild/overlay – 3+ inch thick	4	0.9
Reconstruction	0–2	1.6
TOTAL		**29.7**

1 The City completed two miles of chip sealing in 2020.

recommendations was developed for the City of Columbia Falls.

PAVEMENT MANAGEMENT PROGRAM DEFINITION

Overview

Existing conditions data show that there are more improvements necessary than there is funding available. This is not an uncommon problem for today's public works departments as infrastructure needs continue to grow. In this context, development of a targeted improvement program is critical in order for every dollar to be used as effectively as possible. The recommended PMP will aid the city in implementing a continuous maintenance and capital improvement plan to prolong the service life of existing pavements where feasible and reconstruct failing streets as needed. The PMP functions as follows:

- The PMP is conducted in five-year cycles, with a total of four cycles to be completed over the 20-year planning horizon. At the onset of each cycle, projects are identified for each of two PMP project categories: Major Rehabilitation and Reconstruction and Preventative Maintenance (chip sealing).[1]
- The identified Major Rehabilitation and Reconstruction projects (recommended overlays, rebuilds and complete reconstruction) are combined with the list of Major Street Network (MSN) projects and prioritized through the Plan's MSN prioritization process.
- The identified Preventative Maintenance (chip sealing) projects are prioritized and programmed according to the PMP methodology (**FIGURE 5.3**). Per the methodology, chip sealing needs are addressed across five maintenance districts during the five-year PMP cycle, with one district addressed each year.
- In order for the City to accurately identify Major Rehabilitation and Reconstruction and Preventative Maintenance projects each PMP cycle, a new Iworq assessment is completed during the fourth year of the cycle (at a minimum). The results of the Iworq assessment are processed using the PMP methodology, and each new cycle begins with a current assessment of project needs.

The cyclical PMP process can be visualized in **FIGURE 5.3**.

The main components of the PMP are discussed in the Major Rehabilitation and Reconstruction and Preventative Maintenance sections.

Major Rehabilitation and Reconstruction

The City currently has three and a half miles of roadway for which overlays, rebuilds and complete reconstruction are recommended. Segments within this group have a RSL of 6 years or less, and each has been recommended one of the following treatments:

- Overlay – 2 inch thick (RSL of 6 years)
- Rebuild/overlay – 3+ inch thick (RSL of 4 years)
- Reconstruction (RSL of 0-2 years)

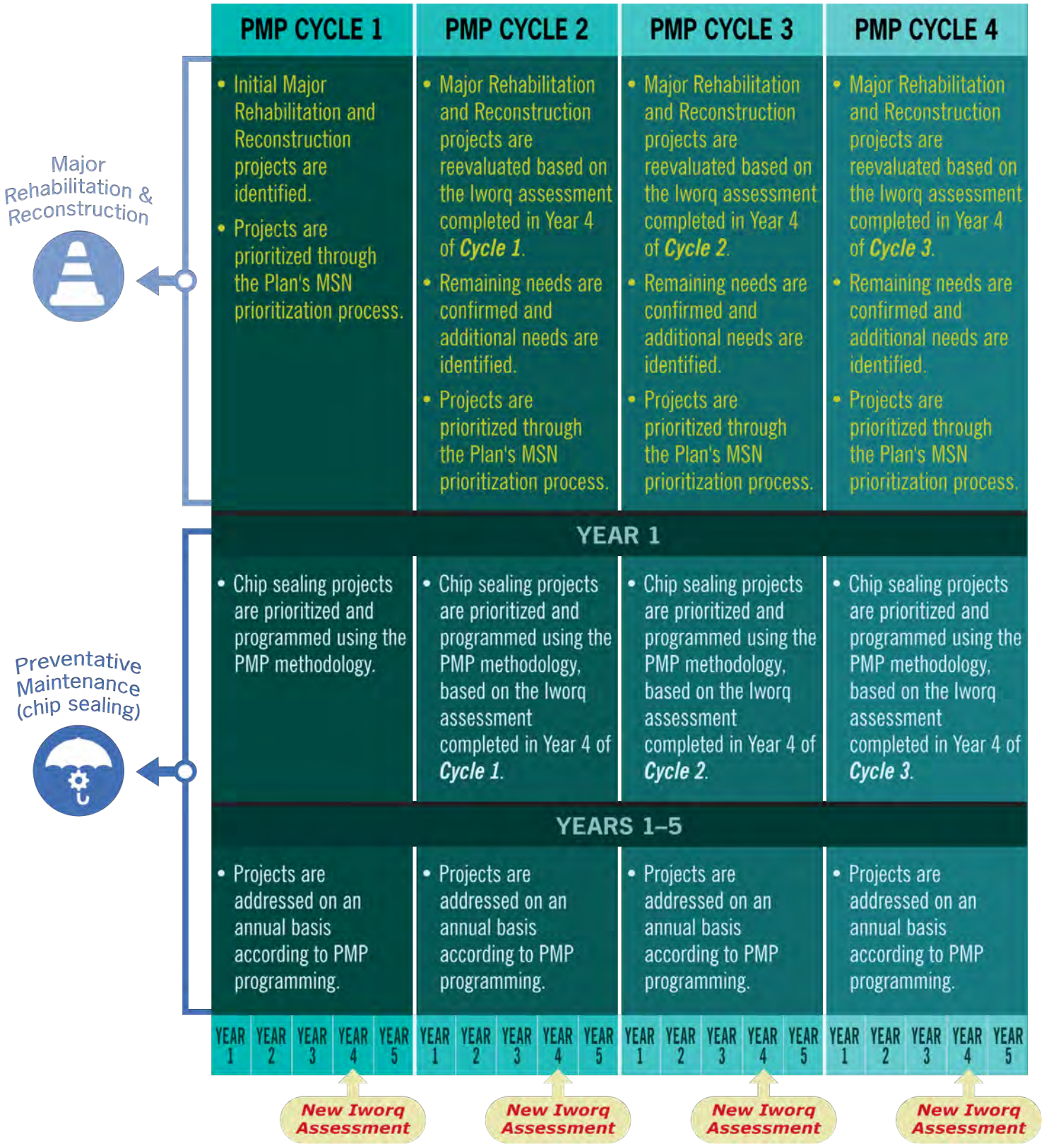
These treatment recommendations were used to develop "Major Rehabilitation and Reconstruction" projects by logically aggregating segments based on proximity and orientation. These projects were combined with other regional transportation needs to form the full set of MSN projects. The Major Rehabilitation and Reconstruction projects are listed in **TABLE 5.2**. Within the table, Project IDs correspond to the MSN Map IDs provided in **CHAPTER 6**.

Table 5.2: Major Rehabilitation and Reconstruction Projects

Project ID	Corridor	Termini	Termini	Description
8	Beth Rd/ Martha Rd	Talbot Rd	13th St	Overlay 2 inches thick
9	6th Ave West	End of road	3rd St W	Overlay 2 inches thick
10	5th Ave West	15th St	Hwy 2	Rebuild/Thick Overlay 3 inches – 4 inches thick
11	Talbot Rd/ 3rd Ave West/ 12th St West	4th Ave West	2nd Ave West	New Street/ Reconstruction
12	Vans Ave	Crescent Dr	Frontage Rd	Rebuild/Thick Overlay 3 inches – 4 inches thick
13	3rd St E and 4th St E	Nucleus Ave/2nd Ave	End	New Street/ Reconstruction; Overlay 2 inches thick
14	9th St E/1st Ave E/5th St E	Nucleus Ave	2nd Ave E	New Street/ Reconstruction
16	S Nucleus Ave	13th St E	11th St W	Rebuild/Thick Overlay 3 inches – 4 inches thick

1 The City will continue to perform routine maintenance such as crack sealing, spot patching and pothole repair on an as-needed basis. Preventative maintenance funds will be focused on chip sealing as a cost-effective strategy for postponing larger capital projects. As such, the Preventative Maintenance component focuses exclusively on chip sealing.

Figure 5.3: Cyclical Pavement Management Program Process



Spot Reconstruction and Overlay Projects

Not all major rehabilitation/reconstruction roadway segments lend themselves to inclusion within a logical MSN project. For example, small, isolated segments are difficult to aggregate logically with other segments. To address these needs, it is recommended that a portion of funds be allocated every year for Spot Reconstruction and Overlay projects. This annual funding allocation is discussed within the Program Summary (Initial PMP Cycle) section.

The Spot Reconstruction and Overlay projects are listed in **TABLE 5.3** and shown in **FIGURE 5.4**. A cost estimate has been included with each project to aid in assessing overall budget needs for the PMP. The cost estimation methodology used for MSN projects was also used for the Spot Reconstruction and Overlay projects. This methodology is based on detailed project cost estimates completed for the Columbia Falls 2021 RAISE grant application, as well as standard cost-per-mile estimates sourced from MDT. The project costing methodology is presented in further detail in **CHAPTER 6**.

Preventative Maintenance

The preventative maintenance (chip sealing) component of the PMP was developed by incorporating and expanding upon the City's current approach. Specifically, the team adopted the City's progressive district-based method to programming, however, additional criteria were added to further prioritize projects within districts. The Iworq assessment designated 7.7 miles of roadway for chip sealing, and two miles of chip sealing were completed by the City in 2020. The approach prioritizes the remaining chip sealing needs through the following elements:

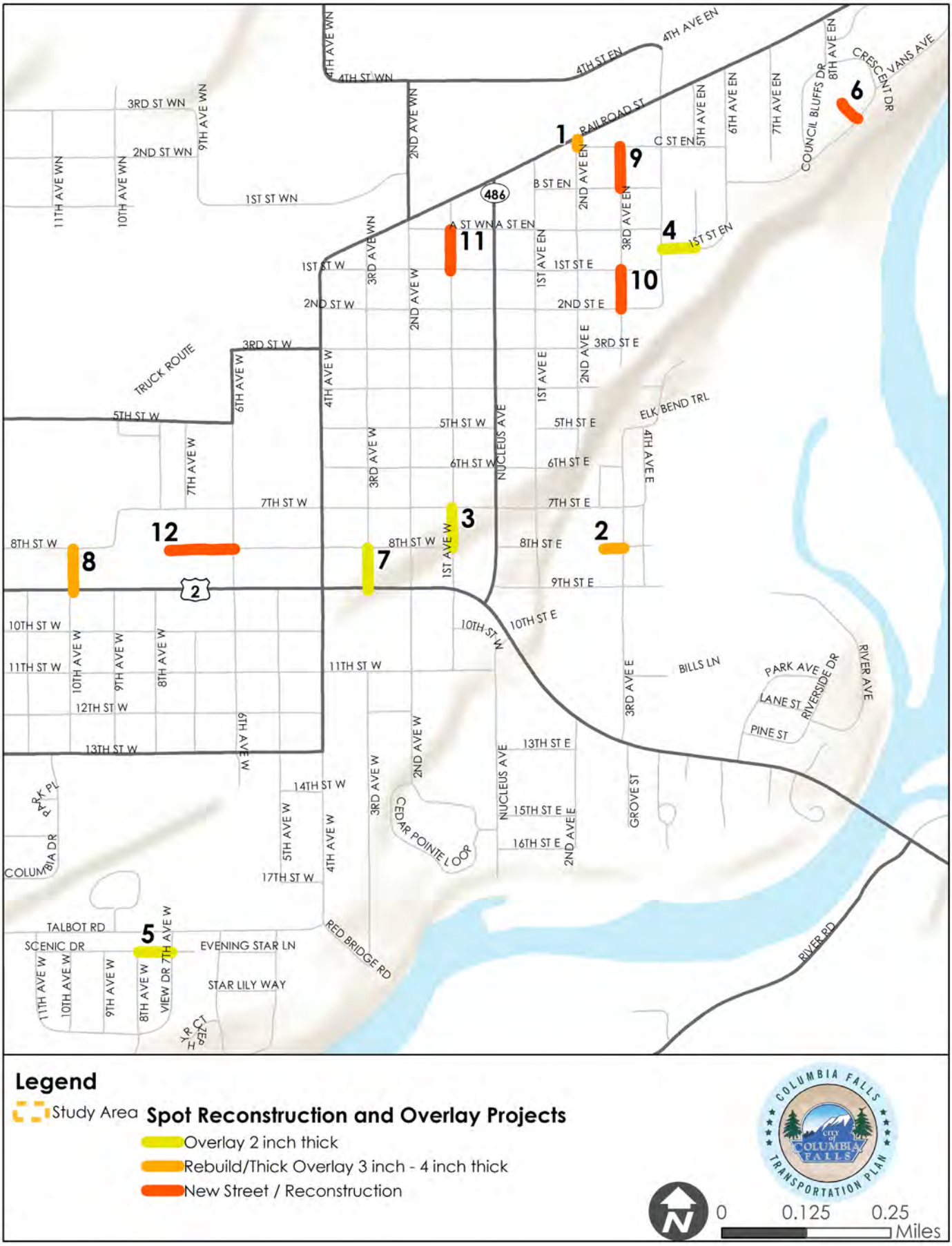
Pavement Management Districts (PMD)

Chip sealing is to be conducted for the five PMDs such that one district is addressed every year and all districts are addressed after five years. Similar to the City's current method, this approach seeks to address needs within confined geographic areas in order to minimize mobilization/demobilization costs. The PMDs are shown in **FIGURE 5.5 ON PAGE 64**.

Table 5.3: Spot Reconstruction and Overlay Projects

Map ID	Road	From	To	Recommended Treatment	Cost Estimate
1	2nd Ave En	C St En	Railroad St	Rebuild/Thick Overlay 3 inches – 4 inches thick	$6,300
2	8th St E	End	3rd Ave E	Rebuild/Thick Overlay 3 inches – 4 inches thick	$16,000
3	1st Ave W	7th St W	8th St W	Overlay 2 inches thick	$19,400
4	1st St En	4th Ave En	5th Ave En	Overlay 2 inches thick	$16,000
5	Scenic Dr	View Dr	8th Ave W	Overlay 2 inches thick	$16,400
6	Crescent Cir	Crescent Dr	End	New Street/Construction	$33,100
7	3rd Ave W	8th St W	9th St W	Overlay 2 inches thick	$20,600
8	10th Ave W	8th St W	9th St W	Rebuild/Thick Overlay 3 inches – 4 inches thick	$35,100
9	3rd Ave En	B St En	C St En	New Street/Construction	$62,100
10	3rd Ave E	1st St E	2nd St E	New Street/Construction	$58,500
11	1st Ave Wn	1st St W	A St Wn	New Street/Construction	$60,400
12	8th St W	6th Ave W	End	New Street/Construction	$96,600
TOTAL					**$440,500**

Figure 5.4: Spot Reconstruction and Overlay Projects



Prioritization Tiers

Prioritization tiers give preference to high-volume urban roadways of regional importance. The tiering system provides a prioritization framework for roadways within each PMD. The pavement prioritization tiers are defined as follows:

- **Tier 1:** Roadways on the Urban Highway System.
- **Tier 2:** Other roadways of significance, mainly off the Urban Highway System.
- **Tier 3:** Balance of the roadway system, primarily lower-volume residential streets.

The prioritization tiers are shown in **FIGURE 5.5**.

Inter-Tier Prioritization Criteria

Once segments are grouped by tier within a specific PMD, inter-tier prioritization criteria are used to further prioritize segments within tiers. This document refrains from defining a complete set of inter-tier prioritization criteria in order to allow for flexibility. However, it is recommended that a roadway's RSL as well as the proximity of eligible segments to one another be considered, at a minimum.

Accordingly, the chip sealing maintenance program would encompass the following general workflow:

1. Identify the appropriate PMD according to the annual district-based maintenance schedule.
2. Identify the Tier 1, Tier 2, and Tier 3 segments eligible for chip sealing within the PMD.
3. Apply the inter-tier prioritization criteria to rank segments within each tier. Conduct chip sealing for the highest-ranked projects within each tier.

RECOMMENDED PREVENTATIVE MAINTENANCE PROGRAM

Based on cost estimates from the Iworq pavement assessment, the current total cost of chip sealing within Columbia Falls is $357,700[1]. This is based on the 2019 Iworq condition assessment, and should be viewed as a "full build" system needs amount were all chip sealing to be conducted immediately.

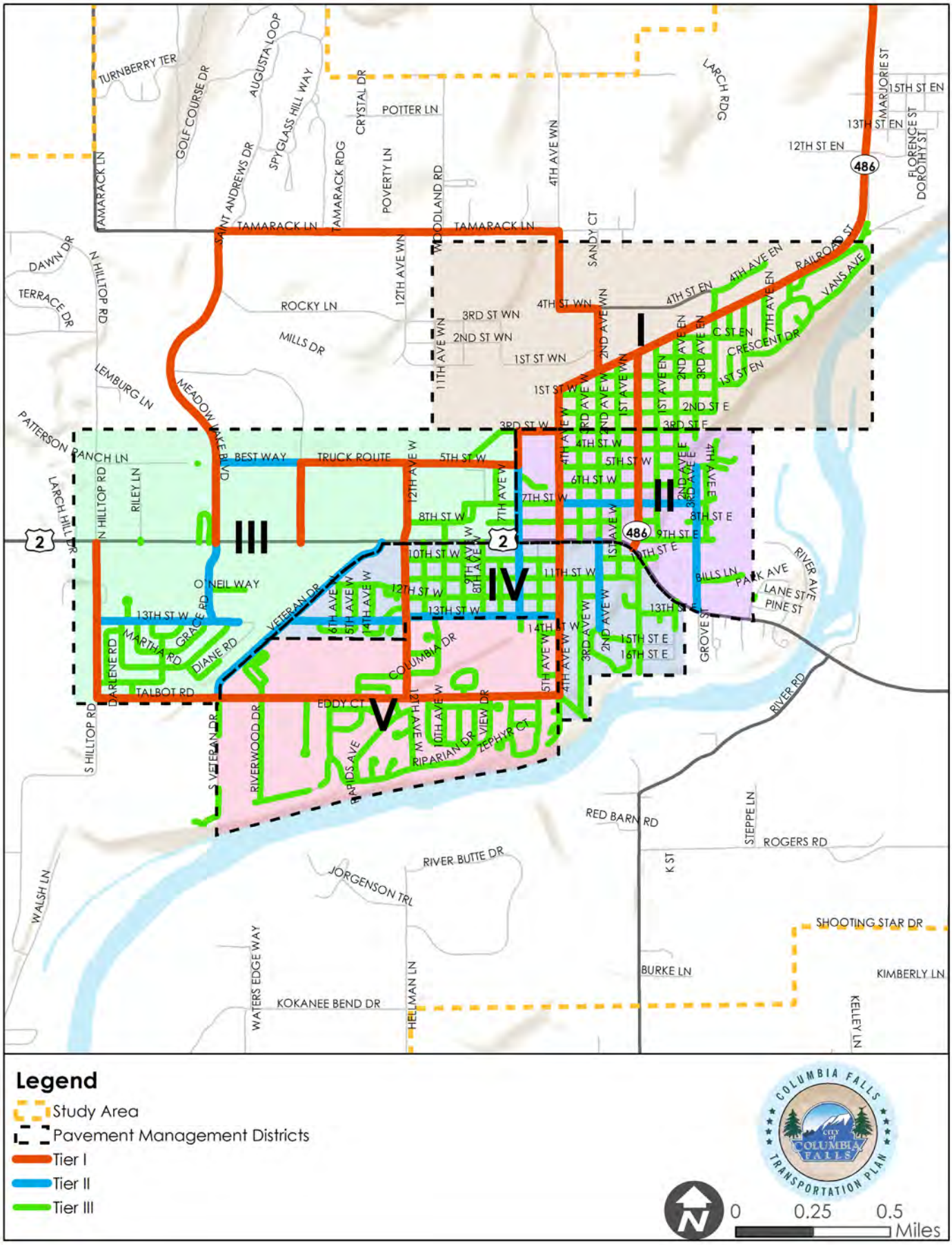
As maintenance investments are staggered according to the five-year program outlined above, pavement will continue to age, and some roadways may deteriorate past the point where chip sealing remains an effective treatment. For this reason, it is important to prioritize the PMDs with roadways that are at or approaching the minimum RSL for which chip sealing is recommended (6 years). **TABLE 5.4** shows the percentage of roadway miles eligible for chip sealing by Tier and RSL for each PMD.

Table 5.4: Percentage of Roadway Miles Eligible for Chip Sealing by Tier and RSL for each PMD

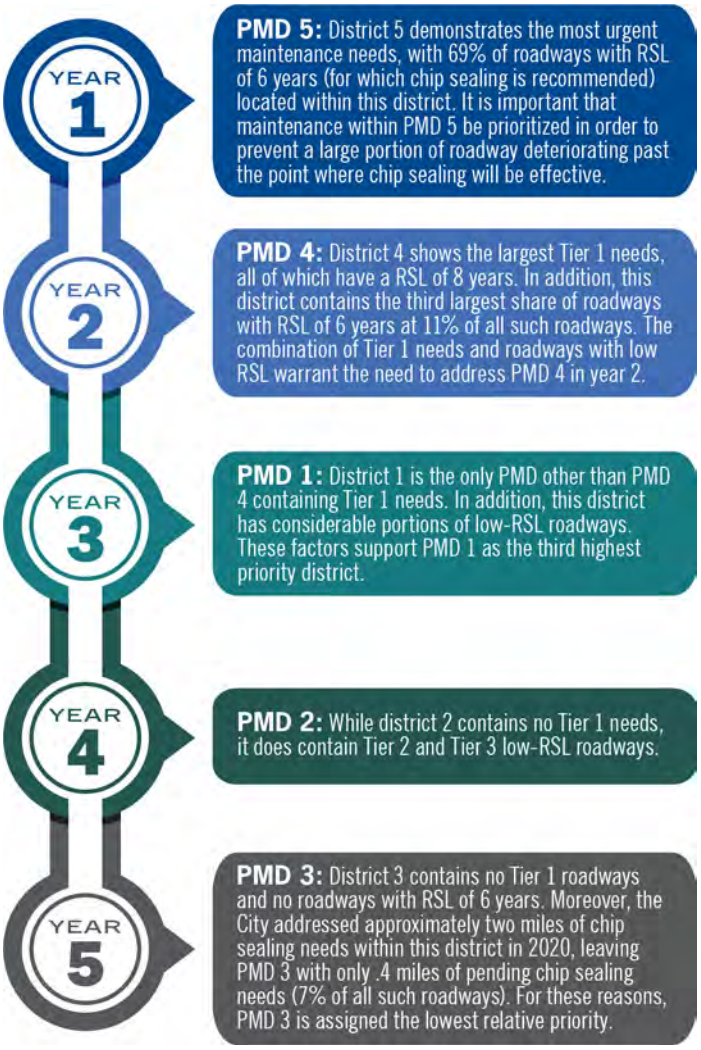
	PMD 1	PMD 2	PMD 3	PMD 4	PMD 5	Totals
TIER 1						
RSL 8	0.95%	0.00%	0.00%	2.18%	0.00%	**3.13%**
Tier 1 Subtotal	*0.95%*	*0.00%*	*0.00%*	*2.18%*	*0.00%*	***3.13%***
TIER 2						
RSL 6	0.00%	0.00%	0.00%	2.27%	0.00%	**2.27%**
RSL 8	0.00%	2.25%	7.03%	8.45%	0.00%	**17.73%**
Tier 2 Subtotal	*0.00%*	*2.25%*	*7.03%*	*10.72%*	*0.00%*	***20.00%***
TIER 3						
RSL 6	1.01%	3.07%	0.00%	0.00%	14.04%	**18.13%**
RSL 8	19.50%	15.82%	0.00%	8.37%	14.09%	**57.79%**
RSL 10	0.00%	0.55%	0.00%	0.40%	0.00%	**0.96%**
Tier 3 Subtotal	*20.51%*	*19.45%*	*0.00%*	*8.77%*	*28.13%*	***76.87%***
GRAND TOTAL	**21.46%**	**21.70%**	**7.03%**	**21.68%**	**28.13%**	**100.00%**

1 The 2019 cost estimates were inflated by 3 percent per year for the period of 2019 – 2021 (two years).

Figure 5.5: Pavement Management Districts and Prioritization Tiers



Based on this breakout by Tier and PMD, it is recommended that management districts be addressed in the following order:



This assessment recommends the following program to aid the City in developing an initial five-year cycle for its PMP. The program supports a maintenance approach that addresses the most urgent needs while preventing deterioration past the point at which preventative maintenance is no longer effective.

The Gas Tax has historically provided annual funds of approximately $80,000 for chip sealing projects. While this amount is sufficient to fully or nearly address chip sealing needs for some years of the recommended program, other years would require additional funds to fully address needs. This analysis assumes that funds will not be sufficient to roll over from year to year.

In addition to the Gas Tax funds for chip sealing, the recommended program includes annual funding for Spot Reconstruction and Overlay projects.

Program Summary (Initial PMP Cycle)

The recommended program for the initial PMP cycle has the following characteristics:

- Annual funds are allocated sufficient to address chip sealing needs in every year of the program. The maximum estimated annual cost for chip sealing is $101,800 (year 1).
- Spot Reconstruction and Overlay projects are addressed over a ten-year period, with the City allocating approximately $44,100 annually for this purpose.

The recommended program would address all current chip sealing needs over the first five-year PMP cycle. Pavement condition would be reassessed during year 4 of the cycle, and the PMP methodology would be applied to initiate the second cycle with an accurate appraisal of project needs. Details of the chip sealing allocations are shown in **TABLE 5.5**.

The recommended program would address approximately half of the Spot Reconstruction and Overlay needs over the first PMP cycle, with an estimated $220,300 allocated for these projects over five years. Spot Reconstruction and Overlay needs are reassessed at the beginning of each PMP cycle, and annual funds allocations are adjusted such that needs are addressed over a ten-year period.

URBAN PAVEMENT PRESERVATION PROGRAM

Developed by MDT in 2001, the Urban Pavement Preservation Program (UPP) funds cost-effective treatments to the existing Urban Highway System that preserve the system, impede future deterioration, and maintain or improve the functional condition of the system without increasing structural capacity. Specific projects eligible for funding may include crack seals, thin lift overlays, seal and covers, fog seals and other preventative maintenance treatments.

In order for an urban area to be eligible for funding under the UPP, the City must complete an inventory of 100 percent of their Urban Highway System every two years. To prepare Columbia Falls for participation in the UPP, an Urban Routes Pavement Summary document was created, which compiles Iworq pavement assessment results for roadways located on the Urban Highway System.[1] The Urban Routes Pavement Summary can be found in **APPENDIX C: URBAN ROUTES PAVEMENT SUMMARY**.

1 Only Urban Highway System routes within the Columbia Falls city limits and under City jurisdiction were included in the 2019 Iworq assessment. It is recommended that the City coordinate with MDT and Flathead County in the future to maintain a uniform pavement inventory for all Urban Routes in the study area.

Table 5.5: Recommended Preventative Maintenance Program – Cycle 1 (present-day costs)

Year 1

	PMD 1		PMD 2		PMD 3		PMD 4		PMD 5		Totals	
	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost
Tier 1	*0.05*	*$ 3,000*	*0.00*	*$ -*	*0.00*	*$ -*	*0.12*	*$ 7,400*	*0.00*	*$ -*	*0.18*	*$ 10,400*
Tier 2	*0.00*	*$ -*	*0.13*	*$ 9,300*	*0.40*	*$ 19,200*	*0.61*	*$ 44,900*	*0.00*	*$ -*	*1.14*	*$ 73,300*
Tier 3	*1.17*	*$ 70,200*	*1.11*	*$ 74,100*	*0.00*	*$ -*	*0.50*	*$ 27,800*	*1.60*	*$ 101,800*	*4.39*	*$ 273,800*
Year 1 Pre-Maintanance Totals	1.22	$ 73,200	1.24	$ 83,400	0.40	$ 19,200	1.24	$ 80,100	1.60	$ 101,800	5.70	$ 357,700
Year 1 Maintanance Reduction	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*1.60*	*$ 101,800*	*1.60*	$ 101,800
End-of-Year Totals	***1.22***	***$ 73,200***	***1.24***	***$ 83,400***	***0.40***	***$ 19,200***	***1.24***	***$ 80,100***	***0.00***	***$ -***	***4.10***	***$ 255,900***

Year 2

	PMD 1		PMD 2		PMD 3		PMD 4		PMD 5		Totals	
	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost
Tier 1	*0.05*	*$ 3,000*	*0.00*	*$ -*	*0.00*	*$ -*	*0.12*	*$ 7,400*	*0.00*	*$ -*	*0.18*	*$ 10,400*
Tier 2	*0.00*	*$ -*	*0.13*	*$ 9,300*	*0.40*	*$ 19,200*	*0.61*	*$ 44,900*	*0.00*	*$ -*	*1.14*	*$ 73,300*
Tier 3	*1.17*	*$ 70,200*	*1.11*	*$ 74,100*	*0.00*	*$ -*	*0.50*	*$ 27,800*	*0.00*	*$ -*	*2.78*	*$ 172,000*
Year 2 Pre-Maintanance Totals	1.22	$ 73,200	1.24	$ 83,400	0.40	$ 19,200	1.24	$ 80,100	0.00	$ -	4.10	$ 255,900
Year 2 Maintanance Reduction	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*1.24*	*$ 80,100*	*0.00*	*$ -*	*1.24*	$ 80,100
End-of-Year Totals	***1.22***	***$ 73,200***	***1.24***	***$ 83,400***	***0.40***	***$ 19,200***	***0.00***	***$ -***	***0.00***	***$ -***	***2.86***	***$ 175,800***

Year 3

	PMD 1		PMD 2		PMD 3		PMD 4		PMD 5		Totals	
	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost
Tier 1	*0.05*	*$ 3,000*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.05*	*$ 3,000*
Tier 2	*0.00*	*$ -*	*0.13*	*$ 9,300*	*0.40*	*$ 19,200*	*0.00*	*$ -*	*0.00*	*$ -*	*0.53*	*$ 28,500*
Tier 3	*1.17*	*$ 70,200*	*1.11*	*$ 74,100*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*2.28*	*$ 144,200*
Year 3 Pre-Maintanance Totals	1.22	$ 73,200	1.24	$ 83,400	0.40	$ 19,200	0.00	$ -	0.00	$ -	2.86	$ 175,800
Year 3 Maintanance Reduction	*1.22*	*$ 73,200*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*1.22*	$ 73,200
End-of-Year Totals	***0.00***	***$ -***	***1.24***	***$ 83,400***	***0.40***	***$ 19,200***	***0.00***	***$ -***	***0.00***	***$ -***	***1.64***	***$ 102,600***

Year 4

	PMD 1		PMD 2		PMD 3		PMD 4		PMD 5		Totals	
	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost
Tier 1	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*
Tier 2	*0.00*	*$ -*	*0.13*	*$ 9,300*	*0.40*	*$ 19,200*	*0.00*	*$ -*	*0.00*	*$ -*	*0.53*	*$ 28,500*
Tier 3	*0.00*	*$ -*	*1.11*	*$ 74,100*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*1.11*	*$ 74,100*
Year 4 Pre-Maintanance Totals	0.00	$ -	1.24	$ 83,400	0.40	$ 19,200	0.00	$ -	0.00	$ -	1.64	$ 102,600
Year 4 Maintanance Reduction	*0.00*	*$ -*	*1.24*	*$ 83,400*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*1.24*	$ 83,400
End-of-Year Totals	***0.00***	***$ -***	***0.00***	***$ -***	***0.40***	***$ 19,200***	***0.00***	***$ -***	***0.00***	***$ -***	***0.40***	***$ 19,200***

Year 5

	PMD 1		PMD 2		PMD 3		PMD 4		PMD 5		Totals	
	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost	Miles	Cost
Tier 1	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*
Tier 2	*0.00*	*$ -*	*0.00*	*$ -*	*0.40*	*$ 19,200*	*0.00*	*$ -*	*0.00*	*$ -*	*0.40*	*$ 19,200*
Tier 3	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*	*0.00*	*$ -*
Year 5 Pre-Maintanance Totals	0.00	$ -	0.00	$ -	0.40	$ 19,200	0.00	$ -	0.00	$ -	0.40	$ 19,200
Year 5 Maintanance Reduction	*0.00*	*$ -*	*0.00*	*$ -*	*0.40*	*$ 19,200*	*0.00*	*$ -*	*0.00*	*$ -*	*0.40*	$ 19,200
End-of-Year Totals	***0.00***	***$ -***	***0.00***	***$ -***	***0.00***	***$ -***	***0.00***	***$ -***	***0.00***	***$ -***	***0.00***	***$ -***

COLUMBIA FALLS TRANSPORTATION PLAN

NOVEMBER 2021

KLJ

ENGINEERING, REIMAGINED

Chapter 6. Project Development and Identification

INTRODUCTION

The project identification process was used to define three categories of projects: Transportation System Management (TSM), MSN, and Corridor Preservation projects. This process is outlined below:

- First, a preliminary set of project recommendations was developed in coordination with the Project Advisory Committee. These preliminary recommendations were based on available data, transportation priorities as expressed by the City, and public input received during the planning process.
- Second, the project team developed additional project recommendations based on the results of the 2019 Iworq pavement assessment. The recommendations were created by aggregating roadway segments needing major rehabilitation or reconstruction into logical groups. These projects are included within the MSN category. This process is discussed in **CHAPTER 5. PAVEMENT MANAGEMENT**.
- Third, the set of project recommendations was assessed against current and historical conditions, such as roadway safety within the study area.
- Fourth, the set of project recommendations was assessed against projected conditions, including future traffic operations and forecast areas of concentrated employment and population growth.

