

WEST RESERVE DRIVE
— CORRIDOR PLANNING STUDY —

Kalispell, MT



OCTOBER 2021

**CORRIDOR
STUDY**

Prepared for:



VISION ZERO
zero deaths • zero serious injuries
MONTANA DEPARTMENT
OF TRANSPORTATION





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- Appendix 4: Improvement Options Memorandum
- Appendix 5: Funding Mechanisms



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ACRONYMS

AADT	Annual Average Daily Traffic
DNRC	Montana Department of Natural Resources and Conservation
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FWP	Montana Fish, Wildlife, and Parks
HSIP	Highway Safety Improvement Program
LOS	Level of Service
LUST	Leaking Underground Storage Tank
MACI	Montana Air and Congestion Initiative
MBTA	Migratory Bird Treaty Act
MDEQ	Montana Department of Environmental Quality
MFWP	Montana Fish Wildlife and Parks
MDT	Montana Department of Transportation
MEPA	Montana Environmental Policy Act
MS4	Municipal Separate Storm Sewer System
MTNHP	Montana Natural Heritage Program
NEPA	National Environmental Policy Act
NH	National Highway System [Non-Interstate]
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PM	Particulate Matter
RCRA	Resource Conservation and Recovery Act
RP	Reference Post
SHPO	State Historic Preservation Office
STPB	Surface Transportation Program-Bridge
STPP	Surface Transportation Program Primary
STPU	Surface Transportation Program-Urban
SOC	Species of Concern
US 2	United States Highway 2
US 93	United States Highway 93
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank



EXECUTIVE SUMMARY

The Montana Department of Transportation (MDT) completed the West Reserve Drive Corridor Planning Study to assess the W. Reserve Dr. corridor between United States Highway 93 (US 93) and United States Highway 2 (US 2). The purpose of the study was to develop a comprehensive long-range plan for managing the corridor and to identify feasible improvement options to address needs and objectives identified by the public, study partners, and resource agencies.

The study corridor includes W. Reserve Dr., between the intersection with US 93 and US 2. A portion of Whitefish Stage Rd. is also included as part of this study, extending 0.5 miles north of W. Reserve Dr. and 300 feet south of W. Reserve Dr.

MDT, Flathead County, the City of Kalispell, and the Federal Highway Administration (FHWA) used a collaborative process to develop the study, with focused outreach efforts to engage the public, key stakeholders, and resource agencies. Activities completed during the planning process included:

- Investigation and analysis of existing study area conditions
- Research of known environmental resources and applicable regulations in the study area
- Identification and analysis of future conditions
- Identification of issues and areas of concern
- Consultation/coordination with local officials, stakeholders, resource agencies, and the public
- Identification of corridor needs and objectives
- Development of corridor improvement options including construction feasibility, planning level cost estimates, funding availability and feasibility, public and stakeholder input, and known constraints
- Identification and documentation of potential funding sources

The W. Reserve Dr. Corridor Planning Study followed the 2009 Montana Business Process to Link Planning and National and Montana Environmental Policy Act Reviews, MDT's guideline for conducting planning studies. The process is intended to facilitate a smooth and efficient transition from early transportation planning to project development and may be used to help determine the level and scope of required environmental review should a project advance.

Public & Stakeholder Outreach

Active participation and community outreach were emphasized during the planning process. Key audiences included state and local agencies, stakeholder organizations, and the public. Multiple engagement methods were employed during the study and are listed below:

- Established a Technical Oversight Committee with MDT, FHWA, City of Kalispell, and Flathead County representatives
- Developed a project website to provide study interaction
- Hosted an online commenting map to collect feedback from stakeholders and the public
- Maintained an email contact list of stakeholders and interested members of the public

Several meetings were held to engage the public and solicit stakeholder and agency feedback. The following activities were included in the study process to identify areas of concern and to develop recommended improvements options.

- A Resource Agency Meeting was held on April 6, 2021, with nine representatives from five agencies in attendance. The meeting allowed the planning team to confirm the accuracy of study evaluation efforts and engage resource agencies in an open discussion on environmental areas of concern.



- Informational Meeting #1 was held virtually on March 17, 2021, following the release of the *Existing and Projected Conditions Report*. A total of 34 participants attended either the morning or afternoon sessions. The meetings began with a brief presentation, followed by a question-and-answer period.
- Informational Meeting #2 was held virtually on September 9, 2021, following the release of the public draft *Corridor Study Report*. A total of 28 participants attended either the morning or afternoon sessions. The meetings began with a brief presentation, followed by a question-and-answer period.

Transportation System

The study assessed existing transportation conditions using a thorough evaluation of existing plans, on-site field review, and supplemental data collection. The following summarizes the key concerns identified through the assessment.

Physical Features & Characteristics

- Pavement is in fair condition for most of the study area except the eastern portion of W. Reserve Dr. where it is in poor condition
- Speed limits range between 40 and 50 miles per hour across the study area
- Access density increases from west to east through the study area
- There are two bridges in the study area, one of which is rated Structurally Deficient/Functionally Obsolete
- A transmission easement with a major transmission line crossing W. Reserve Dr. is present approximately 700 feet east of the US 93 intersection
- A BNSF railroad spur crosses W. Reserve Dr. near Reference Post (RP) 6.3



The W. Reserve Dr. corridor is generally flat and meets current design criteria with exception of one section approaching the Whitefish River bridge.



Geometric Conditions

- The existing horizontal alignment complies with current geometric design standards
- The vertical alignment is generally flat and in compliance with current geometric standards with one exception; the grade from Mission Trail Rd. east to the bridge crossing the Whitefish River is at the maximum grade for level terrain (7%)

Traffic Conditions

- Traffic volumes are projected to grow at a rate of 2.4% per year through 2040 based on historic growth trends
- Intersection operations are projected to deteriorate as volumes in the corridor increase
- With no capacity improvements, most of the roadway corridor is projected to operate at poor or failing traffic operation levels

Safety

- No fatal crashes occurred, but 23 suspected serious injury crashes occurred within the study area between January 1st, 2010 and December 31st, 2019
- Injury crashes primarily occurred at signalized intersections
- Rear-end and right-angle crashes were the most common crash type
- Reported crashes have doubled over the last ten years

Environmental Setting

The study identified the following physical, biological, social, and cultural resources that may be affected by future improvements to the W. Reserve Dr. corridor. Project-level environmental analysis would be required for any improvements forwarded from this study.

Physical Environment

- The study area is in a moderate to high seismic risk zone
- The study area contains some soils classified as farmland
- The Stillwater and Whitefish Rivers do not meet state water quality standards and are listed as impaired
- Hazardous substances in the study area include a delisted remediation response site, hazardous waste generator sites, resolved petroleum-tank release sites, active underground storage tanks, and underground pipelines
- Future roadway improvements may require a noise analysis
- There are several public and private utilities that parallel and cross the study area



Potential relocation of power transmission lines throughout the corridor will require coordination with Flathead Electric Cooperative.

Biological Resources

- Invasive and noxious weeds are a growing concern in Flathead County
- Grizzly bear, bull trout, and yellow-billed cuckoo are threatened and endangered species that have the potential to occur within the study area
- Grizzly bear occurrences have been recorded within three miles of the study area
- Several species of concern and special status species that are at risk have been documented in the study area

Social & Cultural Resources

- One site is eligible for listing on the National Register of Historic Places
- Few recreational facilities exist within the study area

Improvement Options

Corridor needs and objectives were developed based on social, environmental, and engineering conditions, local plans, and input from the technical oversight committee, resource agencies, stakeholders, and the public.

Need 1: Improve the Safety of the Corridor

- Reduce the frequency and severity of crashes for all users, in support of MDT's Vision Zero
- Reduce vehicle conflicts



Need 2: Improve the Corridor Transportation Operations

- Accommodate existing and future travel demands
- Improve intersection operations and level of service
- Consider all modes of transportation
- Employ travel demand management strategies

Other Considerations:

- Consistency with local plans and developments
- Municipal infrastructure improvements
- Public and private utilities
- Constructability and related impacts
- Impacts to adjacent businesses and residences
- Impacts to environmental resources and social equity
- Stormwater management
- Funding source and availability
- Maintenance operations, responsibility, and cost

Recommended improvement options for W. Reserve Dr. were identified to meet the corridor needs and objectives. Small-scale improvement options may be as simple as developing an access management plan for the corridor. Larger, more complex improvements include widening the roadway and expanding intersection footprints to accommodate increased traffic. Implementation of improvement options ultimately depends on funding availability, right-of-way needs, and project development requirements.

Table ES-1 summarizes the recommended improvements developed for the corridor.



The corridor study identified recommendations to improve safety and operations of the corridor while considering many local factors.



ES-1: Recommended Improvement Options Summary

Improvement Option		Description	Implementation Timeframe	Potential Funding Source	Cost Estimate
Intersection Improvements					
S1	US 93	Interim: Add dual left-turn lanes on east- and westbound approaches	Mid-term	NH, STPP, HSIP, MACI	\$4.5 M
S2	Hutton Ranch Rd.	Add east and westbound through lanes to the intersection	Mid-term	STPP	(with widening)
S3	Whitefish Stage Rd.	Full: Provides two east-west through lanes, north- and southbound left-turn lanes, east- and southbound right turn lanes	Mid-term	STPP, HSIP, MACI, Private	\$5.3 M
S4	US 2	Dual protected east- and northbound left-turn lanes, exclusive east- and southbound right-turn lanes, exclusive westbound left-turn lane	Mid-term	NH, STPP, HSIP, MACI	\$10.9 M
Roadway Widening					
R1	W. Reserve Dr. (Hutton Ranch Rd. to Whitefish Stage Rd.)	Widen from 3 to 5 lanes, including Stillwater Bridge; add 6' boulevards with 8' sidewalk on north and 5' sidewalk on south	Mid-term	STPP, STPB, Local	\$17.2 M
R2	W. Reserve Dr. (Whitefish Stage Rd. to US 2)	Widen from 3 to 5 lanes, including Whitefish Bridge; add 6' boulevards with 8' sidewalk on north and 5' sidewalk on south	Mid-term	STPP, STPB, Local	\$24.8 M
R3	Whitefish Stage Rd. (W. Reserve Dr. to 0.5 miles north)	Rural: Add 4' shoulders/flatten side slopes	Mid-term	STPU, Local, Private	\$2.2 M
R4	Whitefish Stage Rd. (W. Reserve Dr. to 0.5 miles north)	Urban: Add curb and gutter to rural section	Long-term	STPU, Local, Private	\$3.5 M
Multimodal Improvements					
M1	Pedestrian Crossing Treatment Study	Study pedestrian volumes at crossing near Drake Dr. and identify crossing treatment	Short-term	HSIP, STPP, TA	\$20,000
Travel Demand Management					
T1	Travel Demand Management	Encourage large employers to use TDM strategies	Short-term	Local, Private	Variable
Access Management					
A1	Corridor Access Management Plan	Develop corridor wide access management plan	Short-term	STPP, HSIP	\$50,000
A2	Side Street and Approach Movement Restriction	Consider restriction of movements at Home Depot, Country Way and Country Way North through signage or channelized islands.	When needed	Local	\$61,000 per approach
A3	Approach Consolidation near Whitefish Stage Rd.	Consolidate driveways to improve traffic operations	Short-term	Local	\$120,000

Implementation Timeframe: The timing and ability to implement improvement options depends on factors including the availability of funding, right-of-way needs, and other project delivery elements. Implementation timeframes are not a commitment to developing recommendations.

- **Short-term:** Implementation is feasible within a 0- to 5-year period.
- **Mid-term:** Implementation is feasible within a 5- to 10-year period.
- **Long-term:** Implementation is feasible within a 10- to 20-year period.
- **When needed:** Implementation could occur based on observed need at any time as needed.

Potential Funding Sources for recommended options identified in this study include federal, state, local, and private sources. Additional detail on funding sources is provided in **Appendix 5**.

Cost Estimates include construction, engineering, right-of-way, utilities, drainage, and indirect costs. In addition, an inflationary factor of three percent per year was applied to the planning-level costs to account for an estimated year of expenditure. Contingencies were added to account for unknown factors at the planning-level stage, however actual costs may vary due to changed conditions at the time of construction.



Project Implementation

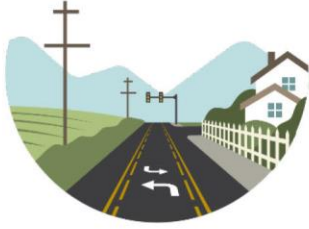
Successful implementation of recommendations may require cooperation and effort from multiple entities with the resources, funding, jurisdictional authority, or expertise required. Implementation agencies and partners playing a role in recommended improvement options include MDT, county and local agencies, federal and state agencies, local businesses and community groups, private landowners and developers, and other parties with interest or authority. MDT will continue to look for partnering opportunities in funding, communications, maintenance, strategy identification, and infrastructure improvements to meet the needs and objectives of the corridor.

Resource agencies, local governments, enforcement agencies, non-profit organizations, and private landowners have an opportunity to pursue actions within and outside the corridor, independent of MDT efforts.

Conclusions & Next Steps

This study provides a diverse list of improvement options and strategies that may be considered as funding becomes available. The list will assist implementing partners in targeting the most critical needs and allocation of resources. No funding has been identified and secured to complete any of the recommended improvement options. Project development requires the following steps:

- Identify and secure funding source(s)
- Follow MDT guidelines for project nomination and development for MDT-led projects, including a public involvement process and environmental documentation
- Coordinate with MDT via the System Impact Action Process, or other appropriate collaborative processes, for projects developed by others



WEST RESERVE DRIVE

— CORRIDOR PLANNING STUDY —

Kalispell, MT



INTRODUCTION





1.0 INTRODUCTION

MDT completed a corridor study of W. Reserve Dr., between the intersection with US 93 and US 2. A portion of Whitefish Stage Rd. is also included as part of this study, extending 0.5 miles north of W. Reserve Dr. and 300 feet south of W. Reserve Dr. The objective of the W. Reserve Dr. Corridor Planning Study was to develop a comprehensive long-range plan for managing the corridor and determining what can be done to improve the corridor based on needs, public and agency input, and financial feasibility. This was a collaborative process with local jurisdictions, resource agencies, MDT, FHWA, and the public to identify transportation needs and potential solutions given environmental and funding constraints.

The study identified and evaluated options for improving W. Reserve Dr. Potential improvement options are intended to address needs and objectives or areas of concern. Recommended improvement options considered in this report reflect input from stakeholders and the public, as well as a thorough evaluation of the existing and projected conditions of W. Reserve Dr. within the study area.

1.1 Study Process

The W. Reserve Dr. Corridor Planning Study followed the 2009 Montana Business Process to Link Planning and National and Montana Environmental Policy Act Reviews, MDT's guideline for conducting planning studies. The process is intended to facilitate a smooth and efficient transition from early transportation planning to project development and may be used to help determine the level and scope of required environmental review should a project advance.

The planning process evaluated existing and projected conditions, including demographic characteristics, physical roadway features, geometric and traffic conditions, crash history and safety performance, and environmental conditions of the W. Reserve Dr. corridor. The study also identified needs and objectives; provided opportunities for engagement with the public, stakeholders, and resource agencies; and identified a package of feasible short-, mid-, and long-term recommendations to address the needs of the roadway over the 20-year planning horizon, to year 2040. The planning process documented potential environmental impacts and constraints and disclosed information to the public, stakeholders, resource agencies, and transportation officials before decisions are made. The corridor planning process does not replace the need for environmental documentation, and it is not a design or construction project.

1.2 Study Area

The study area for the W. Reserve Dr. Corridor Planning Study is in the northeast part of Kalispell, within Flathead County, Montana. The study corridor includes W. Reserve Dr. beginning at the intersection with US 93 (RP 4.0) and continues east to the intersection with US 2 (RP 6.5). The study corridor also includes 0.5 miles of Whitefish Stage Rd. north of W. Reserve Dr. and 300 feet of Whitefish Stage Rd. south of W. Reserve Dr. For the purposes of this planning study, the study limits include a 250-foot buffer from the centerline of each roadway. **Figure 1** shows the study area and the system designation for the roads within the study area. As shown in the figure, much of the corridor lies outside the existing city limits.

The City Boundary (City Limits) are the currently annexed lands of the City of Kalispell, which is the only area the City can implement its Growth Policy and enforce its adopted rules and regulations. The annexation boundary is the land beyond the City limits where city services are generally available or could be reasonably extended if the property were to be annexed into the City in the next ten years. Future land use designations serve as a guide to the County when it considers zoning and rezoning land around the City. The urban area boundary represents an adjustment or revision to the Census Urban Area Boundary and is fixed by responsible state and local officials in coordination with each other. The reason Census Urban Area Boundaries are revised is to smooth out geographic irregularities, maintain administrative continuity, and encompass fringe area having residential, commercial, industrial, and/or national defense significance. The FHWA approved urban area boundary is fixed also to determine capital program funding and eligibility.

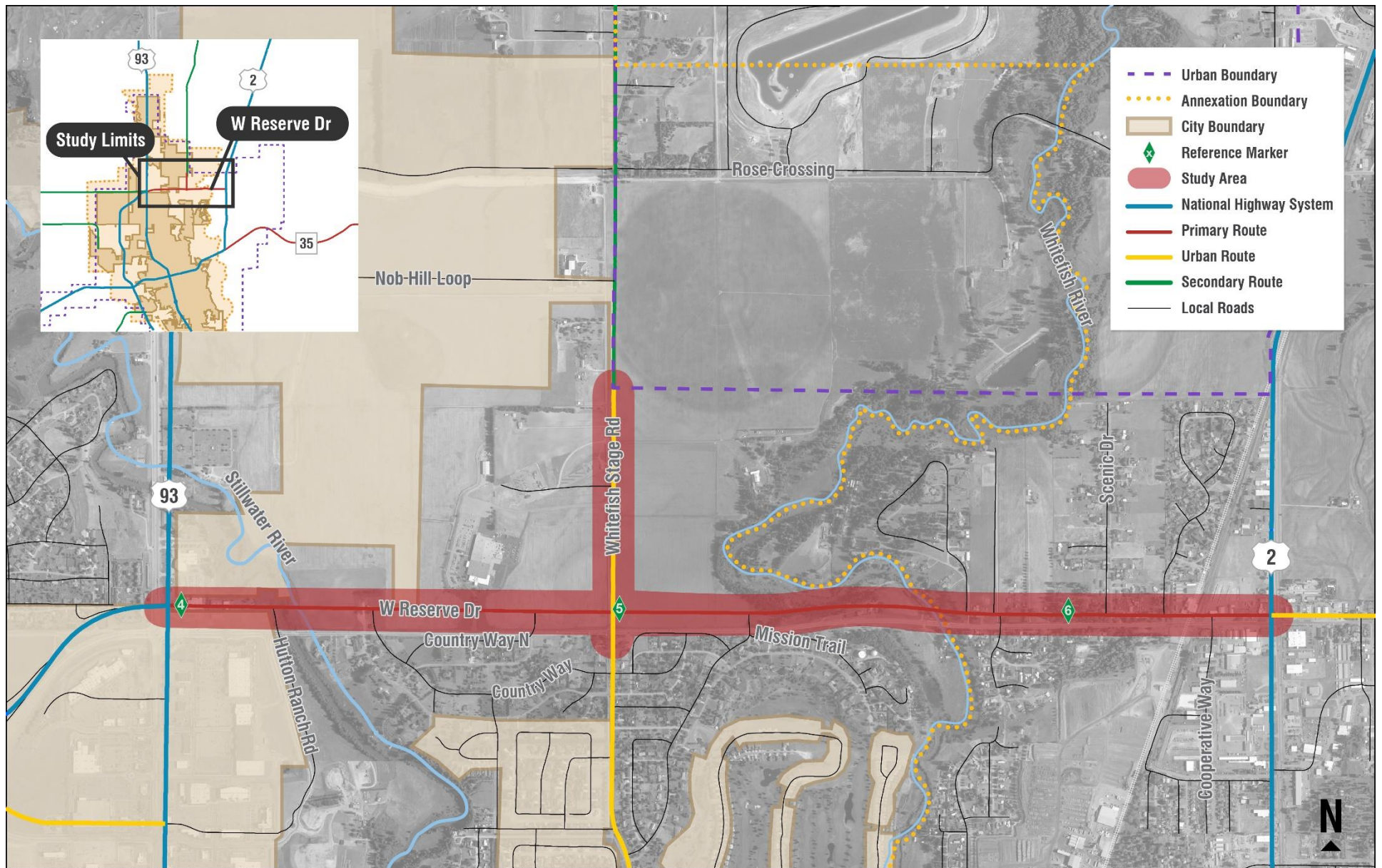


Figure 1: Study Area



WEST RESERVE DRIVE
— CORRIDOR PLANNING STUDY —

Kalispell, MT



**PUBLIC AND
STAKEHOLDER
OUTREACH**





2.0 PUBLIC & STAKEHOLDER OUTREACH

Effective and open communication was a vital component to the success of the study, as it related to public, stakeholder, and agency receptiveness and involvement. The goal of developing a public and stakeholder outreach plan was to provide opportunities for members of the public, stakeholders, and elected leaders to learn about the process, review information about the corridor planning study, and provide input throughout the planning effort.

