

7.0 TRADEOFFS BETWEEN CONFIGURATIONS OF INTEREST FOR THE CORRIDOR

This Part further evaluates the two configurations advanced from the initial screening of improvement options and strategies – the Contra-Flow and the Modified Alternative C (Offset) Configurations. These configurations have the following similarities and differences:

- The configurations provide additional capacity to the corridor by incorporating three travel lanes on much of Spokane Avenue between 2nd and 13th Streets and three travel lanes on all or portions of Baker Avenue between 2nd and 13th Streets.
- Both configurations would change geometric conditions at key signalized intersections to improve traffic flows and accommodate turning movements by trucks.
- Both configurations would maintain two through travel lanes on 2nd Street and provide auxiliary turn lanes at 2nd Street’s intersections with Spokane and Baker Avenues.
- The Contra-Flow configuration includes a bridge at 7th Street and would extend 7th Street between Spokane and Kalispell Avenues; however, the Modified Alternative C (Offset) does not include either of these features.
- The Modified Alternative C (Offset) configuration incorporates Baker Avenue between 2nd and 13th Streets and 13th Street between Baker and Spokane Avenue to help manage corridor traffic flows.
- The Contra-Flow option uses Baker Avenue between 2nd and 7th Streets and the new 7th Street connection between Baker and Spokane Avenues to move traffic through the corridor.

This Part includes a discussion of how these design configurations address the second-level screening criteria for the major screening categories identified for the study. These screening criteria can be found in **APPENDIX D**. The following pages compare and contrast the two corridor configurations of interest.

7.1 Capacity and Traffic Operations

Urban road systems are generally controlled by the operation of their major intersections. Intersection failures reduce the number of vehicles that can be accommodated during peak travel hours at specific locations and lessen a roadway corridor’s overall traffic carrying capacity. Travel demand modeling was conducted for both design configurations to help predict traffic volumes and generate information needed to assess the likely operation of the signalized and unsignalized intersections within the corridor.

7.1.1 Operation and Performance of Signalized Intersections

7.1.1.1 Contra-Flow Configuration

Signals currently control traffic flows at four corridor locations (Spokane Avenue and 13th Street, Spokane Avenue and 2nd Street, 2nd Street and Central Avenue, and 2nd Street and Baker Avenue). With the Contra-Flow configuration, traffic signals would be added at Spokane Avenue and 7th Street and at Baker Avenue and 7th Street to regulate traffic flows across the new 7th Street bridge. The operational analyses assumed left turns from 2nd Street onto Central Avenue would be prohibited and other key intersections were reconfigured to include appropriate dedicated turn lanes.

The operations at each of the signalized intersections were analyzed based on projected current and future peak hour traffic volumes generated by the travel demand model. Existing signal timings were used to analyze current conditions and optimal signal timing was applied to each signalized intersection to obtain future conditions at that location. **Table 7-1** shows the anticipated current and future LOS at signalized intersections in the corridor with the Contra-Flow configuration.

**Table 7-1: Overall Level of Service at Signalized Intersections
Contra-Flow Configuration**

Signalized Intersection	Current (2003) LOS	Future (2030) LOS
Spokane Avenue/13th Street	A	B
Spokane Avenue/7th Street	B	B
Spokane Avenue/2nd Street	B	B
2nd Street/Central Avenue	B	B
2nd Street/Baker Avenue	C	C
Baker Avenue/7th Street	B	F

A performance assessment and information about anticipated peak hour volumes, delays, and volume to capacity ratios for these signalized intersections under current and future conditions can be found in **APPENDIX E**.

The analyses show that all signalized intersections would operate at an overall rating of LOS C or better under current peak hour conditions. All signalized intersections within the corridor except for the intersection of Baker Avenue and 7th Street would operate at LOS C or above under future (2030) conditions. Based on the assumed lane configuration, analyses show the intersection of Baker Avenue and 7th Street would experience a poor LOS due to the vehicle delays expected along the north and west approaches to the intersection. Future traffic volumes at this intersection could be effectively accommodated by modifying the intersection layout.

The LOS C ratings shown for the intersection of 2nd Street and Baker Avenue assume necessary turn lanes are in place on all approaches at the intersection. Adding a dedicated left-turn lane for eastbound traffic on the west approach, dedicated left and right-turn lanes for westbound traffic on the east approach, and a dedicated right-turn lane for southbound traffic on the north approach would benefit operations at the intersection. However, these improvements cannot be fully completed until a project to relocate City Hall and redevelop the property it occupies moves forward. The intersection currently operates at LOS D and its performance would continue to be inhibited until necessary turning lanes are provided.

7.1.1.2 Modified Alternative C (Offset) Configuration

Signals would control traffic flows at four existing corridor locations (Spokane Avenue and 13th Street, Spokane Avenue and 2nd Street, 2nd Street and Central Avenue, and 2nd Street and Baker Avenue). Additionally, the intersection at Baker Avenue and 13th Street would be controlled by a new traffic signal instead of a four-way stop under the Modified Alternative C (Offset) configuration. With the exception of 2nd Street and Central Avenue, necessary dedicated turn lanes would be added to these key signalized intersections within the corridor. Like the Contra-Flow configuration, it was recommended left turns from 2nd Street onto Central Avenue would be prohibited.

The following table summarizes the anticipated current and future LOS at signalized intersections in the corridor with the Modified Alternative C (Offset) configuration.

Table 7-2: Overall Level of Service at Signalized Intersections Modified Alternative C (Offset) Configuration

Signalized Intersection	Current (2003) LOS	Future (2030) LOS
Spokane Avenue/13th Street	A	C
Spokane Avenue/2nd Street	B	B
2nd Street/Central Avenue	B	B
2nd Street/Baker Avenue	C	C
Baker Avenue/13th Street*	B	B

* Assumes intersection is changed from its existing stop-controlled condition.

