



Warm Springs Road Alternatives Analysis Concept Report

City of Ketchum

Ketchum, Idaho

November 28, 2022



Executive Summary

The City of Ketchum, Idaho (City) *Master Transportation Plan* (2021) identified the Warm Springs Road corridor between 10th Street and Lewis Street for enhancement and development of conceptual alternatives to improve the area. This corridor experiences relatively high traffic volumes connecting recreation and residences to the downtown core and beyond. The study area for conceptual alternatives includes the intersections of 10th Street and Main Street (SH-75), Warm Springs Road and 10th Street, and Warm Springs Road and Lewis Street.

The Warm Springs Road corridor – from its diversion from Main Street at 6th Street to its entry into residential West Ketchum – is diverse in its land use and is a nexus of several neighborhoods and zoning districts. Currently, the three zoning districts in the area provide an abrupt transition from one to the next and do not provide a gateway experience. The area lacks many of the basic public realm amenities or elements to make it feel a part of the City, including comfortable and consistent sidewalks and a diversity of shared open space. Overall, the area lacks a consistent and safe public realm, which is critical to extend the vibrancy of downtown to this area, provide an identity, or present a gateway to or from the downtown core or Warm Springs Road.

Under existing conditions, the study intersections are all estimated to operate at a level of service (LOS) C or better during peak season morning (AM) and evening (PM) peak hours. The worst performing intersection is the 10th Street and Warm Springs Road intersection, which experiences 17-second delays during the peak hours for the left turning movements from 10th Street. During the off-peak periods, the intersections operate at a LOS B or better during the AM and PM peak hours, meaning delays are less than 15 seconds at each intersection.

During the 5-year study period, there was one crash near the intersection of Warm Springs Road/Lewis Street and one crash at the intersection of Warm Springs Road/10th Street. Both crashes occurred during the noon hour on a weekday with clear conditions. The cause of the possible injury crash near Warm Springs Road and Lewis Street was caused by a driver following too close and was not related to the intersection. The crash at the intersection of Warm Springs Road/10th Street was a left turning crash where the driver failed to yield. There were no injuries associated with this crash.

Although the number of crashes in the study area is low, conversations with the public at public involvement meetings, City staff, and City Council members revealed safety concerns with the corridor. These concerns increase the amount of stress that pedestrians, bicyclists and motorists feel while traversing the area. These perceived safety issues include restricted sight distance for a southbound vehicle turning left at 10th Street onto Warm Springs with the gas station pumps, long pedestrian crossings across intersections or private approaches, inconsistent and aged sidewalks, and a lack of facilities compliant with the Americans with Disabilities Act (ADA) and Public Rights-of-Way Accessibility Guidelines (PROWAG).

The project team developed and proposed five alternatives for qualitative analysis to improve the surrounding land use in the study area:



- Alternative 1: 10th Street Roundabout
- Alternative 2: Lewis Street Roundabout
- Alternative 3: 10th Street and Lewis Street Dog bone roundabout
- Alternative 4: 10th Street and Lewis Street Realignment & Roundabout
- Alternative 5: Block/Street Realignment.

The five build alternatives and a No Build option were presented to the public for comment and feedback at public meetings. The project team developed a screening process to evaluate each of the alternatives using 11 criteria identified in discussion with City staff. City staff and members of the project team rated each alternative as good, neutral, or poor for each of the criteria. Based on an aggregated score and public feedback, HDR and City staff recommended Alternative 2, Alternative 4, and the No Build option move forward to the City Council (July 18, 2022). The City Council concurred with the recommendation and advanced the three alternatives.

In terms of public realm improvements and future land use, Alternative 4 has the most potential benefit followed by Alternative 2, while the No Build option provides few opportunities. Both the roundabout options would maintain the opportunity for the Albertson’s property to redevelop and provide opportunities for a placemaking. Both alternatives would enhance bike and pedestrian connectivity and safety by removing conflict points with vehicles and shortening pedestrian exposure. In conversations with Mountain Rides, bus transit facilities would need to be relocated in the general area, but operations would not be negatively impacted by either option. Mountain Rides commented that Alternative 4 would enhance operations by removing a difficult turn.

The City does not lie within boundaries of a Municipal Planning Organization (MPO) that would produce a travel demand model that projects trip generation out into the future. HDR instead calculated a 1.44 percent historical growth rate to represent traffic volume growth based on historical data from Idaho Transportation Department’s (ITD) Automated Traffic Recorders (ATRs) on State Highway 75 (SH-75). Design year 2042 was selected for the purposes of this analysis and LOS D was set for the target LOS threshold. HDR analyzed the study intersections using the forecasted volumes and found that both Alternatives 2 and 4 are estimated to operate well in the design year, with vehicle delays at approximately 10 seconds for the improved intersections. The unimproved intersections are expected to operate adequately in the design year.

The following table shows the opinion of probable costs for each of the two build alternatives:

Cost	Alternative 2	Alternative 4
Engineering Fee	\$288,000	\$398,000
Construction Cost	\$1,532,000	\$2,117,000
Right-of-way Cost	\$1,075,100	\$4,461,700
Total Project Cost	\$3,278,100	\$7,506,700

The realigned roadway in Alternative 4 requires purchasing large amounts of right-of-way (ROW) and these costs make up the largest difference between the two alternatives. Alternative 4 also creates an opportunity for the City to vacate the abandoned 10th Street connection and sell it to adjacent land owners. The vacated parcel's estimated value is \$1,277,325 and the revenue from the sale could be used to offset some of the ROW costs. This would be determined during ROW negotiations.

If the City can acquire funding to cover the higher ROW and construction costs, Alternative 4 is recommended. This alternative best improves multi-modal connectivity and operations, simplifies the roadway network, provides the most opportunity for placemaking, and is preferred by both Mountain Rides and the public. However, Alternative 4 costs are significantly higher; therefore, Alternative 2 is recommended if funding for Alternative 4 cannot be secured. Alternative 2 still provides traffic calming, multi-modal, placemaking, and safety benefits to the area. The No Build option is not recommended as it does not provide benefits meeting the City's goals. **Appendix G** contains final concept exhibits for each alternative.

As the City pursues funding for the larger aspects of the build alternatives, there are several opportunities to enhance the area in the meantime. Even if the City chooses the No Build option, the City could consider the following improvements. **Appendix H** contains conceptual exhibits of potential improvements.

- Restripe the two-way left turn (TWLT) lane in front of the gas station to be a dedicated left turn lane. This will prevent delivery vehicles from parking close to the intersection.
- Replace dilapidated sidewalk, install sidewalk where none exists within the study area, and install ADA/PROWAG-complaint pedestrian ramps.
- Install bulb-outs at the Lewis Street and Warm Springs Road intersection to shorten pedestrian crossings.
- Explore one or more of the following options to mitigate the difficult 10th Street left turn sight distance issue:
 - Prohibit southbound left turns at the intersection by signage or adding a diverter in the intersection.
 - Convert the intersection from two-way stop control to all-way stop control.



Contents

Executive Summary	i
1 Introduction	1
1.1 Background and Purpose.....	1
1.2 Study Area.....	1
1.3 Study Process.....	1
1.4 Organization of Report.....	2
2 Existing Conditions Evaluation	3
2.1 Land Use	3
2.2 Public Realm.....	4
2.3 Existing Traffic Operations	5
2.4 Existing Safety Analysis.....	11
2.5 Transit Facilities	14
3 Qualitative Alternatives Analysis	15
3.1 Alternatives	15
3.2 First Public Involvement Summary	19
3.3 High Level Screening	20
3.4 Alternatives Selected	23
4 Detailed Analysis	23
4.1 Future Land Use and Public Realm Opportunities	23
4.2 Forecasted Travel Patterns.....	24
4.3 Future Capacity Analysis	27
4.4 Impacts to Transit, Pedestrians and Bikes	29
4.5 Future Safety Analysis	30
4.6 Opinion of Probable Costs	31
4.7 Second Public Meeting Summary	32
5 Recommendations and Next Steps	32
5.1 Comparing the Alternatives.....	32
5.2 Recommendation and Interim Improvements.....	33
5.3 Mitigating Impact of Future Nearby Developments.....	34
5.4 Nearby Enhancements to Consider	34
5.5 Next Steps	36



Figures

Figure 1. Study Area	1
Figure 2: Study Process	2
Figure 3. Character Areas of Warm Springs Road	3
Figure 4: Lewis Street and Warm Springs Road Intersection Area	5
Figure 5. 10th Street and Warm Springs Road Intersection Area	6
Figure 6. 10th Street and Main Street (SH-75) Intersection Area	7
Figure 7. Warm Springs AM and PM Peak Hour Turning Movement Counts.....	8
Figure 8: Left Turn Sight Triangles.....	12
Figure 9. Aged Sidewalk and Large Approach At 10 th & Warm Springs. Source: Google Earth.	13
Figure 10. Large Pedestrian Crossing Across Lewis Street.....	13
Figure 11: Existing Mountain Rides Bus Pullout. Source: Google Earth	14
Figure 12. Concept Alternative 1	15
Figure 13. Concept Alternative 2.....	16
Figure 14. Concept Alternative 3.....	17
Figure 15. Concept Alternative 4.....	18
Figure 16. Concept Alternative 5.....	19
Figure 17. Total Scores.....	22
Figure 18. Traffic Volumes since 1990.....	25
Figure 19. Alternative 4 Peak Volumes	26
Figure 20: No Build and Alternative 2 Peak Volumes	27
Figure 21. Example Bulb-outs at Lewis Street.....	33
Figure 22. Example Bulb-outs at 8th Street.....	35
Figure 23. Example Separated Pathway Along Warm Springs Road	36

Tables

Table 1. Monthly Seasonal Factors	8
Table 2. LOS Thresholds for Motor Vehicles at Intersections	9
Table 3. Warm Springs Road Intersections - Seasonal Adjustment 2021 AM & PM Peak.....	10
Table 4. Warm Springs Road Intersections - August 2021 AM & PM Peak	10
Table 5. Screening Matrix	21
Table 6. No Build Traffic Operations - August 2042 AM & (PM) Peak	28
Table 7. Alternate 2 Traffic Operations - August 2042 AM & (PM) Peak.....	28
Table 8. Alternative 4 Traffic Operations - August 2042 AM & (PM) Peak.....	29
Table 9. Project Alternatives – Total Project Costs.....	32



Appendices

- Appendix A: Existing Turning Movement Counts
- Appendix B: Existing Capacity Analysis Reports
- Appendix C: First Public Involvement Summary
- Appendix D: High Level Screening Criterion Definitions
- Appendix E: Future Operations Results
- Appendix F: Second Public Meeting Summary
- Appendix G: Final Concept Exhibits
- Appendix H: Additional Improvement Concepts

Acronyms/Abbreviations

Acronyms and abbreviations used more than once in the report text.

ADA	Americans with Disabilities Act
ATR	automated traffic recorders
City	City of Ketchum
CMF	crash modification factor
HCM	Highway Capacity Manual
ITD	Idaho Transportation Department
LOS	level of service
NBL	Northbound left
NBT/L	Northbound through left
NEL	Northeast left
NET/L/R	Northeast through left right
NET/LR	Northeast through left right
PROWAG	Public Rights-of-Way Accessibility Guidelines
ROW	right-of-way
SBL	Southbound Left
SBR	Southbound right
SEL	Southeast left
SWT/L/R	Southwest through left right
TWLT	two-way left turn
v/c	volume to capacity ratio
vpd	vehicles per day

1 Introduction

1.1 Background and Purpose

The City of Ketchum, Idaho (City) *Master Transportation Plan* (2021)¹ identified the Warm Springs Road corridor between 10th Street and Lewis Street for enhancement. This corridor experiences high traffic volumes connecting recreation and residences to the downtown core and beyond. The *Master Transportation Plan* identified the intersections at 10th Street and Lewis Street for further evaluation and development of conceptual alternatives to improve the area. The purpose of this report is to document the concept study process and the decision-making process and recommend an alternative to meet the City’s goals.

1.2 Study Area

The study area is bounded by the following three intersections: 10th Street and Main Street (State Highway 75 [SH-75]), Warm Springs Road and 10th Street, and Warm Springs Road and Lewis Street. The study area is shown in Figure 1. The surrounding land use is zoned as light industrial and features several small businesses, including a gas station on the southeast corner of Warm Springs Road and 10th Street. The Warm Springs Road corridor provides access from residential developments in the northwest part of the City to the downtown core. Nearby traffic generators include the Ernest Hemingway STEAM School to the southwest, the YMCA to the northwest, and the City’s downtown core to the southeast. A large undeveloped lot, owned by Albertsons Corporation, is located along Warm Springs Road between 10th Street and Lewis Street.

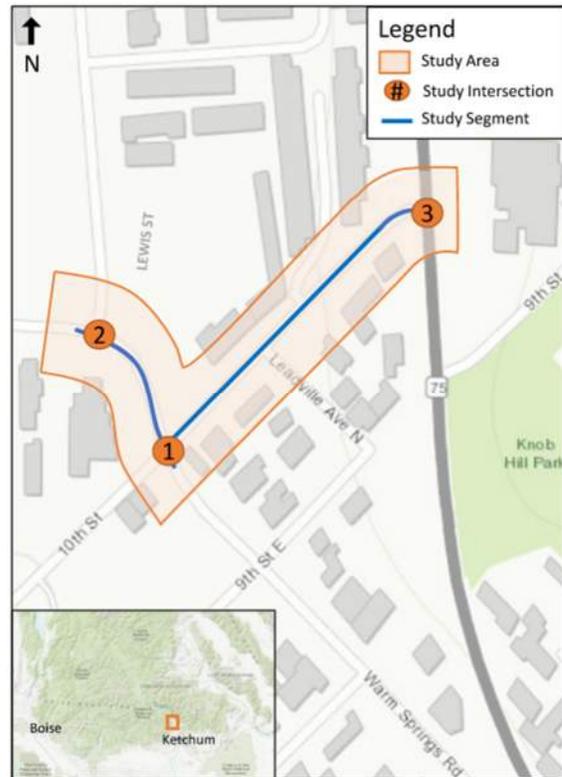


Figure 1. Study Area

1.3 Study Process

The study process followed the procedure outlined in Figure 2. The project team performed an initial evaluation of existing conditions in the study area that evaluated the existing traffic operations, determined the safety needs and examined the public realm needs. Then, the project team developed a series of potential alternatives for presentation to the public that were also evaluated by City and consultant staff based on 11 criteria, developed in consultation with the City. The City and project team recommended two alternatives for detailed analysis to the City Council. This detailed analysis included identifying potential public realm enhancements, future traffic capacity analysis, safety benefits, and a cost comparison. Finally, the project team

¹ City of Ketchum, Master Transportation Plan. March 15, 2021.

revised the alternatives, as necessary, prepared a final report, and presented it to the City Council for adoption.

At each stage during the process, the project team engaged stakeholders, including Mountain Rides, surrounding businesses, the YMCA, and adjacent landowners. Public comment was solicited at two public meetings where residents could evaluate the alternatives, ask questions, and provide feedback. Online surveys accompanied each public meeting for those unable to make the in-person meetings.

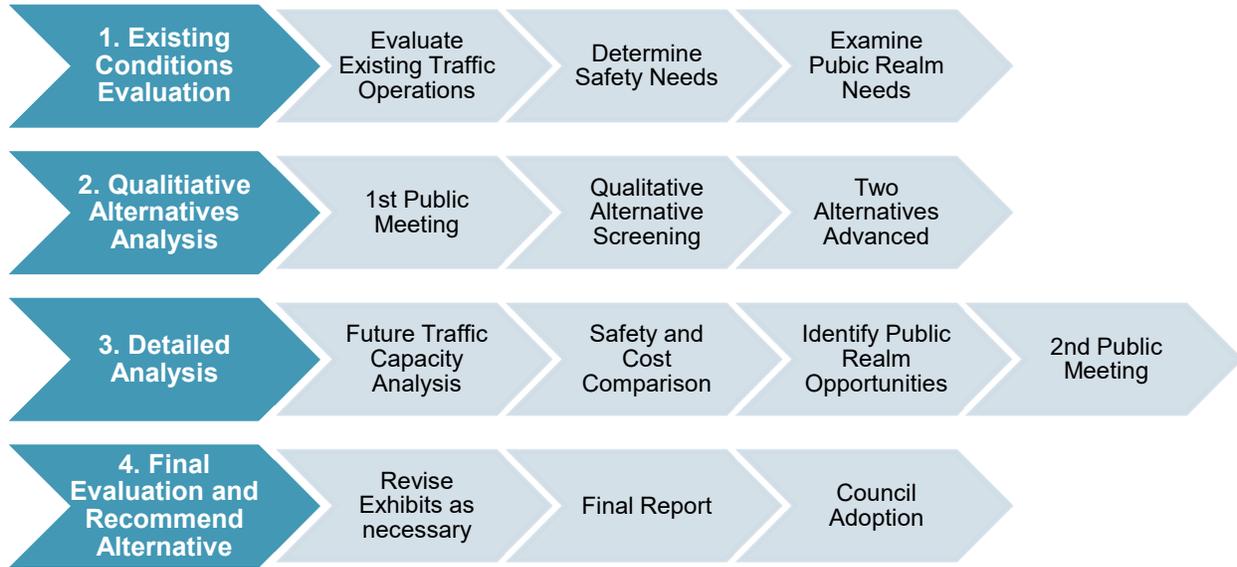


Figure 2: Study Process

1.4 Organization of Report

Following the introduction in Section 1, this report is also organized following the general structure of the study process shown in Figure 2.

- Section 2 describes existing conditions and determines needs;
- Section 3 reviews the first public meeting and qualitative alternatives analysis;
- Section 4 describes the detailed analysis and reviews the second public meeting; and
- Section 5 compares the alternatives, considers mitigation and other issues, makes recommendations, and describes next steps.

2 Existing Conditions Evaluation

2.1 Land Use

The Warm Springs Road corridor – from its diversion from Main Street at 6th Street to its entry into residential West Ketchum at the Big Wood River crossing – is diverse in its land use and is a nexus of several neighborhoods and districts. At its southeastern end, the corridor acts as a lower-intensity extension of the downtown core and has an eclectic mix of uses, including restaurants, homes, and retail. In this stretch, Warm Springs Road is straight and contributes to the downtown block structure and scale found in the downtown core and neighborhoods further to the east.



Figure 3. Character Areas of Warm Springs Road

Approaching 10th Street, the corridor begins to exhibit uses and features indicating its connection to the industrial zone that extends north along Lewis Street. This area includes a mix of light industrial and commercial spaces. The most prominent land use in this section is the large, vacant parcel on the northern edge of the corridor and west of 10th Street along Lewis

Street. Ketchum's *2014 Comprehensive Plan*² identifies this stretch as a part of the industrial neighborhood and as having a future Mixed-Use Industrial land use.

Crossing the popular Wood River Trail, the land use shifts again with single- and multi-family residences defining its southern edge and the substantial YMCA recreation and community center. Beyond the YMCA, the Guy Coles Skate Park occupies the stretch of land leading to the Wood River. This public institutional land use defines this part of the corridor and acts as a landmark.

Though the YMCA is a large, recognizable landmark, the transition from this portion of the corridor into the downtown core is not well-defined through the land uses or buildings. The three distinct zones, described above and shown in Figure 3, provide a somewhat erratic transition from one to the next and do not provide a gateway experience. This corridor is a primary corridor connecting Downtown to the Warm Springs neighborhood and ski mountain; therefore, there is an opportunity for this portion of the corridor to act as a gateway between the areas.

2.2 Public Realm

Currently, the Warm Springs Road corridor from Main Street (SH-75) to the Wood River lacks many basic public realm amenities or elements to make it feel like a part of the City. Many of the amenities and facilities found in or around the downtown core – such as comfortable and consistent sidewalks and a diversity of shared open space, among others – are not found throughout this portion of the corridor. Some areas, such as the stretch from Main Street (SH-75) to 10th Street, lack sidewalks altogether, whereas others have small, attached sidewalks that do not provide a safe or a comfortable experience for pedestrians. Similarly, there is no comfortable, on-street cycling infrastructure along much of the corridor other than a 5' wide bike line on the west side of Warm Springs Road from 9th Street to 6th Street and the Wood River trail connection just south of the YMCA. The Wood River Trail is an important connector through the community and is well-used by residents and visitors, though it does not supplant the need for safer, street-adjacent sidewalks or cycle facilities as prescribed in Goal M-4 of the *2014 Comprehensive Plan*.

Other amenities and pedestrian-oriented lighting, are almost entirely absent in this area. The Blue and Bronze route bus stops at Lewis Street, for example, only provide seating in the eastbound direction and this single bench is unprotected from the elements.

The area has several open spaces nearby, including Atkinson Park (connected by the Wood River Trail), and the public spaces around the YMCA, including the Guy Coles Skate Park. These open spaces are important to the area and provide well-used amenities for the community but act more as “community” open spaces as opposed to “neighborhood” open spaces, as defined in the *2014 Comprehensive Plan*.

² City of Ketchum, 2014 Comprehensive Plan. February 18, 2014. Accessible online: https://www.ketchumidaho.org/sites/default/files/fileattachments/planning_and_building/page/2131/2014_compplan_a_dopted_cc_2-18-14_final_201403281009599481.pdf

Overall, the area lacks a consistent and safe public realm critical to extend the vibrancy of downtown to this area, provide an identity, or present a gateway to or from the downtown core or Warm Springs Road.

2.3 Existing Traffic Operations

2.3.1 Intersection Layout and Traffic Control

The Lewis Street intersection is a T-intersection with stop control on the Lewis Street leg. At this intersection, Warm Springs Road has three-lanes with one travel lane in each direction and a center continuous two-way left turn (TWLT) lane. Additionally, the east leg of the intersection features a dedicated right-turn lane for westbound traffic to turn onto Lewis Street. Lewis Street features one right-turn lane, one left turn lane and one receiving lane with diagonal on-street parking on the west side and parallel on-street parking on the east side. Sidewalk is present along the south side of Warm Springs Road and the west side of 10th Street. The east leg of the intersection has sidewalk on both sides of the road. A crosswalk exists on the north leg of the intersection. Transit stops are present in both directions east of the intersection. Figure 4 shows the Lewis Street Warm Springs Intersection.

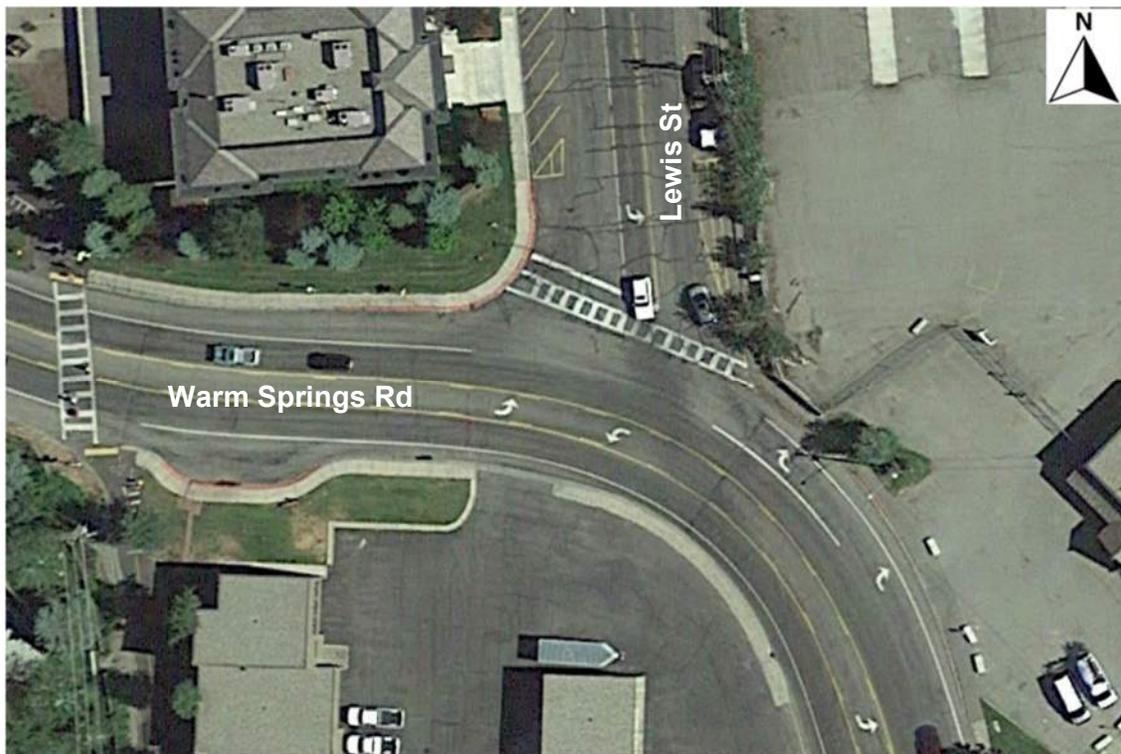


Figure 4: Lewis Street and Warm Springs Road Intersection Area

The 10th Street intersection is a four-leg intersection with stop control on the 10th Street legs. Warm Springs Road is currently striped as a three-lane section with one lane in each direction and a TWLT lane. 10th Street features one lane in each direction on each leg and on-street parking on the northeast side of the east leg. Sidewalk is present south of the intersection to the Hemmingway STEAM school and on the south side of Warm Springs Road. Crosswalks exist on all four legs of the intersection; however, no sidewalk is present on the north side of Warm Springs Road or along 10th Street to the north. Figure 5 shows the 10th Street and Warm Springs Road intersection area.

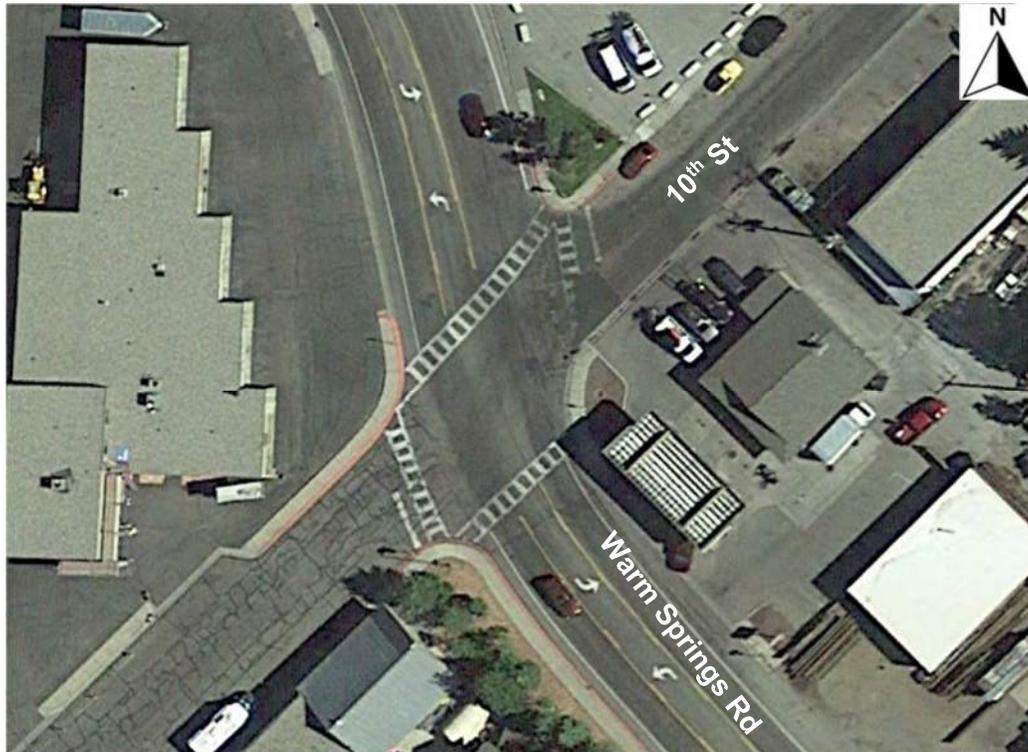


Figure 5. 10th Street and Warm Springs Road Intersection Area

The 10th Street intersection with Main Street (SH-75) is a T-intersection with stop control on the 10th Street leg. Main Street (SH-75) is one lane in each direction and has on street parking on the east side of the roadway. 10th Street is one lane in each direction with parking on the northeast side of the roadway. No Sidewalks or marked pedestrian crossings are present at this intersection. Figure 6 Shows the 10th Street and Main Street (SH-75) intersection area.



Figure 6. 10th Street and Main Street (SH-75) Intersection Area

2.3.2 Existing Volume Development

L2 Data Collection acquired turning movement counts for the study intersections on August 31, 2021, between the hours of 7:00AM to 9:00AM and 4:00PM and 6:00PM. For the Warm Springs Road intersections, the AM or morning peak hour was found to begin at 7:45AM while the evening or PM peak hour begins at 4:00PM. At the 10th Street and Main Street (SH-75) intersection, the AM peak hour begins at 8:00AM and the PM peak hour begins at 4:00 PM.

Appendix A contains summaries of the traffic counts.

In general, the traffic counts indicate a travel pattern where commuters are going to work along the light industrial areas near Lewis Street or Saddle Road in the morning and then commuting home in the evening.

The City of Ketchum is a resort destination community with travel patterns that vary throughout the year. Although the City of Ketchum has no automated traffic recorders (ATR) stations of their own, the Idaho Transportation Department (ITD) has two ATRs at the following locations to record traffic volumes and estimate seasonal variations on SH-75 near Ketchum:

- ATR #28 – SH-75 @ mile post (MP) 135.95 (7.6 miles north of Sun Valley Road)
- ATR #68 – SH-75 @ MP 119.4 (2.9 miles north of Bullion Street in Hailey, ID)

Traffic volumes on SH-75 were analyzed using data from the ATRs to see how they fluctuate throughout a given year. The highest volumes were observed in the summer months, averaging over 15,000 vehicles per day (vpd) in June, July, and August at ATR #68 and around 2,400 vpd at ATR #28. The lowest volumes were observed in the winter months of December, January,

and February with volumes less than 1,200 vpd at ATR #68 and less than 900 vpd at ATR #28. There is a significant drop in volume on the highway from north and south of Ketchum. Table 1 shows the average monthly seasonal factors determined from the historical ATR data. Volumes from 2020 are not included in the analysis due to the Covid-19 pandemic and associated shutdowns.

Table 1. Monthly Seasonal Factors

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg MSF	0.90	0.94	0.88	0.85	0.93	1.11	1.24	1.19	1.08	1.03	0.88	0.98
w/o 2020	0.89	0.93	0.89	0.89	0.94	1.11	1.24	1.18	1.06	1.02	0.88	0.97

The seasonal adjustment results were calculated by dividing the August 2021 counts by a factor of 1.18. This represents an 18 percent decrease in volumes to represent a typical day. Figure 7 details the results of the volume adjustments.

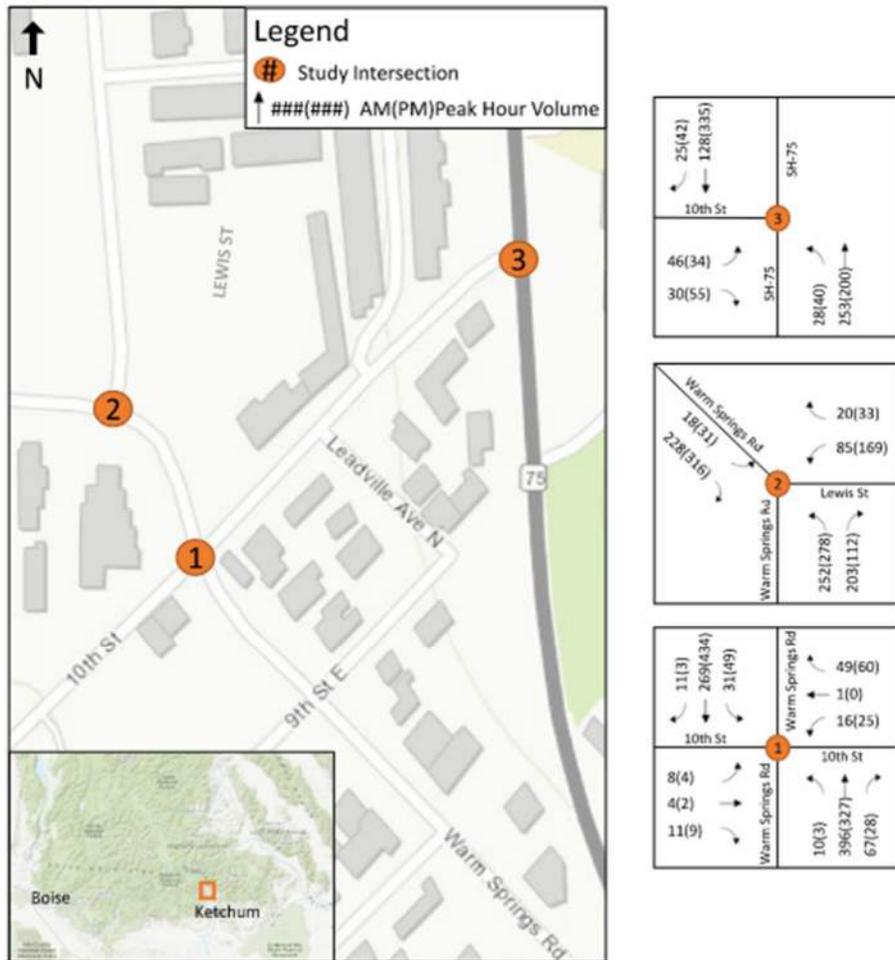


Figure 7. Warm Springs AM and PM Peak Hour Turning Movement Counts

2.3.3 Existing Traffic Operations

Capacity is defined as the maximum rate at which vehicles can pass through a given point in an hour under prevailing conditions. Intersection capacity is measured by evaluating the critical lane groups that experience the most delay for stop-controlled intersections. A volume to capacity (v/c) ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues or delays. As the v/c ratio approaches 1.0, traffic flow may become unstable and significant delay and queuing conditions may occur. Once the demand exceeds capacity, defined as a v/c ratio greater than 1.0, traffic flow is unstable and excessive delay and queuing is expected. The concept of level of service (LOS) was developed to correlate numerical traffic operational data to subjective descriptions of traffic performance at intersections. LOS is defined as the system of six designated ranges, from “A” (best) to “F” (worst), used to evaluate performance. Table 2 presents the Highway Capacity Manual (HCM) thresholds based on delay at stop-controlled intersections.

Table 2. LOS Thresholds for Motor Vehicles at Intersections

LOS	Stop Control Intersection Control Delay (seconds/vehicle)	Roundabout Intersection Control Delay (seconds/vehicle)
A	≤ 10	≤ 10
B	10 – 15	10 – 15
C	15 – 25	15 – 25
D	25 – 35	25 – 35
E	35 – 50	35 – 50
F	> 50	> 50

Source: National Academies Press. Highway Capacity Manual, 6th Ed. A Guide for Multimodal Mobility Analysis.

The project team used Synchro 11 software to model and analyze study area intersections under existing conditions and HCM 6th edition analysis methods to produce the analysis reports.

Given the large variability of the traffic volumes during the summer months compared to other months, the project team analyzed intersections with the unadjusted August volumes for comparison. In this scenario, the Warm Springs Road study intersections are all estimated to operate at LOS B or better during off-peak season AM and PM peak hours. Detailed reports from the capacity analyses are available in **Appendix B**.

Table 3 summarizes the capacity analysis results for the Warm Springs study intersections, using the existing traffic counts depicted in Figure 7. In general, the intersections are operating well over capacity with delays under 15 seconds for each movement. All the intersections operate at LOS A or B with vehicle queue lengths under 30 feet.

Table 3. Warm Springs Road Intersections - Seasonal Adjustment 2021 AM & PM Peak

Intersection	Overall Intersection LOS	Movement	Delay(s)	LOS	95 th Percentile Queue Length (feet)	V/C
10 th Street / Warm Springs Road	B (B)	NET/L/R	14.2 (14.3)	B (B)	4.4 (2.2)	0.052 (0.037)
		SWT/L/R	13.3 (14.1)	B (B)	8.8 (13.2)	0.13 (0.174)
		SBL	8.3 (8.1)	A (A)	2.2 (2.2)	0.027 (0.04)
		NBL	7.8 (8.2)	A (A)	0 (0)	0.007 (0.003)
10 th Street / SH-75	B (B)	NEL	10.7 (12.4)	B (B)	6.6 (11)	0.096 (0.15)
		NBT/L	7.5 (8.1)	A (A)	2.2 (2.2)	0.017 (0.032)
Warm Springs Road/ Lewis Street	B (B)	SBL	12 (14.9)	B (B)	11 (28.6)	0.137 (0.316)
		SBR	9.6 (9.9)	A (A)	2.2 (2.2)	0.024 (0.042)
		SEL	8.1	A	0 (2.2)	0.015 (0.026)

2.3.4 Summer Peak Operations

Given the large variability of the traffic volumes during the summer months compared to other months, the project team analyzed the intersections with the unadjusted August volumes for comparison. The ad study intersections are all estimated to operate at LOS C or better during peak season AM and PM peak hours and Table 4. Warm Springs Road Intersections - August 2021 AM & PM Peak outlines the operational results. Detailed reports from the capacity analyses are available in **Appendix B**.

Table 4. Warm Springs Road Intersections - August 2021 AM & PM Peak

Intersection	Overall Intersection LOS	Movement	Delay (s)	LOS	95 th Percentile Queue Length (feet)	V/C
10 th Street / Warm Springs Road	C (C)	NET/L/R	16.3 (16.9)	C (C)	4.4 (4.4)	0.076 (0.054)
		SWT/L/R	15.1 (17)	C (C)	13.2 (22)	0.174 (0.245)
		SBL	8.6 (8.3)	A (A)	2.2 (4.4)	0.034 (0.049)
		NBL	7.9 (8.4)	A (A)	0 (0)	0.009 (0.003)
10 th Street / SH-75	B (B)	NEL	11.4 (13.8)	B (B)	8.8 (15.4)	0.123 (0.198)
		NBT/L	7.6 (8.3)	A (A)	2.2 (2.2)	0.021 (0.04)
Warm Springs Road / Lewis Street	B (B)	SBL	12.9 (17.7)	B (C)	13.2 (44)	0.175 (0.412)
		SBR	9.9 (10.3)	A (B)	2.2 (4.4)	0.03 (0.053)
		SEL	8.5 (8.3)	A (A)	2.2 (2.2)	0.019 (0.032)

2.4 Existing Safety Analysis

2.4.1 Crash History

During the 5-year study period (2016-2020), there was one crash near the intersection of Warm Springs Road/Lewis Street and one crash at the intersection of Warm Springs Road/10th Street. Both crashes occurred during the noon hour on a weekday with clear conditions. The possible injury crash near Warm Springs Road and Lewis Street was caused by a driver following too close and was not related to the intersection. The crash at the intersection of Warm Springs Road/10th Street was a left turning crash where the driver failed to yield. There were no injuries associated with this crash.

2.4.2 Qualitative Safety Analysis

Although the number of crashes in the study area is low, conversations with the public at public involvement meetings, with City staff, and at City Council meetings revealed safety concerns with the corridor, as described in the following bullets. While the concerns may not be producing crashes within the study area, they do increase the amount of stress that pedestrians, bicyclists and motorists feel while traversing the area.

- A southbound driver turning left from 10th Street onto Warm Springs has a difficult time seeing cross traffic as the visibility is blocked by the gas station pumps. Multiple individuals commented that they specifically avoided the intersection because of the sight distance issues. An intersection sight triangle analysis was performed using methodologies outlined in Sections 9.5.2.3 and 9.5.3 of the AASHTO *Policy on Geometric Design of Highways and Streets*³. A 25 mph design speed was used to evaluate the sight distance. As shown in Figure 8, the gas station blocks the turning vehicle's view of oncoming traffic on Warm Springs Road.

