

6.0 EVALUATION OF IMPROVEMENT OPTIONS FOR THE CORRIDOR

The methods used to evaluate potential improvement options for the US 93 corridor through Whitefish and the results of initial screening efforts are presented in this Part. The screening process was focused on the conceptual improvement options and other strategies identified in **Part 5.0** of this study. These options and strategies were presented and discussed at meetings with the Citizen’s Advisory Committee and general public held during August 2008. A summary of these meetings can be found in **APPENDIX B**.

6.1 Overview of Screening Process

Screening is a term often used to describe the process for reviewing a range of conceptual improvement options or strategies (“alternatives”) and deciding which ones to carry forward for detailed study. The primary function of the screening process is to determine feasible actions to address the overall purpose and specific needs of a project. Screening provides a means of separating the **unreasonable** options (those which can be eliminated without detailed study) from the **reasonable** options (those carried forward for more detailed study).

The overall purpose of this evaluation process is to screen potential improvements and strategies to identify reasonable actions for the US 93 corridor. Reasonable improvement options will be subjected to a more detailed analysis to finalize the recommended system improvements for the corridor.

The Council on Environmental Quality (CEQ) regulations implementing NEPA do not define the term “reasonable” alternative. However, based on the CEQ’s guidance (Question 2a in its *Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations*), “reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.” This general guidance will be considered in the identification reasonable design options for the corridor.

The evaluation of improvement options will rely on a multi-step process designed to consider how well the potential improvement strategies address the overall vision for the corridor and the following goals:

1. Preserve the role of US 93 as regional transportation route while recognizing the need for the segment of US 93 within the corridor to adequately function as an urban principal arterial.
2. Design improvements that provide a safe roadway and transportation environment for facility users and those abutting the roadway.

3. Ensure improvements are consistent with current MDT design standards for Urban Principal Arterials wherever practicable.
4. Provide transportation solutions that minimize impacts to the natural, cultural and social environment in the corridor where practicable.
5. Ensure corridor improvements are feasible to implement and represent a reasonable expenditure of limited public funds.
6. Provide transportation improvements in the corridor that are compatible with local land use and transportation plans and that are sensitive to aspects of the community valued by Whitefish's residents.

These goals support the vision statement presented in **Part 4.0** of this Corridor Study. The goals also reflect the purpose and need for improving the highway corridor as presented in the U.S. Highway 93 Somers-Whitefish FEIS/ROD. The original FEIS purpose and need statement remains valid because the same fundamental needs identified in the document still exist within the Whitefish Urban corridor.

Conceptual improvement options and other strategies for the corridor were pre-screened to identify potential fatal flaws and to determine their general ability to support the purpose and need for improving US 93 through Whitefish. Improvement options and transportation strategies advanced from the pre-screening evaluation were then subjected to a more detailed assessment process based on criteria established for a variety of screening categories sensitive to the identified goals for corridor improvements.

6.2 Pre-Screening of Corridor Improvement Options and Strategies

6.2.1 Pre-Screening for Fatal Flaws

As a first step in identifying potentially actions for the corridor, the range of improvement options and other strategies identified in **Part 5.0** were pre-screened to avoid consideration of improvements or actions that fail to support the overall goals for the US 93 corridor or that possess "fatal flaws." Fatally flawed improvement options or transportation strategies are those that common sense suggests are unrealistic or have little or no reasonable chance of being implemented. The following factors were considered to be potential fatal flaws for corridor design options or strategies:

- Potentially excessive costs
- Not feasible for legal/logistical reasons (i.e., unlikely to be permitted)
- Reliance on unproven technology
- Clearly unacceptable effects on the natural environment
- Clearly unacceptable community impacts with potential for substantial local opposition

The pre-screening step also consisted of assessing each option or strategy with a

subjective “Yes” or “No” response to the following questions based on six overall corridor needs:

- *Would the improvement option or strategy provide a transportation facility that meets current and future demands?*
- *Would the improvement option or strategy improve the operation and efficiency of the facility for the traveling public by incorporating measures to enhance traffic flows and better manage truck traffic in the corridor?*
- *Would the improvement option or strategy reduce opportunities for traffic conflicts and crashes associated with turning movements at major intersections and other corridor locations?*
- *Would the improvement option or strategy incorporate physical changes to the roadway and its adjoining environment so the road’s design complies with MDT’s current design standards for Urban Principal Arterials?*
- *Would the improvement option or strategy provide facility improvements that consider recommendations made in local plans?*
- *Would the improvement option or strategy ensure future improvements help maintain the character of the community by being sensitive to the surrounding natural environment and land uses?*

6.2.2 Options and Strategies Eliminated through Pre-Screening

The paragraphs below identify the options and strategies dropped as a result of the pre-screening evaluation and discuss the reasons for their elimination.

Western Route Alternates. None of the Western Route Alternates (FEIS Bypass Alternatives A - D) were advanced for detailed screening. The Whitefish Transportation Plan does not endorse the development of a western bypass route for US 93 based on the results of travel demand modeling, potential environmental impacts, likely public opposition, and cost considerations.

With limited transportation funding available to MDT and local governments, implementing a bypass project in the Whitefish area would be financially unattainable in the short-term.

Selected Off-System Improvements. The Whitefish Transportation Plan examined the effects of making changes to the local road and street network to enhance travel and street connectivity within the Whitefish Study Area. Many of the improvements modeled for the Transportation Plan were associated with “off-system” roads (i.e. roads and streets not on the state’s Urban System or under MDT’s maintenance responsibility).

Projects from the Transportation Plan with the potential to benefit operations on US 93 included:

- **Columbia Avenue South Extension (MSN-2)**
- **Karrow Avenue Reconstruction (MSN-3)**
- **Baker Avenue Extension (MSN-4)**
- **Kalner Lane Extension (MSN-8)**

Travel demand modeling shows these and other locally implemented improvements to off-system roads could potentially benefit traffic operations on US 93 by offering alternate routes for travel that may draw some traffic from the corridor. However, none of the off-system road improvement projects examined in the Transportation Plan offer the potential to address the anticipated travel demands and meet other needs on the US 93 corridor.

Transportation System Management (TSM). Transportation System Management (TSM) improvements are designed to increase the operational efficiency and capacity of the existing street system. These strategies often include limited actions like installing new traffic signals, adding turn lanes at intersections, removing or restricting on-street parking, and lighting and signage improvements. The Whitefish Transportation Plan recommends two TSM improvement options in the corridor study area:

- **TSM-2 (13th Street/US Highway 93 Intersection)** – Revise lane use designations and striping to smooth traffic flows on the east and west approaches to the intersection.
- **TSM-3 (Baker Avenue/13th Street Intersection)** - Install a traffic signal at the intersection of Baker Avenue and 13th Street when signal warrants are met.