APPENDIX E includes a performance assessment and information about anticipated peak hour volumes, delays, and volume to capacity ratios for these signalized intersections under current and future conditions.

The analyses show all signalized intersections in the corridor would operate at an overall rating of LOS C or better under current and future peak hour conditions under the Modified Alternative C (Offset) configuration.

As discussed earlier, the LOS ratings for the intersection of 2nd Street and Baker Avenue are somewhat misleading since necessary turn lanes must be in place on all approaches for the intersection to function at LOS C. The intersection would likely continue to operate at LOS D or below until all necessary turning lanes are provided.

7.1.2 Operation and Performance of Unsignalized Intersections

7.1.2.1 Contra-Flow Configuration

Table 7-3 shows the anticipated current and future LOS at unsignalized intersections in the corridor with the Contra-Flow configuration. Currently, only three unsignalized intersections operate at LOS D or below during the peak hour. However, the analyses show all but one of the intersections would operate at or below LOS D under future peak hour conditions.

**Table 7-3: Level of Service at Unsignalized Intersections
Contra-Flow Configuration**

Unsignalized Intersection (Stop-Controlled Side Streets)	Current (2003) LOS	Future (2030) LOS
Spokane Avenue/Riverside	B	C
Spokane Avenue/9th Street	A	F
Spokane Avenue/8th Street	E	F
Spokane Avenue/6th Street	D	F
Spokane Avenue/5th Street	C	F
Spokane Avenue/4th Street	C	F
Spokane Avenue/3rd Street	B	D
Baker Avenue/3rd Street	C	F
Baker Avenue/4th Street	C	F
Baker Avenue/5th Street	D	F
Baker Avenue/6th Street	C	F
Baker Avenue/8th Street	B	F
Baker Avenue/10th Street	C	F

It is important to recognize the LOS ratings are based on the movement that shows the greatest average delay at the intersection (usually a left turn or a through movement from the stop-controlled street). The poor LOS ratings predicted for the unsignalized intersections along Spokane and Baker Avenues are the result of delays for side street traffic and not due to poor traffic flows on the main roadways.

Traffic on some side streets already experiences delays when attempting to cross or turn left onto Spokane or Baker Avenues during peak travel periods. The volume of two-way traffic on these roadways is expected to increase in the future and side street movements

would be inhibited because fewer gaps in traffic flows would be available during peak hours. Additionally, traffic attempting left turns off of Spokane or Baker Avenue may experience delays at unsignalized intersections due to high anticipated traffic volumes in the future.

The stop-controlled intersection of Baker Avenue and 13th Street is not part of the Contra-Flow configuration. However, travel demand modeling produced traffic volume information needed to analyze the current and future operation of this intersection with the configuration in place. The LOS analysis showed a poor service level (LOS D and LOS F) resulting at the intersection under both existing and future conditions. This suggests the traffic volumes at this intersection are too high to be adequately handled using stop control and the location needs to be signalized in the future. Signalizing this intersection would provide a LOS of A under both existing (2003) and future (2030) conditions. The City of Whitefish has already identified this intersection as a potential location for a new traffic signal.

7.1.2.2 Modified Alternative C (Offset) Configuration

The anticipated current and future LOS at unsignalized intersections in the corridor with the Modified Offset configuration is shown in **Table 7-4**. As the table illustrates, six unsignalized intersections within the corridor currently operate at LOS D or below. By 2030, 13 of the 14 unsignalized intersections may operate at LOS F during the peak hour.

**Table 7-4: Level of Service at Unsignalized Intersections
Modified Alternative C (Offset) Configuration**

Unsignalized Intersection (Stop-Controlled Side Streets)	Current (2003) LOS	Future (2030) LOS
Spokane Avenue/Riverside	C	B
Spokane Avenue/9th Street	F	F
Spokane Avenue/8th Street	E	F
Spokane Avenue/6th Street	F	F
Spokane Avenue/5th Street	E	F
Spokane Avenue/4th Street	E	F
Spokane Avenue/3rd Street	C	F
Baker Avenue/3rd Street	C	F
Baker Avenue/4th Street	C	F
Baker Avenue/5th Street	D	F
Baker Avenue/6th Street	C	F
Baker Avenue/7th Street	C	F
Baker Avenue/8th Street	B	F
Baker Avenue/10th Street	C	F

Like the Contra-Flow configuration, the poor LOS at unsignalized intersections along Spokane and Baker Avenues can be attributed to the delays that side street traffic would likely experience when attempting to cross or turn left onto these roadways during peak hours. The decrease in LOS shown for future conditions is due to the high anticipated traffic volumes using Spokane and Baker Avenues during peak hours.

7.1.3 Overall Performance of the Configurations

7.1.3.1 Contra-Flow Configuration

As noted in **Part 6.0**, the initial operational reviews show the Contra-Flow Configuration to be one of the best performing options under current and future conditions. Providing a road connection between Spokane and Baker Avenues at 7th Street accommodates corridor traffic and enhances east-west connectivity within the community. With the provision of appropriate improvements at key intersections, Spokane Avenue, 2nd Street, and Baker Avenue would operate acceptably. The anticipated performance of corridor roadways under the Contra-Flow configuration is discussed in the paragraphs below.

Spokane Avenue

The addition of a second northbound lane increases capacity on Spokane Avenue under the Contra-Flow configuration. Similarly, the southbound capacity is also increased on Spokane Avenue between 7th and 13th Streets due to the addition of a second southbound lane.

Year 2030 modeled volumes along Spokane Avenue ranged from about 10,000 north of 7th Street to about 25,000 south of 7th Street. Based on these volume projections, Spokane Avenue would approach the capacity of a four-lane roadway south of 7th Street but could adequately be served by a three-lane roadway north of 7th Street.

2nd Street

The Contra-Flow configuration generally maintains one eastbound and one westbound travel lane along 2nd Street between Spokane Avenue and Baker Avenue and provides necessary turn lanes at Spokane and Baker Avenues.