³ American Association of State Highway and Transportation Officials (AASHTO). A Policy On Geometric Design of Highways and Streets, 7th Edition. 2018

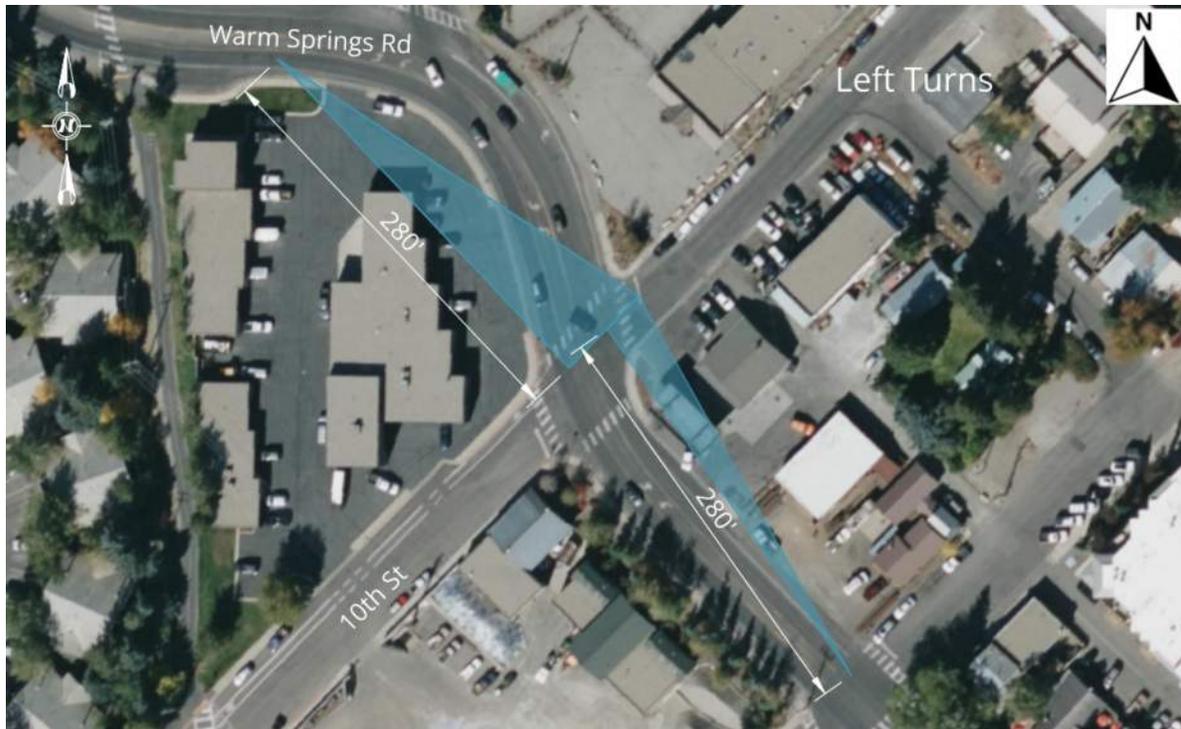


Figure 8: Left Turn Sight Triangles

- Multiple private approaches are within 60 feet of the intersection creating conflicts throughout the intersection.
- Pedestrians and bikes are also overexposed. The sidewalks in this area are in disrepair or missing for long sections. Some business approaches are longer than necessary and overexpose pedestrians traversing the sidewalk to turning traffic entering the business as shown in Figure 9. Lewis Street's wide cross section and skewed intersection with Warm Springs creates an approximately 90-foot crossing for pedestrians in that area, shown in Figure 10. Facilities compliant with the Americans with Disabilities Act (ADA) and Public Rights-of-Way Accessibility Guidelines (PROWAG) are not present to alert visually impaired pedestrians that they are entering a conflict area. The Lack of ADA/PROWAG compliant facilities also creates difficulties for disabled individuals to traverse the area.



Figure 9. Aged Sidewalk and Large Approach At 10th & Warm Springs. Source: Google Earth



Figure 10. Large Pedestrian Crossing Across Lewis Street

- The Warm Springs Road shoulder widths between Lewis Street and 10th Street are too narrow to support bike lanes, which prevents continuity of the network. This forces cyclists into the travel lanes and increases user stress.

2.5 Transit Facilities

Mountain Rides is the local transit authority maintaining bus routes throughout the City of Ketchum. The Blue, Bronze and Valley Routes all provide transit access through this corridor. One stop exists on either side of Warm Springs Road west of Lewis Street. There is a pullout on the route going toward downtown that is no longer of sufficient length for the buses Mountain Rides is using. The pullout is shown in Figure 11. Also, the stops do not feature shelters, or safety lighting. In conversations with Mountain Rides, they expressed concerns with the 10th Street intersection, specifically with how difficult it is to turn right onto Warm Springs Road.



Figure 11: Existing Mountain Rides Bus Pullout. Source: Google Earth

3 Qualitative Alternatives Analysis

3.1 Alternatives

The project team developed five conceptual alternatives for the study area to improve the surrounding land use.

3.1.1 Concept Alternative 1 – 10th Street Roundabout

Figure 12 shows the concept for Alternative 1. This alternative replaces the existing two-way stop-controlled Warm Springs Road and 10th Street intersection with a single lane roundabout. This concept provides good vehicle operations while requiring drivers to slow down approaching and moving through the intersection. Pedestrian facilities would be provided on all legs, connecting to existing facilities, and bikes would be able to travel through the roundabout due to low vehicle speeds or on pathways around the circle, crossing the legs in the pedestrian crosswalks. This concept would require widening the intersection with estimated private and public parking, gas pump, access, and building impacts. The adjacent Warm Springs Road and Lewis Street intersection is not improved with this alternative.

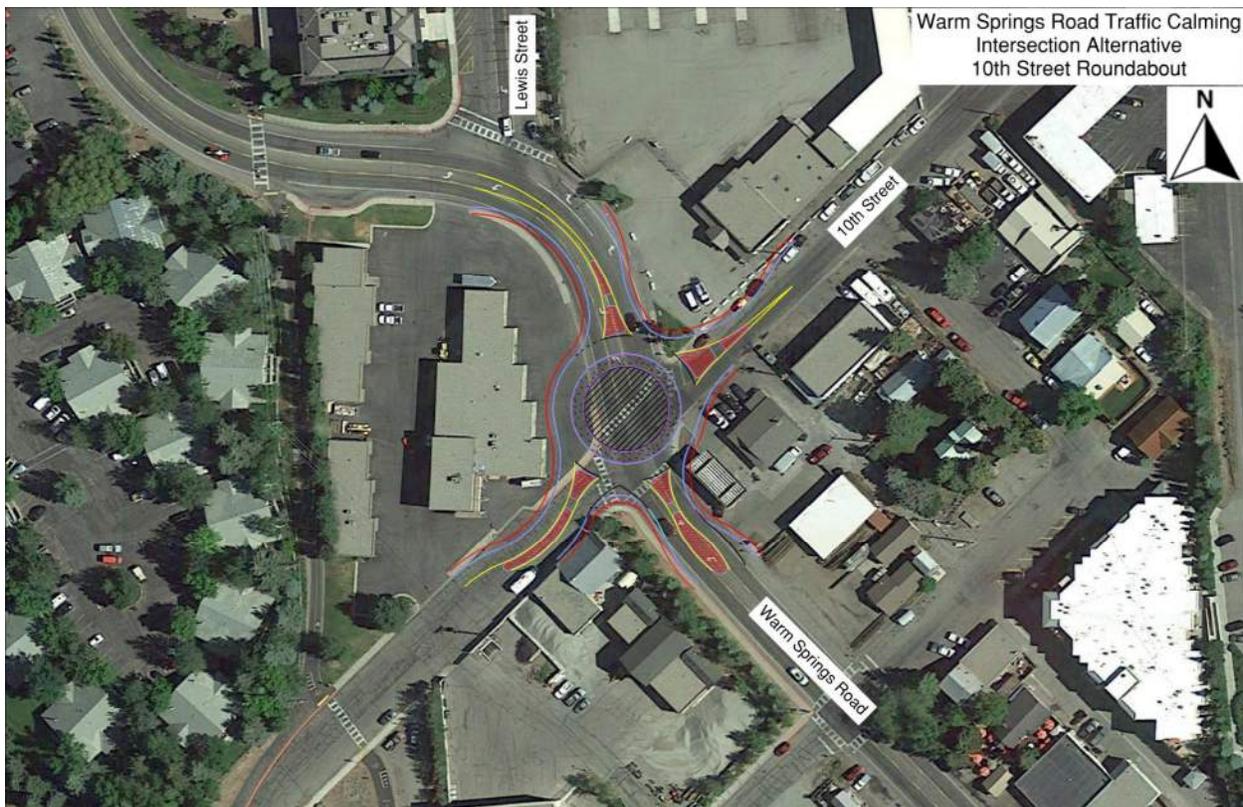


Figure 12. Concept Alternative 1

3.1.2 Concept Alternative 2 - Lewis Street Roundabout

Figure 13 shows the concept for Alternative 2. This alternative replaces the existing stop-controlled Warm Springs Road and Lewis Street intersection with a single lane roundabout. This concept provides good vehicle operations while requiring drivers to slow down approaching and moving through the intersection. Pedestrian facilities would be provided on all legs, connecting to existing facilities, and bikes would be able to travel through the roundabout due to low vehicle speeds or on pathways around the circle, crossing the legs in the pedestrian crosswalks. The bus stop on the west leg would be updated with this alternative. This concept would require widening the intersection with estimated private and public parking and access impacts. The adjacent Warm Springs Road and 10th Street intersection is not improved with this alternative.

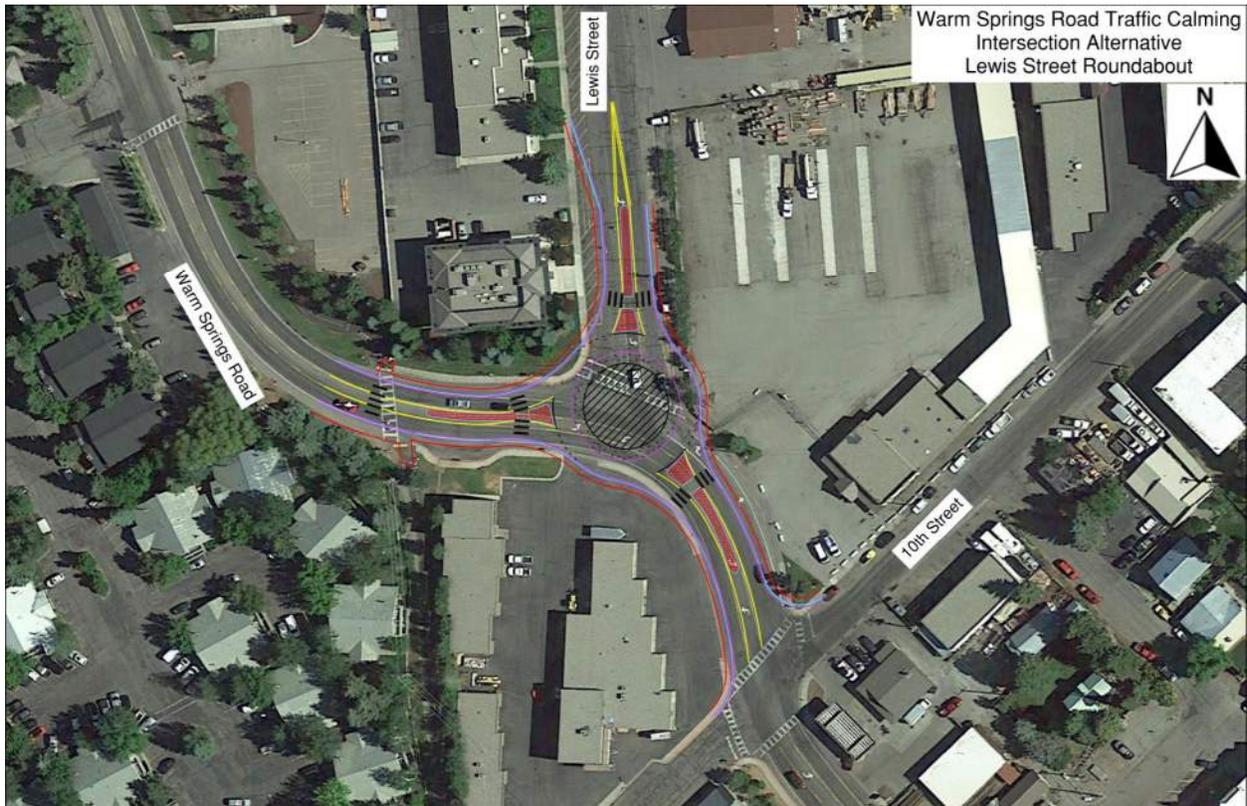


Figure 13. Concept Alternative 2

3.1.3 Concept Alternative 3 - 10th Street and Lewis Street Dog Bone Roundabout

Figure 14 shows the concept for Alternative 3. This alternative replaces the existing stop-controlled Warm Springs Road intersections at both 10th Street and Lewis Street with a single lane “dog bone” roundabout. A dog bone roundabout does not form a complete circle but instead has a “raindrop” or “teardrop shape” in the middle that connects two roundabout intersections. In this case, the two intersections operate as a single larger intersection connected by the dog bone roundabout. This alternative has similar benefits and impacts described for Alternatives 1 and 2. It increases out-of-direction travel for vehicles turning left from some approaches as they must navigate around the entire dog bone to reach the desired street. Pedestrians and bikes potentially have more out-of-direction travel as well.

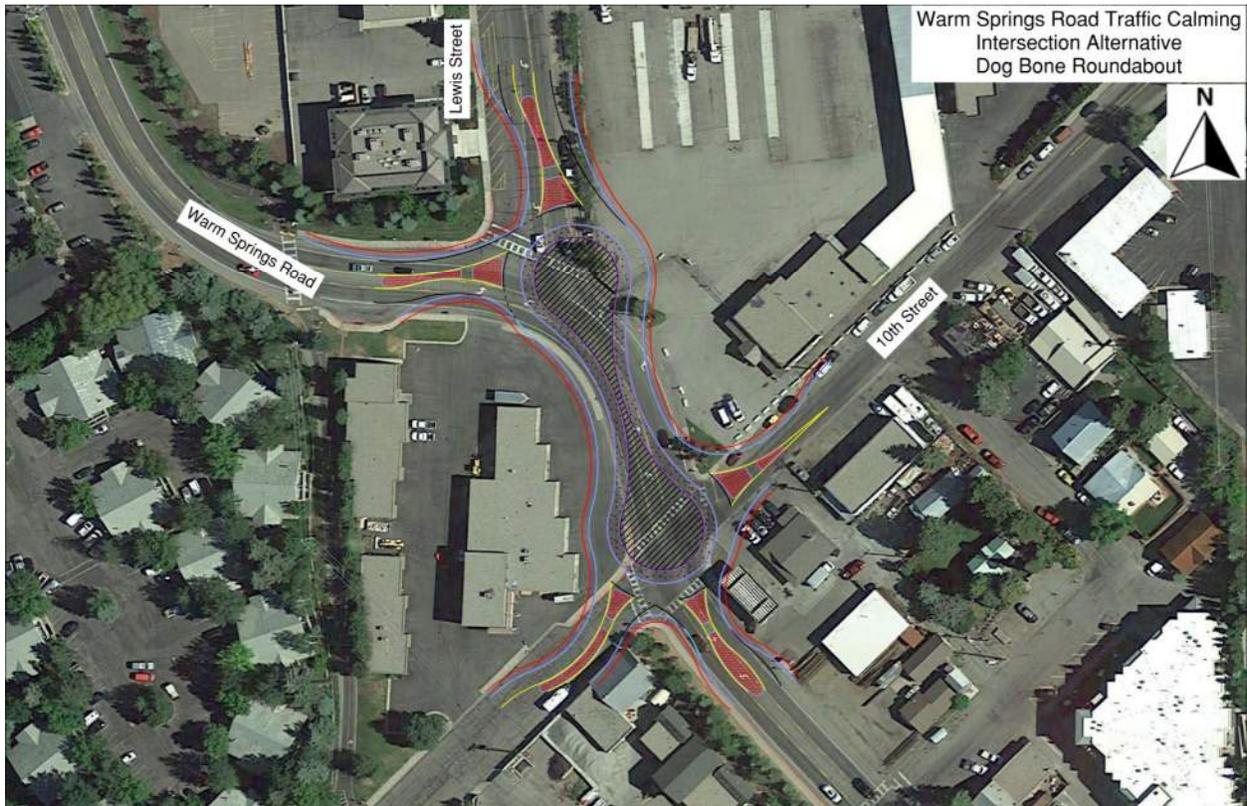


Figure 14. Concept Alternative 3

3.1.4 Concept Alternative 4 – 10th Street & Lewis Street Realignment & Roundabout

Figure 15 shows the concept for Alternative 4. This alternative realigns 10th Street between Warm Springs Road and SH-75 to the north and west to match into the Lewis Street and Warm Springs Road intersection, cutting through the adjacent property. The Lewis Street leg is realigned to the east and a single lane roundabout is developed to serve the new four-leg intersection. The existing 10th Street between Warm Springs Road and SH-75 is proposed to be disconnected from Warm Springs Road but could remain as an access to existing businesses along with Leadville Avenue. The abandoned roadway could also be negotiable for incorporation in development opportunities for adjacent landowners.

As with the other roundabout alternatives, this concept provides good vehicle operations while requiring drivers to slow down approaching and moving through the intersection. Pedestrian facilities would be provided on all legs, connecting to existing facilities, and bikes would be able to travel through the roundabout due to low vehicle speeds or on pathways around the circle, crossing the legs in the pedestrian crosswalks. The bus stop on the west leg of Warm Springs Road would be updated with this alternative. This concept would require widening the intersection with estimated private and public parking, access, and building impacts along with splitting the parcel in the northeast corner. The adjacent Warm Springs Road and 10th Street intersection is updated with this alternative by removing the east leg, as described.

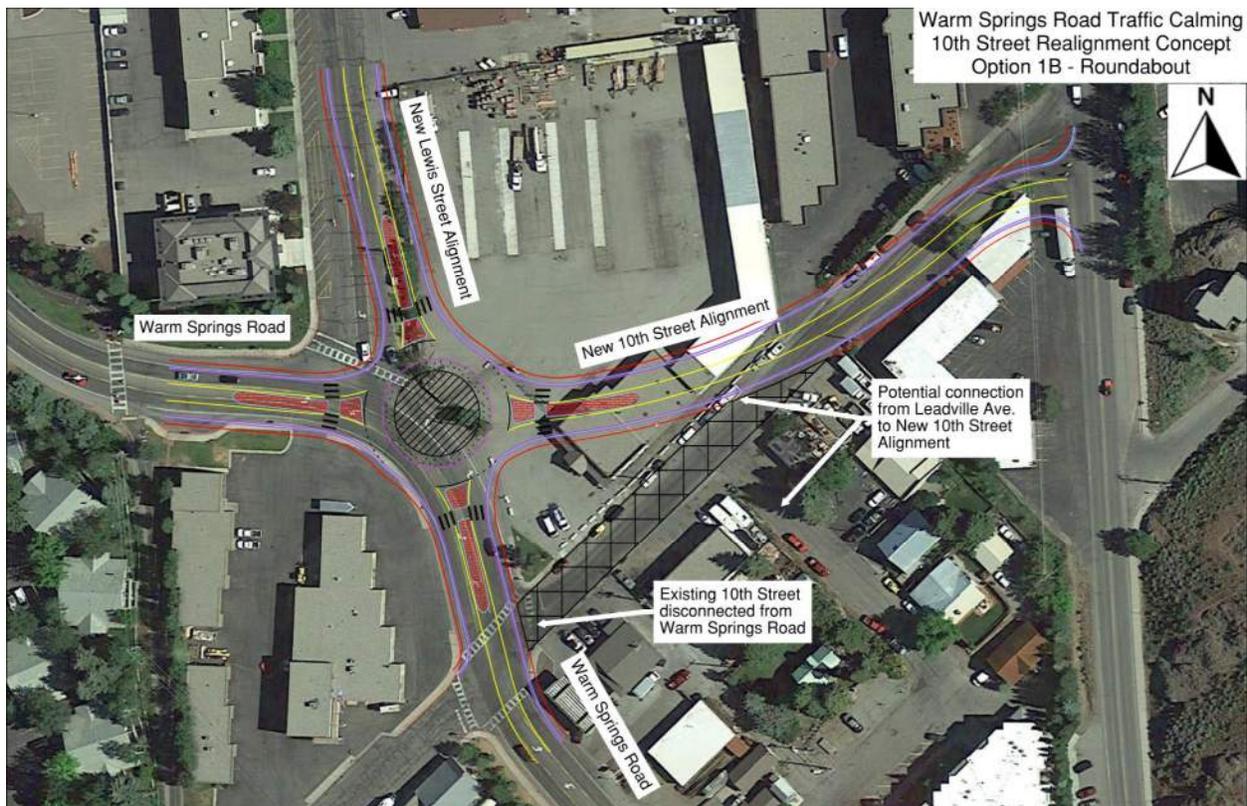


Figure 15. Concept Alternative 4

3.1.5 Concept Alternative 5 – Block/Street Realignment

Figure 16 shows the concept for Alternative 5. This alternative realigns Lewis Street to line up with Leadville Avenue and realigns Warm Springs to be a more direct north/south connection through the adjacent parcel. A new east/west street connects Warm Springs Road and Lewis Street, creating a new block between the realigned Warm Springs Road, realigned Lewis Road, 10th Street, and the new street. The intersections are assumed to be stop controlled in each corner of the new block.

Alternative 5 differs from the others because it includes new local street alignments that impact several parcels. It removes most of the curves in these streets while introducing more intersections to the area.

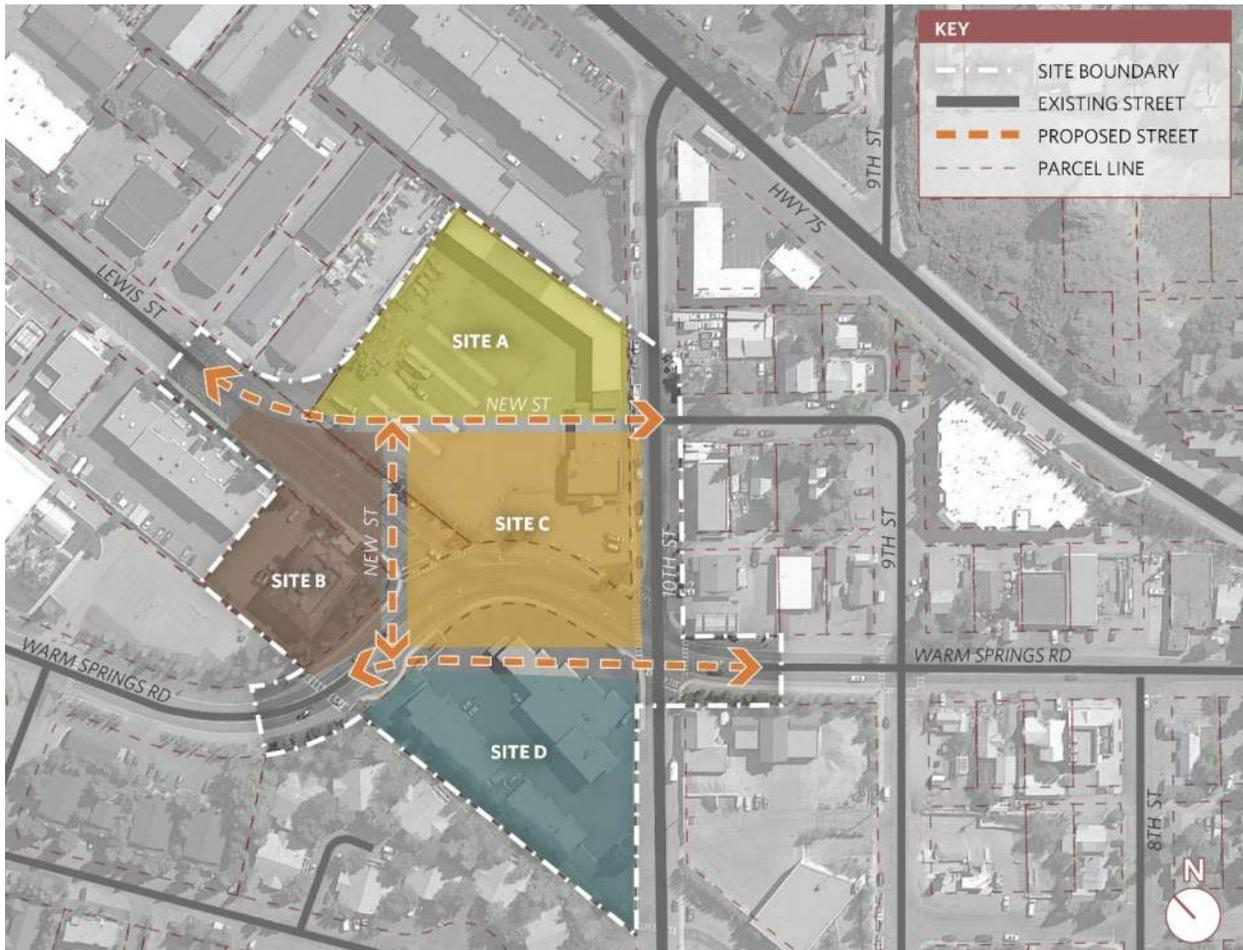


Figure 16. Concept Alternative 5

3.2 First Public Involvement Summary

The first public involvement meeting was held on May 5, 2022, to show the public the different improvement concept alternatives. Online surveys were also available for 2 weeks after the in-person meeting to allow the public to view the alternatives and provide feedback. Public involvement results are shown in **Appendix C**. In total, 219 responses were recorded via the online survey. Not every respondent answered every question.

The results of the public involvement meetings indicated that most people were dissatisfied with the existing intersection configurations and 77 percent of individuals (137 out of 177) said the intersections should be reconfigured or adjusted. One hundred forty-four of 172 individuals (84 percent) said pedestrian enhancements should occur. When asked to rank the different alternatives from first to last, Alternative 4 received the most support, followed by Alternative 1. Alternative 5 received the least support.

3.3 High Level Screening

The project team developed a screening process to evaluate each of the alternatives using 11 separate criteria identified in discussion with the City staff, at the public meeting, and during other project update meetings. Detailed descriptions of each criterion can be found in **Appendix D**.

- Safety
- Improved Connectivity for All Modes
- Warm Springs Road Crossings Improvements
- Split Parcels
- Building Removal
- Parking Impacts
- Improve Existing Business Access & Connectivity
- Opportunity for Redevelopment and/or Placemaking
- Traffic Calming
- Reduce the Number of Intersections/Driveways on Warm Springs Road
- Serve as Parade Detour Route

City staff and members of the project team gave each alternative a score of **GOOD**, **NEUTRAL**, or **POOR** for each of the criteria. A **GOOD** score received +1 point while a **POOR** score received -1 point. A **NEUTRAL** score received 0 points. An overall “score” was given to each alternative by adding up the number of **GOOD** scores and subtracting the number of **POOR** scores. A **NEUTRAL** score for a given criterion neither helped nor hurt an alternative.

3.3.1 Concept Alternative Screening Results

A meeting was held on July 8, 2022, to discuss each alternative, compare the criteria evaluations, and reconcile screening from each evaluator to identify the top two alternatives to move into a more detailed qualitative analysis and screening. City staff and the project team were consistent in identifying the two alternatives to carry forward as Concept Alternative 2 – Lewis Street Roundabout and Concept Alternative 4 – 10th Street & Lewis Street Realignment & Roundabout. Table 5 summarizes the screening process final scoring. Figure 17 also shows a graphical representation of the final score totals.



Table 5. Screening Matrix

Concept Alternative / Criterion	No Build	1– 10 th Street Roundabout	2 - Lewis Street Roundabout	3 - 10 th Street and Lewis Street Dog Bone Roundabout	4– 10 th Street & Lewis Street Realignment & Roundabout	5 – Block/Street Realignment
Safety	NEUTRAL	GOOD	GOOD	GOOD	GOOD	POOR
Improved Connectivity for All Modes	POOR	GOOD	GOOD	POOR	GOOD	GOOD
Warm Springs Road Crossings Improvements	POOR	NEUTRAL	GOOD	GOOD	GOOD	POOR
Split Parcels	GOOD	GOOD	GOOD	POOR	POOR	POOR
Building Removal	GOOD	POOR	GOOD	POOR	POOR	POOR
Parking Impacts	GOOD	POOR	GOOD	POOR	GOOD	POOR
Improve Existing Business Access & Connectivity	POOR	POOR	NEUTRAL	POOR	GOOD	GOOD
Opportunity for Redevelopment and/or Placemaking	POOR	NEUTRAL	NEUTRAL	NEUTRAL	GOOD	GOOD
Traffic Calming	POOR	GOOD	GOOD	GOOD	GOOD	GOOD
Reduce the Number of Intersections/Driveways on Warm Springs Road	NEUTRAL	GOOD	NEUTRAL	GOOD	GOOD	POOR
Serve as Parade Detour Route	GOOD	GOOD	GOOD	POOR	GOOD	GOOD
Total Green Score	4	6	8	4	9	5
Total Red Score	-5	-3	0	-6	-2	-6
Green – Red Total Score	-1	3	8	-2	7	-1



Figure 17. Total Scores

3.4 Alternatives Selected

At a City Council meeting on July 18, 2022, HDR and City staff recommended that the City move Alternative 2, Alternative 4, and the No Build option into a qualitative analysis. The City Council concurred with the recommendation and advanced the three alternatives for more analysis.

Each of the identified alternatives had issues requiring further investigation, mitigation, and comparison in the qualitative analysis. The project team updated the conceptual layouts to address the following issues, as appropriate.

- No Build
 - Add sidewalk to eliminate sidewalk gaps and improve pedestrian ramps, where possible, to improve pedestrian connectivity and ADA/PROWAG compliance.
 - Evaluate existing access near Warm Springs Road/10th Street intersection to improve safety and pedestrian facilities.
- Concept Alternative 2 – Lewis Street Roundabout
 - Verify and update access changes to adjacent properties/businesses.
 - Address Warm Springs Road/10th Street intersection skew, if possible.
 - Adjust on street parking on Lewis Street.
- Concept Alternative 4 – 10th Street & Lewis Street Realignment & Roundabout
 - Verify and update access changes to adjacent properties/businesses.
 - Address Warm Springs Road/10th Street intersection/business access.
 - Update intersection of 10th Street/SH-75 to avoid right-of-way (ROW)/building impacts.

4 Detailed Analysis

4.1 Future Land Use and Public Realm Opportunities

The three alternatives feature differing options to enhance the area. Alternative 4 has the most potential benefit followed by Alternative 2, while the No Build option provides fewer opportunities. Coordination with adjacent business owners will be required to fully realize the benefits of each alternative. The following sections summarize the opportunities that each alternative could provide the City.

4.1.1 No Build

The No Build option provides no changes to the land use or public realm opportunities. The large, underdeveloped parcel owned by Albertsons could still be redeveloped. The transition from the downtown core to the light industrial zone on Warm Springs Road would not be improved. The quick transition of land uses in the area may still lead to a disjointed experience.

4.1.2 Alternative 2 – Lewis Street Roundabout

Alternative 2 provides several opportunities to enhance the area. The alternative allows for development of the large undeveloped parcel owned by Albertsons, and there is potential to

provide enhanced features for pedestrians, bikes, and placemaking. Extra space at the southern portion of the Albertsons' parcel could allow for a distinctive plaza to be created providing the needed space for a gateway element identifying a transition in and out of the downtown core. The roadway improvements will require some ROW from surrounding businesses but the impact to the parcels is minimal.

The opportunity also has potential to enhance placemaking in the area. Space inside the roundabout could be used for public realm enhancements such as artwork, specialty landscaping, or signage and wayfinding. New roadway improvements enable public realm and placemaking elements to continue farther down Warm Springs Road and Lewis Street along the streets themselves. Public realm and placemaking elements that could be incorporated include wide detached sidewalks/pathways, tree coverage, specialty paving, signage and wayfinding, and/or artwork.

4.1.3 Alternative 4 – 10th Street & Lewis Street Realignment & Roundabout

Similar to Alternative 2, the realigned roundabout in Alternative 4 provides opportunity to enhance the area. The alternative allows for developing the large undeveloped parcel owned by Albertsons, and there is potential to provide enhanced features for pedestrians, bikes, and placemaking. A new parcel would be formed between Warm Springs Road and Leadville Avenue with frontage to the proposed roundabout. Land use at this site could be commercial, continuing the downtown feel farther up Warm Springs Road. The parcel could also be sold to adjacent businesses to aid in the redevelopment and enhancement of those parcels. Roadway improvements will have impacts to existing businesses and roads such as 10th Street, Leadville Avenue and Lewis Street.

4.2 Forecasted Travel Patterns

4.2.1 Study Year, Target LOS and Growth Rates

For the purposes of this study, the project team identified year 2042 as the design year for the improvements. Per section A.15 of the Idaho Transportation Department's *Roadway Design Manual*, a target LOS D was set to analyze the intersection improvements. According to the manual, this LOS standard is "applicable for Federal-aid construction on State and local highway excluding highways on the National Highway System." Should the project receive federal funding, identified improvements would need to meet the LOS D threshold.

Since 10th Street intersects Main Street (SH-75), which is an ITD roadway, a target LOS D was set for the intersection improvements per Table A-3 in section A.15.01 of ITD's *Roadway Design Manual*⁴.

The City of Ketchum does not lie within boundaries of a Municipal Planning Organization (MPO) that would produce a travel demand model that projects trip generation out into the future. Therefore, the project team calculated an average growth rate to represent traffic volume growth.

⁴ Idaho Transportation Department (ITD). Roadway Design manual. 2012

Traffic volumes on SH-75 were analyzed using historical data from ITD’s ATRs to see how they have grown between 1990 and 2019. Due to the Covid 19 pandemic shutdowns, 2020 data was again excluded. Historical data from the ATR stations show patterns of steady and rapid growth on SH-75 up to the early 2000s, followed by a steep decline that coincides with the Great Recession. Traffic volumes started increasing again around 2012 and have steadily increased each year approaching the highest volumes seen before the Great Recession. Using the ATR data, the project team calculated a historical annual average growth rate of 1.44 percent for SH-75 and applied it as a regional growth factor for the City of Ketchum. Figure 18 shows the change in traffic volumes since 1990.

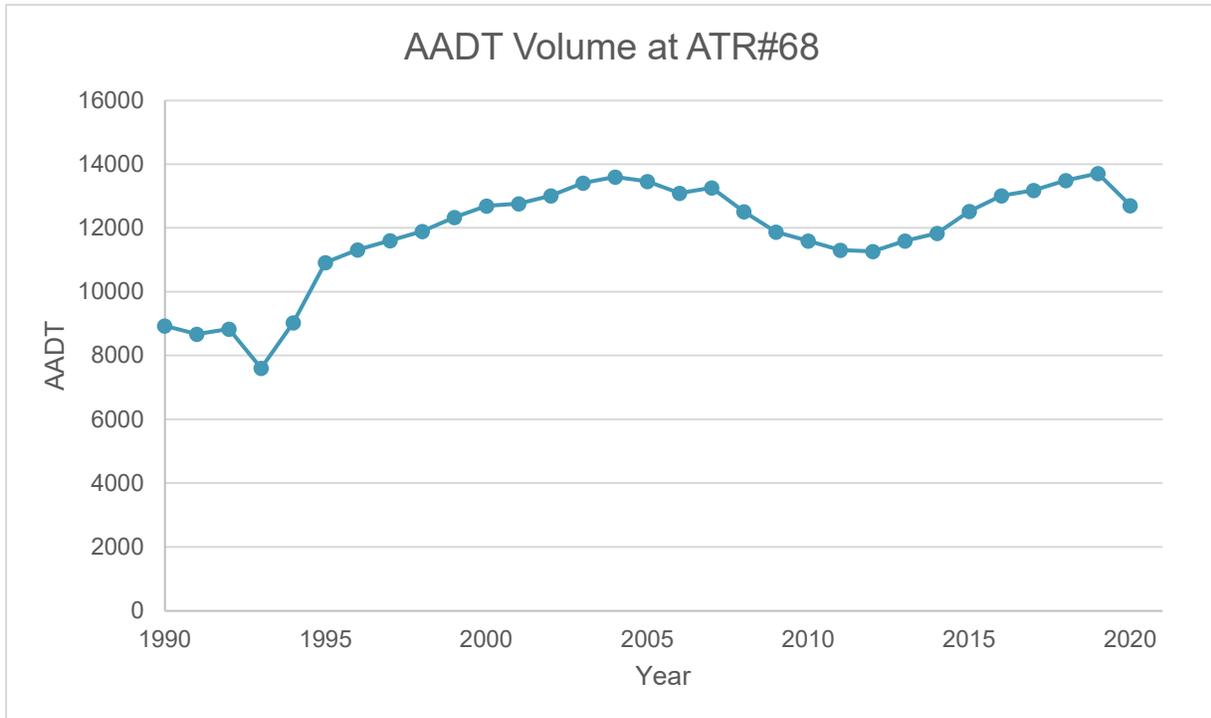


Figure 18. Traffic Volumes since 1990

While the City of Ketchum has experienced recent traffic growth, it also is a resort destination City that is sensitive to economic downturns. Over the design life of the improvements, one can reasonably expect an economic downturn and traffic growth to slow or decline as compared to recent trends. The historical 1.44 percent calculated smooths out the ups and downs that the City may experience throughout the future economic cycles and provides a growth scenario consistent with historical trends.

4.2.2 Forecasted Travel Patterns

HDR applied the historical growth rates to the unadjusted August count volumes to estimate future travel demand. For Alternative 2 and the No Build option, the growth rate was applied to the turning movements directly. However, Alternative 4 removes a portion of 10th Street and converts the intersection of 10th Street and Warm Springs from a four-way intersection into a T-intersection. 10th Street traffic is then rerouted to a new four-way intersection at Warm Springs Road and Lewis Street. For this new intersection, traffic demand entering and leaving the study

area was assumed to remain the same and turning movement volumes were estimated using the iterative procedure – directional method outlined in National Cooperative Highway Research Program (NCHRP) 765, *Analytical Travel Forecasting Approaches for Project-Level Planning and Design*⁵. The directional method uses an iterative approach to alternatively balance entering traffic and departing traffic volumes until an acceptable level of convergence is reached. The T-intersections turning movements were manually reconfigured assuming similar traffic patterns. Results of the turning movement analysis are shown in Figure 19 and Figure 20.