An important aspect of the planning study process is to provide opportunities for ongoing and meaningful public involvement. Specific public outreach activities are noted in this chapter. Meeting materials such as press releases, advertisements, agendas, presentations, and meeting summaries are provided in **Appendix 1**.

2.1 On-Demand Involvement Options

Multiple on-demand involvement opportunities enabled participants to engage in the study process at their convenience, while respecting COVID-19 restrictions. Key audiences included the public, stakeholder organizations, and local agencies.

2.1.1 Project Website

MDT hosted a study website (<https://www.mdt.mt.gov/pubinvolve/westreserve/default.shtml>) to provide study information. The website was designed to encourage public interaction. Pertinent contact information, meeting announcements, frequently asked questions, stakeholder letters, and study reports were accessible from the website.

The screenshot shows the MDT website interface. At the top, the MDT logo is on the left, and the name of the Director, Malcolm "Mack" Long, is on the right. Below the director's name are links for "about", "careers", "news", "meetings & events", and "contacts". A navigation bar contains "TRAVELER INFO", "PUBLIC INVOLVEMENT", "ROAD & BRIDGE \$", "DOING BUSINESS", and "PUBLICATIONS". A dark banner for "COVID-19" includes a link to the Governor's Coronavirus Task Force site. The main heading is "MDT Plans, Studies & Projects". The central content area features the project logo and the text "WEST RESERVE DRIVE — CORRIDOR PLANNING STUDY —". Below this is a "Project Overview" section with a paragraph of text. To the right, there are sections for "Links" (Project Overview, Documents, FAQs, Public Involvement), "Comments" (MDT Comment Form), and "Contacts" (Vicki Crnich, Montana Department of Transportation, MDT Project Manager, 2701 Prospect Ave, PO Box 201001, Helena, MT 59620).

The Study website contained pertinent study information and encouraged interaction from the public and stakeholders.



2.1.2 Email Contact List

The email contact list generated for the study included businesses, residents, and groups with knowledge of the study area. Emails were sent prior to informational meetings to notify identified contacts of the status of key milestones in study development.

2.1.3 Virtual Engagement

A virtual platform page for documentation of study feedback was established and maintained. **Figure 2** highlights locations of comments received via the virtual platform. Users were provided the opportunity to leave notes and identify areas of concern.



Figure 2: Virtual Platform Map

2.2 Targeted Outreach Events

2.2.1 Technical Oversight Committee

A technical oversight committee was established with representatives from MDT, FHWA, City of Kalispell, and Flathead County. The committee met approximately every six weeks to discuss study progress, analysis methodology and approach, draft reports, and other issues and concerns. The committee advised the consulting team and reviewed study documentation before publication.

2.2.2 Resource Agency Meeting

A resource agency meeting was held on April 6, 2021, virtually via Zoom. The purpose of the meeting was to provide an overview of the study process and confirm the accuracy of study evaluation efforts as it relates to the environmental setting. The following agencies were invited to participate:

- State Historic Preservation Office (SHPO)
- Department of Natural Resources and Conservation (DNRC) - State Lands; Water Management; State Water Projects; Water Rights
- United States Army Corps of Engineers (USACE)
- United States Environmental Protection Agency (USEPA)
- US Fish and Wildlife Service (USFWS)



- Federal Highway Administration (FHWA)
- Montana Fish Wildlife & Parks (FWP)
- Department of Environmental Quality (DEQ) - Water Quality; Water Protection
- Flathead Co. Conservation District
- Flathead Co. Floodplain
- City of Kalispell

2.2.3 Informational Meetings

Virtual public informational meetings were held at two key points during the planning study. The first occurred after evaluation of the existing and projected conditions. The second coincided with the release of preliminary recommendations and the draft *Corridor Study Report*.

Informational Meeting #1

MDT *Malcolm "Mack" Long, Director*
about careers news meetings & events contacts

TRAVELER INFO PUBLIC INVOLVEMENT ROAD & BRIDGE \$ DOING BUSINESS PUBLICATIONS

COVID-19
View the [Governor's Coronavirus Task Force](#) site for more information.

MDT Plans, Studies & Projects

WEST RESERVE DRIVE
— CORRIDOR PLANNING STUDY —

Public Involvement

Public Information Meetings

Public Information Meeting #1

Virtual public meetings were held on March 17 at 11:00 am and 5:30 pm.

- [View the 11:00 am meeting recording](#)
- [View the 5:30 pm meeting recording](#)
- [View the presentation slides from the meeting](#)

Outreach Materials

- [Stakeholder Letter](#)
- [Display Ads - Daily Inter Lake and Flathead Beacon](#)
- [Daily Inter Lake Article](#)
- [Press Release](#)

Links

- [Project Overview](#)
- [Documents](#)
- [FAQs](#)
- [Public Involvement](#)

Comments

- [MDT Comment Form](#)

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The project website was updated with advertisement for each public information meeting and recorded meeting videos for public to access.



MDT hosted a set of informational meetings on March 17, 2021. Due to COVID-19, the meeting was held remotely using Zoom. Two meetings were scheduled on the same day, at 11:00 AM and 5:30 PM to allow flexibility for participants. The Zoom meetings were recorded, edited to remove any dead time or technical issues, and posted to the project website. Advertisements were placed in the Daily Inter Lake and Flathead Beacon. Electronic invitations were sent to identified stakeholders and study contacts. Electronic notice was posted to the study website.

A total of 34 participants attended either the morning or afternoon sessions. The purpose of the meetings was to provide information about the scope of the study, share existing conditions data, collect feedback, and answer questions. The meetings began with a prepared presentation and concluded with an open forum question-and-answer period. Refer to **Appendix 1** for a summary of presentation material and comments received.

Informational Meeting #2

MDT hosted a set of informational meetings on September 9, 2021. Due to COVID-19, the meeting was held remotely using Zoom. Two meetings were scheduled on the same day, at 11:00 AM and 5:30 PM to allow flexibility for participants. Advertisements were placed in the Daily Inter Lake and the Flathead Beacon. Electronic invitations were sent to identified stakeholders and study contacts. Electronic notice was posed to the study website.

Informational Meeting #2 was held following the release of the draft *Corridor Study Report*. A total of 28 participants attended either the morning or afternoon sessions. The purpose of the meetings was to share the draft report, provide updates, discuss recommendations, and answer questions. The meetings began with a prepared presentation that covered the needs and objectives of the corridor and improvement options that address the objectives. The meeting concluded with an open forum question-and-answer period. Refer to **Appendix 1** for a summary of presentation material and comments received.

2.3 Corridor Study Public and Agency Comments

Active participation and community outreach were emphasized during the planning process. Comments were solicited from stakeholders to identify areas of concern and help develop recommended improvement options. An official public and agency comment period coincided with the release of the draft *Corridor Study Report* and second virtual public meeting. The commenting period started September 3, 2021 and ended October 9, 2021.

A summary of the comments received during the Corridor Planning Study is provided below:

- **Access:** It is important for businesses, public services, and large trucks to have access on W. Reserve Dr. while maintaining center turn lanes for residential and business access. Residential and business access for those entering and exiting traffic is difficult and turn lanes and traffic lights could alleviate those issues.
- **Construction:** There is consistent feedback that improvements are needed, and the public is anxious to see improvements implemented, even if they are incremental.
- **Design:** Public comments consistently noted that the extent of W. Reserve Dr. needs to be at least four lanes with adequate pedestrian and bicycle facilities. Traffic entering and exiting business access is difficult in both directions. There was a mix of designs suggested including a tunnel or overpass, roundabout, and a diamond interchange. Some people object to roundabouts, too. Dedicated turn lanes with signalized intersections are requested to improve traffic flow. It was noted that another bridge crossing the Stillwater River is needed, namely connecting Four Mile/Grandview Dr. to Evergreen Dr., and the project should continue further north along Whitefish Stage Rd. to Rose Crossing.
- **Multimodal:** Public comments were received noting the need to expand pedestrian and bicycle infrastructure. There were questions about whether facilities would be on both sides of the roadway and about maintenance responsibility.

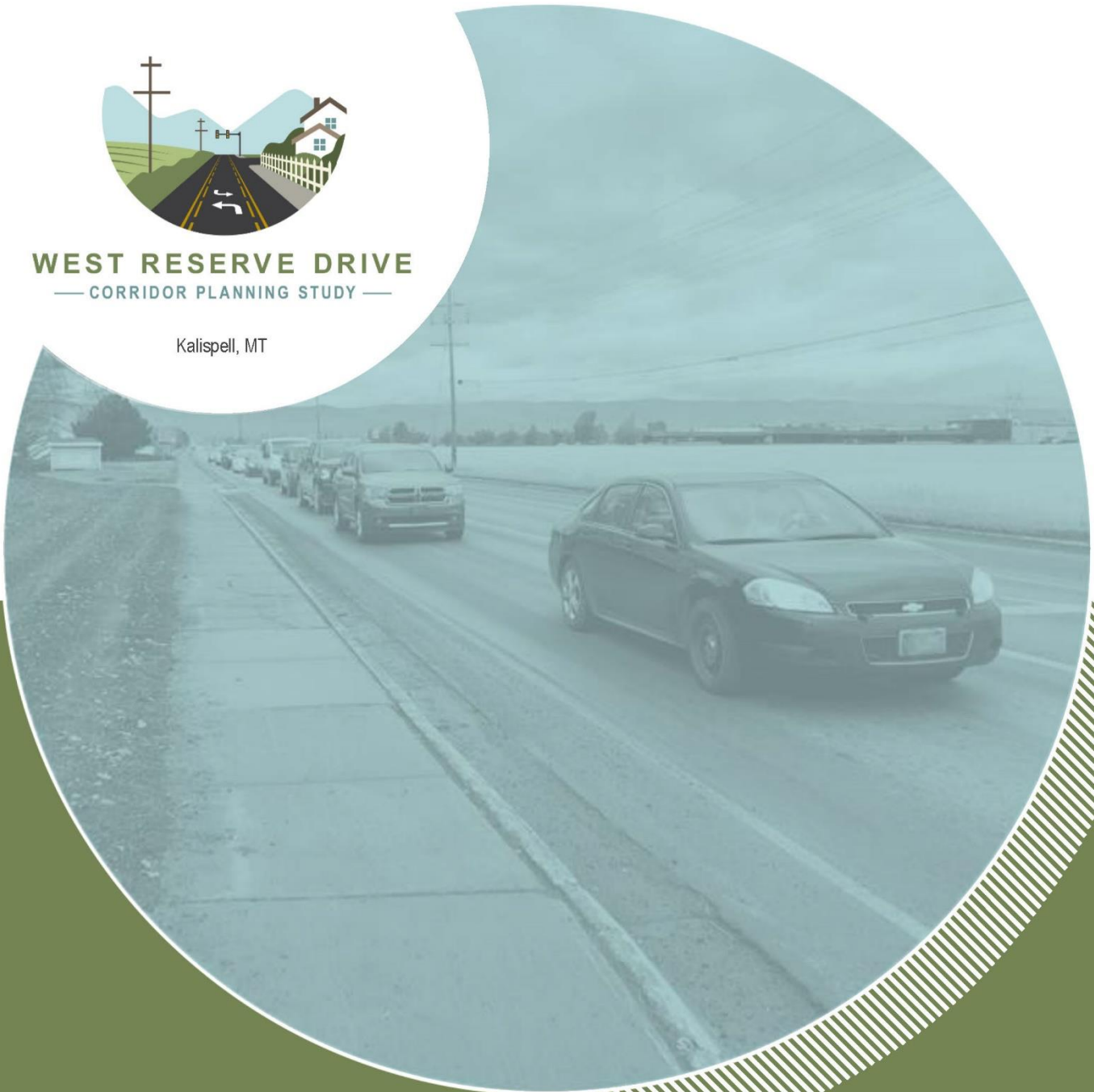


- **Noise:** Some residents requested neighborhood noise barriers and/or appropriate landscaping to eliminate noise, dust, and fumes. There were also inquiries about restrictions to the use of air compression brakes.
- **Right-of-Way Access:** Questions about right-of-way were brought up; one person noted plans for future development along the corridor and recommended acquiring right-of-way now while it is available. Other concerns were raised about right-of-way impacts to specific property owners.
- **Study Perimeter:** Several comments noted the need to review roadways beyond the study perimeter including larger-scale road infrastructure such as bridges and bypasses.
- **Traffic Operations:** There were numerous comments related to traffic operations, noting consistent congestion along the corridor and the resulting impact on adjacent streets. Suggestions included adding a right-hand turn lane from Hutton Ranch Rd. and W. Reserve Dr. to Whitefish Stage Rd to speed up traffic and left traffic signals for northbound travelers turning left on W. Reserve Dr. Others noted the need to adjust signals and timing at W. Reserve Dr. to accommodate traffic turning. There is a need to move more traffic along the corridor more efficiently. Residents on Country Way are frustrated with increased traffic; others are concerned about construction-phase detours impacting the street.
- **Utilities:** There are a lot of utilities present on the corridor and that will need to be coordinated.
- **Varied Uses:** Public comments were received noting the varied uses on the corridor. The comments referenced truck traffic, spurring from the mill on the corridor, and the importance of multimodal accommodations.



WEST RESERVE DRIVE
— CORRIDOR PLANNING STUDY —

Kalispell, MT



**TRANSPORTATION
SYSTEM**





3.0 TRANSPORTATION SYSTEM

The study evaluated the existing transportation system and anticipated future conditions in the corridor. This information may be used to support future, detailed project-level analyses if any improvement options advance from this study. Additional information on these topics is provided in the *Existing and Projected Conditions Report (Appendix 2)*.

3.1 Background

The City of Kalispell and the area surrounding the W. Reserve Dr. study corridor, specifically the area north of the study corridor, have experienced substantial growth in recent years. This has resulted in increased commuter, homeowner, and commercial/construction traffic volumes on W. Reserve Dr., which has become a major east-west thoroughfare, connecting US 2 and US 93. The Flathead Valley has realized a 14.8 percent increase in population since 2010 resulting in a strain on the existing infrastructure including traffic volumes along the route. In April 2020, the Montana Transportation Commission approved a system change for W. Reserve Dr., removing it from the Urban System and adding it to the Primary System. The Primary route designation more closely aligns with the roadway's current functionality, as a high-volume roadway providing important east-west connection between two national highways. In addition to providing an east-west connection between US 2 and US 93, the W. Reserve Dr. corridor also serves several subdivisions and individual residences, farms, a large timber mill, and the commercial areas around US 93 and US 2.

3.1.1 Local & Regional Planning

Several local plans related to transportation and land use exist that pertain to the corridor study area. The following is a list of local plans and regulations that include land use policy and transportation guidance. The planning documents listed below were reviewed to provide context to the study and identify considerations that may be relevant to improvement options on W. Reserve Dr.:

- Flathead County Growth Policy¹
- Flathead County Transportation Plan – Phase II²
- Kalispell Area Transportation Plan (2006 Update)³
- Move 2040, Draft Kalispell Area Transportation Plan (including Bike/Ped Analysis)⁴

3.1.2 Projects Under Development

MDT, Flathead County, City of Kalispell, and private development projects are expected to be completed in the coming years. Planned developments and construction projects affecting the corridor study area include the following:

- **US 93 North Signals-Kalispell:** Construction of this project is anticipated in calendar year 2021. The US 93 North Signals-Kalispell project will upgrade traffic signals, so they are more visible and are timed to allow more efficient movement of traffic. The project will also make improvements to pedestrian accessibility with ramps and crosswalk signals that meet ADA standards. The US 93 and W. Reserve Dr. intersection is included in this project.
- **Center Line Rumble Strips-Kalispell Area:** Construction of this project is anticipated in calendar year 2021. The project will install center line rumble strips in the Kalispell area including Whitefish Stage Rd., north of W. Reserve Dr.
- **City of Kalispell Projects:** The City of Kalispell's 2018 Water Facility Plan Update and 2019 Wastewater Facility Plan Update identify future water and wastewater capital improvement projects between US 93 and Whitefish Stage Rd. The future wastewater improvements include an 8-inch gravity wastewater collection system and sewer lift station east of the Stillwater River within Whitefish Stage Rd. and W. Reserve Dr. The future water improvements consist of a transmission



main between US 93 and Whitefish Stage Rd. along W. Reserve Dr. and Whitefish Stage Rd. The water and wastewater capital improvement projects are on a 5- to 15-year timeline and are driven by growth and development in the surrounding area. MDT prefers utilities to be located outside of the paved roadway; projects will require a permit if located within MDT right-of-way.

The City also plans to develop a regional stormwater system that runs parallel to Whitefish Stage Rd. and then flows west to an outfall at the Stillwater River. Development in the area, including the North Town Center, will drive the need to collect and convey stormwater runoff. This future project is described in detail in the 2019 Kalispell Stormwater Management Projects report.

- **Kalispell North Town Center:** The Kalispell North Town Center is a planned development located on Rose Crossing between US 93 and Whitefish Stage Rd. The project will add significant traffic with the development of 13 commercial lots (hotel, supermarket, bank, car sales, fast-food restaurant, and offices), residential apartments, an elementary school, and a shopping center⁵. When fully complete, this development is expected to attract additional traffic to the study area. The development tentatively plans to add one additional access point on W. Reserve Dr., located near the Country Way intersection. Water and wastewater facilities are also tentatively planned with the development including a new municipal well at the Hutton Ranch Road intersection. A wastewater lift station is tentatively planned near the Stillwater River bridge.

DEVELOPMENT AREA

Whitefish, MT Glacier National Park

Rose Crossing

PHASE I

US Highway 93

Whitefish Stage Rd

W Reserve Dr

Calculus

Bank

Source

Wal-Mart

CONTACT

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KALISPELL NORTH TOWN CENTER

www.kalispellnorthtc.com

IN THE SHADOW OF GLACIER NATIONAL PARK

MONTANA'S
NEWEST
COMMERCIAL CENTER

KALISPELL NORTH
TOWN CENTER
KALISPELL, MONTANA

The Kalispell North Town Center is a large planned development that will add commercial, residential, retail, office space, and a potential school to the area.



3.2 Physical Features & Characteristics

As a major east-west roadway, W. Reserve Dr. serves several subdivisions, commercial developments, and agriculture sites. W. Reserve Dr. is classified as a minor arterial, while US 93 and US 2 are classified as principal arterials. Whitefish Stage Rd. is classified as a major collector north of W. Reserve Dr. and a minor arterial south of W. Reserve Dr., as shown in **Figure 3**.



Figure 3: Functional Classification

3.2.1 Roadway Surfacing

Pavement monitoring is conducted on an annual basis by MDT, utilizing a variety of conditional assessments to assess cracking, rutting, and ride. The Overall Performance Index (OPI) combines and weighs these assessment results to describe the pavement’s general condition. On a scale of 0 to 100, OPI scores of 80-100 are good, 60-80 are fair, and less than 60 are considered poor. As shown in **Table 1**, pavement condition is rated between fair and poor within the study area. Of note, the pavement within the study area was last improved and treated in 2007.