Travel demand modeling shows a 10 to 25% decrease in traffic volumes along 2nd Street when compared to the future operation of the existing corridor configuration. This decrease can largely be attributed to the addition of the 7th Street connection between Spokane Avenue and Baker Avenue. This connection provides an alternate east-west route along the corridor which helps draw traffic from 2nd Street. The travel demand model results show that the future (2030) traffic volumes along 2nd Street would not approach the typical capacity for a two-lane roadway.

7th Street

The Contra-Flow configuration would provide a new east-west connection between Baker Avenue and Kalispell Avenue along 7th Street. The extension of 7th Street between Baker and Kalispell Avenues is beneficial to traffic flows and circulation within the community. Currently, 2nd Street provides the only continuous east-west link across the community and there is no link between Spokane and Baker Avenues between 5th and 13th Streets.

When compared to future conditions without such improvements, travel demand modeling shows the 7th Street connection could result in modest (about 15-20%) decreases in traffic on portions of Spokane Avenue, on 2nd Street, and sections of Baker Avenue.

Baker Avenue

The addition of a second southbound lane increases capacity on Baker Avenue under the Contra-Flow configuration. The Contra-Flow configuration does not incorporate Baker Avenue south of 7th Street; however, the operational review for this study examined existing and future conditions on this portion of Baker Avenue.

The travel demand modeling for the Contra-Flow configuration shows a 5 to 25% increase in volumes on Baker Avenue between 2nd and 7th Streets under future (2030) conditions. The increase in volumes along this section of Baker Avenue could be adequately handled by a three-lane roadway. Modeling also indicated the existing two-lane roadway on Baker Avenue between 7th and 13th Streets may approach or exceed its capacity under future (2030) conditions.

13th Street

The Contra-Flow configuration relies on a new road connection between Spokane and Baker Avenues at 7th Street and does not incorporate 13th Street. However, since Baker Avenue extends south of 7th Street and 13th Street already links Spokane and Baker Avenues, the operational review for the Contra-Flow configuration acknowledged this existing condition.

The travel demand model results show a 50-60% decrease in traffic volumes along 13th Street under both existing and future conditions. This decrease in volume can largely be attributed to the provision of the 7th Street connection. The new east-west connection draws traffic that would otherwise use 2nd and 13th Street for travel between Spokane and Baker Avenues.

7.1.3.2 Modified Alternative C (Offset) Configuration

Operational reviews show the Modified Offset configuration would initially provide a high performance level but its performance declines under future conditions. The option enhances the capacity of the existing roadway network and does not provide any new roadway links that would improve traffic circulation within the community. With the provision of appropriate turn lanes at key intersections, particularly 2nd Street's intersections with Spokane and Baker Avenues, corridor roadways would operate acceptably in the future. The anticipated performance of corridor roadways under this configuration is discussed below.

Spokane Avenue

The addition of a second northbound lane increases the capacity on Spokane Avenue under the Modified Offset configuration. Spokane Avenue would transition from five-lanes south of 13th Street to a three-lane roadway between 2nd and 13th Streets.

Modeling shows traffic on Spokane Avenue would likely increase by about 10 to 30% when compared with modeled volumes for the corridor without any improvements under both existing and future conditions. Future modeled traffic volumes along Spokane Avenue range from just under 10,000 vehicles south of 2nd Street to more than 18,000 vehicles between 6th Street and 13th Street. The capacity benefits and reduced delays due to the addition of another northbound travel lane would be responsible for the increased use of Spokane Avenue.

Considering these modeled volumes, a three-lane roadway would be adequate between 2nd and 6th Streets. However, the portion of Spokane Avenue between 6th and 13th Streets may approach or exceed the capacity of a three-lane roadway under future conditions.

2nd Street

The Modified Offset configuration generally maintains one eastbound and one westbound travel lane along 2nd Street between Spokane Avenue and Baker Avenue and provides necessary turn lanes at Spokane and Baker Avenues.

Modeling for the configuration showed traffic volumes on 2nd Street between Spokane and Baker Avenues ranging from 8,000 to 9,000 vehicles under current conditions. The modeled volumes were about 10 to 15% higher than the volumes shown by the model for current conditions without any corridor improvements. Modeled future traffic volumes on 2nd Street approached 11,500 vehicles and were similar to the volumes predicted by the model for future conditions without any corridor improvements. As a general indicator, the capacity of a two-lane roadway may be approached or exceeded when volumes reach about 12,000 vehicles. The modeled future volumes for this portion of 2nd Street approach this capacity threshold.

The Modified Offset configuration maintains 2nd Street as a two-lane and does not link Spokane and Baker Avenues at 7th Street.

The operational review shows the additional westbound through lane on 2nd Street associated with most of the configurations from the FEIS does little to help traffic operations. Due to the short distance between intersections along this portion of 2nd Street, the capacity benefit afforded by the additional travel lane is unlikely to be realized because traffic in the through lanes would frequently be delayed by turning vehicles. These delays can be avoided if turning movements are separated from through movements.

Analyses indicate traffic flows on 2nd Street can be more effectively handled 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. As noted earlier, the signalized intersections along 2nd Street were shown to operate at an acceptable LOS under both current and future conditions with these modifications. This implies that 2nd Street would function adequately in the future under the Modified Offset configuration.

Baker Avenue

The addition of a second southbound lane increases the capacity of Baker Avenue between 2nd and 13th Streets under this configuration.

Modeled volumes on Baker Avenue with the Modified Offset configuration were typically less than 10,500 vehicles for current conditions. This is similar to modeled volumes for Baker Avenue without any corridor improvements. The model predicted 14,000 to 20,000 vehicles on the roadway between 2nd and 13th Streets under future conditions. These volumes suggest Baker Avenue would have sections that may exceed the capacity of a three-lane roadway by 2030. Like Spokane Avenue, the capacity and reduced delays afforded by the addition of another southbound travel lane could increase the use of this roadway.