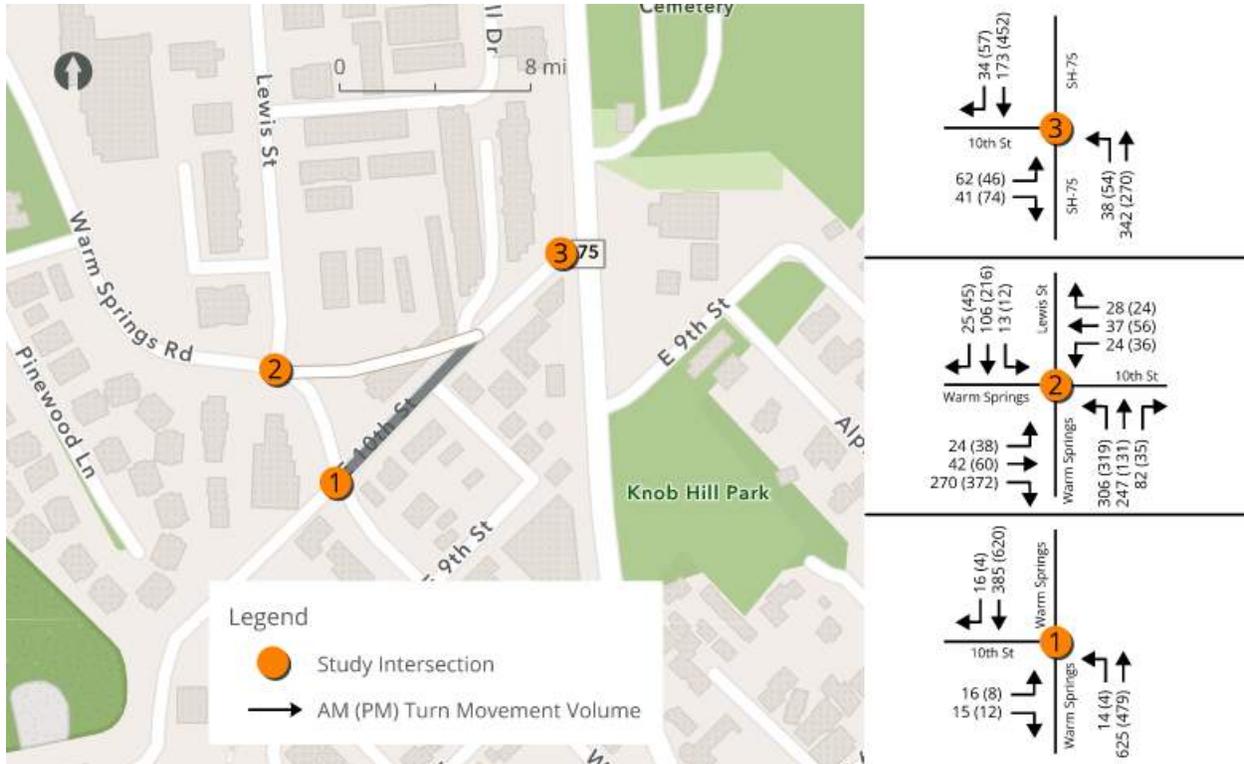


Figure 19. Alternative 4 Peak Volumes

⁵ National Cooperative Highway Research Program (NCHRP). Report 765. Analytical Travel Forecasting Approaches for Project-Level Planning and Design. Transportation Research Board of the National Academies. 2014.

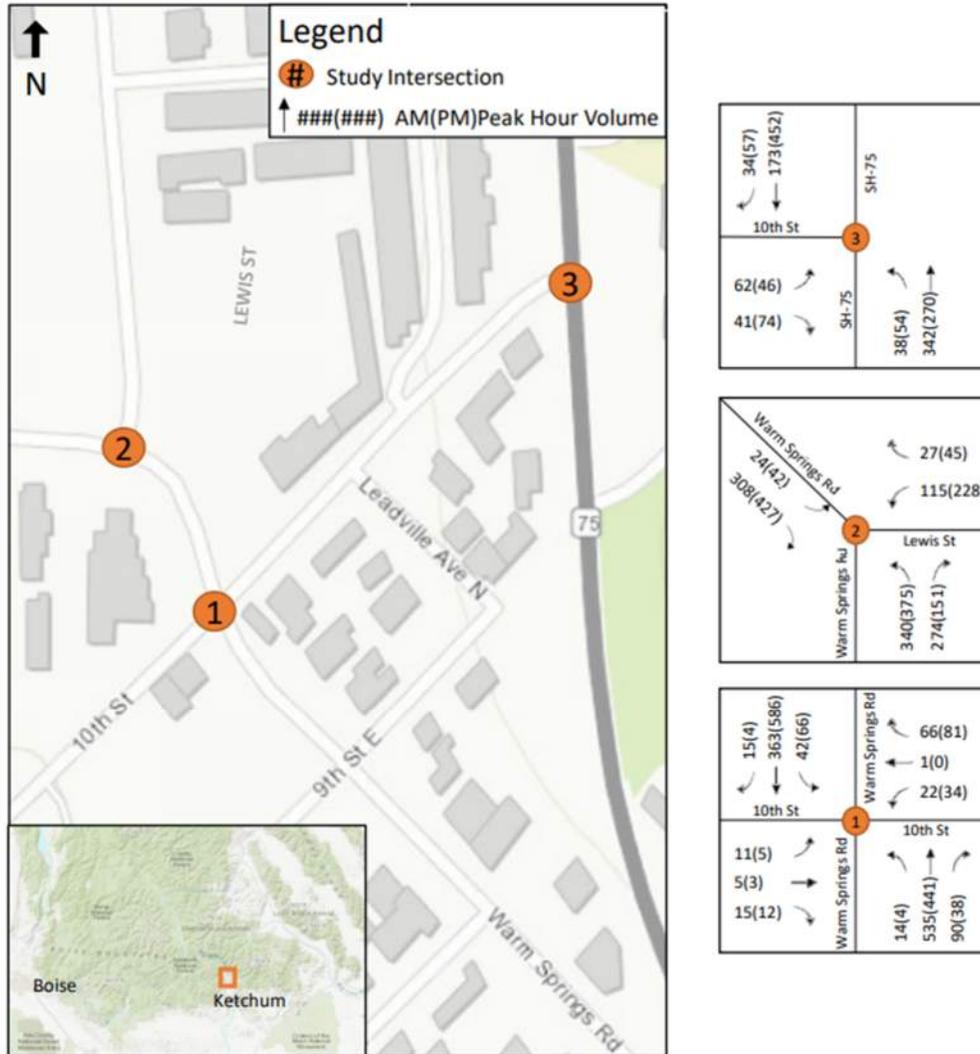


Figure 20: No Build and Alternative 2 Peak Volumes

4.3 Future Capacity Analysis

4.3.1 Analysis Software and Settings

The project team used SIDRA 9 software to analyze the roundabout alternatives and Synchro 11 software to analyze the stop-controlled intersections. Both software programs use the HCM methodology to compute delay, LOS, and V/C ratios. The peak hour factor for the future scenarios was set at 0.92 per HCM recommendations.

4.3.2 No Build Results

In the No Build option, the three study intersections are expected to experience longer delays than in the existing conditions; however, they are estimated to operate at or above the LOS D threshold. The movements on Warm Springs Road continue to see shorter delays; however, the increased volume on Warm Springs Road decreases the number of gaps available for vehicles on the side streets. The 10th Street and Warm Springs Road intersection side street operations

decrease from LOS B to LOS C or D and the Warm Springs Road and Lewis Street intersection decreases to a LOS D from LOS B. Results are presented in Table 6 and detailed results can be found in **Appendix E**.

Table 6. No Build Traffic Operations - August 2042 AM & (PM) Peak

Intersection	Overall Intersection LOS	Movement	Delay (s)	LOS	95 th Percentile Queue Length (feet)	V/C
10 th Street / Warm Springs Road	C (D)	NET/L/R	18 (23.5)	C (C)	6.6 (6.6)	0.09 (0.10)
		SWT/L/R	16.7 (27.7)	C (D)	17.6 (48.4)	0.22 (0.45)
		SBL	8.8 (8.7)	A (A)	2.2 (4.4)	0.04 (0.07)
		NBL	8 (8.8)	A (A)	0 (0)	0.01 (0.01)
10 th Street / SH-75	B (C)	NEL	7.7 (18.2)	A (C)	2.2 (30.8)	0.03 (0.32)
		NBT/L	12.4 (8.7)	B (A)	13.2 (4.4)	0.16 (0.06)
Warm Springs Road/ Lewis Street	C (D)	SBL	15.2 (27.3)	C (D)	22.0 (88.0)	0.26 (0.62)
		SBR	14.3 (11.0)	B (B)	2.2 (4.4)	0.04 (0.08)
		SEL	9.0 (8.7)	A (A)	2.2 (2.2)	0.03 (0.05)

The presence of a TWLT lane at the Warm Springs Road and Lewis Street intersection allows for a two-stage southbound left turn movement; vehicles will first turn into the turn lane and then merge into traffic. The HCM methodology assumes a smaller gap acceptance with a TWLT lane than if traffic were to pull out directly into traffic. Therefore, the HCM assumes TWLT lanes increase capacity at an intersection. Without the TWLT lane, the southbound left turn at Lewis Street is estimated to operate at LOS F in the PM peak hour with delays exceeding 90 seconds.

4.3.3 Alternative 2 – Lewis Street Roundabout

Table 7. Alternate 2 Traffic Operations - August 2042 AM & (PM) Peak

Intersection	Overall Intersection LOS	Movement	Delay (s)	LOS	95 th Percentile Queue Length (feet)	V/C
Warm Springs Road/ Lewis Street	A (A)	NET/L/R	8.2 (7.3)	A (A)	103.0 (79.2)	0.51 (0.45)
		SWT/L/R	5.6 (7.9)	A (A)	18.8 (42.3)	0.17 (0.34)
		ET/L/R	6.0 (9.3)	A (A)	42.6 (78.6)	0.31 (0.49)

The results of the analysis presented in Table 7 show that the proposed roundabout at 10th Street and Warm Springs Road is estimated to operate at LOS A during the design year using the August 2042 volumes. The V/C ratios for each leg are all under 0.85 suggesting that excess

capacity exists to handle an increase in traffic volumes if they increase faster than projected. The 10th Street intersections will not be improved and are expected to operate similarly to the No Build option scenario.

4.3.4 Alternative 4

Table 8. Alternative 4 Traffic Operations - August 2042 AM & (PM) Peak

Intersection	Overall Intersection LOS	Movement	Delay (s)	LOS	95 th Percentile Queue Length (feet)	V/C
10 th Street / Warm Springs Road / Lewis Street	A (A)	NBT/L/R	9.5 (7.7)	A (A)	116.1 (73.9)	0.56 (0.45)
		WBT/L/R	6.7 (6.4)	A (A)	14.2 (17.3)	0.14 (0.16)
		SBT/L/R	5.9 (8.4)	A (A)	19.6 (43.8)	0.18 (0.35)
		EBT/L/R	6.3 (10.0)	A (B)	44.5 (93.3)	0.32 (0.52)
10 th Street / Warm Springs Road	C (C)	NWL	8.2 (8.9)	A (A)	0 (0)	0.01 (0.01)
		NEL/R	17.4 (17.7)	C (C)	6.6 (4.4)	0.10 (0.07)

The re-aligned roundabout provides nearly the same LOS for the roundabout as Alternative 2 as presented in Table 8. The roundabout delays remain low at 10 seconds or less and V/C ratios under 0.85. Again, excess capacity is present in the roundabout for an increase in traffic. The overall LOS for the roundabout is A in both the AM and PM peaks. The 10th Street intersection near the Ernest Hemingway STEAM School is converted into a T-intersection and Warm Springs Road is expected to operate with minimal delays. The side street of the T-intersection will operate at LOS C and experience approximately 17 seconds of delay during the peak hours. The 10th Street intersection with Main Street will operate as shown in the No Build option scenario.

4.4 Impacts to Transit, Pedestrians and Bikes

4.4.1 No Build

The No Build option provides no improvement for transit, pedestrians, or bikes.

4.4.2 Alternative 2 – Lewis Street Roundabout

Mountain Rides eastbound bus stop facilities on Warm Springs Road would likely need to be relocated to provide access to the adjacent parcel. Based on conversations with Mountain Rides, bus routes would be unimproved by the change, but not negatively impacted by the roundabout.

This option would enhance bike connectivity. The bike lanes can be extended to the roundabout where ramps would transition cyclists to multi-use pathways to circulate around the roundabout away from vehicle traffic. Roundabouts generally slow traffic, which would provide an opportunity for experienced cyclists to traverse the intersection in the vehicle lanes, if desired.

Pedestrian connectivity would be improved with this option. The long crossing distance at Lewis Street would be eliminated. Sidewalks would be installed on Warm Springs Road where there are none, thereby enhancing connectivity. Slower vehicle speeds would decrease pedestrian stress while using the intersection. Although the Warm Springs and Lewis Street intersection would be improved with the change, the 10th Street intersection would still present a challenge to pedestrians. Due to the skewed intersection and tight ROW, the long crossing distances are likely to remain. Installing ADA/PROWAG-complaint ramps would bring the intersection into compliance.

4.4.3 Alternative 4

In Alternative 4, Mountain Rides eastbound bus stop facilities on Warm Springs Road would likely need to be relocated to provide access to the adjacent parcel. Based on conversations with Mountain Rides, bus operations would be improved with this option. Instead of busses turning right onto Warm Springs from 10th Street, this movement would become a through movement in the roundabout once 10th Street is realigned.

Like Alternative 2, this option would enhance bike connectivity. The bike lanes could be extended to the roundabout where ramps would transition cyclists to multi-use pathways to circulate around the roundabout away from vehicle traffic. Roundabouts generally slow traffic, which would provide an opportunity for experienced cyclists to traverse the intersection in the vehicle lanes, if desired.

Pedestrian connectivity would be improved with this option. The long crossing distance at Lewis Street would be eliminated. Sidewalks would be installed on Warm Springs Road where there are none, thereby enhancing connectivity. Slower vehicle speeds would decrease pedestrian stress while using the intersection. This option would also eliminate the skewed crossings at the 10th Street intersection.

4.5 Future Safety Analysis

The project team used the Federal Highway Administration's (FHWA) Crash Modification Factor (CMF) Clearinghouse⁶ to identify the potential change in crash frequency or severity associated with the possible changes to the intersections. CMFs were selected based on study similarities to Warm Springs Road roadway conditions and star rating (minimum of three stars). Each CMF also needed to include all crash types and crash severities. When there are no CMFs available for the specific situation, a qualitative discussion is provided. The following sections summarize the findings:

⁶ Crash Modification Factors Clearinghouse. <https://www.cmfclearinghouse.org/>

4.5.1 No Build

The No Build option would not improve safety at the location.

4.5.2 Alternative 2

The proposed treatments of converting the minor road stop control to a roundabout is covered by CMF ID 227 (3 Stars), which estimates a 44 percent decrease in all crashes. With this alternative, the long pedestrian crossing on Lewis Street is split into a two-stage crossing at the roundabout. The improvements propose installing rectangular rapid flashing beacons on all three legs of the roundabout, which are covered by CMF ID 11158. This CMF estimates a 31 percent decrease in crashes.

The left-turn sight distance issue on 10th Street onto Warm Springs Road would not be eliminated with these improvements. Some mitigation measures with this option could include:

- Prohibiting this left turn movement and requiring individuals to turn right and make a U-turn through the roundabout to complete the movement.
- Eliminate parking on 10th Street to move the turn lane closer to the curbing.
- Revising the striping on the east leg of the 10th Street and Warm Springs to be a left-turn lane instead of a TWLT lane, which would prevent delivery vehicles from parking so close to the intersection.

4.5.3 Alternative 4

The proposed treatments of converting the minor road stop control to a roundabout is covered by CMF ID 227 (3 Stars), which estimates a 44 percent decrease in all crashes. With this alternative, the long pedestrian crossing on Lewis Street is split into a two-stage crossing at the roundabout. The improvements propose installing rectangular rapid flashing beacons on all four legs of the roundabout, which are covered by CMF ID 11158. This CMF estimates a 31 percent decrease in crashes. The 10th Street left-turn sight distance issue would be eliminated.

4.6 Opinion of Probable Costs

Typically, roadway projects can be evaluated using a cost/benefit analysis, where alternative costs can be compared to potential safety benefits to determine if the alternative would be beneficial to the public. In this case, crashes within the project area are so infrequent that it would be hard to reach an acceptable benefit-over-cost ratio with any alternative. The benefits to the community may come from improvements to the public realm and a decrease to pedestrian and biker stress when using the roadway. These factors are hard to quantify; therefore, the alternatives are evaluated on total project costs.

The build alternatives probable costs are summarized in Table 9. Three costs were estimated for each alternative: engineering fee, construction costs, and right-of-way costs. Based on experience, the engineering fee is estimated to be approximately 15% of the construction costs. The ROW costs are estimated based upon conceptual layouts and prices provided by a ROW agent contracted with the City.



Table 9. Project Alternatives – Total Project Costs

Cost	Alternative 2	Alternative 4
Engineering Fee	\$288,000	\$398,000
Construction Cost	\$1,532,000	\$2,117,000
Right-of-way Cost	\$1,075,100	\$4,461,700
Total Project Cost	\$3,278,100	\$7,506,700

As with all costs, ROW and construction costs are subject to market changes and could increase or decrease depending on economic conditions. Each cost is based on current year (2022) unit prices and dollar values and adjustment factors are not applied for a future construction year. Comparatively, Alternative 4 would remain more costly than Alternative 2 in future years.

ROW costs make up the largest difference between the two alternatives. Alternative 4 creates an opportunity for the City to vacate the abandoned 10th Street connection and sell it to adjacent land owners. The vacated parcel’s estimated value is \$1,277,325 and the revenue from the sale could be used to offset some of the ROW costs, but that would need to be determined during ROW negotiations.

4.7 Second Public Meeting Summary

A second public meeting was held on October 3, 2022, followed by 2 weeks of online public comment. The public meeting consisted of three separate presentations (one each in the morning, mid-day and evening) that outlined the results of the concept study, presented revised concept exhibits for Alternatives 2 and 4, and reported the benefits or drawbacks of each alternative. For individuals who could not go to the meeting in person, an online form was made available for the public to provide feedback. Additionally, the public meeting included a presentation on a concept study project concerning Main Street between 6th Street and River Street and the online survey reflected both projects.

The results of the in-person meetings showed most people preferred Alternative 4 at 60 percent compared to 40 percent for Alternative 2. A summary of the online public involvement results can be found in **Appendix F**.

5 Recommendations and Next Steps

5.1 Comparing the Alternatives

Alternative 4 provides the most benefit to all modes of travel and has the most opportunity to improve the public realm. The re-aligned roadway would simplify the roadway network and remove most of the perceived safety issues. To achieve these benefits, the alternative would greatly impact adjacent parcels. Alternative 2 would similarly calm traffic and remove safety issues at the Lewis Street and Warm Springs Road intersection but would not address issues at the Warm Springs Road and 10th Street intersection. The placemaking opportunities would not be as robust as with Alternative 4 but could still be significant in providing a transition from the

downtown core to the light industrial or residential areas. Final concept exhibits can be found in **Appendix G**.

Alternative 2 is expected to be significantly less expensive than Alternative 4 primarily because it does not require purchase of large amount of ROW on the undeveloped Albertsons parcel. There could be opportunities to reduce ROW costs for Alternative 4 during the negotiation process. For example, the City could vacate the 10th Street parcel and the adjacent landowners could purchase the property, thereby offsetting ROW costs elsewhere.

5.2 Recommendation and Interim Improvements

If the City can acquire funding to cover the higher ROW and construction costs, Alternative 4 is recommended. The alternative best improves multi-modal connectivity and operation, simplifies the roadway network, provides the most opportunity for placemaking, and is preferred by both Mountain Rides and the public. If the higher amount of funding is not available, then Alternative 2 is recommended as this option still provides traffic calming, multi-modal, placemaking, and safety benefits to the area. The No Build option is not recommended as it does not provide benefits meeting the City's goals.

As the City pursues funding for the larger aspects of the build alternatives, there are several opportunities to enhance the area in the meantime. Even if the City chooses the No Build option, the City could consider the following improvements.

- Restripe the TWLT in front of the gas station to be a dedicated left turn lane. This will prevent delivery vehicles from parking close to the intersection.
- Replace dilapidated sidewalk, install sidewalk where none exists within the study area, and install ADA/PROWAG complaint pedestrian ramps.
- Install bulb-outs at the Lewis Street and Warm Springs Road intersection to shorten pedestrian crossings (Figure 21).



Figure 21. Example Bulb-outs at Lewis Street

- Explore one or more of the following options to mitigate the difficult 10th Street left turn sight distance issue:
 - Prohibit southbound left turns at the intersection by signage or adding a diverter in the intersection.
 - Convert the intersection from two-way stop control to all-way stop control.

5.3 Mitigating Impact of Future Nearby Developments

If there is a large time gap between the selection of the preferred alternative and construction such that nearby parcels are developed, the City should require the developments to submit a traffic impact study and evaluate how those developments will impact the selected alternative. Large high-density developments, multi-family homes, or new traffic generators along Warm Springs Road could impact estimated future operations. The roundabout options are shown to have excess capacity, but major changes to travel patterns may require re-evaluation with the traffic generated specifically by the new development. Opportunities may exist to coordinate placemaking opportunities with adjacent development as well as mitigate traffic impact.

Traffic circulation of developments will need to be considered depending on which alternative is selected. For example, if Alternative 2 is selected, the developer of the Albertson's parcel should avoid creating a situation that increases the number of vehicles performing southbound left turns at 10th Street onto Warm Springs Road. Although not generating crashes today, the sight distance problems at this intersection could be exacerbated if the number of vehicles making this movement is increased. One possible solution is to have most vehicles access the development from Lewis Street to reduce conflicts at 10th Street. The City should work with the developer to identify the best traffic circulation patterns as the development goes through the permitting process.

5.4 Nearby Enhancements to Consider

To fully realize the benefits of enhancing Alternative 2 or Alternative 4, the City should consider programming improvements between Saddle Road and 6th Street on Warm Springs Road. These improvements should be targeted at reducing pedestrian crossing widths, providing sidewalk connectivity and creating more placemaking opportunities. The following are suggested improvements:

- Install sidewalk on the north side of Warm Springs Road between 10th Street and 7th Street.
- Install bulb-outs at 9th Street, 8th Street, and 7th Street to better delineate parking and shorten pedestrian crossings (Figure 22).

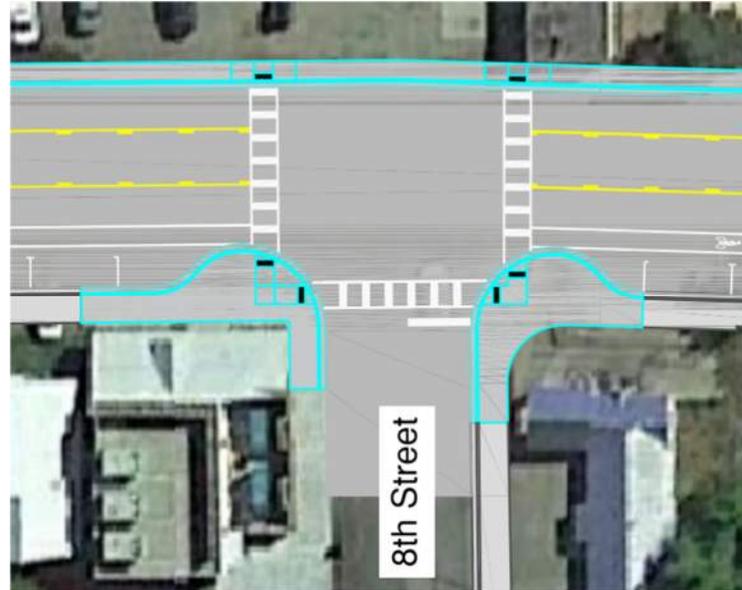


Figure 22. Example Bulb-outs at 8th Street

- Evaluate opportunities to convert the informal pathways people use to traverse down the hill from Main Street to Warm Springs Road into formal pathways.
- Install bike lanes from 6th Street to the Wood River Trail Crossings. To reduce the need for a retaining wall, a sharrow can be installed in the downhill direction between 6th Street and 9th Street until a full lane bike lane can be developed.
- Provide a multi-use pathway on the west side of Warm Springs Road Between the Wood River Trail crossing and Saddle Road to provide access to the Wood River Trail pathway and easier pedestrian connection to the bus stops (Figure 23). This could be implemented with a lane reconfiguration to remove the center turn lane, which could also help in providing traffic calming.

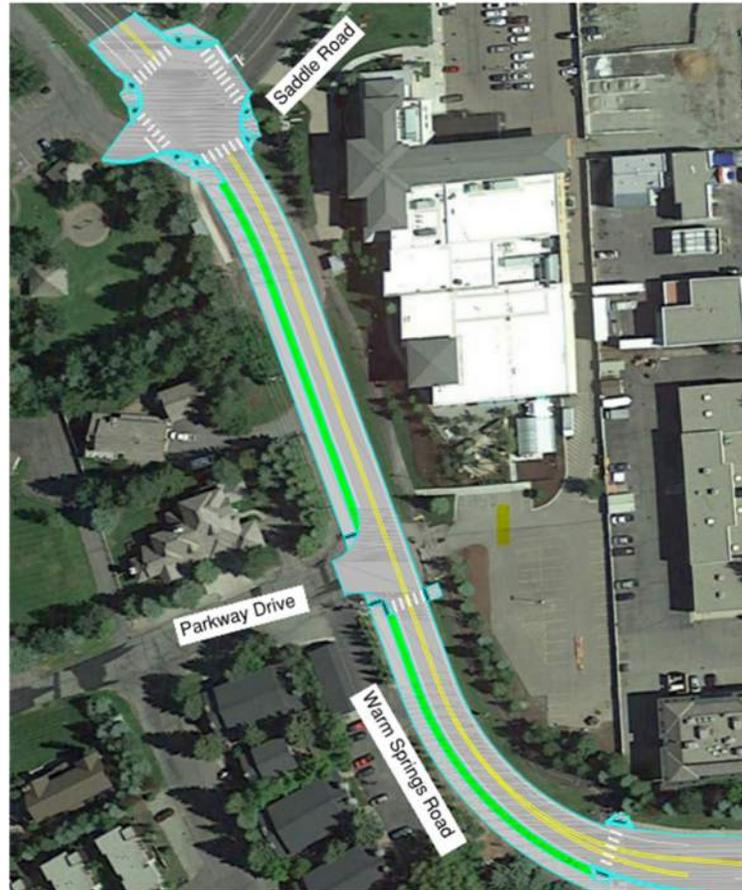


Figure 23. Example Separated Pathway Along Warm Springs Road

- Revise the trail crossing at Saddle Road to be set back from the intersection.
- Evaluate a roundabout at the Saddle Road intersection.
- Install sidewalk on 10th Street between Warm Springs Road and Main Street.

Appendix H contains conceptual exhibits of possible enhancements.

5.5 Next Steps

The City should pursue grant opportunities to fund the recommended improvements. Outreach for stakeholder participation in the grant pursuits should occur, including Mountain Rides, Blaine County School District, and the Ketchum Urban Renewal Agency.



A

Existing Turning Movement Counts



L2 Data Collection

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Idaho (208) 860-7554 Utah (801) 413-2993

Study: HDR0026
 Intersection: SH-75 / 10th Street
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : SH-75 & 10th St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 1

Groups Printed- General Traffic - 3+ Axle Heavy Trucks

Start Time	SH-75 From North				SH-75 From South				10th Street From Southwest				Int. Total
	Bear Right	Thru	Peds	App. Total	Thru	Hard Left	Peds	App. Total	Hard Right	Bear Left	Peds	App. Total	
07:00 AM	3	12	0	15	35	2	1	38	3	4	1	8	61
07:15 AM	5	13	0	18	54	2	0	56	4	4	0	8	82
07:30 AM	7	20	0	27	65	2	0	67	3	5	0	8	102
07:45 AM	6	25	0	31	63	9	0	72	7	14	0	21	124
Total	21	70	0	91	217	15	1	233	17	27	1	45	369
08:00 AM	7	22	2	31	71	6	0	77	6	21	0	27	135
08:15 AM	7	36	0	43	64	4	1	69	7	11	1	19	131
08:30 AM	6	28	0	34	62	9	0	71	9	8	0	17	122
08:45 AM	5	42	0	47	56	9	2	67	8	6	1	15	129
Total	25	128	2	155	253	28	3	284	30	46	2	78	517

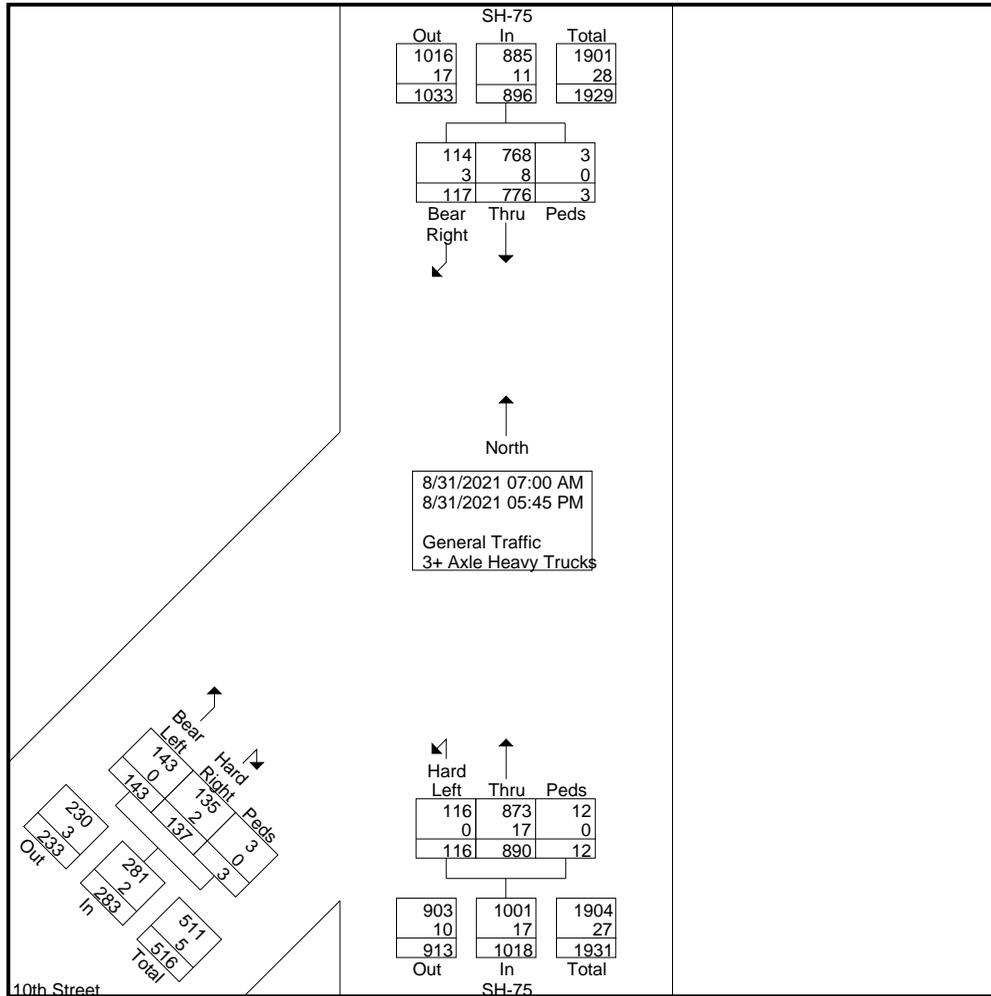
04:00 PM	14	87	0	101	46	9	0	55	17	10	0	27	183
04:15 PM	9	97	1	107	51	13	4	68	12	7	0	19	194
04:30 PM	11	87	0	98	67	12	1	80	16	8	0	24	202
04:45 PM	8	64	0	72	36	6	0	42	10	9	0	19	133
Total	42	335	1	378	200	40	5	245	55	34	0	89	712
05:00 PM	8	67	0	75	56	6	0	62	6	10	0	16	153
05:15 PM	8	64	0	72	62	13	0	75	12	5	0	17	164
05:30 PM	9	54	0	63	42	6	3	51	9	11	0	20	134
05:45 PM	4	58	0	62	60	8	0	68	8	10	0	18	148
Total	29	243	0	272	220	33	3	256	35	36	0	71	599
Grand Total	117	776	3	896	890	116	12	1018	137	143	3	283	2197
Apprch %	13.1	86.6	0.3		87.4	11.4	1.2		48.4	50.5	1.1		
Total %	5.3	35.3	0.1	40.8	40.5	5.3	0.5	46.3	6.2	6.5	0.1	12.9	
General Traffic	114	768	3	885	873	116	12	1001	135	143	3	281	2167
% General Traffic	97.4	99	100	98.8	98.1	100	100	98.3	98.5	100	100	99.3	98.6
3+ Axle Heavy Trucks	3	8	0	11	17	0	0	17	2	0	0	2	30
% 3+ Axle Heavy Trucks	2.6	1	0	1.2	1.9	0	0	1.7	1.5	0	0	0.7	1.4

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File Name : SH-75 & 10th St
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 Start Date : 8/31/2021
 Page No : 2



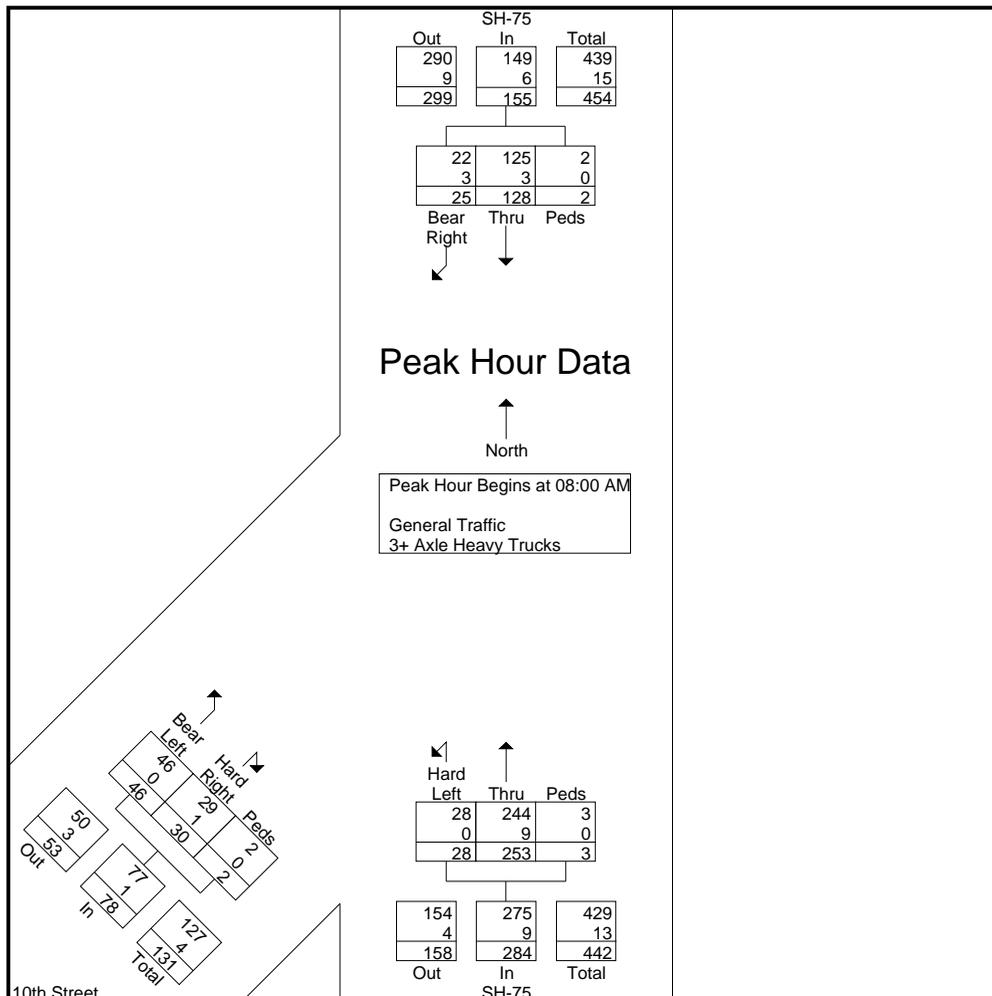
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 Intersection: SH-75 / 10th Street
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : SH-75 & 10th St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 3

Start Time	SH-75 From North				SH-75 From South				10th Street From Southwest				Int. Total
	Bear Right	Thru	Peds	App. Total	Thru	Hard Left	Peds	App. Total	Hard Right	Bear Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	7	22	2	31	71	6	0	77	6	21	0	27	135
08:15 AM	7	36	0	43	64	4	1	69	7	11	1	19	131
08:30 AM	6	28	0	34	62	9	0	71	9	8	0	17	122
08:45 AM	5	42	0	47	56	9	2	67	8	6	1	15	129
Total Volume	25	128	2	155	253	28	3	284	30	46	2	78	517
% App. Total	16.1	82.6	1.3		89.1	9.9	1.1		38.5	59	2.6		
PHF	.893	.762	.250	.824	.891	.778	.375	.922	.833	.548	.500	.722	.957
General Traffic	22	125	2	149	244	28	3	275	29	46	2	77	501
% General Traffic	88.0	97.7	100	96.1	96.4	100	100	96.8	96.7	100	100	98.7	96.9
3+ Axle Heavy Trucks	3	3	0	6	9	0	0	9	1	0	0	1	16
% 3+ Axle Heavy Trucks	12.0	2.3	0	3.9	3.6	0	0	3.2	3.3	0	0	1.3	3.1



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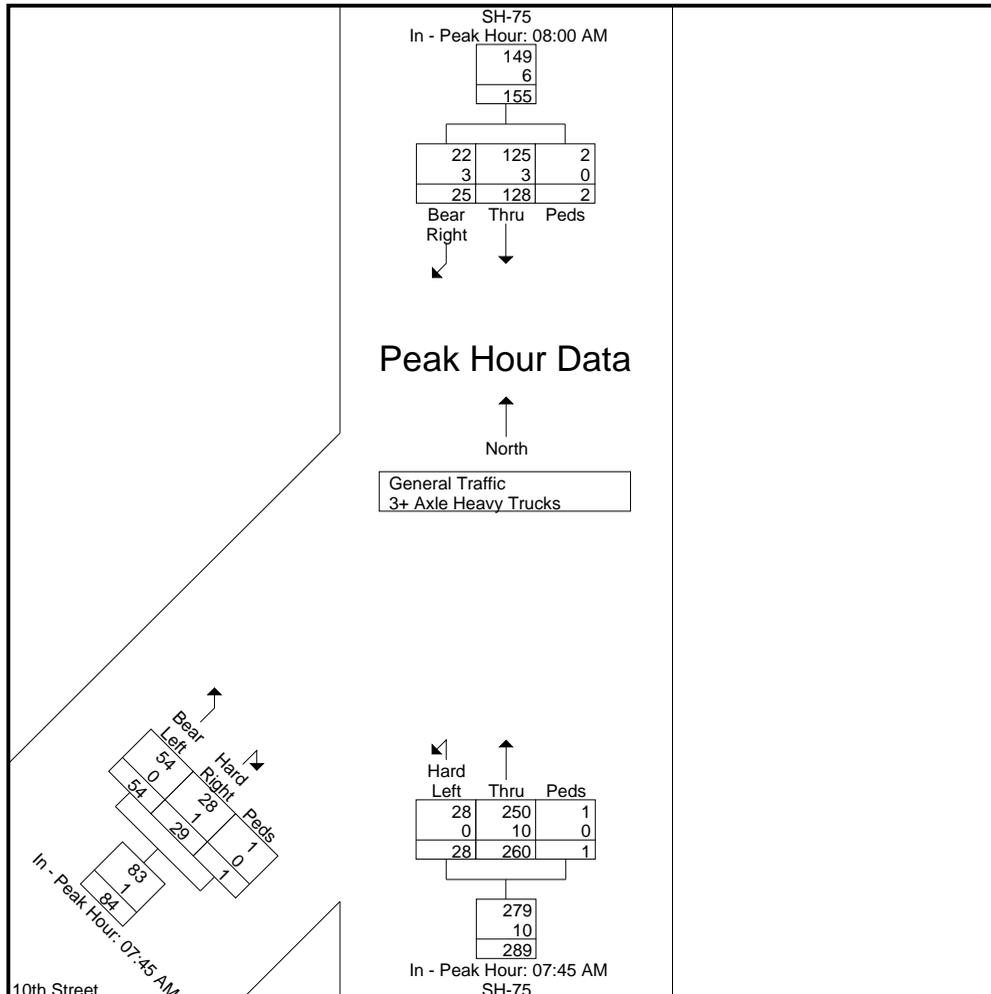
File Name : SH-75 & 10th St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 4