This process provided a progressive approach by which the project team could narrow, adjust, and refine the universe of projects based on existing and projected conditions. It should be noted that future MSN projects developed should include accommodations for bicycle and pedestrian users. A more specific set of Project recommendations related to active transportation will be presented in the **CHAPTER 8. ACTIVE TRANSPORTATION**.

TRANSPORTATION SYSTEM MANAGEMENT

TSM projects reflect intersection-level improvements which respond to both safety- and operations-related issues at an isolated location. TSM projects were developed based on a review of more localized existing and projected conditions.

TSM projects are listed in **TABLE 6.1** and shown in **FIGURE 6.1**. Each TSM project listing includes a map ID, a summary of the corridor location, related termini, and a short description.

Quiet Zone

The City of Columbia Falls has discussed a quiet zone along the BNSF mainline for several years. As part of the Urban Area Transportation Plan, planning-level layouts for quiet zone improvements were developed. TSM #8 and TSM #9 reflect the location of quiet zone improvements. A detailed discussion of quiet zone efforts and planning-level layouts is provided in **APPENDIX D: QUIET ZONE**.

Intersection Evaluations

As part of the Urban Area Transportation Plan, the City expressed interest in evaluating three intersections in greater detail. These include 12th Avenue W and 13th Street W (TSM #10), Talbot Road and 4th Avenue W (TSM #16), and US Highway 2 and Nucleus Avenue (TSM #1). Based on this analysis, recommendations were developed and layouts were prepared for each intersection. A detailed discussion of the analysis and layouts is provided in **APPENDIX E: INTERSECTION ANALYSIS**.

TSM Costing Methodology

Various cost assumptions were used to complete planning-level cost estimates for TSM Recommendations. Cost assumptions for roundabouts and turn lane additions were developed to account for construction and construction engineering costs, and include a 20 percent contingency. Projects already agreed to through a development agreement or programmed in the STIP are listed as committed. Specific costing assumptions are detailed below. All cost estimates are shown as present-day (2021) dollars.

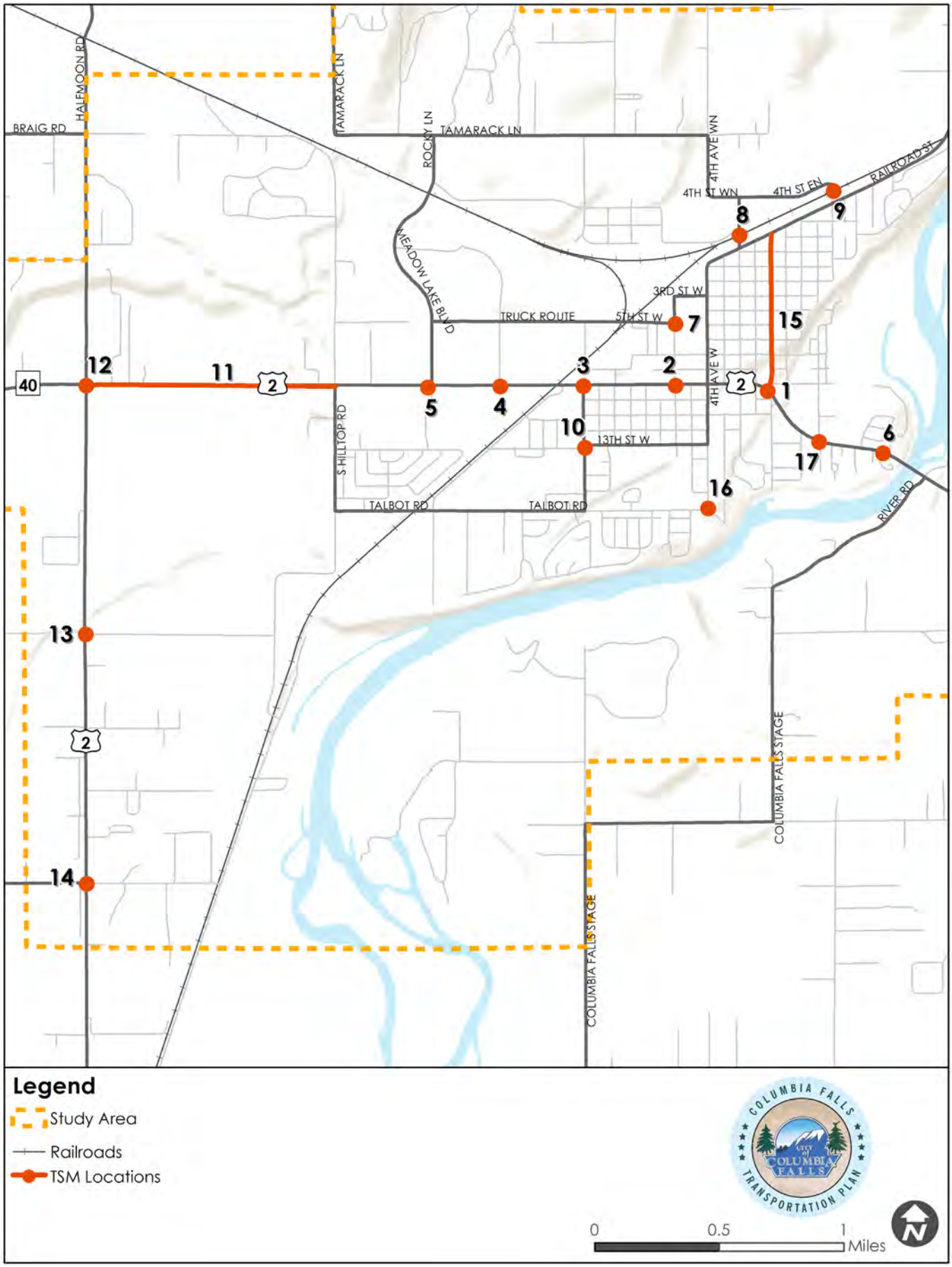
- Roundabout: $1,500,000
- Turn Lane Addition: $80,000
- Project-specific estimates were prepared for TSM #1, TSM #8, TSM #9, and TSM #15

Table 6.1: Transportation System Management Projects

Map ID	Corridor	Termini/ Intersection	Termini/ Intersection	Description	Cost
1	Highway 2	Nucleus		Increase EB turn lane storage; add median and improve pedestrian crossing, reduce access at 1st Avenue West	$1,430,000
2	Highway 2	6th Avenue West		Monitor for NB/SB operations	N/A
3	Highway 2	12th Avenue West		Monitor for NB/SB operations	N/A
4	Highway 2	Truck Route		Signalize intersection	$500,000
5	Highway 2	Meadow Lake		Add EB right turn lane; monitor for NB/SB operations	$80,000
6	Highway 2	Flathead River Bridge		EB right turn lane into Tea Kettle River Access	$80,000
7	Truck Route	6th Avenue		Evaluate intersection following completion of Glacier Elementary	N/A
8	BNSF Mainline	2nd Avenue N		Supplemental safety measures (SSMs)	$583,500
9	BNSF Mainline	4th Avenue N		Close crossing	$618,600
10	12th Street	13th Avenue		Intersection improvements	$1,500,000
11	Highway 2	Hilltop Rd	MT 40	½ mile access preservation in coordination with preservation project #17	N/A
12	Highway 2	MT 40		Monitor intersections for operations/safety improvements. Consider addition of lane improvements/signal phasing to improve southbound traffic movements.	N/A
13	Highway 2	Walsh Road/Conn Road		Monitor intersections for operations/safety improvements	N/A
14	Highway 2	Brunner/Hodgson Road		Monitor intersections for operations/safety improvements	N/A
15	Nucleus Avenue	Highway 2	Railroad Street	Convert to two-lane section with parking upgrade; include streetscape and pedestrian improvements	TBD
16	Talbot Road	4th Avenue West		Intersection improvement	$1,500,000
17	Highway 2	3rd Ave E		Monitor for Signal Warrants/Pedestrian Crossing	N/A
Study Area Wide				Update pavement assessment every five years (to be completed on fourth year of PMP cycle)	TBD

All cost estimates are shown as present-day (2021) dollars.

Figure 6.1: Transportation System Management Projects



MAJOR STREET NETWORK

The MSN recommendations list reflects improvements that have been identified as necessary in order for a corridor to meet the design standards of its existing or projected functionality. Recommended projects on this list include larger corridor-level investments such as infrastructure upgrades, major overlay and rehabilitation projects, and the addition of new connections or extensions. MSN projects are listed in **TABLE 6.2** and shown in **FIGURE 6.2**.

Each MSN project listing includes a map ID, a summary of the corridor location, related termini, and a short description. Several MSN projects were developed using the results of the 2019 Iworq pavement assessment; *these projects are indicated with an asterisk under the "Map ID" column.*

MSN Costing Methodology

Various cost assumptions were used to complete planning-level cost estimates for MSN Recommendations. These assumptions are based on detailed project cost estimates completed for the Columbia Falls 2021 RAISE grant application. Projects already agreed to through a development agreement or programmed in the STIP are listed as committed. Specific costing assumptions are detailed below. All cost estimates are shown as present-day (2021) dollars.

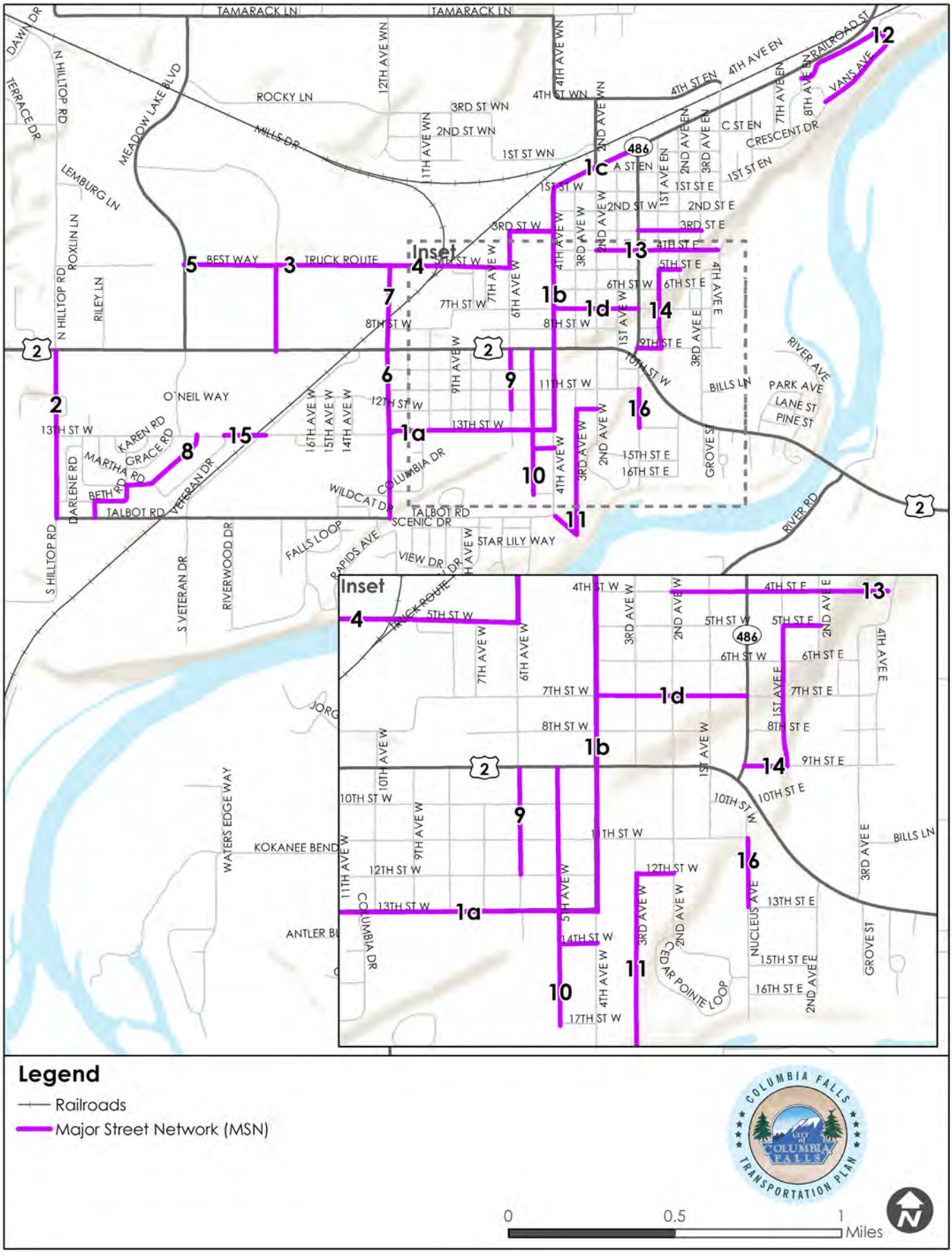
- Corridor Upgrade, New Connection, and Major Rehabilitation (new street/reconstruction) projects use a cost-per-mile estimate of $4,861,720. This includes a variety of major corridor improvements and accounts for construction and construction engineering costs, and a 20 percent contingency.
- Major Rehabilitation (>3" overlay) projects use a cost-per-mile estimate of $550,000. This includes construction and construction engineering costs, and a 20 percent contingency.
- Major Rehabilitation (2" overlay) projects use a cost-per-mile estimate of $330,000. This includes construction and construction engineering costs, and a 20 percent contingency.
- Projects 1a – 1d use project-specific cost estimates developed for the Columbia Falls 2021 RAISE grant application.

Table 6.2: Major Street Network Projects

Map ID	Corridor	Termini/ Intersection	Termini/ Intersection	Description	Cost
1a	13th St West	12th Avenue W	4th Avenue W	Reconstruct, add sidewalk and multiuse path	$2,776,000
1b	4th Ave West	13th St W	Railroad Street	Reconstruct, add sidewalk and multiuse path (Railroad Street to Hwy 2); widen pavement, add sidewalk (Hwy 2 to 13th Street)	$4,242,000
1c	Railroad Street	4th Avenue W	Nucleus	Reconstruct roadway, add multiuse path 4th Avenue to Nucleus; add multiuse path Nucleus to 8th Avenue	$1,548,000
1d	7th St E	4th Ave W	Nucleus Avenue	Reconstruct roadway, add sidewalk	$1,233,000
2	South Hilltop	Hwy 2	Talbot	Corridor Upgrade – Major Collector	$2,434,000
3	Truck Route	Hwy 2	12th Avenue W	Corridor Upgrade – Major Collector	$2,922,000
4*	Truck Route	12th Avenue W	4th Avenue W	Corridor Upgrade – Major Collector	$2,924,000
5	Best Way	Meadow Lake Blvd	Truck Route	Corridor Upgrade – Major Collector	$1,359,000
6	12th Avenue W	Talbot Road	Hwy 2	Corridor Upgrade – Major Collector	$2,446,000
7	12th Avenue W	Hwy 2	Truck Route	Corridor Upgrade (Committed 2021/2022)	Committed
8*	Beth Rd/Martha Rd	Talbot Rd	13th St	Major rehabilitation/reconstruct – per Pavement Management Plan	$155,000
9*	6th Ave. West	End of road	3rd St W	Major rehabilitation/reconstruct – per Pavement Management Plan	$59,000
10*	5th Ave West	15th St	Hwy 2	Major rehabilitation/reconstruct – per Pavement Management Plan	$274,000
11*	Talbot Rd/3rd Ave West/12th St West	4th Ave West	2nd Ave West	Major rehabilitation/reconstruct – per Pavement Management Plan	$2,563,000
12*	Vans Ave	Crescent Dr	Frontage Rd	Major rehabilitation/reconstruct – per Pavement Management Plan	$319,000
13*	3rd St E and 4th St E	Nucleus/ 2nd Ave	End	Major rehabilitation/reconstruct – per Pavement Management Plan	$1,504,000
14*	9th St E/1st Ave E/ 5th St E	Nucleus Ave	2nd Ave E	Major rehabilitation/reconstruct – per Pavement Management Plan	$1,821,000
15	13th St W	Diane Rd	Veteran Dr	New connection (construct railroad crossing)	$608,000
16*	S Nucleus Ave	13th St E	11th St W	Major rehabilitation/reconstruct – per Pavement Management Plan	$64,000

Note: Asterisks indicate projects developed using the results of the 2019 Iworq pavement assessment
All cost estimates are shown as present-day (2021) dollars.

Figure 6.2: Major Street Network Projects



CORRIDOR PRESERVATION PROJECTS

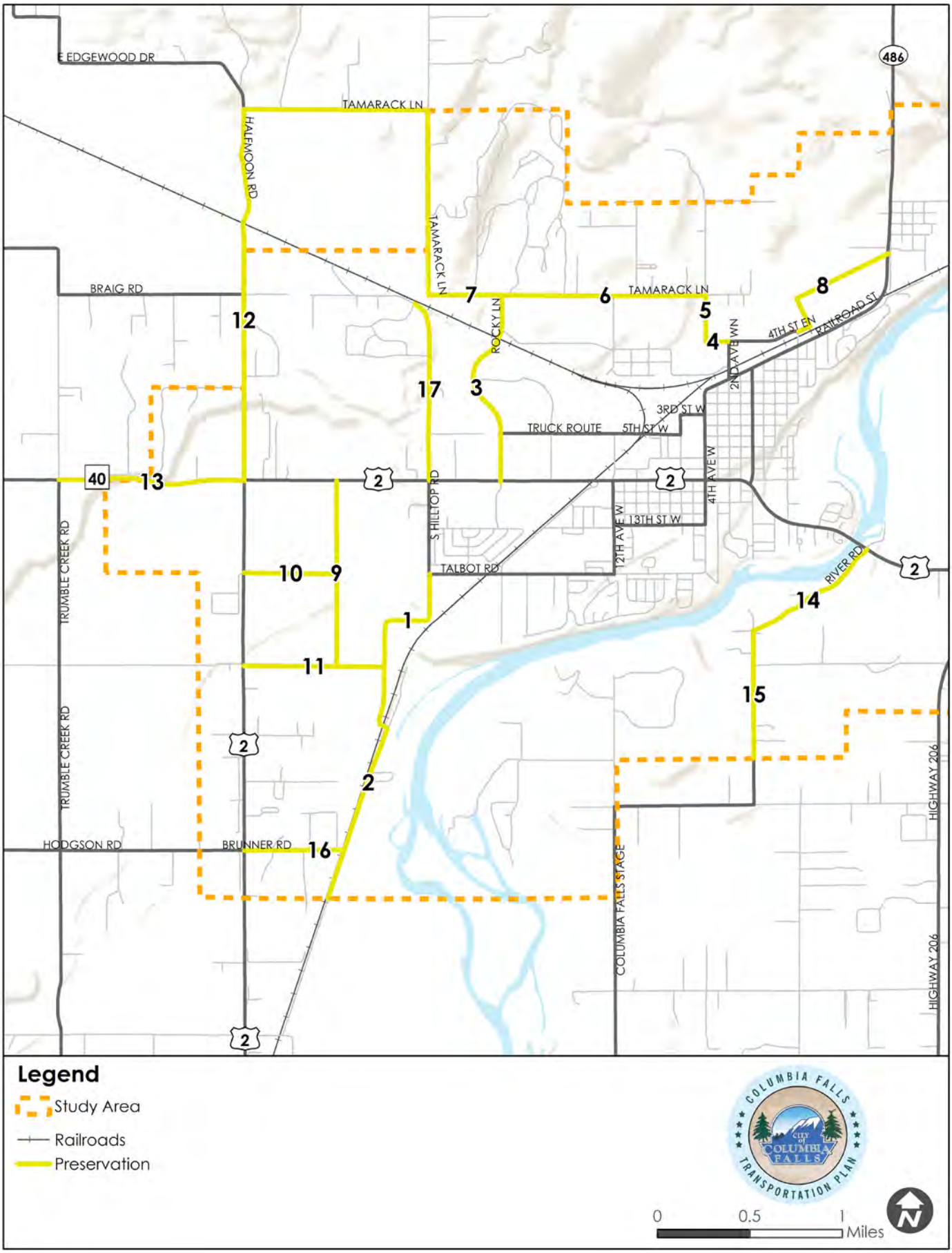
The Corridor Preservation recommendations list enables local planning officials to better manage the access and design of roadways. The list reflects identified needs to preserve specific corridors to meet the design standards of their intended future function. Recommendations were completed by evaluating the current transportation system, assessing anticipated changes in land use and development patterns, considering the direction of established guidelines, and emphasizing improvements to overall system efficiency. It is recommended that, over the life of this plan, land use and transportation decision making be based on the proposed function of the corridors indicated here. Corridor Preservation recommendations are listed in **TABLE 6.3** and shown in **FIGURE 6.3**.

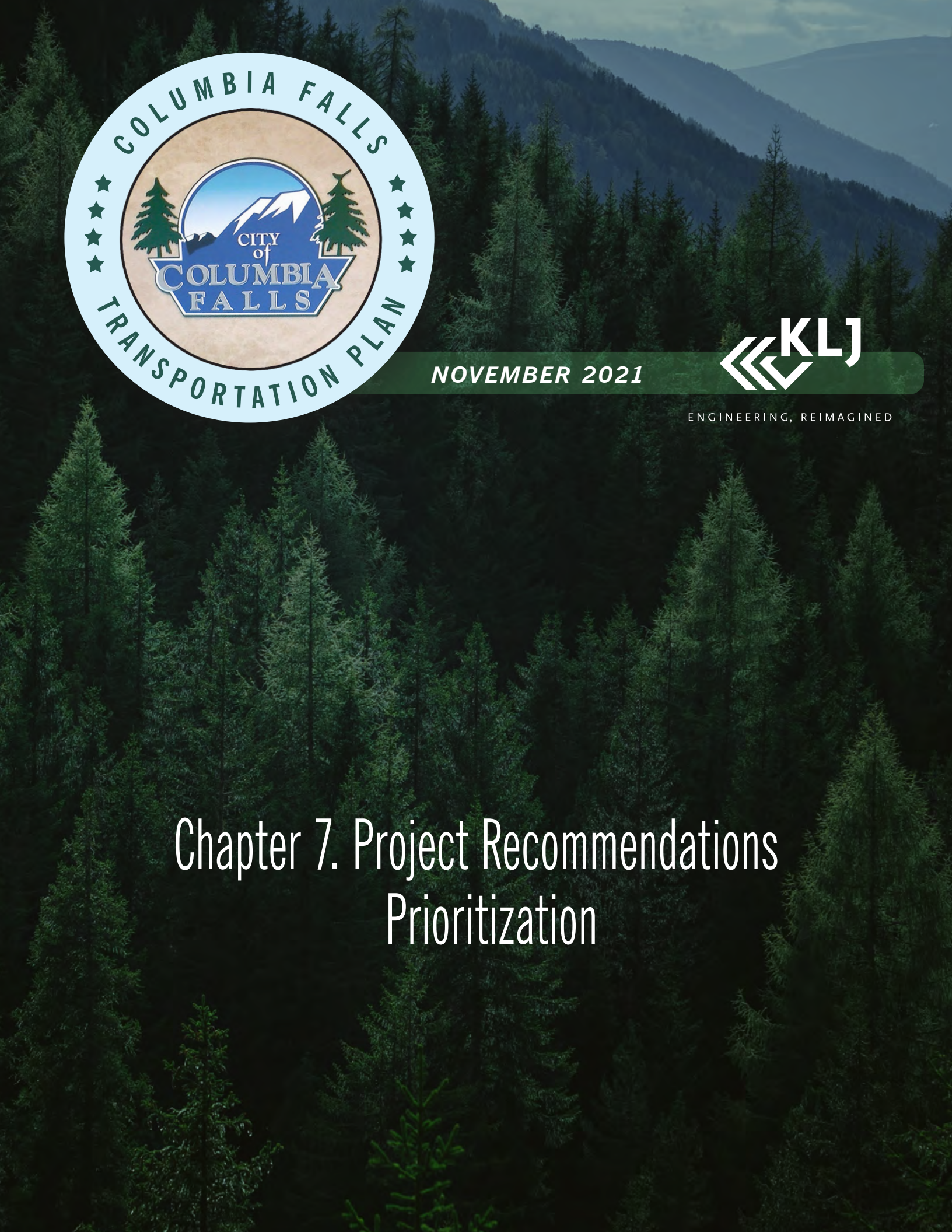
Each Corridor Preservation recommendation listing includes a map ID, a summary of the corridor location, related termini, and a short description.

Table 6.3: Corridor Preservation Projects

Map ID	Corridor	Termini/Intersection	Termini/Intersection	Description
1	South Hilltop	Talbot	Walsh Road	Corridor Preservation – Major Collector
2	South Hilltop	Walsh Road	South Study Area Boundary	Corridor Preservation – Minor Collector
3	Meadlow Lake Blvd	Hwy 2	Tamarack Lane	Corridor Preservation – Major Collector
4	4th Street WN	4th Avenue WN	2nd Avenue WN	Corridor Preservation – Major Collector
5	4th Avenue WN	Tamarack Lane	4th Street WN	Corridor Preservation – Major Collector
6	Tamarack Lane	Meadow Lake Blvd	4th Avenue W	Corridor Preservation – Major Collector
7	Tamarack Lane	Halfmoon Rd	Meadow Lake Blvd	Corridor Preservation – Minor Collector
8	New Corridor	4th Avenue WN	North Fork Road	New Corridor – Minor Collector
9	New Connection	Walsh Road	Highway 2	Establish 1/4-mile roads – Minor Collector
10	New Connection	Hwy 2	New Connection	Establish 1/4-mile roads – Minor Collector
11	Walsh Rd	South Hilltop	Highway 2	Corridor Preservation – Major Collector
12	Halfmoon Road	Hwy 2	Tamarack Lane	Corridor Preservation – Minor Collector
13	MT 40	Hwy 2	Trumble Creek	Corridor Preservation – Minor Arterial
14	River Road	Columbia Falls Stage	Highway 2	Corridor Preservation – Major Collector
15	Columbia Falls Stage	South Study Area Boundary	River Road	Corridor Preservation – Major Collector
16	Brunner Road	Jellison Road	Highway 2	Corridor Preservation – Minor Collector
17	North Hilltop	Hwy 2	Dawn Dr	Corridor Preservation – Minor Collector

Figure 6.3: Corridor Preservation Projects





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Chapter 7. Project Recommendations Prioritization

INTRODUCTION

As discussed in **CHAPTER 1**, the Columbia Falls Urban Area Transportation Plan goals express key priorities and desired outcomes for the area's transportation system. The goals help to establish the long-term vision for both the City and adjacent planning area. For this reason, transportation project recommendations should play a role in making progress towards the goals. The goals are not necessarily quantitative in nature, however, and more specific measures are needed to compare various projects based on their adherence to the community's transportation vision. The goals and vision were used as a foundation to develop a methodology for prioritizing the MSN and TSM project recommendations.

METHODOLOGY

A prioritization approach was developed to reflect the City's and community's most critical transportation issues. To do this, the project team identified a set of prioritization criteria that would reflect the spirit of the transportation goals and vision, as well as key issues identified through public engagement and emphasized by the City. The resulting methodology employed a set of seven criteria to rank the Plan's project recommendations in terms of relative importance.

Prioritization Criteria

The prioritization criteria were developed to incorporate the transportation goals and vision, as well as key issues identified through the planning process. Bonus points were assigned to projects that had been specifically highlighted during public outreach, or that represent a previously identified need. The final prioritization methodology allowed for an objective evaluation of project recommendations according to their potential to address the community's most imperative needs.

The prioritization criteria are presented in **TABLE 7.1**.

Table 7.1: Columbia Falls Urban Area Transportation Plan Project Prioritization Criteria

Criteria	Methodology
Freight/Economic Development	• Does the project improve a corridor that benefits freight movement and/or economic development?
Livability/Sustainability	• Does the project improve community livability/sustainability through improvements to alternative transportation systems?
Pavement Management	• Does the project advance recommendations from the Columbia Falls pavement management program?
State of Good Repair	• Does the project provide for maintenance and preservation of existing infrastructure/ transportation systems (exclusive of recommendations from the Columbia Falls pavement management program)?
Safety & Connectivity	• Does the project address high crash/severe crash locations? • Does the project improve the removal of barriers faced by pedestrians and cyclists?
Safe Routes to School	• Does the project improve connections to/ from school facilities within the City of Columbia Falls?
Bonus Points	• Does the project represent a previously identified need? • Was the project specifically identified during public outreach?

PRIORITIZATION RESULTS

The prioritization results for TSM and MSN projects are presented in **TABLE 7.2** and **TABLE 7.3**, and shown in **FIGURE 7.1** and **FIGURE 7.2**. Projects were grouped into High, Medium, and Low tiers according to their prioritization rank relative to other projects.

While TSM and MSN projects are shown separately for clarity, all projects were scored together (the "Priority Tier" column within the tables communicates the absolute tier of a project when all projects are organized into a single table). A project's Map ID can be used to locate the project on its respective TSM or MSN map.