13th Street

The Modified Offset configuration would provide a three-lane roadway (two eastbound lanes and one westbound lane) on 13th Street with additional widening at the intersections for necessary turn lanes.

The travel demand model for this configuration shows an increase in traffic volumes on 13th Street under both existing and future conditions. The model projects 13th Street to carry about 5,400 vehicles under existing conditions and about 11,500 vehicles in 2030. The modeled traffic volumes for 13th Street suggest a three-lane roadway would be adequate under future conditions.

7.1.4 Accommodation of Truck Traffic

Truck traffic on US 93 adversely affects traffic operations, contributes to congestion, occasionally presents safety concerns, and is inconsistent with the desires presented in local plans. The presence of substantial numbers of trucks inhibits traffic flows on US 93 and affects traffic operations at signalized intersections in the downtown area. Community input during the numerous planning efforts in Whitefish reiterated these concerns and called for the final design of US 93 to include measures that would mitigate traffic through the community to the extent practicable.

Given that Spokane Avenue and 2nd Street are part of a state highway and on the National Highway System, commercial vehicle traffic cannot be prohibited from using these public roads.

7.1.4.1 Contra-Flow Configuration

Corridor roadways could be improved to accommodate turns by large vehicles at all signalized intersections. This would involve providing dedicated turning lanes, adequate curb radii on corners, and may require some minor widening for receiving lanes. Trucks would be diverted from Spokane Avenue at 7th Street and diverted from 2nd Street at Baker Avenue. Southbound trucks on Baker would cross the new 7th Street bridge and rejoin Spokane Avenue. This configuration would reduce the number of trucks using Spokane Avenue and 2nd Street in downtown Whitefish.

7.1.4.2 Modified Alternative C (Offset) Configuration

Like the Contra-Flow configuration, corridor roadways could be improved to accommodate turns by large vehicles at all signalized intersections. The only viable locations to divert trucks from Spokane Avenue and 2nd Street with this configuration would be at the intersection of Spokane Avenue and 13th Street and at the intersection of 2nd Street and Baker Avenue.

Reduced truck traffic on Spokane Avenue north of 13th Street and 2nd Street could be realized if a truck route using Baker Avenue and 13th Street was established. The potential for noise-related effects to residences along the roadway south of the Whitefish River has been identified as a concern with shifting truck traffic onto Baker Avenue. Commercial areas along Baker Avenue north of 13th Street would be less sensitive to traffic-related noise.

7.1.5 Tradeoffs Between the Configurations

The Contra-Flow and Modified Alternative C (Offset) configurations were reviewed with respect to the second-level screening criteria for **Capacity Considerations** found in **APPENDIX D**. A summary of how these options address the criteria in this screening category is provided below.

SECOND-LEVEL SCREENING CONSIDERATIONS	CONFIGURATIONS UNDER FINAL REVIEW	
	Contra-Flow Configuration	Modified Alternative C (Offset) Configuration
<i>V/C, LOS, average travel time and delay, other measures of effectiveness</i>	ADVANTAGE	
<i>Would the option improve traffic flows for trucks through the City?</i>	ADVANTAGE	
<i>Would key intersections be designed to better accommodate truck traffic and turning movements?</i>	EQUAL	
<i>Could the option reduce the number of driveway intersections along corridor?</i>	EQUAL	
<i>Would the option potentially support increased multimodal transportation facilities?</i>	EQUAL	

The Contra-Flow configuration was given the advantage over the Modified Alternative C (Offset) configuration because the option showed better overall performance for relevant measures of effectiveness. The operational review suggests the Contra-Flow configuration would perform better than the Modified Offset configuration in the future. The enhancement of traffic circulation within the community afforded by the 7th Street connection also gives the option an advantage over the Modified Offset configuration.

Both options provide alternate routes for trucks to use Baker Avenue instead of Spokane Avenue and 2nd Street. The Contra-Flow option would allow for trucks to use Spokane Avenue, 7th Street, and Baker Avenue for travel through the corridor. The Modified Offset configuration would require trucks to use Baker Avenue between 2nd and 13th Streets and 13th Street to travel the corridor. The advantage was given to the Contra-Flow configuration since a residential area along Baker Avenue south of 7th Street would be affected less by truck movements than with the Modified Offset configuration. Both configurations could include modifications at intersections that accommodate truck traffic and provide appropriate turn lanes.

If improvement options are forwarded into project development, both configurations could be designed to better manage access along corridor roadways by combining approaches or eliminate unnecessary approaches. Corridor roadways could be designed to accommodate pedestrian and bicyclist travel and future transit facilities.

7.2 Safety Considerations

7.2.1 Contra-Flow Configuration

This option provides an increase in overall safety on US 93 when compared to existing conditions due to the added capacity of corridor roadways and improvements at key intersections. The Contra-Flow configuration incorporates a non-typical lane arrangement (two lanes in one direction and one opposing lane) on Spokane and Baker Avenues and on 7th Street between these streets. This lane arrangement could increase the crash potential on these roadways. Increased left turn conflicts could be expected since southbound traffic on Spokane Avenue and northbound traffic on Baker Avenue would be required to cross two opposing lanes when making such turns.

New traffic signals would be installed on both Spokane and Baker Avenues at 7th Street. These new signals would introduce additional locations for traffic conflicts to occur due to the number of turning movements expected at these intersections.

The potential for congestion and conflicts between through traffic and motorists attempting to park would be eliminated with the removal of on-street parking along portions of Spokane and Baker Avenues.

Pedestrians crossing Spokane and Baker Avenues would need to cross three travel lanes instead of the two lanes. Pedestrian movements at signalized intersections on Spokane and Baker Avenues, 2nd Street, and 7th Street would continue to be regulated by signals.

7.2.2 Modified Alternative C (Offset) Configuration

The added capacity and intersection improvements associated with this configuration would be expected to provide an overall increase in safety within the corridor. Like the Contra-Flow option, the Modified Offset configuration employs a non-typical lane arrangement on Spokane and Baker Avenues and would have a similar potential for an increase in left turn conflicts on Spokane and Baker Avenues.