These improvement options could provide interim relief and help resolve traffic congestion and associated issues at spot locations on the US 93 corridor or adjoining roads. However, by themselves, the TSM projects do not represent a long-term or comprehensive way to address all corridor needs.

Travel Demand Management (TDM). TDM strategies can reduce travel demand and improving traffic flow during peak hours. These strategies consist of programs or policies focused on either reducing the number of vehicles on the roadway or redistributing trips so they occur during less congested periods of the day. Widely practiced TDM measures include telecommuting, variable work hours, walking or bicycling to work, employer-based carpool and vanpool programs, and parking management strategies.

The Whitefish Transportation Plan recognizes some TDM measures could be effective in helping to reduce travel (vehicle trips and the vehicle miles traveled) as Whitefish grows. While the use of TDM strategies in Whitefish is encouraged, this strategy would

likely result in only a small reduction in overall vehicle travel in the community and the corridor.

Transit Improvements. Improving bus transit within the community is a strategy that could help address traffic congestion and future travel demands on US 93. Currently, several organizations offer limited transit services within Whitefish (like the Snow Bus to Whitefish Mountain Resort and Eagle Transit’s shuttle services to other Flathead Valley communities). However, these services are offered only on a seasonal basis within Whitefish.

The Whitefish Transportation Plan notes interest within the community for the expansion of transit services.

Given the limited public transportation services presently available in Whitefish and funding issues typically associated with establishing and operating such services, relying on transit alone to reduce congestion on the US 93 corridor is unrealistic. Transit options were not advanced because they would not meet future travel demands on US 93 and would require large public subsidies to provide necessary capital and operating costs.

ITS Strategies. Although ITS strategies could potentially benefit some traffic operations in the greater Whitefish area, they would be unlikely to produce any major travel changes within the US 93 corridor. For this reason, ITS strategies were not recommended for further evaluation.

While ITS as an overall strategy for addressing corridor needs was not recommended, video detection coupled with an updated system of traffic signals and controls is an ITS application could be incorporated with future improvement options at the signalized intersections along the US 93 corridor.

6.2.3 Corridor Improvement Options and Strategies Advanced

The results of the pre-screening evaluations for corridor improvement options and strategies are presented in **Table 6-1**. As the table shows, all “Build Options” for the US 93 corridor from the U.S. Highway 93 Somers-Whitefish FEIS/ROD were recommended for further evaluation. The Build Options generally address many of the identified needs of the corridor although some options are more responsive than others. Without a detailed analysis of their potential ability to serve current and future travel demands in the corridor it is not possible to eliminate specific improvement options. These detailed analyses were undertaken as part of the first-level screening process.

Additionally, the four design configurations developed after the FEIS/ROD were advanced. These configurations attempt to respond to identified capacity and geometric needs in the corridor and changed conditions in the community.

Table 6-1: Pre-Screening Evaluation of Corridor Options and Strategies

<i>CONSISTENCY WITH THE CORRIDOR PURPOSE AND NEED STATEMENT (from US Highway 93 Somers-Whitefish West FEIS)</i>	FEIS/ROD Preferred Alternative	OTHER ALTERNATIVES FROM US HIGHWAY 93 SOMERS TO WHITEFISH WEST FEIS				
		Alternative A (4-Lane)	Alternative C (Offset)	Alternative C (Couplet-1)	Alternative C (Couplet 2)	Alternative C (Couplet 4)
Would the improvement option or strategy provide a transportation facility that meets current and future demands?	UNKNOWN without further analysis					
Would the improvement option or strategy improve the operation and efficiency of the facility for the traveling public by incorporating measures to enhance traffic flows and better manage truck traffic in the corridor?	YES (Operations) PARTIALLY (Trucks)	YES (Operations) NO (Trucks)	YES (Operations) PARTIALLY (Trucks)			
Would the improvement option or strategy reduce opportunities for traffic conflicts and crashes associated with turning movements at major intersections and other corridor locations?	YES	YES	YES	YES	YES	YES
Would the improvement option or strategy incorporate physical changes to the roadway and its adjoining environment so the road's design complies with MDT's current design standards for Urban Principal Arterials?	YES	YES	YES	YES	YES	YES
Would the improvement option or strategy provide facility improvements that consider recommendations made in local plans?	NO	NO	NO	NO	NO	NO
Would the improvement option or strategy ensure future improvements help maintain the character of the community by being sensitive to the surrounding natural environment and land uses?	YES (New Bridge Impacts River)	NO	YES	YES	YES (New Bridge Impacts River)	YES
POTENTIAL FATAL FLAWS? 1. Potentially excessive project costs 2. Legal/logistical infeasibility 3. Reliance on unproven technology 4. Potentially unacceptable environmental effects 5. Potentially unacceptable community impacts or community opposition	NO	YES (4, 5)	NO	NO	NO	NO
ADVANCE TO DETAILED SCREENING?	YES	YES	YES	YES	YES	YES

Table 6-1: Pre-Screening Evaluation of Corridor Options and Strategies (Cont.)

<i>CONSISTENCY WITH THE CORRIDOR PURPOSE AND NEED STATEMENT (from US Highway 93 Somers-Whitefish West FEIS)</i>	OPTIONS IDENTIFIED AFTER THE FEIS/ROD			
	Modified Record of Decision Configuration	Contra-Flow Configuration	Truck Route Configuration	Whitefish Downtown Business District Master Plan Configuration
Would the improvement option or strategy provide a transportation facility that meets current and future demands?	UNKNOWN without further analysis	UNKNOWN without further analysis	UNKNOWN without further analysis	UNKNOWN without further analysis
Would the improvement option or strategy improve the operation and efficiency of the facility for the traveling public by incorporating measures to enhance traffic flows and better manage truck traffic in the corridor?	YES (Operations) PARTIALLY (Trucks)	YES	YES	YES
Would the improvement option or strategy reduce opportunities for traffic conflicts and crashes associated with turning movements at major intersections and other corridor locations?	YES	YES	YES	YES
Would the improvement option or strategy incorporate physical changes to the roadway and its adjoining environment so the road's design complies with MDT's current design standards for Urban Principal Arterials?	YES	YES	YES	YES
Would the improvement option or strategy provide facility improvements that consider recommendations made in local plans?	PARTIALLY	YES	YES	YES
Would the improvement option or strategy ensure future improvements help maintain the character of the community by being sensitive to the surrounding natural environment and land uses?	YES (New Bridge Impacts River)	YES (New Bridge Impacts River)	YES (New Bridge Impacts River)	YES (New Bridge Impacts River)
POTENTIAL FATAL FLAWS? 1. Potentially excessive project costs 2. Legal/logistical infeasibility 3. Reliance on unproven technology 4. Potentially unacceptable environmental effects 5. Potentially unacceptable community impacts or community opposition	NO	NO	NO	NO
ADVANCE TO DETAILED SCREENING?	YES	YES	YES	YES

Table 6-1: Pre-Screening Evaluation of Corridor Options and Strategies (Cont.)