Table 1: Pavement Condition

<i>Begin RP</i>	<i>End RP</i>	<i>Roadway</i>	<i>Overall Performance Index</i>
4.44	5.11	W. Reserve Dr.	62.26 (fair)
5.11	6.48	W. Reserve Dr.	44.51 (poor)
.014	2.57	Whitefish Stage Rd.	72.70 (fair)



3.2.2 Posted Speed Limits

Figure 4 shows the posted speed limits in the study area. The speed limit is 45 miles per hour (mph) along most of the W. Reserve Dr. corridor but decreases to 40 mph about 0.6 miles west of US 2. The reduced speed limit occurs as the corridor transitions into a more residential area, where homes and business have direct access to W. Reserve Dr. The speed limit on Whitefish Stage Rd. is 45 mph south of W. Reserve Dr. and 50 mph north of the intersection.



Figure 4: Posted Speed Limits

3.2.3 Access Density

The corridor was divided into quarter-mile segments and the number of approaches and intersections were counted on each segment. As shown in **Figure 5** below, access density is relatively low from US 93 to the Whitefish River bridge. However, the nature of the corridor changes just east of the Whitefish River bridge, where there are numerous residential and commercial properties with direct access to W. Reserve Dr. No access control plan currently exists for the corridor.

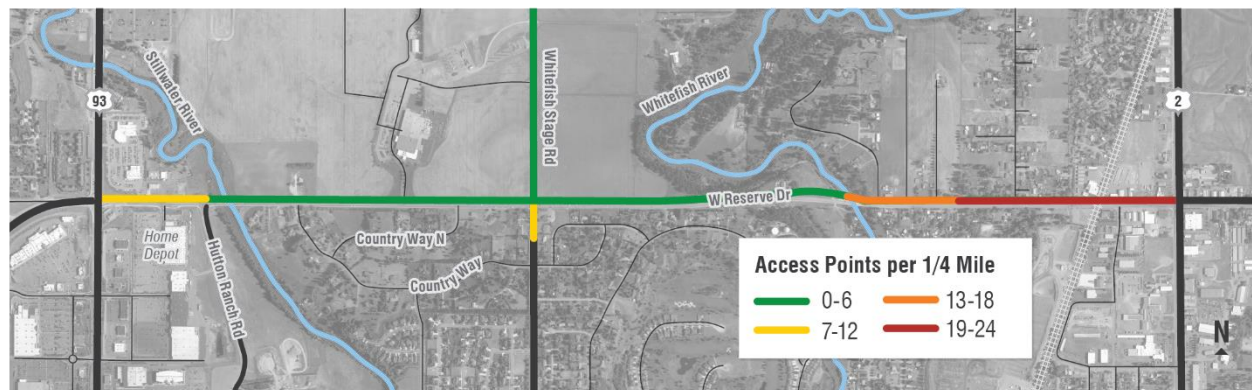


Figure 5: Access Density



3.2.4 Utilities



Utilities are present within the corridor, like these major power transmission towers.

Most of the parcels along W. Reserve Dr. have individual septic systems and drain fields. The primary concentration of septic systems is on the south side of W. Reserve Dr. between the Stillwater and Whitefish Rivers. In addition to the individual septic systems, existing sanitary sewer infrastructure is located within the W. Reserve Dr. right-of-way.

Potable water mains present along the corridor are owned by the City of Kalispell and the Evergreen Water & Sewer District (EWSD). The City of Kalispell water main lines are within the city limits, with a 12-inch transmission main crossing at the US 93 intersection, a 12-inch main on the south side of W.

Reserve Dr. between the Home Depot entrance and Hutton Ranch Rd., and an 8-inch water main on the north side of W. Reserve Dr. between US 93 and the east side of Town Pump. The EWSD District spans from the Stillwater River to the US 2 intersection. The EWSD has multiple potable water mains impacting the corridor area right-of-way. There are no records of existing water or sewer utilities within Whitefish Stage Rd. outside of the immediate intersection with W. Reserve Dr.

Bonneville Power Administration (BPA) has a transmission easement with a major transmission line crossing W. Reserve Dr. approximately 700 feet east of the US 93 intersection. Overhead utility lines run along the entire length of W. Reserve Dr. There are overhead utility lines at the intersection of W. Reserve Dr. and Whitefish Stage Rd. and along the east and west sides of Whitefish Stage Rd. and at the Flathead Electrical Cooperative-Stillwater Substation located approximately 1,900 feet north of the W. Reserve Dr. and Whitefish Stage Rd. intersection. Coordination with Flathead Electric Cooperative will be needed to understand potential upgrades to power lines which may impact relocation costs.

There are buried natural gas and communication utilities running parallel and transverse to W. Reserve Dr. and Whitefish Stage Rd. There is a 2-inch diameter natural gas main within the roadway from the Whitefish River bridge east to the US 2 intersection. Additional parallel and transverse natural gas and communication utility crossings may be present but require location by a qualified utility location service.

3.2.5 Railroad

A BNSF railroad spur crosses W. Reserve Dr. near RP 6.3. The track averages 2 trains daily and serves local warehousing and commercial facilities. A recent upgrade to the railroad crossing at W. Reserve Dr. included new concrete crossing surface and detectable warning devices. The crossing has a 60-degree skew angle with crossing gates and warning lights.

3.2.6 Maintenance & Operations

MDT is responsible for maintenance of both W. Reserve Dr. and Whitefish Stage Rd. throughout the study area except for the segment of Whitefish Stage Rd. extending south of W. Reserve Dr. That segment is locally maintained by the County. The maintenance of Whitefish Stage Rd., north of W. Reserve Dr., was transferred to MDT in 2000. These maintenance responsibilities include repairs and preventative maintenance of the roadway, sidewalk and trails, structures, and signs within the right-of-way. The MDT Kalispell Maintenance Section has jurisdiction over these facilities.

Winter Operations

MDT maintenance personnel are responsible for winter snowplowing and sanding of both W. Reserve Dr. and Whitefish Stage Rd. north of W. Reserve Dr. The MDT Maintenance Operations and Procedures Manual provides classification of winter maintenance areas. The W. Reserve Dr. corridor qualifies as a Level I facility and is eligible to receive up to 24-hours-per-day coverage during a winter storm event.



Whitefish Stage Rd. north of W. Reserve Dr. qualifies as a Level I-A facility and is eligible to receive coverage up to 19 hours per day during a storm event, typically between the hours of 5:00 AM and 12:00 AM. Coverage of these facilities is at the discretion of the MDT Area Maintenance Chief.

Emergency Services

Coordination of public safety agencies is the responsibility of Flathead County Office of Emergency Services (OES). These services include law enforcement, fire, ambulances, public works, volunteers, and other groups that may be associated with an emergency response.

The corridor is served by two volunteer fire departments, Evergreen Fire Department and West Valley Fire Department. Law enforcement is provided by the Kalispell Police Department, Flathead County Sheriff Department and Montana Highway Patrol.

Medical services for emergency situations are provided by Logan Health, formerly known as Kalispell Regional Healthcare, in Kalispell. Logan Health capabilities include air ambulance and certification as a Level III Trauma Center by the American College of Surgeons.

3.2.7 Drainage Conditions

W. Reserve Dr. is an urban curb and gutter section with limited stormwater and drainage facilities. There is a total of 26 storm drain inlets associated with these stormwater systems. There are two major drainages along the corridor and include bridges over the Stillwater River and Whitefish River. Both crossings are located within FEMA delineated floodplains. There are six minor drainage culverts, 42-inch and smaller, identified throughout the corridor. Many of these drainage culverts have buried ends and are ineffective. Stormwater along Whitefish Stage Rd. is captured in roadside borrow ditches that flow south. Only one stormwater utility is located along this roadway within the study area. This is an 18-inch approach culvert located at the Flathead Electric substation approach (approximately 1,975 feet north of the W. Reserve Dr. centerline).



There are culverts within the study area that contribute to poor drainage conditions.

Future stormwater development would be anticipated in this area to comply with MS4 permit requirements. Stormwater and MS4 permitting will be important hydraulic considerations during design of any future improvement options.



3.2.8 Geotechnical Conditions

Much of the study area is mapped on “glaciolacustrine deposits,” soil that was deposited during the Pleistocene epoch in a glacial lake. Sediment consists of relatively soft silt, sand, and clay. Quaternary Alluvium is present along the Stillwater and Whitefish Rivers.

The Natural Resource Conservation Service (NRCS) provides soil survey mapping⁶. Foundation soils at the Stillwater River Bridge consist primarily of clay and silt, while at the Whitefish River Bridge, foundation soils consist primarily of gravels. From mapping and drilling investigations of projects near and within this corridor study, soils are expected to be composed primarily of silt, with some clay and some sand. These soil types often require additional subgrade preparation and compaction will be more difficult if the subgrade soil is moist. The areas that are composed primarily of silt and fine sand will be frost susceptible when moisture is present. Finally, there is a meander in the Whitefish River that has created a slope on the north side of the roadway between approximate milepost 5.3 and 5.4. If the roadway is widened or if the alignment is moved to the north, this slope could necessitate a wall or tall embankment that could present global soil stability challenges.

3.2.9 Bridges

MDT uses a Structure Condition Performance Measure and a Deck Performance Condition Measure to classify the elements of a bridge. These measures categorize bridge conditions as good, fair, or poor, based on the condition rating given to the bridge deck, superstructure (including beams, bearings and diaphragms supporting the bridge deck), and substructure (the foundational elements that transfer load from the structure to the soil and provide stability). Additionally, the structures are classified as Structurally Deficient or Functionally Obsolete if certain serviceability inadequacies exist.



The two bridges in the study area are currently in need of repair, maintenance, or replacement.



Table 2 lists the overall width, length, and age of each bridge within the study area. According to the MDT Bridge Design Standards, both bridges have adequate width for structures to remain in place but due to the pedestrian access on both structures and approaching roadway alignment there is only one travel lane in each direction. Both structures are candidates for structure rehabilitation and widening if an overall corridor widening improvement option is forwarded through this study. However, the Stillwater Bridge would warrant an evaluation of replacement rather than widening due to its classification of Structurally Deficient/Functionally Obsolete.

Table 2: Bridge Condition

Structure No.	Feature Crossed	Year Built	Width (ft)	Length (ft)	Structurally Deficient
06913	Stillwater River (RP 4.28)	1983	59	209.1	Yes
06914	Whitefish River (RP 5.74)	1983	59	133.0	No

3.2.10 Other Transportation Modes

Transit

Figure 6 shows existing transit routes within the study area. Eagle Transit / Mountain Climber operates the green line bus route, which passes through the west end of the study area. The green line provides a north-south connection between the Gateway Center and US 93 and W. Reserve Dr. The route typically serves the downtown area and extends up to Hutton Ranch Road. For the years 2020 and 2021, the route is not in service due to COVID-related concerns. It typically operates with a 30-minute headway from 9am-4pm and a 60-minute headway from 8-9am and 4-6pm.



Figure 6: Transit Routes

Bicycles & Pedestrians

Figure 7 shows the existing bicycle and pedestrian facilities. Sidewalk coverage is incomplete throughout the corridor. Sidewalk exists on both sides of W. Reserve Dr. from US 93 to the Stillwater Bridge. However, sidewalk only exists on the south side of W. Reserve Dr. from the Stillwater Bridge to the Whitefish River Bridge. Just east of the Whitefish River Bridge, the sidewalk moves from the south side to the north side of W. Reserve Dr. without a dedicated crosswalk and continues to the US 2 intersection. A paved trail exists on the west side of Whitefish Stage Rd., starting at W. Reserve Dr. and extending 1.6 miles south.



Figure 7: Bicycle and Pedestrian Facilities

Pedestrian volumes are relatively low throughout the corridor, with the US 93 and US 2 intersections having the highest pedestrian volumes. Of note, pedestrian volumes are likely higher during the warmer summer months.

3.3 Geometric Conditions

Existing roadway geometrics were evaluated and compared to current MDT standards. The analysis was completed based on a review of public information, MDT as-built drawings, GIS data, and field observations.

3.3.1 Design Criteria

The MDT Road Design Manual establishes the design controls and general design criteria that influence the overall roadway design approach. A balanced design incorporates the general design criteria while meeting the desired outcome of the project mindful of impacts related to the project. MDT considers W. Reserve Dr. an urban minor arterial which accommodates shorter trip lengths, lower traffic volumes, and more access to property than a principal arterial. The geometric criteria for the study corridor are based on current MDT standards for urban minor arterials on non-NHS routes, consistent with the corridor's classification. The design speed for an urban minor arterial is 35 mph. Posted speeds may differ from design speed.

3.3.2 Roadway Typical Section

The existing three-lane typical section has a roadway surface width of 41 feet with curb and gutter on both sides of the roadway for a total of 45 feet from back-of-curb to back-of-curb. Sidewalk is present throughout the corridor, on one side of the roadway or the other. The existing sidewalk does not provide continuous accessible routes on either side of the roadway. Lane widths, shoulders, and sidewalk widths are generally compliant with existing standards.

3.3.3 Horizontal & Vertical Alignment

A horizontal alignment consists of a series of straight lines, known as tangents, and curves to change direction. The horizontal alignment is relatively straight with three curves. The existing horizontal alignment complies with current geometric design standards. A vertical alignment consists of a series of straight grades and vertical curves, or changes in elevation. The vertical alignment is generally flat and in compliance with current geometric standards with one exception. The grade down from Mission Trail Rd. east to the bridge crossing the Whitefish River is at 7%, the maximum grade for level terrain. Vertical curves generally meet or exceed current geometric design standards. Improvement options forwarded from this study need to ensure that current alignment standards are met and consider design speed and terrain type.



3.4 Traffic Conditions

Traffic conditions on the study corridor have been documented, including a review of existing and historic traffic volumes, anticipated future growth, and intersection operations with existing and future 2040 traffic volumes.

3.4.1 Traffic Volumes

Historic & Expected Volumes

The historic growth rate over the last 20 years (2000 to 2019) was analyzed to estimate future traffic volumes. The Annual Average Daily Traffic (AADT) reported is only an estimate and can vary widely from year to year, based on the conditions during the traffic count. **Table 3** lists the locations of the short-term count sites and the compound annual growth rate (CAGR) at each site.

Table 3: Historic AADT and Growth Rate

Count Site	2000 AADT	2019 AADT	Growth Rate		
			2000-2009	2010-2019	2000-2019
W. Reserve Dr., west of Country Way	10,700	19,853	5.2%	1.5%	3.1%
W. Reserve Dr., west of Whitefish Stage Rd.	13,230	18,323	2.3%	1.4%	1.6%
W. Reserve Dr., east of Whitefish Stage Rd.	8,730	13,574	3.8%	1.0%	2.2%
W. Reserve Dr., west of US 2	9,340	15,281	2.6%	2.7%	2.5%
Average Growth Rate for W. Reserve Count Sites			3.4%	1.7%	2.4%

Figure 8 shows the data graphically. The recommended 2.4% growth rate is also consistent with growth rates used for other planning-level studies in the area. The Kalispell Move 2040 Transportation plan projects 2.4% annual growth in households in the Kalispell area and 1.9% annual growth in employment over the next 20 years.

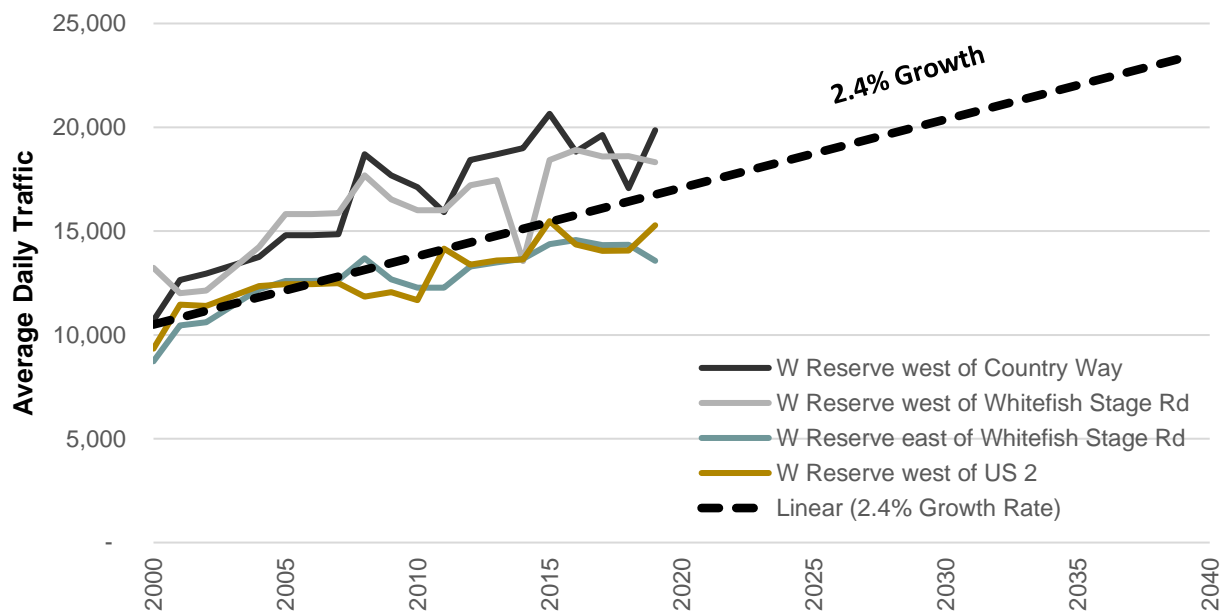


Figure 8: Average Daily Traffic Volumes (2000-2019)



Table 4 shows the projected AADT at the short-term count sites in year 2040, assuming a CAGR of 2.4%. The corridor is expected to have 30,000 to 33,000 daily vehicles on the west end and 22,000 to 25,000 daily vehicles on the east end in 2040.

Table 4: Forecasted 2040 AADT

Count Site	2019 AADT	2040 AADT
W. Reserve Dr., west of Country Way	19,853	32,668
W. Reserve Dr., west of Whitefish Stage Rd.	18,323	30,151
W. Reserve Dr., east of Whitefish Stage Rd.	13,574	22,336
W. Reserve Dr., west of US 2	15,281	25,145

Of note, this projected AADT assumes that corridor laneage will be expanded. If the corridor cross-section remains as-is, drivers will experience increased congestion at the 20,000 AADT range and may divert to other routes.

Heavy Vehicle Traffic

Heavy vehicles generally include buses, delivery trucks, and semi-trailer trucks. The percent heavy vehicles were calculated using recent 48-hour traffic counts collected by MDT. On average, heavy vehicles make up about 4.1 percent of all vehicles on the corridor over a 24-hour period.



Traffic accumulating near the US 2 intersection.

COVID-19 Traffic Impacts

A 12-hour traffic count was collected at each study intersection during October 13th-15th, 2020. This count data was compared to recent historic counts to understand how the COVID-19 pandemic has impacted existing traffic volumes. **Appendix 2** provides a summary of historic and October 2020 count data.



Figure 9 compares the traffic volume profile for historic traffic counts versus October 2020 traffic counts at the three intersections. The historic 48-hour traffic count data was averaged across the two weekdays and is shown as a dashed line in the figure. On average, the AM peak hour is about 10% lower and the PM peak hour is about 3% lower due to COVID traffic impacts. The October 2020 turning movement proportions were also compared to historic data. The proportion of traffic making each turning movement was very similar to historic data (within 2%); this indicates that travel patterns have not changed substantially on the corridor due to COVID-19.