Start Time	SH-75 From North				SH-75 From South				10th Street From Southwest				Int. Total
	Bear Right	Thru	Peds	App. Total	Thru	Hard Left	Peds	App. Total	Hard Right	Bear Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:45 AM			
+0 mins.	7	22	2	31	63	9	0	72	7	14	0	21
+15 mins.	7	36	0	43	71	6	0	77	6	21	0	27
+30 mins.	6	28	0	34	64	4	1	69	7	11	1	19
+45 mins.	5	42	0	47	62	9	0	71	9	8	0	17
Total Volume	25	128	2	155	260	28	1	289	29	54	1	84
% App. Total	16.1	82.6	1.3		90	9.7	0.3		34.5	64.3	1.2	
PHF	.893	.762	.250	.824	.915	.778	.250	.938	.806	.643	.250	.778
General Traffic	22	125	2	149	250	28	1	279	28	54	1	83
% General Traffic	88	97.7	100	96.1	96.2	100	100	96.5	96.6	100	100	98.8
3+ Axle Heavy Trucks	3	3	0	6	10	0	0	10	1	0	0	1
% 3+ Axle Heavy Trucks	12	2.3	0	3.9	3.8	0	0	3.5	3.4	0	0	1.2



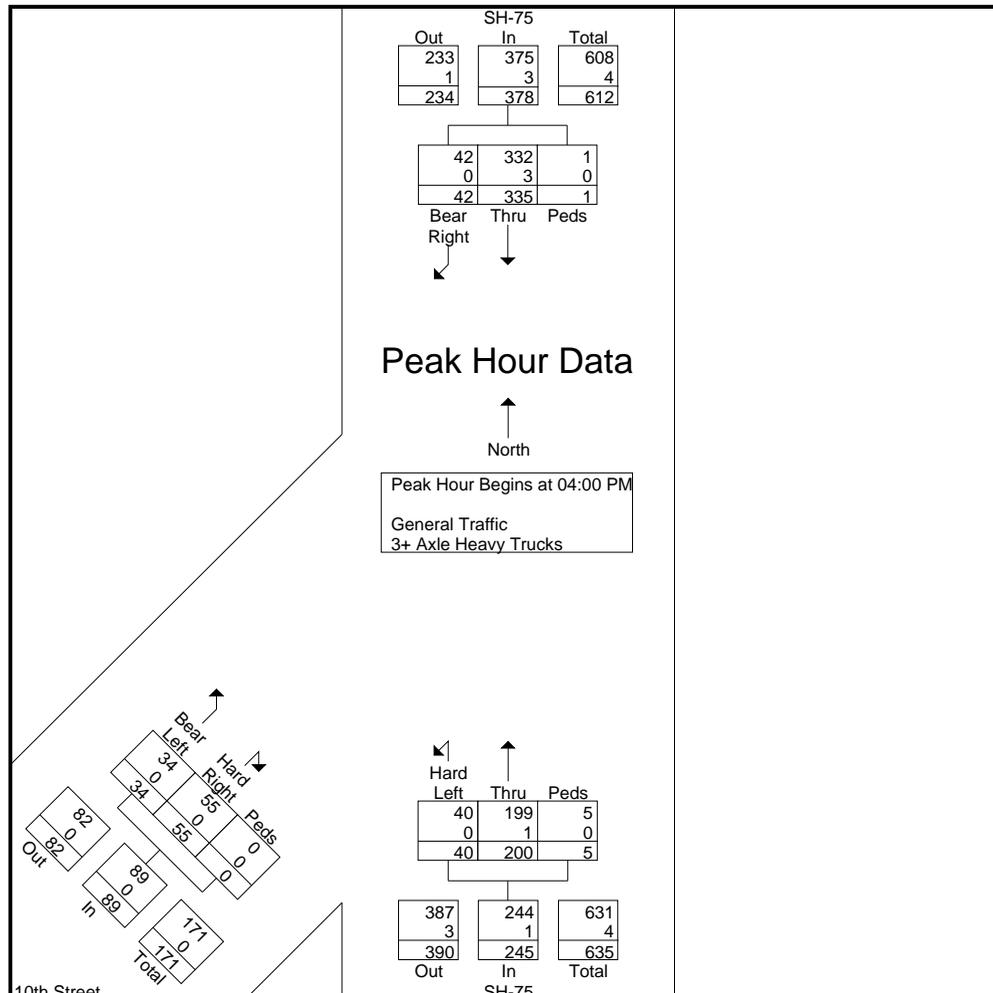
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Control: Stop Sign

File Name : SH-75 & 10th St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 5

Start Time	SH-75 From North				SH-75 From South				10th Street From Southwest				Int. Total
	Bear Right	Thru	Peds	App. Total	Thru	Hard Left	Peds	App. Total	Hard Right	Bear Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	14	87	0	101	46	9	0	55	17	10	0	27	183
04:15 PM	9	97	1	107	51	13	4	68	12	7	0	19	194
04:30 PM	11	87	0	98	67	12	1	80	16	8	0	24	202
04:45 PM	8	64	0	72	36	6	0	42	10	9	0	19	133
Total Volume	42	335	1	378	200	40	5	245	55	34	0	89	712
% App. Total	11.1	88.6	0.3		81.6	16.3	2		61.8	38.2	0		
PHF	.750	.863	.250	.883	.746	.769	.313	.766	.809	.850	.000	.824	.881
General Traffic	42	332	1	375	199	40	5	244	55	34	0	89	708
% General Traffic	100	99.1	100	99.2	99.5	100	100	99.6	100	100	0	100	99.4
3+ Axle Heavy Trucks	0	3	0	3	1	0	0	1	0	0	0	0	4
% 3+ Axle Heavy Trucks	0	0.9	0	0.8	0.5	0	0	0.4	0	0	0	0	0.6



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Control: Stop Sign

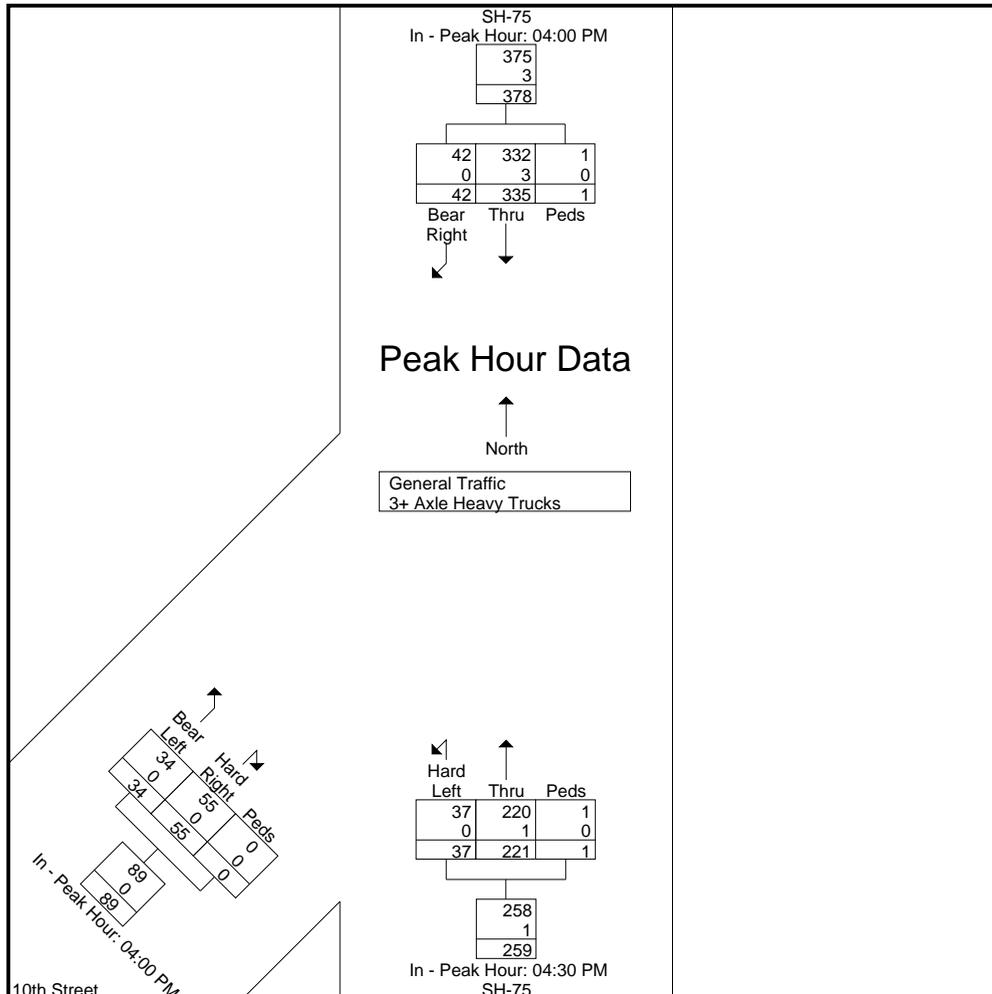
File Name : SH-75 & 10th St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 6

Start Time	SH-75 From North				SH-75 From South				10th Street From Southwest				Int. Total
	Bear Right	Thru	Peds	App. Total	Thru	Hard Left	Peds	App. Total	Hard Right	Bear Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM			
+0 mins.	14	87	0	101	67	12	1	80	17	10	0	27
+15 mins.	9	97	1	107	36	6	0	42	12	7	0	19
+30 mins.	11	87	0	98	56	6	0	62	16	8	0	24
+45 mins.	8	64	0	72	62	13	0	75	10	9	0	19
Total Volume	42	335	1	378	221	37	1	259	55	34	0	89
% App. Total	11.1	88.6	0.3		85.3	14.3	0.4		61.8	38.2	0	
PHF	.750	.863	.250	.883	.825	.712	.250	.809	.809	.850	.000	.824
General Traffic	42	332	1	375	220	37	1	258	55	34	0	89
% General Traffic	100	99.1	100	99.2	99.5	100	100	99.6	100	100	0	100
3+ Axle Heavy Trucks	0	3	0	3	1	0	0	1	0	0	0	0
% 3+ Axle Heavy Trucks	0	0.9	0	0.8	0.5	0	0	0.4	0	0	0	0



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City, State: Ketchum, Idaho
Control: Stop Sign

File Name : SH-75 & 10th St
Site Code : 00000000
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Page No : 7

Image 1



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Study: HDR0026
 Intersection: Warm Springs / 10th Street
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & 10th St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 1

Groups Printed- General Traffic - 3+ Axle Heavy Trucks

Start Time	10th Street From Northeast					Warm Springs Road From Southeast					10th Street From Southwest					Warm Springs Road From Northwest					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	3	0	1	0	4	2	35	4	2	43	0	0	0	1	1	0	24	3	0	27	75
07:15 AM	7	2	1	0	10	6	47	6	1	60	0	0	0	1	1	3	29	3	1	36	107
07:30 AM	4	2	4	0	10	2	51	7	0	60	9	0	0	0	9	1	40	7	1	49	128
07:45 AM	13	0	7	1	21	28	91	5	0	124	7	1	5	0	13	8	79	4	0	91	249
Total	27	4	13	1	45	38	224	22	3	287	16	1	5	2	24	12	172	17	2	203	559
08:00 AM	12	1	3	0	16	18	131	1	0	150	1	3	2	0	6	2	69	6	2	79	251
08:15 AM	7	0	4	1	12	12	92	1	0	105	2	0	0	0	2	0	60	11	0	71	190
08:30 AM	17	0	2	0	19	9	82	3	0	94	1	0	1	2	4	1	61	10	0	72	189
08:45 AM	10	0	0	0	10	6	81	2	1	90	1	0	0	0	1	0	93	12	1	106	207
Total	46	1	9	1	57	45	386	7	1	439	5	3	3	2	13	3	283	39	3	328	837

04:00 PM	20	0	10	2	32	6	104	0	0	110	2	2	2	2	8	0	110	15	0	125	275
04:15 PM	19	0	6	0	25	6	86	3	2	97	3	0	1	1	5	3	118	8	5	134	261
04:30 PM	13	0	4	0	17	8	70	0	0	78	2	0	1	0	3	0	101	15	1	117	215
04:45 PM	8	0	5	1	14	8	67	0	0	75	2	0	0	0	2	0	105	11	1	117	208
Total	60	0	25	3	88	28	327	3	2	360	9	2	4	3	18	3	434	49	7	493	959
05:00 PM	16	0	5	1	22	2	94	0	0	96	1	0	0	1	2	0	138	13	1	152	272
05:15 PM	22	0	7	2	31	8	95	0	4	107	3	0	1	2	6	0	91	12	1	104	248
05:30 PM	7	0	0	0	7	9	81	0	0	90	1	0	0	1	2	1	96	9	0	106	205
05:45 PM	8	0	7	1	16	10	71	1	0	82	3	0	0	0	3	2	72	8	1	83	184
Total	53	0	19	4	76	29	341	1	4	375	8	0	1	4	13	3	397	42	3	445	909
Grand Total	186	5	66	9	266	140	1278	33	10	1461	38	6	13	11	68	21	1286	147	15	1469	3264
Apprch %	69.9	1.9	24.8	3.4		9.6	87.5	2.3	0.7		55.9	8.8	19.1	16.2		1.4	87.5	10	1		
Total %	5.7	0.2	2	0.3	8.1	4.3	39.2	1	0.3	44.8	1.2	0.2	0.4	0.3	2.1	0.6	39.4	4.5	0.5	45	
General Traffic	186	5	66	9	266	138	1273	32	10	1453	38	6	13	11	68	21	1275	146	15	1457	3244
% General Traffic	100	100	100	100	100	98.6	99.6	97	100	99.5	100	100	100	100	100	100	99.1	99.3	100	99.2	99.4
3+ Axle Heavy Trucks	0	0	0	0	0	2	5	1	0	8	0	0	0	0	0	0	11	1	0	12	20
% 3+ Axle Heavy Trucks	0	0	0	0	0	1.4	0.4	3	0	0.5	0	0	0	0	0	0	0.9	0.7	0	0.8	0.6

L2 Data Collection

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Study: HDR0026
 Intersection: Warm Springs / 10th Street
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 Control: Stop Sign

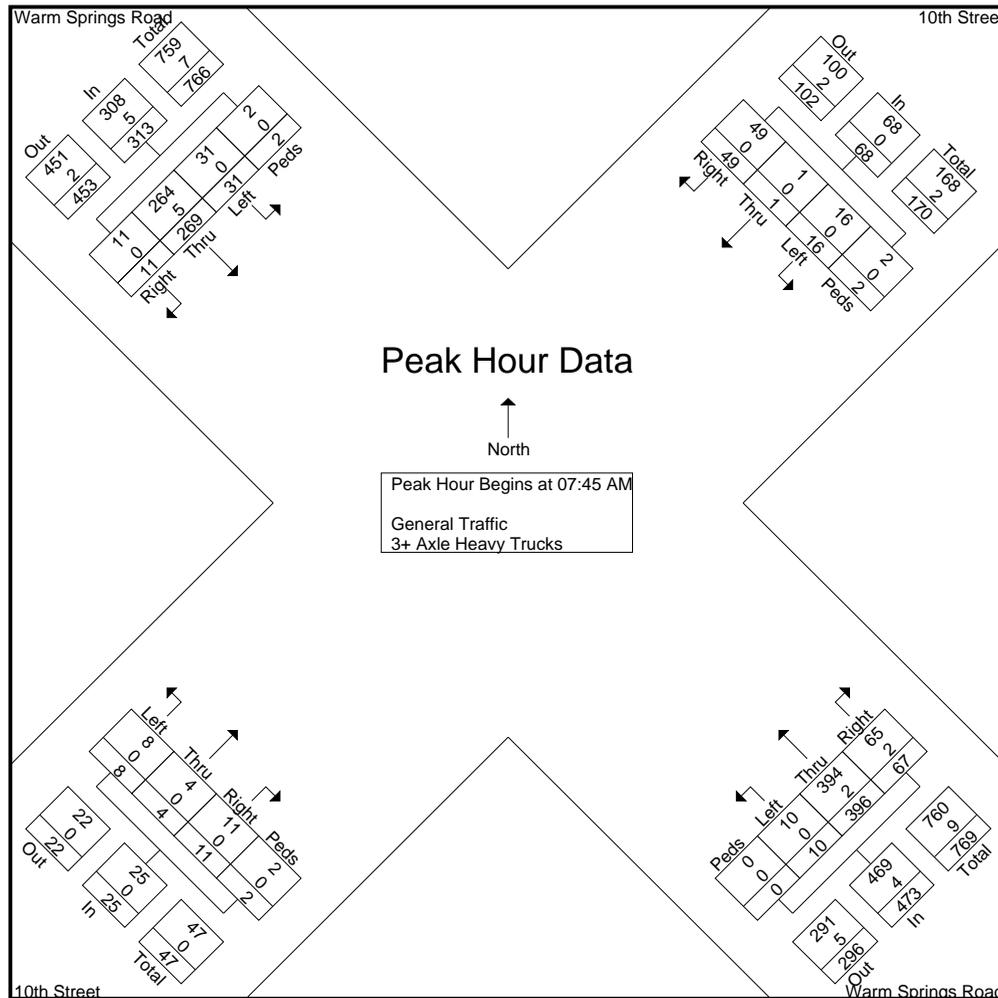
File Name : Warm Springs Rd & 10th St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 3

Start Time	10th Street From Northeast					Warm Springs Road From Southeast					10th Street From Southwest					Warm Springs Road From Northwest					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:45 AM

07:45 AM	13	0	7	1	21	28	91	5	0	124	7	1	5	0	13	8	79	4	0	91	249
08:00 AM	12	1	3	0	16	18	131	1	0	150	1	3	2	0	6	2	69	6	2	79	251
08:15 AM	7	0	4	1	12	12	92	1	0	105	2	0	0	0	2	0	60	11	0	71	190
08:30 AM	17	0	2	0	19	9	82	3	0	94	1	0	1	2	4	1	61	10	0	72	189
Total Volume	49	1	16	2	68	67	396	10	0	473	11	4	8	2	25	11	269	31	2	313	879
% App. Total	72.1	1.5	23.5	2.9		14.2	83.7	2.1	0		44	16	32	8		3.5	85.9	9.9	0.6		
PHF	.721	.250	.571	.500	.810	.598	.756	.500	.000	.788	.393	.333	.400	.250	.481	.344	.851	.705	.250	.860	.875
General Traffic	49	1	16	2	68	65	394	10	0	469	11	4	8	2	25	11	264	31	2	308	870
% General Traffic	100	100	100	100	100	97.0	99.5	100	0	99.2	100	100	100	100	100	100	98.1	100	100	98.4	99.0
3+ Axle Heavy Trucks	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	0	5	0	0	5	9
% 3+ Axle Heavy Trucks	0	0	0	0	0	3.0	0.5	0	0	0.8	0	0	0	0	0	0	1.9	0	0	1.6	1.0



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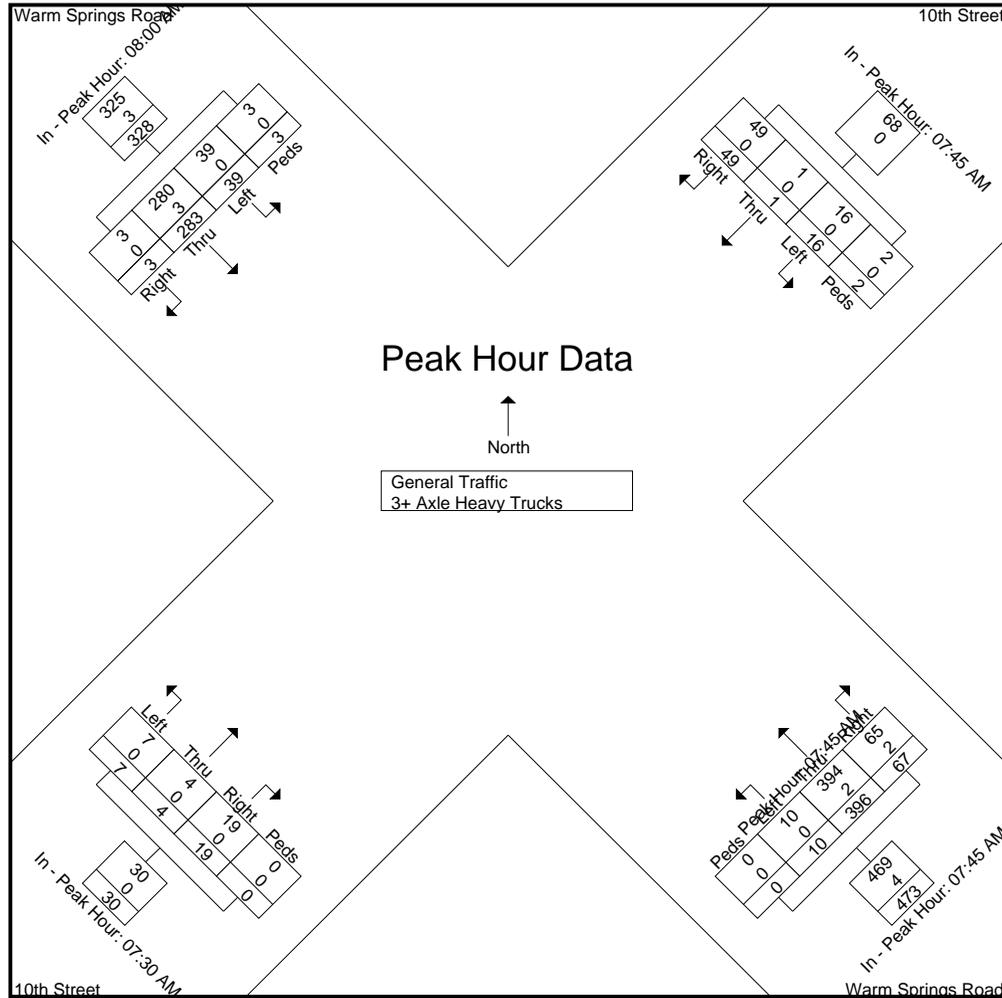
Study: HDR0026
Intersection: Warm Springs / 10th Street
City, State: Ketchum, Idaho
Control: Stop Sign

File Name : Warm Springs Rd & 10th St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 4

Start Time	10th Street From Northeast					Warm Springs Road From Southeast					10th Street From Southwest					Warm Springs Road From Northwest					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM					07:45 AM					07:30 AM					08:00 AM				
+0 mins.	13	0	7	1	21	28	91	5	0	124	9	0	0	0	9	2	69	6	2	79
+15 mins.	12	1	3	0	16	18	131	1	0	150	7	1	5	0	13	0	60	11	0	71
+30 mins.	7	0	4	1	12	12	92	1	0	105	1	3	2	0	6	1	61	10	0	72
+45 mins.	17	0	2	0	19	9	82	3	0	94	2	0	0	0	2	0	93	12	1	106
Total Volume	49	1	16	2	68	67	396	10	0	473	19	4	7	0	30	3	283	39	3	328
% App. Total	72.1	1.5	23.5	2.9		14.2	83.7	2.1	0		63.3	13.3	23.3	0		0.9	86.3	11.9	0.9	
PHF	.721	.250	.571	.500	.810	.598	.756	.500	.000	.788	.528	.333	.350	.000	.577	.375	.761	.813	.375	.774
General Traffic	49	1	16	2	68	65	394	10	0	469	19	4	7	0	30	3	280	39	3	325
% General Traffic	100	100	100	100	100	97	99.5	100	0	99.2	100	100	100	0	100	100	98.9	100	100	99.1
3+ Axle Heavy Trucks	0	0	0	0	0	2	2	0	0	4	0	0	0	0	0	0	3	0	0	3
% 3+ Axle Heavy Trucks	0	0	0	0	0	3	0.5	0	0	0.8	0	0	0	0	0	0	1.1	0	0	0.9



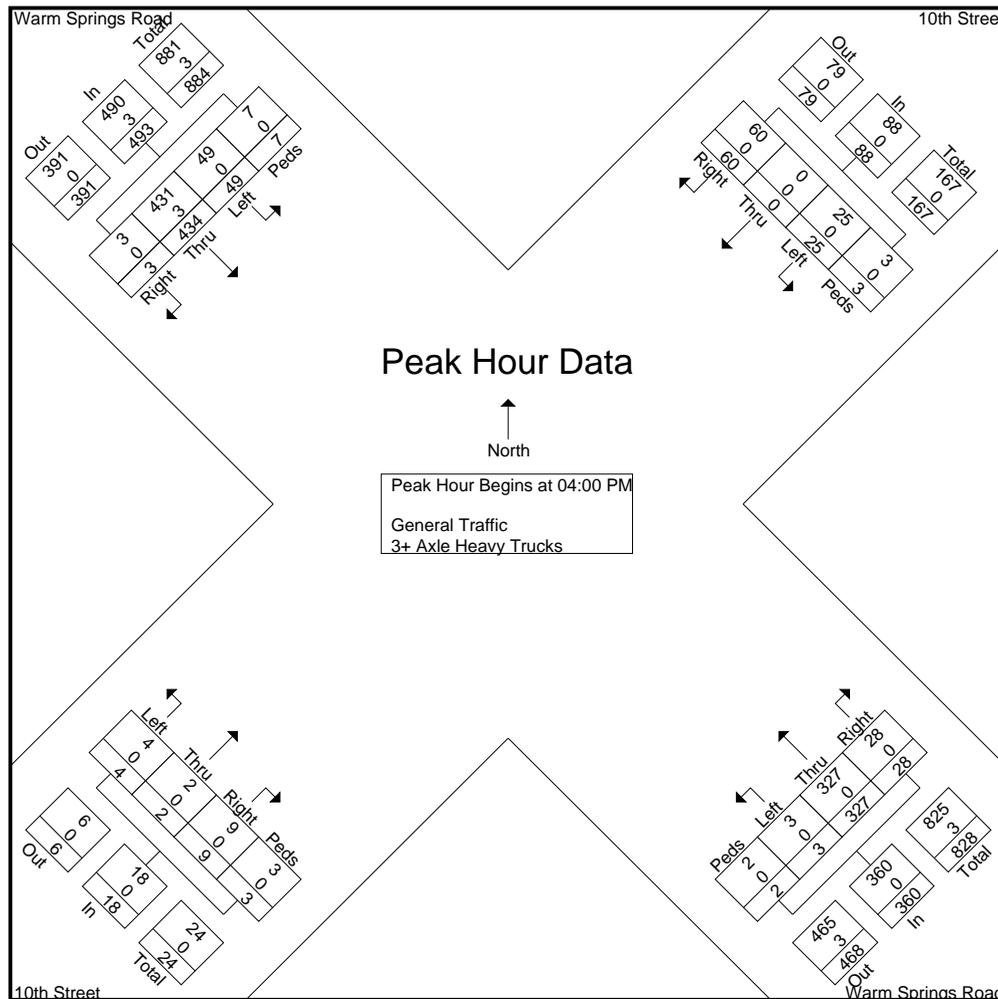
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Study: HDR0026
 Intersection: Warm Springs / 10th Street
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & 10th St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 5

Start Time	10th Street From Northeast					Warm Springs Road From Southeast					10th Street From Southwest					Warm Springs Road From Northwest					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	20	0	10	2	32	6	104	0	0	110	2	2	2	2	8	0	110	15	0	125	275
04:15 PM	19	0	6	0	25	6	86	3	2	97	3	0	1	1	5	3	118	8	5	134	261
04:30 PM	13	0	4	0	17	8	70	0	0	78	2	0	1	0	3	0	101	15	1	117	215
04:45 PM	8	0	5	1	14	8	67	0	0	75	2	0	0	0	2	0	105	11	1	117	208
Total Volume	60	0	25	3	88	28	327	3	2	360	9	2	4	3	18	3	434	49	7	493	959
% App. Total	68.2	0	28.4	3.4		7.8	90.8	0.8	0.6		50	11.1	22.2	16.7		0.6	88	9.9	1.4		
PHF	.750	.000	.625	.375	.688	.875	.786	.250	.250	.818	.750	.250	.500	.375	.563	.250	.919	.817	.350	.920	.872
General Traffic	60	0	25	3	88	28	327	3	2	360	9	2	4	3	18	3	431	49	7	490	956
% General Traffic	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99.3	100	100	99.4	99.7
3+ Axle Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
% 3+ Axle Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0.6	0.3



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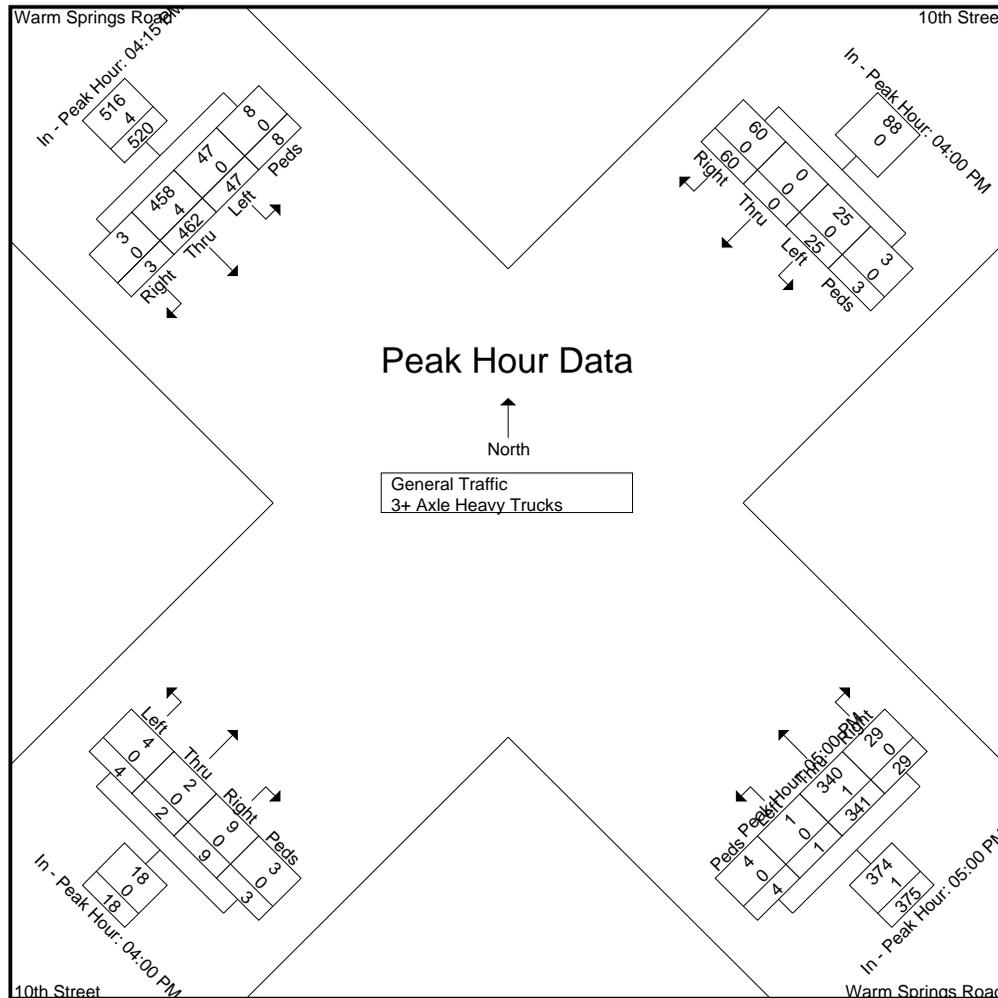
Study: HDR0026
 Intersection: Warm Springs / 10th Street
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & 10th St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 6

Start Time	10th Street From Northeast					Warm Springs Road From Southeast					10th Street From Southwest					Warm Springs Road From Northwest					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:00 PM					05:00 PM					04:00 PM					04:15 PM				
+0 mins.	20	0	10	2	32	2	94	0	0	96	2	2	2	2	8	3	118	8	5	134
+15 mins.	19	0	6	0	25	8	95	0	4	107	3	0	1	1	5	0	101	15	1	117
+30 mins.	13	0	4	0	17	9	81	0	0	90	2	0	1	0	3	0	105	11	1	117
+45 mins.	8	0	5	1	14	10	71	1	0	82	2	0	0	0	2	0	138	13	1	152
Total Volume	60	0	25	3	88	29	341	1	4	375	9	2	4	3	18	3	462	47	8	520
% App. Total	68.2	0	28.4	3.4		7.7	90.9	0.3	1.1		50	11.1	22.2	16.7		0.6	88.8	9	1.5	
PHF	.750	.000	.625	.375	.688	.725	.897	.250	.250	.876	.750	.250	.500	.375	.563	.250	.837	.783	.400	.855
General Traffic	60	0	25	3	88	29	340	1	4	374	9	2	4	3	18	3	458	47	8	516
% General Traffic	100	0	100	100	100	100	99.7	100	100	99.7	100	100	100	100	100	100	99.1	100	100	99.2
3+ Axle Heavy Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4
% 3+ Axle Heavy Trucks	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0	0.9	0	0	0.8



L2 Data Collection

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Study: HDR0026
Intersection: Warm Springs / 10th Street
City, State: Ketchum, Idaho
Control: Stop Sign

File Name : Warm Springs Rd & 10th St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 7

Image 1



L2 Data Collection

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Idaho (208) 860-7554 Utah (801) 413-2993

Study: HDR0026
 Intersection: Warm Springs / Lewis St
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & Lewis St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 1

Groups Printed- General Traffic - 3+ Axle Heavy Trucks

Start Time	Lewis Street From North				Warm Springs Road From Southeast				Warm Springs Road From West				Int. Total
	Right	Bear Left	Peds	App. Total	Bear Right	Bear Left	Peds	App. Total	Bear Right	Left	Peds	App. Total	
07:00 AM	2	5	0	7	17	23	0	40	23	1	1	25	72
07:15 AM	5	5	0	10	25	29	0	54	29	2	1	32	96
07:30 AM	4	13	0	17	30	21	0	51	36	5	0	41	109
07:45 AM	4	8	1	13	58	53	0	111	86	5	1	92	216
Total	15	31	1	47	130	126	0	256	174	13	3	190	493
08:00 AM	7	24	0	31	67	76	0	143	53	3	1	57	231
08:15 AM	3	28	1	32	39	62	0	101	42	4	0	46	179
08:30 AM	6	25	3	34	39	61	0	100	47	6	0	53	187
08:45 AM	6	26	0	32	37	56	0	93	78	5	0	83	208
Total	22	103	4	129	182	255	0	437	220	18	1	239	805

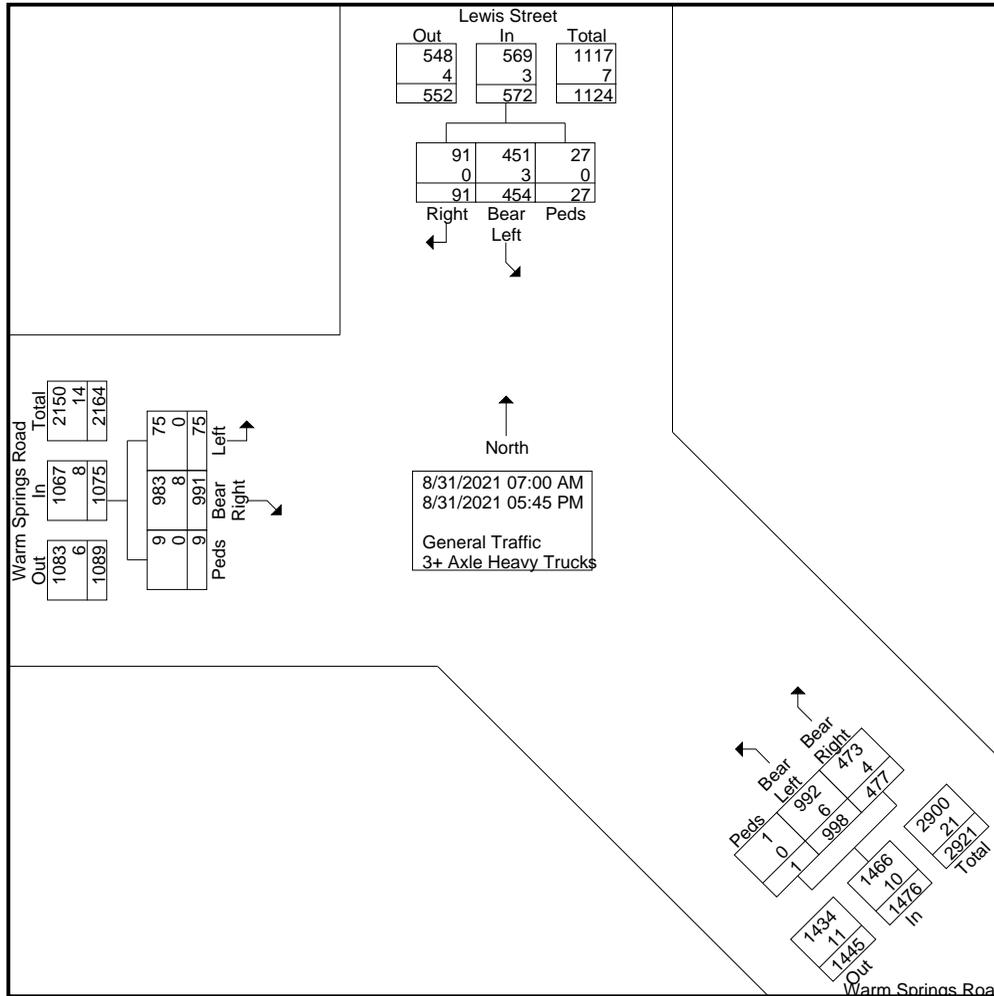
04:00 PM	12	46	4	62	38	87	1	126	84	6	0	90	278
04:15 PM	5	37	4	46	27	78	0	105	90	9	0	99	250
04:30 PM	9	40	1	50	36	49	0	85	72	6	0	78	213
04:45 PM	7	46	3	56	11	64	0	75	70	10	0	80	211
Total	33	169	12	214	112	278	1	391	316	31	0	347	952
05:00 PM	4	57	3	64	14	95	0	109	94	1	1	96	269
05:15 PM	10	33	4	47	21	93	0	114	63	4	1	68	229
05:30 PM	2	28	0	30	12	77	0	89	74	5	0	79	198
05:45 PM	5	33	3	41	6	74	0	80	50	3	3	56	177
Total	21	151	10	182	53	339	0	392	281	13	5	299	873
Grand Total	91	454	27	572	477	998	1	1476	991	75	9	1075	3123
Apprch %	15.9	79.4	4.7		32.3	67.6	0.1		92.2	7	0.8		
Total %	2.9	14.5	0.9	18.3	15.3	32	0	47.3	31.7	2.4	0.3	34.4	
General Traffic	91	451	27	569	473	992	1	1466	983	75	9	1067	3102
% General Traffic	100	99.3	100	99.5	99.2	99.4	100	99.3	99.2	100	100	99.3	99.3
3+ Axle Heavy Trucks	0	3	0	3	4	6	0	10	8	0	0	8	21
% 3+ Axle Heavy Trucks	0	0.7	0	0.5	0.8	0.6	0	0.7	0.8	0	0	0.7	0.7

L2 Data Collection

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Study: HDR0026
 Intersection: Warm Springs / Lewis St
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & Lewis St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 2