<i>CONSISTENCY WITH THE CORRIDOR PURPOSE AND NEED STATEMENT (from US Highway 93 Somers-Whitefish West FEIS)</i>	OTHER TRANSPORTATION STRATEGIES FOR US 93 THROUGH WHITEFISH					
	Western Route Alternates	Selected Off-system Improvements	Transit (Bus Service) Only	TDM Strategies Only	TSM Strategies Only	ITS Strategies
Would the improvement option or strategy provide a transportation facility that meets current and future demands?	NO	NO	NO	NO	NO	NO
Would the improvement option or strategy improve the operation and efficiency of the facility for the traveling public by incorporating measures to enhance traffic flows and better manage truck traffic in the corridor?	NO	NO	NO	NO	NO	NO
Would the improvement option or strategy reduce opportunities for traffic conflicts and crashes associated with turning movements at major intersections and other corridor locations?	NO	NO	NO	NO	NO	NO
Would the improvement option or strategy incorporate physical changes to the roadway and its adjoining environment so the road's design complies with MDT's current design standards for Urban Principal Arterials?	NO	NO	NO	NO	YES	NO
Would the improvement option or strategy provide facility improvements that consider recommendations made in local plans?	PARTIALLY	NO	NO	NO	NO	NO
Would the improvement option or strategy ensure future improvements help maintain the character of the community by being sensitive to the surrounding natural environment and land uses?	NO	NO	YES	YES	NO	NO
POTENTIAL FATAL FLAWS? 1. Potentially excessive project costs 2. Legal/logistical infeasibility 3. Reliance on unproven technology 4. Potentially unacceptable environmental effects 5. Potentially unacceptable community impacts or community opposition	YES (1, 4, 5)	NO	YES (1)	NO	NO	NO
ADVANCE TO DETAILED SCREENING?	NO	NO	NO	NO	NO	NO

6.3 Screening Process for Improvement Options

The configurations advanced from the Pre-screening stage were subjected to more detailed screening to determine reasonable improvement actions for the corridor. Detailed screening is a two-step process intended to identify those options that best address the goals for the corridor.

6.3.1 First-Level Screening

This initial screening step involved an assessment of corridor options to identify those improvement options that are most practical or feasible from a technical, economic, and environmental standpoint. First-level screening was intended to reduce the number of options through the general consideration of their ability to meet goals and associated objectives for the corridor. The options were evaluated against a set of screening criteria relating to identified goals and objectives for the US 93 corridor.

An assessment of each improvement option was conducted to help identify:

- Options would be unlikely to provide desired operational or safety characteristics under current or future conditions;
- Options could potentially cause unreasonable impacts to the environment;
- Options lack consistency with local plans or community desires; and
- Options may be financially unrealistic due to high implementation costs.

The initial screening step included an operational review, an assessment of potential environmental effects, and a generalized estimate of project costs (low, medium, and high cost) for each option. Traffic modeling for existing and future year (2030) conditions and simulations provided the information needed to assess the operational characteristics and overall performance of each improvement option.

The options advanced to second-level screening were based on how well each design option addressed the first-level screening considerations.

6.3.2 Second-Level Screening

The improvement options advanced from the first-level screening stage were then subjected to a second and more detailed screening evaluation to help identify the option(s) that best address corridor needs. Where possible, the final screening process considered quantifiable measures to help differentiate between each option.

6.3.3 Screening Criteria

Screening criteria based on the goals and objectives for the corridor were developed to help evaluate improvement options at each screening level. The screening

considerations used to evaluate improvement options are highlighted briefly below:

- **Capacity and Traffic Operations:** This consideration relates to operational characteristics and performance of improvement options for with the corridor. The criteria relate to how well each option addresses current and future travel demands based on the results of detailed modeling and performance analyses.
- **Safety:** This screening consideration focuses on improvements to the corridor from a safety standpoint. Issues such as traffic conflicts, bike and pedestrian safety, and contributing factors identified from the crash analysis are covered in this screening consideration.
- **Eliminate/Reduce Roadway Deficiencies:** Compliance to MDT’s current design standards for Urban Principal Arterials is the focus of this consideration.
- **Potential Environmental Effects:** Environmental impacts that each improvement option is expected to have on the community are the focus of this screening consideration. Conformity to environmental standards is also addressed in these criteria.
- **Feasibility and Affordability:** This consideration is concerned with issues like overall constructability and probable cost of the improvements, future compliance with the National Environmental Policy Act (NEPA) and Montana Environmental Policy Act (MEPA), and the potential for agency or public opposition to aspects of the improvements.
- **Compatibility with Local Plans and Community Ideals:** This screening consideration addresses consistency with local accepted plans and community desires.

The first-level and second-level screening criteria used to evaluate corridor design options can be found in **APPENDIX D**.

6.4 Initial Operational Reviews of Corridor Options

6.4.1 Methodology

Each improvement option considered for the corridor was analyzed to assess how the option may perform under current and future traffic conditions. The proposed corridor modifications (lane configurations and assumed intersection controls) for each improvement option were added to the street network and modeled using the travel demand model created for the Whitefish Transportation Plan. Modeling was conducted for each option to provide an indication of how the option might initially operate and perform by the year 2030.

The results of the travel demand modeling for each improvement option (traffic volumes and turning movement distributions) were used as inputs to analyze peak hour LOS at intersections in the corridor and for operational reviews of road network performance using *Synchro* software. The software is capable of producing detailed reports with numerical values for measures of effectiveness (MOE) to help gauge network operations under current and future conditions. The MOE provide a way of comparing traffic operations on a broader scale than just focusing on LOS for individual intersections. Examining the relative differences between the values for individual MOEs can be insightful when comparing the overall performance of various improvement options.

It should be noted that some of the MOEs calculated by the *Synchro* software are difficult to compare and not very meaningful due to the differences between the configurations. **Table 6-2** identifies and defines the relevant MOEs for each option considered during the first-level screening assessment.