Bicycle and pedestrian projects are discussed separately in **CHAPTER 8**.

Table 7.2: TSM Prioritization

Map ID	Corridor	From	To	Priority Tier
1	Highway 2	Nucleus		High
15	Nucleus Avenue	Highway 2	Railroad Street	
5	Highway 2	Meadow Lake		
9	BNSF Mainline	4th Avenue N		
7	Truck Route	6th Avenue		
10	12th Street	13th Avenue		Medium
8	BNSF Mainline	2nd Avenue N		
12	Highway 2	MT 40		
4	Highway 2	Truck Route		
14	Highway 2	Brunner/Hodgson Road		Low
6	Highway 2	Flathead River Bridge		
17	Highway 2	3rd Ave E		
3	Highway 2	12th Avenue West		
11	Highway 2	Hilltop Rd	MT 40	
2	Highway 2	6th Avenue West		
13	Highway 2	Walsh Road/Conn Road		
16	Talbot Road	4th Avenue West		

Table 7.3: MSN Prioritization

Map ID	Corridor	From	To	Priority Tier
1b	4th Ave West	13th St W	Railroad Street	High
9	6th Ave. West	End of road	3rd St W	
13	3rd St E and 4th St E	Nucleus/2nd Ave	End	
4	Truck Route	12th Avenue W	4th Avenue W	
7	12th Avenue W	Hwy 2	Truck Route	
1d	7th St E	4th Ave W	Nucleus Avenue	
3	Truck Route	Hwy 2	12th Avenue W	
1a	13th St West	12th Avenue W	4th Avenue W	
1c	Railroad Street	4th Avenue W	Nucleus	Medium
2	South Hilltop	Hwy 2	Talbot	
6	12th Avenue W	Talbot Road	Hwy 2	
8	Beth Rd/Martha Rd	Talbot Rd	13th St	
10	5th Ave West	15th St	Hwy 2	
11	Talbot Rd/3rd Ave West/12th St West	4th Ave West	2nd Ave West	
12	Vans Ave	Crescent Dr	Frontage Rd	
16	S Nucleus Ave	13th St E	11th St W	
14	9th St E/1st Ave E/5th St E	Nucleus Ave	2nd Ave E	Low
15	13th St W	Diane Rd	Veteran Dr	
5	Best Way	Meadow Lake Blvd	Truck Route	

Figure 7.1: TSM Prioritization

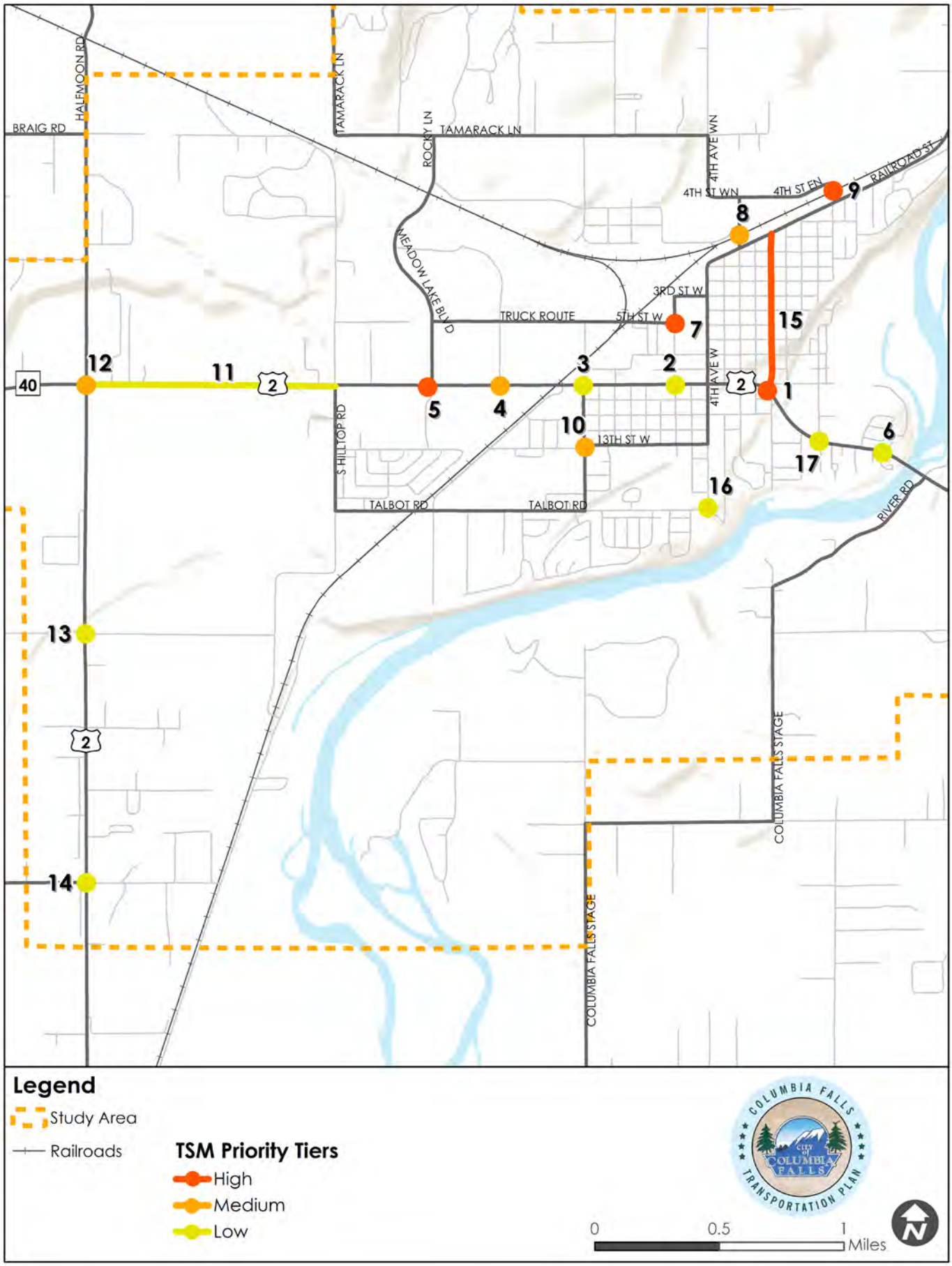
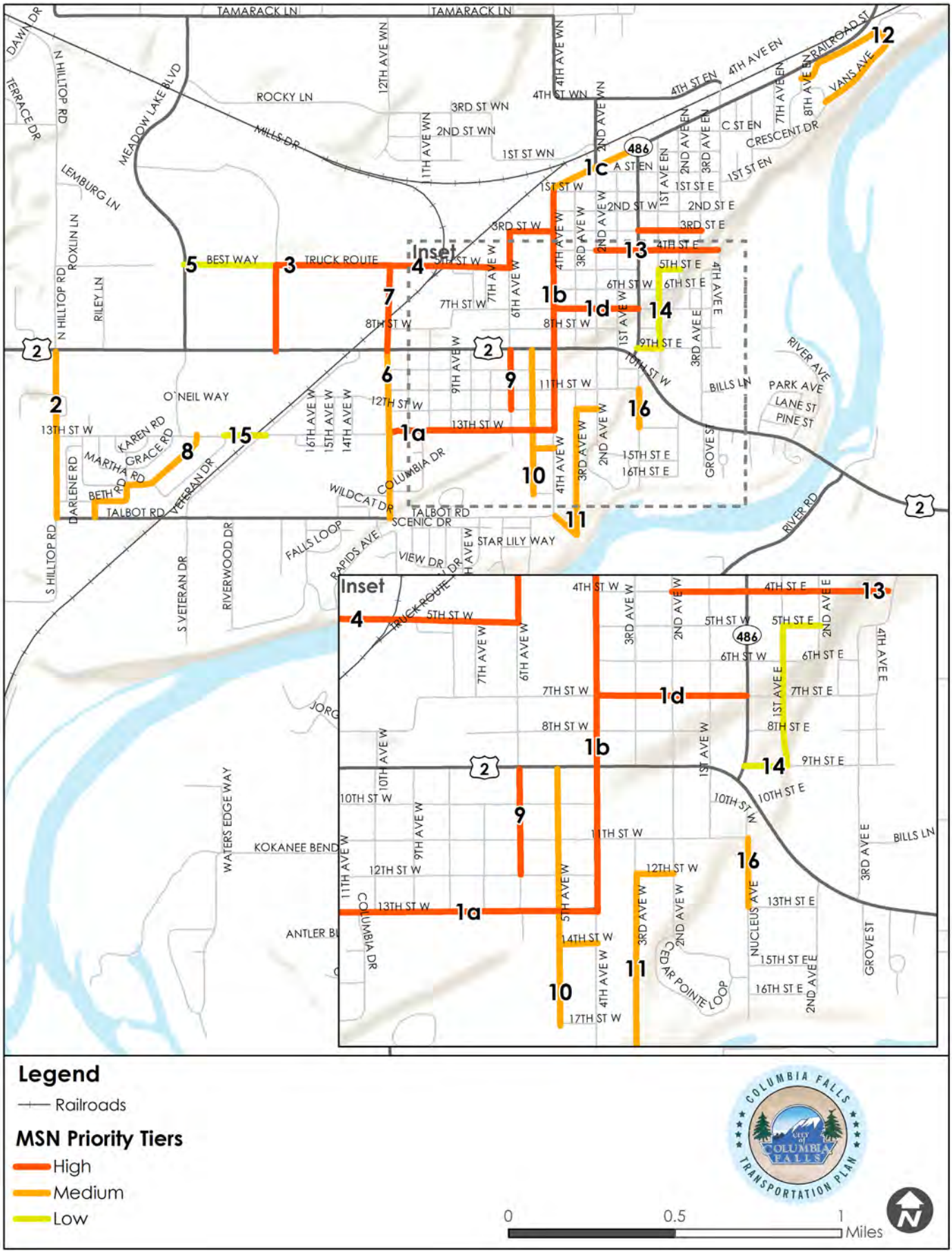


Figure 7.2: MSN Prioritization



COLUMBIA FALLS TRANSPORTATION PLAN

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Chapter 8. Active Transportation

INTRODUCTION

Bicycle and pedestrian (bike/ped) facilities serve many purposes for residents and visitors of Columbia Falls, providing safe, convenient travel and promoting an active lifestyle and outdoor enjoyment. The needs for these facilities range from critical travel to leisure activities. Critical needs include connections between neighborhoods and schools and the provision of secure, viable travel options for residents without access to a private vehicle or with mobility restrictions. Leisure needs are met by facilities that are enjoyable to use and serve a recreational benefit, such as providing connections between neighborhoods, parks, visitor amenities and destination areas. From both a visitor and resident standpoint, bicycle and pedestrian facilities are essential transportation infrastructure that improves quality of life and adds to a vibrant community. There were a significant number of public comments received during the planning process reflecting the need to add safer pedestrian crossings and linkages within Columbia Falls. These comments have been taken into account in the recommended bike/ped projects.

Bicycle and pedestrian recommendations within this chapter are separated into three categories:

- **Bicycle and Pedestrian Crossings:** Additional and improved crossing points will allow movement across barriers and help close network gaps.
- **Bicycle and Pedestrian Connections:** Improved major and minor bike/ped connections will increase access to regional destinations and facilitate travel throughout the community.
- **Downtown/Nucleus Avenue:** Pedestrian improvements along Nucleus Avenue will support a safe and attractive downtown core for residents and visitors.

Bicycle and Pedestrian Crossings

Adequate bike/ped crossing locations is a critical aspect of providing a safe, enjoyable, and efficient transportation network for all users. This transportation plan has identified several needed crossing locations, as outlined below.

Crossing at US Highway 2 and 1st Ave. W.

There is a significant amount of pedestrian traffic in the downtown area during events, such as farmer's markets. Currently, the only convenient pedestrian crossings on US Highway 2 are located at the signalized intersection on Nucleus Avenue or at the intersection on 4th Ave. W. Many pedestrians choose to cross US Highway 2 at 1st Ave. W. out of convenience, even though there is no designated crossing at this intersection. A number of public comments highlighted this issue. Adding a designated crosswalk at this location would improve the north-south pedestrian connectivity and alleviate bottlenecks during crowded events.

Crossing on US Highway 2 near 3rd Ave. E., east of Marantette Park

The existing shared use path along 3rd Ave. E. begins at US Highway 2 and heads north to River's Edge Park. Bicyclists or pedestrians coming from the south part of town to use this path or access the park must cross the highway at the designated crossing at US Highway 2 and Nucleus Ave., located approximately 1,600 ft. west of the path. To avoid such a lengthy detour, some users choose to cross US Highway 2 at the uncontrolled intersection at 3rd Ave. E. This presents a variety of safety concerns. The road is 100 ft. wide with five lanes, and sight distances at this intersection are poor due to the speed of traffic and road geometry. The road is curved, and trees block the view of oncoming cars past a certain distance. New development in this area gives additional priority to adding a safe crossing in this vicinity for a convenient north-south connection.

Red Bridge crossing

The community has been expressing its desire for a Red Bridge crossing for several years. Numerous public comments were shared supporting the need to improve the bridge to allow for a shared use path. This would provide an important connection from different parts of the City to the broader regional trail system, as well as serving as a landmark destination in and of itself. One challenge of this project is the need to retrofit the historic bridge and make it structurally sound for use. In addition to rehabilitating the structural steel and bridge decking, one of the bridge piers needs repair, an effort that alone would require significant design and permitting efforts as well as significant funds. Investments required to return the Red Bridge to safely function as a bike/ped facility are not currently understood. However, these costs need to be measured against other high priority bike/ped needs in the Columbia Falls community. Regardless, the concept of restoring the Red Bridge should remain a possibility until such time as it is deemed fully unfeasible from a technical and financial perspective.

Bicycle and Pedestrian Connections

Columbia Falls has created a basic framework of bike/ped paths throughout the City supporting a variety of users, from children walking to school to those engaging in recreational pursuits. During the evaluation for this transportation plan, several missing pieces were identified that would help support a more connected bike/ped network.

Major bike/ped loops/connections

An important consideration for the overall bike/ped network is what connections are available to destinations that would be desirable for bicyclists and pedestrians. These major destinations include the Gateway to Glacier trail system (a shared use path that leads from Columbia Falls to West Glacier), downtown Columbia Falls and Nucleus Avenue, the North Fork, and Whitefish. To support these connections, major shared use path loops around the City's perimeter connect densely populated areas with key destination points, and "share the road" markings can help bring driver awareness to bicycle traffic.

Minor bike/ped connections

Minor connections provide basic travel for bicyclists and pedestrians including trips to school, jobs, and amenities. For those without access to a private vehicle, safe and convenient bicycle and pedestrian connections throughout the community are essential. An important aspect of connectivity within the City is improving connections between bike and pedestrian networks and existing public access points along the Flathead River. Minor connections can be provided in a variety of ways, either through sidewalks, shared use paths, or on-street bike lanes, typically on local streets and minor collectors.

Downtown/Nucleus Avenue

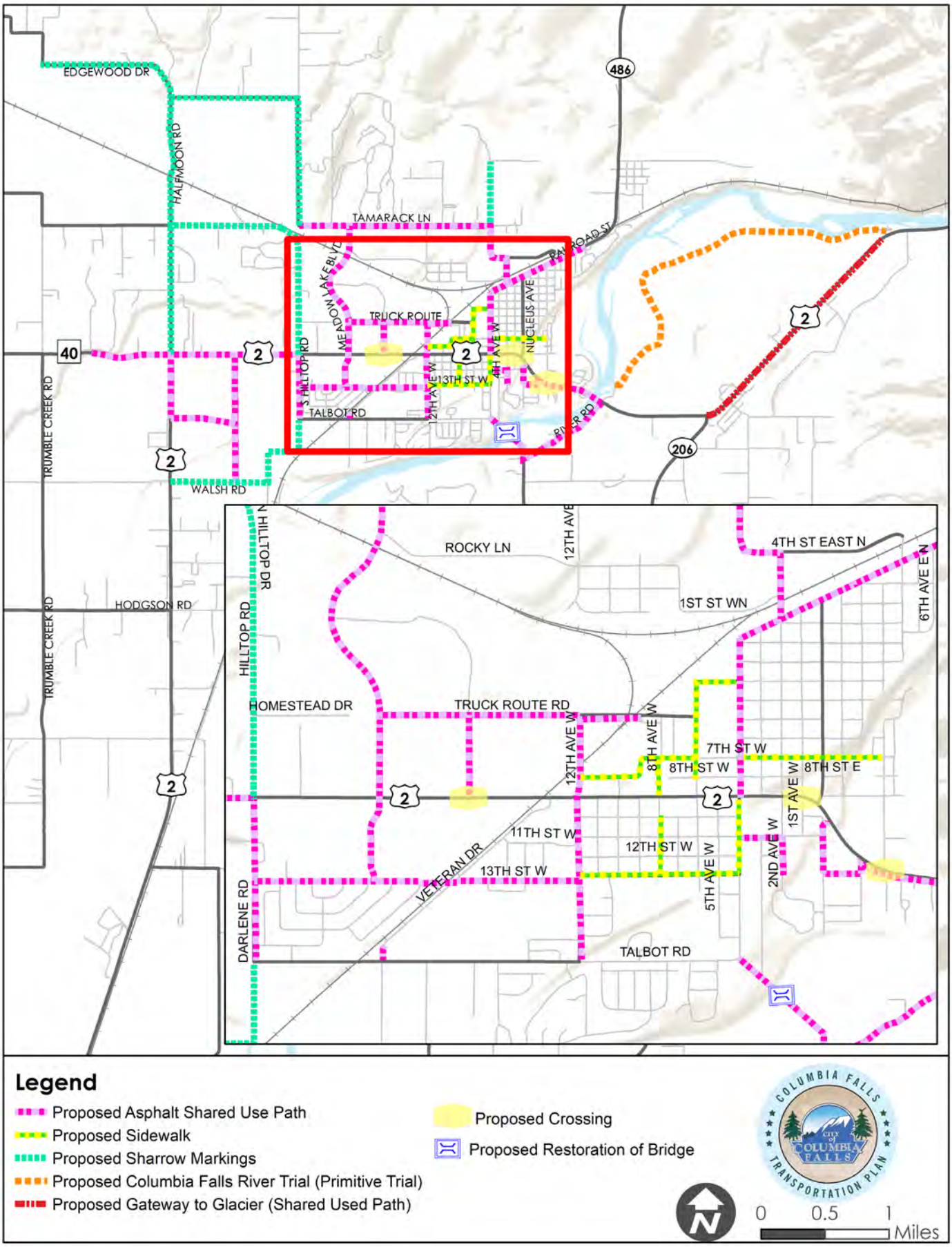
Nucleus Avenue is the downtown core of Columbia Falls with coffee shops, bars, restaurants, gift shops, businesses, multi-family residential buildings, and grocery stores. There are sidewalks on each side of Nucleus Avenue, and several intersections have had Americans with Disabilities Act of 1990 (ADA) improvements made in recent years. However, further improvements are needed to make Nucleus Avenue a safer and more pedestrian-friendly corridor. First, the intersection of Nucleus with 5th Street W. (near the grocery store) has a number of safety issues related to the angled sidewalk crossing, and it is difficult for pedestrians to see oncoming traffic past the parked cars on Nucleus when crossing. Wider sidewalks and the addition of boulevard trees can make for a more pedestrian-focused feel to downtown and improve walkability. ADA accessibility is of central importance. Removing obstacles that are in the middle of the sidewalk, such as light poles, trash cans, and signposts, will improve safety and increase accessibility for all users.

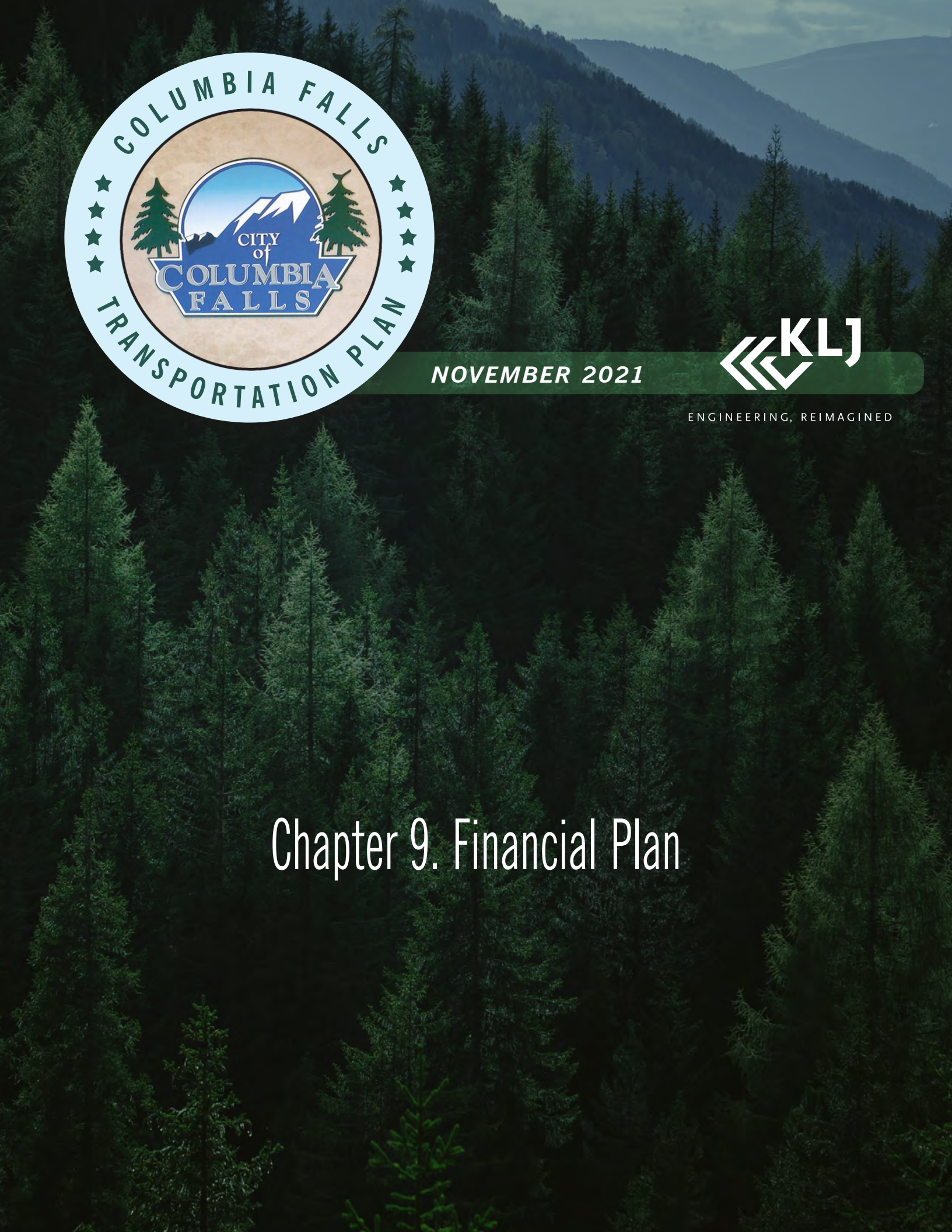
PROPOSED BICYCLE AND PEDESTRIAN PLAN

As road reconstruction projects take place, bike/ped facilities should be added as part of the reconstruction efforts. This creates cost savings by avoiding duplicative construction costs. These facilities can be added over time, allowing the City to build towards the overall bike/ped networks identified in this transportation plan.

FIGURE 8.1 shows proposed bicycle and pedestrian improvements for the Columbia Falls study area.

Figure 8.1: Proposed Bicycle and Pedestrian Improvements





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Chapter 9. Financial Plan

INTRODUCTION

This element of the Columbia Falls Urban Area Transportation Plan provides a general overview of transportation funding relevant to the study area. Most transportation dollars directed to the study area are derived from federal and state sources. MDT administers several programs that are funded from state and federal sources. The City of Columbia Falls is dependent on a number of these programs to support transportation infrastructure investments. This Plan recommends that the City of Columbia Falls allocate annual funding to preventative maintenance and "spot" rehabilitation/reconstruction pavement projects (**CHAPTER 5**). While this funding has historically come from the Gas Tax, additional local funding may need to be considered in the future to adequately address pavement needs.

Each year, in accordance with Montana Code Annotated (MCA) 60-2-127 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 document.

The Fixing America's Surface Transportation Act (FAST Act) was signed into law on December 4, 2015, and authorizes federal transportation funding for federal fiscal years 2016 through 2020. Funding sources and allocations change with each authorization and may vary following completion of the next federal authorization.

FEDERAL FUNDING SOURCES

The following sections summarize relevant federal transportation funding categories received by the state through US Code (U.S.C.) Title 23 and U.S.C. Title 49, including state developed implementation or sub-programs that may be potential sources for projects. To receive project funding under these programs, projects must be included in the State Transportation Improvement Program (STIP), where relevant.

National Highway Performance Program

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

Allocations and Matching Requirements

NHPP funds are federally apportioned to Montana and allocated to financial districts based on need by the Montana Transportation Commission. Also, consideration is given to balancing needs using the MDT Performance Programming Process. The funds are allocated to three programs:

- Interstate Maintenance
- National Highway System (Non-Interstate)
- NHPP Bridge

FIGURE 3.6 ON PAGE 27 of **CHAPTER 3** shows the roadways eligible for NHPP funds.

Eligibility and Planning Considerations

Activities eligible for NHPP funding include:

- Construction, reconstruction, resurfacing, restoration, and rehabilitation of roadways on the NHS.
- Construction, replacement, rehabilitation, preservation and protection of NHS bridges.
- Projects or part of a program supporting national goals for improving infrastructure condition, safety, mobility, or freight movements on the NHS.
- Operational improvements and highway safety improvements.
- Other miscellaneous activities that may qualify for NHPP funding include bikeways and pedestrian walkways, environmental mitigation, restoration and pollution control, infrastructure based intelligent transportation systems, vehicle-to-infrastructure communication equipment, traffic and traveler monitoring and control, and construction of intra or inter-city bus terminals serving the NHS.

The Transportation Commission establishes priorities for the use of NHPP funds and projects are let through a competitive bidding process.

Surface Transportation Block Grant Program

Surface Transportation Block Grant Program (STBG) 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), the Surface Transportation Program Urban Highways (STPU), and the Surface Transportation Program – Bridge Program (STPB), as well as set-asides for programs including Transportation Alternatives (TA) and Recreational Trails (RT). The federal share for these projects is 86.58 percent with the state share typically funded through a Highway State Special Revenue Account (HSSRA).

The Montana Transportation Commission establishes priorities for the use of STBG funds and projects are let through a competitive bidding process.

Primary Highway System (STPP)[1]

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 and FHWA 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 60-2-126(b).

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. The federal share for this program is 86.58 percent and the state is responsible for the remaining 13.42 percent. The state share is funded through the HSSRA.

ELIGIBILITY AND PLANNING CONSIDERATIONS

STPP funds are eligible for resurfacing, rehabilitating or reconstructing roads and bridges on the Primary System.

Secondary Highway System (STPS)[2]

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. The federal share for this program is 86.58 percent and the state is responsible for the remaining 13.42 percent. Normally, the match on these funds is from the HSSRA.

ELIGIBILITY AND PLANNING CONSIDERATIONS

Eligible activities for the use of Secondary funds fall under three major types of improvements: reconstruction, rehabilitation, and pavement preservation in addition to vehicle-to-infrastructure communication equipment. The reconstruction and rehabilitation categories are allocated at 65 percent of the program funds with the remaining 35 percent dedicated to pavement preservation. Priorities are identified in consultation with the appropriate local government and approved by the Montana Transportation Commission.

Urban Highway System (STPU)[3]

The federal and state funds available under this program are used to finance transportation projects on Montana's Urban Highway System (MCA 60-3-211). STPU allocations are based on a per capita distribution and are recalculated each decade following the census.

ALLOCATIONS AND MATCHING REQUIREMENTS

State law guides the allocation of STPU funds to 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. The federal share for this program is 86.58 percent and the State is responsible for the remaining 13.42 percent. The state share is funded through the HSSRA.

Table 9.1: Montana's Urban Areas

• Anaconda	• Columbia Falls	• Helena	• Miles City
• Belgrade	• Kalispell	• Glendive	• Missoula
• Billings	• Great Falls	• Laurel	• Sidney
• Bozeman	• Hamilton	• Lewistown	• Whitefish
• Butte	• Havre	• Livingston	

ELIGIBILITY AND PLANNING CONSIDERATIONS

STPU funds are eligible for rehabilitation, resurfacing, reconstruction of existing facilities, operational improvements, vehicle-to-infrastructure communication equipment, bicycle facilities, pedestrian walkways, carpool projects, and traffic operation projects on the 430 miles of the state-designated Urban Highway System. Priorities for the use of STPU funds are established at the local level through local planning processes with final approval by the Montana Transportation Commission.

Bridge Program (STPB)

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

1 State funding program developed to distribute federal funding within Montana.
2 State funding program developed to distribute federal funding within Montana.
3 State funding program developed to distribute federal funding within Montana.

off-system routes. Projects are identified based on bridge condition and performance metrics.

UPP[1]

The 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).

Set-Aside (Previously "Transportation Alternatives (TA) Program" under "Moving Ahead for Progress in the 21st Century Act" [MAP-21])

The Set-Aside Program (TA) requires MDT to obligate 50 percent of the funds within the state based on population, using a competitive process, while the other 50 percent may be obligated in any area of the state.

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.
- Education funds for publications, monitoring, and patrol programs and for trail-related training.
- Planning, design, and construction of projects that will substantially improve the ability of students to walk and bicycle to school.
- Non-infrastructure-related activities to encourage walking and bicycling to school, including public awareness campaigns, outreach to press and community leaders, traffic education and enforcement near schools, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training.

COMPETITIVE PROCESS

The state is required to allocate TA funds through a competitive process which allows 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.

National Highway Freight Program

The National Highway Freight Program (NHFP) was created by the FAST Act to invest in freight projects on the National Highway Freight Network. This program is apportioned to states by formula and a state must have had a freight plan in place beginning fiscal year (FY) 2018 to receive formula funding. Activities eligible for NHFP funding include planning, environmental review, preliminary engineering, design work, construction, reconstruction, rehabilitation work and/or operational improvements that directly result in improved system performance – as well as interchange improvements, truck-only lanes, shoulder widening, traffic signal optimization, highway ramp metering and roadway capacity projects (that address freight bottlenecks). Generally, the federal share for this program is 91.24 percent and the state is responsible for the remaining 8.76 percent. The state share is typically funded through the HSSRA for projects on state highways and local governments provide the match for local projects.

Highway Safety Improvement Program

Highway Safety Improvement Program (HSIP) funds are apportioned to Montana for safety improvement projects approved by the Commission and are consistent with the strategic highway safety improvement plan. In Montana, the primary focus of the HSIP program involves identifying locations with crash trends (where feasible countermeasures exist) and prioritizing work according to benefit/cost

1 State funding program developed to distribute federal funding within Montana.

ratios. However, MDT also advances systemic improvements (such as rumble strip projects, curve signing and wrong-way warnings) to address safety issues at the network level. Additionally, a portion of Highway Safety Improvement Program funds are designated to improve safety at railroad crossings via the installation of protective devices or the elimination of hazards. 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 percent and the State is responsible for the remaining 10 percent. Typically, the state share is funded through the HSSRA.