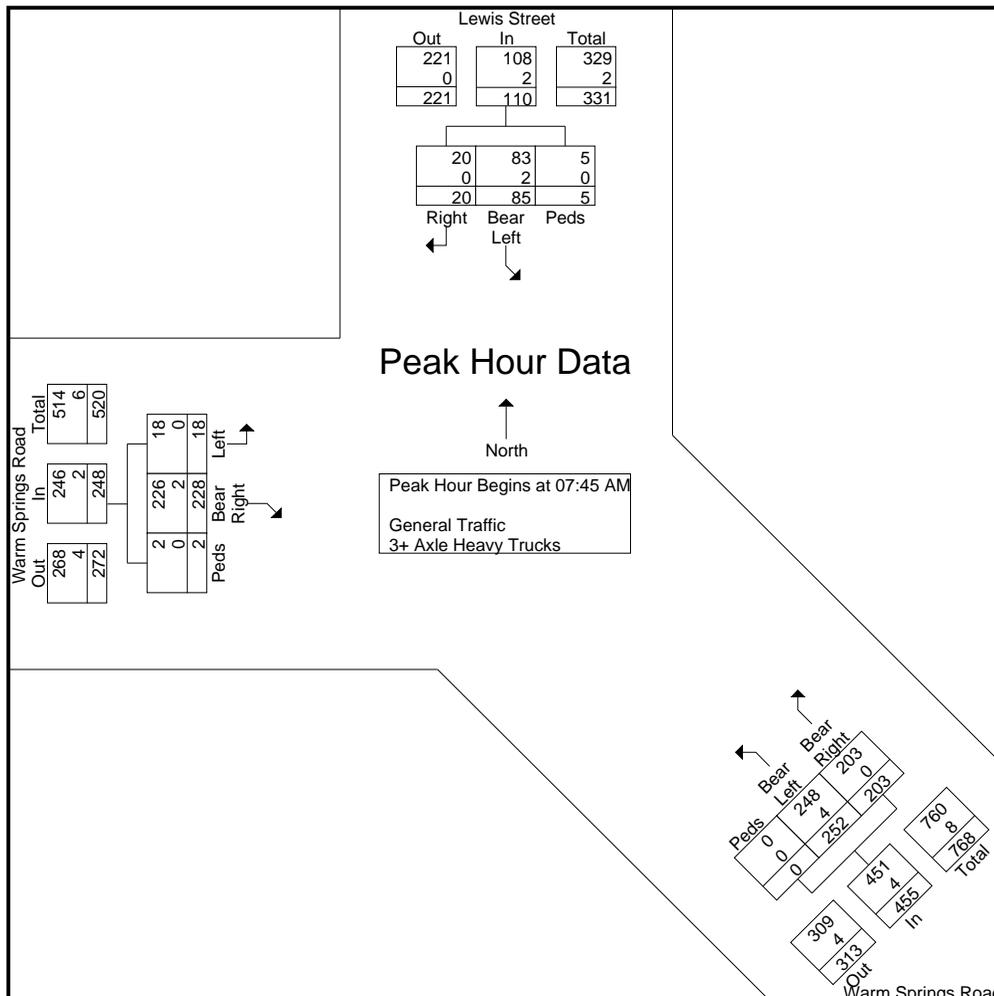
L2 Data Collection

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Study: HDR0026
 Intersection: Warm Springs / Lewis St
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & Lewis St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 3

Start Time	Lewis Street From North				Warm Springs Road From Southeast				Warm Springs Road From West				Int. Total
	Right	Bear Left	Peds	App. Total	Bear Right	Bear Left	Peds	App. Total	Bear Right	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	4	8	1	13	58	53	0	111	86	5	1	92	216
08:00 AM	7	24	0	31	67	76	0	143	53	3	1	57	231
08:15 AM	3	28	1	32	39	62	0	101	42	4	0	46	179
08:30 AM	6	25	3	34	39	61	0	100	47	6	0	53	187
Total Volume	20	85	5	110	203	252	0	455	228	18	2	248	813
% App. Total	18.2	77.3	4.5		44.6	55.4	0		91.9	7.3	0.8		
PHF	.714	.759	.417	.809	.757	.829	.000	.795	.663	.750	.500	.674	.880
General Traffic	20	83	5	108	203	248	0	451	226	18	2	246	805
% General Traffic	100	97.6	100	98.2	100	98.4	0	99.1	99.1	100	100	99.2	99.0
3+ Axle Heavy Trucks	0	2	0	2	0	4	0	4	2	0	0	2	8
% 3+ Axle Heavy Trucks	0	2.4	0	1.8	0	1.6	0	0.9	0.9	0	0	0.8	1.0



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Study: HDR0026
Intersection: Warm Springs / Lewis St
City, State: Ketchum, Idaho
Control: Stop Sign

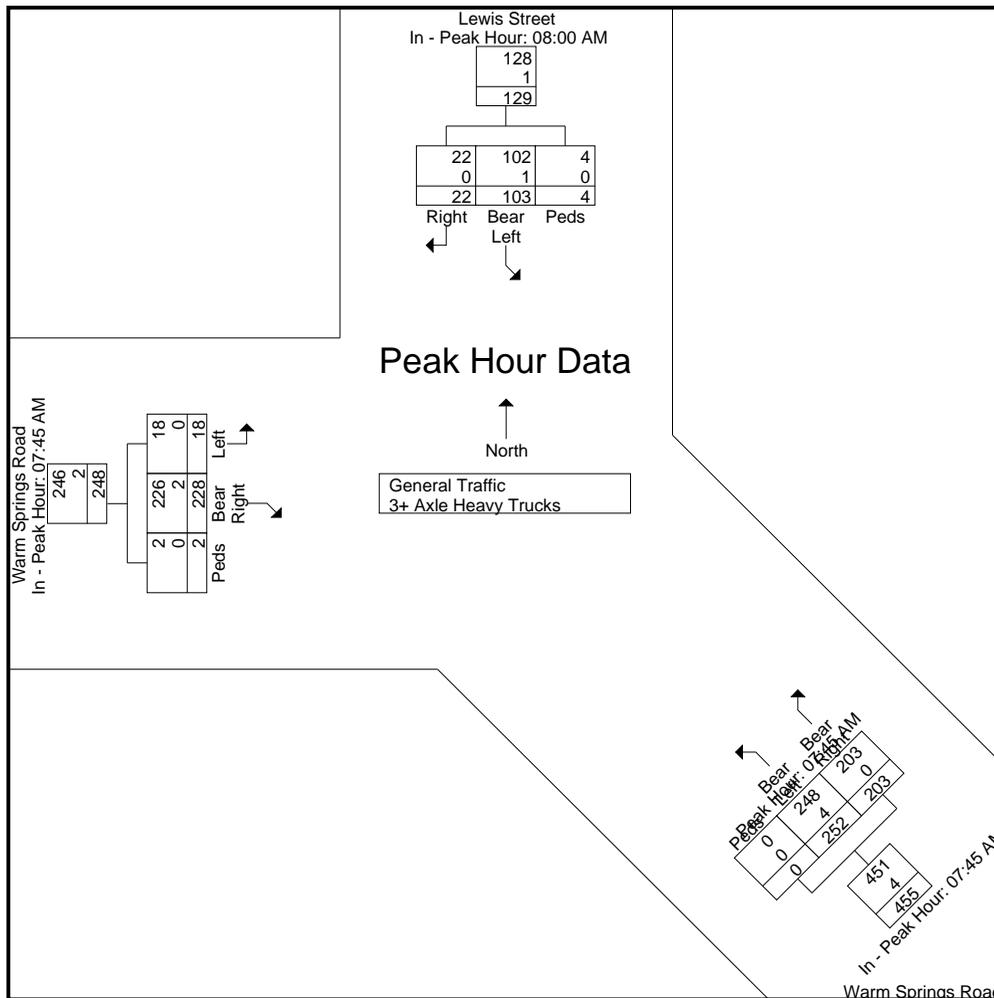
File Name : Warm Springs Rd & Lewis St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 4

Start Time	Lewis Street From North				Warm Springs Road From Southeast				Warm Springs Road From West				Int. Total
	Right	Bear Left	Peds	App. Total	Bear Right	Bear Left	Peds	App. Total	Bear Right	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:45 AM			
+0 mins.	7	24	0	31	58	53	0	111	86	5	1	92
+15 mins.	3	28	1	32	67	76	0	143	53	3	1	57
+30 mins.	6	25	3	34	39	62	0	101	42	4	0	46
+45 mins.	6	26	0	32	39	61	0	100	47	6	0	53
Total Volume	22	103	4	129	203	252	0	455	228	18	2	248
% App. Total	17.1	79.8	3.1		44.6	55.4	0		91.9	7.3	0.8	
PHF	.786	.920	.333	.949	.757	.829	.000	.795	.663	.750	.500	.674
General Traffic	22	102	4	128	203	248	0	451	226	18	2	246
% General Traffic	100	99	100	99.2	100	98.4	0	99.1	99.1	100	100	99.2
3+ Axle Heavy Trucks	0	1	0	1	0	4	0	4	2	0	0	2
% 3+ Axle Heavy Trucks	0	1	0	0.8	0	1.6	0	0.9	0.9	0	0	0.8



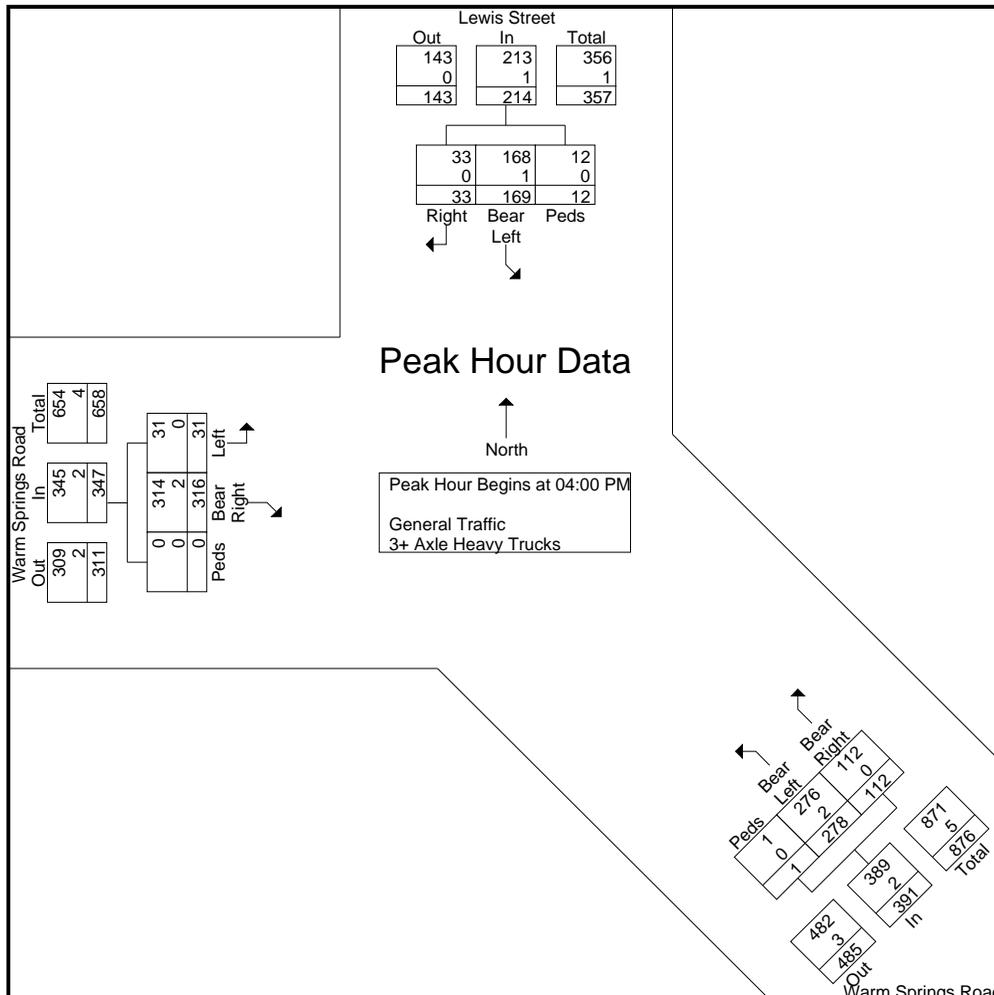
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Study: HDR0026
 Intersection: Warm Springs / Lewis St
 City, State: Ketchum, Idaho
 Control: Stop Sign

File Name : Warm Springs Rd & Lewis St
 Site Code : 00000000
 Start Date : 8/31/2021
 Page No : 5

Start Time	Lewis Street From North				Warm Springs Road From Southeast				Warm Springs Road From West				Int. Total
	Right	Bear Left	Peds	App. Total	Bear Right	Bear Left	Peds	App. Total	Bear Right	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	12	46	4	62	38	87	1	126	84	6	0	90	278
04:15 PM	5	37	4	46	27	78	0	105	90	9	0	99	250
04:30 PM	9	40	1	50	36	49	0	85	72	6	0	78	213
04:45 PM	7	46	3	56	11	64	0	75	70	10	0	80	211
Total Volume	33	169	12	214	112	278	1	391	316	31	0	347	952
% App. Total	15.4	79	5.6		28.6	71.1	0.3		91.1	8.9	0		
PHF	.688	.918	.750	.863	.737	.799	.250	.776	.878	.775	.000	.876	.856
General Traffic	33	168	12	213	112	276	1	389	314	31	0	345	947
% General Traffic	100	99.4	100	99.5	100	99.3	100	99.5	99.4	100	0	99.4	99.5
3+ Axle Heavy Trucks	0	1	0	1	0	2	0	2	2	0	0	2	5
% 3+ Axle Heavy Trucks	0	0.6	0	0.5	0	0.7	0	0.5	0.6	0	0	0.6	0.5



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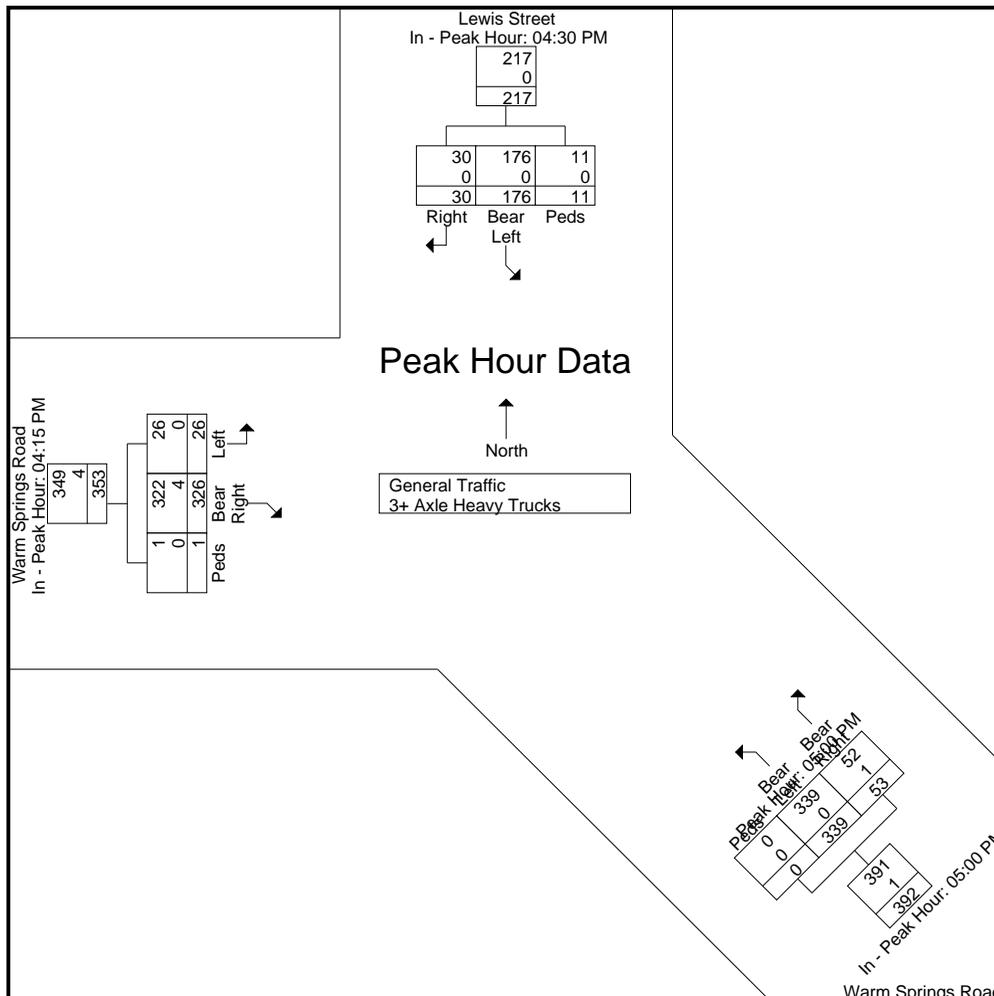
File Name : Warm Springs Rd & Lewis St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 6

Start Time	Lewis Street From North				Warm Springs Road From Southeast				Warm Springs Road From West				Int. Total
	Right	Bear Left	Peds	App. Total	Bear Right	Bear Left	Peds	App. Total	Bear Right	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:15 PM			
+0 mins.	9	40	1	50	14	95	0	109	90	9	0	99
+15 mins.	7	46	3	56	21	93	0	114	72	6	0	78
+30 mins.	4	57	3	64	12	77	0	89	70	10	0	80
+45 mins.	10	33	4	47	6	74	0	80	94	1	1	96
Total Volume	30	176	11	217	53	339	0	392	326	26	1	353
% App. Total	13.8	81.1	5.1		13.5	86.5	0		92.4	7.4	0.3	
PHF	.750	.772	.688	.848	.631	.892	.000	.860	.867	.650	.250	.891
General Traffic	30	176	11	217	52	339	0	391	322	26	1	349
% General Traffic	100	100	100	100	98.1	100	0	99.7	98.8	100	100	98.9
3+ Axle Heavy Trucks	0	0	0	0	1	0	0	1	4	0	0	4
% 3+ Axle Heavy Trucks	0	0	0	0	1.9	0	0	0.3	1.2	0	0	1.1



L2 Data Collection

L2DataCollection.com

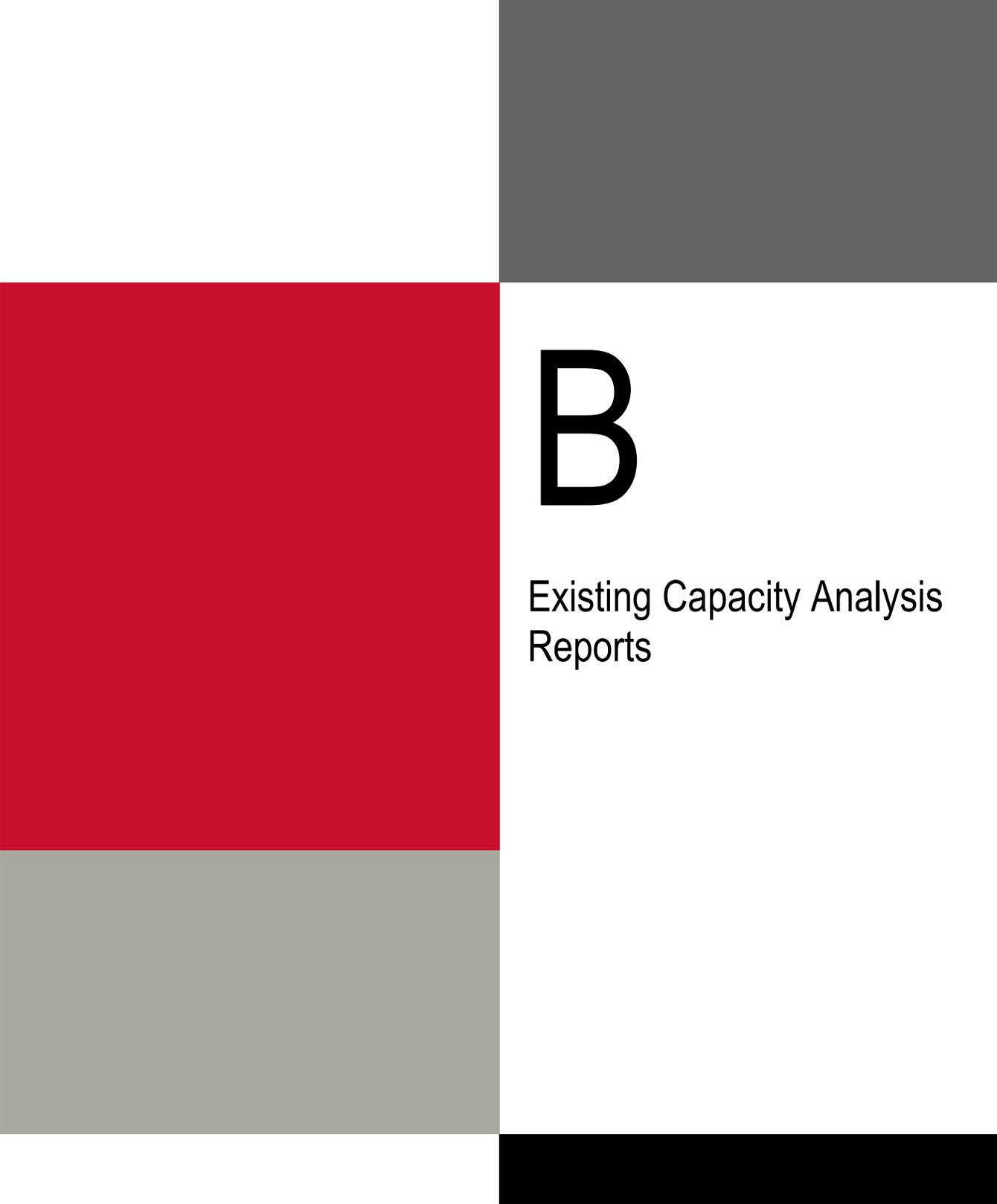
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Study: HDR0026
Intersection: Warm Springs / Lewis St
City, State: Ketchum, Idaho
Control: Stop Sign

File Name : Warm Springs Rd & Lewis St
Site Code : 00000000
Start Date : 8/31/2021
Page No : 7

Image 1





B

Existing Capacity Analysis Reports

Intersection						
Int Delay, s/veh	2					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	24	214	108	21	39	25
Future Vol, veh/h	24	214	108	21	39	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	4	4	1	1
Mvmt Flow	25	223	113	22	41	26

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	135	0	-	0	397 124
Stage 1	-	-	-	-	124 -
Stage 2	-	-	-	-	273 -
Critical Hdwy	4.13	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.227	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1443	-	-	-	610 929
Stage 1	-	-	-	-	904 -
Stage 2	-	-	-	-	775 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1443	-	-	-	598 929
Mov Cap-2 Maneuver	-	-	-	-	598 -
Stage 1	-	-	-	-	886 -
Stage 2	-	-	-	-	775 -

Approach	NB	SB	NE
HCM Control Delay, s	0.8	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	SBT	SBR
Capacity (veh/h)	695	1443	-	-	-
HCM Lane V/C Ratio	0.096	0.017	-	-	-
HCM Control Delay (s)	10.7	7.5	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	-

Intersection						
Int Delay, s/veh	2.1					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	28	253	128	25	46	30
Future Vol, veh/h	28	253	128	25	46	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	4	4	1	1
Mvmt Flow	29	264	133	26	48	31

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	159	0	-	0	468 146
Stage 1	-	-	-	-	146 -
Stage 2	-	-	-	-	322 -
Critical Hdwy	4.13	-	-	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	2.227	-	-	-	3.509 3.309
Pot Cap-1 Maneuver	1414	-	-	-	555 904
Stage 1	-	-	-	-	884 -
Stage 2	-	-	-	-	737 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1414	-	-	-	542 904
Mov Cap-2 Maneuver	-	-	-	-	542 -
Stage 1	-	-	-	-	863 -
Stage 2	-	-	-	-	737 -

Approach	NB	SB	NE
HCM Control Delay, s	0.8	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	SBT	SBR
Capacity (veh/h)	644	1414	-	-	-
HCM Lane V/C Ratio	0.123	0.021	-	-	-
HCM Control Delay (s)	11.4	7.6	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.4	0.1	-	-	-

Intersection						
Int Delay, s/veh	2					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	34	169	284	36	29	47
Future Vol, veh/h	34	169	284	36	29	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	1	1	0	0
Mvmt Flow	39	192	323	41	33	53

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	364	0	-	0	614 344
Stage 1	-	-	-	-	344 -
Stage 2	-	-	-	-	270 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1206	-	-	-	459 703
Stage 1	-	-	-	-	722 -
Stage 2	-	-	-	-	780 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1206	-	-	-	442 703
Mov Cap-2 Maneuver	-	-	-	-	442 -
Stage 1	-	-	-	-	696 -
Stage 2	-	-	-	-	780 -

Approach	NB	SB	NE
HCM Control Delay, s	1.4	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	SBT	SBR
Capacity (veh/h)	574	1206	-	-	-
HCM Lane V/C Ratio	0.15	0.032	-	-	-
HCM Control Delay (s)	12.4	8.1	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.5	0.1	-	-	-

Intersection						
Int Delay, s/veh	2.2					
Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑	↑		↑	
Traffic Vol, veh/h	40	200	335	42	34	55
Future Vol, veh/h	40	200	335	42	34	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	1	1	0	0
Mvmt Flow	45	227	381	48	39	63

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	429	0	-	0	722 405
Stage 1	-	-	-	-	405 -
Stage 2	-	-	-	-	317 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1141	-	-	-	397 650
Stage 1	-	-	-	-	678 -
Stage 2	-	-	-	-	743 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1141	-	-	-	379 650
Mov Cap-2 Maneuver	-	-	-	-	379 -
Stage 1	-	-	-	-	647 -
Stage 2	-	-	-	-	743 -

Approach	NB	SB	NE
HCM Control Delay, s	1.4	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	SBT	SBR
Capacity (veh/h)	511	1141	-	-	-
HCM Lane V/C Ratio	0.198	0.04	-	-	-
HCM Control Delay (s)	13.8	8.3	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	-

Intersection												
Int Delay, s/veh	1.8											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	8	336	57	26	228	9	7	3	9	14	1	42
Future Vol, veh/h	8	336	57	26	228	9	7	3	9	14	1	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	9	382	65	30	259	10	8	3	10	16	1	48

Major/Minor	Major1		Major2		Minor2		Minor1					
Conflicting Flow All	269	0	0	447	0	0	781	789	264	764	762	415
Stage 1	-	-	-	-	-	-	324	324	-	433	433	-
Stage 2	-	-	-	-	-	-	457	465	-	331	329	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1300	-	-	1113	-	-	315	325	780	323	337	642
Stage 1	-	-	-	-	-	-	692	653	-	605	585	-
Stage 2	-	-	-	-	-	-	587	566	-	687	650	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1300	-	-	1113	-	-	283	314	780	308	326	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	314	-	308	326	-
Stage 1	-	-	-	-	-	-	687	635	-	601	581	-
Stage 2	-	-	-	-	-	-	539	562	-	656	632	-

Approach	NB		SB		NE		SW	
HCM Control Delay, s	0.2		0.8		14.2		13.3	
HCM LOS					B		B	

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	415	1300	-	-	1113	-	-	500
HCM Lane V/C Ratio	0.052	0.007	-	-	0.027	-	-	0.13
HCM Control Delay (s)	14.2	7.8	-	-	8.3	-	-	13.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.4

Intersection												
Int Delay, s/veh	2											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	10	396	67	31	269	11	8	4	11	16	1	49
Future Vol, veh/h	10	396	67	31	269	11	8	4	11	16	1	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	0	0	0
Mvmt Flow	11	450	76	35	306	13	9	5	13	18	1	56

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	319	0	0	526	0	0	922	931	313	902	899	488
Stage 1	-	-	-	-	-	-	383	383	-	510	510	-
Stage 2	-	-	-	-	-	-	539	548	-	392	389	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1247	-	-	1041	-	-	253	269	732	261	281	584
Stage 1	-	-	-	-	-	-	644	616	-	550	541	-
Stage 2	-	-	-	-	-	-	530	520	-	637	612	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1247	-	-	1041	-	-	221	257	732	245	269	584
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	257	-	245	269	-
Stage 1	-	-	-	-	-	-	638	595	-	545	536	-
Stage 2	-	-	-	-	-	-	474	515	-	600	591	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.2	0.9	16.3	15.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	344	1247	-	-	1041	-	-	432
HCM Lane V/C Ratio	0.076	0.009	-	-	0.034	-	-	0.174
HCM Control Delay (s)	16.3	7.9	-	-	8.6	-	-	15.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.6

Intersection												
Int Delay, s/veh	1.9											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	3	277	24	42	368	3	3	2	8	21	0	51
Future Vol, veh/h	3	277	24	42	368	3	3	2	8	21	0	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	0	0	0
Mvmt Flow	3	318	28	48	423	3	3	2	9	24	0	59

Major/Minor	Major1		Major2		Minor2		Minor1					
Conflicting Flow All	426	0	0	346	0	0	889	873	425	864	860	332
Stage 1	-	-	-	-	-	-	521	521	-	338	338	-
Stage 2	-	-	-	-	-	-	368	352	-	526	522	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1144	-	-	1219	-	-	266	291	634	277	296	714
Stage 1	-	-	-	-	-	-	542	535	-	681	644	-
Stage 2	-	-	-	-	-	-	656	635	-	539	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1144	-	-	1219	-	-	236	279	634	263	284	714
Mov Cap-2 Maneuver	-	-	-	-	-	-	236	279	-	263	284	-
Stage 1	-	-	-	-	-	-	540	514	-	679	642	-
Stage 2	-	-	-	-	-	-	601	633	-	508	513	-

Approach	NB		SB		NE		SW	
HCM Control Delay, s	0.1		0.8		14.3		14.1	
HCM LOS					B		B	

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	400	1144	-	-	1219	-	-	476
HCM Lane V/C Ratio	0.037	0.003	-	-	0.04	-	-	0.174
HCM Control Delay (s)	14.3	8.2	-	-	8.1	-	-	14.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.6

Intersection												
Int Delay, s/veh	2.2											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	3	327	28	49	434	3	4	2	9	25	0	60
Future Vol, veh/h	3	327	28	49	434	3	4	2	9	25	0	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	0	0	0
Mvmt Flow	3	376	32	56	499	3	5	2	10	29	0	69

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	502	0	0	408	0	0	1046	1027	501	1017	1012	392
Stage 1	-	-	-	-	-	-	613	613	-	398	398	-
Stage 2	-	-	-	-	-	-	433	414	-	619	614	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1073	-	-	1156	-	-	208	236	574	218	241	661
Stage 1	-	-	-	-	-	-	483	486	-	632	606	-
Stage 2	-	-	-	-	-	-	605	597	-	480	486	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1073	-	-	1156	-	-	179	224	574	204	229	661
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	224	-	204	229	-
Stage 1	-	-	-	-	-	-	482	463	-	630	604	-
Stage 2	-	-	-	-	-	-	540	595	-	446	463	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.8	16.9	17
HCM LOS			C	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	319	1073	-	-	1156	-	-	398
HCM Lane V/C Ratio	0.054	0.003	-	-	0.049	-	-	0.245
HCM Control Delay (s)	16.9	8.4	-	-	8.3	-	-	17
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.2	-	-	1

Intersection						
Int Delay, s/veh	1.7					
Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	72	17	15	193	214	172
Future Vol, veh/h	72	17	15	193	214	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	140	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	82	19	17	219	243	195

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	496	243	438	0	-	0
Stage 1	243	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	533	796	1127	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	524	796	1127	-	-	-
Mov Cap-2 Maneuver	598	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	11.5	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1	SBLn2
Capacity (veh/h)	-	-	1127	-	598	796
HCM Lane V/C Ratio	-	-	0.015	-	0.137	0.024
HCM Control Delay (s)	-	-	8.2	-	12	9.6
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0	-	0.5	0.1

Intersection						
Int Delay, s/veh	1.8					
Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	85	20	18	228	252	203
Future Vol, veh/h	85	20	18	228	252	203
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	140	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	97	23	20	259	286	231

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	585	286	517	0	-	0
Stage 1	286	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.11	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.209	-	-	-
Pot Cap-1 Maneuver	473	753	1054	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	463	753	1054	-	-	-
Mov Cap-2 Maneuver	553	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	752	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	12.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1	SBLn2
Capacity (veh/h)	-	-	1054	-	553	753
HCM Lane V/C Ratio	-	-	0.019	-	0.175	0.03
HCM Control Delay (s)	-	-	8.5	-	12.9	9.9
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.6	0.1

Intersection						
Int Delay, s/veh	3.3					
Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	143	28	26	268	236	95
Future Vol, veh/h	143	28	26	268	236	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	140	0	50	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	166	33	30	312	274	110

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	646	274	384	0	-	0
Stage 1	274	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	439	770	1180	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	428	770	1180	-	-	-
Mov Cap-2 Maneuver	527	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	14.1	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1	SBLn2
Capacity (veh/h)	-	-	1180	-	527	770
HCM Lane V/C Ratio	-	-	0.026	-	0.316	0.042
HCM Control Delay (s)	-	-	8.1	-	14.9	9.9
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	-	1.3	0.1

Intersection						
Int Delay, s/veh	3.8					
Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	169	33	31	316	278	112
Future Vol, veh/h	169	33	31	316	278	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	140	0	50	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	197	38	36	367	323	130

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	762	323	453	0	-	0
Stage 1	323	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.11	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	376	723	1113	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	364	723	1113	-	-	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	714	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	16.5	0.7	0
HCM LOS	C		

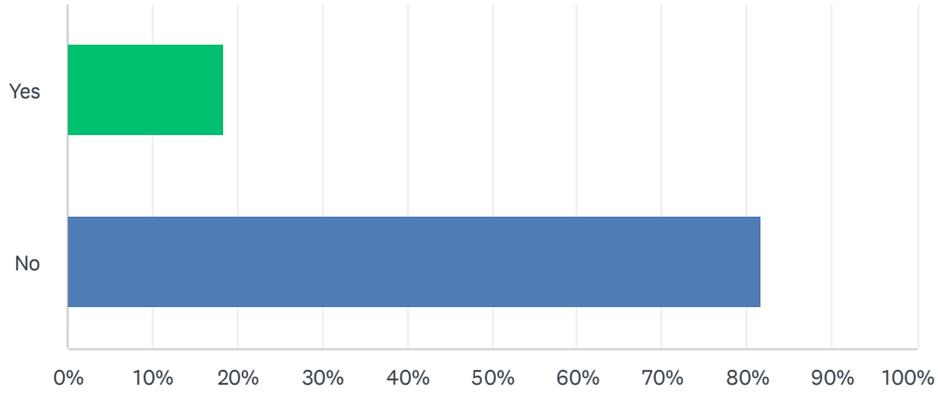
Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1	SBLn2
Capacity (veh/h)	-	-	1113	-	477	723
HCM Lane V/C Ratio	-	-	0.032	-	0.412	0.053
HCM Control Delay (s)	-	-	8.3	-	17.7	10.3
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.1	-	2	0.2

A large, bold, black letter 'C' is positioned on the right side of the page, partially overlapping a white rectangular area. The background of the page features a large red rectangle on the left and a grey rectangle at the top right.

First Public Involvement Summary

Q1 Are you a business or property owner along Warm Springs Road (between Main Street and Saddle Road)

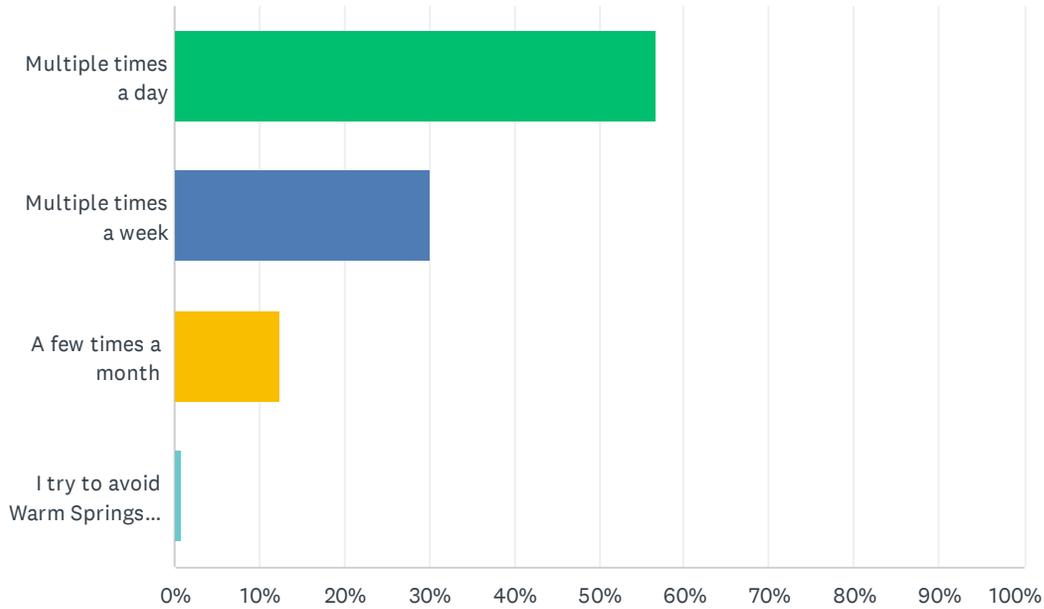
Answered: 219 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	18.26%	40
No	81.74%	179
Total Respondents: 219		

Q2 How frequently do you travel along Warm Springs Road?

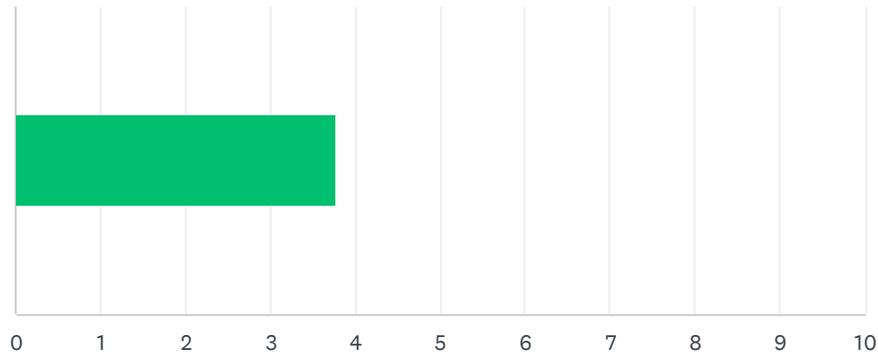
Answered: 219 Skipped: 0



ANSWER CHOICES	RESPONSES	
Multiple times a day	56.62%	124
Multiple times a week	30.14%	66
A few times a month	12.33%	27
I try to avoid Warm Springs Road	0.91%	2
TOTAL		219

Q3 How satisfied are you with the current intersections and roadway configurations?