Table 6-2: Relevant Measures of Effectiveness

MEASURE OF EFFECTIVENESS	DEFINITION
Total Delay	A measure in hours of the total vehicle delay within the network. Delay can also be expressed in terms of the number of seconds of delay experienced by each vehicle using the network. Lower values suggest better network operations.
Total Number of Stops	A sum of the total number of stops by vehicles within the network. Stops can also be expressed in terms of the number of stops per vehicle using the network. Lower values suggest better network operations.
Total Travel Time	A sum of the individual vehicle travel times in hours within the network. Lower values suggest better network operations.
Distance Traveled	A sum of the individual vehicle distance traveled in miles within the network. Lower values for miles traveled suggest more efficient travel through the network and less out of direction travel.
Intersection LOS	A summary of intersection level of service within the network. The rating is based on the number of signalized intersections and unsignalized operating at or below LOS D.
Unserviced Vehicles	The total number of vehicles in the network not served upon arrival by the first green phase of traffic signals. Unserved vehicles must wait for successive red or green phases. Lower values for unserved vehicles suggest more efficient network operations.
Fuel Consumed	The combined total amount of fuel consumed by all vehicles in the network. Lower values for fuel consumption suggest more efficient network operations.
CO Emissions	The combined total amount of CO emitted by all vehicles in the network. Lower values suggest more efficient network operations.

6.4.2 Results of Initial Operational Reviews

Operational Reviews of Improvement Options Under Current Conditions. Table 6-3 presents MOE ratings for each option based on the operational assessment of network performance under current (2003) conditions. The ratings provide a general indication of how each option may perform with respect to individual MOEs and offer a means to compare overall performance among the options. The table illustrates the options that showed the best and worst performance characteristics and those options that fell somewhere in the “middle” with respect to relevant MOE values.

The ratings reflect the numerical MOE values calculated by the *Synchro* software that can be found in APPENDIX E.

Table 6-3: MOE Ratings for Improvement Options - Current (2003) Conditions

CORRIDOR IMPROVEMENT CONFIGURATION	MEASURE OF EFFECTIVENESS (MOE)							
	Total Delay	Total Stops	Travel Time	Distance Traveled	Signalized Intersections Below LOS D	Unsignalized Intersections Below LOS D	Unserviced Vehicles	Fuel Consumed CO Emissions
Alternative A (Four Lane)	●	●	●	●	●	●	All Equal	●/●
Alternative C (Couplet 1)	●	○	●	◐	○	●	All Equal	◐/◐
Alternative C (Couplet 2)	◐	○	○	◐	○	○	All Equal	◐/◐
Alternative C (Couplet-3) FEIS/ROD PREFERRED	◐	◐	◐	◐	○	○	All Equal	◐/◐
Alternative C (Couplet 4)	●	●	●	◐	○	●	All Equal	●/●
Alternative C (Offset)	◐	◐	○	○	●	◐	All Equal	○/○
Modified ROD	○	◐	○	◐	○	○	All Equal	◐/◐
Contra-Flow Configuration	○	○	○	○	○	◐	All Equal	○/○
Truck Route	◐	◐	◐	◐	●	◐	All Equal	●/●
Downtown Business District Master Plan	◐	◐	◐	◐	○	◐	All Equal	◐/◐

- Among Best Performing Options for MOE
- ◐ MOE Values Falling Between Best and Worst Performing Options
- Among Worst Performing Options for MOE

Based on the MOE ratings from **Table 6-3**, the Contra-Flow option appears to exhibit the best performance under current conditions. The Alternative C (Couplet 2), Alternative C (Offset), and Modified ROD configurations also showed some of the best performance characteristics under current conditions. The Alternative A (Four Lane) option was among the worst performing configuration based on MOEs for current conditions. The Alternative C (Couplet 1) and Alternative C (Couplet 4) configurations also showed poor performance characteristics based on the MOE ratings based on current conditions.

The operational review showed that many of the options fell “somewhere in the middle” for performance characteristics and many options appear to operate similarly with respect to several MOEs. For example, the operational review showed all options resulted in no unserved vehicles. There was also little difference among all options in the MOE for the number of signalized intersections operating below LOS D – the “worst” performing options showed only one intersection operating below LOS D.

Operational Reviews of Improvement Options Under Future Conditions.

The operational review examined the potential performance of improvement options under year 2030 conditions. **Table 6-4** on the following page shows a generalized rating for each option based on a comparison of calculated values for relevant MOEs.

Table 6-4 shows the Contra-Flow and Alternative C (Couplet 4) options exhibit some of the best performance characteristics based on the MOEs for year 2030 conditions. The Alternative C (Couplet 2) and the Alternative C (Offset) configurations were improvement options that showed good performance characteristics for several MOEs. The Alternative A (Four Lane) and Alternative C (Couplet 1) options were the worst performing configuration based on MOEs for future conditions. The Alternative C (Couplet-3) FEIS/ROD Preferred, Alternative C (Offset), and Truck Route configurations showed poor performance characteristics with one or more of the relevant MOE ratings for future conditions.

There was little difference in performance among most improvement options with respect to the number of unsignalized intersections operating at or below LOS D. The operational review showed that most unsignalized intersections along the corridor would likely operate at or below LOS D in the future. Nine of the ten configurations showed poor operations at unsignalized intersections. This poor LOS is due to the delays that side street traffic at unsignalized intersections may encounter when attempting to enter or cross high volume corridor roads.

As noted previously, the numerical MOE values for future conditions presented in **APPENDIX E**.

Table 6-4: MOE Ratings for Improvement Options - 2030 Conditions

CORRIDOR IMPROVEMENT CONFIGURATION	MEASURE OF EFFECTIVENESS (MOE)							
	Total Delay	Total Stops	Travel Time	Distance Traveled	Signalized Intersections Below LOS D	Unsignalized Intersections Below LOS D	Unserved Vehicles	Fuel Consumed CO Emissions
Alternative A (Four Lane)	●	●	●	●	○	◐	◐	●/●
Alternative C (Couplet 1)	●	○	●	◐	◐	◐	◐	●/●
Alternative C (Couplet 2)	○	◐	○	◐	●	◐	◐	○/○
Alternative C (Couplet-3) FEIS/ROD PREFERRED	◐	◐	◐	◐	●	◐	●	◐/◐
Alternative C (Couplet 4)	◐	○	◐	○	○	○	○	◐/◐
Alternative C (Offset)	◐	●	◐	◐	○	●	○	◐/◐
Modified ROD	◐	◐	◐	◐	◐	◐	●	◐/◐
Contra-Flow Configuration	○	◐	○	◐	◐	◐	○	○/○
Truck Route	◐	◐	◐	◐	●	◐	●	◐/◐
Downtown Business District Master Plan	◐	◐	◐	◐	◐	○	◐	◐/◐

- Among Best Performing Options for MOE
- ◐ MOE Values Falling Between Best and Worst Performing Options
- Among Worst Performing Options for MOE

6.5 First-Level Screening Assessments for Improvement Options

The operational review provides an indication of expected current and future performance for each configuration. While performance is the primary consideration for the corridor, other factors like potential environmental effects, overall cost and implementation requirements, and consistency with local plans must be reviewed to help identify the option(s) that best address the short-term and long-term transportation needs of the corridor.