The removal of on-street parking along portions of Spokane and Baker Avenues would eliminate the potential for conflicts between through traffic and motorists attempting to park along these roadways. The anticipated volumes of traffic on Baker Avenue south of the Whitefish River and 13th Street may make access to and from businesses and public buildings along the street more difficult and increase the potential for traffic conflicts.

A new traffic signal would be provided at Baker Avenue and 13th Street to replace the existing stop controls at the intersection. National studies suggest, in many cases, the number of crashes and crash rates typically increase as the result of installing traffic signals at intersections. Since this intersection is already controlled by stop signs on all

legs, the change in traffic control may not result in notable changes in the number of crashes or the crash rate at the intersection.

Pedestrians crossing Spokane and Baker Avenues would need to cross three travel lanes instead of two lanes. Pedestrian crossings at signalized intersections on Spokane and Baker Avenues, 2nd Street, and 13th Street would continue to be regulated by signals.

7.2.3 Tradeoffs Between the Configurations

The Contra-Flow and Modified Alternative C (Offset) configurations and were reviewed against the screening criteria for the **Safety Considerations** category. A summary of how these options address the second-level screening criteria for this category is provided below.

SECOND-LEVEL SCREENING CONSIDERATION	CONFIGURATIONS UNDER FINAL REVIEW	
	Contra-Flow Configuration	Modified Alternative C (Offset) Configuration
<i>Does the option meet MDT's current design standards for urban principal arterials?</i>	EQUAL	
<i>Does the option address identified common factors identified in crash analysis?</i>	EQUAL	
<i>Does the option have the potential to reduce traffic conflicts?</i>	ADVANTAGE	
<i>Would the option change the manner in which trucks are accommodated on US 93?</i>	EQUAL	
<i>Does the option have the potential to reduce the number of driveway access points along the corridor?</i>	EQUAL	
<i>Does the option include improvements to enhance safety or mobility for pedestrians and bicyclists?</i>	EQUAL	

The Contra-Flow configuration was given an advantage over the Alternative C (Offset) configuration because the future increases in traffic along Baker Avenue north of 13th Street projected for the Offset option may increase the potential for traffic conflicts. In most other respects, the options are similar in their ability to address the screening criteria for this category.

7.3 Consistency with MDT's Current Design Standards

7.3.1 Contra-Flow Configuration

The Contra-Flow could be designed to resolve geometric deficiencies within the corridor and generally comply with MDT's current standards for National Highway System routes and urban principal arterials. The option would include the corner radii modifications necessary to facilitate truck movements at 2nd Street's intersections with Spokane and Baker Avenues.

Widening would be needed on Baker Avenue from the Whitefish River to 7th Street to accommodate the proposed road cross-section.

7.3.2 Modified Alternative C (Offset) Configuration

Like Contra-Flow configuration, the Modified Alternative C (Offset) configuration could be designed and constructed in a manner that resolves identified geometric deficiencies and generally complies with appropriate MDT design guidance for urban principal arterials.

Widening would be needed on Baker Avenue from the Whitefish River southward and along 13th Street between Spokane and Baker Avenues to accommodate the proposed road cross-section consistent with MDT's Current Design Standards for Urban and Developed Areas.

7.3.3 Tradeoffs Between the Configurations

These improvement option configurations are judged to be equal in their ability to meet MDT's current design standards. Both configurations could require design exceptions for turn lane taper rates along 2nd Street and for any variances from 12-foot-wide lanes on corridor roadways.

7.4 Potential Environmental Effects

7.4.1 Contra-Flow Configuration

The most apparent potential environmental effects associated with the Contra-Flow configuration would be at 7th Street where a new bridge and road extension are proposed. The new connection at 7th Street would occur at a location where the river channel and its associated riparian zone are substantially wider than most locations in the area. Consequently, a bridge about 575 feet long would be required to cross the Whitefish River at 7th Street. The active channel of the river could be easily spanned; however, the new bridge would cross a delineated floodplain and the construction of bridge piers would impact riparian wetlands.

The existing bridge over the Whitefish River on Baker Avenue would also have to be widened or replaced to accommodate the proposed three-lane roadway associated with the Contra-Flow option.

Several federal, state, and local water regulations protecting water would apply to work in or near the Whitefish River. The following permits or authorizations may be needed for building a new bridge at 7th Street and widening or replacing the existing bridge on Baker Avenue:

- “Nationwide” or Individual Section 404 Permit (Corps of Engineers)
- Stream Protection Act - SPA 124 Notification (Montana Fish, Wildlife & Parks)
- Short-term Water Quality Standard for Turbidity - 318 Authorization (MDEQ)
- Section 401 Certification (MDEQ)
- Floodplain Development Permit (City of Whitefish)
- Exemption to Critical Areas Ordinance (City of Whitefish)

While a new bridge and road connection at 7th Street could be designed in a manner that minimizes impacts to the Whitefish River and associated wetlands, ensuring compliance with applicable federal, state, and local regulations can sometimes be difficult or contentious. For example, the Corps of Engineers may resist issuing a 404 permit for the bridge project if realistic alternatives exist that could result in lesser impacts to “Waters of the U.S.” including special aquatic sites and jurisdictional wetlands.

Compliance with Section 404 requires a permit from the Corps of Engineers and the design would need to consider measures to avoid or minimize impacts to jurisdictional waters or wetlands. To receive a 404 permit, the design would need to demonstrate the proposed is the least environmentally damaging practicable alternative to achieve the purpose. Mitigation would be required for unavoidable impacts to waters or wetlands resulting from the bridge work associated with the Contra-Flow option.

The Critical Areas Ordinance, adopted by the City in early 2008, indicates the community places a high priority on protecting water bodies and wetlands in the Whitefish area.