Answered: 177 Skipped: 42



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	4	669	177
Total Respondents: 177			

#		DATE
1	1	5/28/2022 8:42 AM
2	8	5/28/2022 7:28 AM
3	7	5/26/2022 10:23 AM
4	6	5/24/2022 12:41 AM
5	4	5/23/2022 5:37 PM
6	3	5/23/2022 5:07 PM
7	0	5/23/2022 4:54 PM
8	5	5/23/2022 2:34 PM
9	7	5/23/2022 12:39 PM
10	5	5/23/2022 11:54 AM
11	4	5/23/2022 11:46 AM
12	5	5/22/2022 7:55 PM
13	3	5/22/2022 7:46 PM
14	2	5/22/2022 1:09 PM
15	1	5/22/2022 11:54 AM
16	4	5/22/2022 11:07 AM
17	2	5/22/2022 10:04 AM
18	1	5/22/2022 9:37 AM
19	9	5/22/2022 7:54 AM

Warm Springs Road Alternatives & Improvements

20	10	5/21/2022 8:58 PM
21	3	5/21/2022 5:00 PM
22	0	5/21/2022 1:58 PM
23	5	5/21/2022 12:23 PM
24	9	5/21/2022 11:56 AM
25	8	5/21/2022 11:36 AM
26	2	5/21/2022 10:57 AM
27	5	5/21/2022 10:34 AM
28	4	5/21/2022 10:17 AM
29	2	5/21/2022 9:46 AM
30	5	5/21/2022 9:01 AM
31	2	5/21/2022 8:38 AM
32	6	5/21/2022 7:45 AM
33	1	5/21/2022 7:21 AM
34	3	5/21/2022 7:19 AM
35	1	5/21/2022 6:55 AM
36	2	5/21/2022 6:22 AM
37	10	5/21/2022 6:06 AM
38	5	5/21/2022 12:46 AM
39	7	5/20/2022 11:51 PM
40	4	5/20/2022 10:55 PM
41	1	5/20/2022 10:22 PM
42	5	5/20/2022 9:59 PM
43	2	5/20/2022 9:36 PM
44	4	5/20/2022 9:29 PM
45	2	5/20/2022 9:06 PM
46	6	5/20/2022 8:55 PM
47	3	5/20/2022 8:14 PM
48	10	5/20/2022 7:12 PM
49	8	5/20/2022 7:07 PM
50	5	5/20/2022 7:02 PM
51	1	5/20/2022 6:30 PM
52	4	5/20/2022 6:30 PM
53	7	5/20/2022 5:48 PM
54	3	5/20/2022 5:45 PM
55	10	5/20/2022 5:10 PM
56	5	5/20/2022 4:31 PM
57	5	5/20/2022 4:15 PM

Warm Springs Road Alternatives & Improvements

58	5	5/20/2022 4:06 PM
59	4	5/20/2022 3:45 PM
60	1	5/20/2022 3:21 PM
61	6	5/20/2022 3:16 PM
62	5	5/20/2022 3:12 PM
63	0	5/20/2022 3:10 PM
64	10	5/20/2022 3:05 PM
65	1	5/20/2022 2:54 PM
66	5	5/20/2022 2:18 PM
67	8	5/20/2022 2:16 PM
68	2	5/20/2022 2:16 PM
69	10	5/20/2022 2:13 PM
70	0	5/20/2022 2:08 PM
71	3	5/20/2022 1:45 PM
72	4	5/20/2022 1:45 PM
73	1	5/20/2022 1:31 PM
74	10	5/20/2022 1:29 PM
75	5	5/20/2022 1:22 PM
76	3	5/20/2022 1:13 PM
77	5	5/20/2022 12:58 PM
78	2	5/20/2022 12:56 PM
79	9	5/20/2022 12:43 PM
80	0	5/20/2022 12:30 PM
81	4	5/20/2022 12:22 PM
82	1	5/20/2022 12:18 PM
83	7	5/20/2022 12:14 PM
84	1	5/20/2022 12:12 PM
85	7	5/20/2022 12:12 PM
86	2	5/20/2022 12:06 PM
87	1	5/20/2022 12:04 PM
88	1	5/20/2022 12:02 PM
89	4	5/20/2022 11:59 AM
90	1	5/20/2022 11:58 AM
91	3	5/20/2022 11:56 AM
92	0	5/20/2022 9:43 AM
93	0	5/19/2022 10:40 AM
94	4	5/19/2022 8:16 AM
95	5	5/18/2022 5:10 PM

Warm Springs Road Alternatives & Improvements

96	2	5/18/2022 5:09 PM
97	5	5/18/2022 4:09 PM
98	3	5/18/2022 3:10 PM
99	0	5/18/2022 2:26 PM
100	4	5/18/2022 12:49 PM
101	2	5/18/2022 12:27 PM
102	1	5/18/2022 10:38 AM
103	1	5/18/2022 9:10 AM
104	3	5/18/2022 8:37 AM
105	7	5/18/2022 8:35 AM
106	1	5/18/2022 7:57 AM
107	1	5/18/2022 7:00 AM
108	1	5/18/2022 6:46 AM
109	1	5/18/2022 6:12 AM
110	2	5/17/2022 10:38 PM
111	2	5/17/2022 9:40 PM
112	2	5/17/2022 6:10 PM
113	3	5/17/2022 5:35 PM
114	5	5/17/2022 4:57 PM
115	1	5/17/2022 4:40 PM
116	2	5/17/2022 4:12 PM
117	8	5/17/2022 4:11 PM
118	1	5/17/2022 4:08 PM
119	0	5/17/2022 3:54 PM
120	5	5/17/2022 2:45 PM
121	8	5/17/2022 2:08 PM
122	4	5/17/2022 1:50 PM
123	8	5/17/2022 1:01 PM
124	7	5/17/2022 12:48 PM
125	5	5/17/2022 12:45 PM
126	1	5/17/2022 12:23 PM
127	7	5/17/2022 10:18 AM
128	5	5/17/2022 9:19 AM
129	10	5/17/2022 9:10 AM
130	1	5/17/2022 8:54 AM
131	2	5/17/2022 8:13 AM
132	2	5/17/2022 7:58 AM
133	2	5/17/2022 7:57 AM

Warm Springs Road Alternatives & Improvements

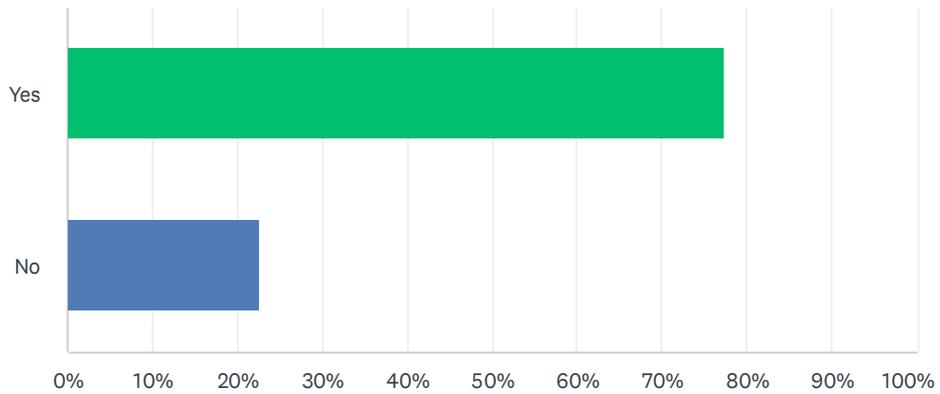
134	2	5/17/2022 7:34 AM
135	7	5/17/2022 7:06 AM
136	1	5/17/2022 5:55 AM
137	9	5/17/2022 3:14 AM
138	1	5/17/2022 12:16 AM
139	3	5/16/2022 11:06 PM
140	2	5/16/2022 10:42 PM
141	3	5/16/2022 10:27 PM
142	5	5/16/2022 10:10 PM
143	8	5/16/2022 10:03 PM
144	5	5/16/2022 9:25 PM
145	10	5/16/2022 9:23 PM
146	6	5/16/2022 8:51 PM
147	0	5/16/2022 7:46 PM
148	5	5/16/2022 7:40 PM
149	0	5/16/2022 6:57 PM
150	2	5/16/2022 6:34 PM
151	5	5/16/2022 6:33 PM
152	4	5/16/2022 6:07 PM
153	4	5/16/2022 1:58 PM
154	4	5/16/2022 1:12 PM
155	3	5/16/2022 1:04 PM
156	2	5/16/2022 12:58 PM
157	7	5/16/2022 12:33 PM
158	6	5/16/2022 12:31 PM
159	3	5/16/2022 12:25 PM
160	1	5/16/2022 12:22 PM
161	4	5/16/2022 12:13 PM
162	3	5/16/2022 12:01 PM
163	2	5/16/2022 11:59 AM
164	2	5/16/2022 11:52 AM
165	1	5/16/2022 11:48 AM
166	1	5/16/2022 11:27 AM
167	5	5/16/2022 11:10 AM
168	4	5/16/2022 10:53 AM
169	5	5/16/2022 10:43 AM
170	5	5/16/2022 10:35 AM
171	3	5/16/2022 10:22 AM

Warm Springs Road Alternatives & Improvements

172	1	5/16/2022 10:20 AM
173	1	5/16/2022 10:07 AM
174	2	5/16/2022 10:07 AM
175	1	5/16/2022 9:40 AM
176	3	5/16/2022 9:33 AM
177	1	5/16/2022 8:42 AM

Q4 Should the intersections be reconfigured or adjusted?

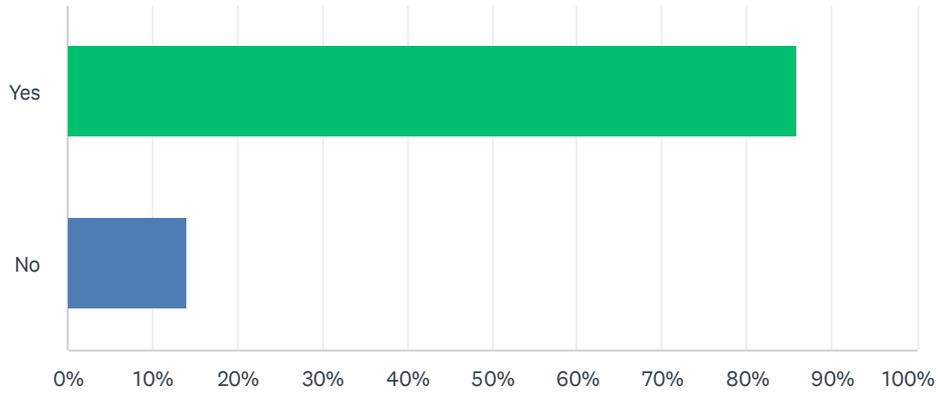
Answered: 177 Skipped: 42



ANSWER CHOICES	RESPONSES	
Yes	77.40%	137
No	22.60%	40
TOTAL		177

Q5 Should pedestrian safety enhancements occur?

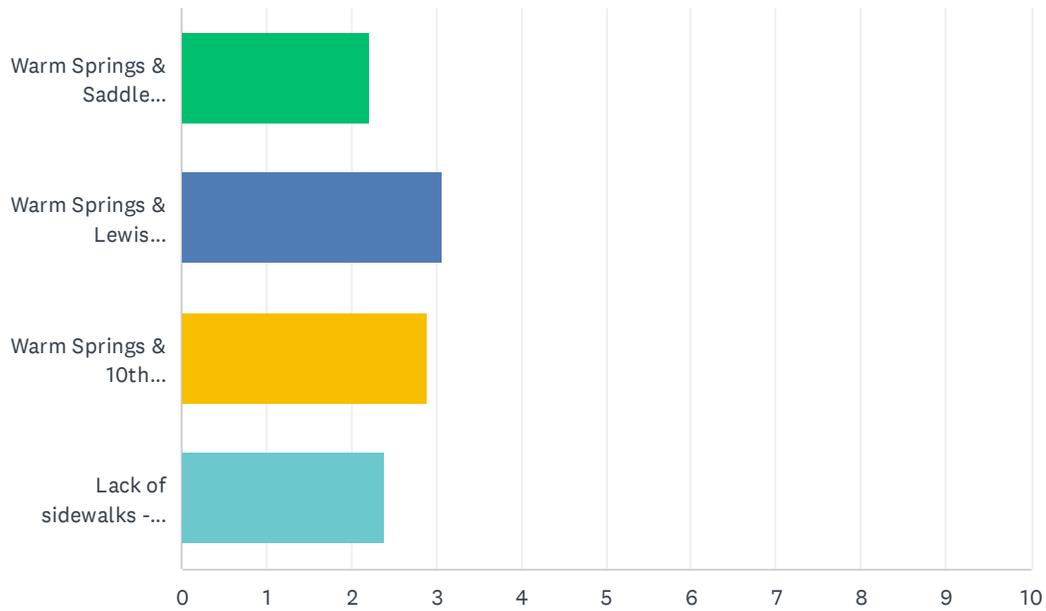
Answered: 177 Skipped: 42



ANSWER CHOICES	RESPONSES	
Yes	85.88%	152
No	14.12%	25
TOTAL		177

Q6 Please rank the locations - 1 being the spot in most need of attention:

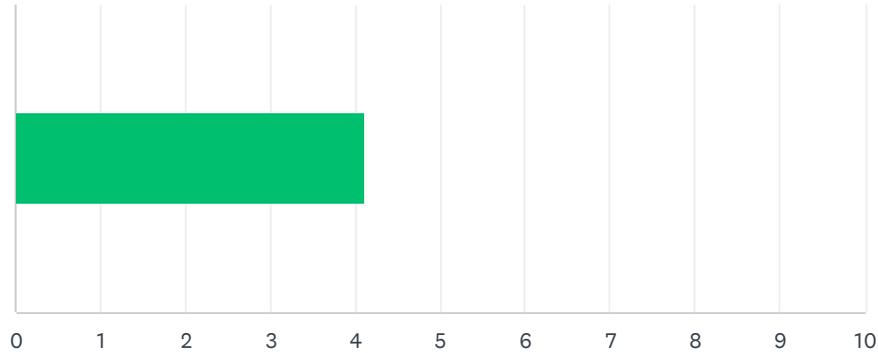
Answered: 177 Skipped: 42



	1	2	3	4	LEAVE AS-IS	TOTAL	SCORE
Warm Springs & Saddle intersection	13.56% 24	11.30% 20	16.95% 30	24.29% 43	33.90% 60	177	2.21
Warm Springs & Lewis intersection	35.03% 62	22.03% 39	20.34% 36	4.52% 8	18.08% 32	177	3.07
Warm Springs & 10th intersection	26.55% 47	32.20% 57	16.95% 30	8.47% 15	15.82% 28	177	2.91
Lack of sidewalks - 10th Street and between 10th & Lewis	16.95% 30	21.47% 38	23.16% 41	22.60% 40	15.82% 28	177	2.39

Q7 How satisfied are you with the current intersections and roadway configurations?

Answered: 172 Skipped: 47



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	4	707	172
Total Respondents: 172			

#		DATE
1	10	5/28/2022 8:45 AM
2	8	5/28/2022 7:29 AM
3	7	5/26/2022 10:23 AM
4	6	5/24/2022 12:41 AM
5	6	5/23/2022 5:37 PM
6	8	5/23/2022 5:07 PM
7	0	5/23/2022 4:54 PM
8	6	5/23/2022 2:34 PM
9	7	5/23/2022 12:40 PM
10	9	5/23/2022 11:55 AM
11	1	5/23/2022 11:46 AM
12	7	5/22/2022 7:56 PM
13	2	5/22/2022 7:47 PM
14	2	5/22/2022 1:14 PM
15	3	5/22/2022 11:58 AM
16	1	5/22/2022 11:07 AM
17	6	5/22/2022 10:04 AM
18	7	5/22/2022 9:38 AM
19	9	5/22/2022 7:54 AM

Warm Springs Road Alternatives & Improvements

20	10	5/21/2022 8:59 PM
21	5	5/21/2022 5:02 PM
22	5	5/21/2022 1:59 PM
23	5	5/21/2022 12:24 PM
24	9	5/21/2022 11:57 AM
25	8	5/21/2022 11:36 AM
26	6	5/21/2022 10:57 AM
27	5	5/21/2022 10:34 AM
28	9	5/21/2022 10:19 AM
29	3	5/21/2022 9:46 AM
30	5	5/21/2022 9:01 AM
31	1	5/21/2022 8:38 AM
32	5	5/21/2022 7:45 AM
33	3	5/21/2022 7:23 AM
34	1	5/21/2022 7:19 AM
35	1	5/21/2022 6:56 AM
36	2	5/21/2022 6:23 AM
37	10	5/21/2022 6:07 AM
38	6	5/21/2022 12:47 AM
39	7	5/20/2022 11:52 PM
40	7	5/20/2022 10:55 PM
41	1	5/20/2022 10:23 PM
42	5	5/20/2022 9:36 PM
43	2	5/20/2022 9:06 PM
44	1	5/20/2022 8:14 PM
45	10	5/20/2022 7:12 PM
46	8	5/20/2022 7:08 PM
47	2	5/20/2022 7:02 PM
48	3	5/20/2022 6:31 PM
49	1	5/20/2022 6:30 PM
50	4	5/20/2022 5:49 PM
51	7	5/20/2022 5:48 PM
52	10	5/20/2022 5:11 PM
53	6	5/20/2022 4:31 PM
54	2	5/20/2022 4:15 PM
55	6	5/20/2022 4:07 PM
56	9	5/20/2022 3:45 PM
57	1	5/20/2022 3:21 PM

Warm Springs Road Alternatives & Improvements

58	6	5/20/2022 3:16 PM
59	5	5/20/2022 3:13 PM
60	0	5/20/2022 3:11 PM
61	9	5/20/2022 3:05 PM
62	1	5/20/2022 2:54 PM
63	5	5/20/2022 2:18 PM
64	5	5/20/2022 2:18 PM
65	7	5/20/2022 2:17 PM
66	6	5/20/2022 2:13 PM
67	0	5/20/2022 2:09 PM
68	1	5/20/2022 1:46 PM
69	6	5/20/2022 1:46 PM
70	6	5/20/2022 1:33 PM
71	10	5/20/2022 1:30 PM
72	5	5/20/2022 1:22 PM
73	2	5/20/2022 1:14 PM
74	3	5/20/2022 12:58 PM
75	2	5/20/2022 12:56 PM
76	9	5/20/2022 12:43 PM
77	1	5/20/2022 12:30 PM
78	4	5/20/2022 12:22 PM
79	1	5/20/2022 12:19 PM
80	7	5/20/2022 12:14 PM
81	1	5/20/2022 12:13 PM
82	6	5/20/2022 12:13 PM
83	2	5/20/2022 12:06 PM
84	1	5/20/2022 12:04 PM
85	2	5/20/2022 12:03 PM
86	6	5/20/2022 11:59 AM
87	1	5/20/2022 11:58 AM
88	1	5/20/2022 11:57 AM
89	0	5/20/2022 9:44 AM
90	1	5/19/2022 10:40 AM
91	1	5/19/2022 8:17 AM
92	2	5/18/2022 5:10 PM
93	1	5/18/2022 5:10 PM
94	5	5/18/2022 4:10 PM
95	3	5/18/2022 3:10 PM

Warm Springs Road Alternatives & Improvements

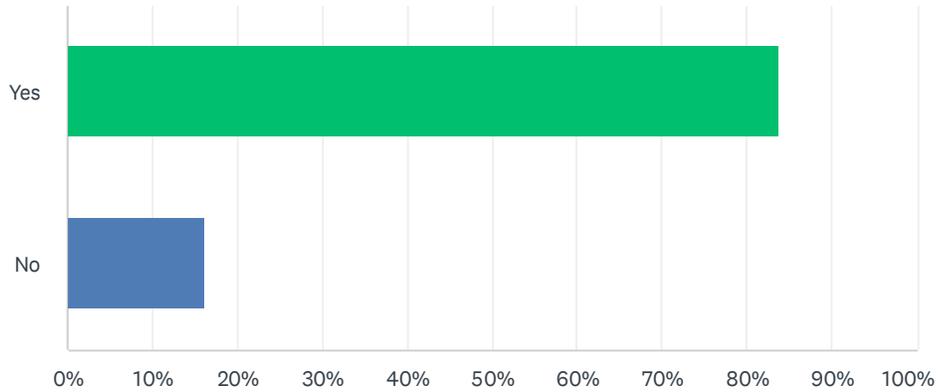
96	0	5/18/2022 2:26 PM
97	8	5/18/2022 1:40 PM
98	6	5/18/2022 12:29 PM
99	3	5/18/2022 10:38 AM
100	1	5/18/2022 9:10 AM
101	3	5/18/2022 8:37 AM
102	5	5/18/2022 8:36 AM
103	1	5/18/2022 7:58 AM
104	3	5/18/2022 7:04 AM
105	1	5/18/2022 6:46 AM
106	3	5/18/2022 6:12 AM
107	1	5/17/2022 10:38 PM
108	2	5/17/2022 9:41 PM
109	2	5/17/2022 6:11 PM
110	3	5/17/2022 5:35 PM
111	7	5/17/2022 4:58 PM
112	1	5/17/2022 4:40 PM
113	5	5/17/2022 4:12 PM
114	1	5/17/2022 4:08 PM
115	0	5/17/2022 3:55 PM
116	5	5/17/2022 2:46 PM
117	8	5/17/2022 2:08 PM
118	3	5/17/2022 1:52 PM
119	8	5/17/2022 1:03 PM
120	6	5/17/2022 12:49 PM
121	1	5/17/2022 12:46 PM
122	3	5/17/2022 12:26 PM
123	9	5/17/2022 10:18 AM
124	0	5/17/2022 9:19 AM
125	10	5/17/2022 9:10 AM
126	3	5/17/2022 8:54 AM
127	2	5/17/2022 8:14 AM
128	8	5/17/2022 7:59 AM
129	1	5/17/2022 7:57 AM
130	2	5/17/2022 7:35 AM
131	5	5/17/2022 7:07 AM
132	3	5/17/2022 5:56 AM
133	9	5/17/2022 3:15 AM

Warm Springs Road Alternatives & Improvements

134	5	5/17/2022 12:17 AM
135	5	5/16/2022 11:07 PM
136	1	5/16/2022 10:42 PM
137	3	5/16/2022 10:28 PM
138	3	5/16/2022 10:10 PM
139	8	5/16/2022 9:26 PM
140	10	5/16/2022 9:23 PM
141	7	5/16/2022 8:52 PM
142	0	5/16/2022 7:46 PM
143	3	5/16/2022 7:40 PM
144	2	5/16/2022 6:59 PM
145	1	5/16/2022 6:34 PM
146	4	5/16/2022 6:33 PM
147	3	5/16/2022 6:08 PM
148	5	5/16/2022 1:58 PM
149	4	5/16/2022 1:12 PM
150	2	5/16/2022 1:04 PM
151	2	5/16/2022 12:59 PM
152	7	5/16/2022 12:34 PM
153	9	5/16/2022 12:32 PM
154	3	5/16/2022 12:25 PM
155	0	5/16/2022 12:22 PM
156	6	5/16/2022 12:13 PM
157	2	5/16/2022 12:02 PM
158	1	5/16/2022 11:59 AM
159	3	5/16/2022 11:53 AM
160	3	5/16/2022 11:49 AM
161	1	5/16/2022 11:27 AM
162	2	5/16/2022 11:11 AM
163	4	5/16/2022 10:54 AM
164	5	5/16/2022 10:44 AM
165	5	5/16/2022 10:35 AM
166	3	5/16/2022 10:23 AM
167	5	5/16/2022 10:21 AM
168	1	5/16/2022 10:07 AM
169	2	5/16/2022 10:07 AM
170	1	5/16/2022 9:41 AM
171	3	5/16/2022 9:33 AM

Q8 Should pedestrian safety enhancements occur?

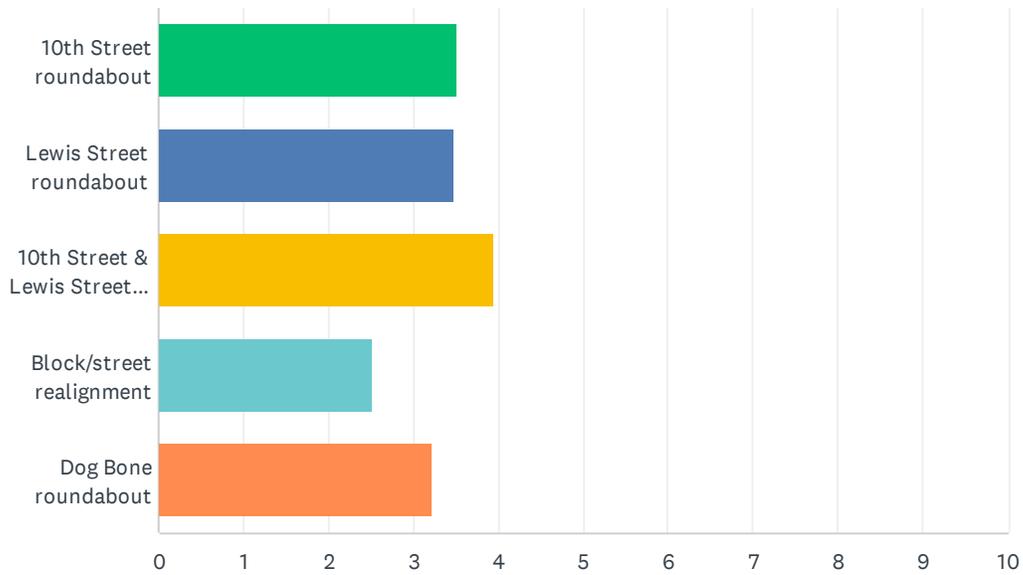
Answered: 172 Skipped: 47



ANSWER CHOICES	RESPONSES	
Yes	83.72%	144
No	16.28%	28
TOTAL		172

Q9 Please rank the above options in order from first choice to last.

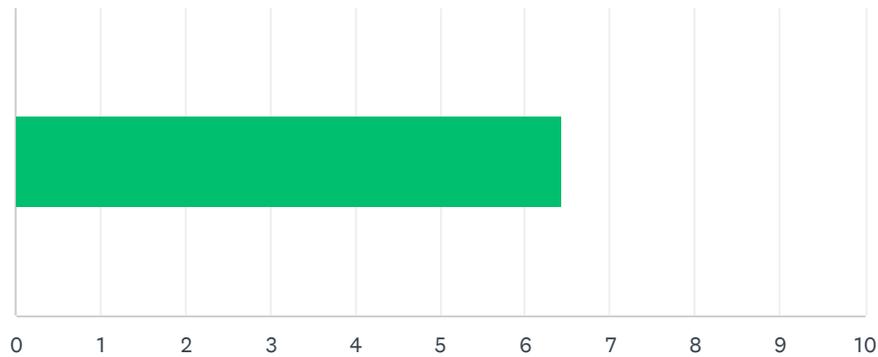
Answered: 143 Skipped: 76



	1	2	3	4	5	DON'T EXPLORE THIS OPTION.	TOTAL	SCORE
10th Street roundabout	16.78% 24	22.38% 32	17.48% 25	9.09% 13	4.90% 7	29.37% 42	143	3.52
Lewis Street roundabout	17.48% 25	16.08% 23	23.78% 34	11.19% 16	2.80% 4	28.67% 41	143	3.48
10th Street & Lewis Street realignment and roundabout	31.47% 45	16.08% 23	13.99% 20	8.39% 12	1.40% 2	28.67% 41	143	3.95
Block/street realignment	7.69% 11	6.29% 9	5.59% 8	16.78% 24	14.69% 21	48.95% 70	143	2.52
Dog Bone roundabout	12.68% 18	14.79% 21	9.15% 13	8.45% 12	9.86% 14	45.07% 64	142	3.22

Q10 How important would these safety enhancements be to you?

Answered: 140 Skipped: 79



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	6	901	140
Total Respondents: 140			

#		DATE
1	8	5/26/2022 10:25 AM
2	10	5/25/2022 7:30 PM
3	10	5/23/2022 5:43 PM
4	3	5/23/2022 5:09 PM
5	5	5/23/2022 4:58 PM
6	7	5/23/2022 2:36 PM
7	1	5/23/2022 12:43 PM
8	10	5/23/2022 11:47 AM
9	10	5/22/2022 8:02 PM
10	2	5/22/2022 7:48 PM
11	9	5/22/2022 1:19 PM
12	8	5/22/2022 11:59 AM
13	7	5/22/2022 11:10 AM
14	5	5/22/2022 10:06 AM
15	2	5/22/2022 9:41 AM
16	1	5/22/2022 7:55 AM
17	9	5/21/2022 8:59 PM
18	6	5/21/2022 5:18 PM
19	6	5/21/2022 12:26 PM
20	3	5/21/2022 12:00 PM

Warm Springs Road Alternatives & Improvements

21	4	5/21/2022 10:22 AM
22	8	5/21/2022 9:47 AM
23	5	5/21/2022 9:04 AM
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30	1	5/21/2022 6:08 AM
31	7	5/21/2022 12:52 AM
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37	4	5/20/2022 7:11 PM
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46	5	5/20/2022 3:47 PM
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51	10	5/20/2022 2:57 PM
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53	4	5/20/2022 2:23 PM
54	9	5/20/2022 2:21 PM
55	5	5/20/2022 2:14 PM
56	2	5/20/2022 1:48 PM
57	1	5/20/2022 1:31 PM
58	3	5/20/2022 1:25 PM

Warm Springs Road Alternatives & Improvements

59	9	5/20/2022 1:18 PM
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61	2	5/20/2022 12:46 PM
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63	6	5/20/2022 12:27 PM
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72	9	5/18/2022 5:12 PM
73	5	5/18/2022 4:11 PM
74	8	5/18/2022 3:12 PM
75	10	5/18/2022 2:28 PM
76	10	5/18/2022 1:42 PM
77	6	5/18/2022 12:31 PM
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96	7	5/17/2022 12:29 PM

Warm Springs Road Alternatives & Improvements

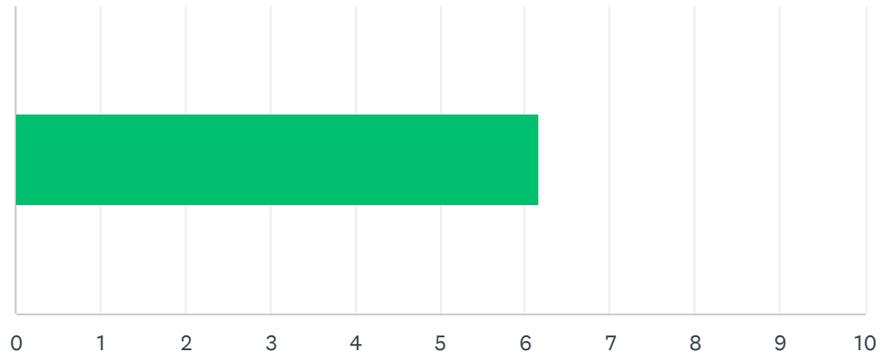
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138	10	5/16/2022 10:09 AM
139	8	5/16/2022 9:35 AM
140	10	5/16/2022 8:44 AM

Q11 How important would these safety enhancements be to you?

Answered: 140 Skipped: 79



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	6	864	140
Total Respondents: 140			

#		DATE
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6	5	5/23/2022 2:36 PM
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Warm Springs Road Alternatives & Improvements

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140	8	5/16/2022 8:44 AM

Q12 Please share any additional thoughts or feedback and/or leave your email address to sign up for ProjectKetchum.org newsletters.

Answered: 44 Skipped: 175

#	RESPONSES	DATE
1	The most important element is missing and that is the enhancement of safe bike access. The bike path only functions for through traffic and a limited number of destinations. We need bike lanes and bike safety features on Warm Springs road (from 6th to Lewis and a safer bike path beyond the bridge on ws), Lewis and 10th street. Additionally, we need safe access for riders going to and from Northwood place and the fire station. Even something simple like a crosswalk from that side of the road to the bike path would be an easy improvement (combined with lowering the speed limit in that stretch). The current bike path is great (in parts) but not sufficient to get riders safely where they need to go. Thank you for addressing this important element especially as we as a community try to reduce our carbon footprint.	5/25/2022 7:41 PM
2	Additional sidewalks designed in the same way as the one going up the hill toward Sawtooth Brewery would be a huge improvement. Connecting the bike path/creating a sidewalk up 10th st could also be a welcome a solution. Thank you City of Ketchum for seeking community feedback on this issue!	5/23/2022 2:38 PM
3	don't forget there is currently a bike path for walking on. Rarely do I see pedestrians walking from Lewis Street to 10th street, and they do have the option of walking on the west side of the road if they desired more space for walking. Please don't waste money needlessly. Pulling out from Hemingway to head back towards Lewis Street is a nightmare, a round about there would be handy, however I frequently use the roundabout in Hailey headed to the high school, and am often astounded at the lack of knowledge US drivers have at how to operated a roundabout.	5/23/2022 12:47 PM
4	If there is to be more retail or living in the light industrial area then sidewalks and bump outs are important!!! If the area will continue to be majority light industry the the need is less.	5/22/2022 1:22 PM
5	Lewis St is the most important thing to address. SO MANY businesses that have to come in and out including 5 wine and beer distributors that have to do delivery's all day. Plus the only car wash in town. 90% of lower 10th street traffic then turn right on Lewis St.	5/22/2022 9:51 AM
6	It's all fine as it is. Let's stop "improving" Ketchum. Slow down development in general. Better yet, just stop.	5/21/2022 9:01 PM
7	I generally dislike roundabouts. The primary issue, I think, is trying to make a left from 10th St. onto warm Spring Road. Visibility is completely blocked if there are cars filling up at the gas station. That intersection is dangerous and needs attention. Safer Pedestrian walkways to and from the YMCA to town are also important. But it's equally important to make it safer to and from town for bicyclists across 10th and Lewis toward the ymca. The rest of the changes seem unnecessary in my humble opinion. Making a left from Lewis onto warm Springs isn't great, but it doesn't seem to be a major problem. Nothing like trying to make a left from 10th St. onto warm Springs. thanks.	5/21/2022 5:26 PM
8	It seems most American drivers don't know how to use roundabouts (signals, signage, bike paths, etc. are often used wrong or not at all). Please don't add more roundabouts. They're also a pain to plow and often too small for emergency service vehicles.	5/21/2022 12:02 PM
9	This is a terribly written survey and maps/proposals are not explained at all. These survey results should be dismissed	5/21/2022 10:24 AM
10	Thank you for making projects on Warm Springs a priority. As someone who frequently drives, walks, and bikes on this stretch, it can be a frightening commute. Anything that can help the flow of large trucks in particular between 10th/Lewis and Warm Springs will be a tremendous update.	5/21/2022 9:49 AM
11	bulbouts and new sidewalks would be welcome, and less disruptive to install	5/21/2022 9:05 AM
12	Any way to get a pedestrian light or something at the bike path crossing? I frequently am not	5/21/2022 8:44 AM

Warm Springs Road Alternatives & Improvements

able to stop my car in time because bicyclists quickly approach and I don't see them coming. Have had some close calls. If there was a way for both cyclists and drivers to agree on when the cyclist will be crossing (ie with a light) that would be a much safer situation.

13	Police/speed enforcement would be helpful by the YMCA and near Grumpy's	5/20/2022 11:59 PM
14	FIX MAIN STREET!!! & if you can't.....! get Hailey to do what needs to be done for the last decade	5/20/2022 7:16 PM
15	I honestly think that making the left lane heading north out of town a turn only lane to warm springs while the right lane is the straight ahead lane would ease congestion and confusion on Main Street heading north....	5/20/2022 7:05 PM
16	My family lives right next to the fire station and we use this route multiple times per day either by car or bicycle. I'm so happy the city is finally working towards making this a safer area for children.	5/20/2022 6:37 PM
17	coburn9526@gmail.com	5/20/2022 3:24 PM
18	The streets are fine for driving. Time abs money should be spent on pedestrian and bicycle safety. All routes out if warm springs neighborhoods should have a cross walk to the bike path. There should be safe abs clear alternate side of the street use for pedestrians or bikes - for neighborhoods on the other side of the bike path. Cars are fine. Take care of the children and people!	5/20/2022 3:16 PM
19	The scariest intersection from a motorist's perspective is the intersection of Saddle and Warm Springs with bicycles speeding down Warm Springs and across Saddle without stopping. It is very blind when approaching Warm Springs from Saddle. Bicyclists are suppose to stop but many don't.	5/20/2022 2:32 PM
20	Please don't make changes that will Make it worse. Better to leave it alone.	5/20/2022 2:15 PM
21	Thanks for keeping us safe out there	5/20/2022 1:19 PM
22	This street and these intersections seem to function fine now and are part of the charm of Ketchum. All of these proposals are way too complicated and will create more problems than they solve.	5/20/2022 12:48 PM
23	if you do the new block then the new property could be rezoned for apartments	5/20/2022 12:03 PM
24	There should be mention of bike traffic and either a protected bike lane or a separate bike road through this area. It is dangerous once you have to leave the bike path and go onto warm springs road to go to the vet/grumpys/basecamp ect.	5/18/2022 9:14 AM
25	this plan has lots of advantages, but lots of issues...Start with one round about and then see how it works...instead of tearing everything up at once...Lewis Street First....	5/18/2022 8:03 AM
26	Please keep the school and related pedestrian and vehicle traffic along 10th street in mind.	5/17/2022 10:42 PM
27	People speeding in front of YMCA is awful and I have had people go around me thru the crosswalk when i was stopped at crosswalk.	5/17/2022 4:00 PM
28	I think that the pedestrian improvements are far more important and a significantly better and more cost effective means of addressing pedestrian safety than roundabouts. Functional "warning/caution" lights and adding to/improving the sidewalks, adding bulb outs, and more defined marking/painting and signage would make each of the identified intersections significantly safer for pedestrians and on-road cyclists... and would also be significantly more cost effective/efficient.	5/17/2022 1:12 PM
29	Roundabouts save lives, save money in the long run over traffic lights, ease congestion and frustration, and are beautiful!!!	5/17/2022 12:30 PM
30	pedestrians can wait too. if we really cared about pedestrian safety we would stop encouraging them from blindly walking in front of moving vehicles.	5/17/2022 10:24 AM
31	Roundabouts are confusing and difficult for pedestrians to cross. With potentially more housing development in this area, walkability needs to be prioritized.	5/17/2022 8:02 AM
32	Don't do whatever the stoplight is on Main/4th. That's terrible. Please get rid of it. It really only needs a blinking button crosswalk	5/17/2022 7:43 AM

Warm Springs Road Alternatives & Improvements

33	My kids have almost been hit multiple times. Thank you for addressing this. My kids go to Boulder Clay works and there is no safe way to get there if you are 8 years old.	5/16/2022 7:49 PM
34	You have not addressed the most significant problem in 10th street, which is the automotive repair business that utilizes a great portion of the street as parking for their business, and has cars backing into 10th street regularly. This is the single biggest issue for 10th street. I live in Wm Springs, take the bus, drive, walk and bike into Ketchum regularly for the past twenty years. The 10th street automotive business is the big problem on 10th street.	5/16/2022 6:40 PM
35	As a warm springs resident who has seen the traffic through this area increase a crazy amount over the last 5 years, I believe that this area is in need of improvements, thank you for looking at it. However I also believe that improvements are needed in order to connect the bike path with the downtown core/Atkinson's area. I love riding my bike to town to meet friends or do chores but hate getting from the bike path west of main street up in to the downtown core. More people biking to town regularly = less parking issues...	5/16/2022 1:17 PM
36	While some changes here can be positive the city has a track record of making things worse when trying to make things better. Main st / SV Rd pedestrian scramble is example. Sometimes less intervention is better.	5/16/2022 12:38 PM
37	Short term, low cost solution to saddle and warm springs: make it a 4 way stop intersection	5/16/2022 12:28 PM
38	The area where Warm Springs breaks off of Main St is a major car & pedestrian danger too.	5/16/2022 12:15 PM
39	monarch83340@hotmail.com	5/16/2022 12:05 PM
40	Love roundabouts- hope it happens!	5/16/2022 12:02 PM
41	A roundabout at the Warm Springs Rd and Saddle Rd intersection should be considered a top priority.	5/16/2022 11:57 AM
42	Appreciated. More focus is needed on Saddle/WmSpgs intersection! From a human injury standpoint, this is the highest priority, since accidents here are much more likely to involve a cyclist or pedestrian. A fender bender on Lewis is not the same as a ghost bike in front of the YMCA!	5/16/2022 10:33 AM
43	Living on Warm Spring Rd we have been concerned about the increase in traffic over the years. Too many cars, too much noise, and cars making multiple trips.	5/16/2022 10:15 AM
44	Lots of pedestrian traffic with Hemingway school and ymca. I am also concerned about the bike path crossing and traffic into Hemingway on 10th st - disaster waiting to happen	5/16/2022 10:10 AM



D

High Level Screening Criterion Definitions

Memo

Date: Monday, June 27, 2022

Project: Warm Springs Road Alternative Analysis

To: Jade Riley, City of Ketchum
Sherri Newland, S&C Associates LLC

From: Cameron Waite, HDR
Brett Kohring, HDR

Subject: Draft Concept Alternative Comparisons & Recommendations

Introduction

This memo summarizes the high-level screening of different intersection alternatives for the Warm Springs Road corridor within the City of Ketchum, Idaho. Previously, an Existing Conditions Memo was submitted that details the analysis of existing operational, safety and land use of the corridor.

Concept Alternatives Development

The five alternative concepts developed all improve operations for all modes of travel along Warm Springs Road and provide opportunities to improve connectivity for pedestrians, bikes, and transit while having unique impacts to adjacent properties. The concept alternatives are presented in **Figures 1 through 5** and are described below.