Congestion Mitigation and Air Quality Improvement Program

Congestion Mitigation and Air Quality Improvement Program (CMAQ) 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 10 (PM_{10}) micrometers or less in diameter.

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 formula based distribution of CMAQ funds goes to projects in Missoula since it was Montana's only designated and classified air quality non-attainment area. The remaining, non-formula funds, referred to as "flexible CMAQ" are primarily directed to areas of the state with emerging air quality issues through various state programs. The Commission approves and awards all projects on MDT right-of-way. Infrastructure and capital equipment projects are let through a competitive bidding process. The federal share for this program is 86.58 percent and the state is responsible for the remaining 13.42 percent. The state share is funded through the HSSRA for projects on state highways and local governments provide the match for local projects.

Eligibility and Planning Considerations

In general, eligible activities include transit improvements, ADA upgrades, traffic signal synchronization, bicycle pedestrian projects, intersection improvements, travel demand management strategies, traffic flow improvements, air-quality equipment purchases, vehicle-to-infrastructure communication equipment, 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 the FHWA.

CMAQ (FORMULA)

Mandatory CMAQ funds that come to Montana based on a federal formula are directed to Missoula, Montana's only classified, moderate CO non-attainment area. Projects are prioritized through the Missoula metropolitan planning process.

MONTANA AIR AND CONGESTION INITIATIVE–GUARANTEED PROGRAM (FLEXIBLE)[1]

The Montana Air and Congestion Initiative (MACI) – Guaranteed Program is a 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, 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 AND CONGESTION INITIATIVE–DISCRETIONARY PROGRAM (FLEXIBLE)[2]

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.

Federal Lands Access Program

The Federal Lands Access Program (FLAP) was created by the MAP-21 to improve access to federal lands and is continued in the FAST Act. FHWA's Western Federal Lands Division administers the program and 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. FLAP 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

1 State funding program developed to distribute federal funding within Montana.
2 State funding program developed to distribute federal funding within Montana.

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:

- Preventive maintenance, rehabilitation, restoration, construction, and reconstruction.
- Adjacent vehicular parking areas.
- Acquisition of necessary scenic easements and scenic or historic sites.
- Provisions for pedestrian and bicycles.
- Environmental mitigation in or adjacent to Federal land to improve public safety and reduce vehicle-wildlife mortality while maintaining habitat connectivity.
- Construction and reconstruction of roadside rest areas, including sanitary and water facilities.
- 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

The federal share for this program is 86.58 percent and the State provides match for projects on state highways that address MDT identified infrastructure condition deficiencies; local governments provide the match for off-system projects. The state share is funded through the HSSRA. Funding is authorized and allocated for each state under U.S.C. Title 23, Chapter 2, MAP-21, Division A, Title I, Subtitle A, Section 1119 distribution formula.

Congressionally-Directed or Discretionary Funds

Congressionally-directed funds may be received through 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 locally-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."

Nationally-Significant Freight and Highway Projects

This program was also established by the FAST Act to create competitive grants or Transportation Infrastructure Finance and Innovation Act (TIFIA) loans for projects greater than $100 million. This is a discretionary freight-focused grant program that allows states, metropolitan planning organizations, local governments, tribal governments, special purpose districts, public authorities (including port authorities), and other parties to apply for funding to complete projects that improve safety and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements. Generally, the federal share for this program is 91.24 percent and the state is responsible for the remaining 8.76 percent. The state provides match for projects on state highways that addresses MDT identified infrastructure condition deficiencies; local governments provide the match for off-system projects. The state share is typically funded through the HSSRA.

ELIGIBLE ACTIVITIES

- Highway freight projects on the National Highway Freight Network.
- NHS highway/bridge projects, projects in National Scenic Areas.
- Freight rail/intermodal/port projects.
- Rail-highway grade crossings or grade separation projects.

Transit Capital & Operating Assistance Funding

The MDT Transit Section provides 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. 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)

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.

Formula Grants for Rural Areas (Section 5311)

This program enhances the access of people in non-urbanized areas by providing public transportation. Federal funds pay 86.58 percent of capital costs and 54.11 percent of deficit operating costs, 80 percent of administrative costs, and 80 percent of maintenance costs. The remaining 13.42, 45.89, 20, and 20 percent respectively must come from the local recipient. Eligible recipients of these funds can be a state agency, a local public body, a nonprofit agency, or an operator of public transportation services. Ten percent of the state's Section 5311 apportionment is dedicated to carry out a program to develop and support intercity bus transportation.

STATE FUNDING SOURCES

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.

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.

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:

$$\text{LOCAL SUPPORT} = \frac{\text{Expenditures for public transportation operations}}{\text{Mill value of city or urban transportation district}}$$

State Fuel Tax Allocations

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

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 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.

Effective July 1, 2017, HB473, the Bridge and Road Safety and Accountability Act (BaRSAA) incrementally increases Montana's fuel tax rate for gasoline and for special fuel. HB473 directs the fuel tax rate increase each biennium, until 2023, at the following increments as shown in **TABLE 9.2**.

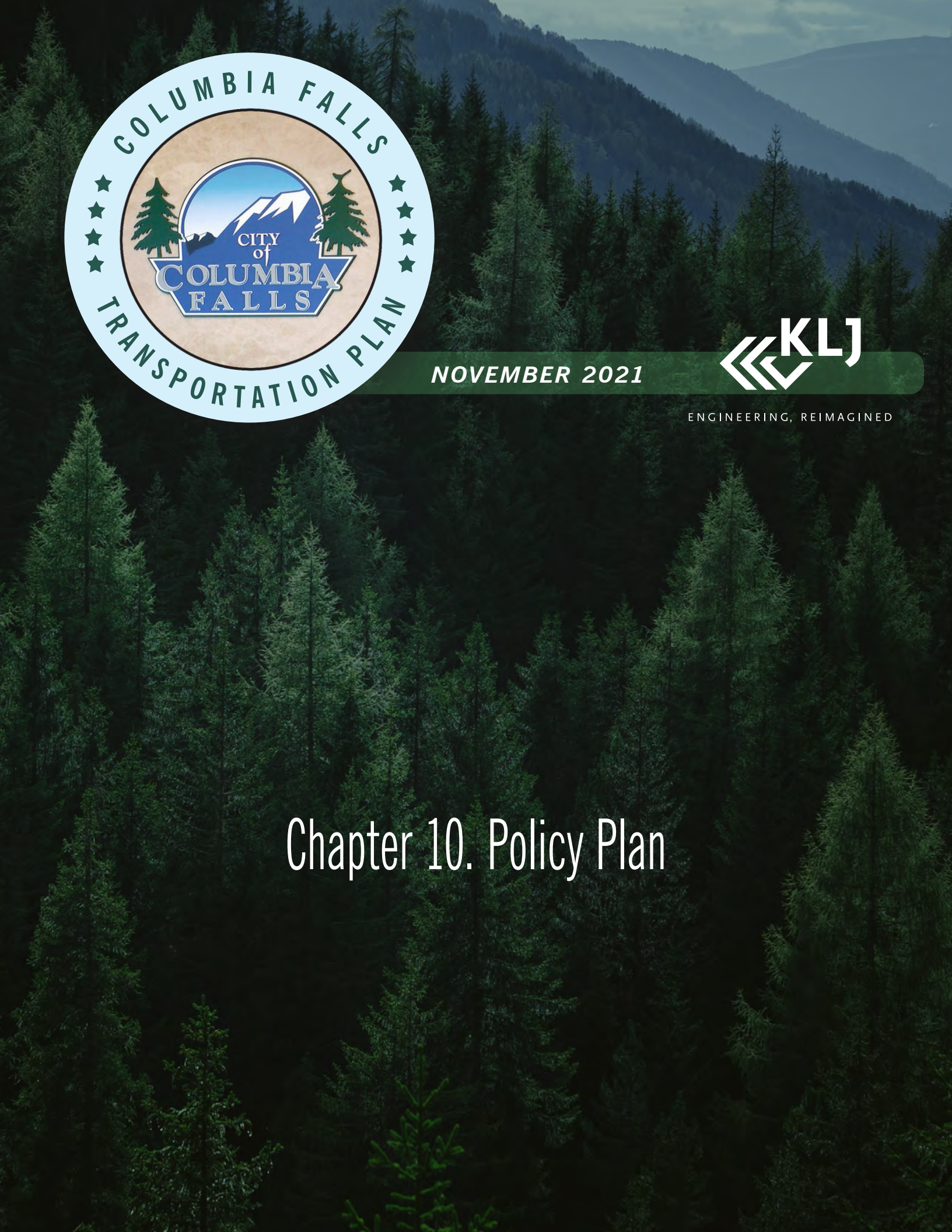
Table 9.2: BaRSAA Increases

Date	State Gas Rate	State Diesel Rate
July 1, 2017	0.315	0.2925
July 1, 2019	0.32	0.2945
July 1, 2021	0.325	0.2955
July 1, 2023	0.33	0.2975

A portion of the revenue generated by the increase will be allocated to local governments in addition to the existing fuel tax distributions provided for in MCA 15-70-101 and 7-14-102(2). BaRSAA funds are allocated in the same proportion and using the same ratios provided for in MCA 15-70-101(2)(b), (2)(c), and (3). Allocations are calculated based upon the statutory formula.

Local governments can use BaRSAA funds for the construction, reconstruction, maintenance, and repair of rural roads or city streets and alleys the local government has the responsibility to maintain which does not include the purchase of capital equipment. Funds may also be used to match federal funds used for the construction of roads and streets that are part of the national, primary, secondary or urban highway systems; or road and streets a local government has the responsibility to maintain.

Beginning March 1, 2018, local governments have been able to request distribution of their allocation from MDT. Local governments must match each $20 requested for distribution with at least $1 of local government budgeted matching funds. Local governments can request distributions of allocated funds between March 1 and November 1 of the calendar year the funds were allocated. Reservation requests can be made between September 1st and November 1st.



NOVEMBER 2021

KLJ

ENGINEERING, REIMAGINED

Chapter 10. Policy Plan

INTRODUCTION

The Policy Plan element of the Columbia Falls Urban Area Transportation Plan provides policy guidance to support development of the transportation system. The Plan encompasses the priorities and policy direction established within other local plans, and leverages collaboration with stakeholders and agency partners to set forth a vision for mobility, accessibility, and connectivity that will serve the community for decades to come.

The Transportation Policy Plan covers several policy areas that will support the economic success and vibrancy of the Columbia Falls area. The policy areas included in the Plan are summarized below:

- **Proposed Functional Class Map:** Presents and discusses the Columbia Falls proposed functional class map.
- **Typical Street Cross Sections:** Presents street cross section concepts for major collectors, minor collectors, and local roads.
- **Access Management:** Provides an overview of access management and discusses best practices to operate an effective access management program.
- **Traffic Calming:** Presents a sample toolbox of traffic calming techniques, and discusses their appropriateness for different road types.
- **Overview of Roundabouts:** Presents an overview of best practices for roundabouts, including types of roundabouts, their warrants, and a comparison with other traffic control devices.
- **Intelligent Transportation Systems (ITS):** Provides an overview of ITS and presents several solutions for consideration within the Columbia Falls area.

PROPOSED FUNCTIONAL CLASS MAP

A proposed functional class map was developed in collaboration with the City. The map was created by evaluating the existing functional classification system within the study area against current FHWA guidelines for recommended percentages for each functional classified roadway. These guidelines refer to FHWA best practices for urban and rural areas based on the *2013 Highway Functional Classification Concepts, Criteria and Procedures* manual. The existing functional classification system was evaluated against both urban and rural recommendations to account for the fact that, while Columbia Falls is considered an urban area, it only just recently crossed the urban threshold, so retains rural attributes.

The project team's assessment revealed the following for the existing system:

- Principle arterial mileage is above the FHWA recommended ranges
- Minor arterial mileage is below the FHWA recommended ranges
- Local road mileage is above the FHWA recommended ranges

The City's proposed functional classification map strives to align the roadway system with FHWA best practices to the extent possible. **TABLE 10.1** shows total mileage by functional classification for the existing and proposed functional classification maps, and provides a comparison with FHWA best practices.

Table 10.1: Total Mileage by Functional Classification – Existing and Proposed Functional Classification Maps

Functional Class Name	FHWA Rural Best Practice	Existing FC Map			Proposed FC Map		
		Miles	% of Total	Within Range	Miles	% of Total	Within Range
Principal Arterial	4% to 9%	9.9	9.1%	No	9.9	8.7%	No
Minor Arterial	7% to 14%	0.9	0.9%	No	0.9	0.8%	No
Major Collector	3% to 16%	10.0	9.2%	Yes	12.5	10.9%	Yes
Minor Collector	3% to 16%	4.4	4.0%	Yes	16.1	14.1%	Yes
Local	62% to 74%	83.7	76.8%	No	74.8	65.5%	Yes
TOTAL		**109.0**	**100.0%**		**114.2**	**100.0%**	

The City's proposed functional classification map is shown in **FIGURE 10.1**[1] and **FIGURE 10.2**[2]. For an existing built roadway, the proposed functional class map shows the intended function of the roadway to meet both existing and projected demand. These designations should guide future roadway investments in terms of access and typical section standards.

For roadways not yet constructed or not yet urbanized (i.e., paved or gravel rural standard roadways) the proposed functional class map is intended to show the functional class standard to which that roadway should be built as it is improved. This is particularly important for local roadways in growth areas which have not yet been urbanized to support access management and right-of-way preservation.

1 This map is for local planning purposes and does not represent the FHWA-approved functional classification.
2 This map is for local planning purposes and does not represent the FHWA-approved functional classification.

Figure 10.1: Proposed City of Columbia Falls Functional Classification Map

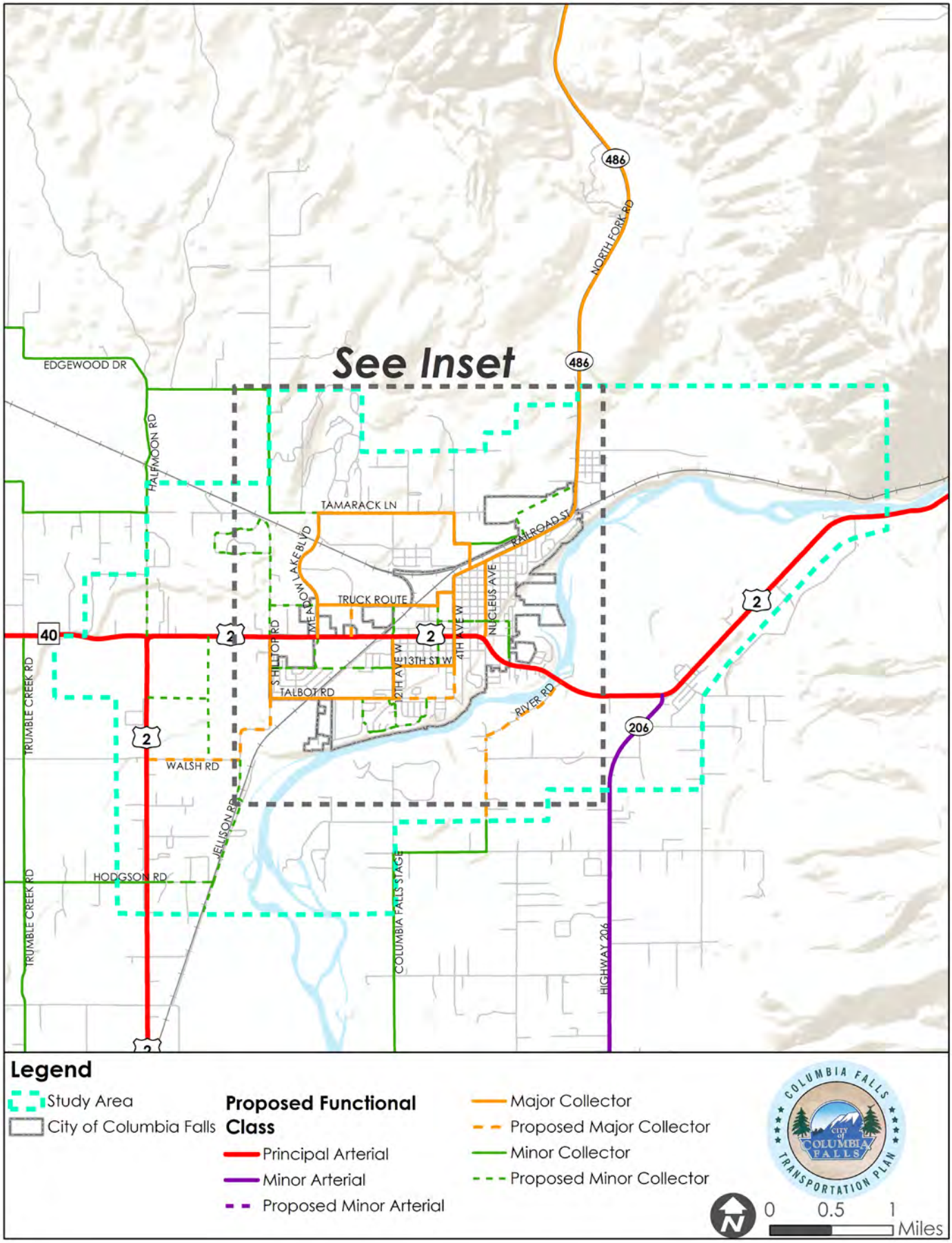
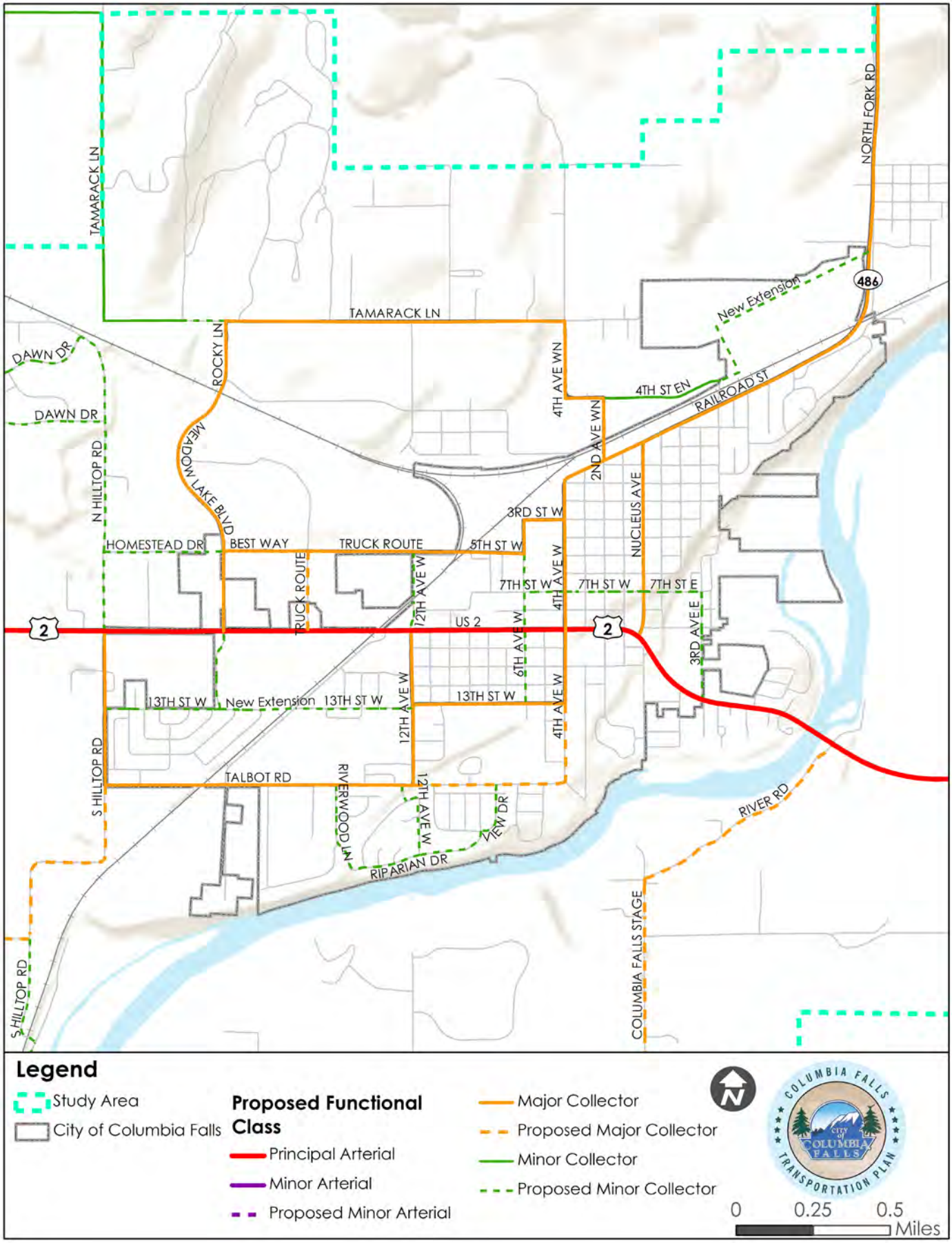


Figure 10.2: Proposed City of Columbia Falls Functional Classification Map (inset)



TYPICAL STREET CROSS SECTIONS

To support the city's proposed functional class map, planning-level roadway cross sections are presented below for Columbia Falls. The concepts presented here are intended to be illustrative and aspirational, and do not constitute approved or compulsory standards. Typical cross section concepts are provided for the following functional classifications:

MAJOR COLLECTOR
Including variations that make use of shared-use paths and on-street bike lanes. A typical section is also presented for Downtown/Nucleus Avenue which explores the conversion from three to two lanes.

MINOR COLLECTOR
Including a variation that makes use of a shared-use paths.

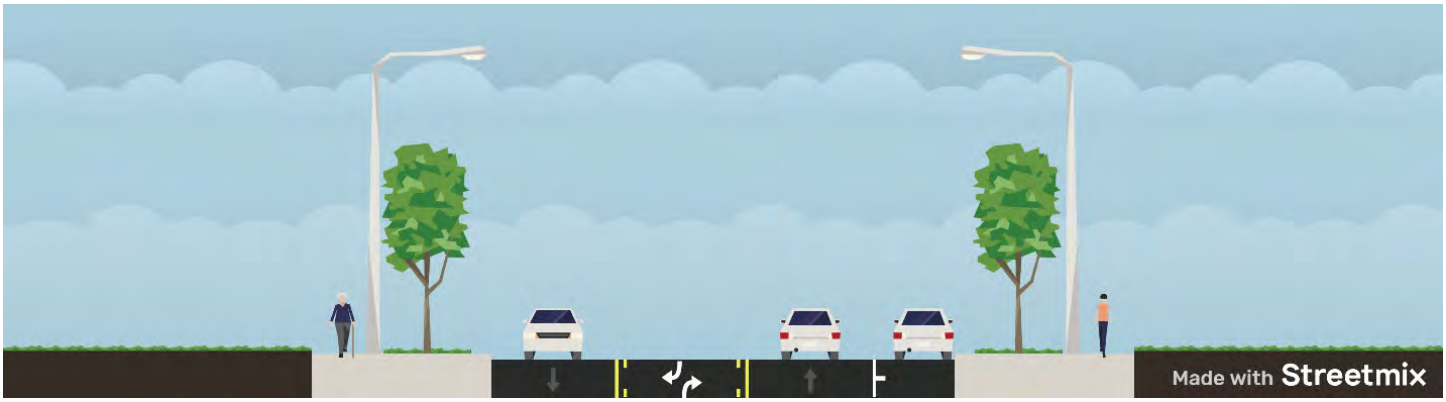
LOCAL ROAD

Major Collector (Standard)

The standard major collector cross section is presented as a three-lane facility with the following characteristics:

- 80' ROW
- 12' travel lanes
- 13' TWCLTL
- 8' parking lane
- 8½' boulevards
- 6' sidewalks

Figure 10.3: Major Collector Cross Section

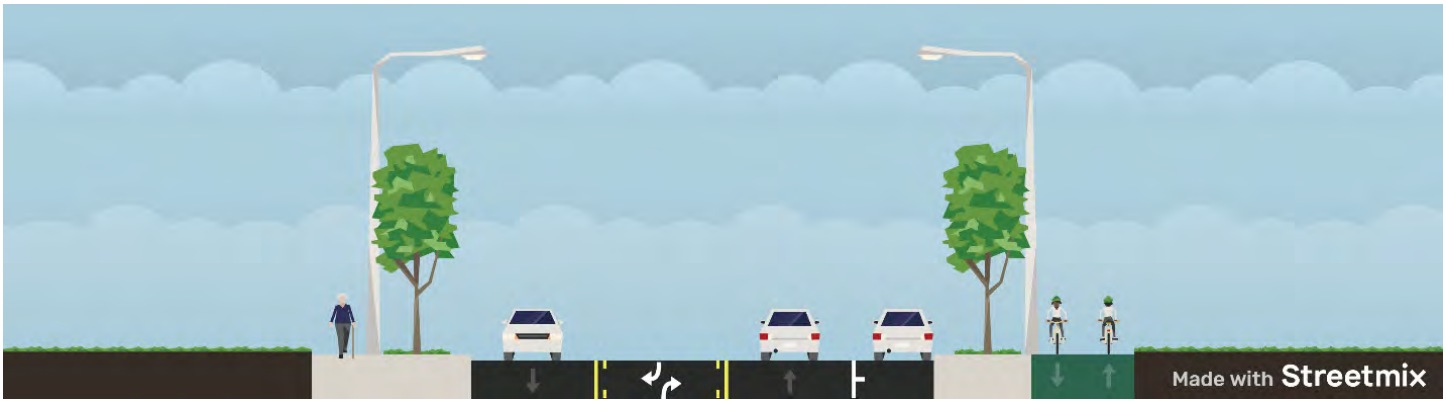


Major Collector (Shared-Use Path)

This variation of the major collector uses a shared-use path instead of a sidewalk on one side of the road. This option has the following characteristics:

- 80' ROW
- 12' travel lanes
- 13' TWCLTL
- 8' parking lane
- 6' sidewalk
- 10' shared-use path
- 6½' boulevards

Figure 10.4: Major Collector Cross Section (Shared-Use Path)



Major Collector (Bike Lanes)

This variation of the major collector includes on-street bike lanes, as well as sidewalks on both sides of the road. This option has the following characteristics:

- 80’ ROW
- 12’ travel lanes
- 13’ TWCLTL
- 6’ sidewalk
- 5’ bike lanes
- 6½’ boulevards

Figure 10.5: Major Collector Cross Section (bike lanes)

Major Collector (Downtown/Nucleus Ave)

This variation of the major collector explores the conversion from three to two lanes along Nucleus Avenue. Any changes to Nucleus Avenue require coordination with MDT. This option has the following characteristics:

- 100’ ROW
- 12’ travel lanes
- 10’ parking lanes
- 10’ sidewalks
- 10’ boulevards

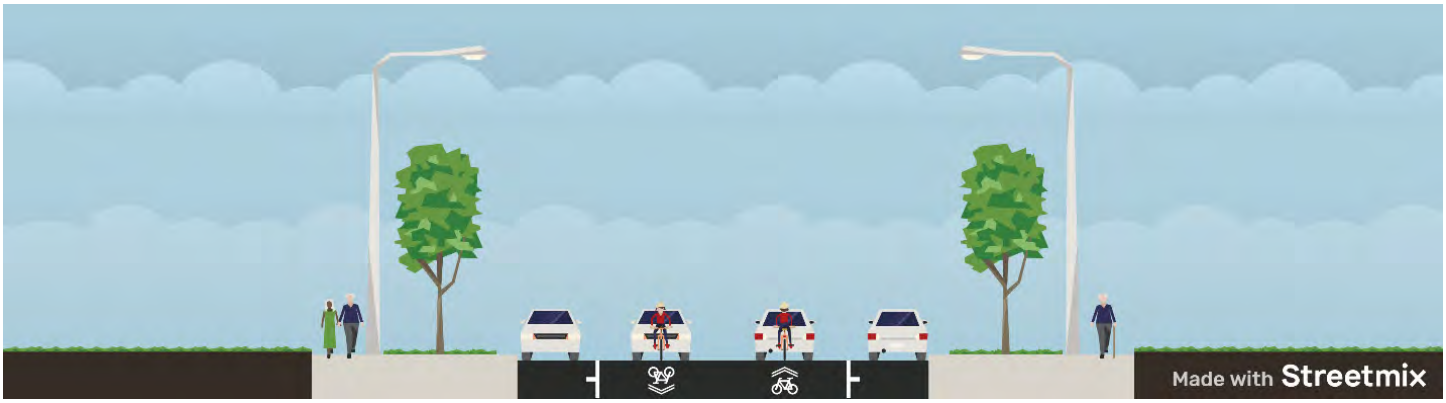
Figure 10.6: Major Collector Cross Section (Downtown/Nucleus Avenue)

Minor Collector (Standard)

The standard minor collector cross section is presented with two travel lanes and parking lanes on both sides of the road:

- 80' ROW
- 12' sharrows
- 8' parking lanes
- 11' boulevards
- 6' sidewalks

Figure 10.7: Minor Collector Cross Section

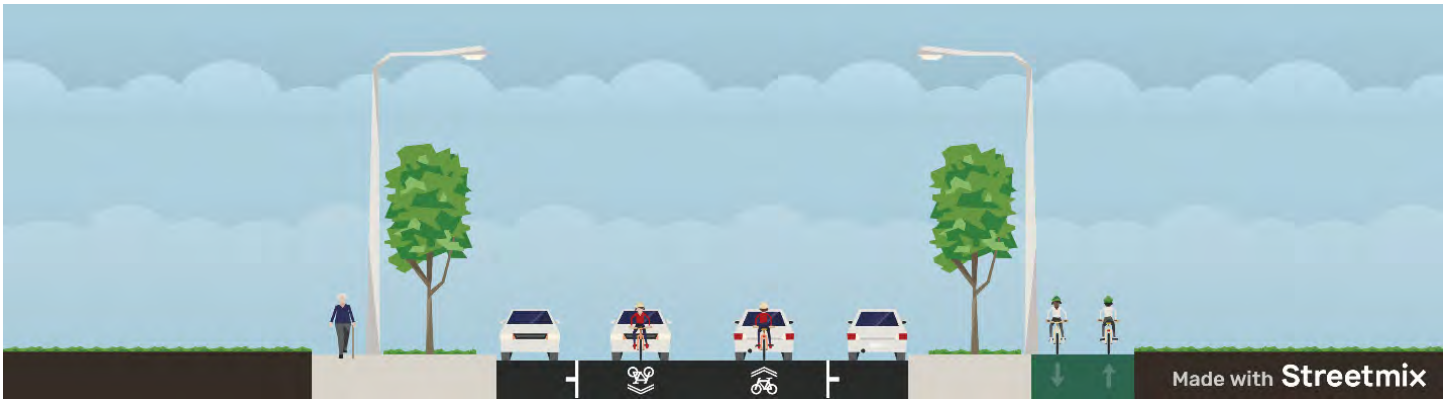


Minor Collector (Shared-Use Path)

This variation of the minor collector uses a shared-use path instead of a sidewalk on one side of the road. This option has the following characteristics:

- 80' ROW
- 12' sharrows
- 8' parking lanes
- 9' boulevards
- 6' sidewalk
- 10' shared-use path

Figure 10.8: Minor Collector Cross Section (shared-use path)

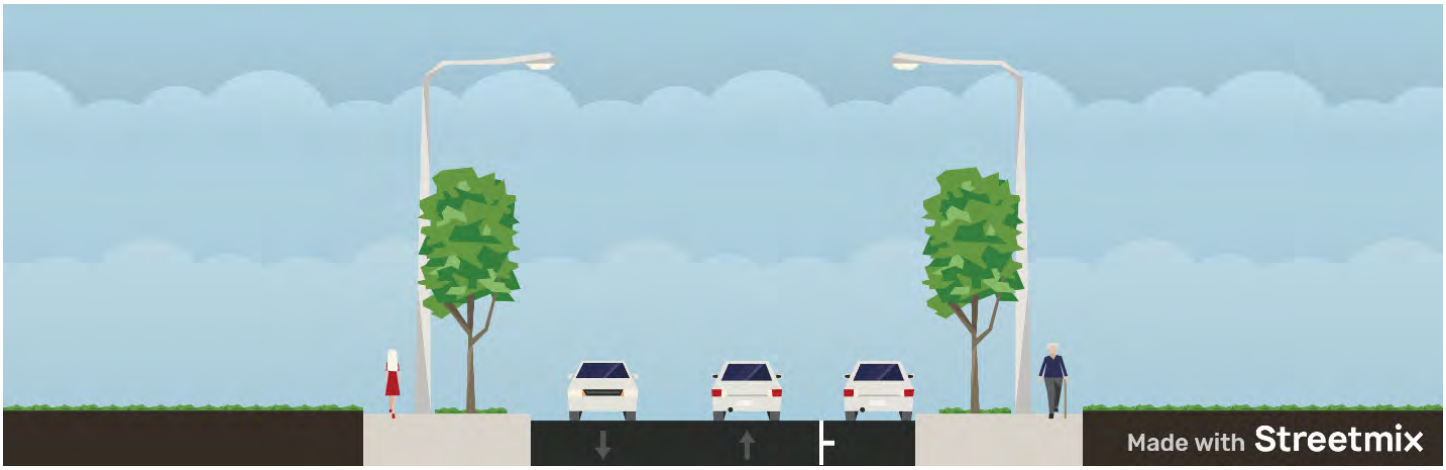


Local Road

The local road cross section is presented with two travel lanes and a parking lane on one side of the road:

- 60' ROW
- 12' travel lanes
- 8' parking lane
- 6' boulevards
- 5' sidewalk

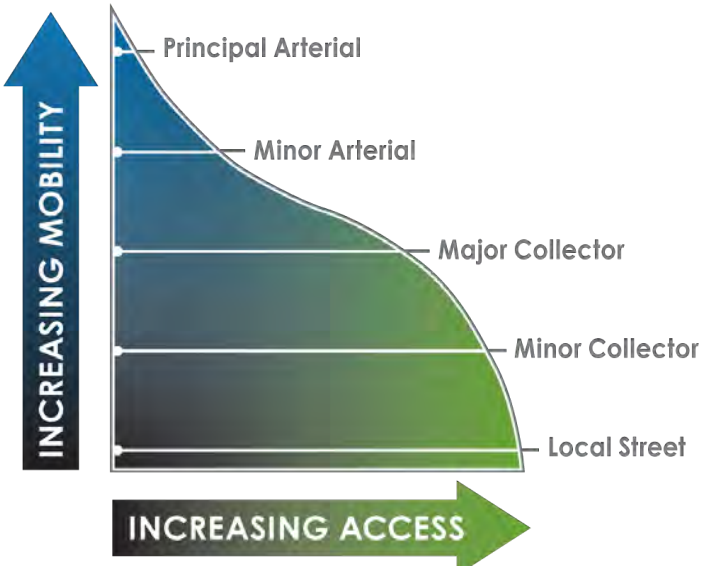
Figure 10.9: Local Road Cross Section



ACCESS MANAGEMENT

According to MDT, access management is a "strategy for managing the type of development along and physical connections to transportation corridors by regulating the frequency or location of access points along roadways".[1] While access points, such as intersections, pedestrian crossings, and driveways, are essential in allowing users to reach their destinations, poorly designed access management can increase the risk of crashes among vehicles and other roadway users.