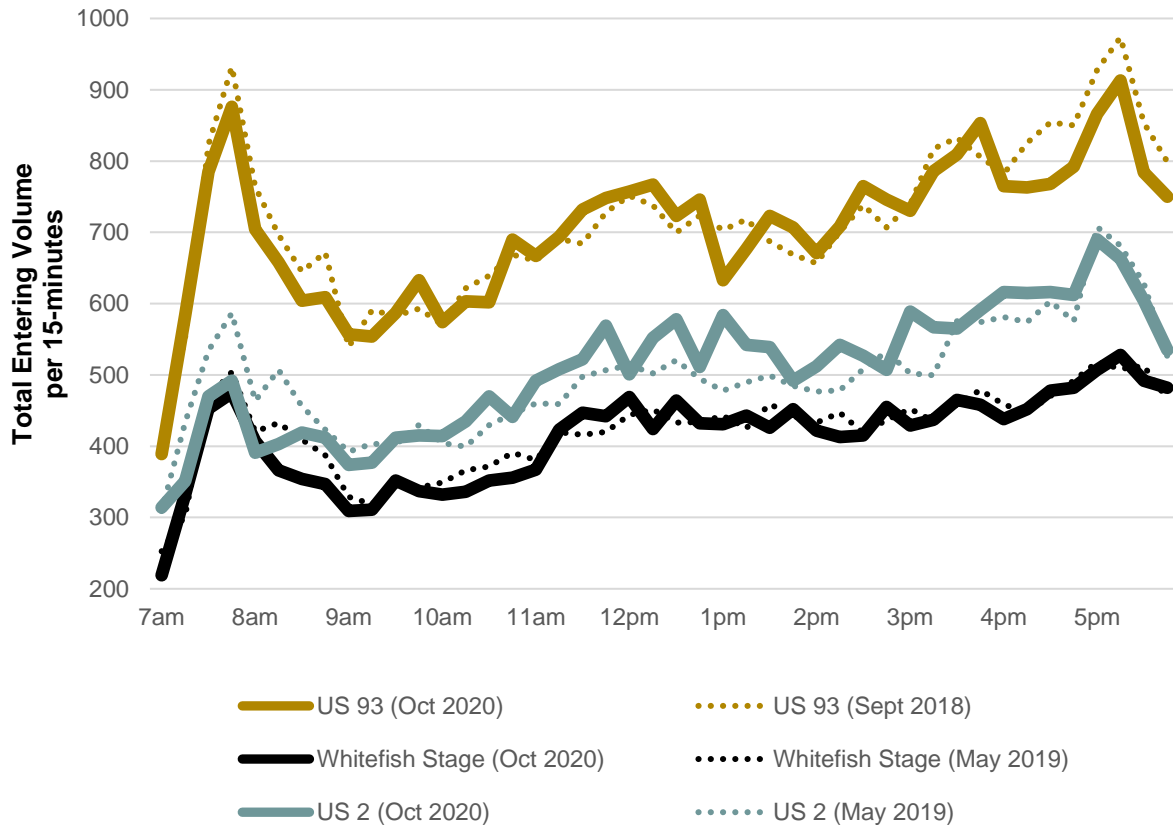


Figure 9: Comparison of Historic vs October 2020 Traffic Counts

3.4.2 Corridor & Intersection Operations

Existing Traffic Control & Intersection Configuration

Figure 10 shows the existing traffic control and intersection configuration at the seven study intersections. All traffic signals operate actuated and uncoordinated. This means the intersection approaches have vehicle detection, but the signals are not synchronized to allow for traffic progression throughout the corridor (also known as actuated-uncoordinated signal timing). The following summarizes the left-turn phasing at the signalized intersections with W. Reserve Dr.

- **US 93:** northbound and southbound protected-permitted left turn phasing; eastbound and westbound split phasing
- **Hutton Ranch Rd.:** westbound protected-permitted left turn phasing.
- **Whitefish Stage Rd.:** eastbound and westbound protected-permitted left turn phasing.
- **US 2:** northbound and eastbound protected-permitted left-turn phasing.

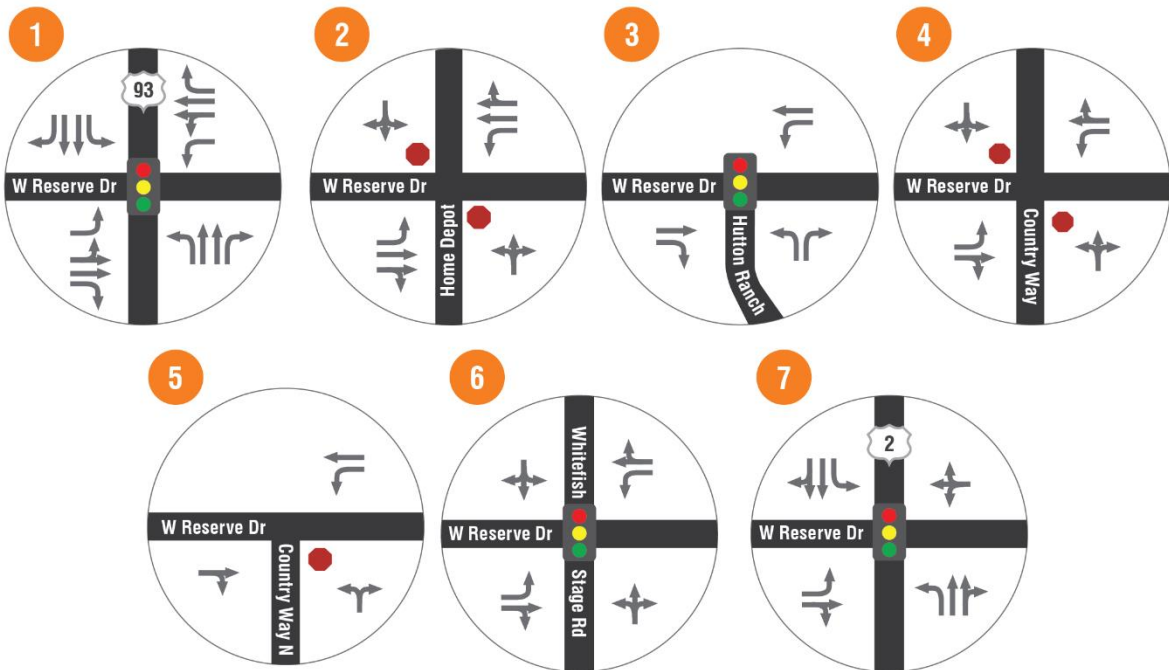
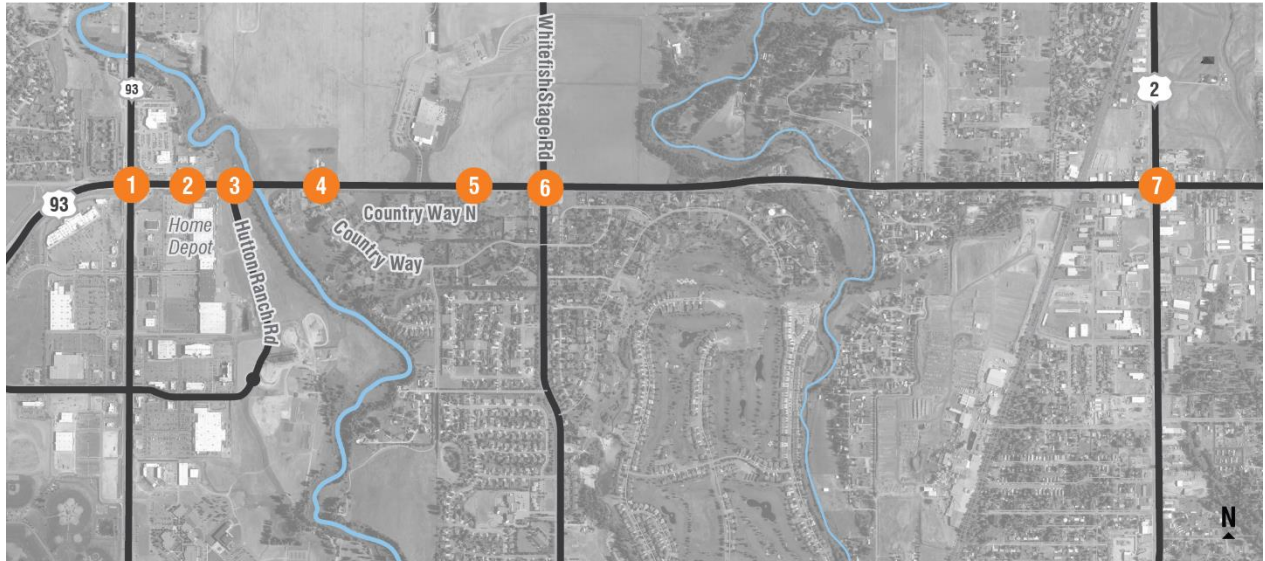


Figure 10: Traffic Control and Intersection Configuration



Roadway Operations

On an annual average basis, W. Reserve Dr. is currently experiencing fair to poor operations across the corridor, with failing operations at isolated intersections during evening peak hours.

Year 2040 traffic volumes were developed assuming a projected growth rate of 2.4% per year. Under projected future traffic conditions, the corridor is expected to operate with failing conditions during both morning and evening peak hours. With no capacity improvements, all intersections are expected to fail during the peak hours in 2040, except for Hutton Ranch Rd. in the AM peak hour.

The full analysis of intersection operations can be found in the *Existing and Projected Conditions Report*.

Intersection Operations

Existing queue lengths were observed in the field from 4:45-5:45 pm on two typical weekdays during December 2020. Field observations of queue lengths were used to calibrate the traffic models used to estimate existing and forecasted traffic delay.

US 93 Intersection



W. Reserve Dr. and US 93 is a signalized intersection located at the west end of the corridor. In the existing condition, the east-west approaches operate with split phasing and have one exclusive left and one shared through-left turn lane. The intersection currently operates at level of service (LOS) D and is forecasted to fail by 2040.



Hutton Ranch Rd. Intersection



W. Reserve Dr. and Hutton Ranch Rd. is a three-leg signalized intersection on the west end of the corridor providing access to retail and an alternate route to US 93. The northbound right and westbound left are the predominant turning movements in the PM peak hour. The westbound left currently operates with protected-permissive left-turn phasing. The intersection, in its current configuration, is forecasted to fail by 2040.

Whitefish Stage Rd. Intersection



W. Reserve Dr. and Whitefish Stage Rd. is a signalized intersection one mile east of US 93 providing access to residential areas to the south and proposed developments to the north. In the existing condition the intersection operates near capacity during the PM peak hour and is forecasted to fail by 2040.



US 2 Intersection

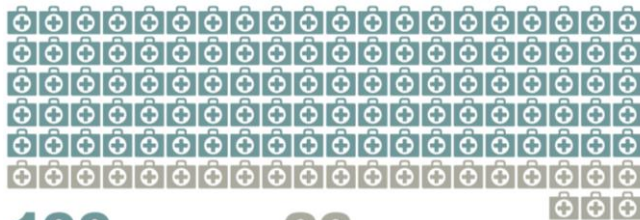


W. Reserve Dr. and US 2 is a signalized intersection located on the east end of the corridor. In the existing condition, the eastbound left and northbound left operate with protected-permissive left-turn phasing. The westbound leg experiences significant queue lengths but carries a relatively small amount of traffic. This intersection is forecasted to fail by 2040 in the PM peak traffic hours.

3.5 Safety

Crash data for the corridor was provided by MDT for the 10-year period between January 1st, 2010 and December 31st, 2019. Crash data is obtained from crash reports completed by law enforcement personnel at the time of the crash. The data can be incomplete or inaccurate, as many crashes go unreported and the reporting of crash information can vary, depending on the reporting officer. A total of 725 crashes were reported over the 10-years analysis period.

725 TOTAL CRASHES



100
MINOR INJURIES

23
SERIOUS INJURIES



58%
REAR-END COLLISIONS



38%
of crashes occurred during
CONGESTED TRAFFIC CONDITIONS
(between 3-6 pm)



3.5.1 Crash Trends

Crashes have nearly doubled on the corridor over the last ten years, while AADT has increased by about 16%. The increase in crashes can be attributed to recent development and increases in traffic congestion. The west end of the corridor has changed significantly over the last ten years, with the construction of the Hutton Ranch Rd. intersection and the construction of the Kalispell Bypass. These changes increased the number of turning movements on the corridor, thereby increasing the number of potential vehicle conflicts.

Crashes occur most often during school release and the PM peak hour. This period coincides with when the corridor experiences the heaviest traffic volumes and longest intersection delays. Crashes occurred more frequently Monday through Friday, with Friday having the highest number of crashes.

3.5.2 Crash Locations

Figure 11 shows the density of crashes along the corridor and the location of serious injury crashes. The west end of the corridor has a much higher crash density than the east end. The suspected serious injury crashes generally occurred at the four signalized intersections. The Whitefish Stage Rd. intersection experienced the highest number of crashes, followed by US 93 and US 2.

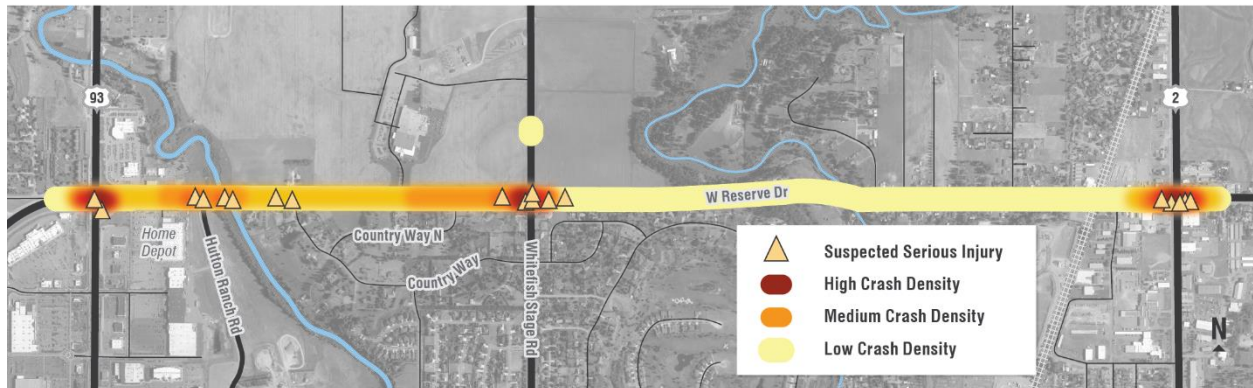


Figure 11: Crash Density

3.5.3 Corridor Crash Types

Figure 12 summarizes the types of crashes occurring on the corridor. Rear-end crashes are the most common crash type, followed by right-angle crashes. Most of the right-angle crashes at signalized intersections were attributed to red light running or failure to yield right of way. There were relatively few wildlife-vehicle collisions on the corridor (19 collisions over ten years).

Two pedestrian crashes and two bicycle crashes occurred on the corridor over ten years. All bicycle and pedestrian crashes occurred on the east end of the corridor. The bicycle crashes occurred at the Cooperative Way and Scenic Dr. intersections, while the pedestrian crashes occurred at the US 2 intersection and the approach just east of the US 2 intersection.

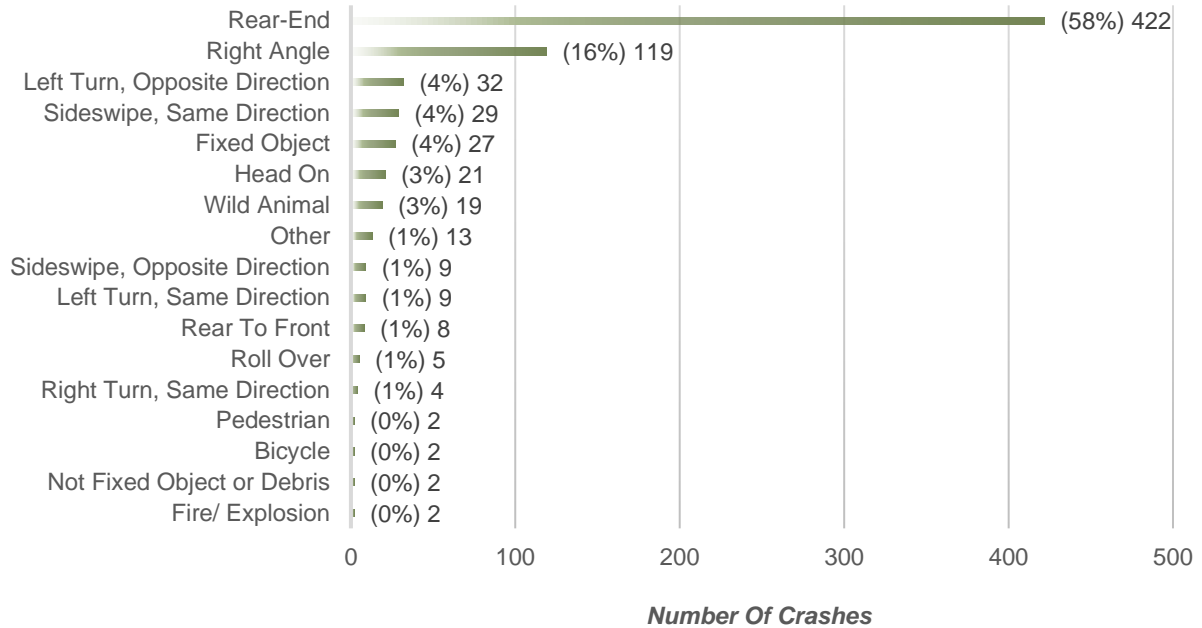


Figure 12: Crash Types

3.5.4 Crash Severity

No fatal crashes occurred on the corridor over the 10-year period; approximately 68% of crashes were property damage only (PDO) and 31% of crashes resulted in injury. **Table 5** shows the total number of crashes and the crash severity at each of the study intersections.

Table 5: Crash Severity at Study Intersections

Intersection	PDO	Injury	Unknown	Fatal	Total
W. Reserve Dr. / US 93	63	30	0	0	93
W. Reserve Dr. / Hutton Ranch Rd.	40	14	1	0	55
W. Reserve Dr. / Country Way	8	5	0	0	13
W. Reserve Dr. / Country Way N.	8	6	0	0	14
W. Reserve Dr. / Whitefish Stage Rd.	73	39	2	0	114
W. Reserve Dr. / US 2	52	35	0	0	87

3.5.5 Road & Lighting Conditions

Approximately 30% of crashes reported occurred during wet, snowy, or icy road conditions, while approximately 18% of crashes occurred during low light or dark conditions.



3.5.6 Intersection Crash Rates

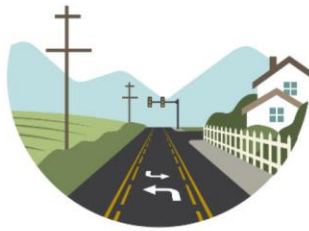
Table 6 shows the crash rate at each study intersection, along with a weighted crash rate which accounts for crash severity. The crash rate provides more information than crash frequency alone, as it factors in the number of vehicles entering an intersection. To calculate the weighted crash rate, PDO crashes were weighted by a value of one, while injury crashes were weighted by a value of three.

Table 6: Crash Rates at Study Intersections

Intersection	Total Crashes	Vehicles per Day	Crash Rate	Weighted Crash Rate (by Crash Severity)
W. Reserve Dr. / US 93	93	38,467	0.66	1.09
W. Reserve Dr. / Hutton Ranch Rd.	55	22,247	0.68	1.02
W. Reserve Dr. / Country Way*	13	19,778	0.18	0.32
W. Reserve Dr. / Country Way N.*	14	18,353	0.21	0.39
W. Reserve Dr. / Whitefish Stage Rd.	114	21,204	1.47	2.48
W. Reserve Dr. / US 2	87	26,286	0.91	1.64

**Vehicles per day estimated at Country Way and Country Way North, assuming the peak hour volume is equal to approximately 10% of the daily traffic volume.*

The raw crash rate and weighted crash rates are significantly higher at the Whitefish Stage Rd. intersection, compared to all other study intersections. The US 2 intersection has the second highest crash rate, followed by the US 93 and Hutton Ranch Rd. intersection.



WEST RESERVE DRIVE
— CORRIDOR PLANNING STUDY —

Kalispell, MT



**ENVIRONMENTAL
SETTING**





4.0 ENVIRONMENTAL SETTING

The environmental setting includes naturally occurring features and populations as well as human influences and characteristics. These elements provide context for transportation projects and may serve as potential constraints or opportunities during the project development process.

If improvement options are forwarded from this study into project development, an analysis for compliance with the National and Montana Environmental Policy Acts must be completed as part of the project development process. Information contained in the corridor study documents may be used to support further environmental documentation. Additional information is provided in the *Environmental Scan Report* (**Appendix 3**).