No-Build Alternative

The no-build alternative was evaluated along with the concept alternatives for comparison purposes.

Concept Alternative 1 – 10th Street Roundabout

Figure 1 shows the concept for Alternative 1. This alternative replaces the existing two-way stop controlled Warm Springs Road and 10th Street intersection with a single lane roundabout. This concept provides good vehicle operations while requiring drivers to slow down approaching and moving through the intersection. Pedestrian facilities would be provided on all legs, connecting to existing facilities, and bikes would be able to travel through the roundabout due to low vehicle speeds or could travel around on pathways around the circle, crossing the legs in the pedestrian crosswalks. This concept would require widening the intersection with estimated private and public parking, gas pump, access, and building impacts. The adjacent Warm Springs Road and Lewis Street intersection is not improved with this alternative.

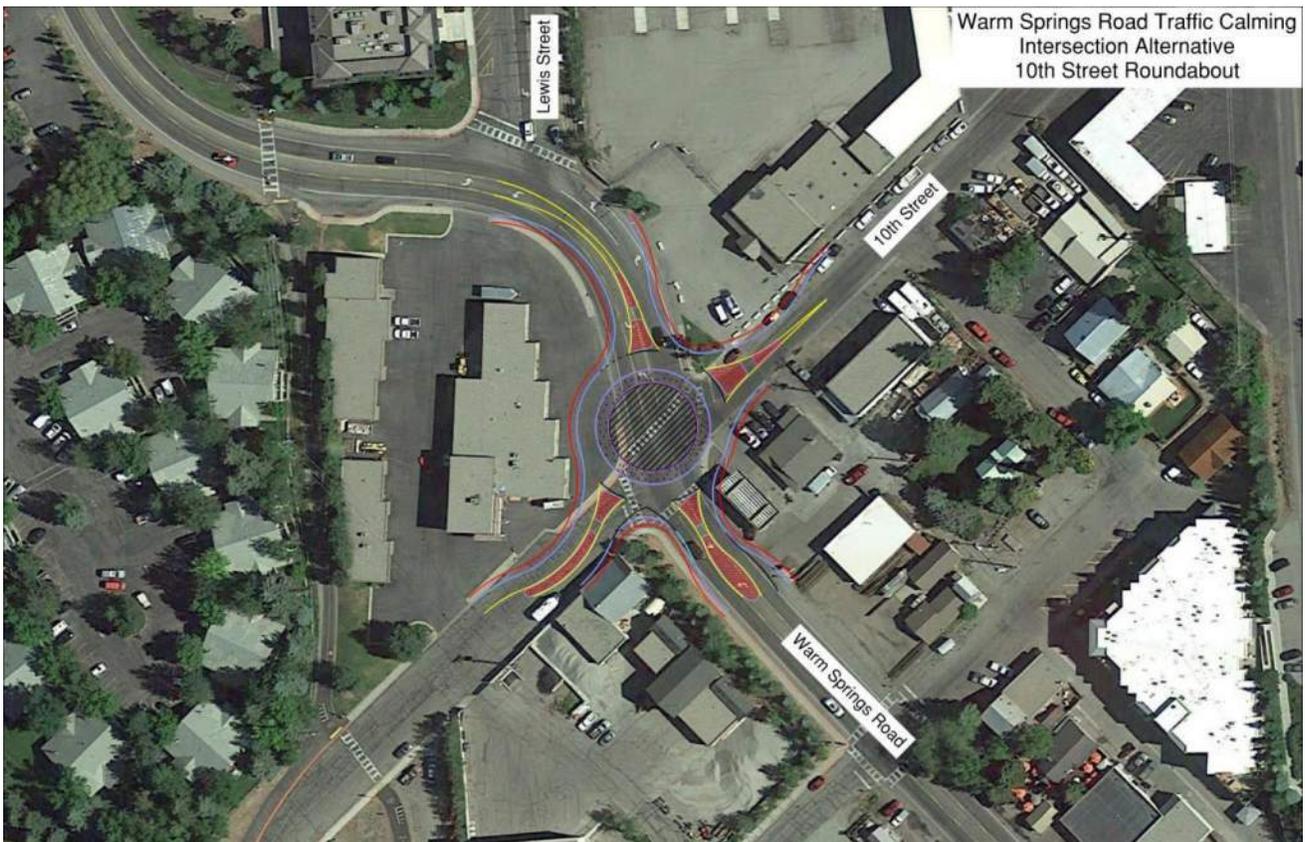


Figure 1. Concept Alternative 1

Concept Alternative 2 - Lewis Street Roundabout

Figure 2 shows the concept for Alternative 2. This alternative replaces the existing stop controlled Warm Springs Road and Lewis Street intersection with a single lane roundabout. This concept provides good vehicle operations while requiring drivers to slow down approaching and moving through the intersection. Pedestrian facilities would be provided on all legs, connecting to existing facilities, and bikes would be able to travel through the roundabout due to low vehicle speeds or could travel around on pathways around the circle, crossing the legs in the pedestrian crosswalks. The bus stop on the west leg would be updated with this alternative. This concept would require widening the intersection with estimated private and public parking and access impacts. The adjacent Warm Springs Road and 10th Street intersection is not improved with this alternative.

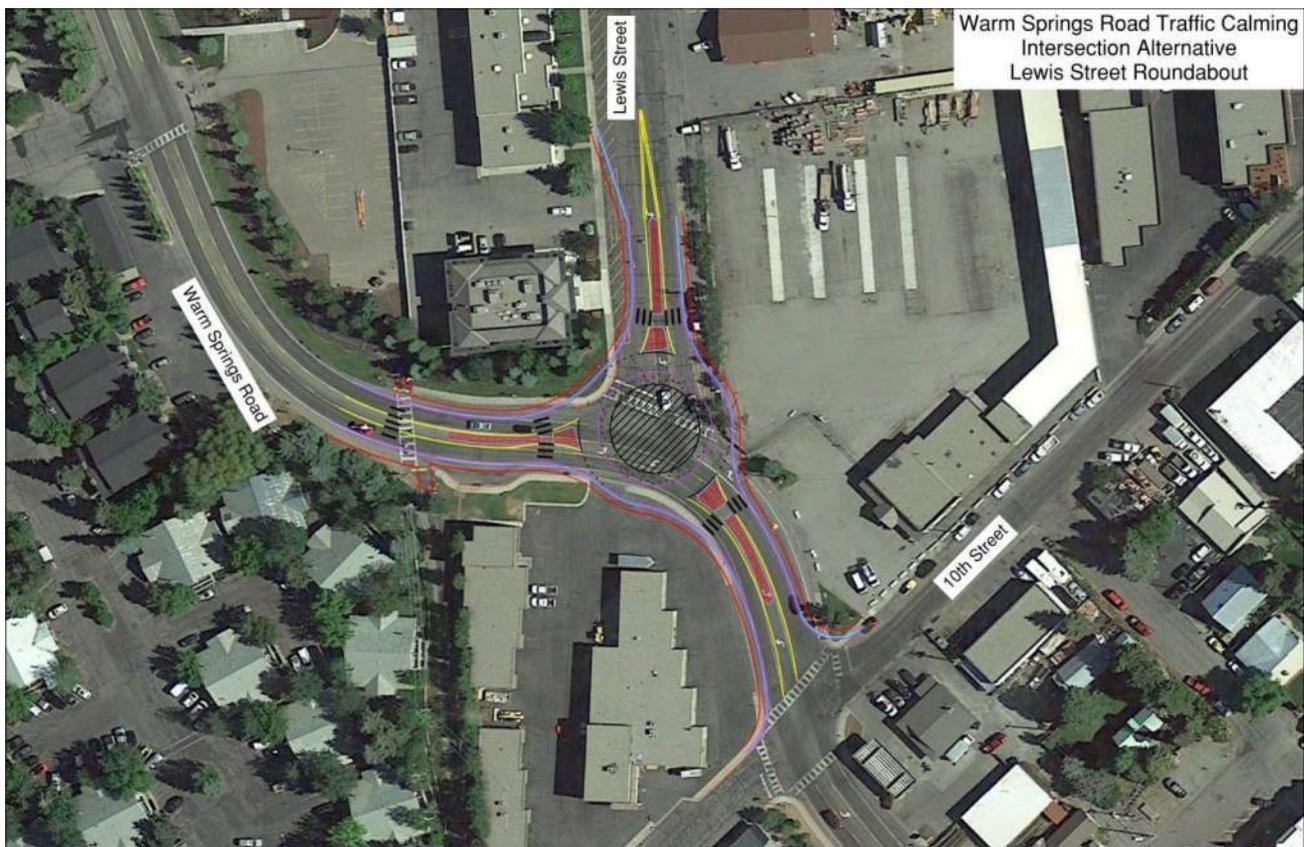


Figure 2. Concept Alternative 2

Concept Alternative 3 - 10th Street and Lewis Street Dog bone Roundabout

Figure 3 shows the concept for Alternative 3. This alternative replaces the existing stop controlled Warm Springs Road intersections at both 10th Street and Lewis Street with a single lane “dog bone” roundabout. A dog bone roundabout does not form a complete circle, but instead has a “raindrop” or “teardrop shape” in the middle that connects two roundabout intersections. In this case, the two intersections operate as a single larger intersection connected by the dog-bone roundabout. This alternative has the benefits and impacts described for Alternatives 1 and 2. It also increases out of direction travel for vehicles turning left from some approaches as they must navigate around the entire dog bone to reach the desired street. Pedestrians and bikes potentially have more out of direction travel as well.

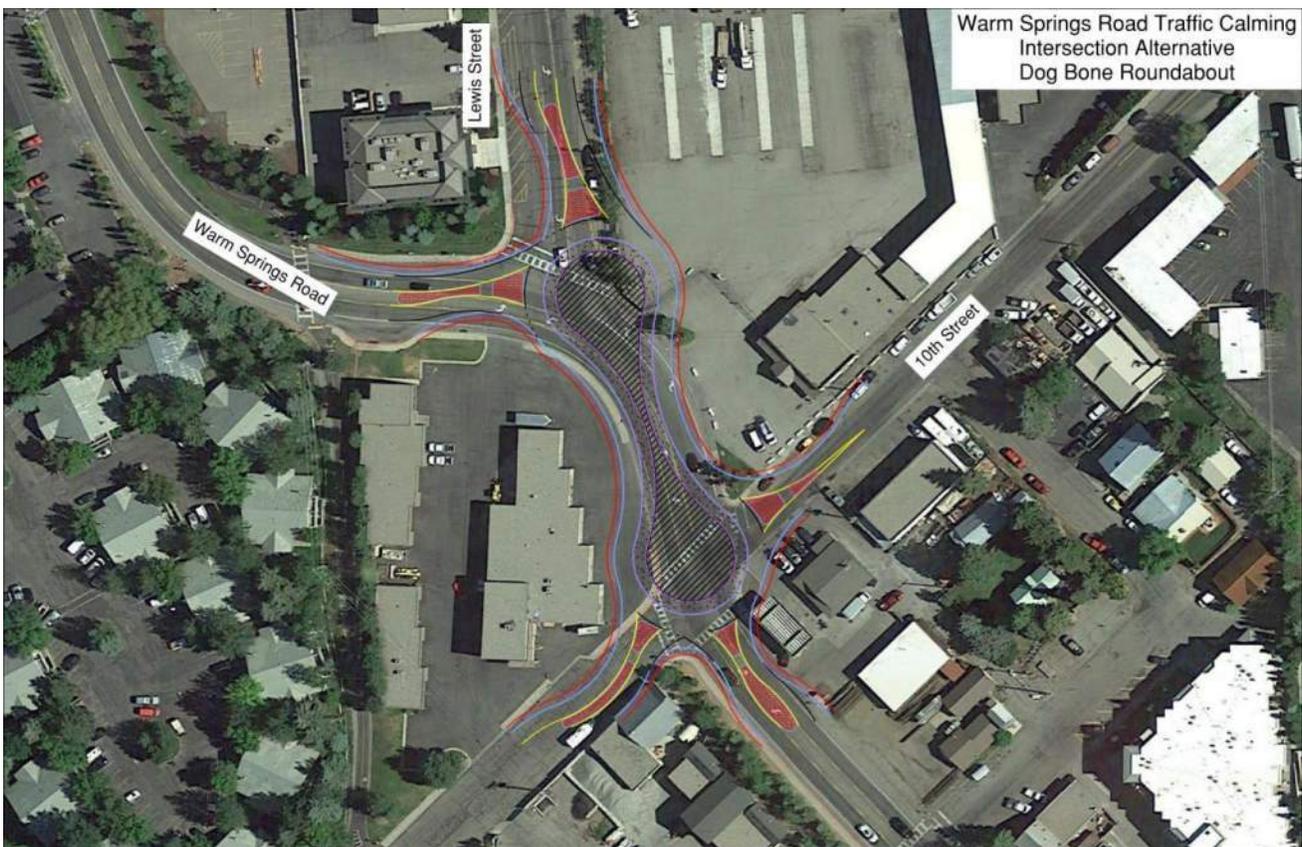


Figure 3. Concept Alternative 3

Concept Alternative 4 – 10th Street & Lewis Street Realignment & Roundabout

Figure 4 shows the concept for Alternative 4. This alternative realigns 10th Street between Warm Springs Road and SH-75 to the north and west to match into the Lewis Street and Warm Springs Road intersection, cutting through the adjacent property. The Lewis Street leg is realigned to the east and a single lane roundabout is developed to serve the new four-leg intersection. The existing 10th Street between Warm Springs Road and SH-75 is proposed to be disconnected from Warm Springs Road but could remain as an access to existing businesses along with Leadville Avenue. The abandoned roadway could also be negotiated to be incorporated with adjacent landowners for development opportunities.

As with the other roundabout alternatives, this concept provides good vehicle operations while requiring drivers to slow down approaching and moving through the intersection. Pedestrian facilities would be provided on all legs, connecting to existing facilities, and bikes would be able to travel through the roundabout due to low vehicle speeds or could travel around on pathways around the circle, crossing the legs in the pedestrian crosswalks. The bus stop on the west leg of Warm Springs Road would be updated with this alternative. This concept would require widening the intersection with estimated private and public parking, access, and building impacts along with splitting the parcel in the northeast corner. The adjacent Warm Springs Road and 10th Street intersection is updated with this alternative by removing the east leg as described.

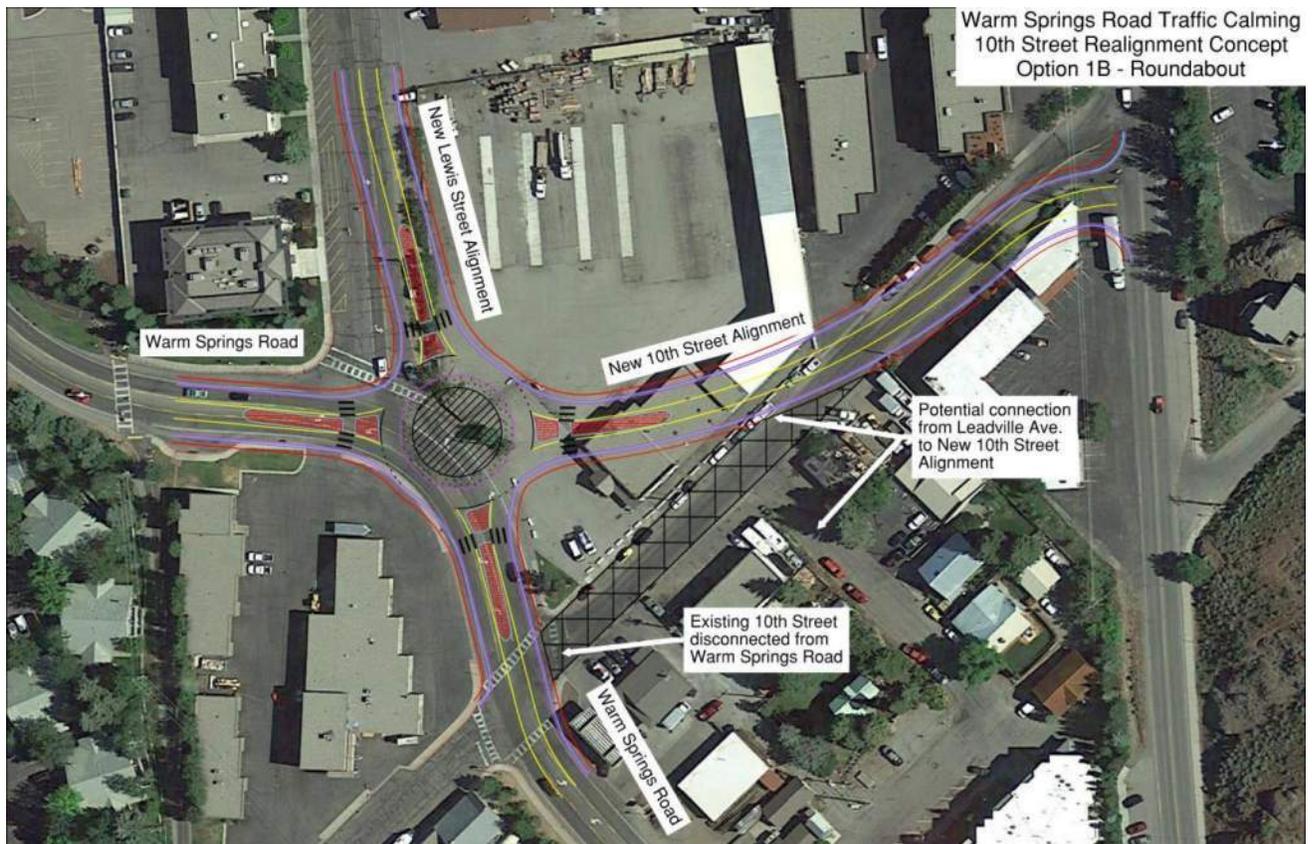


Figure 4. Concept Alternative 4

Concept Alternative 5 – Block/Street Realignment

Figure 5 shows the concept for Alternative 5. This alternate realigns Lewis Street to line up with Leadville Avenue and realigns Warm Springs to be a more direct north/south connection through the adjacent parcel. A new east/west street connects Warm Springs Road and Lewis Street, creating a new block between the realigned Warm Springs Road, realigned Lewis Road, 10th Street, and the new street. The intersections are assumed to be stop controlled in each corner of the new block.

Alternative 5 differs from the others because it includes new local street alignments that impact several parcels. It removes most of the curves in these streets while introducing more intersections to the area.

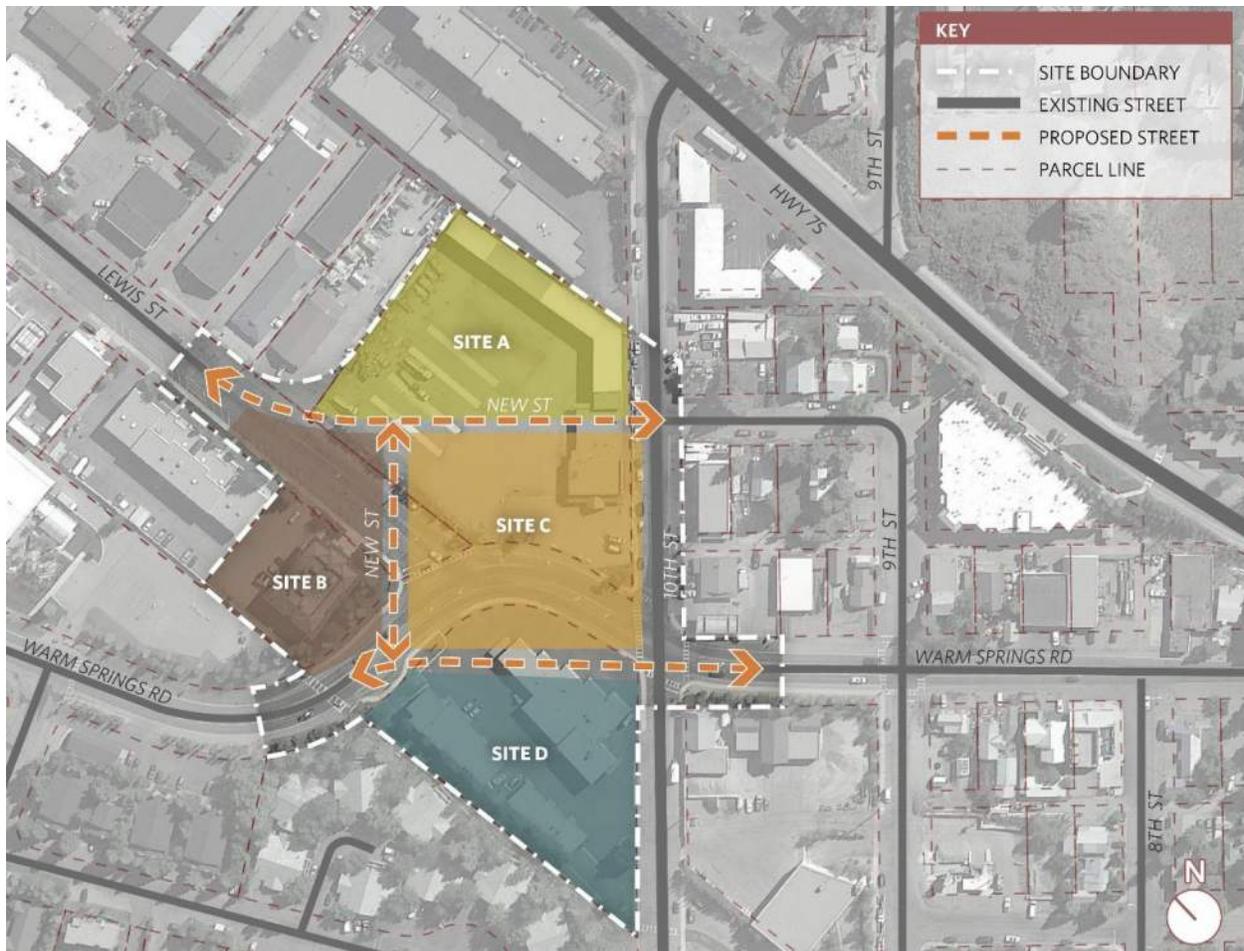


Figure 5. Concept Alternative 5

Screening Process and Criteria

A screening process was developed to evaluate each of the alternatives using criteria identified with the City staff in discussion, at the public meeting, and during other project update meetings. Five categories with a total of eleven criteria were established and are described below. Each alternative was given a score of **GOOD**, **NEUTRAL**, or **POOR** for each of the criteria. A **GOOD** score received +1 point while a **POOR** score received -1 point. A **NEUTRAL** score received 0 points. An overall “score” was given to each alternative by adding up the number of **GOOD** scores and subtracting the number of **POOR** scores. A **NEUTRAL** score for a given criterion neither helped nor hurt an alternative.

Safety Criterion

Safety is the number one priority of the City of Ketchum in providing mobility and access for the users of their system. This criterion qualitatively evaluates each concept alternative for its potential to make the streets and intersections safer.

- If the alternative reduces the number of potential conflicts between vehicles, pedestrians, and bikes, or improves safety, it was scored as **GOOD**.
- If the alternative does not include any features that will reduce conflicts or improve safety, it was scored as **NEUTRAL**.
- If the alternative increases the number of potential conflicts between vehicles, pedestrians, and bikes it was scored as **POOR**.

Multi-Modal Mobility Criteria

Two criteria were identified to evaluate how each concept alternative would improve the area for pedestrian, bike and transit connectivity and operations.

Improved Connectivity For All Modes

The existing pedestrian, bike, and transit facilities are not connected, do not meet ADA requirements, and do not adequately serve all users in the area. This criterion qualitatively evaluates each concept alternative for its potential to improve connectivity and ADA compliance, including reducing or removing out of direction travel.

- If the alternative provides consistent ADA access and connectivity for pedestrians, bikes, and transit vehicles, it was scored as **GOOD**.
- If the alternative does not provide consistent ADA access and connectivity for pedestrians, bikes, and transit vehicles, it was scored as **POOR**.

Warm Springs Road Crossings improvements

The current pedestrian and bike crossings of Warm Springs Road are wide and difficult for users to cross due to perceived high speeds on Warm Springs Road and less than desirable distance and visibility. This criterion qualitatively evaluates each concept alternative for its potential to improve Warm Springs Road crossings for pedestrians and bikes.

- If the alternative reduces the width of crossings and/or limits crossings to one direction of vehicular traffic, it was scored as **GOOD**.
- If the alternative does not reduce the width of the crossings and/or limits crossings to one direction of vehicular traffic, it was scored as **POOR**.

Right-of-Way Impact Criteria

Right-of-way also is a major cost and impact consideration when developing a project. Three criteria were developed to qualify the impacts each concept alternative would have on property owners in the area.

Split Parcels

- If the alternative does not split any parcels, it was scored as **GOOD**.
- If the alternative splits 1 or more parcels, it was scored as **POOR**.

Building Removal

- If the alternative does not require the removal of any buildings, it was scored as **GOOD**.
- If the alternative requires removal of one or more buildings, it was scored as **POOR**.

Parking Impacts

- If the alternative does not remove existing private parking or creates the opportunity to replace that parking elsewhere, it was scored as **GOOD**.
- If the alternative removes existing private parking, it was scored as **POOR**.

Community Value Criteria

Improve Existing Business Access & Connectivity

Providing better access to the properties Warm Springs Road, 10th Street, and Lewis Street could encourage continued development of the area as a light industrial hub for the City of Ketchum and even expand to other development opportunities. This criterion qualitatively evaluates the ability of each alternative to encourage development by improving connectivity and reliability along these corridors. This criterion is weighted due to its importance.

- If the alternative provides improved access to Warm Springs Road and another street, it was scored as **GOOD**.
- If the alternative only provides improved access to Warm Springs Road, it was scored as **NEUTRAL**.
- If the alternative did not improve access to Warm Springs Road and other streets, it was scored as **POOR**.

Opportunity for Redevelopment and/or Placemaking

This criterion evaluates how the alternative matches the surrounding land use and provides for future redevelopment opportunities. The alternative should work well with the current and future zoning and existing land uses including retail and commercial business, Ernest Hemingway STEAM School, and the YMCA. The alternative should allow for placemaking within the infrastructure improvements.

- If the alternative matches well with the existing land use and provides for future redevelopment and placemaking, it was scored as **GOOD**.
- If the alternative matches well with the existing land use but does not provide for future redevelopment and placemaking, it was scored as **NEUTRAL**.
- If the alternative does not match well with the existing land use and does not provide for future redevelopment and placemaking, it was scored as **POOR**.

Vehicle Operations Criteria

All the concept alternatives are estimated to operate at acceptable levels of service (LOS) for vehicles, pedestrians, and bikes, so other criteria were established to evaluate how the concept alternative would improve the overall operations of the Warm Springs Road area. Once the two recommended alternatives are selected, a deeper operations analysis will be performed to confirm operations.

Traffic Calming

Calming traffic to maintain lower and consistent speeds is a priority of the City and will enhance the overall operations of the roadways and intersections along with the connections to other mode facilities.

- If the alternative provides positive guidance to calm vehicular traffic, it was scored as **GOOD**.
- If the alternative does not provide positive guidance to calm vehicular traffic, it was scored as **POOR**.

Reduce the Number of Intersections/Driveways on Warm Springs Road

This criterion measures the benefits of fewer intersections and driveways along Warm Springs Road as it will reduce the number of conflicts and disruptions to vehicle, pedestrian, and bike movements. Removing conflicts and disruptions will improve operations for all users.

- If the alternative removes one or more intersections and/or driveways from Warm Springs Road, it was scored as **GOOD**.
- If the alternative does not remove an intersection and/or driveway from Warm Springs Road, it was scored as **NEUTRAL**.
- If the alternative adds intersections and/or driveways to Warm Springs Road, it was scored as **POOR**.

Serve as Parade Detour Route

This criterion measures the ability of the alternative to serve as a accommodate State Highway 75 (SH-75) traffic as a detour when parades occur on SH-75.

- If the alternative components will accommodate SH-75 detoured traffic, it was scored as **GOOD**.
- If the alternative will not accommodate SH-75 detoured traffic or is seen as difficult to do so, it was scored as **POOR**.



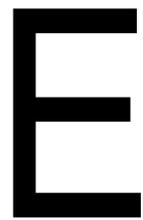
Screening Matrix						
.Concept Alternative	No Build	1– 10th Street Roundabout	2 - Lewis Street Roundabout	3 - 10th Street and Lewis Street Dog bone Roundabout	4– 10th Street & Lewis Street Realignment & Roundabout	5 – Block/Street Realignment
Safety						
Improved Connectivity For All Modes						
Warm Springs Road Crossings Improvements						
Split Parcels						
Building Removal						
Parking Impacts						
Improve Existing Business Access & Connectivity						
Opportunity for Redevelopment and/or Placemaking						
Traffic Calming						
Reduce the Number of Intersections/Driveways on Warm Springs Road						
Serve as Parade Detour Route						
Total Green Score						
Total Red Score						
Green – Red Total						

Screening

The matrix above will be used by City and consultant staff screeners to evaluate each alternative against the established criteria. Once all screeners have completed their screening, we will hold a meeting to reconcile screening and identify the top two alternatives to move into a more detailed qualitative analysis and screening.

Next Steps

HDR will work with the City of Ketchum to complete the screening, identify which two alternative concepts should be advanced, and conduct the qualitative analysis to identify a preferred alternative.

A large, bold, black letter 'E' is positioned on the right side of the page, partially overlapping a red rectangular area on the left and a grey rectangular area above it.

Future Operations Results

Intersection						
Int Delay, s/veh	0.6					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	385	16	14	625	16	15
Future Vol, veh/h	385	16	14	625	16	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	0	0
Mvmt Flow	418	17	15	679	17	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	435	0	1136 427
Stage 1	-	-	-	-	427 -
Stage 2	-	-	-	-	709 -
Critical Hdwy	-	-	4.11	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.209	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1130	-	225 632
Stage 1	-	-	-	-	662 -
Stage 2	-	-	-	-	491 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1130	-	222 632
Mov Cap-2 Maneuver	-	-	-	-	222 -
Stage 1	-	-	-	-	662 -
Stage 2	-	-	-	-	485 -

Approach	SE	NW	NE
HCM Control Delay, s	0	0.2	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	324	1130	-	-	-
HCM Lane V/C Ratio	0.104	0.013	-	-	-
HCM Control Delay (s)	17.4	8.2	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	0.3	0	-	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	620	4	4	479	8	12
Future Vol, veh/h	620	4	4	479	8	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	0	0
Mvmt Flow	674	4	4	521	9	13

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	678	0	1205	676
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	529	-
Critical Hdwy	-	-	4.11	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	919	-	205	457
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	919	-	204	457
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	593	-

Approach	SE	NW	NE
HCM Control Delay, s	0	0.1	17.7
HCM LOS			C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	305	919	-	-	-
HCM Lane V/C Ratio	0.071	0.005	-	-	-
HCM Control Delay (s)	17.7	8.9	-	-	-
HCM Lane LOS	C	A	-	-	-
HCM 95th %tile Q(veh)	0.2	0	-	-	-

LANE SUMMARY

Site: 101 [Warm Springs & Lewis - 2042 Un-Adjusted AM (Site Folder: 2042 Un-Adjusted AM)]

Warm Springs & Lewis
 Site Category: (None)
 Roundabout

Lane Use and Performance													
	DEMAND FLOWS		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV %]						[Veh	Dist] ft				
SouthEast: Warm Springs													
Lane 1 ^d	667	3.0	1304	0.512	100	8.2	LOSA	4.0	103.0	Full	1600	0.0	0.0
Approach	667	3.0		0.512		8.2	LOSA	4.0	103.0				
North: Lewis Street													
Lane 1 ^d	154	3.0	909	0.170	100	5.6	LOSA	0.7	18.8	Full	1600	0.0	0.0
Approach	154	3.0		0.170		5.6	LOSA	0.7	18.8				
West: Warm Springs													
Lane 1 ^d	361	3.0	1175	0.307	100	6.0	LOSA	1.7	42.6	Full	1600	0.0	0.0
Approach	361	3.0		0.307		6.0	LOSA	1.7	42.6				
Intersection	1183	3.0		0.512		7.2	LOSA	4.0	103.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)										
SouthEast: Warm Springs										
Mov.	L1	R1	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.	
From SE To Exit:	W	N			Cap. veh/h					
Lane 1	370	298	667	3.0	1304	0.512	100	NA	NA	
Approach	370	298	667	3.0		0.512				
North: Lewis Street										
Mov.	L1	R2	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.	
From N To Exit:	SE	W			Cap. veh/h					
Lane 1	125	29	154	3.0	909	0.170	100	NA	NA	
Approach	125	29	154	3.0		0.170				
West: Warm Springs										
Mov.	L2	R1	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.	
From W To Exit:	N	SE			Cap. veh/h					
Lane 1	26	335	361	3.0	1175	0.307	100	NA	NA	
Approach	26	335	361	3.0		0.307				

	Total	%HV	Deg.Satn (v/c)
Intersection	1183	3.0	0.512

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis											
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
SouthEast Exit: Warm Springs Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
North Exit: Lewis Street Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
West Exit: Warm Springs Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.

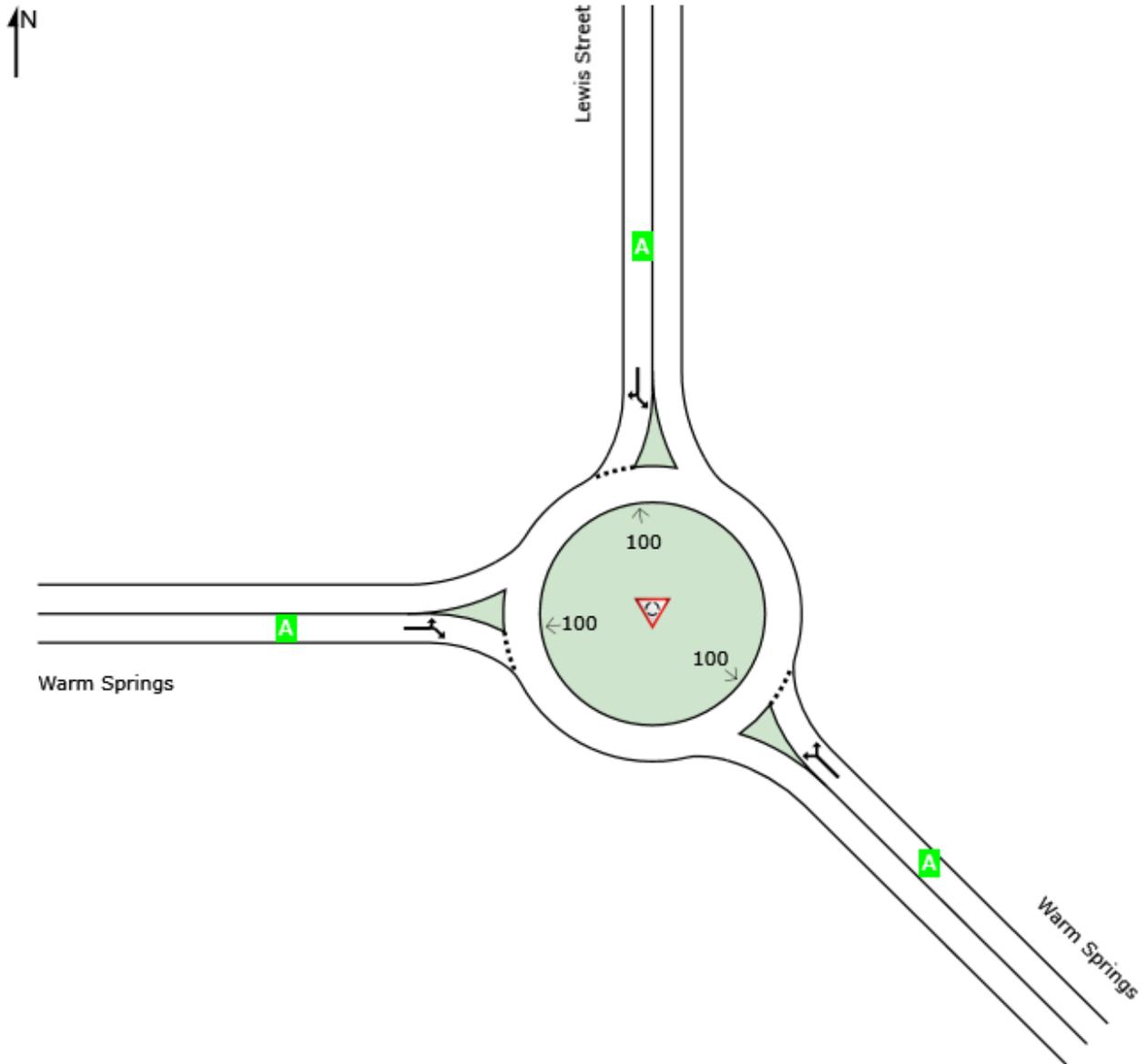
LANE LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Warm Springs & Lewis - 2042 Un-Adjusted AM (Site Folder: 2042 Un-Adjusted AM)]**

Warm Springs & Lewis
Site Category: (None)
Roundabout

	Approaches			Intersection
	Southeast	North	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Geometric Delay is not included).

INPUT REPORT

 **Site: 101 [Warm Springs & Lewis - 2042 Un-Adjusted AM]**

Warm Springs & Lewis
 Site Category: (None)
 Roundabout

Intersection - Site Data	
Site Name	Warm Springs & Lewis - 2042 Un-Adjusted AM
Site ID	101
Site Category	(None)
Site Title	Warm Springs & Lewis

Intersection - Site Properties	
Site (Intersection) Type	Roundabout
Setup Name	US HCM (Customary)
Base Setup	NA
Drive Rule	Right-hand side of the road
HCM Version	Yes
Units	US
First Created	-----
Date	1/26/2022 3:35:14 PM
Created By	LMENG
Organisation	HDR, INC.
Version	9.0.3.9771
Last Modified	-----
Date	8/12/2022 12:25:27 PM
Modified By	BFOCHT
Organisation	HDR, INC.
Version	9.0.3.9771

Intersection - Approach & Exit Data											
Location	Name	Type	No. of App. Lanes	No. of Exit Lanes	Approach Distance	Extra Bunching (Site Analysis)	Extra Bunching (Network Analysis)	Exit Distance	Approach Control	Area	Type Factor
					ft	%	%	ft			
SouthEast	Warm Springs	Two-way	1	1	1600.0	0	-	-	-	-	-
North	Lewis Street	Two-way	1	1	1600.0	0	-	-	-	-	-
West	Warm Springs	Two-way	1	1	1600.0	0	-	-	-	-	-

Movement Definitions - Included Movement Classes				
Name	ID	Model Designation	Type	
Light Vehicles	LV	Light Vehicle	Standard	
Heavy Vehicles	HV	Heavy Vehicle	Standard	

Movement Definitions - Origin-Destination Movements		
To Approach	Turn	OD Mov ID
From: SouthEast	Warm Springs	
West	L1	3ax
North	R1	18ax
From: North	Lewis Street	
SouthEast	L1	7a
West	R2	14

From: West	Warm Springs	
North	L2	5
SouthEast	R1	12a
Approach	U-Turn Before Intersection	Exclude U-Turn Before Intersection From Signal Analysis
SouthEast	-	-
North	-	-
West	-	-

Lane Geometry - Lane Configuration															
Leg Item	Configuration	Type	Control	Slip/ Bypass Control	Length	Width	Grade	Full Lane		Island			For Ped Stgn	Short Splitter Isl]	
								[ID	Col]	[Front Width	Back Width	Fill Style			Cnct To
					ft	ft	%			ft	ft				
SouthEast Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0			-	-	-	-	-	-
Rou Splt Isl-		-	-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes
1															
App. Lane	Full-Length	Normal	Yield	-	1600	13	0			-	-	-	-	-	-
1															
North Lewis Street															
Exit Lane 1	Full-Length	-	-	-	1600	13	0			-	-	-	-	-	-
Rou Splt Isl-		-	-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes
1															
App. Lane	Full-Length	Normal	Yield	-	1600	13	0			-	-	-	-	-	-
1															
West Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0			-	-	-	-	-	-
Rou Splt Isl-		-	-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes
1															
App. Lane	Full-Length	Normal	Yield	-	1600	13	0			-	-	-	-	-	-
1															

Lanes are numbered from left to right in the direction of travel.