The following section summarizes the first-level screening assessments of each option and highlights the advantages and disadvantages associated with implementing each option.

6.5.1. Alternative A (4-Lane) Configuration



ALTERNATIVE A (4-LANE) ADVANTAGES:

- Adding new travel lanes would increase the capacity of Spokane Avenue and 2nd Street through Whitefish.
- With the provision of dedicated turn lanes at key intersections, the configuration generally performs well under current (2003) conditions.
- Impacts to the Whitefish River could be avoided.
- This option would likely be among those with the lowest overall cost since work would occur along the existing alignment of US 93 and it attempts to provide a 4-lane roadway within the “footprint” of the existing roadway.

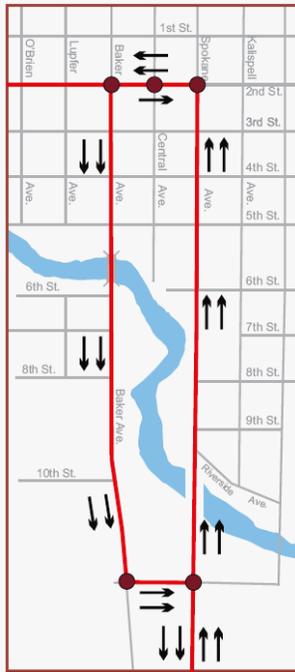
ALTERNATIVE A (4-LANE) DISADVANTAGES:

- The configuration would operate poorly under future (2030) conditions and was one of the worst performing options under future conditions.
- Trucks accommodations on US 93 would be unchanged.
- All on-street parking along Spokane Avenue and along 2nd between Spokane and Baker Avenues would be lost.
- There would be no provision for bicycles to use the roadway.
- The addition of new travel lanes may make crossings more difficult for pedestrians at unsignalized intersections along Spokane Avenue.
- A 4-lane roadway would change the character of Spokane Avenue and 2nd Street.
- There is no local support for reconstructing Spokane Avenue and 2nd Street as 4-lane facilities through downtown Whitefish.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

This configuration was not advanced because of its anticipated poor future performance, inconsistency with MDT current design standards, impacts to on-street parking, and conflicts with local plans.

6.5.2. Alternative C (Couplet 1) Configuration



ALTERNATIVE C (COUPLLET 1) ADVANTAGES:

- The configuration would increase roadway capacity along Spokane Avenue, Baker Avenue, and 2nd Street.
- This configuration would initially perform adequately.
- The configuration removes a portion of the truck traffic currently using Spokane Avenue and 2nd Street by diverting some southbound traffic to Baker Avenue.
- Bicycle lanes could be provided along Spokane and Baker Avenues.
- Impacts to the Whitefish River could be avoided.
- On-street parking could be retained along Spokane and Baker Avenues.
- Right-of-way acquisition would be necessary only at key intersections.
- This option would be among those with the lowest overall construction cost.

ALTERNATIVE C (COUPLLET 1) DISADVANTAGES:

- When analyzed under future (2030) conditions, Alternative C (Couplet 1) performs poorly.
- Based on several relevant measures of effectiveness, the configuration rated among the worst performing options under future conditions.
- The proposed 3-lane configuration on 2nd Street would cause the loss of some on-street parking between Spokane and Baker Avenues and conflicts with recommendations from local plans.
- This configuration relies on a one-way couplet to move traffic through downtown Whitefish. The one-way couplet configuration is not consistent with the traffic circulation concept presented in local plans.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

This configuration was dropped due to its anticipated poor future performance level. One-way traffic flows on Spokane and Baker Avenues and a 3-lane configuration on 2nd Street are not consistent with local plans and desires.

6.5.3. Alternative C (Couplet 2) Configuration



ALTERNATIVE C (COUplet 2) ADVANTAGES:

- This configuration increases the overall capacity of the corridor to accommodate traffic.
- The configuration performs adequately under current (2003) conditions and would operate at a high performance level under future (2030) conditions.
- The configuration rated among the best performing options for future conditions based on key measures of effectiveness.
- The 7th Street connection enhances east-west connectivity and could help decrease traffic on Spokane Avenue, 2nd Street, and portions of Baker Avenue.
- A portion of the truck traffic currently using Spokane Avenue and 2nd Street would be diverted to Baker Avenue.
- Like Alternative C (Couplet 1), the option represents one of the configurations with the least impact to on-street parking. On-street parking could be retained along Spokane and Baker Avenues.

ALTERNATIVE C (COUplet 2) DISADVANTAGES:

- This one-way configuration has many of the same disadvantages as Couplet 1.
- The 7th Street connection requires a lengthy and expensive bridge due to its location.
- Building a bridge would affect the Whitefish River and associated wetlands and would be subject to federal, state, and local regulations protecting water quality.
- New right-of-way, including a business acquisition, would be needed to construct the 7th Street connection.
- This option would be among those with the highest overall cost due to the provision of a new bridge, the amount of new road construction and traffic signals, and the need to acquire additional rights-of-way.
- The proposed 3-lane configuration on 2nd Street would likely cause the loss of some on-street parking between Spokane and Baker Avenues and conflicts with parking recommendations from local plans.
- The one-way traffic circulation concept and lane configuration on 2nd Street are not consistent with recommendations from local plans.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

This configuration was not advanced because one-way traffic circulation and a 3-lane configuration on 2nd Street are not consistent with local plans.

6.5.4. FEIS/Record of Decision Preferred Alternative Alternative C (COUPLET 3) Configuration



FEIS/ROD PREFERRED ALTERNATIVE ADVANTAGES:

- This configuration would increase the overall capacity within the corridor.
- This configuration performs well under existing and adequately under future conditions.
- Like Couplet 2, the provision of a bridge with two-way traffic flows at 7th Street improves east-west connectivity and would help reduce out-of-direction travel within the corridor.
- The configuration could reduce truck traffic through the downtown.
- The proposed configuration on Spokane and Baker Avenue could generally be accommodated within the “footprint” of the existing corridor roadways.
- On-street parking could be retained along Spokane and Baker Avenues.