4.1 Physical Environment

The physical environment includes natural elements such as soil and rock features, floodplain areas, air quality, terrestrial and aquatic resources including fish, wildlife, rivers and wetlands, and human influences such as developed land areas, farmlands, hazardous materials sites, and areas sensitive to noise impacts.

4.1.1 Land Ownership & Land Use

W. Reserve Dr. and Whitefish Stage Rd. are within MDT and Flathead County right-of-way. A large parcel at the southwest quadrant of the W. Reserve Dr. and US 93 intersection is Montana State Trust Land. The remainder of the study area is owned by private landowners. No lands under federal jurisdiction and no conservation easements are found within the study area. The study area and the lands adjacent to the study area are primarily used for residential and commercial uses and crop production. The study area is located primarily within zoning districts designated by Flathead County⁷, with only portions of the far western end of the corridor within City of Kalispell designated zoning districts⁸. Maps of land ownership, zoning designations, and land uses are included in **Appendix 3**.

Improvement options carried forward from this study will need to consider potential impacts to adjacent private landowners, as well as potential impacts to adjacent land use, should new right-of-way or easements on adjacent lands, new access points, or changes in access be required.

4.1.2 Geologic Resources & Hazards

The study area is located within the Upper Flathead Valley situated between the Swan Range to the east, the Salish Range to the west, and the Whitefish Range to the north. The area exhibits varied soil characteristics and moderate to high potential for seismic events. Several earthquakes have been documented within the Flathead Valley and surrounding mountain ranges.

Improvement options carried forward from this study that involve new construction, reconstruction or other substantial improvements will require geotechnical investigations to determine potential stability, erosion, and settlement concerns posed by surface geology and soil conditions.

4.1.3 Soil Resources & Prime Farmland

Soils classified as prime farmland if irrigated, and farmland of local and statewide importance occur within the study limits. If any improvement options are advanced from this study, coordination with the US Department of Agriculture Natural Resources Conservation Service may be required.

4.1.4 Surface Waters

The study area is located almost entirely within the Stillwater River Watershed, which is divided into two sub watersheds: The Lower Stillwater River Sub Watershed and the Whitefish River Sub Watershed. There is a small portion of the study area within the Flathead River – Columbia Falls Sub Watershed. W.



Reserve Dr. crosses two primary waterways via bridges: the Stillwater River and the Whitefish River. Additional unnamed drainages are present within the study area.

Bridge reconstruction or replacement, placement of fill, or bank stabilization have the potential to impact surface waters. Coordination with federal, state, and local agencies will be necessary to determine appropriate permits based on the improvement options forwarded from this study. Impacts must be avoided and minimized to the maximum extent practicable. Impacts to streams or wetlands may trigger compensatory mitigation.

Water Quality

Within the study area, both the Stillwater River and the Whitefish River are listed as impaired waterways, not fully supporting aquatic life beneficial uses. This is due to sediment levels in the Stillwater River and temperature, oil and grease, and polychlorinated biphenyls in the Whitefish River. Pollution limits have been established and Watershed Restoration Plans have been prepared to address impairments identified by MDEQ, improve water quality, and improve habitat conditions.



Stillwater River



Whitefish River

A stormwater detention pond exists north of the W. Reserve Dr. and Hutton Ranch Rd. intersection. The pond captures stormwater along the W. Reserve Dr. Corridor from its intersection with US 93 to the Stillwater River bridge. It serves to settle sediment and improve water quality prior to discharging into the Stillwater River. A stormwater treatment manhole treats effluent by mechanical means within the pond before draining to the river.

Stormwater management is regulated by MDEQ. Permitting would need to be reviewed for any projects that may be brought forward from the corridor study. Incorporation of permanent erosion and sediment control measures should be considered with any projects advanced from this study that impact one or more acres, or if the project adversely affects water quality.

Irrigation Features

Several agricultural fields are located north of W. Reserve Dr. and along Whitefish Stage Rd. Maps from the Flathead County, Montana Water Resources Survey (1965)⁹ show no irrigation ditches, laterals, or canals within or adjacent to the study area capable of supplying irrigation water to these fields. Individual pumps are present at the Stillwater River and Whitefish River. An irrigation hydrant and vents are also located west of Whitefish Stage Rd.

Data indicates several groundwater wells in the area are used primarily for irrigation, with one central pivot and one large lateral move sprinkler irrigation system east of Whitefish Stage Rd. and north of W. Reserve Dr. To help avoid or minimize impacts to agricultural operations, coordination with affected landowners is required if irrigation facilities, such as pumps, pivots, or sprinkler systems are affected by improvement options carried forward from this planning study.



4.1.5 Groundwater

15 wells are located within the study area. Of the 15 wells, 10 are used for domestic use, 2 are used for industrial use, 2 are used for irrigation, and 1 is an unknown use. There are no public water supply wells within the study area. The two closest public water supply wells are 500 feet south and 700 feet north of W. Reserve Dr. Public water supply wells have an MDEQ setback requirement that stipulates a 100-foot isolation zone in which no source of pollutant can be located.

Evergreen Water and Sewer District is the only water and sewer district within the study area. Individual septic systems, however, appear to be prevalent within the study area, with all parcels south of W. Reserve Dr., from the Stillwater River to the Whitefish River, and some parcels north of the roadway showing septic permits¹⁰.

Impacts to groundwater, existing groundwater wells, and septic tanks must be considered for any improvement option carried forward from this study. Engineering and constructability constraints due to shallow groundwater must also be reviewed.

4.1.6 Wetlands

Freshwater emergent wetlands and freshwater forested/shrub wetlands are indicated only along or near the Whitefish River. Field-based wetland delineations are required if improvement options are forwarded from the study that could potentially impact wetlands. Future improvements will need to incorporate project design features to avoid and minimize adverse impacts to wetlands to the maximum extent practicable. Unavoidable impacts to wetlands may require compensatory mitigation in accordance with USACE regulatory requirements and requirements of Executive Order 11990. State and federal permits may also be required to construct improvements within wetlands, including CWA Section 404 authorization and CWA Section 401 certification.

4.1.7 Floodplains and Floodways

FEMA-issued flood insurance rate maps for Flathead County, Montana, indicate three flood zones within the study area: Zone A, Zone AE, and Zone X¹¹. In Flathead County, development activities in flood hazard areas are regulated under the Flathead County Floodplain and Floodway Management Regulations¹². Improvement options that cross or encroach on delineated flood hazard areas must be evaluated, and coordination with the Flathead County floodplain administrator is required on design and potential permits.

4.1.8 Hazardous Substances

If a project were to overlap any of the following known hazardous substance sites, a soil investigation would likely be needed to determine the extent of contamination and need for remediation. The presence of contaminated soils may require special provisions for handling hazardous materials.

Remediation Response Sites

There is one remediation response/hazardous waste release site within the study area. The former Semitool, Inc, (acquired by Applied Materials), site is a MDEQ listed site where unpermitted releases of hazardous materials occurred. The site is maintained by the state superfund unit; however, no indication whether the site is active or inactive is apparent. A notice regarding a compliant-class V injection well was issued on June 25, 1993. The United States Environmental Protection Agency (USEPA) also lists the site as a Resource Conservation and Recovery Act (RCRA) site but shows it as inactive. No additional information regarding the site or the release is included in the USEPA RCRA database.

Hazardous Waste Generators

MDEQ has listed two hazardous waste generators within or near the study area, Applied Materials and The Home Depot. USEPA also lists a RCRA site near the study area, Steel Reality Manufacturing.



The Applied Materials facility, located North of W. Reserve Dr., is a large quantity hazardous waste generator.

Underground Storage Tanks

There are several regulated underground storage tanks (USTs) within the study area, including active tanks and tanks permanently out of use. **Table 7** provides detail on the number, status, and location of USTs within the study area.

Table 7: Summary of Underground Storage Tanks

Hazardous Site	Name	Description	Location	Status
Underground Storage Tanks	Zip Trip	3 Gasoline Tanks	RP 4.0	Active
	Town Pump Kalispell 7	3 Gasoline Tanks 3 Diesel Tanks 1 DEF Tank	RP 4.1	Active
	Town Pump Kalispell 3	3 Gasoline Tanks 2 Diesel Tanks	US 2 Intersection	Active
	Village Mart Kalispell	Gasoline Tank	RP 5.0	Closed
	Robert M Rechtsteiner	Gasoline Tank	RP 6.0	Closed
	Tri City Lumber, Inc	Unknown	RP 6.3	Closed
	Lilienthal and Schuman Insulation	Unknown	RP 6.4	Closed
	Tri City Quick Stop	Gasoline Tank(s)	US 2 Intersection	Closed



Petroleum-Tank Releases

Several petroleum-tank releases have occurred within or adjacent to the study area. All of the following claims for assistance from the Petroleum Tank Release Compensation Board and Cleanup Fund have been resolved: **Village Mart Kalispell** (Facility ID #15-02334), located at the intersection of W. Reserve Dr. and Whitefish Stage Rd., **Robert M Rechtsteiner** (Facility ID #15-11654) located at 105 W. Reserve Dr., **Tri City Quick Stop** (Facility ID #15-07490), located at the northwest corner of the W. Reserve Dr. and US 2 intersection.

Pipelines

Two natural gas pipelines cross the study area. A primary natural gas pipeline, owned by Northwestern Energy, crosses W. Reserve Dr. at RP 5.8. A smaller natural gas pipeline spurs off the primary pipeline and parallels W. Reserve Dr. to the north. This tap line, called the Kalispell City Gate 2 tap line, crosses under the Whitefish River and then crosses under W. Reserve Dr. at RP 5.7, where it extends 0.2 mile along the south side of W. Reserve Dr. before connecting into a large residential development.

4.1.9 Air Quality

A non-attainment area for particulate matter (PM)₁₀ has been designated within the Kalispell Area¹³. The eastern portion of the W. Reserve Dr. study area from Whitefish Stage Rd. to US 2 falls within the designated limits of the PM₁₀ non-attainment area. In addition, an area of concern for carbon monoxide has been designated within the Kalispell Area. An area of concern is an area that has not been legally designated as a nonattainment area. The Kalispell area of concern for carbon monoxide includes a delineated core area centered around downtown Kalispell and a broader study area limit in which the pollutant is being recorded and reviewed. The W. Reserve Dr. study area is within the designated broader study limits.

Improvement options carried forward from this study will need to examine the current air quality status and determine if a project is subject to conformity requirements. In addition, depending on the scope of improvements being considered within the study area, an evaluation of mobile source air toxics (MSATs) may be required.

4.1.10 Noise

Residences and sites protected under Section 4(f) of the Department of Transportation Act of 1966 and Section 6(f) of the Land and Water Conservation Fund Act within the study area are considered sensitive noise receptors that could be affected by roadway improvements on W. Reserve Dr. Improvement options carried forward from this study may require a noise analysis, consistent with MDT noise policies. Noise abatement measures will be considered if noise levels approach or substantially exceed noise abatement criteria.



Many residences and businesses are adjacent to the roadway including established neighborhoods.

4.2 Biological Resources

The biological environment includes plants and animals known or likely to occur in the study area, including sensitive species protected by state and federal regulations.

4.2.1 Vegetation

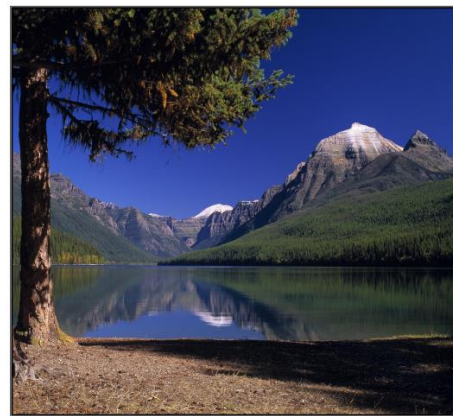
Within the study area, the landscape has been heavily manipulated through agricultural practices and urban and residential development. Vegetation within the corridor is dominated by cultivated crops or landscape vegetation found on developed lands. Small pockets of native vegetation cross the study area at the Stillwater River and Whitefish River, including native riparian vegetation consisting of species such as black cottonwood, aspen, chokecherry, bur oak, green ash, dogwood, and willow. Refer to **Appendix 3** for more information on land cover composition and land cover descriptions.

Noxious Weeds

The Flathead County Weed Management Plan¹⁴ provides guidance for managing noxious weeds in Flathead County and outlines the County Weed District's roles and responsibilities. The MDT 2018-2024 Vegetation Management Plans also includes weed management strategies. According to the Environmental Summary compiled by MTNHP, found in **Appendix 3**, approximately 16 of these noxious weed species have been observed in the study area and vicinity.

FLATHEAD COUNTY WEED MANAGEMENT PLAN

September 2015



2015 Flathead County Weed Management Plan



If improvements are forwarded from the study, field reviews for noxious weeds will commence prior to any ground disturbance, and coordination with the Flathead County Weed District will occur. Proposed projects will implement applicable best management practices, as outlined in the MDT Standard Specifications and the Flathead County Weed Management Plan.

4.2.2 Biological Community

A majority of the study area has been heavily disturbed by various agricultural practices and commercial and residential development. These changes to the landscape have negatively impacted the amount and quality of suitable wildlife habitat. Riparian areas along Stillwater River and Whitefish River bisect the study area. These wooded corridors still possess specimens of native vegetation that was likely present in this area prior to its conversion to agriculture and urban/residential development. These are important corridors for wildlife moving from higher elevations down to the Flathead River valley.

Mammals

Montana Fish Wildlife & Parks (FWP) general and wintering distribution mapping for larger mammals shows the entire study area and surrounding area provides general range for mule deer, moose, black bear, and mountain lion. The study area and surrounding area provides general and winter range for white-tail deer.

MDT maintenance personnel documented 13 animal carcasses were collected and documented along the study area between January 1, 2010 and December 31, 2019. White-tail deer accounted for all but one of the carcasses, with the outlier carcass documented as a fox. Carcasses were distributed throughout the corridor but tended to be more concentrated near the Stillwater and Whitefish River crossings. Carcass data may not accurately reflect animal-vehicle conflicts throughout the corridor, and not all carcasses result from vehicle collisions. Approved legislation permits the collection of deer, elk, antelope, and moose killed on Montana roads for personal consumption.

If improvement options are forwarded from the study, impacts to habitat and other wildlife mitigation strategies must be considered during the project development process. Carcass data must continue to be reviewed to identify possible wildlife accommodation opportunities near both river crossing. Additional coordination with FWP area wildlife biologists will be required for local expertise in the study area.

Birds

More than 272 species of birds have been documented with the potential to occur and nest in or near the study area. These species include representative songbirds, birds of prey, waterfowl, owls, and shorebirds, including several listed as species of concern (SOC) or special status species. Many of the bird species are protected under or included in the USFWS Migratory Bird Treaty Act. Any improvements carried forward from this study should consider possible project constraints that may result from seasonal nesting of migratory birds.

Fisheries

The Stillwater River and the Whitefish River are the two primary waterbodies that cross the study area. Currently available information from Montana FWP's FishMT database¹⁵ shows both the Stillwater and the Whitefish Rivers as supporting a variety of Montana native and non-native fish species. These include brook trout, bull trout, lake trout, lake whitefish, largescale sucker, longnose sucker, mountain whitefish, northern pike, northern pike minnow, peamouth, rainbow trout, redbelt shiner, slimy sculpin, westslope cutthroat trout, and yellow perch.

In-water work that may affect fish and potential fish passage opportunities must be considered if a project is forwarded from this study. Permit conditions from regulatory and resource agencies may require incorporation of design measures to facilitate aquatic species passage.



Bull Trout are found in both the Stillwater and Whitefish Rivers. Photo courtesy fws.gov.

Amphibians, Reptiles, & Invertebrates

According to the Montana Natural Heritage Program (MTHNP) database, amphibian and reptile species documented as occurring within the study area and 3-mile vicinity include, but are not limited to, Columbia spotted frog, northern leopard frog, western toad, painted turtle, and terrestrial garter snake. Nearly 88 invertebrate species have also been observed in the area.

4.2.3 Threatened & Endangered Species

Within Flathead County, grizzly bear, bull trout, and yellow-billed cuckoo have the potential to occur within the study area. Despite dispersed human uses, such as agriculture, and commercial/residential development, some habitat in the study area is suitable for grizzly bear, bull trout, and yellow-billed cuckoo. FWP fisheries data indicates bull trout occurrences in both the Whitefish and Stillwater rivers. Wooded riparian vegetation along the Stillwater and Whitefish rivers may provide some stopover or foraging habitat for yellow-billed cuckoo.

Any improvements forwarded from the corridor study must undergo review for compliance with the provisions of the Endangered Species Act (ESA). Because the listing status of species and critical habitat can change over time, an up-to-date list of potentially affected federally-listed species and designated critical habitat must be reviewed for any project carried forward from this study.

4.2.4 State Species of Concern & Special Status Species

SOC are native animals or plants that are at risk due to declining population trends, threats to their habitats, and restricted distribution, among other factors. Two mammals, three birds, two fish, one reptile, two invertebrates and two plants have documented occurrences within the study area, or within a 3-mile radius around the study. Should projects be carried forward from this corridor study, additional review of databases documenting SOC and special status species occurrences must be conducted, and an evaluation of habitats near proposed projects must be completed to determine suitability for SOC and special status species. Measures to avoid or minimize impacts to these species and their habitat should be incorporated into project designs and implementation.



4.3 Social & Cultural Resources

The study evaluated the social and cultural environment within the study area, including characteristics of the human population, living and working conditions, recreation uses, culturally important sites, and visual character. These elements reflect human experiences and values.

Under NEPA/MEPA, federal, state, and local agencies are directed to assess potential social and economic impacts anticipated from proposed actions. Improvement options carried forward from this study must consider impacts to neighborhoods and community cohesion, local and/or regional economies, as well as growth and development that may be induced by transportation improvements.

4.3.1 Socioeconomic Conditions

Transportation projects can affect neighborhood and community cohesion, social groups including minority populations, and local and/or regional economics, as well as growth and development that may be induced by transportation improvements. Understanding historic and recent demographic trends can aid in forecasting techniques due to the direct correlation between motor vehicle travel and socioeconomic indicators.

Historic Population Trends & Projects Growth

Kalispell is the largest urban area in Flathead County and one of the fastest growing areas in Montana. The Kalispell area has experienced significant growth and supports a relatively large portion of the county's consumption-based economic activity. Since the corridor is fully contained within Flathead County, demographic and economic conditions discussed in this section cover all of Flathead County.

From 2010 to 2018, Flathead County grew at an average annual rate of 1 percent compared to 0.75 percent for Montana and 0.67 percent for the United States over the same period. The population is projected to grow over the next 20 years at a rate greater than Montana as a whole. This is supported by both American Community Survey data and Kalispell's 2019 transportation plan update.

Population Characteristics & Environmental Justice

Flathead County has a population of 102,106 with a larger proportion of individuals who identify as white relative to the rest of the state and the United States as a whole. To determine potential low-income or minority populations within or near the study area, American Community Survey data (2015-2019 5-Year Estimates)¹⁶ at the Census Tract level was compared with the percentages of corresponding county and state occurrences.

Title VI of the United States Civil Rights Act of 1964 prohibits recipients of federal financial assistance from discriminating based on race, color, or national origin in any program or activity. Based on screening results for this study, minority and/or low-income populations are unlikely to be adversely affected by corridor study corridor projects. If improvement options are advanced from this study, environmental justice would need to be further evaluated during the project development process.

Historic Employment Trends & Projected Growth

The three primary industries in Flathead County are: 1) educational, healthcare, and social services; 2) arts, entertainment, recreation, accommodation/hospitality, and food services; and 3) retail trade. The county is home to the Kalispell Regional Medical Center, which is designated as a State Area Trauma Hospital by Department of Public Health and Human Services, making it one of the more important hospitals in the western region of the state. Flathead County also provides access to Glacier National Park. Flathead County has relatively more employment in the arts, entertainment, recreation, accommodation, and food services, and retail trade categories than Montana and the United States.