Figure 10.10: Access and Mobility



Access management addresses the classic trade-off between corridor-wide throughput (or "mobility") and local accessibility (**FIGURE 10.10**). At one extreme, no minor street conflicts exist on a corridor and traffic flows freely, with influences on function limited to density, weather, and integrity of the roadway. When minor-street conflicts are introduced, the mainline flow is affected by the resulting combination of slowing, turning, merging, entering, and stopped vehicles. Inadequate access management may result in growing corridors that deteriorate functionally and aesthetically. The characteristics of good and poor access management are compared in **TABLE 10.2**.

Access Management Best Practices

Each access point along a facility creates opportunities for conflict between turning vehicles and through traffic. Access management seeks to limit the number, spacing, and location of vehicle-to-vehicle conflict points, reduce the speed differentials between turning vehicles and through traffic, and require proof of necessity for access from developers.

There are six basic principles of access management that are used to achieve the desired outcome of safer and more efficient roadways:

1. Limit the number of conflict points
2. Separate the different conflict points
3. Separate turning vehicles from through traffic
4. Locate traffic signals to facilitate traffic movement
5. Maintain a hierarchy of roadways by function
6. Limit direct access on higher speed roads

1 Please see: https://www.mdt.mt.gov/research/toolkit/m1/pptools/ds/am.shtml

Table 10.2: Characteristics of Good and Poor Access Management

Good Access Management	Poor Access Management
• Reduced congestion and better overall traffic flow	• Poor capacity throughput
• Lower potential for crashes due to fewer opportunities for vehicle conflicts with other vehicles, with pedestrians and with bicyclists	• Increases in crashes and crash rates
• Decreased travel times for commuters, truck drivers, and others	• Reduced roadway efficiency
• Easier movement between properties, increasing the attractiveness of adjacent neighborhoods	• Decreased property values and less livable neighborhoods
• Preservation of public investment in transportation infrastructure	• Waste of public funds resulting from disrupted traffic movement (public not "getting what they paid for" in terms of the intended function of a roadway)
• Better control over the intended character of a corridor and its adjacent neighborhoods	• Potential for unsightly strip development • Potential for unwanted neighborhood cut-thru traffic • Less desirable corridor user exper

Access management encompasses a set of techniques that local governments can use to control access to highways, major arterials, and other roadways. The following represents a "toolbox" of access management best practices that can be used to preserve roadway capacity, improve safety, and plan for future growth.

Access Denial, Removal, or Relocation

A city may control the number of conflict points by denying, removing, relocating, and consolidating access points. If proof of necessity cannot be adequately demonstrated for a proposed access onto a major roadway, then the access permit request may be denied and alternate means of access explored.

A Traffic Impact Study (TIS) may be required before a new access is permitted. The purpose of a TIS is to evaluate the effects of a proposed development on the surrounding transportation network. The TIS assesses the ability of the intended land use traffic to efficiently and safely enter/exit the site, and makes recommendations for any mitigation measures needed to accommodate the additional traffic volumes resulting from the proposed entrances.

Access Spacing Standards

Access spacing standards establish the minimum distance between access points with the intent of separating potential conflict points involving turning vehicles and through-moving vehicles. Access spacing standards govern the distance between driveways, between unsignalized intersections, and between intersections and the nearest driveway. Access spacing standards will vary based on the functional classification of the adjacent roadway, the desired land use, and the type of access. An indirect method to reinforce the minimum access spacing requirements is to require an increased minimum lot frontage on major roadways for all new development.

Frontage Roads

Frontage roads can reduce the frequency of conflicts along the main travel lanes of high-volume roadways. Direct access to adjoining property is provided from the frontage road and is restricted or prohibited from the main roadway. The restricted access along the main roadway allows for fewer access points with increased spacing.

Median Alternatives

Medians can be used to create space between access points, restrict some turning movements at access points, and facilitate auxiliary lanes for turning vehicles. For example, use of a non-traversable median is an effective way to limit disruptive left-turn movements into and out of access points to only those spots designed for turning vehicles. All other mid-block access points would be restricted to right-turn only movements, reducing dangerous cross-traffic movements.

Property Access Restriction

The regulation of access location can be accomplished by restricting each parcel to a specific number of access points, typically one. If a parcel is further subdivided, the new lots would have to share the single permitted access point. Denying major roadway access would force developments to provide internal lot access and utilize minor street networks or other pre-approved access roads. This technique encourages a connected street system with residential access served by low-volume neighborhood streets rather than major arterials or collectors.

Turn Lanes

Turn lanes can serve as an effective access management technique as they separate through traffic from vehicles slowing and turning. Separating traffic turning from through traffic reduces the speed differentials that increase the risk

of crashes and increase delay, thereby improving safety and increasing capacity. Turn lanes are often incorporated as a separate lane or traversable median, such as a two-way left-turn lane, or are included as turning bays within non-traversable medians.

Traffic Signal Spacing

Signalized intersections should be spaced uniformly to maintain optimal signal timing and progression. The installation of traffic signals can assist access management by establishing the location and spacing of major access points. The signalized access points allow for protected movements to and from these accesses. Signal design and timing operation often incorporate access management techniques involving turn lanes and medians to efficiently remove potential conflicts between turning and through traffic.

Corridor Preservation Measures

Corridor preservation is the process of preventing or minimizing development along a defined transportation corridor through the use of building setback standards and local guidelines. These measures are intended to address potential future land development and transportation improvements along the corridor, which may include additional vehicle travel lanes, bikeways, multi-use trails, high occupancy vehicle lanes, and fixed-rail lines, etc. Corridor preservation measures ensure that new developments along planned transportation corridors are designed to accommodate future transportation facilities.

State, regional, and local governments across the country use access management programs 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. For example, local residential roads are allowed full access, while major highways and freeways allow very little. Between these classifications 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.

For roadways on the state system and under the jurisdiction of MDT, MDT develops an access control plan defining minimum access point spacing, access geometrics, etc. For other roadways, the adoption of an access classification system based upon the functional classification of the roadway is recommended. These local regulations should serve to govern minimum spacing of driveway approaches/connections and median openings along a given roadway in an effort to fit the roadway into the context of the adjacent land uses and the overall roadway system.

Sample Guidelines by Functional Classification

While the development of specific access and spacing guidelines is beyond the scope of the Columbia Falls Urban Area Transportation Plan, the project team compiled a set of sample standards by roadway type to aid the City as it considers improvements to its existing access management program. The sample standards are based upon peer research, and represent the approach used by various small (<50,000) cities within the Midwest. It is important to note that, while the sample guidelines provide a valuable point of reference, an effective access management program must be tailored to consider a roadway's specific context and reflect the community's unique transportation and land use goals.

TABLE 10.3 provides sample guidelines for minimum access spacing by roadway functional classification.

Note: When determining minimum spacing for one intersection with respect to another intersection of a different access roadway functional classification, it is recommended that the minimum spacing corresponding to the lower-tier functional classification intersection be used.

TRAFFIC CALMING

Traffic calming supports the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming approaches use a variety of physical measures and driver-perception techniques to produce desired effects. An effective traffic calming program can help to transform streets and aid in creating a sense of place for communities.

The importance of reducing vehicle speeds in an area where there is potential for conflict between a pedestrian and a motor vehicle is undeniable. Simply stated, the slower the speed of a motor vehicle, the greater the chances are for survival for a pedestrian. **FIGURE 10.11** illustrates the relationship between the speed of a vehicle and the potential for pedestrian injury.

Traffic Calming Toolbox

As part of the Plan, a sample toolbox of traffic calming measures was compiled to support the development of a traffic calming program. It is important to remember that the application of a calming measure must consider the specific problem to be addressed, as even very effective measures will produce little benefit in the wrong context.

Table 10.3: Access Spacing Guidelines

Type of Access	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Road
Private Residential Driveways	No direct access	No direct access	No direct access	No direct access	As required
Commercial Driveways	No direct access	No direct access	1/8 mile (660')	1/8 mile (660')	Based on: Speed, Traffic Volume, Sight Distances, etc. (min. 100 ft.)
Non-Continuous[1] Local Roads	No direct access	1/8 mile (660')	1/8 mile (660')	1/8 mile (660')	(150')
Continuous Local Roads	No direct access	1/4 mile (1,320')	1/8 mile (660')	1/8 mile (660')	(150')
Collector Streets	1/2 mile (2,640')	1/4 mile (1,320')	1/8 mile (660')	1/8 mile (660')	1/8 mile (660')
Minor Arterials	1 mile (5,280')	1/2 mile (2,640')	1/4 mile (1,320')	1/4 mile (1,320')	1/4 mile (1,320')
Minimum Spacing Between Intersection and Nearest Driveway[2]	N/A	N/A	330'	330'	100' for commercial driveways; 35' for residential driveways

1 "Non-continuous" roads refer to cul-de-sacs or short length streets, typically less than one-half mile in length, which do not cross the roadway providing access (three-legged intersections).

2 Please see: Access Management Guidelines for the Urbanized Area (https://ccrpc.org/wp-content/uploads/2015/03/access-management-2013-04-17-final.pdf)

Figure 10.11: Speed/Pedestrian Injury Severity Correlation

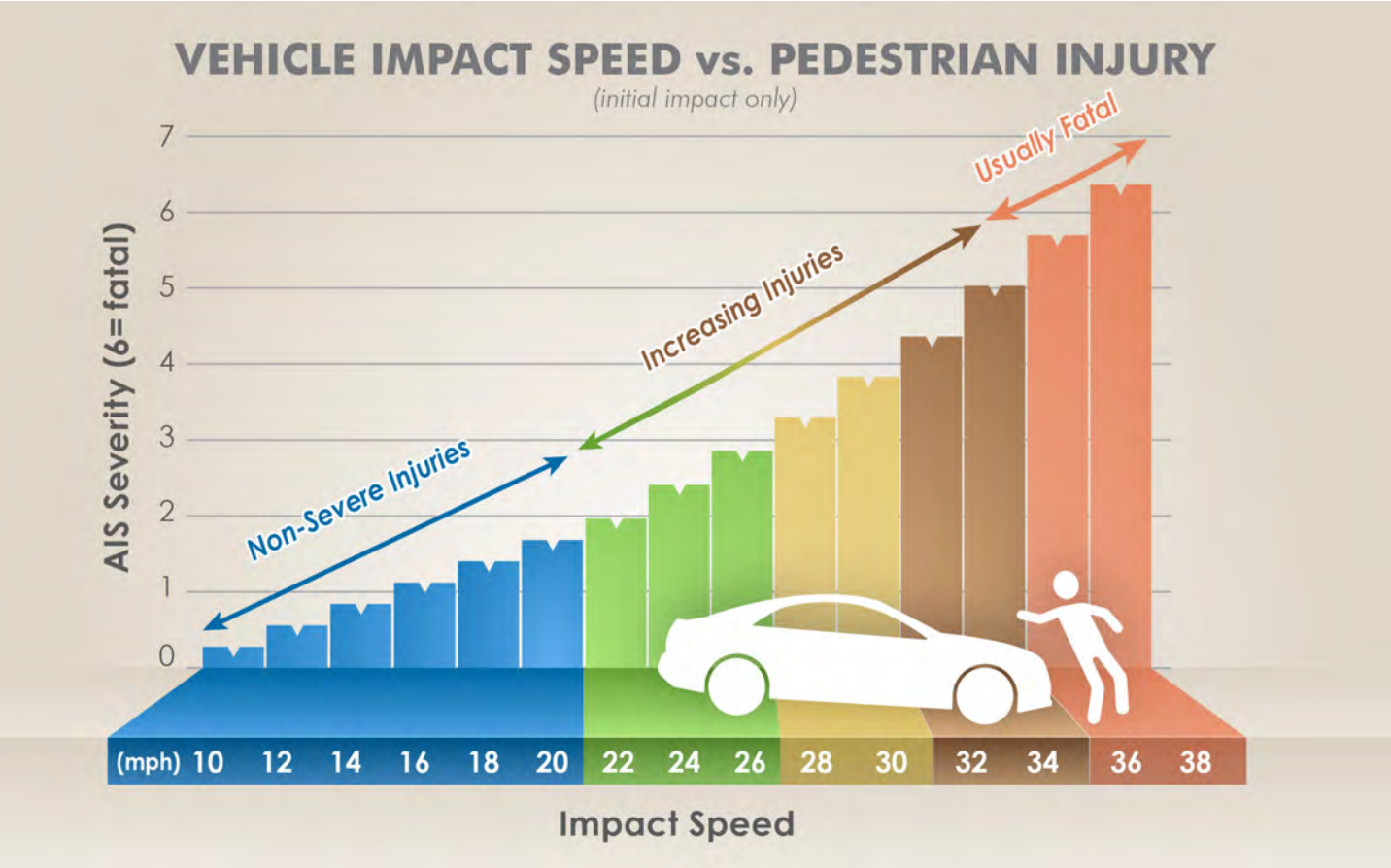


TABLE 10.4 presents the toolbox of traffic calming measures, including a description of each measure and an indication of the type of roadway for which the measure may be most appropriate. The toolbox is not comprehensive, but rather provides a sample of effective calming measures. Much of the toolbox content was adapted from the FHWA Traffic Calming ePrimer.[1] The table separates measures into four general categories:

- **Horizontal deflection** limits the ability of a motorist to drive in a straight line by creating a horizontal shift in the roadway
- **Vertical deflection** creates a change in the height of the roadway that forces a motorist to slow down in order to maintain an acceptable level of comfort
- **Street width reduction** makes increases driver attentiveness and naturally lowers vehicle speeds
- **Routing restriction** prevents turns or through movements into specific areas to reduce traffic or create pedestrian zones

The appropriateness of a specific measure by road type is indicated with the numbers 3 to 1, with 3 reflecting a high level of potential appropriateness, 2 reflecting a moderate level, and 1 representing a low level.

The Four "E's" of Traffic Calming

The traffic calming toolbox represents the third component of what is commonly referred to as the "four E's" of traffic calming: Education, Enforcement, Engineering, and Evaluation. This approach reflects the fact that pure engineering solutions are not always the most effective way of achieving the goals of traffic calming. Rather, many safety issues are addressed more effectively, and more economically, through education and enforcement or a combination of education, enforcement, and engineering. It is recommended that education and enforcement be considered prior to engineering alternatives; if these are unsuccessful, engineering solutions—such as those presented in the traffic calming toolbox—should be considered. Evaluation, the fourth "E", is conducted throughout the process to gauge the effectiveness of solutions and help an agency tailor its traffic calming approach.

The traffic calming response process begins when the community reports a specific traffic or safety issue. The process would encompass the following general steps:

1 PROBLEM IDENTIFICATION AND ASSESSMENT

- City staff collects information on the affected location. This may include site visits, crash history reviews, sight distance reviews, analysis of traffic and speed data, and monitoring of pedestrian and bicycle activity.
- City staff facilitates a neighborhood meeting to gather input on the issue and inform residents of the ongoing analysis.

2 EDUCATION AND ENFORCEMENT

- If staff's assessment of the reported issue has demonstrated the need for traffic calming measures, education and enforcement efforts will begin.
- Education involves working with residents of the neighborhood to correct driver behavior using information and neighborhood awareness. Effective measures include vehicle-activated speed alerts, embedded flashing-light systems at crossings, neighborhood yard signs, and neighborhood social networking services such as Nextdoor, among others.
- Enforcement involves increased levels of police presence and speed monitoring to change driver behavior. Speed limit reductions may also be considered.

3 ENGINEERING SOLUTIONS

- City staff monitors the affected location for changes in driver behavior. If the reported issue persists, engineering solutions may be considered.
- An inclusive planning process is conducted with the neighborhood to choose the correct solution(s) considering the nature and severity of the issue, and available project budget.

4 ENGINEERING SOLUTIONS

- City staff evaluates the effectiveness of solutions implemented during steps 2 and 3.
- Evaluation is essential in helping an agency decide when a strategy has been effective, and when additional options, such as engineering solutions, should be considered.

Conclusion

Traffic calming involves trade-offs between the need to provide an efficient transportation network and maintaining a livable and safe environment for bicyclists, pedestrians, drivers, and adjacent land uses. The challenge of traffic calming is selecting the appropriate measures and locations to reach that balance. The City is encouraged to refer to the FHWA Traffic Calming ePrimer and its recommended resources as it develops and updates its traffic calming plan.

1 Please see: https://safety.fhwa.dot.gov/speedmgt/traffic__calm.cfm

Table 10.4: Traffic Calming Toolbox

Measure	Description	Appropriateness
HORIZONTAL DEFLECTION		
Chicane	A series of alternating curves or lane shifts that force a motorist to steer back and forth out of a straight travel path. The curvilinear path is intended to reduce the speed at which a motorist is comfortable travelling through a facility. Chicane curves can be created with a curb extension that alternates from one side of the street to the other.	Arterials: 1 Collectors: 3 Local Roads: 3
Realigned Intersection	The reconfiguration of an intersection with perpendicular angles to have skewed approaches or travel paths through the intersection. The expectation is that these physical features will discourage fast vehicle movements through the intersection.	Arterials: 1 Collectors: 3 Local Roads: 3
Traffic Circle	A raised island, placed within an unsignalized intersection, around which traffic circulates. A circle forces a motorist to use reduced speed when entering and passing through an intersection, whether the vehicle path is straight through or involves a turn onto an intersecting street.	Arterials: 1 Collectors: 2 Local Roads: 3
VERTICAL DEFLECTION		
Speed Hump	An elongated mound in the roadway pavement surface extending across the travel way at a right angle to the traffic flow. A speed hump produces sufficient discomfort to a motorist driving above the speed hump design speed to discourage speeding.	Arterials: 1 Collectors: 3 Local Roads: 3
Speed Table	A raised area placed across the roadway designed to limit the speed at which a vehicle can traverse it. Like a speed hump, it extends across the travelway. Unlike a speed hump, a speed table has a long enough flat top (typically 10 feet) to accommodate the entire wheelbase of most passenger cars. This flat top enables comfortable and safe vehicle speeds that are faster than allowed by a speed hump.	Arterials: 2 Collectors: 3 Local Roads: 3
Raised Crosswalk	A variation of a flat-topped speed table, a raised crosswalk is marked and signed as a pedestrian crossing. A raised crosswalk improves pedestrian safety by causing motorist speed to decrease at the crossing. Additionally, the height of the crosswalk increases the visibility of a pedestrian to motorists and improves the line of sight for a pedestrian toward an oncoming vehicle.	Arterials: 2 Collectors: 3 Local Roads: 3
STREET WIDTH REDUCTION		
Curb Extension	A horizontal extension of the sidewalk into the street resulting in a narrower roadway section. This method may be used at either a corner or midblock. A curb extension at an intersection is called a corner extension, while at midblock it is referred to as a choker. A corner extension shortens pedestrian crossing distance, and can be combined with a vertical speed control device (e.g., a raised crosswalk) to achieve a greater reduction in vehicle speed.	Arterials: 3 Collectors: 3 Local Roads: 3
Median Island	A raised island located along the street centerline that narrows the travel lanes at that location, encouraging motorists to slow. A median island can double as a pedestrian refuge island if a cut in the island is provided along a marked crosswalk. When placed at or near the entrance to a neighborhood, a median island provides a visual cue to the motorist about the preferred vehicle speed	Arterials: 3 Collectors: 3 Local Roads: 3
Road Diet	The conversion of an undivided roadway to a cross-section with fewer or narrower through motor vehicle travel lanes. The most common application is the conversion of an undivided four-lane roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane. This lane reduction may also accommodate the inclusion of multimodal elements such as bicycle lanes, sidewalks, pedestrian refuge islands, and transit.	Arterials: 3 Collectors: 3 Local Roads: 2
ROUTING RESTRICTION		
Diagonal Diverter	A diagonal diverter is a physical barrier placed diagonally across a four-legged intersection. The barrier creates two unconnected intersections. Traffic approaching the intersection is restricted to one receiving leg, rather than three. A strategically placed diagonal diverter can reduce traffic volume by preventing straight-through traffic movements at an intersection.	Arterials: 1 Collectors: 2 Local Roads: 2
Full Closure	A physical barrier placed across a street to close the street completely to through vehicle traffic. Full closure can be done at either an intersection or midblock. A full closure can be designed to allow bicyclists and pedestrians to pass through. It is important to consider where the diverted traffic is likely to shift, in particular the availability, capacity, and appropriateness of the alternative routes.	Arterials: 1 Collectors: 2 Local Roads: 2
Median Barrier	A median barrier is a raised island placed through an intersection, along the centerline of a roadway, preventing a motorist from traveling straight through the intersection on the side street. A median barrier can be designed to allow turns to and from the main street, while preventing through traffic from the side street from crossing the main roadway.	Arterials: 2 Collectors: 3 Local Roads: 3

OVERVIEW OF ROUNDABOUTS

Primary Roundabout Types

TABLE 10.5 compares the characteristics of the primary roundabout types. The primary types/configurations of the modern roundabout in the United States include:

- A **Multi-Lane Roundabout** (**FIGURE 10.12**) has two or more approach lanes for each leg of the intersection and two or more circulating lanes throughout the entire roundabout.
- A **Hybrid Multi-Lane Roundabout** (**FIGURE 10.13**), commonly referred to as a "2x1 Roundabout", is classified as having a mixture of one- and two-lane approaches and circulating lanes.
- A **Single-Lane Roundabout** (**FIGURE 10.14**) has one approach lane and a circulating lane throughout the entire footprint.
- A **Mini Roundabout** (**FIGURE 10.15**) is a single-lane roundabout with design features that make it more compressed and suitable for compact urban environments. Mini roundabouts have become more common across the United States in recent years. In the right circumstances they can achieve the same benefits as a single-lane roundabout at a substantially lower price.

Table 10.5: Roundabout Type Comparison

Characteristics	Multi-Lane Roundabout	Hybrid Multi-Lane Roundabout	Single-Lane Roundabout	Mini Roundabout
Desired Entry Speed	25 to 30 mph	Varies	20 to 25 mph	15 to 20 mph
Typical Inscribed Circle (Curb to Curb of the circulating roadway)	150 to 300 ft	Varies	90 to 180 ft	45 to 90ft
Planning Level Entering Volume Capacity	Up to 45,000 for two lane approaches on each leg. Roundabouts with 3+ entry legs require more planning level analysis	Varies	Up to 25,000	Up to 15,000 vpd
Advantages	Large capacity and ability to process traffic volume	Allows for adaptive and creative design where there are right-of-way constraints and has a smaller footprint and cost than a traditional multi-lane roundabout if the capacity is not needed on the minor approach	The maximum safety benefit compared to other roundabout types	Small footprint, usually able to be constructed within the existing curb lines of an intersection which relates to a lower construction cost
Disadvantages	Large footprint and will likely increase the overall frequency of crashes (still greatly reducing severity) compared to other roundabouts. There are concerns with driver entry yielding compliance that is elevated with multi-lane roundabouts. The design process can be very challenging and complex compared to smaller roundabouts.	Inconsistency of lanes in the circulatory roadway may cause additional crossing paths and confusion for motorists. The design process and for multi-lane/hybrid roundabouts can be very challenging complex compared to other roundabouts.	More expensive and larger impact compared to mini roundabouts.	Tight geometry makes navigation for large vehicles difficult. The entire center island must be fully traversable for heavy vehicles.
Applicable Contexts	Multi-lane roundabouts are typically most successful for traffic operation mitigation where a large signalized intersection would have been needed.	A Hybrid roundabout should be used in specific circumstances where traffic volumes are unbalanced but the operations are still deemed to be acceptable.	A Single lane roundabout is the most common and widely applicable roundabout in the United States.	This roundabout should be used in low speed urban areas.

Figure 10.12: Multi-Lane Roundabout – King Avenue and 40th Street, Billings, MT

Figure 10.13: Hybrid Multi-lane Roundabout (2x1) –
E North Pacific Avenue and Airway Boulevard, Belgrade, MT

Figure 10.14: Single-lane Roundabout – Smelter Avenue and Division Road, Great Falls, MT

Figure 10.15: Mini Roundabout – Toole Avenue and Scott Street, Missoula, MT

Prevalence of Roundabouts

Roundabouts construction emerged in the 1990s in states like California, Florida, Nevada, Colorado, Vermont, and Maryland. As public perception and safety data improved to show the safety and operational benefits of roundabouts, their implementation increase drastically in the mid to late 2000s.

Kittelson's Lee Rodegerdts played a key role in the NCHRP study and since then has kept a real-time database of roundabouts in the Unites States through his firm Kittelson and Associates since 1997. **FIGURE 10.16, FIGURE 10.17** and **FIGURE 10.18** give more perspective on the history and growth of roundabouts in the United States.

The National Cooperative Highway Research Program (NCHRP) conducted a study in 2003 that found that 73 percent of roundabouts in the United States are single lane and mini roundabouts, 25 percent are hybrid multi-lane and multi-lane with two approach lanes and circulating lanes, and 2 percent were multi-lane roundabouts with at least one approach that had three or more lanes. A comparable study has not been completed since then.

MDT began design and public engagement for roundabouts in the early 2000s and constructed their first roundabouts in the late 2000s. To date, there are approximately 56 roundabouts in operation, 10 more in construction, and 18 more in design, planning, or early consideration phases according to MDT records. These numbers are broken out in **TABLE 10.6**.