Contaminated sediments are also known to exist at various locations along the Whitefish River. The bridge construction associated with Contra-Flow configuration offers the potential for disturbing the sediments. It should be noted that a cleanup project is underway along the Whitefish River that may remove this contaminated material.

The improvements to Spokane Avenue, 2nd Street, and Baker Avenue (between 2nd Street and the Whitefish River) associated with the Contra-Flow option could generally be provided within the existing right-of-way for these roadways. Areas of new right-of-way acquisition are anticipated along Baker Avenue south of the Whitefish River to accommodate roadway widening. Minor amounts of right-of-way may be required at

key intersections to accommodate geometric modifications and the addition of turn lanes. As noted previously, right-of-way limitations exist at the intersection of 2nd Street and Baker Avenue making the provision of necessary turn lanes on all approaches difficult at this time.

The new connection at 7th Street would require new right-of-way along the bridge alignment and from lands between Spokane Avenue and Kalispell Avenue. Additionally, the Whitefish River is considered commercially navigable from Whitefish Lake to its confluence with the Stillwater River. As such, a Land Use License or Easement from the Montana Department of Natural Resources and Conservation (DNRC) before a bridge could be constructed across the river would need to be obtained. The Preliminary Traffic Report for the Whitefish Urban project (WGM, February 2006) shows a business on the southeast corner of 7th Street and Spokane Avenue intersection would need to be relocated due to the extension of 7th Street eastward.

The development of the three-lane roadways associated with the Contra-Flow configuration would eliminate parking along Spokane Avenue between 3rd and 6th Streets and on Baker Avenue between 2nd and 5th Streets. The addition of turn lanes on 2nd Street at Baker Avenue would result in the loss of some parking near the intersection; however, the configuration would retain some parking along both sides of 2nd Street between Spokane and Baker Avenues.

Noise levels along Baker Avenue would rise as overall traffic and truck volumes on the roadway increase. Conversely, noise levels may decrease along Spokane Avenue (north of 7th Street) and 2nd Street due to the diversion of some traffic to Baker Avenue and because fewer trucks may be in the traffic stream.

7.4.2 Modified Alternative C (Offset) Configuration

The Modified Alternative C (Offset) configuration would affect the Whitefish River at the existing bridge location on Baker Avenue due to the need to widen or replace the narrow structure. Various federal, state, and local water regulations protecting water would apply to work in or near the Whitefish River and the following permits and authorization may be needed for work at the highway crossing:

- “Nationwide” or Individual Section 404 Permit (Corps of Engineers)
- Stream Protection Act - SPA 124 Notification (Montana Fish, Wildlife & Parks)
- Short-term Water Quality Standard for Turbidity - 318 Authorization (MDEQ)
- Section 401 Certification (MDEQ)
- Montana Land-use License of Easement on Navigable Waters (DNRC)
- Floodplain Development Permit (City of Whitefish)
- Exemption to Critical Areas Ordinance (City of Whitefish)

If improvement options are forwarded mitigation for unavoidable impacts to waters or wetlands resulting from the widening or replacement of the Baker Avenue bridge would need to be provided. As with the Contra-Flow option, areas of contaminated sediments along the river could be encountered during bridge construction.

The right-of-way needs for the Modified Offset configuration are similar to those of the Contra-Flow option on Spokane Avenue, 2nd Street, and Baker Avenue (between 2nd Street and the Whitefish River). Roadway improvements could generally be provided within the existing right-of-way for these roadways. Minor amounts of right-of-way may be required at key intersections to accommodate geometric modifications and the addition of turn lanes. Like the Contra-Flow option, right-of-way limitations exist at the intersection 2nd Street and Baker Avenue and necessary turn lanes on all approaches cannot be provided until sufficient right-of-way becomes available.

Areas of new right-of-way would be necessary along Baker Avenue between the Whitefish River and 13th Street to accommodate roadway widening. Staff from the City of Whitefish noted that right-of-way acquisition posed issues during previous reconstruction projects on Baker Avenue. Additional right-of-way would likely be needed at the intersection of Baker Avenue and 13th Street to provide necessary turn lanes and ensure corner radii are adequate for turning movements by large vehicles.

Like the Contra-Flow option, the Modified Offset configuration would result in the loss of on-street parking spaces along Spokane Avenue between 3rd and 6th Streets and along Baker Avenue between 2nd and 5th Streets. The option would retain some parking along both sides of 2nd Street as called for in local plans.

The Modified Offset configuration would divert truck traffic to Baker Avenue and noise levels along the roadway could rise. Such a diversion could decrease noise levels along Spokane Avenue as fewer trucks use the roadway.

7.4.3 Tradeoffs Between the Configurations

A comparison of how the Modified Alternative C (Offset) and Contra-Flow configurations address the second-level screening criteria for **Potential Environmental Effects** is shown below.

The Modified Alternative C (Offset) configuration possesses a clear advantage over the Contra-Flow option when considering screening criteria focused on the natural environment. This conclusion was reached because the Contra-Flow configuration would provide a new bridge across the Whitefish River and affect riparian habitat. The potential effects on the river at the existing crossing on Baker Avenue would be similar for both configurations. The Contra-Flow option also has the potential to encounter contaminated sediments at two Whitefish River crossing locations.

The Contra-Flow configuration has an advantage with respect to the emission of air pollutants since the operational review shows the option would result in fewer miles of travel, less overall delay, and lower fuel consumption than the Modified Offset configuration. The Modified Offset configuration has a higher potential to increase noise levels along Baker Avenue than the Contra-Flow option and has the potential to affect sensitive noise receptors in a residential area along Baker Avenue south of 7th Street.

Both configurations would require new right-of-way acquisition at various locations within the corridor. The Modified Offset configuration was given a slight advantage over the Contra-Flow option for this screening consideration because the extension of 7th Street east of Spokane Avenue may require a business relocation.

The configurations rated similarly for most other criteria in this screening category.