Employment Characteristics

The number of employed citizens over the age of 16 in Flathead County is approximately 50,938. The unemployment rate in Flathead County is 1.7 percent as compared to 2.2 percent in Montana and 3.1 percent in the United States. The median household income in Flathead County is slightly lower than the median household income in Montana at \$53,193 and \$55,328, respectively. The median household income in the United States is \$61,937. Flathead County has a larger concentration of higher income households than the state, but relatively less than the United States at large. Flathead County is primarily different from both Montana and the United States in that it has higher concentrations of low to middle and very high-income households. Flathead County has relatively fewer households in the \$75,000-\$150,000 income categories relative to the United States and Montana. This suggests there is significant income stratification in the area, which is usually the case within areas that rely heavily on recreation-resort economies.

4.3.2 Recreational Resources

Very few recreational resources are located within the study area. Sidewalks within the study area, or that begin in the study area, have been designated as City trails. All the paths and sidewalks are designated as part of the local transportation system. W. Reserve Dr. does provide a direct connection to US 93 and US 2, which provide direct routes to Glacier National Park, Whitefish Lake, and Flathead Lake. The Village Greens Golf Course is located directly south of the study limits, with access to the golf course provided from Whitefish Stage Rd. The golf course is privately owned, but open to the public through payment of a daily greens fee.

4.3.3 Cultural Resources

A search of historic properties identified one property within the general vicinity of the study area. This site is the historic Great Northern Railroad (Site 24FH0350), which is eligible for listing on the National Register of Historic Places (NRHP) and crosses the study area at RP 6.3. The search noted there were several eligible sites within the vicinity of the study area. If improvement options are forwarded from this study, a cultural resources survey of the area of potential affect will be completed for unrecorded historic and archaeological properties.



The Montana Rail Link crossing was recently updated with new pedestrian-friendly improvements.



4.3.4 Section 4(f) Resources

Recreational and historic sites within the corridor may qualify for protection under Section 4(f). If improvement options are advanced from the corridor study, potential effects on recreational use and historic sites should be investigated and appropriately considered in accordance with Section 4(f).

4.3.5 Section 6(f) Resources

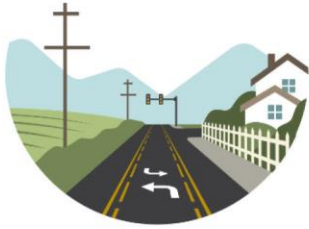
No Section 6(f) resources were identified within the study area.

4.3.6 Visual Resources



Views of the Swan Range from W. Reserve Dr.

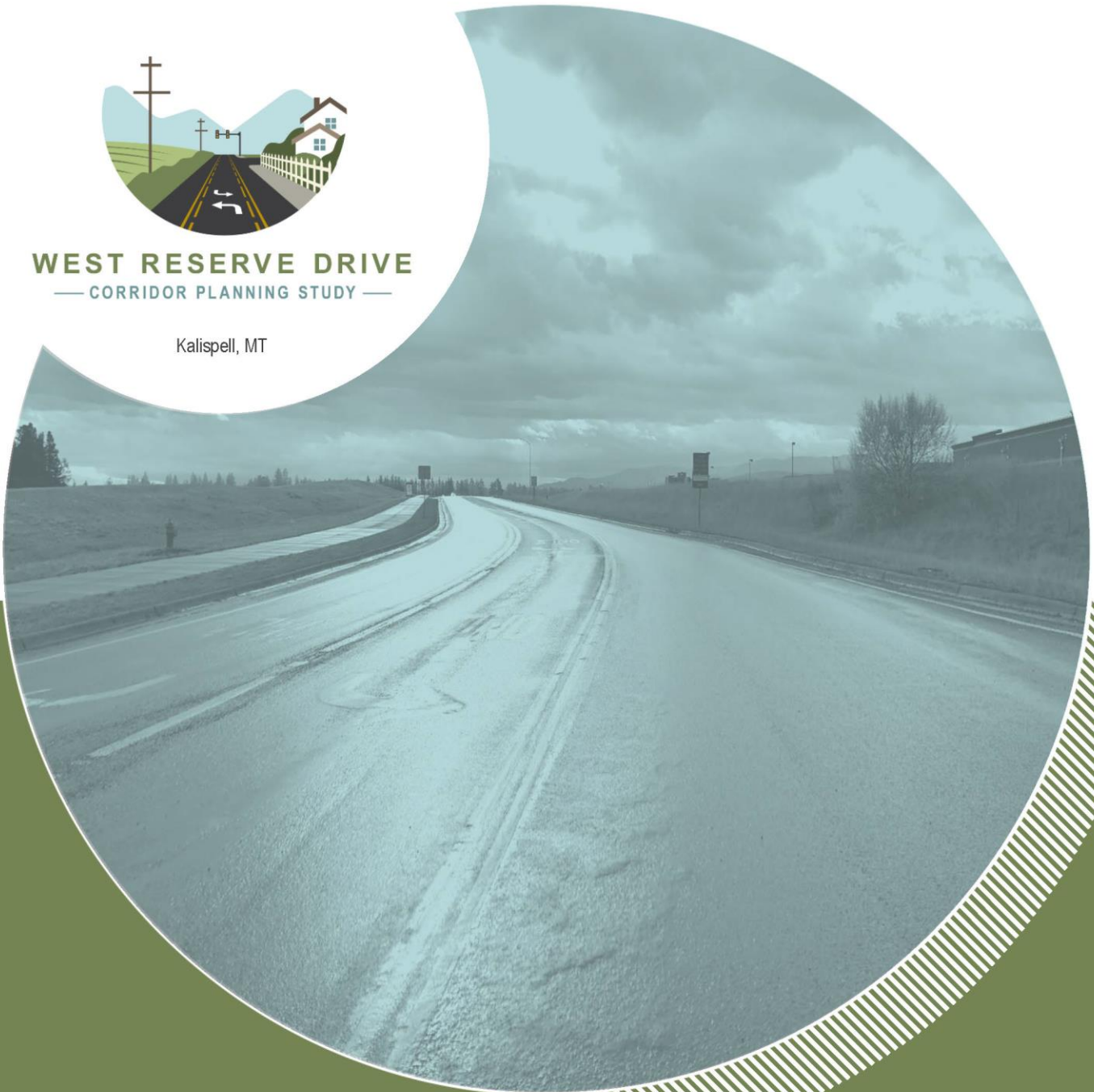
The study area is characterized as primarily agricultural to the north, with mid-and high-density residential areas to the south, commercial and industrial areas primarily to the east and west, and the bisecting riparian corridors for Stillwater River and Whitefish River. Distant views of the Swan Range are visible far to the east with the Salish Range far to the west. Potential projects carried forward from this study must consider effects on visual resources, particularly projects that may be located on a new alignment, involve expansion, or involve other changes that would alter the character of the existing landscape.



WEST RESERVE DRIVE

— CORRIDOR PLANNING STUDY —

Kalispell, MT



IMPROVEMENT OPTIONS





5.0 IMPROVEMENT OPTIONS

Recommended improvement options were identified to address issues and areas of concern within the corridor study area. The improvement options reflect input from stakeholders and the public, as well as information gathered from a thorough evaluation of the existing and projection conditions of the corridor. This information was used to identify needs and objectives for the corridor and develop improvement options addressing the corridor's needs and objectives.

Descriptions of the improvement options, implementation considerations, implementation agencies, implementation timeline, and estimated costs are provided in subsequent sections. Additional detail regarding development of the recommendations is provided in the *Improvement Options Memorandum (Appendix 4)*.

5.1 Needs and Objectives

Needs and objectives for the W. Reserve Dr. Corridor Planning Study were developed based on the social, environmental, and engineering conditions described in the *Existing and Projected Conditions Report*; input from the public, stakeholders, and resource agencies; review of local plans; and coordination with the technical oversight committee. Improvement options identified in this study address the needs and objectives to the extent feasible. As projects are advanced from this study, needs and objectives may be incorporated in purpose and need statements for future National and Montana Environmental Policy Act (NEPA/MEPA) documentation. Needs, objectives, and considerations are not listed in order of priority.

Need 1: Improve the Safety of the Corridor

- Reduce the frequency and severity of crashes for all users, in support of MDT's Vision Zero
- Reduce vehicle conflicts

Need 2: Improve the Corridor Transportation Operations

- Accommodate existing and future travel demands
- Improve intersection operations and level of service
- Consider all modes of transportation
- Employ travel demand management strategies

Other Considerations:

- Consistency with local plans and developments
- Municipal infrastructure improvements
- Public and private utilities
- Constructability and related impacts
- Impacts to adjacent businesses and residences
- Impacts to environmental resources and social equity
- Stormwater management
- Funding availability
- Maintenance operations, responsibility, and cost



5.2 Project Implementation

Implementation of improvement options is dependent on factors including project size, availability of funding, environmental review, right-of-way needs, and other factors. A preliminary evaluation of project implementation agencies and partners, timeframes, costs, and other project development considerations was conducted for each recommended improvement option. Each improvement option can be implemented independent of other options or combined as a larger project. Grouping options into larger projects may result in cost savings and efficiencies.

5.2.1 Project Development Considerations

Improvement options forwarded from this study will be subject to MDT's standard project development process. This process typically includes project-specific design activities such as stakeholder coordination, environmental impact analysis and permitting, utility conflict mitigation, traffic and safety analysis, hydraulic and geotechnical investigations, and right-of-way acquisition based on project location and design features. For projects initiated by entities other than MDT that may substantially and permanently impact the transportation system, the MDT System Impact Action Process may apply. Notable project development considerations are listed for each option such as potential stakeholder interests, resources and site features, indirect effects, and other factors to be addressed during project development.

If improvements are forwarded from this study, detailed analyses would be required during the project development process to quantify specific resource impacts, and identify associated permits, laws, and regulations that may apply. Information contained in this report may be used to support future project development and environmental documentation.

5.2.2 Implementation Agency & Funding Sources

Successful implementation of improvements may require cooperation and effort from multiple entities. The lead agency(s) responsible for each improvement option are identified, however coordination with other entities may be necessary. Implementation agencies include MDT, city and local agencies, federal and state agencies, transit operators, school districts, wildlife organizations, private landowners and developers, and other parties with interest or authority.

The ability to advance recommendations from this study and develop projects on W. Reserve Dr. depends on the availability of existing and future federal, state, local, and private funding sources. Recommendations identified in this study may be eligible for funding through a variety of programs and sources. Currently, no funding has been identified or dedicated to completing any of the recommended improvement options contained in this study. Refer to Section 6 and **Appendix 5** for more information on potential funding mechanisms.

5.2.3 Implementation Timeframe

An implementation timeline was identified for each improvement option based on minimum LOS thresholds, considering the time necessary for design, right of way (ROW) acquisition, and utility relocation. The implementation timeframes are as follows:

- **Short-term:** Implementation is feasible within 0 to 5 years (by 2025).
- **Mid-term:** Implementation is feasible within 5 to 10 years (by 2030).
- **Long-term:** Implementation is feasible within 10 to 20 years (by 2040).
- **When needed:** Implementation could occur any time based on observed need.



5.2.4 Cost Estimates

Planning-level cost estimates were developed for each improvement option using average bid prices from MDT's AASHTOWare Project Estimation software. MDT's Cost Estimation Procedures¹⁷ were followed for estimating costs related to preliminary engineering, construction engineering, traffic control, mobilization, contingency/miscellaneous items, indirect costs, right-of-way, incidental construction/utility relocation, and inflation. The cost estimates are included in **Appendix 4**. Each cost estimate represents cost during the construction year and represents that alternative alone (i.e., cost estimate is independent of other improvements). Present value (2021) cost is also included for planning and programming purposes.

5.3 Recommended Improvement Options

Recommended improvement options are intended to address needs and objectives for the W. Reserve Dr. corridor. The options are grouped as intersection improvements, roadway widening improvements, multimodal improvements, travel demand management, and access management improvements. The recommended improvements can be developed as stand-alone projects, or, in some cases, combined as larger projects as appropriate. There may be cost savings and efficiencies gained by combining improvement options together.

5.3.1 Intersection Improvements

The improvement options in this section address traffic operations and safety at several intersections along the corridor. As more growth is anticipated in the future, several locations within the study area may experience additional safety concerns and poor intersection operations. Improvement options that address safety and congestion trends at the study intersections include additional lanes, signal timing improvements, and traffic signal reconstruction.

S1. US 93 Intersection

W. Reserve Dr. and US 93 is a signalized intersection located at the west end of the corridor. In the existing condition, the east and west legs of W. Reserve Dr. operate with split phasing; this means that traffic on the east leg proceeds first, followed by traffic on the west leg. The proposed build laneage provides dual left-turn lanes on the eastbound and westbound approaches, which allows for removal of east-west split phasing. The intersection currently operates at LOS D in the PM peak hour. If no improvements are made, the intersection is forecasted to operate at LOS D in year 2030 and LOS F in year 2040. The recommended configuration is forecasted to operate at LOS E in the PM peak in 2040.

Figure 13 shows the existing intersection laneage, along with proposed build laneage. The recommended configuration provides dual left-turn lanes on the eastbound and westbound approaches, which allows for removal of east-west split phasing.

Recommendation: Provide dual left-turn lanes on east and westbound approaches

Project Development Considerations:

- Hazardous materials
- Longer pedestrian crossing distance on east and west legs
- Include sidewalk and curb ramps at all quadrants
- Approach consolidation at the southeast quadrant
- Underground storage tanks are located at the gas station
- Existing retaining wall located at the northwest quadrant
- Drainage challenges exist at the southwest quadrant

Implementation Agency: MDT



Implementation Timeframe: Mid-term

Estimated Cost: \$4.5 M

Potential Funding Sources: NH, STPP, HSIP, MACI

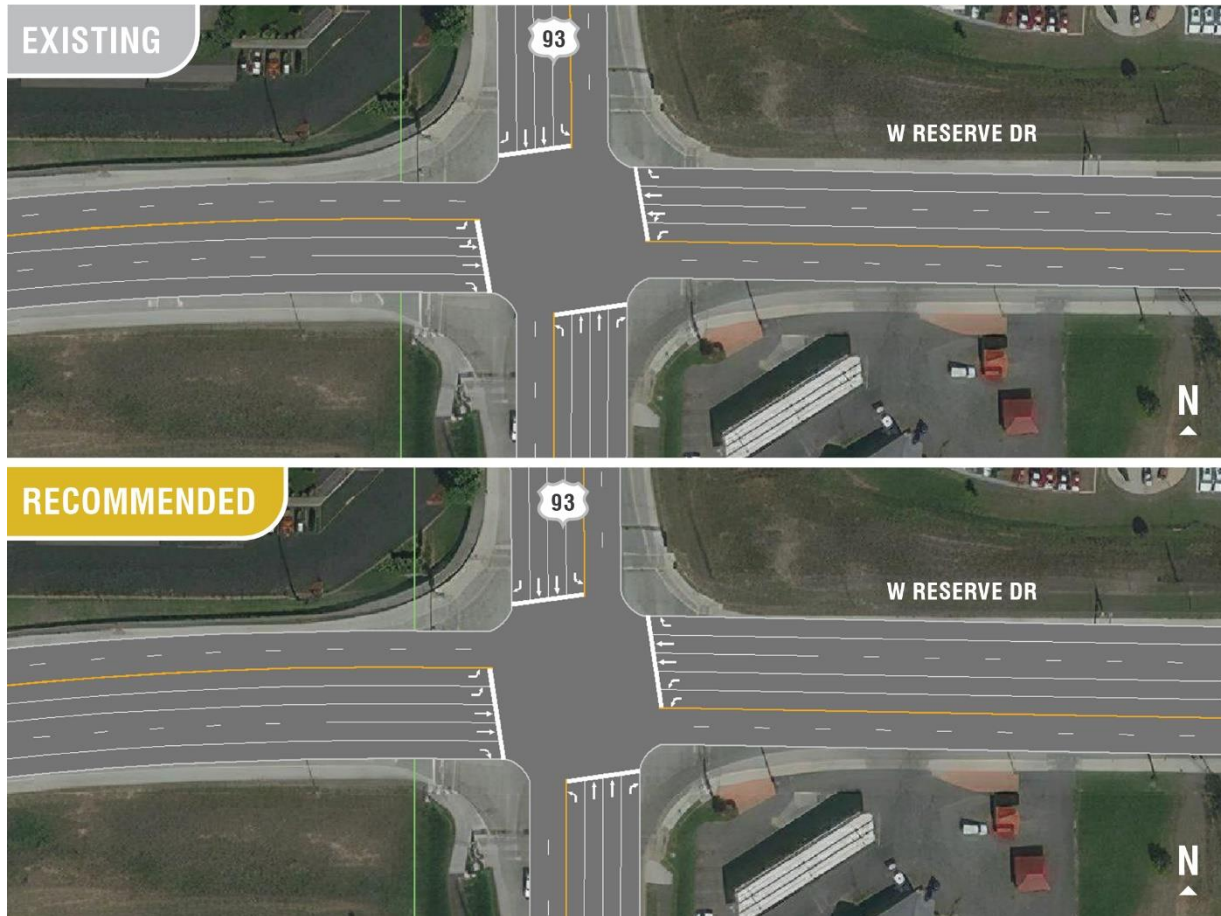


Figure 13: US 93 Intersection Improvements

S2. Hutton Ranch Rd. Intersection

W. Reserve Dr. and Hutton Ranch Rd. is a three-leg signalized intersection on the west end of the corridor providing access to retail and an alternate route to US 93. The intersection currently operates at LOS B during the PM peak hour. If no improvements are made, the intersection is forecasted to operate at LOS D in the PM peak hour in 2030 and LOS F in 2040. The delay during the PM peak hour is primarily on the northbound approach. The recommended configuration is forecasted to operate at LOS B in the PM peak in 2040. Of note, coordinating the signal at Hutton Ranch Rd. with the signal at US 93 may also provide operational benefits in the future.

Figure 14 shows the existing intersection laneage, along with the proposed build laneage. The configuration provides two eastbound and westbound through lanes at the intersection. This intersection improvement would only be implemented with roadway widening; therefore, a standalone cost estimate was not provided (its cost was incorporated into the corridor widening improvement option cost).