Figure 10.16: Types of Roundabouts in the U.S. (NCHRP)

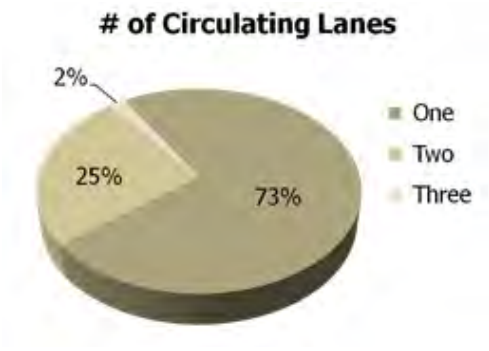


Figure 10.17: Roundabouts by State

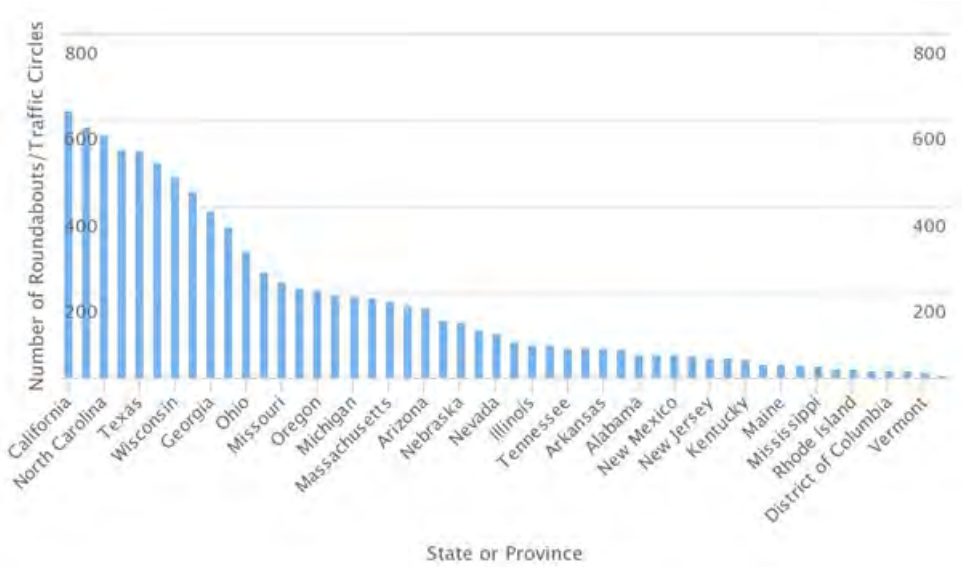
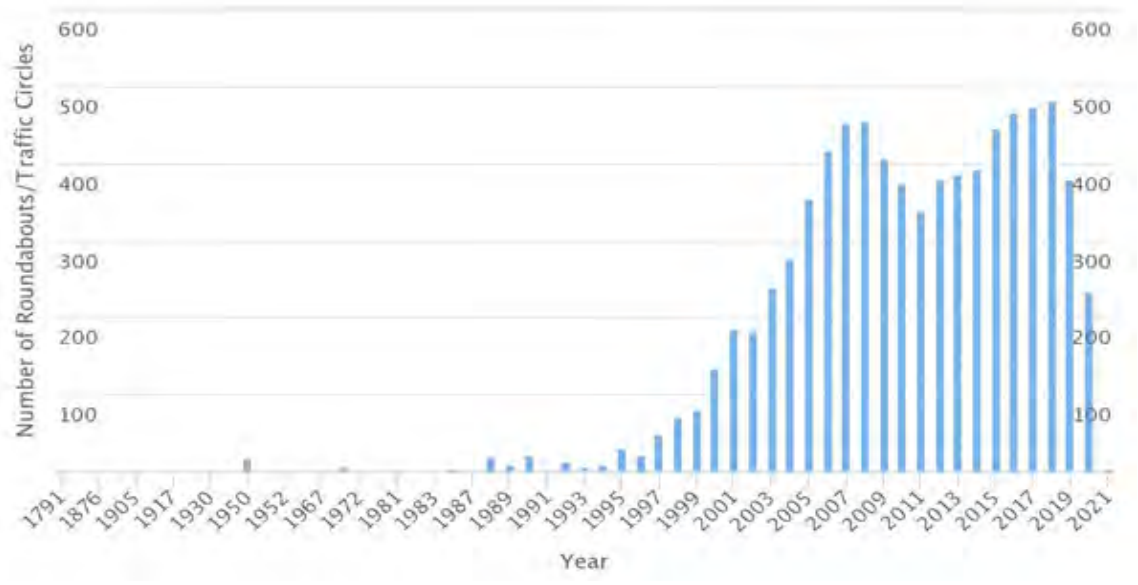


Table 10.6: Montana Roundabouts by Location[1]

General Location	Roundabouts in Operation	Roundabouts under Construction[2]	Roundabouts in Consideration/Planning/ Design Phases
Billings	17	1	5
Bozeman & Belgrade	11	0	1
Great Falls	1	0	3
Helena	5	1	3
Butte	0	1	1
Missoula	11	2	2
Kalispell	7	2	3
Combination of Other Jurisdictions With Less than 10,000 population (Sidney, Poplar, Miles City, Lame Deer, Red Lodge, Browning)	4	3	1
TOTAL	**56**	**10**	**18**

1 See: https://www.mdt.mt.gov/visionzero/roads/roundabouts/locations.shtml. Table numbers are current as of March 2021.
2 Includes roundabouts that are let for construction

Figure 10.18: Roundabouts by Year Constructed



Benefits of Roundabouts

Roundabouts have been shown to reduce the number of crashes that occur at an intersection, reduce crash severity, and improve bicycle and pedestrian safety. The two major components that allow the accomplishment of these safety benefits are the ability of the roundabout to reduce conflict points between facility users and reduce vehicle speed.

FIGURE 10.19 and **FIGURE 10.20** help demonstrate how a roundabout physically achieves these concepts.

Roundabouts can also reduce delay and travel time, reduce operation and maintenance costs, be cheaper to construct, offer more flexibility for traffic growth and travel pattern changes, and offer opportunities for placemaking and aesthetics. **TABLE 10.7** provides considerations for roundabouts in comparison to other traffic control types.

Table 10.7: Comparison of Roundabouts to Other Traffic Control Types

Consideration	Disadvantages	Advantages over Side-Street Stop Control	Advantages over All-Way Stop Control	Advantages over Signal Control
Safety	There may be an increase in low severity sideswipe crashes and rear end crashes on the major approach when converting from two way stop control. This is especially true of muilti-lane and hybrid roundabouts.	Roundabouts show a 44% reduction in all crashes and up to 87% reduction in serious and fatal crashes.	While there is still expected to be a crash reduction, the comparison to all-way stop control is less drastic than other control types.	Roundabouts show a 48% reduction in all crashes and up to 78% reduction in serious injury and fatal crashes.
Delay	Roundabouts are also less consistent and capable of servicing large volume intersections or dominant movements when compared to signal actuation, signal time of day plans, or the uncontrolled approach of two-way stop control.	Roundabouts can improve the frequency and duration of gaps for minor street traffic movements when compared to two-way stop control.	Roundabouts are generally able to process traffic faster due to a yield entry condition instead of the full stop and by allowing multiple approaches to enter the intersection simultaneously.	Roundabouts in a variety of cases are able to reduce delay compared to a signal by elimination of loss time (yellow + all-red between phases).
Cost	The geometric footprint of roundabouts frequently cost more than a signal. It is important to complete a benefit/cost analysis for roundabouts when less expensive solutions may be adequate. Maintenance of the center island components should be considered in the cost.	No Cost Advantage.	No Cost Advantage.	Roundabouts of a smaller footprint, especially mini roundabouts, can cost less to construct than signals. Roundabouts also require less maintenance and no electrical equipment.

Figure 10.19: Vehicle Conflict Point Comparison

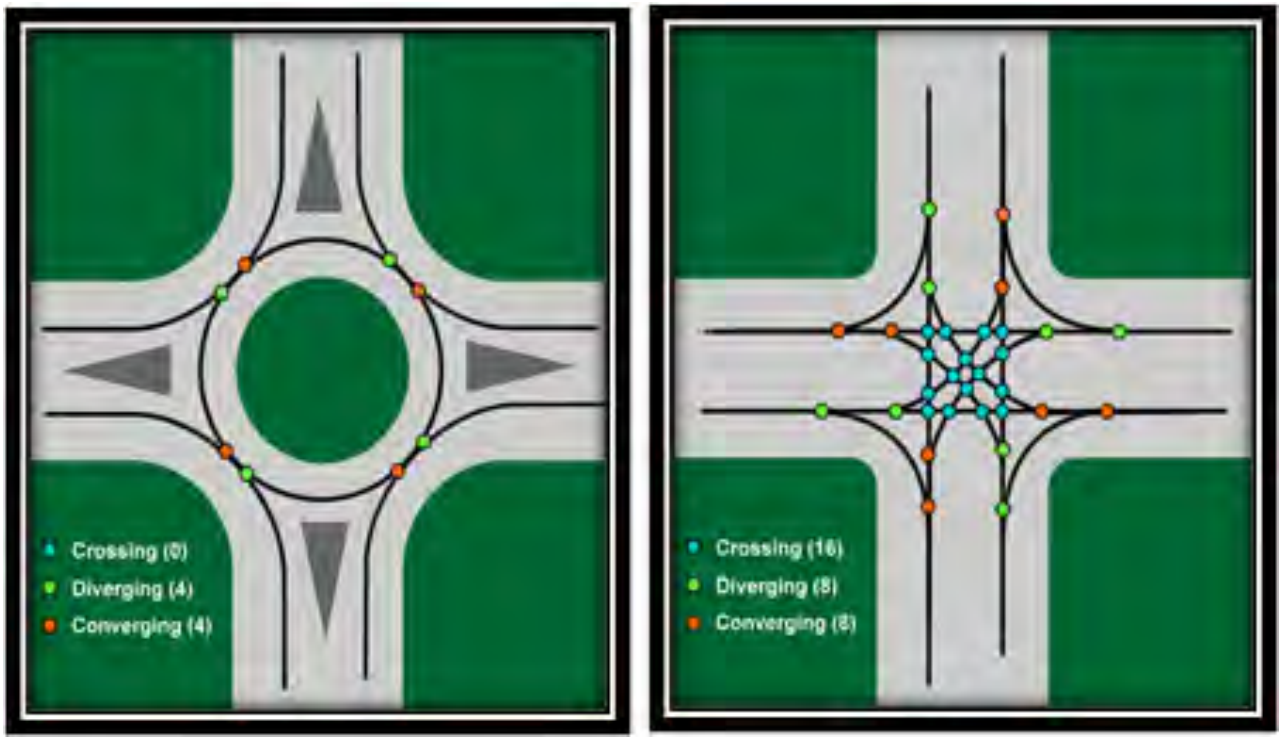
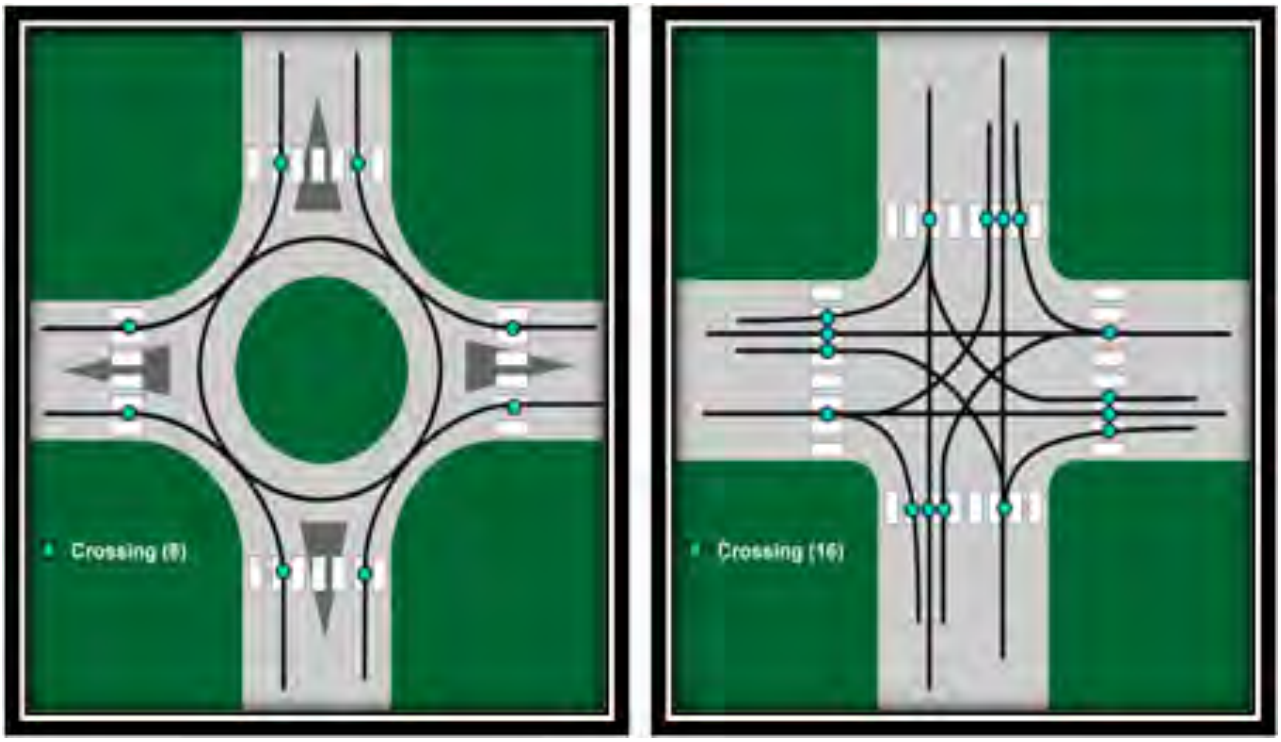


Figure 10.20: Pedestrian Conflict Point Comparison



ITS

ITS applies information, technology, and systems engineering principles to the management and operations of surface transportation facilities and systems, including freeways, arterials, and transit. ITS includes a wide range of applications that process and share information to reduce congestion, improve traffic management, minimize environmental impacts and increase the benefits of transportation to commercial users and the general public. The substantial benefits of ITS can be observed in the areas of travel time improvement, capacity management, incident management, and sustainability.

Many of the most prominent ITS technologies have already been deployed throughout the country (please see the call-out box).

MDT has employed several ITS solutions to improve the efficiency of Montana's transportation system, with the most notable examples being upgrades to traffic signal systems and implementation of traveler information systems.

MDT has also implemented the 511 system, which allows drivers to access real-time information by phone or internet. The 511 system provides updates on weather-related conditions, road work, commercial vehicle restrictions, road closures, chain requirements and other travel information. Finally, dynamic message signs have been employed at key locations on the road network to advise motorists of changing travel conditions. These technologies allow travelers to make better choices about when they travel, what transportation mode they use, and what route they take.

Examples of ITS in Use Today

- **Ramp Meters (RM)** on freeway ramps alternate between red and green signals to control the flow of entering vehicles. Metering rates are altered based on freeway traffic conditions.
- **Red Light Cameras (RLC)** detect when a motor vehicle runs a red light. The sensors connect to computers in high-speed cameras, which capture license plate information. Law enforcement reviews the information and mails a citation if warranted.
- **Adaptive Signal Control Technology (ASCT)** collects and evaluates traffic data in real time to adjust signal timing and improve traffic flow. ASCT can also respond to traffic incidents and special events.
- **Transit Signal Priority (TSP)** systems use sensors to detect approaching transit vehicles and give them priority at signalized intersections.

Source: USDOT ITS Research Fact Sheets – Benefits of Intelligent Transportation Systems

ITS for Columbia Falls

USDOT recognizes that there is a subset of ITS solutions and technologies that is most relevant for "rural environments", which it defines to include both rural areas and urban centers with populations of less than 50,000. This is because such areas have different technological infrastructure, fiscal resources, infrastructure usage, and travel patterns relative to urban areas. Considering these unique characteristics, the City may benefit from exploring ITS solutions in the following focus areas:

Traveler Safety and Security

This focus area addresses a driver's ability to operate their vehicle in a safe and responsible way and for improving driver awareness of potentially hazardous driving conditions.

POTENTIAL ITS SOLUTIONS:

- Dynamic speed warning message signs that communicate a vehicle's actual speed to the driver.
- Animal Warning Systems that warn motorists about the potential or actual presence of animals on the road. These systems utilize electronic sensors to detect animals. Once an animal is detected, signs are activated to warn drivers of the presence of an animal.

Tourism and Travel Information Services

This focus area addresses the challenges experienced by drivers unfamiliar with the area through which they are traveling.

POTENTIAL ITS SOLUTIONS:

- Dissemination of real-time information on parking availability through a cell phone application. Such an application could also provide information on construction projects, etc.
- Dissemination of real-time weather and road conditions information via cell phone applications.

Transit Services

This focus area addresses opportunities to increase the accessibility and coordination of Mountain Climber service.

POTENTIAL ITS SOLUTIONS:

- TSP technologies, which reduce dwell time at traffic signals for transit vehicles by holding green lights longer or shortening red lights. TSP may be implemented at individual intersections or across corridors or entire street systems.
- Electronic fare payment systems to automate fare collection and processing. Electric payment options

include smart phones (e-tickets), magnetic stripe cards, smart cards and credit cards.

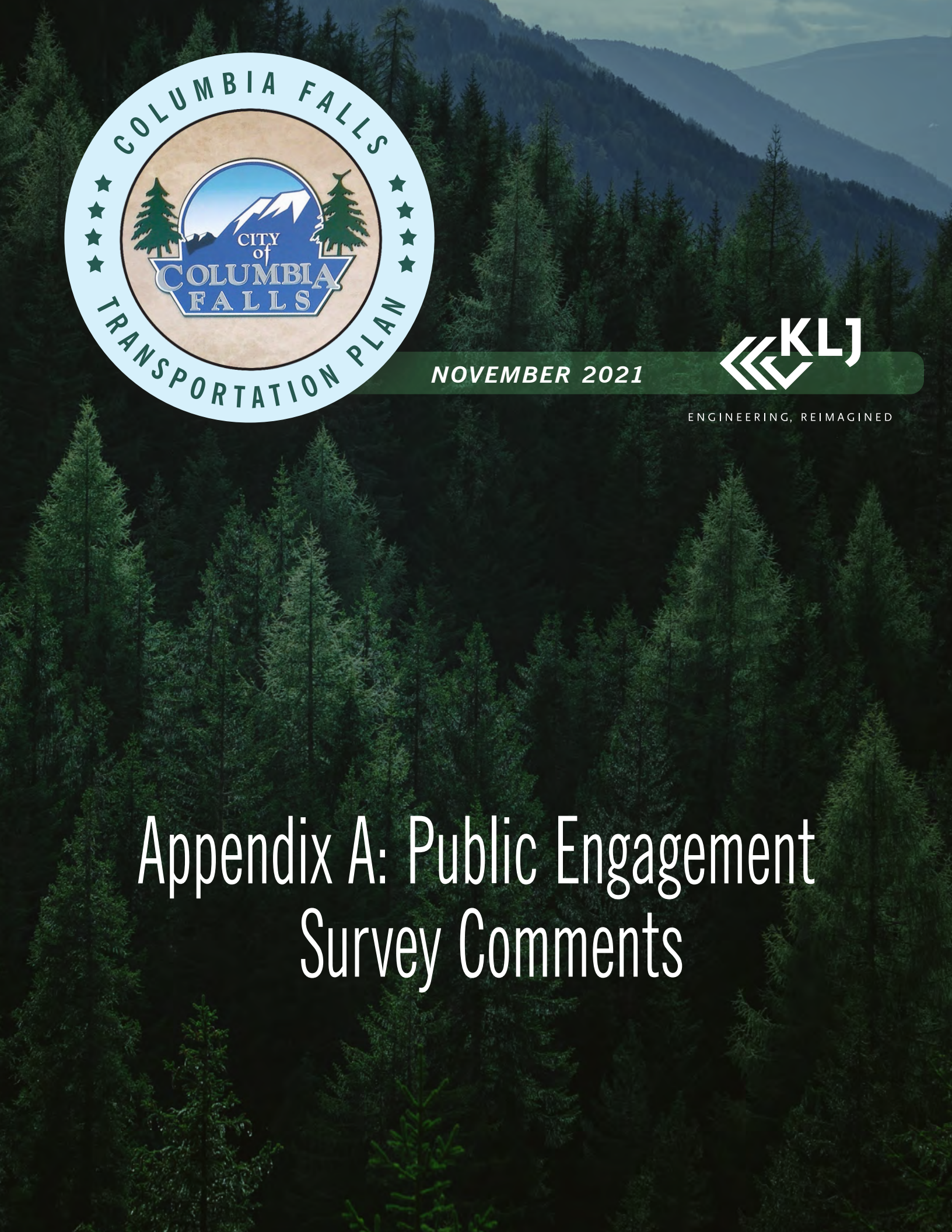
- Automatic Vehicle Location (AVL) technology, a computer-based vehicle tracking solution that uses GPS to communicate the real-time location of buses. Transit agencies use AVL systems to improve customer service by communicating arrival times, which can be posted to variable message boards installed at transit stops, websites and smartphone applications. AVL also allows agencies to monitor transit driver performance.
- Automated voice annunciator systems that broadcast bus route and safety information.

Traffic Signals

This focus area addresses the signal system so that traffic operates at an optimal level.

POTENTIAL ITS SOLUTIONS:

- Traffic signal coordination provides the ability to synchronize multiple intersections to enhance the operation of one or more directional movements in a system. The decision to use coordination is supported by various considerations, but is typically most appropriate when intersections are in close proximity and there is a large amount of traffic on the coordinated street.



NOVEMBER 2021

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Appendix A: Public Engagement Survey Comments

PUBLIC ENGAGEMENT SURVEY COMMENTS

Comment locations are pinpointed on corresponding maps in **CHAPTER 2**. Please see **FIGURE 2.2: BIKE/PED-RELATED COMMENTS, FIGURE 2.3: TRAFFIC-RELATED COMMENTS,** and **FIGURE 2.4: TRAFFIC-RELATED COMMENTS (US HIGHWAY 2 & MT 40).**

ID	Comment	Up Votes	Down Votes
1	Better yet and overpass like on Meadowlake Blvd would be ideal with path for people walking, biking and running.	0	0
2	Would like to see speed limit signs and deer crossing signs. People drive down this road like its a drag strip and deer are constantly crossing roadway.	0	0
3	Could you please make this yellow strip on curb to prevent parking. When people park here it's a blind turn to the north and south making it dangerous.	0	0
4	I agree that this is a hazardous blind corner. Extra hazard of the fenced lot right on the corner. Could the blind spot be replaced with a 4 foot fence? The Talbot bike path is very busy during three of the seasons. It is a main access for all of the housing South of Talbot to get downtown. Also East end kids take this to/from school.	0	0
5	I agree that this would be a fantastic restoration for our town. Similar to River's Edge Park this would be a very unique landmark for our valley. It is quite expensive to deal with it. Whether tearing down, rebuilding, or restoring. There is a group having discussions about it: saveouroldredbridge@gmail.com. With the money flooding into our valley with out of state homebuyers maybe we can get a campaign going. As well as all the extra tax money with the new building.	0	0
6	I had an experience at this crossing with two children and was nearly hit by a car but I don't think a street light is necessary. Definitely better lighting (solar? Low light pollution) is needed and a working crossing light. I also think they should position a crossing guard during start/end of school.	2	0
7	I don't think a stop sign was needed here. Unnecessary at a non-congested intersection.	0	0
8	Fully agree on a green arrow. In summer (which extends through September) you cannot turn south on 4th unless you go on the red. And only one car will make it. This leads to pushing the turning traffic to use more unsafe routes through town.	1	0
9	I agree that stops signs could be placed. Minor fix. I use this multiple times a week biking and if no cars are present I just cruise through the intersection. Is there already a stop sign for cars? If not there should be.	0	0
10	Traffic delays are caused by trains stopping for lengthy times or going extremely slow. Train traffic should be realigned for off hours and to not stop at the crossing. Has been super frustrating for decades. A lot of residents live along Talbot and deal with the stopped train.	0	0
11	I would agree with the comment. Might a 4 way stop help? I realize the cost of a light might not be warranted but some type of traffic control here would be beneficial to the safety of drivers, pedestrians, and bikers.	0	0
12	Not sure why it bothers me, but this isn't 4th Avenue East; it's an alley. 4th Avenue East doesn't exist south of the entrance to River's Edge Park. This often confuses people when trying to give directions, but maybe it's more of an issue with the mapping service.	0	0
13	Crosswalk needed - especially for events at the Coop	7	0
14	Please consider a bike path or lane on S Hilltop to Jellison	13	0
15	Reconfigure the intersection of 4th Ave East and 5th Street East as an actual 90-degree T-shaped intersection with stop signs to help with traffic flow and bicycle/pedestrian safety into River's Edge Park.	0	0
16	Totally agree! As a resident that uses that left hand turn lane to access my property, I have been very frustrated that the blinking yellow arrow has functionality to go green but never has. I too have sat through multiple cycles of this signal!	0	0
17	Bus Stop and EV Charging Station on Nuclues. Red Lodge and other towns have this.	3	1
18	The rail use during the day across Highway 2 causes significant traffic congestion, especially during summer. I have frequently observed vehicles making a u-turn in response to the rail use. It would be great to shift the rail use to late evening or night.	0	0
19	Need to have a better functioning light at this intersection. Push button activation. People really can get moving on Talbot and this one has a hedge and bushes on the West side to hinder visibility.	0	0
20	Seems that 1st street connecting to 4th may not even be necessary, perhaps dead end 1st at 4th Ave? Local traffic still has several outlets.	0	0
21	This turn lane is not long enough to support the line of cars turning left onto Nucleus at certain times of the day.	6	0
22	Left turn bay is too short.	1	2

ID	Comment	Up Votes	Down Votes
23	The lack of visibility due to street parking on 4th and semitrucks unloading at Smiths makes this uncontrolled intersection dangerous.	4	0
24	The city and/or county needs to start sweeping the shoulders ... they are full of debris that creates hazards for cyclists.	1	1
25	This intersection only has one yield sign even though it is a 4 way intersection. It really needs another yield sign clearly showing the N/S street has the right of way.	0	0
26	There needs to be a turning lane to this river access as well as a merging lane for drivers coming back onto the highway. Cars often go 60+ miles through here and it can be very dangerous to slow down to turn into it or merge into fast moving traffic with a trailer.	1	0
27	I don't really know what is happening here but there has been a chunk of road missing for months. Maybe it is to access pipes or something, but it is a big square of dirt/gravel on the side of a real road.	0	0
28	This intersection could be made a lot safer if the vehicles had to park farther away from it for increased visibility. It is often hard to see around them and see if any cars are coming. I know we need parking on Nucleus, but pulling out onto the street is very difficult here.	0	0
29	I think there needs to be a street light at the intersection of 12th Ave W and Talbot Rd. This intersection is very dark during the night and early mornings when kids are going to school at Ruder Elementary. Its extremely hard to see people crossing 12th Ave W on the bike path. I believe this truly is a public safety issue.	0	1
30	Agree. Did not think the city should have allowed the private landowner here to exclude the public. His extension of fence into the water was illegal.	0	0
31	I agree would be a valuable addition for bike/pedestrian traffic only. This would greatly expand the recreational opportunities for those of us in town to get to nice roads for bicycling without needing to ride on the highway. It would also improve the ability of kids to walk/bike to school.	0	0
32	I am against a full time street light here. The nearby park is one of the few dark habitats in town for pollinators and other small animals. I would support a light that operated only during the times when kids are going to school and it is dark. A crossing guard is also a good idea.	0	0
33	What about adding a mirror to help with the visibility around the corner. These are used in some places and might be a good solution here.	0	0
34	Not sure this is needed quite yet for the size of the problem. If so, suggest having green arrow based on time of day as well as time of year.	0	0
35	The nearby park is one of the few dark habitats in town and I think the darkness is a good thing. Traffic should be slow here anyway as people are exiting a residential area or going into a residential area.	0	0
36	Quiet zones for the railroad. Exempting the crossing with gates from blowing their whistles in Columbia Falls	2	0
37	Agree 4-way not needed. 2 way sufficient here.	0	0
38	This neighborhood (and all of CFalls really) would benefit from eliminating uncontrolled intersections. In this area there are a lot of new drivers (high schoolers) which makes this more dangerous. Ideally would plan out some streets and avenues to have right away- probably can use mostly two way stops in neighborhoods like this.	0	0
39	This seems like a good place for a roundabout, perhaps combined with a wildlife underpass to reduce that conflict as well.	0	0
40	This planning area is too small. I have heard there are similar efforts for Whitefish and Kalispell. It seems like planning for the full county or at least the bottom of the valley would be more efficient.	0	0
41	Would like to see this and all lights in Columbia Falls modified to be less harsh, less bright, and more efficient. This light keeps me awake at night.	0	0
42	This exit to the highway should've eliminated and only accessible from River road (not from the highway). It is extremely dangerous to motorists and bike/pedestrians to have two adjacent points where people turn onto the highway at this already dangerous intersection in need of a traffic light	0	0
43	A bike path, not a sidewalk, is needed to connect the new bike path between river road and the water slides to downtown. The bike path should be on both sides of the highway as that stretch of highway is impossible to cross safely with children .	0	0
44	River road has an extremely narrow / nonexistent shoulder and blind curves making it dangerous for bike/ pedestrians. A bike path is desperately needed. All new developments or subdivisions must be required to incorporate a public bike path.	0	0

ID	Comment	Up Votes	Down Votes
45	It would be great if we could put in a walking path through here to connect the upper neighborhood with the Rivers Edge park!	0	0
46	Need Stop Light	0	2
47	There would not be enough bike/pedestrian use to justify the cost, in my opinion. However, restoration for vehicle use & bike/pedestrian use of this bridge would be a great transportation strategy, especially considering the significant growth occurring in the Middle/Columbia Falls Stage roads areas.	0	1
48	A flashing “be prepared to stop” signal as you enter the Blue Moon intersection would be awesome. I find these lights useful along Highway 2.	4	0
49	Need bike/ped path connecting downtown to Gateway to Glacier.	2	0
50	Eliminate this entry onto 1st Avenue West (south side) in order to lengthen the left-turn lane for Nucleus and avoid traffic confusion/congestion. Businesses and parking in this area could instead be accessed via 2nd Avenue West and 10th Street.	4	1
51	There should be a turn signal here! Now with the addition of Murdochs and a gas station, it is treacherous trying to make a left turn coming from Halfmoon and heading into CFalls.	8	0
52	Transit service only serves commuters to Whitefish or Kalispell. There is no inter-city service at this time which promotes auto use, reduces safety, increases pollution and generally discourages a pedestrian oriented community. A looped service originating on Nucleus and running west to 12th on both sides of Hwy 2 would be a huge benefit for employees and employers.	1	0
53	This would be a great stop location for public transit.	2	1
54	It won’t take much more growth for hwy 2 to be gridlocked through town. Transit/bike options need to provide affordable links between the places people live, work and play, including beyond the study area boundaries (whitefish, airport, Glacier)	2	0
55	Bike travel around town is generally very dangerous and very undesirable. You are forced to cross Hwy 2 to go almost anywhere. There are very few and very inadequate bike lanes, intersection lighting and many streets have speeds in excess of typical residential movement. It discourages me from both biking/walking but also from traveling around CFalls.	2	0
56	Left turn bay is too short.	6	1
57	This is the location where my previous comment/location relates to. The daily rail-use closures causes significant traffic delays, especially during summer. I have frequently observed people making u-turns in response to the rail use. Suggest rail use should be during evening or night, especially during summer.	3	2
58	View to the north is very limited	0	0
59	There is already a well-established social trail here. It would be nice to make an official pedestrian path, or possibly even re-connect both sides with an actual street/road.	4	0
60	Work with property owners to create an established biking/pedestrian path along the river that fully-connects Teakettle River Access down to Riverwood Drive, and possibly even up to River’s Edge Park.	9	0
61	This is a blind curve and pulling out from 1st Street West is dangerous. A traffic mirror would alleviate this blind curve.	7	0
62	Need to continue to prioritize safe ped crossings on Nucleus West to East throughout urban corridor.	2	0
63	Restoration of bridge for bike/pedestrian use would provide safe connection for south side of planning area to down town.	14	0
64	Need future work to establish safe ped/bike route to the 4th St Trailhead associated with the Crystal/Cedar Trail Project.	1	0
65	Work towards connecting parks with ped/bike seperated path or sidewalk	3	0
66	There should be a sidewalk on either side of Railroad Street for pedestrian and bicycle safety.	6	0
67	During farmers Market and in the summer there is no crosswalks, people just cross anywhere along roadway to access hotel and parking.	4	0
68	This entire intersection is desperately in need of repair. The pot holes are dangerous! Looks junky right at the Welcome into town. Additionally, The light needs turn arrows that work independently. And the intersection needs to be deuces in winter. Lots of ice accidents here. Thank You	4	0
69	There needs to be additional lighting at this intersection and likely will need a stop light in the near future	13	4
70	Needs a 4 way stop like the rest of 3rd St W	3	1