SECOND-LEVEL SCREENING CONSIDERATION	CONFIGURATIONS UNDER FINAL REVIEW	
	Contra-Flow Configuration	Modified Alternative C (Offset) Configuration
<i>Would wildlife or fisheries habitat be affected?</i>		ADVANTAGE
<i>Are wetlands or Waters of the US affected?</i>		
<i>Would FEMA-designated 100-year floodplains be crossed or encroached upon?</i>		
<i>Would City of Whitefish "critical areas" be affected?</i>		
<i>Is there a potential for increased emissions of air pollutants?</i>	ADVANTAGE	
<i>Are noise sensitive receptors present?</i>	ADVANTAGE	
<i>Are Hazardous Materials Sites affected?</i>		ADVANTAGE
<i>Are cultural resources affected?</i>	EQUAL	
<i>Are 4(f) Resources (historic sites, public recreation facilities or parkland) affected?</i>	EQUAL	
<i>Would the option likely cause notable socio-economic effects?</i>	EQUAL	
<i>Would on-street parking be lost?</i>	EQUAL	
<i>Would new right-of-way be required?</i>		SLIGHT ADVANTAGE
<i>Would the option eliminate access from adjoining properties?</i>	EQUAL	
<i>Would utilities be affected?</i>	EQUAL	

7.5 Feasibility and Affordability

7.5.1 Contra-Flow Configuration

As **Table 7-5** shows, the planning-level cost for the Contra-Flow configuration is estimated to be about \$20.81 million. The costs of building a new bridge at 7th Street and extending 7th Street between Spokane and Kalispell Avenues accounts for more than \$11 million of the total estimated construction cost for the configuration. The estimates include construction costs based on typical unit costs for recent MDT highway projects, a representative cost for new right-of-way, and costs for mobilization and contingencies. Please note the estimates provided are very preliminary and will likely change based on more detailed engineering and design activities.

APPENDIX F presents a table detailing the items considered to develop planning-level cost estimates for the corridor improvements associated with this configuration.

Table 7-5: Planning-Level Cost Estimate for Corridor Improvements—Contra-Flow Configuration

Associated Improvements	Current Cost (in millions)
2nd Street Improvements and Signal Upgrades	\$2.02
Add Capacity to the Baker Avenue Bridge	\$1.45
Baker Avenue Reconstruction/Upgrades	\$2.07
7th Street Bridge and 7th Street Connection	\$11.22
Spokane Avenue Reconstruction/Upgrades*	\$4.05
TOTAL	\$20.81M

* Does not include the cost of replacing the culverts for the Whitefish River on Spokane Avenue with a new bridge.

Because it would be unlikely to accomplish all corridor improvements within the same timeframe, the potential future costs of implementing corridor improvements were also examined. Estimates of future improvement costs were calculated based on an assumed annual inflation rate of 3 percent over the next 20 years. This assumed inflation rate shows that costs could be about 19% higher than current estimates by the year 2015 and about 86% higher than current estimates by the year 2030. This means the total cost for the improvements associated with the Contra-Flow configuration would be about \$24.8 million by 2015 and about \$38.7 million by the year 2030.

The Contra-Flow configuration was developed after the U.S. Highway 93 Somers to Whitefish West FEIS/ROD so the option was not examined in detail in the FEIS. MDT must complete an environmental review to document NEPA/MEPA compliance before federal and state funding could be programmed for the corridor improvements and design activities can actually begin. This review would involve a re-evaluation of the FEIS as it relates to the Whitefish Urban project area to determine if a Supplemental EIS is needed. FHWA, in consultation with MDT, would need to make a decision about the

appropriate environmental review process and would need to revise the ROD for the Whitefish Urban project area to include the improvements associated with the Contra-Flow configuration.

Building a new bridge at 7th Street and widening or reconstructing the existing bridge on Baker Avenue would be subject to federal and state regulations protecting water quality and the City’s Critical Areas Ordinance. Securing environmental permits and authorization for a new 7th Street bridge may be complicated if other options (like the Modified Offset configuration) could reduce impacts to the river and wetlands.

7.5.2 Modified Alternative C (Offset) Configuration

The Modified Alternative C (Offset) configuration would require about 1.7 miles of reconstruction along Spokane Avenue and 2nd Street, on Baker Avenue between 2nd and 13th Streets, and on 13th Street between Baker and Spokane Avenues. The option includes the widening or replacement of the existing bridge across the Whitefish River on Baker Avenue. Signal upgrades or replacements would be needed at four locations and a new signal would be required at Baker and 13th Street.

As shown in **Table 7-6**, the planning-level cost for the Modified Alternative C (Offset) configuration is \$10.86 million. The estimates for corridor improvements include construction costs based on typical unit costs for recent MDT highway projects, a representative cost for right-of-way, and costs for mobilization and contingencies.

Table 7-6: Planning Level Cost Estimate for Corridor Improvements—Modified Alternative C (Offset) Configuration

Associated Improvements	Current Cost (in millions)
2nd Street Improvements and Signal Upgrades	\$2.02
Add Capacity to the Baker Avenue Bridge	\$1.45
Baker Avenue and 13th Reconstruction and Upgrades	\$3.79
Spokane Avenue Reconstruction/Upgrades*	\$3.60
TOTAL	\$10.86 M

* Does not include the cost of replacing the culverts for the Whitefish River on Spokane Avenue with a new bridge.

APPENDIX F presents the items considered to develop the planning-level cost estimates for the corridor improvements associated with this configuration.

Based on an assumed annual inflation rate of 3 percent over the next 20 years, the total cost of the Modified Alternative C (Offset) Configuration improvements would be more than \$12.9 million by 2015 and be nearly \$20.2 million by the year 2030.