Recommendation: Improve intersection with corridor widening to recommended laneage

Project Development Considerations:

- Stillwater River Bridge is located just east of the intersection



- Consider water quality and stormwater requirements
- A municipal well is tentatively planned at the intersection
- Include sidewalk, new curb ramps, and connection to existing path at implementation

Implementation Agency: MDT

Implementation Timeframe: Mid-term

Estimated Cost: Incorporated into corridor widening cost

Potential Funding Sources: STPP (improvement made through corridor widening)

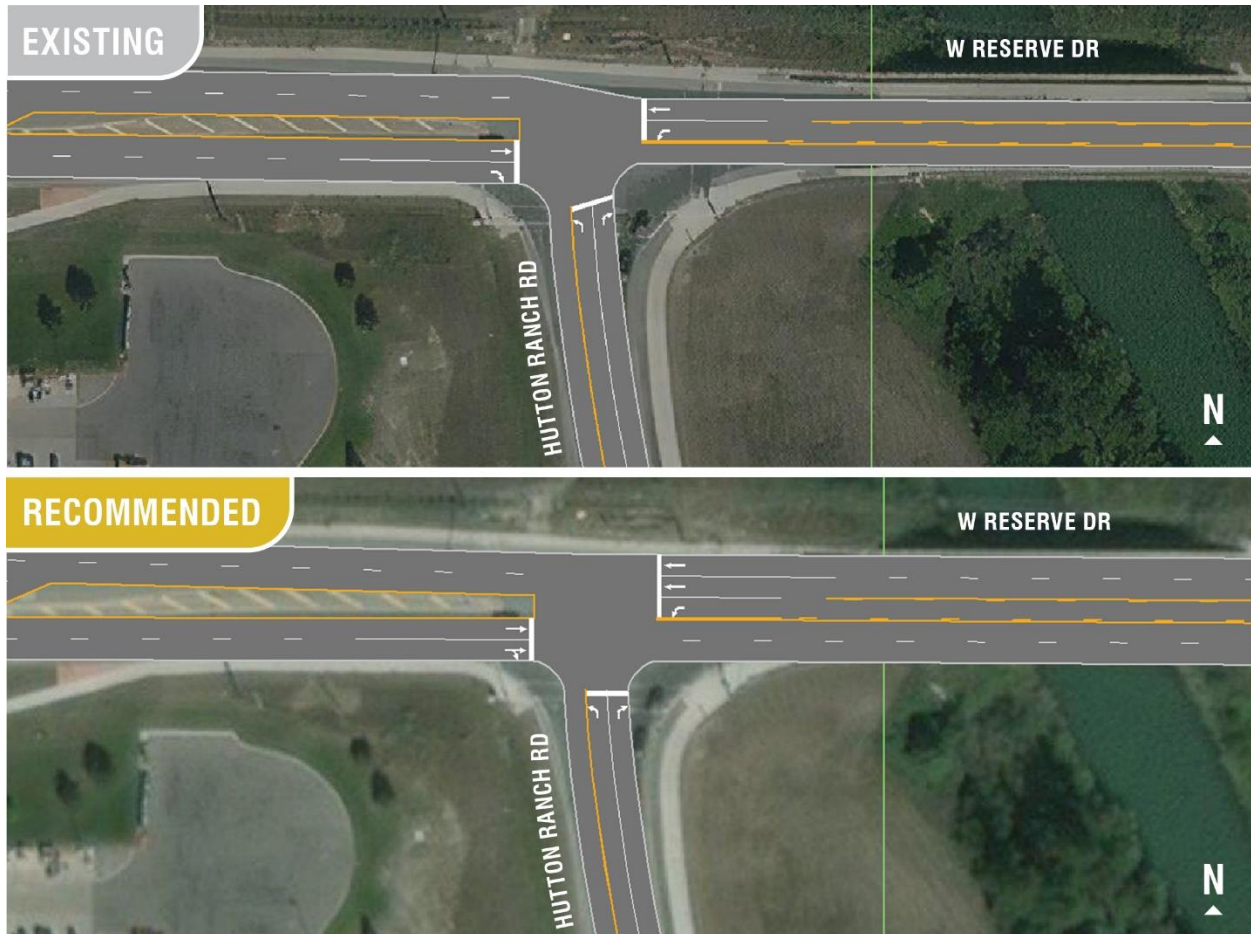


Figure 14: Hutton Ranch Rd. Intersection Improvements

S3. Whitefish Stage Rd. Intersection

W. Reserve Dr. and Whitefish Stage Rd. is a signalized intersection one mile east of US 93. Residential areas exist south of the intersection, while development is expected north of the intersection on Rose Crossing. In the existing condition, the eastbound and westbound left turns operate with protected permissive left-turn phasing. The intersection currently operates at LOS E in the PM peak hour. The recommended configuration is forecasted to operate at LOS C in the PM Peak in 2040.

Figure 15 shows the existing intersection laneage, along with the proposed build laneage. The proposed configuration adds exclusive northbound and southbound left-turn lanes, northbound left-turn phasing, and exclusive eastbound and southbound right turn lanes along with two east-west through lanes.



Recommendation: Include exclusive north- and southbound left turn lanes, exclusive east- and southbound right turn lanes, and provide two east-west through lanes; modify business access

Project Development Considerations:

- Businesses may not support modified access
- Consider water quality and stormwater requirements
- Termination of curb and gutter at lane developments
- Include sidewalk and curb ramps at all quadrants

Implementation Agency: MDT, Private

Implementation Timeframe: Mid-term

Estimated Cost: \$5.3 M

Potential Funding Sources: STPP, HSIP, MACI, Private

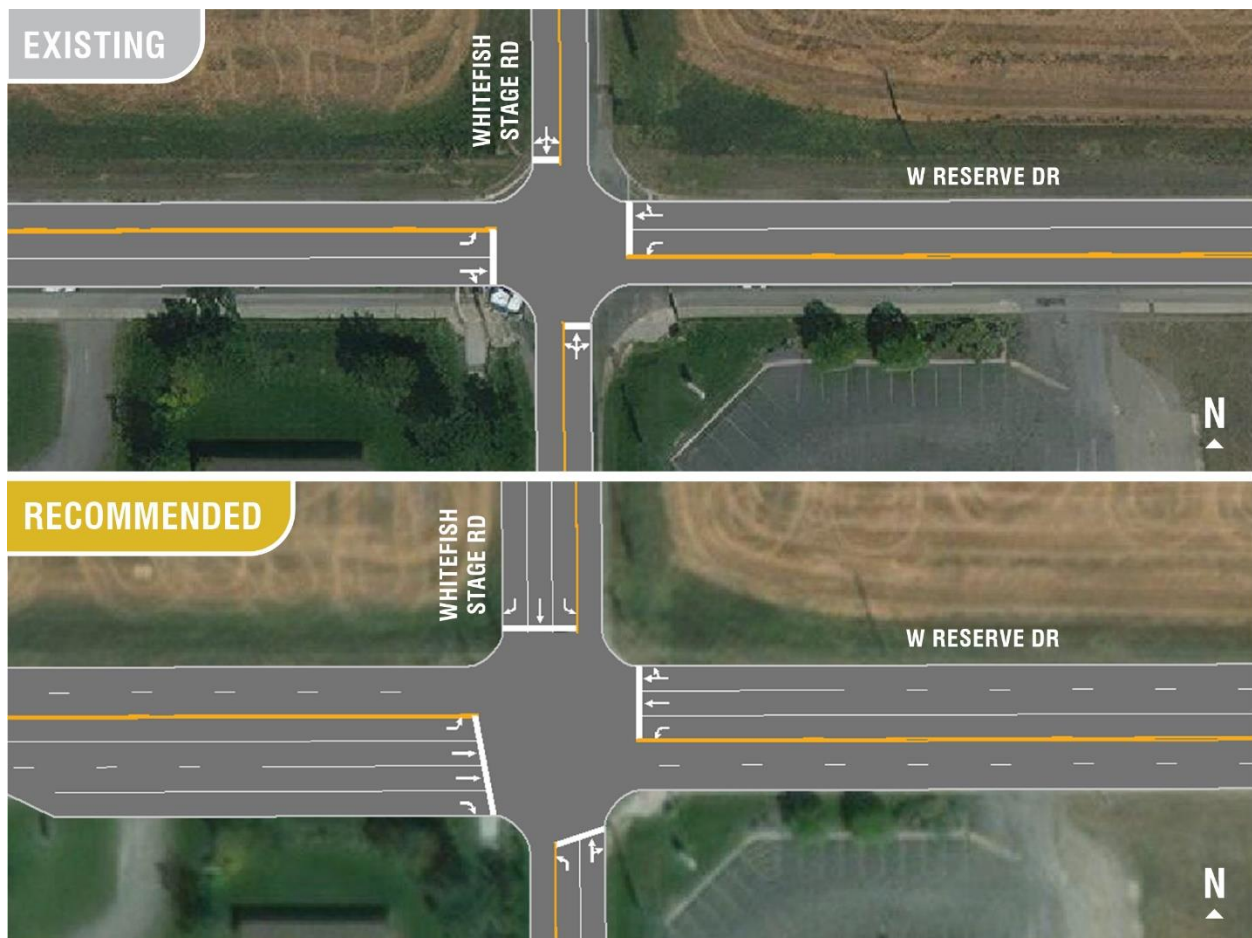


Figure 15: Whitefish Stage Rd. Signalized Improvement Options

S4. US 2 Intersection

W. Reserve Dr. and US 2 is a signalized intersection located on the east end of the corridor. In the existing condition, the eastbound left and northbound left operate with protected-permissive left-turn phasing. The intersection currently operates at LOS D during the PM peak hour. If no improvements are made, the intersection is forecasted to operate at LOS F during the PM peak hour in 2030. The highest



delay occurs on the westbound approach in the existing condition. The recommended configuration is expected to operate at LOC D in the PM peak in 2040.

Figure 16 shows the existing intersection laneage, along with the proposed build laneage. The proposed laneage provides dual protected eastbound and northbound left-turn lanes, exclusive eastbound and southbound right-turn lanes, and an exclusive westbound left-turn lane. Protected-permissive left-turn phasing is provided on the southbound and westbound approaches. A lane drop would occur 500 feet west of the intersection, to accommodate the dual northbound left-turn lanes prior to corridor widening.

Recommendation: Provide dual protected eastbound and northbound left-turn lanes, exclusive eastbound and southbound right-turn lanes, and an exclusive westbound left-turn lane

Project Development Considerations:

- Rail crossing is potential constraint if corridor widening is completed at different time
- Additional right-of-way required for intersection realignment
- Hazardous materials properties
- Include sidewalk and curb ramps at all quadrants

Implementation Agency: MDT

Implementation Timeframe: Mid-term

Estimated Cost: \$10.9 M

Potential Funding Sources: NH, STPP, HSIP, MACI

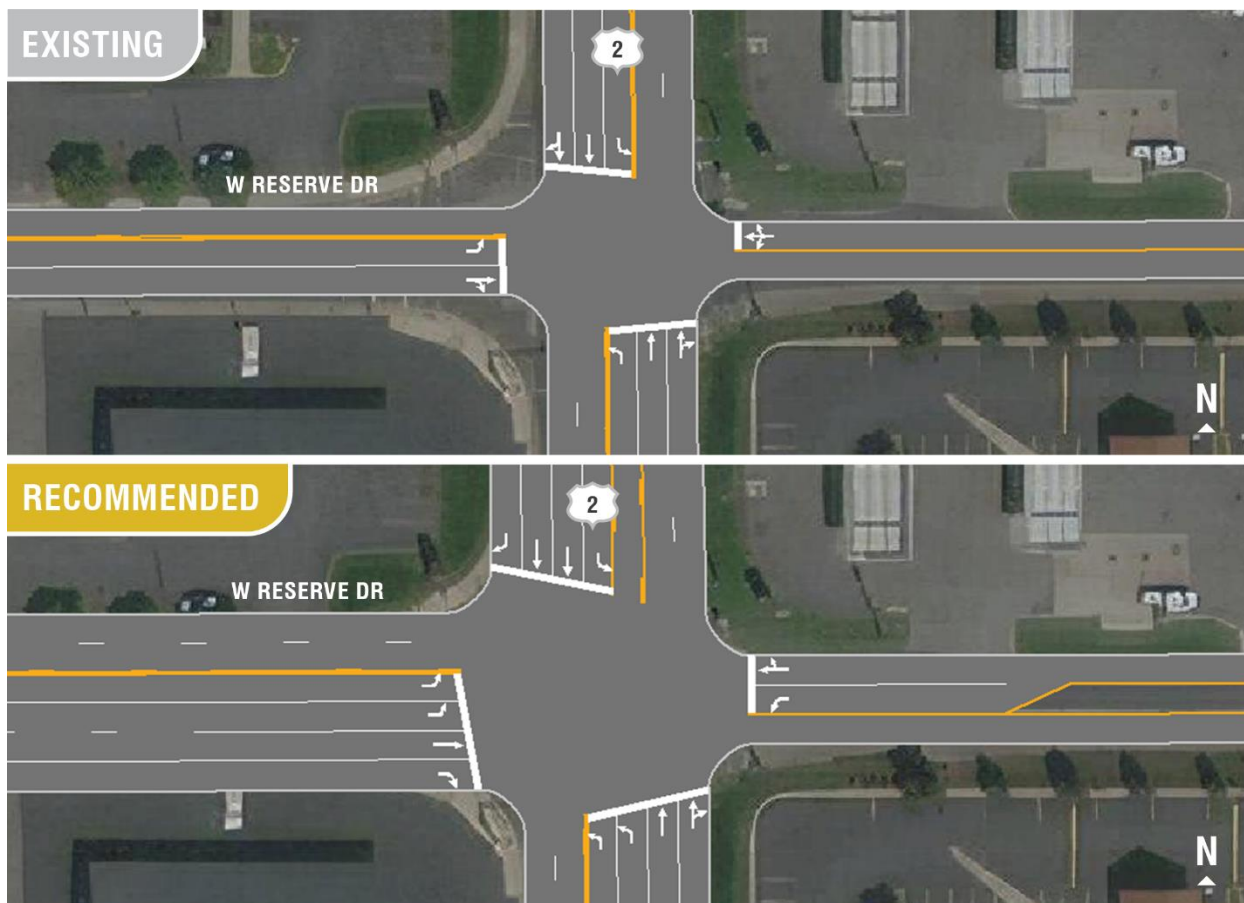


Figure 16: US 2 Intersection Improvements



5.3.2 Roadway Widening Improvements

The following improvement options aim to increase capacity and improve traffic operations on W. Reserve Dr. and Whitefish Stage Rd. Since substantially reducing vehicular traffic is unlikely over the planning horizon, the performance and safety of the roadway can be improved by increasing capacity.

These options will require major reconstruction of the roadway and are more costly and may have greater impacts than the intersection improvement options. For this reason, the corridor has been broken up into smaller sections based on current land use, existing/future traffic demands, and logical project limits. It is envisioned that these improvements could be implemented over the long term when funding becomes available. There may also be opportunity to combine these options with some of the intersection improvements discussed previously. Utility poles are located north of W. Reserve Dr. between US 93 and Mission Trail; these poles will be impacted by corridor widening. Coordination with Flathead Electric Cooperative will be needed to understand potential upgrades to power lines which may impact relocation costs.

R1 & R2. W. Reserve Dr. Widening

Providing additional continuous eastbound and westbound lanes in each direction through the corridor would accommodate greater volumes of traffic and reduce congestion and peak hour travel times. It is recommended that the corridor be widened to the north, west of Whitefish River, and widened symmetrically east of Whitefish River. Widening the corridor to the north, west of Whitefish River, has significantly lower impacts as the land north of the corridor is primarily undeveloped between the Stillwater River and Whitefish River. Widening to the north also reduces noise impacts to the residential properties located south of the corridor (between the Stillwater and Whitefish Rivers) and allows for a boulevard for snow storage. **Figure 17** and **Figure 18** illustrate the recommended cross sections for W. Reserve Dr. widening.

Recommendation: Widen roadway to five-lane cross section (two segments)

Project Development Considerations:

- Right-of-way acquisition to impact approximately 42 parcels
- Relocation assistance likely necessary for several properties
- Full replacement of Stillwater and Whitefish River bridges
- Two specific cross sections assumed with transition at Mission Trail Rd.
- Hazardous materials properties
- Include sidewalk and curb ramps at all intersection quadrants

Implementation Agency: MDT, City of Kalispell, Flathead County, Private

Implementation Timeframe: Mid-term

Estimated Cost: R1 (Hutton Ranch Rd. to Whitefish Stage Rd.): \$17.2 M; R2 (Whitefish Stage Rd. to US 2): \$24.8 M

Potential Funding Sources: STPP, STPB, Local

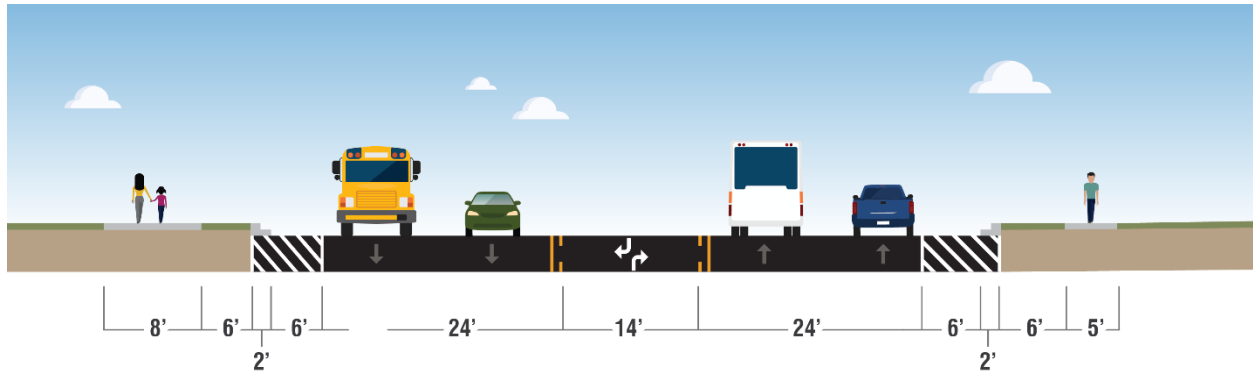


Figure 17: Cross section of W. Reserve Dr. from Hutton Ranch Rd. to Mission Trail Rd.

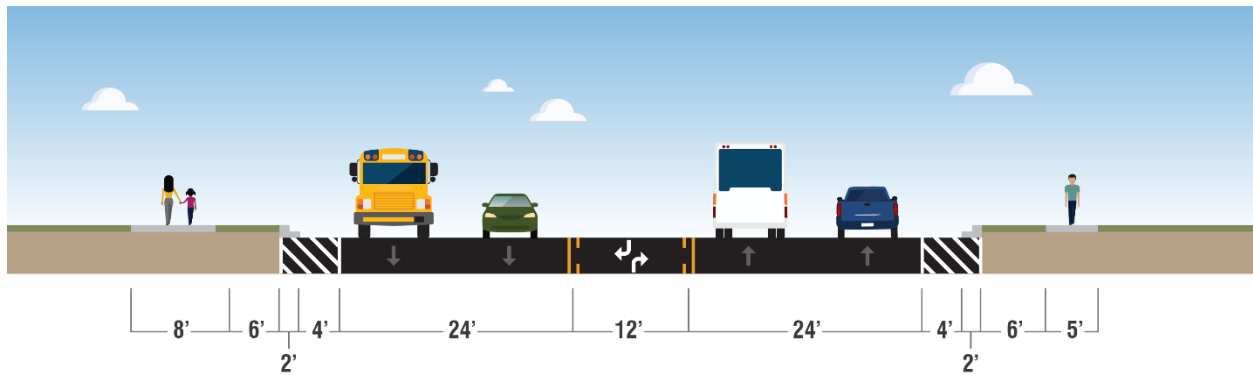


Figure 18: Cross section of W. Reserve Dr. from Mission Trail Rd. to US 2

R3 & R4. Whitefish Stage Rd. Widening

The segment of Whitefish Stage Rd. north of W. Reserve Dr. should also be improved to provide a facility which meets current design standards. Adding shoulders will provide a safety improvement which reduces the occurrence of roadway departure crashes on Whitefish Stage Rd. by allowing for vehicle recovery prior to leaving the roadway surface.

Both a rural and urban cross section were considered. Initially, a rural cross section with widened shoulders can be implemented. As future development occurs, an urban cross section adding curb and gutter and a two-way left turn lane can be implemented to align with long-term improvements along Whitefish Stage Rd. according to local planning documents.

Recommendation: Widen roadway to two lane rural cross section in mid-term and then widen to three-lane urban cross section in the long-term.

Project Development Considerations:

- Funding dependent on Kalispell Urban Transportation Area Technical Advisory Committee identifying it as a STP urban funding priority project
- A storm drain system is anticipated with the new adjacent development
- Private utilities, including overhead power, will require relocation
- Permits will likely be needed for impacts to farmland conversion
- Include sidewalk and curb ramps at all intersection quadrants

Implementation Agency: MDT, City of Kalispell, Flathead County, Private



Implementation Timeframe: Mid-term; Long-term

Estimated Cost: R3 (Rural cross section in mid-term): \$2.2 M; R4 (Urban cross section in long-term): \$3.5 M

Potential Funding Sources: STPU, Local, Private

5.3.3 Multimodal Improvements

M1. Pedestrian Crossing Treatment Study near Drake Dr.

Future pedestrian crossing needs should be considered corridor-wide, particularly as the north side of the corridor develops. For example, providing pedestrian crossings every quarter mile reduces the distance a pedestrian must travel to cross safely, encouraging use of alternate transportation modes. A follow-up study could be conducted to analyze existing pedestrian volumes at unmarked crossings and determine if a pedestrian crossing treatment is warranted.

Recommendation: Conduct study to analyze pedestrian volumes

Project Development Considerations:

- Connectivity improvement throughout corridor
- Increased use of alternate modes of transportation

Implementation Agency: MDT

Implementation Timeframe: Short-term

Estimated Cost: \$20,000

Potential Funding Sources: STPP, HSIP, TA

5.3.4 Travel Demand Management

T1. Travel Demand Management Strategies

The overarching goal of traffic demand management (TDM) is to reduce peak hour vehicle trips on the corridor. TDM strategies include encouraging employers to allow flexible work hours, compressed work weeks, and telecommuting, while also encouraging use of public transit and non-motorized travel options to reduce peak hour vehicle demand. Some example workplace strategies to promote non-motorized travel include internal commute challenges, incentives or raffles, and collecting/sharing data on employee commute behavior.