ID	Comment	Up Votes	Down Votes
71	Number 1 issue is that HWY 2 needs traffic calming measures, all types. I know there are restrictions because it is a highway but round-a-bouts with landscaping/art, banners, pedestrian crossing lights, speed traps, lower speed limits, etc. need to be explored so travelers know they are entering a city. It is not as difficult to slow down if you have distraction, things to look at. The turn onto Nucleus needs even more highlights, the signs are a good start.	4	0
72	This intersection is a disaster. Huge potholes, pooling water, and tons of truck traffic really have destroyed the intersection as a whole.	5	0
73	Road needs major repairs and adequate width to support ped/bike	5	0
74	With the addition of the River Trail the need for a safe Pedestrain/cycling crossing of US 2 is going to become a priority. Between traffic volume width of road and the competing cars attempting to turn on to and off of Hwy 2 this is a dangerous intersection	4	1
75	I would like to see the North side of Meadow Lake Blvd to have much wider roadway with a turn bay. More like the intersection on the south side	7	0
76	The traffic speed should be decreased earlier as cars enter Columbia Falls.	15	7
77	Crossing US 2 in anything that is not a car to access downtown core. Downtown core ped. connectivity to CFalls residents south of US 2. HANDS DOWN BIGGEST ISSUE FROM A MAIN STREET CORE DEVELOPMENT PERSPECTIVE.	5	0
78	Speed limit may need to be reduced to 25 in this area.	7	1
79	Need Ped Crossing	4	0
80	This intersection is extremely busy with semi truck traffic and traffic in and out of both businesses on the North side of the highway. I would like to see a stoplight here to help with the flow of traffic.	13	1
81	I believe a right hand turn lane would be very useful, especially during summer. Most people turn left toward Columbia Falls and often a line of cars get backed up due to east/west traffic on Highway 2. However, there are enough vehicles turning east on Highway 2, that I believe a right turn lane would be justified.	6	0
82	There should be a pedestrian cross walk here connecting the south side to the bike path on the north. No safe crossings from the bridge to Nucleus Ave.	4	0
83	PLEASE PUT IN A FOUR-WAY stop here! I live a road away from this intersection and drive though this every day--this intersection is VERY dangerous and there are multiple near-misses here constantly.	3	0
84	Bike/Ped path.	3	0
85	Would love to see functional red, green and yellow turn arrows at this intersection. I've sat through 3 light cycles in mid summer without being able to make a turn northbound.	16	1
86	Bike and walking path all the down truck route and 12th.	0	0
87	Bike and walking pathway on Truck Rte from 4th to St Andrews Dr. Also down 12th to Burger King.	2	0
88	Needs a stop sign here! People drive so fast.	0	1
89	This curve is extremely dangerous. There are no shoulders and the speed is 60mph. When the shoulder is widened here it is essential to put a turn lane in by Tallent Lane. Due to the length and abruptness of the curve homeowners in this area are forced to prepare to be hit every time they turn into their driveways. Since we have owned our property we have witnessed 5 major crashes in front of our house, two deaths, and multiple noninjury accidents. This is a must not a question!	3	0
90	With large gatherings in this area, it would be nice to have a safe pedestrian crossing area. There is a 2-block gap in areas to cross safely and pedestrians cross this busy section of road on a regular basis.	6	0
91	This intersection needs an actual lane when going south. Historically, the single lane was divided into two and there is just a stop sign and no room. Additionally, when going east and turning south you can't see if someone is on the crosswalk in front of the schools.	1	0
92	A stop light at this intersection would be great. So much congestion coming in and out of post office from all directions.	2	1
93	Traffic is more often than not backed up to turn into Smith's and backed up with people waiting to turn. Along with people going south and people wanting to turn west onto 5th street or people wanting to go straight across the highway to get into Smiths. I think this intersection could benefit much from a stoplight in place.	1	1

ID	Comment	Up Votes	Down Votes
94	This area is very dark at night and would benefit from extra lighting. Also, the bike path should have stop signs indicating there is a road here. It is Talbott Pines Loop. There is increased traffic due to more lots being developed. Many users of the bike path-especially those on bikes-cross the intersection with no regard to other traffic.	2	3
95	This is dangerous when a train is crossing and cars back up to around the corner onto railroad street. Especially, when you have people running, walking or riding pedal bikes. I think a crosswalk would add safety.	2	0
96	Dangerous intersection. When driving south or north to cross the paint in turn lanes is not visible due to wear and tear and people always turn in front of someone going straight across the highway or someone waiting to turn left or right onto highway and person going straight goes around the turning car and causing safety issues.	0	0
97	This road is listed as trail for pedal bikes and walking. However, there is no shoulder on this road and can be quite dangerous for vehicles, bikers and walkers. I hope for a walking/bike path to help with this danger.	2	0
98	This intersection could use a four-way stop.	1	0
99	Pothole city here! The road is horrible and unsafe.	2	0
100	Or, perhaps Columbia Falls could make a master plan for through streets with controlled intersections, where some streets and avenues have the right of way with stop signs protecting those more major streets and avenues (I don't now what this is called) - rather than having a few random 4-way stops, yet largely uncontrolled intersections at around town.	1	0
101	This intersection is extremely difficult to navigate due to the misalignment of 13th St. Especially during school in/out time periods with all of the student pedestrian/ bike traffic and buses.	10	0
102	Or, perhaps Columbia Falls could make a master plan for through streets with controlled intersections, where some streets and avenues have the right of way with stop signs protecting those more major streets and avenues (I don't now what this is called) - rather than having a few random 4-way stops, yet largely uncontrolled intersections at around town.	0	0
103	I see a need for better night lighting at the front entrances of Glacier Gateway school. During a good part of the year, school and community activities are conducted after sundown where adults, children, parking and traffic all share the area. However, I find that the area is poorly lit for the high traffic that it receives after hours.	0	0
104	Increased use of this southern access to/from Columbia Falls should be looked at. Perhaps a traffic light that turns when vehicles approach from the east to allow safe entry onto the highway. A right turn lane off of the highway would likely help too.	1	0
105	With the amount of traffic on Hwy 2, making a left turn from River Road onto Hwy 2 is scary and getting dangerous during the tourist season. There needs to be a light at this intersection.	4	5
106	Trees on the NE side of intersection make it necessary to ease out well past the stop sign to look for traffic southbound. This can be very hazardous, especially when icy.	2	1
107	This spot can get crazy during the busy season ... it should really be improved with designated parking spots and a way for vehicle traffic to safely enter/exit, vs. being a free for all. Also don't like seeing the hobo/squatter types who decide they're going to set up and camp there for free ... maybe some signage to discourage that would be helpful.	1	0
108	Reconfigure the north end of the intersection of Half-Moon Road and Highway 40 with established direction lanes to assist with traffic flow at a green light (e.g. right-turn-only, left-turn only, straight only, etc.)	4	0
109	This intersection needs an left turn arrow for south bound traffic turning East from Halfmoon Road going towards Columbia Falls. It's impossible to see North bound traffic when there is a line up of cars turning west onto HWY 40.	0	0
110	Please reduce the speed limit between Hwy 206 and River Road. People are still going too fast as they come into town, particularly at the Tea Kettle access. Visibility coming out of the parking lot is always challenging and particularly dangerous in the busy summer months.	0	1
111	I disagree that there would not be enough bike/pedestrian traffic to justify the cost. There is a proposed river trail to which restoration of this bridge would provide access. https://www.gatewaytoglaciertrail.com/projects/columbia-falls-river-trail I second restoration of the bridge but only for bike and pedestrian traffic, not for vehicle traffic.	0	0
112	People blow through these intersections all the time. They don't even look or slow down. I have avoided a couple of accidents because I slow down and look for other cars. I think people this this is a through street.	0	0
113	River Road is in poor condition and seeing increased use in both traffic and cyclists ... as the area grows this will result in a lot of problems. It's also extremely difficult getting across Hwy 2 at times. Fixing the old steel bridge as a passage for pedestrians/cyclists would be helpful.	4	0

ID	Comment	Up Votes	Down Votes
114	The transition from road-shoulder to sidewalk is difficult to navigate for bicycle and pedestrian traffic just west of the intersection of Highway 2 and South Hilltop Road.	3	0
115	Bike/Ped path.	3	0
116	Another example of where roads and paths need to be swept more frequently ... this path is a mess of gravel and debris.	2	0
117	4-way stop needed ... this intersection lacks visibility due to vehicles parked up and down Nucleus, making it very difficult to see when it's safe to merge with traffic. Haphazard pedestrian behavior also amplifies the problem.	2	2
118	Implement green arrows for left turns onto 4th ave and 6th ave. Especially during peak season, June-September.	6	0
119	Railroad backs up traffic daily, negative impact on the efficiency of emergency vehicles as well as hindering citizens ability to be punctual with work, appointments, ect.	2	0
120	Traffic safety is generally terrible, for any non-highway trips, throughout the City. CFalls is currently designed only as an east-west throughway with very inadequate north-south travel.	2	0
121	I disagree that there would not be enough bike/pedestrian traffic to justify the cost. There is a proposed gateway to glacier river trail to which this bridge would provide access if restored. I second restoration of the bridge but only for bike and pedestrian traffic, not for vehicle traffic.	1	0
122	(Or some other kind of westbound traffic-calming measure)	0	0
123	Whether you're an eastbound cyclist or a westbound driver, it's extremely difficult to see around the corner here. A solar-powered flashing caution sign on the westbound side could help remind drivers that there may be people in a crosswalk just around the corner.	0	0

COLUMBIA FALLS TRANSPORTATION PLAN

NOVEMBER 2021

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Appendix B: Study Area Traffic County Locations

COMPLETE STUDY AREA TRAFFIC COUNT LOCATIONS[1]

Site ID	Description	AADT 2018	2040 Estimate
15-4A-028	US 2, 135+0.623, btwn Truck Rt & RR tracks	23,200	32,200
15-4A-012	US 2, 134+0.761, E of MT 40	21,300	29,500
15-4A-029	US 2, 136+0.319, btwn 5th & 6th Avs W (Col Falls)	17,600	24,400
15-4A-030	US 2, 136+0.551, btwn 1st & 2nd Avs W (Col Falls)	17,000	23,600
15-4A-031	US 2, 136+0.806, E of Nucleus Av (S-486) (Col Falls)	14,700	20,400
15-4A-014	US 2, 132+0.446, 1 mi S of MT 40	14,500	20,100
15-4A-011	MONTANA 40, 004+0.191, W of US 2	14,200	18,900
15-4A-013	US 2, 137+0.466, E of Flathead Rv bridge	12,100	16,800
15-4A-002	US 2, 139+0.793, 1.5 mi N of Col. Heights (A-60)	7,700	10,700
15-4A-032	ROUTE 486, 000+0.053, btwn 8th & 9th (Col Falls)	6,400	8,900
15-4A-033	ROUTE 486, 000+0.351, btwn 3rd & 4th (Col Falls)	5,700	7,900
15-4A-001	ROUTE 206, 008+0.700, 1 mi SW of US 2	4,400	6,100
15-4A-055	MEADOW LAKE BLVD, 000+0.205, N of US 2	3,600	4,500
15-4A-034	ROUTE 486, 000+0.600, btwn A & Railroad (Col Falls)	3,300	4,500
15-4A-063	RAILROAD ST, 000+0.097, W of Nucleus Ave	3,100	3,900
15-4A-056	MEADOW LAKE BLVD, 001+0.007, S of Tamarack Ln	2,900	3,700
15-4A-062	3RD ST W, 000+0.298, W of 4th Ave W	2,300	3,000
15-4A-061	6TH AVE W, 000+0.061, N of 5th St W	2,300	2,900
15-4A-035	ROUTE 486, 001+0.252, E of 4th Av (Col Falls)	2,100	2,900
15-4A-039	RIVER RD, 000+0.697, S of US 2	2,200	2,800
15-4A-060	BEST WY, 000+0.373, E of Truck Route	2,100	2,700
15-4A-077	HILLTOP RD, 001+0.159, N of Walsh Rd	2,000	2,600
15-4A-036	4TH AVE W, 000+0.446, btwn 8th & 9th (Col Falls)	2,000	2,500
15-4A-068	4TH AVE W, 000+0.623, S of 11th St W	1,900	2,400
15-4A-073	4TH AVE W, 000+0.802, S of 14th St W	1,600	2,100
15-4A-065	TALBOT RD, 000+0.612, E of Veteran Dr	1,600	2,000
15-4A-059	2ND AVE W, 000+0.053, N of Railroad St	1,400	1,900
15-4A-064	HILLTOP RD, 000+0.097, S of US 2	1,200	1,600
15-4A-057	TAMARACK LN, 000+0.435, W of Woodland Rd	1,200	1,500
15-4A-066	12TH AVE W, 000+0.543, S of 13th St W	1,200	1,500
15-4A-058	4TH AVE W, 000+0.702, S of Tamarack Ln	1,200	1,500
15-4A-015	ROUTE 486, 002+0.794, 0.5 mi N of Cedar Ck bridge	900	1,300

1 Future volumes were projected based on growth rates developed in collaboration with City staff, MDT and the PAC. A rate of 1.5 percent was used to project state highway volumes. For all other corridors, volumes were projected using a growth rate of 1.1 percent.

Site ID	Description	AADT 2018	2040 Estimate
15-4A-081	TAMARACK LN, 002+0.436, S of Witty Ln	800	1,100
15-4A-083	COLUMBIA FALLS STAGE RD, 008+0.343, S of Hellman Ln	800	1,000
15-4A-076	TALBOT RD, 001+0.100, E of 12th Ave W	700	900
15-4A-078	HILLTOP RD, 001+0.277, S of Walsh Rd	700	900
15-4A-067	13TH ST W, 000+0.340, W of 9th Ave W	600	800
15-4A-075	12TH AVE W, 000+0.204, N of US 2	600	800
15-4A-079	3RD ST W, 000+0.233, E of 4th Ave W	600	800
15-4A-074	13TH ST W, 000+0.841, E of Veteran Dr	600	700
15-4A-080	6TH AVE W, 000+0.437, S of 10th St W	600	700
15-4A-072	2ND AVE W, 000+0.794, S of US 2	500	600
15-4A-086	TRUMBLE CR RD, 009+0.106, N of MT 40	400	500
15-4A-071	2ND AVE W, 000+0.712, N of US 2	400	500
15-4A-037	4TH ST W, 000+0.091, btwn 1st & 2nd Av W (Col Falls)	400	500
15-4A-069	4TH ST EAST N, 000+0.310, E of 2nd Ave West	300	400
15-4A-082	WITTY LN, 002+0.580, N of Tamarack Ln	300	400
15-4A-070	4TH AVE W, 000+0.813, N of Tamarack Ln	300	400
15-4A-085	TRUMBLE CR RD, 007+0.110, N of Hodgson Rd	200	200
15-4A-038	1ST AVE W, 000+0.492, btwn 2nd & 3rd (Col Falls)	200	200

COLUMBIA FALLS TRANSPORTATION PLAN

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Appendix C: Urban Routes Pavement Summary

URBAN ROUTES PAVEMENT SUMMARY

Urban Route	City / County	Street	Start	End	RSL	Inspection Date	Proposed Treatment
U-2502N							
12TH AVENUE WEST							
U-2502N	CITY	12TH AVE W	COLUMBIA DR	TALBOT RD	10	7/23/2019	No Maintenance
U-2502N	CITY	12TH AVE W	12TH ST W	13TH ST W	10	7/23/2019	No Maintenance
U-2502N	CITY	12TH AVE W	9TH ST W	10TH ST W	10	7/23/2019	No Maintenance
U-2502N	CITY	12TH AVE W	10TH ST W	11TH ST W	10	7/23/2019	Crack Seal
U-2502N	CITY	12TH AVE W	13TH ST W	GLACIER DR	10	7/23/2019	Crack Seal
U-2502N	CITY	12TH AVE W	GLACIER DR	COLUMBIA DR	10	7/23/2019	No Maintenance
U-2502N	CITY	12TH AVE W	11TH ST W	12TH ST W	10	7/23/2019	No Maintenance
U-2504N							
4TH AVENUE WEST							
U-2504N	CITY	4TH AVE W	8TH ST W	9TH ST W	6	7/23/2019	Overlay 2 inch thick
U-2504N	CITY	4TH AVE W	1ST ST W	2ND ST W	20	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	2ND ST W	3RD ST W	10	7/23/2019	Crack Seal
U-2504N	CITY	4TH AVE W	3RD ST W	4TH ST W	20	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	4TH ST W	5TH ST W	20	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	5TH ST W	6TH ST W	20	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	6TH ST W	7TH ST W	20	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	10TH ST W	11TH ST W	10	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	7TH ST W	8TH ST W	20	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	9TH ST W	10TH ST W	8	7/23/2019	Chip Seal
U-2504N	CITY	4TH AVE W	11TH ST W	12TH ST W	10	7/23/2019	No Maintenance
U-2504N	CITY	4TH AVE W	12TH ST W	13TH ST W	10	7/23/2019	No Maintenance
U-2505N							
4TH AVENUE WN							
U-2505N	CITY	4TH AVE WN	RAILROAD ST	1ST ST W	10	7/23/2019	Patching
U-2506N							
13TH STREET WEST							
U-2506N	CITY	13TH ST W	COLUMBIA DR	11TH AVE W	8	7/23/2019	Chip Seal
U-2506N	CITY	13TH ST W	10TH AVE W	COLUMBIA DR	8	7/23/2019	Chip Seal
U-2506N	CITY	13TH ST W	11TH AVE W	12TH AVE W	8	7/23/2019	Chip Seal
U-2506N	CITY	13TH ST W	9TH AVE W	10TH AVE W	8	7/23/2019	Chip Seal
U-2506N	CITY	13TH ST W	8TH AVE W	9TH AVE W	6	7/23/2019	Patching
U-2506N	CITY	13TH ST W	7TH AVE W	8TH AVE W	6	7/23/2019	Patching
U-2506N	CITY	13TH ST W	6TH AVE W	7TH AVE W	6	7/23/2019	Patching
U-2506N	CITY	13TH ST W	5TH AVE W	6TH AVE W	2	7/23/2019	New Street / Construction
U-2506N	CITY	13TH ST W	4TH AVE W	5TH AVE W	6	7/23/2019	Chip Seal

Urban Route	City / County	Street	Start	End	RSL	Inspection Date	Proposed Treatment
U-2507N							
TALBOT ROAD							
U-2507N	CITY	TALBOT RD	WEST WILDCAT DRIVE	RIVERWOOD LN	14	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	BETH RD	S HILLTOP RD	10	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	VETERAN DR	BETH RD	10	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	RIVERWOOD DR	VETERAN DR	12	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	EAST WILDCAT DRIVE	WEST WILDCAT DRIVE	20	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	RAPIDS AVE	WILDCAT DR EAST	20	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	12TH AVE W	RAPIDS AVE	20	7/23/2019	No Maintenance
U-2507N	CITY	TALBOT RD	RIVERWOOD LN	RIVERWOOD DR	20	7/23/2019	No Maintenance
U-2512N							
2ND AVENUE WN							
U-2512N	CITY	2ND AVE WN	A ST WN	1ST ST W	8	7/23/2019	Chip Seal

COLUMBIA FALLS TRANSPORTATION PLAN

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Appendix D: Quiet Zone

QUIET ZONE

Since their inception, railroads have sounded locomotive horns or whistles in advance of grade crossings and under other circumstances as a universal safety precaution. During the 20th century, nearly every state in the nation enacted laws requiring railroads to do so. In 2005, the Federal Railroad Administration (FRA) issued regulations which provide local communities the option of silencing train horns by establishing quiet zones. Quiet zones include safety engineering improvements, referred to as SSMs, which effectively reduce the risk of collisions associated with silencing a train's horn.

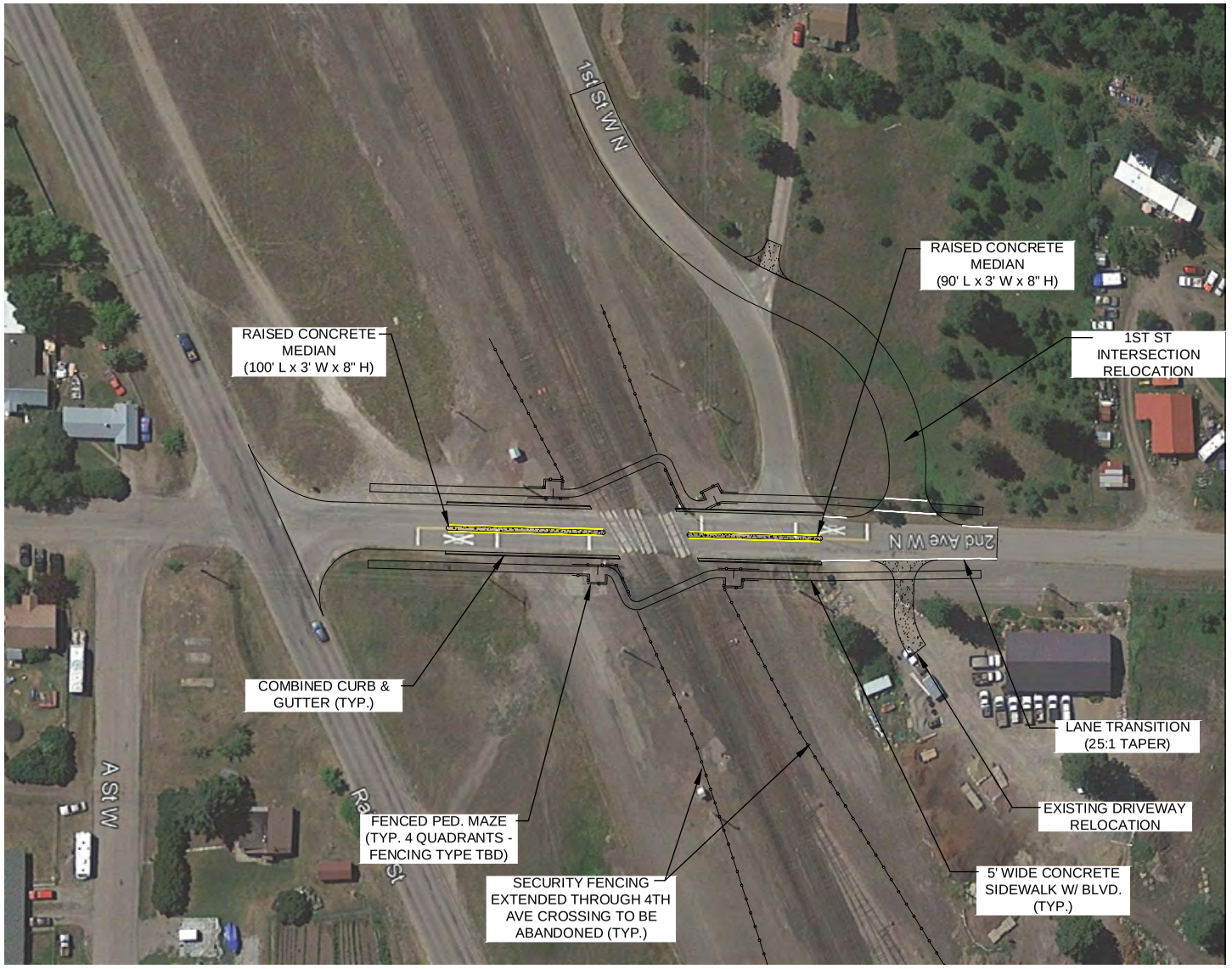
The City of Columbia Falls has discussed a quiet zone along the BNSF mainline for several years. As part of the Urban Area Transportation Plan, a planning level layout was developed for implementation of a quiet zone along the BNSF Mainline.

Intersections included in the evaluation were 4th Avenue and 2nd Avenue. Based on previous discussions with BNSF and the FRA it was assumed that 4th Avenue would be closed, and 2nd Avenue would be quieted. To support the elimination of train horns at 2nd Avenue, a series of SSMs were developed.

The City, in cooperation with the BSNF and FRA, is currently moving these concepts further into the quiet zone development process. Layouts and assumptions included in the Urban Area Transportation Plan are likely to change, however, they provide a baseline set of planning assumptions for beginning the development process for a quiet zone in Columbia Falls. The preliminary concepts developed for the quiet zone on 2nd Avenue (TSM 8) and road closing on 4th Avenue (TSM 9) are shown in **FIGURE D.1** and **FIGURE D.2**, respectively. A typical section concept for the quiet zone on 2nd Avenue is shown in **FIGURE D.3**.

Detailed planning-level cost estimates were prepared for the quiet zone on 2nd Avenue and road closing on 4th Avenue. The cost estimates are presented in **TABLE D.1**.

Figure D.1: BNSF Mainline at 2nd Avenue WN



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REVISION | NO. | DATE

DRAFTED LK
REVIEWED SS
PROJECT NUMBER 1904-01984
ISSUE DATE 2021

COLUMBIA FALLS URBAN AREA TRANSPORTATION
CITY OF COLUMBIA FALLS
COLUMBIA FALLS, MONTANA
2ND AVE. CROSSING CONCEPT

SHEET 1

Jan 27, 2021 - 12:59pm - K:\Projects\City\MT\ColumbiaFalls\1904_01984\CAD\2ndAve_Xing_Aerial.dwg

PRELIMINARY - NOT FOR CONSTRUCTION

Figure D.2: BNSF Mainline at 4th Avenue

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NO. DATE

DRAFTED LK
REVIEWED SS
PROJECT NUMBER 1904-01984
ISSUE DATE 2021

COLUMBIA FALLS URBAN AREA TRANSPORTATION
CITY OF COLUMBIA FALLS
COLUMBIA FALLS, MONTANA
4TH AVE. CROSSING ABANDONMENT

SHEET 1

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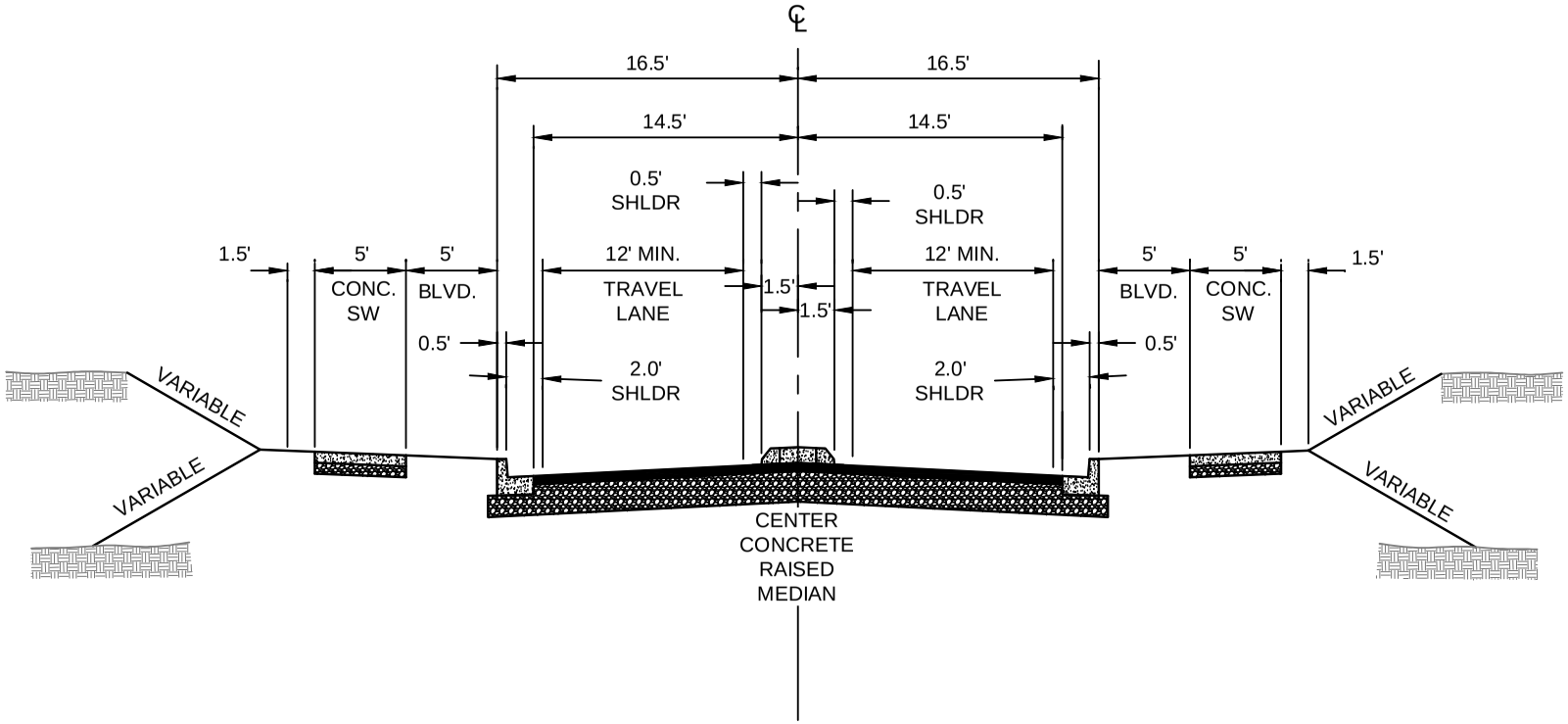
PRELIMINARY - NOT FOR CONSTRUCTION