The Alternative C (Offset) configuration was evaluated in detail in the U.S. Highway 93 Somers to Whitefish West FEIS; however, the option considered in the FEIS included

three travel lanes on 2nd Street instead of two lanes as proposed with the Modified Offset configuration. Like the Contra-Flow option, advancing this configuration would require a re-evaluation of the FEIS focused on the Whitefish Urban project area to determine the need for a Supplemental EIS and a future revision to the ROD.

The environmental permitting process for the Modified Offset configuration would be focused on the potential effects of widening or replacing the existing bridge on Baker Avenue.

7.5.3 Tradeoffs Between the Configurations

The summary below indicates how the Contra-Flow and Modified Alternative C (Offset) configurations address the second-level screening criteria for **Feasibility and Affordability Considerations**.

SECOND-LEVEL SCREENING CONSIDERATION	CONFIGURATIONS UNDER FINAL REVIEW	
	Contra-Flow Configuration	Modified Alternative C (Offset) Configuration
<i>Does a precedent exist for similar strategies?</i>	EQUAL	
<i>Could the option be constructed under traffic?</i>	EQUAL	
<i>Is the option potentially fundable by FHWA/MDT?</i>	EQUAL	
<i>What is the relative cost of the option?</i>		ADVANTAGE
<i>Does the option include components or design features that would likely result in agency or public opposition or generate controversy?</i>		ADVANTAGE
<i>Relative expense and ease of procedural requirements for to advancement of the option through a future NEPA process.</i>		SLIGHT ADVANTAGE

The non-typical lane arrangement for Spokane and Baker Avenues (two lanes in one direction and one opposing lane) associated with the Contra-Flow and Modified Offset configurations provide for added roadway capacity. However, similar three-lane roadways have not been previously used in Whitefish.

With proper sequencing, detours, and traffic controls, both options could be constructed with minimal delays to facility users.

The Modified Alternative C (Offset) configuration has clear advantages over the Contra-Flow configuration with respect to the overall cost of making corridor improvements.

Planning-level cost estimates show the Contra-Flow configuration would be nearly twice as expensive as the Offset configuration due to the provision of the new bridge and roadway connection at 7th Street. It is assumed the lower overall cost of the option could facilitate the funding and implementation of the corridor improvements.

The annual maintenance costs associated with the Modified Offset configuration may be slightly higher than those for the Contra-Flow option due to the difference in overall roadway lengths of the options. However, the Modified Offset configuration would have lower bridge maintenance costs since it does not include a bridge at 7th Street and has fewer traffic signals to maintain than the Contra-Flow option.

Procedurally, the Modified Offset configuration may have a slight advantage over the Contra-Flow option since the option was evaluated previously in the U.S. Highway 93 Somers to Whitefish West FEIS. However, a re-evaluation of the FEIS for the Whitefish Urban project area would initially be required with both options to determine the need for a Supplemental EIS. Environmental permitting for the Offset configuration may also be less difficult or contentious than for Contra-Flow option since it does not include a bridge at 7th Street.

7.6 Compatibility with Local Plans and Ideals

7.6.1 Contra-Flow Configuration

The Contra-Flow configuration was developed after the U.S. Highway 93 Somers to Whitefish West FEIS/ROD to address concerns associated with the ROD Preferred Alternative about the lane configuration on 2nd Street, parking, and circulation in downtown Whitefish. The option provides an alternate routing for trucks to pass through the downtown via a bridge at 7th Street. While the concept presented in this configuration does not exactly match the recommendations from local plans, the option retains 2nd Street as a two-lane roadway with some on-street parking along both sides of the street and provides for two-way traffic flows on Spokane and Baker Avenues. Both of these elements are very important aspects of local plans and desired by downtown business owners.

Comments received during various planning efforts in the community shows a range of opinions about the viability of providing a new bridge at 7th Street as called for in the Contra-Flow configuration.

7.6.2 Modified Alternative C (Offset) Configuration

The Alternative C (Offset) configuration evaluated in the FEIS was developed more than a decade before the completion of the Whitefish Downtown Business District Master Plan and the City's Growth Policy. As a result, the FEIS configuration does not reflect many of the community's more recent concerns and ideas about redevelopment in the downtown area, particularly on 2nd Street.

However, the Modified Alternative C (Offset) configuration better reflects recommendations from local plans. The Modified Offset configuration provides for two-way traffic flows on Spokane Avenue, 2nd Street, and Baker Avenue in the downtown. The option generally maintains 2nd Street as a two-lane facility with some on-street parking between Spokane and Baker Avenues.

7.6.3 Tradeoffs Between the Configurations

A comparison of how well the two configurations address the second-level screening criteria associated with the **Compatibility with Local Plans and Ideals** screening category is provided below.

SECOND-LEVEL SCREENING CONSIDERATION	CONFIGURATIONS UNDER FINAL REVIEW	
	Contra-Flow Configuration	Modified Alternative C (Offset) Configuration
<i>Would the option be compatible with or support recommendations from local plans?</i>	ADVANTAGE	
<i>Would the option be consistent with the City of Whitefish's Bicycle and Pedestrian Master Plan?</i>	EQUAL	
<i>Would enhancements be consistent with features recommended in local plans or desired by the City of Whitefish and local residents?</i>	EQUAL	
<i>Does the option provide new and desirable connections to local street network?</i>	ADVANTAGE	
<i>Does the option have the potential to enhance the appearance of the corridor?</i>	EQUAL	

The overall advantage has to be given to the Contra-Flow configuration since the option was developed based on the input received and recommendations contained in the Whitefish Downtown Business District Master Plan and the City's Growth Policy. As a result, the Contra-Flow configuration is more responsive to local planning concepts than the Modified Offset configuration.

The Contra-Flow option also has an advantage over the Modified Offset configuration since it enhances traffic circulation within the community by including a bridge and roadway to connect Baker, Spokane, and Kalispell Avenues along 7th Street. Enhancing roadway connectivity within Whitefish was a key consideration in the recent development of the Whitefish Transportation Plan.

Both configurations could include many of the desired trail connections and streetscape amenities called for in local plans if local funding is available.