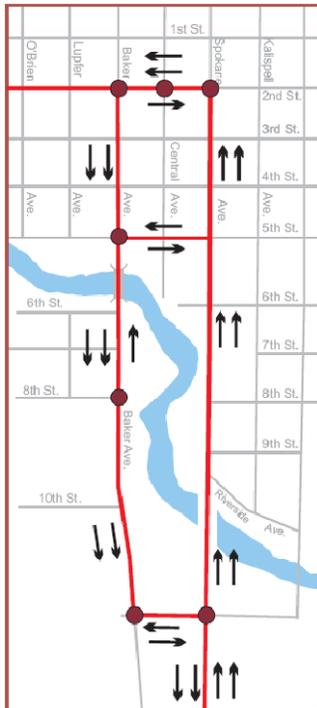
FEIS/ROD PREFERRED ALTERNATIVE DISADVANTAGES:

- The proposed 3-lane configuration on 2nd Street would cause the loss of some on-street parking between Spokane and Baker Avenues and conflicts with parking recommendations from local plans.
- Building a bridge would affect the Whitefish River and associated wetlands and would be subject to federal, state, and local regulations protecting water quality.
- New right-of-way (including a business acquisition) would be needed to extend 7th Street between Baker and Kalispell Avenues.
- This option would be among those with the highest overall cost due to the provision of a new bridge and required right-of-way acquisitions.
- This configuration relies on a one-way couplet to move traffic through downtown Whitefish and is not consistent with the traffic circulation concept presented in local plans.
- The lane configuration on 2nd Street is not consistent with local desires.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

Although this configuration was identified as the Preferred Alternative in the FEIS/ROD, this option was not recommended for further screening because of capacity and geometric needs and changed community conditions identified since the time of the EIS. The configuration’s one-way traffic circulation in the downtown and its configuration on 2nd Street are not consistent with local plans.

6.5.5. Alternative C (Couplet 4) Configuration



ALTERNATIVE C (COUplet 4) ADVANTAGES:

- This configuration would increase the overall capacity within the corridor.
- This configuration would perform adequately under future (2030) conditions.
- An improved 5th Street would enhance east-west connectivity between Spokane and Baker Avenues.
- The improvements could generally be made within the existing footprint of corridor roadways.
- Incorporating a single northbound lane on Baker between 5th and 8th Streets would limit out-of-direction travel particularly for residents of Baker Avenue neighborhoods south of the river.
- This option would be less costly to construct than options incorporating a new bridge at 7th Street.
- On-street parking could be retained along Spokane and Baker Avenues.

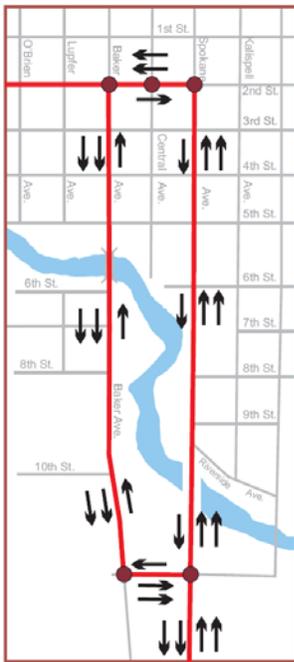
ALTERNATIVE C (COUplet 4) DISADVANTAGES:

- This configuration would perform poorly under current (2003) conditions.
- The availability of a traffic signal at 5th Street and Baker Avenue could increase traffic volumes and congestion in the area due to recirculating traffic.
- Changing lane configurations on Baker Avenue could be confusing to drivers.
- This configuration would require widening Baker Avenue (including the existing bridge) between 5th and 8th Streets to accommodate a 3-lane roadway. This may require additional right-of-way.
- The Whitefish River could be impacted due to work at the Baker Avenue crossing.
- The proposed 3-lane configuration on 2nd Street would cause the loss of some on-street parking between Spokane and Baker Avenues and conflicts with parking recommendations from local plans.
- This option incorporates one-way traffic flows on Spokane and Baker Avenues in downtown Whitefish.
- The lane configuration on 2nd Street is not consistent with local desires.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

This configuration was dropped from consideration because its one-way traffic circulation on Spokane and Baker Avenues and 3-lane configuration on 2nd Street are not consistent with local plans.

6.5.6. Alternative C (Offset) Configuration



ALTERNATIVE C (OFFSET) ADVANTAGES:

- This configuration would increase the overall capacity within the corridor.
- The configuration reflects the existing street network and does not require adding any new roadway links.
- The operational reviews show this option it would provide a high performance level under current (2003) conditions.
- Much of Spokane and Baker Avenues and 2nd Street could be improved within the existing roadway footprint.
- Truck traffic could be diverted from Spokane Avenue at 13th Street and from 2nd Street at Baker Avenue.
- This configuration would be less costly to construct than options incorporating a new bridge at 7th Street.
- This option incorporates two-way traffic flows on Spokane and Baker Avenues in downtown Whitefish.

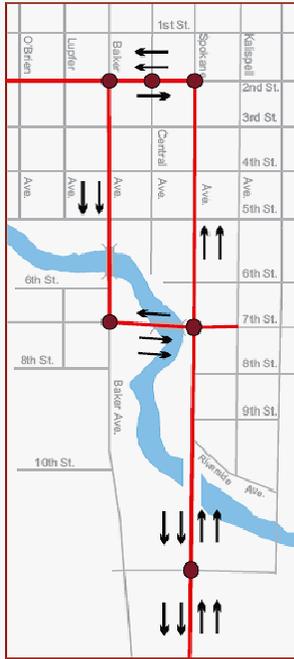
ALTERNATIVE C (OFFSET) DISADVANTAGES:

- Although the configuration would initially perform at a high level, it shows a declining performance under future (2030) conditions.
- The three-lane configuration associated with this configuration (two lanes in one direction and one opposing lane) is a non-typical lane configuration. Conflicts between through and turning traffic could increase as “mainline” traffic attempts to turn left across two lanes.
- Diverting truck traffic to Baker Avenue may be opposed by some residents in the area south of the Whitefish River crossing.
- This configuration would require widening Baker Avenue (including the existing bridge) between 5th and 13th Streets to accommodate a 3-lane roadway. This would require areas of right-of-way acquisition along Baker Avenue.
- The Whitefish River would be affected by work at the Baker Avenue crossing.
- On-street parking would be eliminated along Spokane and Baker Avenues south of 2nd Street and some on-street parking on 2nd Street would be lost.
- The lane configuration on 2nd Street is not consistent with local desires.

CONCLUSION: ADVANCED TO SECOND-LEVEL SCREENING

The Alternative C (Offset) Configuration was advanced because it builds on the existing roadway network and does not require adding new roadway links. Operational reviews suggest the option would initially perform well and function acceptably in the future. It is the only couplet configuration that provides for two-way traffic circulation in the downtown. Because the option does not include a bridge at 7th Street, the configuration is among the least expensive corridor options.