Figure D.3: 2nd Avenue Quiet Zone Typical Section



TYPICAL SECTION CONCEPT
2ND AVENUE

NOT TO SCALE

Table D.1: Quiet Zone Cost Estimates

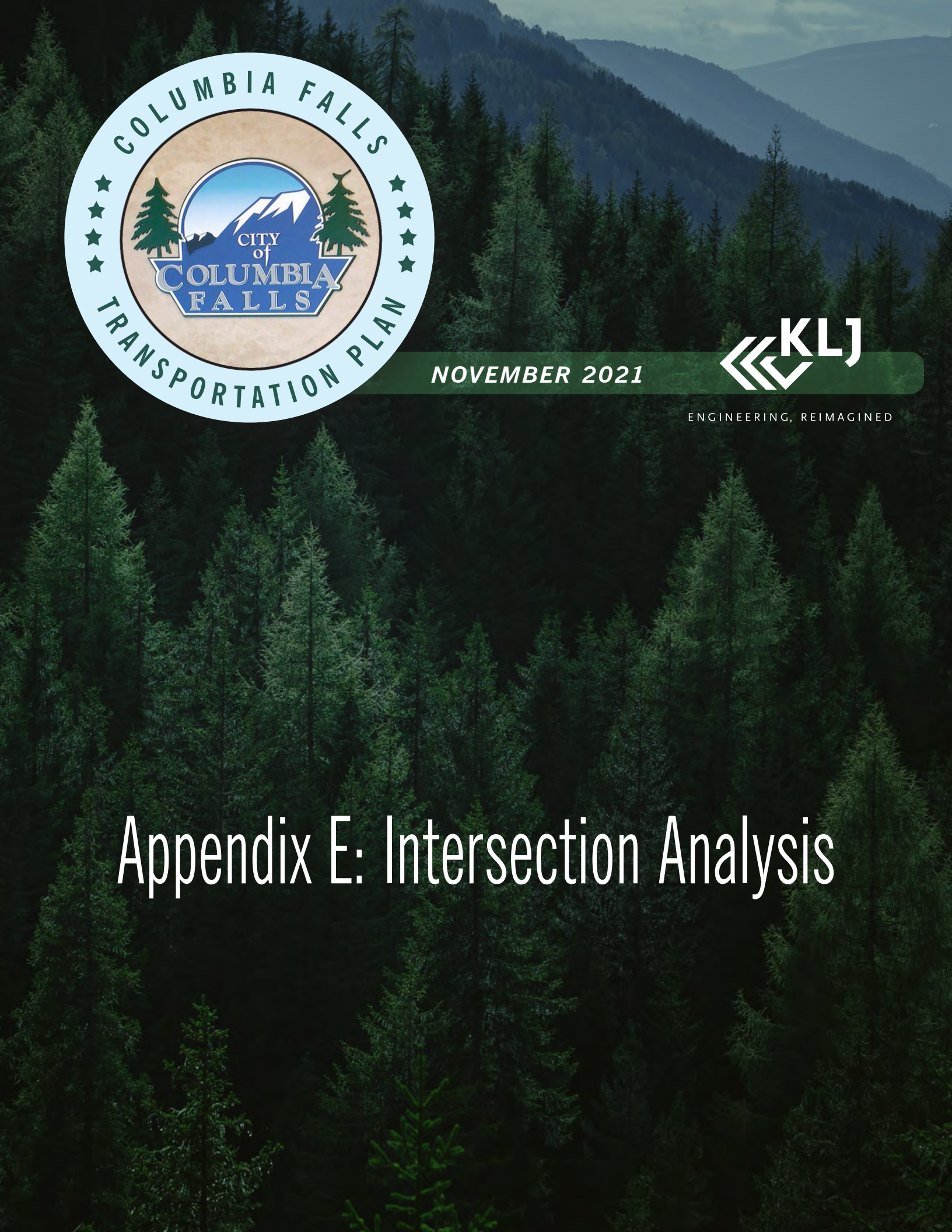
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
Rail Road Crossing Quiet Zone Improvements
City of Columbia Falls, MT
January 27, 2021

2nd Ave. Improvements

Item #	Description	Quantity	Unit	Unit Price	TOTAL COST
1	Mobilization	1	LS	$ 34,000.00	$34,000
2	Taxes, Bond, & Insurance	1	LS	$ 21,000.00	$21,000
3	Stormwater Management & Temporary Erosion Control	1	LS	$ 13,000.00	$13,000
4	Construction Traffic Control	1	LS	$ 11,000.00	$11,000
5	Asphalt Removal - Cold Milling Only - Tie In Joints	100	SY	$ 25.00	$2,500
6	Remove Existing Street Sign & Post	1	EA	$ 300.00	$300
7	Excavation Above Subgrade	1,169	CY	$ 40.00	$46,760
8	Subgrade Stabilization	360	SY	$ 25.00	$9,000
9	Non-Woven Separation Fabric	2,375	SY	$ 2.00	$4,750
10	3" Crushed Subbase Course	396	CY	$ 45.00	$17,820
11	1-1/2" Crushed Base Course	396	CY	$ 40.00	$15,840
12	Asphalt Concrete Surface Course Grade Type B	500	TON	$ 135.00	$67,500
13	Combined Curb & Gutter	370	LF	$ 25.00	$9,250
14	Concrete Median Curb	377	LF	$ 19.25	$7,257
15	Concrete Median Cap	20	SY	$ 200.00	$4,000
16	4-Inch Sidewalk	4,087	SF	$ 9.00	$36,783
17	Detectable Warning Panels	40	SF	$ 50.00	$2,000
18	Gravel Driveway Replacement	19	CY	$ 40.00	$760
19	Security Fencing	4,675	LF	$ 25.00	$116,875
20	Pedestrian Maze Fencing	250	LF	$ 30.00	$7,500
21	Precast Concrete Rail Crossing Panels	6	EA	$ 10,000.00	$60,000
22	Street Sign & Post	6	EA	$ 525.00	$3,150
23	Preformed Inlaid Plastic Pavement Marking - White (4-inch)	147	LF	$ 7.00	$1,029
24	Preformed Inlaid Plastic Pavement Marking - Yellow (4-inch)	358	LF	$ 7.00	$2,506
25	Preformed Inlaid Plastic Pavement Marking - White (8-inch)	65	LF	$ 15.00	$975
26	Preformed Inlaid Plastic Pavement Marking - White (24-inch)	21	LF	$ 45.00	$945
27	Epoxy Paint - Curb Top & Face	5.0	GAL	$ 600.00	$3,000
28	Hydraulic Seeding	1,575	SY	$ 5.00	$7,875
				Subtotal	**$507,400**
				15% Contingency	$76,100
				Crossing Total	**$583,500**

4th Ave. Improvements

Item #	Description	Quantity	Unit	Unit Price	TOTAL COST
1	Mobilization	1	LS	$ 2,000.00	$2,000
2	Taxes, Bond, & Insurance	1	LS	$ 1,000.00	$1,000
3	Stormwater Management & Temporary Erosion Control	1	LS	$ 1,000.00	$1,000
4	Construction Traffic Control	1	LS	$ 1,000.00	$1,000
5	Asphalt Removal - Cold Milling	1,288	SY	$ 10.00	$12,880
6	Topsoil (Obtained Off-Site)	160	CY	$ 30.00	$4,800
7	Non-Woven Separation Fabric	357	SY	$ 2.00	$714
8	Gravel Replacement "Rail Yard Area"	60	CY	$ 40.00	$2,400
9	Hydraulic Seeding	932	SY	$ 5.00	$4,660
				Subtotal	**$30,500**
				15% Contingency	$4,600
				Crossing Total	**$35,100**
				Combined Total (With Contingency)	**$618,600**



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Appendix E: Intersection Analysis

INTERSECTION EVALUATIONS

As part of the Urban Area Transportation Plan, the City expressed interest in evaluating three intersections in greater detail. Based on this analysis, geometric changes were recommended to improve efficiency and safety and increase livability for surrounding neighborhoods. The intersections evaluated are presented below. For each, the key existing issues and main design recommendations are summarized.

12th Avenue W and 13th Street W (TSM 10)

Key existing issues:

The existing intersection's east-west approaches are offset, requiring those traveling straight on 13th Street West to make two turns in order to clear the intersection. This configuration reduces the operational efficiency of the intersection and increases opportunities for vehicle crashes and pedestrian conflicts due to the awkward maneuvering required of drivers. These risks are heightened at night, and for unfamiliar drivers.

Safety and operations issues are especially concerning at the 12th Avenue W—13th Street W intersection due to the school-related vehicle and pedestrian traffic.

Main design recommendations:

- The concept proposes a compact roundabout design, which would provide more efficient, intuitive, and safe operations.
- The concept integrates previously identified bike and pedestrian facilities into the design.

The 12th Avenue W and 13th Street W concept is shown in **FIGURE E.1**.

Talbot Road and 4th Avenue W (TSM 16)

Key existing issues:

The "wishbone" form of the existing three-leg intersection results in inefficient operations and safety concerns. At present, vehicles traveling east on Talbot Road to access Red Bridge Road, and vice versa, must make a sharp (>90°) turn at 4th Avenue W. In addition to the awkward maneuvering that this requires, vehicles must pass through both pedestrian path crossings to travel east-west through the intersection. Finally, vehicles needing to access the properties south of the intersection must share a portion of the pedestrian path crossing to access the driveway approach.

Main design recommendations:

- The four-way intersection concept would provide more efficient, intuitive east-west travel on Talbot Road and Red Bridge Road. A single connection for the pedestrian path would be located on the north leg of the intersection, reducing the opportunity for vehicle-pedestrian conflicts. A southern leg would be added to provide access for properties to the south.
- The compact roundabout concept would provide many of the same benefits as the four-way intersection concept, with the additional operational and safety benefits of a roundabout (see **CHAPTER 10. POLICY PLAN**).

The Talbot Road and 4th Avenue W concepts are shown in **FIGURE E.2** and **FIGURE E.3**.

US Highway 2 and Nucleus Avenue (TSM 1)

Key existing issues:

The existing left-turn bay for the US Highway 2—Nucleus Avenue intersection has approximately 80 ft of storage. A bay of this length is able to store roughly 5 average-sized cars (16 ft each) or four average-sized trucks (20 ft each). This left-turn bay storage has proven insufficient for the US Highway 2—Nucleus Avenue intersection during peak periods.

Additionally, the City has expressed the desire to provide a pedestrian crossing at US Highway 2 and 1st Avenue W. The multiple businesses at this intersection make it a natural crossing point, but no designated crossing currently exists, leaving pedestrians to navigate unprotected across five lanes of traffic.

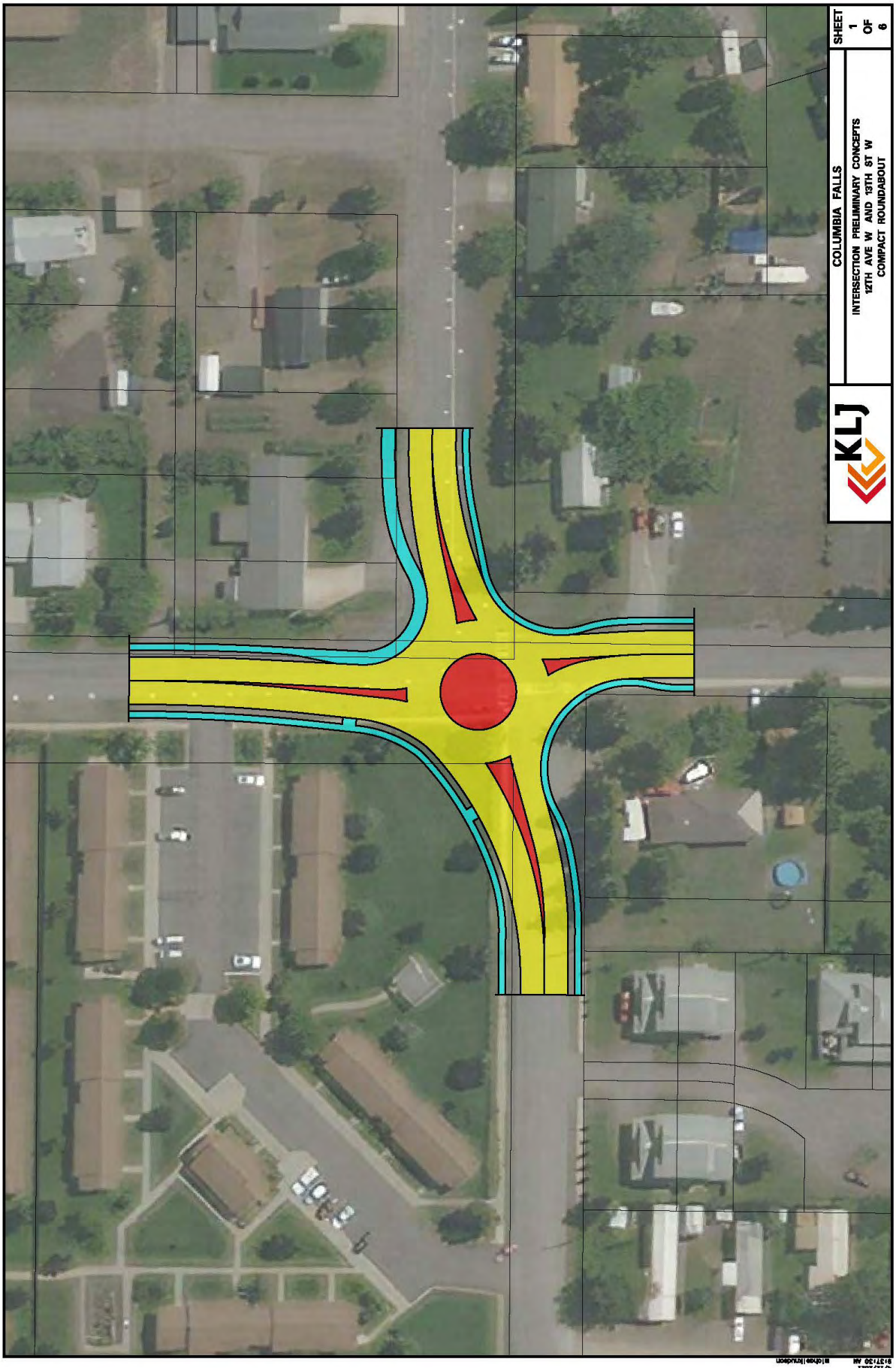

Figure E.1: 12th Avenue W and 13th Street W

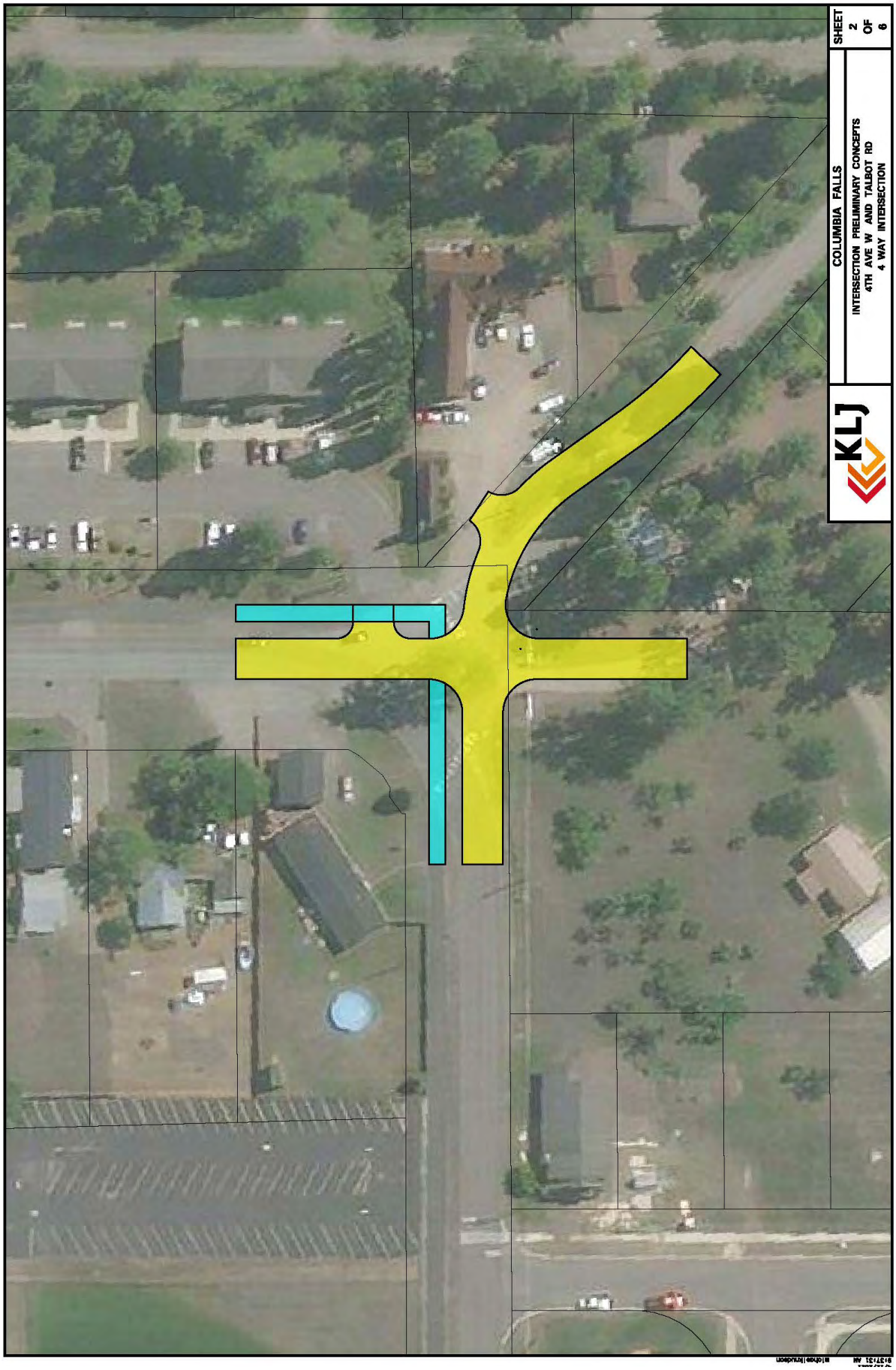

Figure E.2: Talbot Road and 4th Avenue W (four-way intersection)

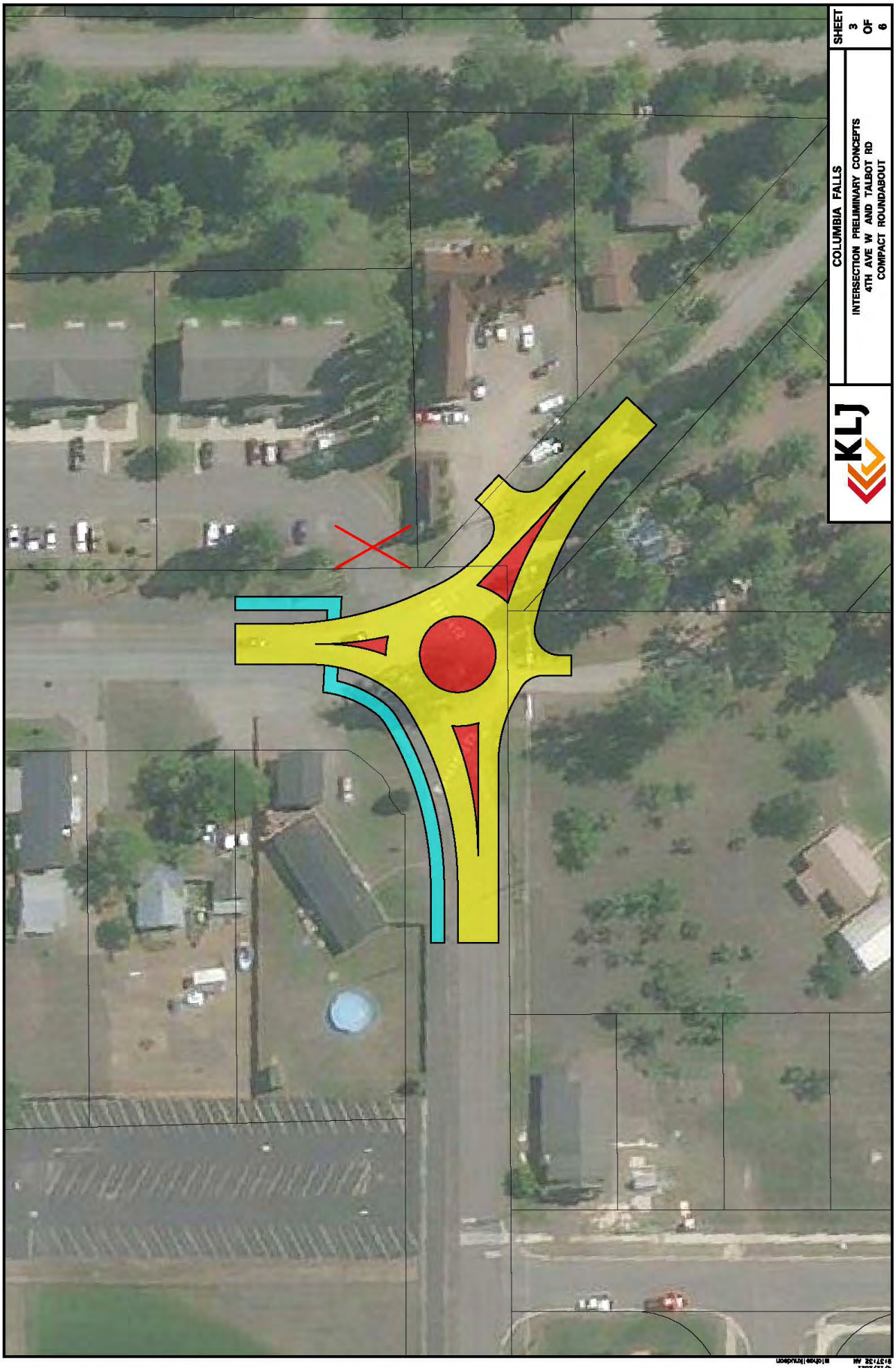

Figure E.3: Talbot Road and 4th Avenue W (compact roundabout)

Main design recommendations:

- The proposed concept would add a non-traversable median on US Highway 2 from 2nd Avenue W to Nucleus Avenue. The median would increase the length of the left-turn bay for access to Nucleus Avenue, with the new bay having approximately 180 ft of storage. The median would also replace the existing two-way center left-turn lane between 2nd Avenue W and 1st Avenue W with a dedicated left-turn lane for 2nd Avenue W.
- Addition of the non-traversable median would provide the opportunity to create a designated pedestrian crossing with a pedestrian refuge area at 1st Avenue W. The crossing would be located such that it would meet the median where it is widest, between the turn bay tapers.
- Addition of the non-traversable median would eliminate left turns onto 1st Avenue W, restricting turning movements for 1st Avenue W to right-in right-out.

Various factors may complicate implementation of this project recommendation. These include, but are not limited to:

- While MDT supports the concept of providing additional eastbound left-turn storage and the raised median concept, they have emphasized that implementation of this option will be difficult due to the existing width of the roadway. A raised median will likely trigger right-of-way needs from the businesses located on US Highway 2, and there may be opposition to restricted access to these businesses, especially those located within the southeast quadrant of US Highway 2 and 1st Avenue W.
- Regarding the proposed crosswalk at US Highway 2 and 1st Avenue W, an enhanced pedestrian crossing may pose safety and operational issues, particularly for conflicts between northbound pedestrians and westbound vehicles. The multiple lanes, curve, and short distance from the Nucleus Avenue intersection may make this a poor location to encourage pedestrian activity. Consideration should be given to alternative options which guide pedestrians to the traffic signal at Nucleus Avenue.

The US Highway 2 and Nucleus Avenue concept is shown in **FIGURE E.4**.

Nucleus Avenue: Three-Lane to Two-Lane Conversion

As part of the Plan, the City of Columbia Falls explored the possibility of reducing the number of lanes along Nucleus Avenue from three to two. This conversion would be completed by removing the existing dedicated left-turn lanes.

A conversion to two lanes along Nucleus Avenue could provide a variety of benefits that encourage pedestrian activity and support the downtown as a hub for tourism, shopping, and jobs. Potential benefits include:

- Widened sidewalks and space for additional pedestrian amenities
- Shorter pedestrian crossing distances
- Slower vehicle speeds and increased safety
- Wider parallel parking isles for better pedestrian separation from traffic and easier parking
- Opportunities for pop-up sidewalk dining and other creative uses of the pedestrian realm
- Increased economic activity due to better, safer, and more convenient access to businesses
- A more positive overall experience for residents and tourists

Traffic Operations Analysis

An operations analysis was conducted to assess the viability of a three-to-two lane conversion along Nucleus Avenue. In coordination with City staff, the intersections of Nucleus Avenue and 5th Street and Nucleus Avenue and 7th Street were selected as likely to see the most significant impacts from changes in the roadway section through downtown. As such, current and future turning movement volumes were assessed at these intersections to understand how a lane reduction might affect operations.

The analysis was conducted using Synchro. Vehicle counts were recorded for morning, midday, and afternoon peaks during a regular weekday for both locations. The existing volumes from 2021 were projected to 2040 using a growth rate of 1.5 percent, which coincides with the growth rate used for the Columbia Falls Long Range Transportation Plan. Operations were simulated at both intersections for build and no-build conditions, for both the base year and 2040.

Synchro software was used to estimate traffic operations for "no-build" and "build" conditions. "No-build" refers to conditions with no geometric improvement at the intersections, while "build" refers to conditions with geometric improvements that include removal of the dedicated left turn lanes on the major approaches. Turning movement counts were collected during the morning, midday, and evening peak on a weekday in March 2021. The traffic volumes were projected to 2040 using an annual growth rate of 1.5 percent, which is consistent with the growth rates used in the Columbia Falls Long Range Transportation Plan. The traffic operation analysis results indicate that the intersections operate with acceptable delay and LOS through 2040 for no-build and build conditions.

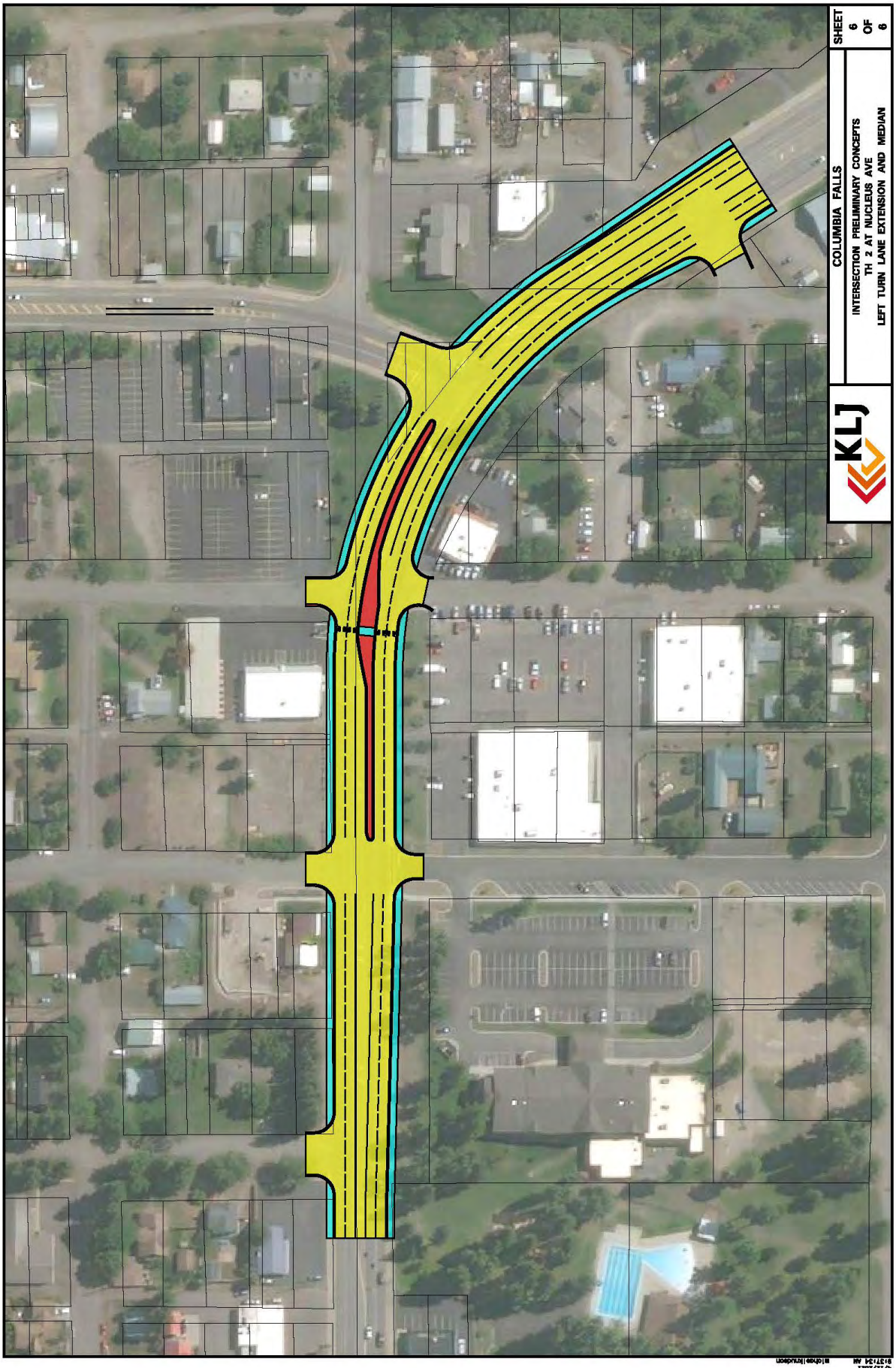

Figure E.4: US Highway 2 and Nucleus Avenue

Analysis Results

The analysis indicates that a conversion to two lanes would have minimal impact on operations, with LOS on all approaches for both intersections remaining nearly identical despite the lane reduction. This is true both at present and in the future.

At Nucleus Avenue & 5th Street, operations are adequate now and in 2040, with LOS C or better for almost all approaches. The only exception is the EB approach, where LOS D is expected in 2040. However, LOS D is still considered acceptable by MDT for a major urban collector. Operations analysis results for the Nucleus Avenue & 5th Street intersection are summarized in **TABLE E.1**.

At Nucleus Avenue & 7th Street, the stop-controlled approaches have considerable delays in 2040. This is particularly pronounced for the afternoon peak, with delays reaching over 40 seconds per vehicle for the westbound approach. This results in LOS E for this approach, which is considered unacceptable. However, this level of service is present regardless of the two intersection configurations considered in this analysis, so it cannot be attributed to removal of the dedicated left-turn lane. Operations analysis results for the Nucleus Ave & 7th St intersection are summarized in **TABLE E.2**.

Summary

Intersection LOS is D or better for all current and future peak volumes analyzed, for both build and no-build conditions. This is considered acceptable by MDT standards for urban major collector roads. In summary, the traffic operation analysis results indicate that the intersections operate with acceptable delay and LOS through 2040 for build and no-build conditions. The removal of the left-turn lanes along Nucleus Avenue would likely have a negligible effect on traffic operations.

Table E.1: Nucleus Avenue & 5th Street Intersection Operations

Year	Intersection	Peak	No Build (Left-turn NB/SB lanes)					Shared NB/SB lanes for all movements				
			Level of Service					Level of Service				
			EB	WB	NB	SB	Int	EB	WB	NB	SB	Int
2021	Nucleus Ave @ 5th St	AM	B	A	A	A	A	B	A	A	A	A
		MD	B	B	A	A	A	B	B	A	A	A
		PM	C	B	A	A	B	C	B	A	A	B
2040	Nucleus Ave @ 5th St	AM	B	B	A	A	A	B	B	A	A	A
		MD	C	C	A	A	B	C	C	A	A	B
		PM	D	C	A	A	B	D	C	A	A	B

Table E.2: Nucleus Avenue & 7th Street Intersection Operations

Year	Intersection	Peak	No Build (Left-turn NB/SB lanes)					Shared NB/SB lanes for all movements				
			Level of Service					Level of Service				
			EB	WB	NB	SB	Int	EB	WB	NB	SB	Int
2021	Nucleus Ave @ 7th St	AM	B	B	A	A	B	B	B	A	A	A
		MD	B	C	A	A	B	B	C	A	A	B
		PM	C	C	A	A	C	C	C	A	A	C
2040	Nucleus Ave @ 7th St	AM	B	C	A	A	B	B	C	A	A	B
		MD	C	D	A	A	C	C	D	A	A	C
		PM	D	E	A	A	D	D	E	A	A	D

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