Recommendation: Encourage integration of TDM strategies corridor wide

Project Development Considerations:

- Some businesses may not support management approach
- Increased use of alternate modes of transportation through better connectivity
- Funding responsibilities

Implementation Agency: MDT, Flathead County

Implementation Timeframe: Short-term

Estimated Cost: Variable

Potential Funding Sources: Local, Private



5.3.5 Access Management

The improvement options contained in this section address traffic operations, safety, and roadway geometrics at the corridor level. These improvements are more systematic and do not require major roadway reconstruction. These options are important to addressing the overall needs and objectives for the corridor; however, this section does not provide a comprehensive assessment of all access management issues on the corridor.

A1. Corridor Access Management Plan

A plan of this type includes specific recommendations as to the number, location, and spacing of both public and private approaches allowed to access the roadway directly. It also includes intersection control, lane treatments, traffic restrictions, and other features necessary to address identified traffic issues.

Recommendation: Develop and execute access management plan

Project Development Considerations:

- Additional right-of-way may be required
- Establish guidelines for future development on corridor

Implementation Agency: MDT, City of Kalispell, Flathead County

Implementation Timeframe: Short-term

Estimated Cost: \$50,000

Potential Funding Sources: STPP, HSIP

A2. Side Street and Approach Movement Restriction

The Home Depot driveway and Country Way and Country Way North intersections are stop-controlled. Side street through and left turning movements can be prohibited via signage, only allowing a right-turn out of the driveway. This modification reduces delay for vehicles on the side street approaches and enhances safety at the corridor access points, reducing the amount of neighborhood cut-through traffic on Country Way and preserving the intended functionality of the neighborhood street. However, it would be an inconvenience to vehicles leaving Home Depot on the south leg and Town Pump / Liquor Store on the north leg. If no changes are made, these vehicles will naturally be forced to re-route as the left-turning movement becomes more difficult to make due to traffic on W. Reserve Dr.

Recommendation: Provide signage and channelizing island to restrict through and left-turn movements at the identified intersections

Project Development Considerations:

- Enhances safety across the corridor
- Prevents queueing of traffic at side streets
- Increased change of drivers circumventing regulatory signage

Implementation Agency: City of Kalispell, Flathead County

Implementation Timeframe: As needed

Estimated Cost: \$61,000 per approach

Potential Funding Sources: Local



A3. Approach Consolidation Near Whitefish Stage Rd.

Management of access can help improve traffic flow and reduce driveway-related crashes. Access management practices include enforcing minimum spacing distance standards between adjacent approaches and signalized intersections. To achieve appropriate spacing on W. Reserve Dr., it may be necessary to pave a cross-parcel access road between adjacent properties at the W. Reserve Dr. and Whitefish Stage Rd. intersection, so they meet at a single approach. **Figure 19** shows existing approaches adjacent to the Whitefish Stage Rd. intersection.

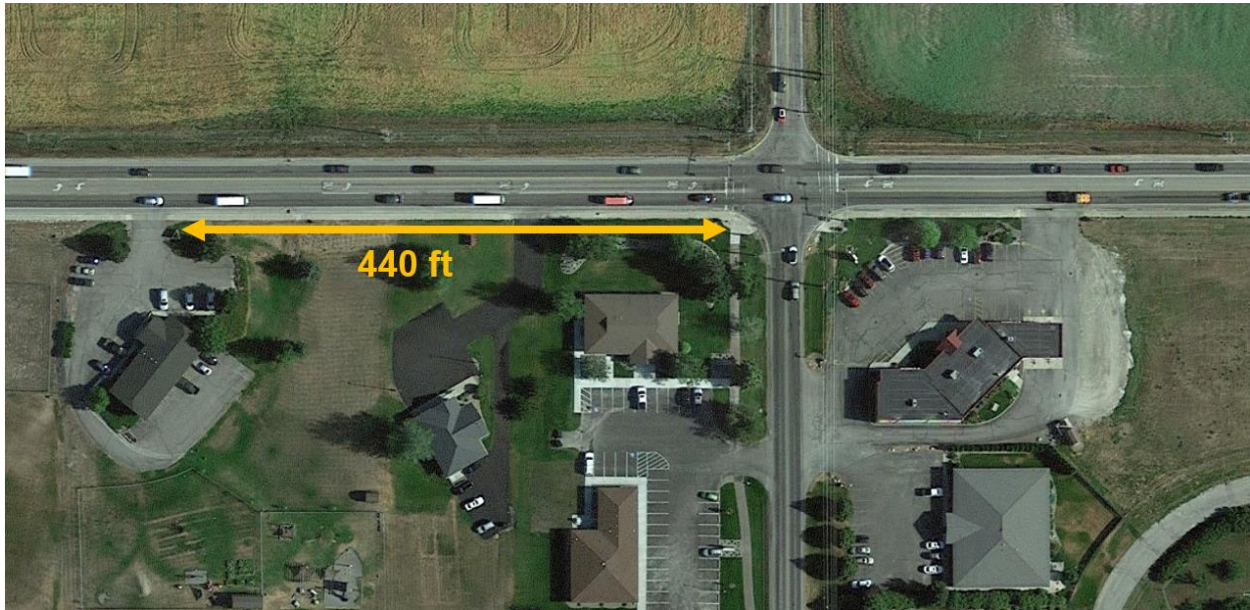


Figure 19: Driveways Adjacent to Whitefish Stage Rd. Intersection

Recommendation: Manage and consolidate existing approaches

Project Development Considerations:

- Additional right-of-way/easement required
- Recommendations from future access management plan

Implementation Agency: City of Kalispell, Flathead County

Implementation Timeframe: Short-term

Estimated Cost: \$120,000

Potential Funding Sources: Local



5.3.6 Options Eliminated from Further Consideration

Many improvement options were considered through the process with the intent of addressing the needs and objectives of the corridor. Through review of these improvement options with stakeholders and the public and comparison of performance and ability to meet the needs and objectives of the corridor, some options were eliminated from the study. The following provides background for the options that were considered but not advanced as part of this study.

US 93 Continuous Flow Intersection (CFI)

A continuous flow intersection (CFI) was considered at the intersection of US 93 and W. Reserve Dr. but is not forwarded for further consideration. The high volume of left turn movements at the US 93 intersection could benefit from a CFI arrangement. This configuration displaces the left-hand turn movement beyond the opposing through lanes to allow for free movement.

The CFI alternative has significantly higher capacity than a standard signalized intersection with left-turn phasing, but the CFI also has a much larger footprint and would require more right-of-way acquisition. Performance benefits of this intersection type did not overcome its exorbitant cost and right-of-way impact as compared to traditional signalized arrangements.

US 93 Full Build Intersection

The full build intersection configuration was considered at US 93 and W. Reserve Dr. but is not forwarded for further consideration. This configuration would provide free northbound and southbound channelized right-turn lanes to accommodate heavy right-turn volumes. The channelized right-turn lanes would require dedicated receiving lanes on the east and west legs. On the east leg, the third lane would drop at the Home Depot driveway; on the west leg, the lane would drop about 500 feet west of the intersection. The full build configuration would also provide dual southbound left-turn lanes, to mitigate delay associated with the heavy northbound through movement in the PM peak hour.

While this intersection configuration would accommodate anticipated 2040 traffic volumes, its footprint would create significant right-of-way impacts at a high overall cost. Further, future improvements to other corridors in the transportation network may positively affect this intersection's performance. The high overall cost of this configuration did not overcome its performance benefits.

Whitefish Stage Rd. Roundabout

A two-lane roundabout alternative was analyzed at Whitefish Stage Rd. A two-lane roundabout is expected to operate at LOS D in the PM peak hour in 2040. However, the signalized improvement option would provide more gaps in traffic on W. Reserve Dr. This benefits traffic at adjacent driveways trying to enter the W. Reserve Dr. corridor.

The footprint for a two-lane roundabout was also considered, requiring more right-of-way and cost while not providing additional capacity benefit. The roundabout would also need to be offset to the north to minimize right-of-way needs at the detriment to its east/west approach geometry. Overall, the signalized improvement was selected over the roundabout improvement, given the site characteristics.

Sidewalk and Bicycle Lane Options

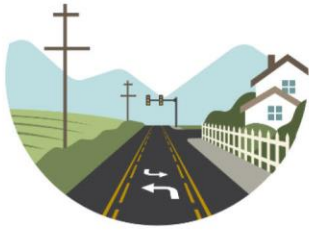
Cross section options were reviewed for the W. Reserve Dr. corridor widening to determine a footprint that accommodated all users of the corridor while considering the various needs and objectives. These options included curb sidewalks without boulevards and on-street bicycle lanes. Through discussion with stakeholders, it was determined that a boulevard should be included for snow storage and a wider sidewalk provided on the north to accommodate bicyclists and other users. The recommended cross section is consistent with local planning efforts while considering snow storage needs, bicyclists, and other roadway users.



Raised Median

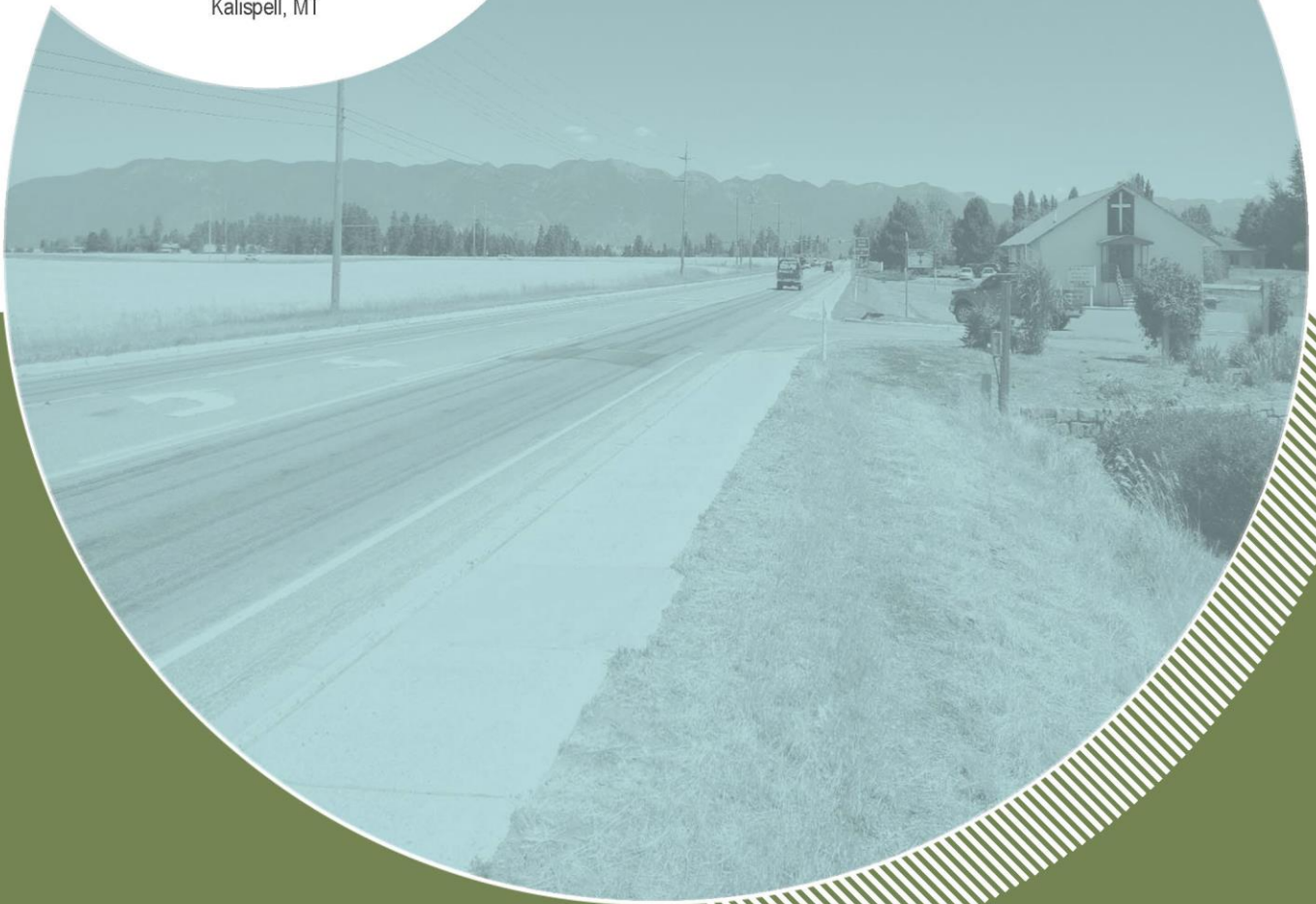
A raised median improvement option was considered between Hutton Ranch Rd. and Mission Trail Rd. As the north side of the corridor develops, a raised median would help to prohibit certain movements at driveways and side streets to maintain traffic operations and safety along W. Reserve Dr. A raised median is an effective means to provide access management and could be considered in the future.

This improvement option was removed as a recommendation because a corridor access management plan would provide better guidance and specific recommendations for raised median implementation or other access management strategies. In general, this option may be accommodated through restriping of the roadway to provide room for the median. The recommended cross section from Hutton Ranch Rd. to Mission Trail Dr. is wide enough to include a four-foot wide raised median if it is deemed necessary.



WEST RESERVE DRIVE — CORRIDOR PLANNING STUDY —

Kalispell, MT



CONCLUSIONS AND NEXT STEPS





6.0 CONCLUSIONS & NEXT STEPS

This study evaluated the section of W. Reserve Dr., between the intersections with US 93 and US 2, including a portion of Whitefish Stage Rd. extending 0.5 miles north of W. Reserve Dr. and 300 feet south of W. Reserve Dr., to understand corridor needs, objectives, constraints, and opportunities and develop a package of improvement options to address study findings. The purpose of the study was to develop a comprehensive long-range plan for managing the corridor and to identify feasible improvement options to address needs identified by the public, study partners, and resource agencies.

After completing a comprehensive review of available information, the study identified multiple short-, mid-, and long-term recommendations to address corridor needs and objectives. These recommendations will assist implementing agencies in targeting the most critical needs and allocation of resources. This study provides a diverse list of improvement options and strategies that may be considered as funding becomes available.

6.1 Funding

The ability to advance recommendations from this study and develop projects within the study area depends on the availability of existing and future federal, state, local, and private funding sources. Currently, no funding has been identified and secured to complete any of the recommended improvement options developed in this study. Additional detail on funding sources is provided in **Appendix 5**.

6.1.1 Federal Funding

Federal transportation revenues are generated from gasoline and diesel fuel taxes and apportioned to states according to specific transportation programs, eligible fund uses, and required state participation (or match percentage), which is determined based on population and miles of federal-aid highway within each state. Most federal transportation expenditures in Montana require approximately 13 percent state matching funds, with approximately 87 percent of project costs covered by federal dollars. Improvements to W. Reserve Dr. and Whitefish Stage Rd. may be eligible for funding through the following federal programs administered by MDT:

- **National Highway System [Non-Interstate] (NH):** Provides funding for highway and bridge projects to rehabilitate, restore, resurface, and reconstruct Non-Interstate National Highway System routes. Funds in this program are allocated by Montana's Transportation Commission.
- **Surface Transportation Program Primary (STPP):** Provides federal and state funding for transportation projects on the state-designated Primary Highway System, which includes roadways that are functionally classified as principal arterials or minor arterials, selected by the Montana Transportation Commission for placement on the Primary Highway System. Funds are used to resurface, rehabilitate, or reconstruct roads and bridges on the Primary System.
- **Surface Transportation Program-Urban (STPU):** Provides federal and state funding for transportation projects on Montana's Urban Highway System, based on per capita distribution and are re-calculated each decade following the census. Funds are used to resurface, rehabilitate, or reconstruct existing facilities; operational improvements; bicycle facilities; pedestrian walkways and carpool projects.
- **Surface Transportation Program-Bridge (STPB):** Provides federal and state funding for bridge projects, primarily used for bridge rehabilitation or reconstruction activities on Primary, Secondary, Urban, or off-system routes. Funding can be used for on-system and off-system routes in Montana.
- **Highway Safety Improvement Program (HSIP):** Provides funding to help states implement data-driven and strategic approaches for improving safety on all public roads and bicycle/pedestrian pathways or trails. Local government applications are prioritized by MDT and approved by the Montana Transportation Commission.



- **Montana Air and Congestion Initiative (MACI):** Provides funding to state and local governments for transportation programs to meet the requirements of the Clean Air Act. Funding is provided to reduce congestion and improve air quality in areas not meeting National Ambient Air Quality Standards for ozone, carbon monoxide or particulate matter.
- **Transportation Alternatives Program (TA):** Funding for smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, and environmental mitigation related to stormwater and habitat connectivity. Funding is awarded to projects through a competitive process.

6.1.2 State Funding

- **State Fuel Tax:** Funding provided for construction, reconstruction, maintenance, and repair of local roadways, allocated to incorporated cities and towns based on population and street mileage ratios across the state.
- **State Special Revenue:** Funding provided for projects to preserve the condition and extend the service life of state-maintained highways that are not eligible for federal funds. MDT District priorities are approved by the Montana Transportation Commission.

6.1.3 Local Funding

Flathead County generates revenues through intergovernmental transfers (including state gas tax apportionment and motor vehicle fees) and a mill levy assessed against county residents living outside cities and towns.

- **Road Fund:** Funding for construction, maintenance, and repair of county roads outside the corporate limits of cities and towns.
- **Bridge Fund:** Funding for engineering services, capital outlays, and necessary maintenance for bridges on all off-system and secondary routes.
- **Special Revenue Funds:** Budgets and distributes revenues legally restricted to a specific purpose, such as major capital improvements, rural special improvement districts, special bond funds, or specialized transportation funds.

6.1.4 Private Funding

Private sector recognizes that improved facilities can be profitable due to increased land values and development possibilities. Improvements to W. Reserve Dr. could be partially funded through various forms of private funding, such as donations, cost-sharing, impact fees, and improvement districts.

6.2 Next Steps & Other Project Development Considerations

To continue with development of projects, funding sources must be identified and secured. MDT guidelines for project nomination and development must be followed, including the public involvement process and environmental documentation requirements. Projects that are not developed by MDT must be coordinated with MDT through a collaborative process via the SIAP.

The purpose and need statement for any future project should be consistent with and address one or more of the needs and objectives contained in this study. This corridor study will be used as the basis for determining the impacts and subsequent mitigation for improvement options in future environmental documentation. Any future project must comply with Code of Federal Regulations Title 23 Part 771 and Administrative Rules of Montana 18, sub-chapter 2, which outline the requirements for documenting environmental impacts on highway projects.



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- ⁶ Natural Resource Conservation Service Soil Survey Mapping,
<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>
- ⁷ Flathead County Zoning.
https://flathead.mt.gov/planning_zoning/zoning.php
- ⁸ City of Kalispell Zoning Map.
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- ⁹ DNRC Flathead WRS
http://dnrc.mt.gov/divisions/water/water-rights/docs/survey-books/flatheadwrs_1965.pdf/view
- ¹⁰ Flathead County Septic Permits.
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- ¹¹ FEMA Floodplain Maps for Flathead County Montana.
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- ¹² Flathead County Flood Regulations
https://flathead.mt.gov/planning_zoning/documents/FloodplainRegulations--cleancopy-updatedtableofcontents_000.pdf
- ¹³ MDEQ Air Quality Non-Attainment Areas.
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- ¹⁴ Flathead County weed management plan
<https://flathead.mt.gov/weeds/downloads.php>
- ¹⁵ FWP FishMT database
<https://myfwp.mt.gov/fishMT/explore>



¹⁶ US Census. ACS Five Year Estimates 2015-2019

<https://data.census.gov/cedsci/table?q=United%20States&g=0100000US&tid=ACSDP1Y2017.DP05>

¹⁷ Montana Department of Transportation, Cost Estimation Procedure for Highway Design Projects, November 2016.

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