6.5.7. Modified Record of Decision Configuration



MODIFIED ROD ADVANTAGES:

- The performance of the FEIS/ROD Preferred Alternative is improved with the modifications provided by this configuration.
- The Modified ROD Configuration would provide a high performance level under current (2003) conditions and continue to perform well under future (2030) conditions.
- This configuration possesses the same advantages as the FEIS/ROD Preferred Alternative including the circulation benefits and enhanced east-west connectivity provided by the 7th Street bridge and street extension.
- The alternate route for trucks via 7th Street and Baker Avenue could potentially reduce truck traffic through the downtown.
- Improvements to corridor roadways could generally be accommodated within the existing roadway footprint.
- On-street parking could be retained along Spokane and Baker Avenues.

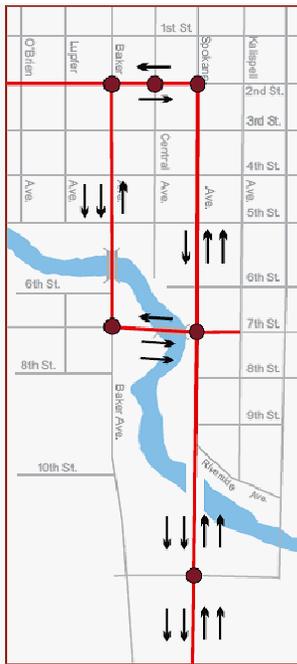
MODIFIED ROD DISADVANTAGES:

- The proposed 3-lane configuration on 2nd Street would likely cause the loss of some on-street parking between Spokane and Baker Avenues and conflicts with parking recommendations from local plans.
- Building a bridge would affect the Whitefish River and associated wetlands and would be subject to federal, state, and local regulations protecting water quality.
- New right-of-way (including a business acquisition) would be needed to extend 7th Street between Baker and Kalispell Avenues.
- This option would be among those with the highest overall cost due to the provision of a new bridge and required right-of-way acquisitions.
- This option incorporates one-way traffic circulation on Spokane and Baker Avenues in downtown Whitefish.
- The lane configuration on 2nd Street is not consistent with local desires.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

The Modified ROD Configuration was not advanced because one-way traffic flows and a 3-lane configuration on 2nd Street are not consistent with local plans and desires.

6.5.8. Contra Flow Configuration



CONTRA-FLOW ADVANTAGES:

- The operational reviews showed this configuration would likely perform at a high level under both current (2003) and future (2030) conditions.
- The option was the best performing configuration of those analyzed for this study.
- The alternate route for trucks via 7th Street and Baker Avenue could help reduce truck traffic through the downtown.
- Circulation benefits and enhanced east-west connectivity can be realized by the provision of a bridge at 7th Street and extending 7th Street east of Spokane Avenue.
- Some parking would be retained along both sides of 2nd Street between Spokane and Baker Avenues.
- The configuration maintains two-way traffic flows in the downtown.

CONTRA-FLOW DISADVANTAGES:

- Baker Avenue south of the Whitefish River crossing and the existing Baker Avenue bridge would need to be widened to accommodate a 3-lane roadway.
- Additional right-of-way would be required along portions of Baker Avenue from the Whitefish River crossing to 7th Street.
- The Whitefish River would be affected by work at the Baker Avenue crossing.
- Building a new bridge would affect the Whitefish River and associated wetlands and work within the river would be subject to federal, state, and local regulations.
- New right-of-way (including a business acquisition) would be needed to extend 7th Street between Baker and Kalispell Avenues.
- Parking along Spokane and Baker Avenues south of 2nd Street would be eliminated.
- This option would be among those with the highest overall cost.

CONCLUSION: ADVANCED TO SECOND-LEVEL SCREENING

This configuration was advanced because the operational reviews showed the Contra-Flow option to be the best performing option under current and future conditions. The 7th Street connection is beneficial since it would efficiently accommodate corridor traffic and enhance east-west connectivity within the community. The option is also generally consistent with concepts and recommendations presented in local plans.

6.5.9. Truck Route Configuration



TRUCK ROUTE ADVANTAGES:

- This configuration would result in a minor increase in roadway capacity along the corridor since Spokane Avenue and 2nd Street would remain as 2-lane facilities.
- The Truck Route Configuration would be expected to perform adequately under both existing and future conditions.
- The option provides an alternate route for trucks.
- The 7th Street bridge and 7th Street connection between Spokane and Kalispell Avenues enhances circulation and east-west connectivity.
- The option would retain some parking along both sides of 2nd Street between Spokane and Baker Avenues and along Spokane Avenue where it is currently permitted.
- Consistent with local plans, the configuration would maintain two-way traffic flows in the downtown and provides a 2-lane configuration on 2nd Street.

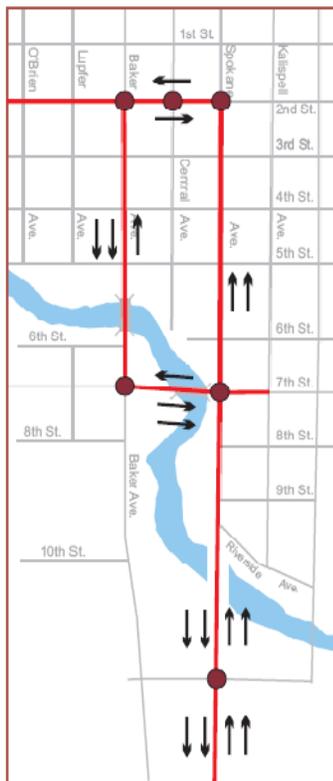
TRUCK ROUTE DISADVANTAGES:

- The Truck Route configuration ranked among the worst performing options for two relevant measures of effectiveness under future (2030) conditions.
- Baker Avenue south of the Whitefish River crossing and the existing Baker Avenue bridge would need to be widened to accommodate a 3-lane roadway.
- Additional right-of-way would be required along portions of Baker Avenue from the Whitefish River crossing to 7th Street.
- The Whitefish River would be affected by work at the Baker Avenue crossing.
- Building a new bridge at 7th Street would affect the Whitefish River and associated wetlands and work within the river would be subject to federal, state, and local regulations.
- New right-of-way (including a business acquisition) would be needed to extend 7th Street between Baker and Kalispell Avenues.
- The configuration would eliminate parking along Baker Avenue south of 2nd Street.
- This option would be among those with the highest overall cost.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

While this option may help reduce the presence of trucks on 2nd Street, the Truck Route Configuration was not advanced because it would operate at only an adequate level under future conditions. Although this option is sensitive to local plans, it does not perform as well as another option (the Contra-Flow Configuration) based on a comparison of key measures of effectiveness. The costs and potential environmental effects of the Truck Route configuration are notable due to the provision of a bridge at 7th Street.

6.5.10. Downtown Business District Master Plan Configuration



DOWNTOWN MASTER PLAN CONFIGURATION

ADVANTAGES:

- This configuration would provide an overall increase in corridor capacity.
- The configuration would likely perform adequately under both current (2003) and future (2030) conditions.
- The configuration provides an alternate route for trucks that could help reduce truck traffic through the downtown.
- The 7th Street connection provides circulation benefits, enhances east-west connectivity, and could help decrease traffic volumes on other corridor roadways.
- Some parking along both sides of 2nd Street between Spokane and Baker Avenues and along one side of Spokane Avenue could be retained.
- This configuration was recommended in the Whitefish Downtown Business District Master Plan.

DOWNTOWN MASTER PLAN CONFIGURATION DISADVANTAGES:

- Spokane Avenue north of 7th Street would have a one-way northbound configuration.
- Baker Avenue south of the Whitefish River and the existing Baker Avenue bridge would need to be widened to accommodate a 3-lane roadway.
- Additional right-of-way would be required along portions of Baker Avenue from the Whitefish River crossing to 7th Street.
- Building a new bridge at 7th Street would affect the Whitefish River and associated wetlands and work within the river would be subject to federal, state, and local regulations.
- New right-of-way (including a business acquisition) would be needed to extend 7th Street between Baker and Kalispell Avenues.
- Parking along one side of Baker Avenue south of 2nd Street would be eliminated.
- This configuration is among a group of options with the highest overall cost.

CONCLUSION: NOT ADVANCED TO SECOND-LEVEL SCREENING

The Downtown Master Plan Configuration was not advanced due to its anticipated network performance. Although it performs adequately compared to other options, the configuration does not rank among the best performing options based on key measures of effectiveness. Operational reviews suggest the Contra-Flow Configuration would operate more effectively than this option. Like other options with a bridge at 7th Street, the Downtown Master Plan Configuration is costly and its potential environmental effects are notable.

6.6 Recommendations Based on First-Level Screening

6.6.1 Options Not Advanced to Second-Level Screening

Eight corridor improvement options were eliminated from further evaluation based on the initial operational reviews and the consideration of the criteria associated with other first-level screening considerations. The options that were dropped after first-level screening are shown in **Table 6-5**.

Table 6-5: Options Not Advanced to Second-Level Screening

Configurations Evaluated in Detail in the FEIS/ROD	Configurations Developed After the FEIS/ROD
Alternative A (Four Lane) Alternative C (Couplet 1) Alternative C (Couplet 2) FEIS/ROD PREFERRED ALTERNATIVE Alternative C (Couplet 4)	Modified ROD Configuration Truck Route Configuration Downtown Business District Master Plan Configuration

6.6.2 Options Advanced to Second-Level Screening

Two configurations – the **Alternative C (Offset) Configuration** and the **Contra-Flow Configuration** – were selected for more extensive review based on the results of the first-level screening. All screening categories were considered to identify the option(s) that best satisfy the overall corridor vision and the associated goals supporting the vision. The major reasons why the Alternative C (Offset) and Contra-Flow Configurations were recommended for more detailed study are highlighted below.

- The operational reviews showed the Contra-Flow Configuration ranked as the one of the best performing options under current and future conditions. Providing a road connection between Spokane and Baker Avenues at 7th Street efficiently accommodates corridor traffic and enhances east-west connectivity within the community. The two-lane configuration on 2nd Street and the two-way traffic circulation associated with the Contra-Flow Configuration is also consistent with recommendations in local plans.
- Although the Contra-Flow Configuration initially performs comparably to other options that provide a bridge at 7th Street and two-lanes on 2nd Street (like the Truck Route and Downtown Master Plan Configurations), the Contra-Flow Configuration outperforms these options under future traffic conditions.
- While several other couplet configurations performed similarly or better, only the Alternative C (Offset) Configuration provides for two-way traffic flows on Spokane and Baker Avenues in the downtown area favored by local residents and the

business community. The other couplet configurations rely on one-way traffic flows using Spokane and Baker Avenues to handle corridor traffic. The Offset Configuration requires less out-of-direction travel than the one-way couplet options.

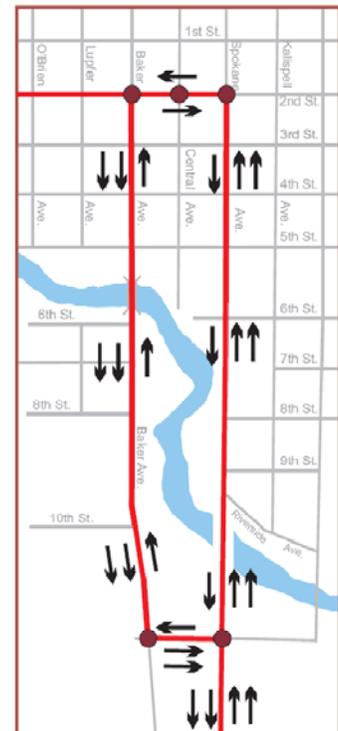
- Due to the anticipated high cost of providing a bridge at 7th Street and its associated environmental effects, there is merit to evaluating an option – like the Alternative C (Offset) Configuration – that does not include a bridge.
- The Alternative C (Offset) Configuration reflects the existing street network and does not require adding any new roadway links.
- Both options offer alternate routing possibilities for trucks passing through Whitefish and could help reduce the number of such vehicles on 2nd Street between Spokane and Baker Avenues.
- The options include a configuration previously considered in the U.S. Highway 93 Somers to Whitefish West FEIS and a configuration developed after the EIS that reflects the type of transportation network improvements currently recommended in local plans.

6.6.3 Modification to Alternative C (Offset) Configuration

The initial operational review showed the overall performance of the Alternative C (Offset) option is inhibited by its design configuration on 2nd Street. The option’s performance suffers from a lack of dedicated turn lanes at several signalized intersections. The provision of two westbound through lanes and one eastbound through lane on 2nd Street also conflicts with local desires for maintaining a two-lane configuration on the roadway.

As discussed above, the Alternative C (Offset) Configuration has several characteristics that suggest it may be a viable option for the corridor. The operational review showed traffic flows on 2nd Street could be more effectively handled under the Offset Configuration by providing one through lane in each direction, prohibiting left turns at Central Avenue, and adding dedicated turn lanes at the signalized intersections at Spokane and Baker Avenues. Modifying the option in this manner should help the Alternative C (Offset) Configuration better address overall corridor needs.

Making these operational revisions on 2nd Street represents a notable change from the Alternative C (Offset) Configuration initially reviewed. Therefore, the **Modified Alternative C (Offset) Configuration** (shown at right) is considered to be a new and different configuration. Since the Modified





Alternative C (Offset) would likely perform better and be more consistent with local plans, the revised configuration was advanced instead of the Alternative C (Offset) Configuration.