Lane Geometry - Lane Disciplines			
To Approach	Turn	Free Queue Distance ft	Movement Class(es)
From: SouthEast App. Lane 1			
West	L1	0	LV, HV
North	R1	0	LV, HV
From: North App. Lane 1			
SouthEast	L1	0	LV, HV
West	R2	0	LV, HV
From: West App. Lane 1			
North	L2	0	LV, HV
SouthEast	R1	0	LV, HV

Lane Geometry - Lane Data											
Approach Lane Data											
Approach Lane	Basic Satn Flow	Util Ratio	Satn Speed	Capacity Adj	Use Given Cap Adj in Network Analysis	Set As Dominant Lane	Include SLip/ ByPass Lane in Entry Lane Count	Apply Satn Flow Est	Short Lane Capacity	Delay Model Param	
		tcu/h	%	mph	%						
SouthEast Warm Springs											
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-	
North Lewis Street											

App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
West Warm Springs										
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
Merge Analysis										
Exit Lane	Merge Lane Number	Apply Merge Analysis	Merge Type	Percent Opposing in Short Lane %	Percent Opposing in Merge Lane %	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min		
SouthEast Warm Springs										
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
North Lewis Street										
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
West Warm Springs										
Exit Lane 1	-	-	-	-	-	-	-	-	-	-

Lane Movements - Flow Proportions				
Exit Lane	SouthEast %	To Exit Leg		West %
		SouthEast %	North %	
Light Vehicles (LV)				
From: SouthEast	App. Lane 1			
Exit Lane 1	-	100		100
From: North	App. Lane 1			
Exit Lane 1	100	-		100
From: West	App. Lane 1			
Exit Lane 1	100	100		-
Heavy Vehicles (HV)				
From: SouthEast	App. Lane 1			
Exit Lane 1	-	100		100
From: North	App. Lane 1			
Exit Lane 1	100	-		100
From: West	App. Lane 1			
Exit Lane 1	100	100		-

Lane Movements - Blockage Calibration				
Exit Lane	SouthEast	To Exit Leg		West
		SouthEast	North	
From: SouthEast	App. Lane 1			
Exit Lane 1	-	1.0		1.0
From: North	App. Lane 1			
Exit Lane 1	1.0	-		1.0
From: West	App. Lane 1			
Exit Lane 1	1.0	1.0		-

Roundabouts - Options	
Roundabout Model Options	
Roundabout Capacity Model	US HCM 6
Roundabout LOS Method	Same as Sign Control
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 2010	-
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 6	No
Other Roundabout Models	
FHWA 2000	No

Use	Urban	Compact	-
Roundabout			
HCM 2000			No
NAASRA 1986			No

Roundabouts - Geometry										
Location	Name	Circ. Lanes	Circ. Width	Island Diameter	Inscribed Diameter	Entry Radius	Entry Angle	Raindrop Design	Circ Trans Line	Downstream Circ Lanes
			ft	ft	ft	ft	°			
SouthEast	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-
North	Lewis Street	1	20.0	100.0	-	65.0	30.0	No	No	-
West	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-

HCM 6 Roundabout Capacity Model Parameters											
Location	Name	Single L.Circ: Single L.Entry		Single L.Circ: Multi L.Entry		Multi L.Circ: Single L.Entry		Multi L.Circ: Dominant Lane		Multi L.Circ: Subdominant Lane	
		Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B
SouthEa	Warm Springs st	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
North	Lewis Street	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
West	Warm Springs	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920

HCM 6 Roundabout Model Calibration			
Location	Name	Model Entry/Circ. Calib. Flow Factor Adjust. (HCM6)	
		(HCM6)	(HCM6)
SouthEast	Warm Springs	1.00	None
North	Lewis Street	1.00	None
West	Warm Springs	1.00	None

Pedestrians - Pedestrian Movements				
Unit Time for Volumes: 60 minutes				
Peak Flow Period: 15 minutes				
Main Crossing/ Slip/Bypass Lane Crossing	Volume	Peak Flow	Flow Scale	Growth Rate
	ped	%	%	%
No Ped Movements				

Pedestrians - Pedestrian Movement Data									
Main Crossing/ Slip/Bypass Lane Crossing	Mov. ID	Crossing Distance	Conflict Zone Length	Oppng Ped.Fac.	P.Deg. Satn	Walking Speed	App. Trav. Distance	Downst. Distance	Queue Space
		ft	ft			ft/sec	ft	ft	ft
No Ped Movements									

Volumes - Vehicle Volumes

Unit Time for Volumes: 60 minutes
 Peak Flow Period: 15 minutes
 Volume Data Method: Total and %

Movement Class	To Exit Leg		
	SouthEast veh	North veh	West veh
From: SouthEast Warm Springs			
Total (veh)	-	274.0	340.0
LV (%)	-	97.000	97.000
HV (%)	-	3.000	3.000
From: North Lewis Street			
Total (veh)	115.0	-	27.0
LV (%)	97.000	-	97.000
HV (%)	3.000	-	3.000
From: West Warm Springs			
Total (veh)	308.0	24.0	-
LV (%)	97.000	97.000	-
HV (%)	3.000	3.000	-

Volumes - Volume Factors				
To Approach	Peak Flow Factor %	Flow Scale %	Growth Rate %/year	
Light Vehicles (LV)				
From: SouthEast Warm Springs				
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North Lewis Street				
SouthEast	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West Warm Springs				
North	92.0	100.00	2.00	
SouthEast	92.0	100.00	2.00	
Heavy Vehicles (HV)				
From: SouthEast Warm Springs				
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North Lewis Street				
SouthEast	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West Warm Springs				
North	92.0	100.00	2.00	
SouthEast	92.0	100.00	2.00	

Gap Acceptance - Gap Acceptance Data						
Gap Acceptance Data						
Opposed Movement	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min	Exiting Flow Effect %	% Opp. By Nearest Lane %	Opng. Peds (UnSig)
SouthEast Warm Springs						
L1	-	-	2.50	0	0.00	Prg(Flow)
R1	-	-	2.50	0	0.00	Prg(Flow)
North Lewis Street						
L1	-	-	2.50	0	0.00	Prg(Flow)
R2	-	-	2.50	0	0.00	Prg(Flow)
West Warm Springs						
L2	-	-	2.50	0	0.00	Prg(Flow)
R1	-	-	2.50	0	0.00	Prg(Flow)

Gap Acceptance - Settings

Gap Acceptance Options				
Gap Acceptance Capacity Model : –				
Merge Analysis & Zebra Crossing Analysis Parameters				
Parameters	Zebra Crossing on Slip/ Bypass Lane	Midblock Zebra Crossing	Merge Analysis	
			[Exit Short Lane	Merge Lane]
Light Vehicles				
Gap Acceptance Factor		1.0	1.0	1.0
Opposing Vehicle Factor		–	–	1.0
Continuous Lane Capacity		–	1800	1800
Heavy Vehicles				
Gap Acceptance Factor		2.0	2.0	2.0
Opposing Vehicle Factor		–	–	2.0
Continuous Lane Capacity		–	1800	1800

Vehicle Movement Data - Path Data							
Turn	Approach	Exit	Negotiation	Negotiation	Downstream	Negotiation	
	Cruise Speed	Cruise Speed	Speed	Distance	Distance	Radius	
	mph	mph	mph	ft	ft	ft	
Light Vehicles (LV)							
From: SouthEast		Warm Springs					
L1	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–
From: North		Lewis Street					
L1	40.0	40.0	–	–	–	–	–
R2	40.0	40.0	–	–	–	–	–
From: West		Warm Springs					
L2	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–
Heavy Vehicles (HV)							
From: SouthEast		Warm Springs					
L1	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–
From: North		Lewis Street					
L1	40.0	40.0	–	–	–	–	–
R2	40.0	40.0	–	–	–	–	–
From: West		Warm Springs					
L2	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–

Vehicle Movement Data - Calibration								
Turn	Queue	Vehicle	Vehicle	Turn Veh	Effect	Gap Accp	Opng. Veh	Prac. Deg.
	Space	Length	Occupancy	[Factor	Radius]	Factor	Factor	Of Satn.
	ft	ft	pers/veh		ft			
Light Vehicles (LV)								
From: SouthEast		Warm Springs						
L1	25.00	17.00	1.20	1.05	–	1	1	–
R1	25.00	17.00	1.20	1.05	–	1	1	–
From: North		Lewis Street						
L1	25.00	17.00	1.20	1.05	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: West		Warm Springs						
L2	25.00	17.00	1.20	1.05	–	1	1	–
R1	25.00	17.00	1.20	1.05	–	1	1	–
Heavy Vehicles (HV)								
From: SouthEast		Warm Springs						
L1	45.00	36.00	1.20	1.05	–	2	2	–
R1	45.00	36.00	1.20	1.05	–	2	2	–
From: North		Lewis Street						

L1	45.00	36.00	1.20	1.05	-	2	2	-
R2	45.00	36.00	1.20	1.18	-	2	2	-
From: West		Warm Springs						
L2	45.00	36.00	1.20	1.05	-	2	2	-
R1	45.00	36.00	1.20	1.05	-	2	2	-

Site Demand & Sensitivity
Analysis Method: None

Parameter Settings - Options

General Options	
Site Level of Service Method	Delay & v/c (HCM 6)
Site Level of Service Target	LOS D
Pedestrian Level of Service Target	LOS D
Site Performance Measure	Delay
Queue in Output	Average
Percentile Queue	95%
Hours per Year	480 h
Include Short Lanes in determining Approach Queue Storage Ratio	No

Parameter Settings - Model Parameters

Passenger Car Equivalents	
Light Vehicles (LV)	1.00 pcu/veh
Heavy Vehicles (HV)	2.00 pcu/veh
Queue Blockage	
Blockage Tolerance	0
Delay and Queue	
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
HCM Queue Formula	Yes
Midblock Detection Data	
Effective Detection Zone Length	7.0

Parameter Settings - Cost

Efficiency Parameters						
Movement Class		Desired Speed mph			Lower Limit of Speed Efficiency for TTI	
Light Vehicles (LV)		-			0.1	
Heavy Vehicles (HV)		-			0.1	
Vehicle Cost Parameters						
Movement Class	Veh Cost Method	Veh Operating Cost			Veh Time Cost	
		[Pump Price of Fuel	Fuel Res. Cost Factor	Ratio of Running Cost to Fuel Cost]	[Avg. Income	Time Value Factor]
		\$/Gal			\$/h	
Light Vehicles (LV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Heavy Vehicles (HV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Cost Options						
Cost Unit	\$					

Parameter Settings - Vehicle Parameters

Mass	Max Power	CO2 to
------	-----------	--------

Movement Class	lb	kW	Fuel Rate
Light Vehicles (LV)	3500.0	120	2.35
Heavy Vehicles (HV)	33000.0	170	2.633

Parameter Settings - Fuel Consumption				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1200	16	0.004	0.1
Heavy Vehicles (HV)	2300	200	0.009	0.075

Parameter Settings - CO Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1620	-138	0.0743	0.294
Heavy Vehicles (HV)	25000	320	-0.06	0.04

Parameter Settings - HC Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	340	-9	0.0031	0.029
Heavy Vehicles (HV)	3000	1	-0.0016	0.0013

Parameter Settings - NOx Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	300	-14	0.0068	0.166
Heavy Vehicles (HV)	44000	2820	0.21	1.9

Parameter Settings - Advanced	
Platoon Dispersion Model	
fpf	0.80
fpmin	1.00
fpmax	1.25
Lpmin	200.0 ft
Lpmax	1000.0 ft
n	0.60
Exit (Downstream) Short Lane Model	
Minimum Downstream Utilisation Ratio	20 %
Minimum Downstream Distance	100 ft
Distance for Full Lane Utilisation	660 ft
Calibration Parameter	1.2

LANE SUMMARY

Site: 101 [Warm Springs & Lewis - 2042 Un-Adjusted PM (Site Folder: 2042 Un-Adjusted PM)]

Warm Springs & Lewis
 Site Category: (None)
 Roundabout

Lane Use and Performance													
	DEMAND FLOWS		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV %						[Veh	Dist] ft				
SouthEast: Warm Springs													
Lane 1 ^d	572	3.0	1277	0.448	100	7.3	LOSA	3.1	79.2	Full	1600	0.0	0.0
Approach	572	3.0		0.448		7.3	LOSA	3.1	79.2				
North: Lewis Street													
Lane 1 ^d	297	3.0	873	0.340	100	7.9	LOSA	1.7	42.3	Full	1600	0.0	0.0
Approach	297	3.0		0.340		7.9	LOSA	1.7	42.3				
West: Warm Springs													
Lane 1 ^d	510	3.0	1033	0.494	100	9.3	LOSA	3.1	78.6	Full	1600	0.0	0.0
Approach	510	3.0		0.494		9.3	LOSA	3.1	78.6				
Intersection	1378	3.0		0.494		8.2	LOSA	3.1	79.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)										
SouthEast: Warm Springs										
Mov.	L1	R1	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.	
From SE To Exit:	W	N			Cap. veh/h					
Lane 1	408	164	572	3.0	1277	0.448	100	NA	NA	
Approach	408	164	572	3.0		0.448				
North: Lewis Street										
Mov.	L1	R2	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.	
From N To Exit:	SE	W			Cap. veh/h					
Lane 1	248	49	297	3.0	873	0.340	100	NA	NA	
Approach	248	49	297	3.0		0.340				
West: Warm Springs										
Mov.	L2	R1	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.	
From W To Exit:	N	SE			Cap. veh/h					
Lane 1	46	464	510	3.0	1033	0.494	100	NA	NA	
Approach	46	464	510	3.0		0.494				

	Total	%HV	Deg.Satn (v/c)
Intersection	1378	3.0	0.494

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis											
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
SouthEast Exit: Warm Springs Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
North Exit: Lewis Street Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
West Exit: Warm Springs Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.

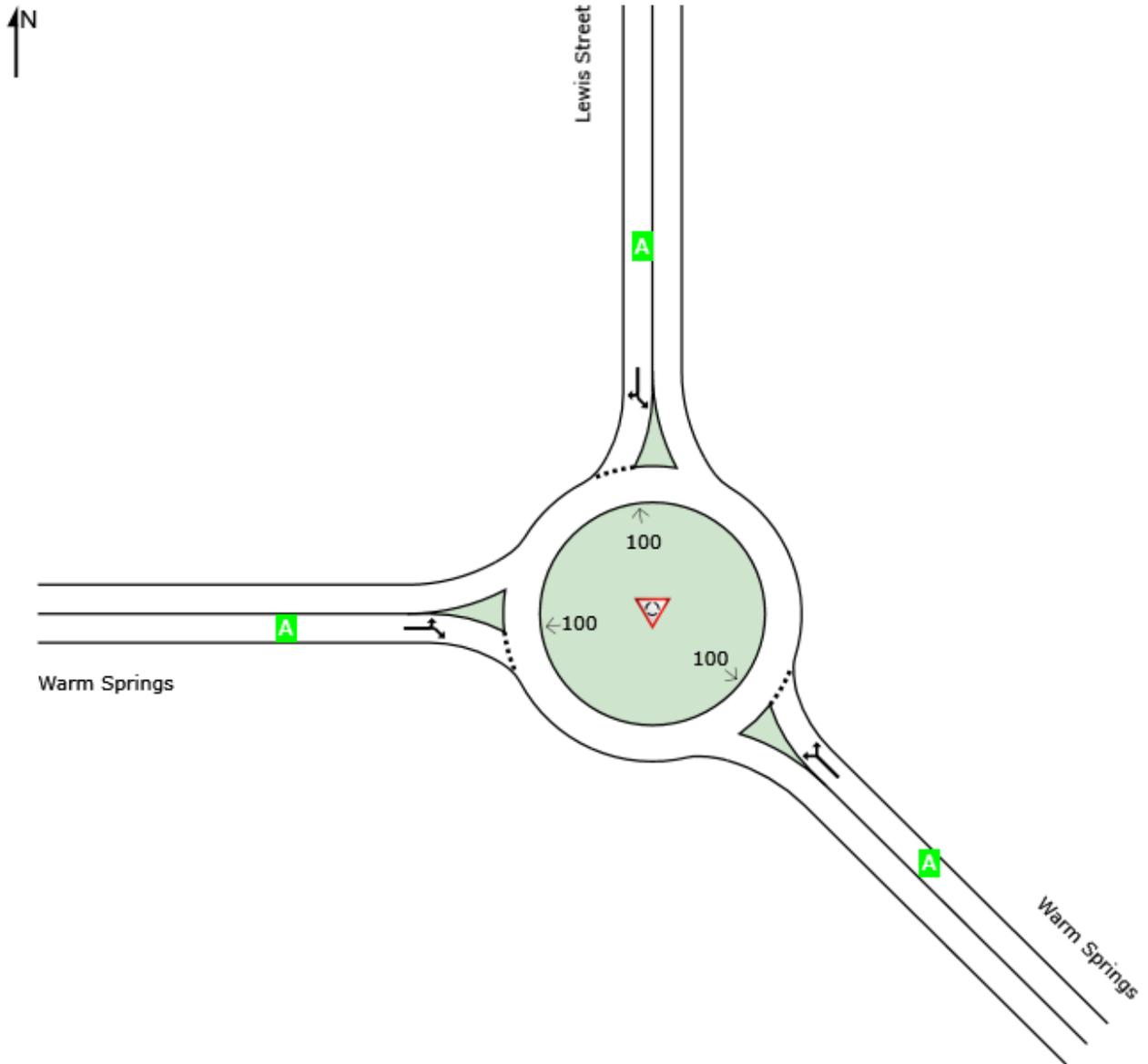
LANE LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Warm Springs & Lewis - 2042 Un-Adjusted PM (Site Folder: 2042 Un-Adjusted PM)]**

Warm Springs & Lewis
Site Category: (None)
Roundabout

	Approaches			Intersection
	Southeast	North	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Geometric Delay is not included).

INPUT REPORT

 **Site: 101 [Warm Springs & Lewis - 2042 Un-Adjusted PM]**

Warm Springs & Lewis
 Site Category: (None)
 Roundabout

Intersection - Site Data	
Site Name	Warm Springs & Lewis - 2042 Un-Adjusted PM
Site ID	101
Site Category	(None)
Site Title	Warm Springs & Lewis

Intersection - Site Properties	
Site (Intersection) Type	Roundabout
Setup Name	US HCM (Customary)
Base Setup	NA
Drive Rule	Right-hand side of the road
HCM Version	Yes
Units	US
First Created	
Date	1/26/2022 3:35:14 PM
Created By	LMENG
Organisation	HDR, INC.
Version	9.0.3.9771
Last Modified	
Date	8/12/2022 12:25:27 PM
Modified By	BFOCHT
Organisation	HDR, INC.
Version	9.0.3.9771

Intersection - Approach & Exit Data											
Location	Name	Type	No. of App. Lanes	No. of Exit Lanes	Approach Distance	Extra Bunching (Site Analysis)	Extra Bunching (Network Analysis)	Exit Distance	Approach Control	Area	Type Factor
					ft	%	%	ft			
SouthEast	Warm Springs	Two-way	1	1	1600.0	0	-	-	-	-	-
North	Lewis Street	Two-way	1	1	1600.0	0	-	-	-	-	-
West	Warm Springs	Two-way	1	1	1600.0	0	-	-	-	-	-

Movement Definitions - Included Movement Classes				
Name	ID	Model Designation	Type	
Light Vehicles	LV	Light Vehicle	Standard	
Heavy Vehicles	HV	Heavy Vehicle	Standard	

Movement Definitions - Origin-Destination Movements		
To Approach	Turn	OD Mov ID
From: SouthEast Warm Springs		
West	L1	3ax
North	R1	18ax
From: North Lewis Street		
SouthEast	L1	7a
West	R2	14

From: West	Warm Springs	
North	L2	5
SouthEast	R1	12a
Approach	U-Turn Before Intersection	Exclude U-Turn Before Intersection From Signal Analysis
SouthEast	-	-
North	-	-
West	-	-

Lane Geometry - Lane Configuration															
Leg Item	Configuration	Type	Control	Slip/ Bypass Control	Length	Width	Grade	Full Lane		Island			For Ped Stgn	Short Splitter Isl]	
								[ID	Col]	[Front Width	Back Width	Fill Style			Cnct To
					ft	ft	%			ft	ft				
SouthEast Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0			-	-	-	-	-	-
Rou Splt Isl-		-	-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes
1															
App. Lane	Full-Length	Normal	Yield	-	1600	13	0			-	-	-	-	-	-
1															
North Lewis Street															
Exit Lane 1	Full-Length	-	-	-	1600	13	0			-	-	-	-	-	-
Rou Splt Isl-		-	-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes
1															
App. Lane	Full-Length	Normal	Yield	-	1600	13	0			-	-	-	-	-	-
1															
West Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0			-	-	-	-	-	-
Rou Splt Isl-		-	-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes
1															
App. Lane	Full-Length	Normal	Yield	-	1600	13	0			-	-	-	-	-	-
1															

Lanes are numbered from left to right in the direction of travel.

Lane Geometry - Lane Disciplines			
To Approach	Turn	Free Queue Distance ft	Movement Class(es)
From: SouthEast App. Lane 1			
West	L1	0	LV, HV
North	R1	0	LV, HV
From: North App. Lane 1			
SouthEast	L1	0	LV, HV
West	R2	0	LV, HV
From: West App. Lane 1			
North	L2	0	LV, HV
SouthEast	R1	0	LV, HV

Lane Geometry - Lane Data											
Approach Lane Data											
Approach Lane	Basic Satn Flow	Util Ratio	Satn Speed	Capacity Adj	Use Given Cap Adj in Network Analysis	Set As Dominant Lane	Include SLip/ ByPass Lane in Entry Lane Count	Apply Satn Flow Est	Short Lane Capacity	Delay Model Param	
		tcu/h	%	mph	%						
SouthEast Warm Springs											
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-	
North Lewis Street											

App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
West Warm Springs										
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
Merge Analysis										
Exit Lane	Merge Lane Number	Apply Merge Analysis	Merge Type	Percent Opposing in Short Lane %	Percent Opposing in Merge Lane %	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min		
SouthEast Warm Springs										
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
North Lewis Street										
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
West Warm Springs										
Exit Lane 1	-	-	-	-	-	-	-	-	-	-

Lane Movements - Flow Proportions				
Exit Lane	SouthEast %	To Exit Leg		
		North %	West %	
Light Vehicles (LV)				
From: SouthEast	App. Lane 1			
Exit Lane 1	-	100	100	
From: North	App. Lane 1			
Exit Lane 1	100	-	100	
From: West	App. Lane 1			
Exit Lane 1	100	100	-	
Heavy Vehicles (HV)				
From: SouthEast	App. Lane 1			
Exit Lane 1	-	100	100	
From: North	App. Lane 1			
Exit Lane 1	100	-	100	
From: West	App. Lane 1			
Exit Lane 1	100	100	-	

Lane Movements - Blockage Calibration				
Exit Lane	SouthEast	To Exit Leg		
		North	West	
From: SouthEast	App. Lane 1			
Exit Lane 1	-	1.0	1.0	
From: North	App. Lane 1			
Exit Lane 1	1.0	-	1.0	
From: West	App. Lane 1			
Exit Lane 1	1.0	1.0	-	

Roundabouts - Options	
Roundabout Model Options	
Roundabout Capacity Model	US HCM 6
Roundabout LOS Method	Same as Sign Control
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 2010	-
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 6	No
Other Roundabout Models	
FHWA 2000	No

Use	Urban	Compact	-
Roundabout			
HCM 2000			No
NAASRA 1986			No

Roundabouts - Geometry										
Location	Name	Circ. Lanes	Circ. Width	Island Diameter	Inscribed Diameter	Entry Radius	Entry Angle	Raindrop Design	Circ Trans Line	Downstream Circ Lanes
			ft	ft	ft	ft	°			
SouthEast	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-
North	Lewis Street	1	20.0	100.0	-	65.0	30.0	No	No	-
West	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-

HCM 6 Roundabout Capacity Model Parameters											
Location	Name	Single L.Circ: Single L.Entry		Single L.Circ: Multi L.Entry		Multi L.Circ: Single L.Entry		Multi L.Circ: Dominant Lane		Multi L.Circ: Subdominant Lane	
		Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B
SouthEa	Warm Springs st	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
North	Lewis Street	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
West	Warm Springs	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920

HCM 6 Roundabout Model Calibration			
Location	Name	Model Entry/Circ. Calib. Flow Factor Adjust. (HCM6)	
		(HCM6)	(HCM6)
SouthEast	Warm Springs	1.00	None
North	Lewis Street	1.00	None
West	Warm Springs	1.00	None

Pedestrians - Pedestrian Movements				
Unit Time for Volumes: 60 minutes				
Peak Flow Period: 15 minutes				
Main Crossing/ Slip/Bypass Lane Crossing	Volume	Peak Flow	Flow Scale	Growth Rate
	ped	%	%	%
No Ped Movements				

Pedestrians - Pedestrian Movement Data									
Main Crossing/ Slip/Bypass Lane Crossing	Mov. ID	Crossing Distance	Conflict Zone Length	Oppng Ped.Fac.	P.Deg. Satn	Walking Speed	App. Trav. Distance	Downst. Distance	Queue Space
		ft	ft			ft/sec	ft	ft	ft
No Ped Movements									

Volumes - Vehicle Volumes

Unit Time for Volumes: 60 minutes
 Peak Flow Period: 15 minutes
 Volume Data Method: Total and %

Movement Class	To Exit Leg		
	SouthEast veh	North veh	West veh
From: SouthEast Warm Springs			
Total (veh)	-	151.0	375.0
LV (%)	-	97.000	97.000
HV (%)	-	3.000	3.000
From: North Lewis Street			
Total (veh)	228.0	-	45.0
LV (%)	97.000	-	97.000
HV (%)	3.000	-	3.000
From: West Warm Springs			
Total (veh)	427.0	42.0	-
LV (%)	97.000	97.000	-
HV (%)	3.000	3.000	-

Volumes - Volume Factors				
To Approach	Peak Flow Factor %	Flow Scale %	Growth Rate %/year	
Light Vehicles (LV)				
From: SouthEast Warm Springs				
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North Lewis Street				
SouthEast	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West Warm Springs				
North	92.0	100.00	2.00	
SouthEast	92.0	100.00	2.00	
Heavy Vehicles (HV)				
From: SouthEast Warm Springs				
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North Lewis Street				
SouthEast	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West Warm Springs				
North	92.0	100.00	2.00	
SouthEast	92.0	100.00	2.00	

Gap Acceptance - Gap Acceptance Data						
Gap Acceptance Data						
Opposed Movement	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min	Exiting Flow Effect %	% Opp. By Nearest Lane %	Opng. Peds (UnSig)
SouthEast Warm Springs						
L1	-	-	2.50	0	0.00	Prg(Flow)
R1	-	-	2.50	0	0.00	Prg(Flow)
North Lewis Street						
L1	-	-	2.50	0	0.00	Prg(Flow)
R2	-	-	2.50	0	0.00	Prg(Flow)
West Warm Springs						
L2	-	-	2.50	0	0.00	Prg(Flow)
R1	-	-	2.50	0	0.00	Prg(Flow)

Gap Acceptance - Settings

Gap Acceptance Options					
Gap Acceptance Capacity Model : –					
Merge Analysis & Zebra Crossing Analysis Parameters					
Parameters	Zebra Crossing on Slip/ Bypass Lane	Midblock Zebra Crossing	Merge Analysis		
			[Exit Short Lane	Merge Lane]	
Light Vehicles					
Gap Acceptance Factor		1.0	1.0	1.0	1.0
Opposing Vehicle Factor		–	–	1.0	1.0
Continuous Lane Capacity		–	–	1800	1800
Heavy Vehicles					
Gap Acceptance Factor		2.0	2.0	2.0	2.0
Opposing Vehicle Factor		–	–	2.0	2.0
Continuous Lane Capacity		–	–	1800	1800

Vehicle Movement Data - Path Data							
Turn	Approach	Exit	Negotiation	Negotiation	Downstream	Negotiation	
	Cruise Speed	Cruise Speed	Speed	Distance	Distance	Radius	
	mph	mph	mph	ft	ft	ft	
Light Vehicles (LV)							
From: SouthEast		Warm Springs					
L1	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–
From: North		Lewis Street					
L1	40.0	40.0	–	–	–	–	–
R2	40.0	40.0	–	–	–	–	–
From: West		Warm Springs					
L2	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–
Heavy Vehicles (HV)							
From: SouthEast		Warm Springs					
L1	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–
From: North		Lewis Street					
L1	40.0	40.0	–	–	–	–	–
R2	40.0	40.0	–	–	–	–	–
From: West		Warm Springs					
L2	40.0	40.0	–	–	–	–	–
R1	40.0	40.0	–	–	–	–	–

Vehicle Movement Data - Calibration								
Turn	Queue	Vehicle	Vehicle	Turn Veh	Effect	Gap Accp	Opng. Veh	Prac. Deg.
	Space	Length	Occupancy	[Factor	Radius]	Factor	Factor	Of Satn.
	ft	ft	pers/veh		ft			
Light Vehicles (LV)								
From: SouthEast		Warm Springs						
L1	25.00	17.00	1.20	1.05	–	1	1	–
R1	25.00	17.00	1.20	1.05	–	1	1	–
From: North		Lewis Street						
L1	25.00	17.00	1.20	1.05	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: West		Warm Springs						
L2	25.00	17.00	1.20	1.05	–	1	1	–
R1	25.00	17.00	1.20	1.05	–	1	1	–
Heavy Vehicles (HV)								
From: SouthEast		Warm Springs						
L1	45.00	36.00	1.20	1.05	–	2	2	–
R1	45.00	36.00	1.20	1.05	–	2	2	–
From: North		Lewis Street						

L1	45.00	36.00	1.20	1.05	-	2	2	-
R2	45.00	36.00	1.20	1.18	-	2	2	-
From: West		Warm Springs						
L2	45.00	36.00	1.20	1.05	-	2	2	-
R1	45.00	36.00	1.20	1.05	-	2	2	-

Site Demand & Sensitivity
Analysis Method: None

Parameter Settings - Options

General Options	
Site Level of Service Method	Delay & v/c (HCM 6)
Site Level of Service Target	LOS D
Pedestrian Level of Service Target	LOS D
Site Performance Measure	Delay
Queue in Output	Average
Percentile Queue	95%
Hours per Year	480 h
Include Short Lanes in determining Approach Queue Storage Ratio	No

Parameter Settings - Model Parameters

Passenger Car Equivalents	
Light Vehicles (LV)	1.00 pcu/veh
Heavy Vehicles (HV)	2.00 pcu/veh
Queue Blockage	
Blockage Tolerance	0
Delay and Queue	
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
HCM Queue Formula	Yes
Midblock Detection Data	
Effective Detection Zone Length	7.0

Parameter Settings - Cost

Efficiency Parameters						
Movement Class	Desired Speed	Lower Limit of Speed Efficiency for TTI				
	mph					
Light Vehicles (LV)	-	0.1				
Heavy Vehicles (HV)	-	0.1				
Vehicle Cost Parameters						
Movement Class	Veh Cost Method	Veh Operating Cost			Veh Time Cost	
		[Pump Price of Fuel	Fuel Res. Cost Factor	Ratio of Running Cost to Fuel Cost]	[Avg. Income	Time Value Factor]
		\$/Gal			\$/h	
Light Vehicles (LV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Heavy Vehicles (HV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Cost Options						
Cost Unit	\$					

Parameter Settings - Vehicle Parameters

Mass	Max Power	CO2 to
------	-----------	--------

Movement Class	lb	kW	Fuel Rate
Light Vehicles (LV)	3500.0	120	2.35
Heavy Vehicles (HV)	33000.0	170	2.633

Parameter Settings - Fuel Consumption				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1200	16	0.004	0.1
Heavy Vehicles (HV)	2300	200	0.009	0.075

Parameter Settings - CO Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1620	-138	0.0743	0.294
Heavy Vehicles (HV)	25000	320	-0.06	0.04

Parameter Settings - HC Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	340	-9	0.0031	0.029
Heavy Vehicles (HV)	3000	1	-0.0016	0.0013

Parameter Settings - NOx Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	300	-14	0.0068	0.166
Heavy Vehicles (HV)	44000	2820	0.21	1.9

Parameter Settings - Advanced	
Platoon Dispersion Model	
fpf	0.80
fpmin	1.00
fpmax	1.25
Lpmin	200.0 ft
Lpmax	1000.0 ft
n	0.60
Exit (Downstream) Short Lane Model	
Minimum Downstream Utilisation Ratio	20 %
Minimum Downstream Distance	100 ft
Distance for Full Lane Utilisation	660 ft
Calibration Parameter	1.2

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	14	115	27	157	3.0	881	0.178	100	NA	NA
Approach	14	115	27	157	3.0		0.178			
West: Warm Springs										
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.
From W To Exit:	N	E	S			Cap. veh/h	v/c	%	%	No.
Lane 1	26	46	293	365	3.0	1138	0.321	100	NA	NA
Approach	26	46	293	365	3.0		0.321			
Total %HV Deg. Satn (v/c)										
Intersection	1309	3.0		0.564						

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis											
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap sec	Follow-up Headway sec	Lane Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	
South Exit: Warm Springs											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
East Exit: 10th Street											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
North Exit: Lewis Street											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
West Exit: Warm Springs											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.

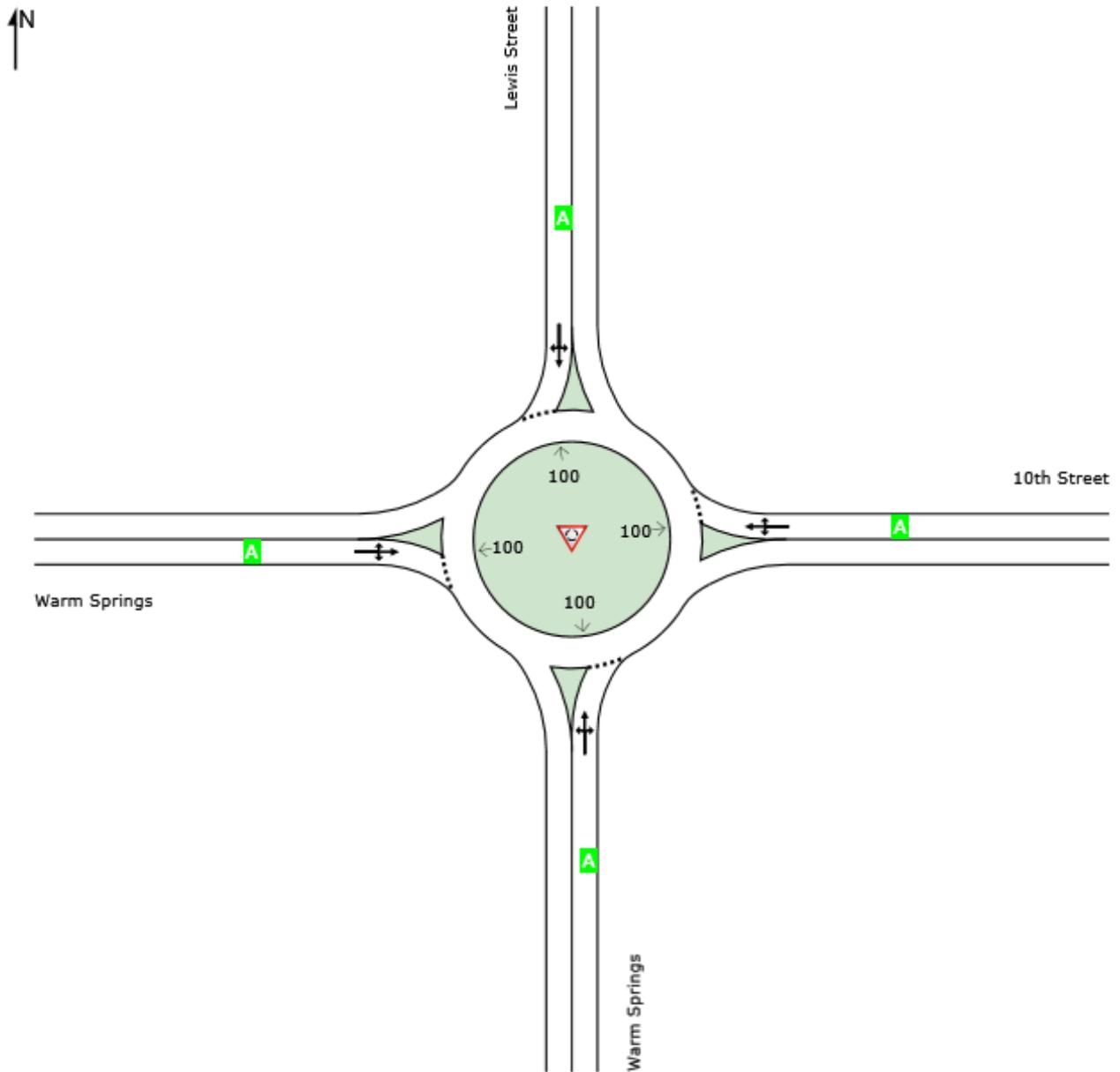
LANE LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Warm Springs Re-Alg. - 2042 Un-Adjusted AM (Site Folder: 2042 Un-Adjusted AM)]**

Warm Springs Re-Aligned Roundabout
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Geometric Delay is not included).

INPUT REPORT

Site: 101 [Warm Springs Re-Alg. - 2042 Un-Adjusted AM]

Warm Springs Re-Aligned Roundabout
 Site Category: (None)
 Roundabout

Intersection - Site Data	
Site Name	Warm Springs Re-Alg. - 2042 Un-Adjusted AM
Site ID	101
Site Category	(None)
Site Title	Warm Springs Re-Aligned Roundabout

Intersection - Site Properties	
Site (Intersection) Type	Roundabout
Setup Name	US HCM (Customary)
Base Setup	NA
Drive Rule	Right-hand side of the road
HCM Version	Yes
Units	US
First Created	
Date	1/26/2022 3:35:14 PM
Created By	LMENG
Organisation	HDR, INC.
Version	9.0.3.9771
Last Modified	
Date	8/12/2022 12:09:35 PM
Modified By	BFOCHT
Organisation	HDR, INC.
Version	9.0.3.9771

Intersection - Approach & Exit Data										
Location	Name	Type	No. of App. Lanes	No. of Exit Lanes	Approach Distance	Extra Bunching (Site Analysis)	Extra Bunching (Network Analysis)	Exit Distance	Approach Control	Area Type Factor
					ft	%	%	ft		
South	Warm Springs	Two-way	1	1	1600.0	0	-	-	-	-
East	10th Street	Two-way	1	1	1600.0	0	-	-	-	-
North	Lewis Street	Two-way	1	1	1600.0	0	-	-	-	-
West	Warm Springs	Two-way	1	1	1600.0	0	-	-	-	-

Movement Definitions - Included Movement Classes			
Name	ID	Model Designation	Type
Light Vehicles	LV	Light Vehicle	Standard
Heavy Vehicles	HV	Heavy Vehicle	Standard

Movement Definitions - Origin-Destination Movements		
To Approach	Turn	OD Mov ID
From: South	Warm Springs	
West	L2	3
North	T1	8
East	R2	18
From: East	10th Street	
South	L2	1

West	T1	6
North	R2	16
From: North Lewis Street		
East	L2	7
South	T1	4
West	R2	14
From: West Warm Springs		
North	L2	5
East	T1	2
South	R2	12
Approach	U-Turn Before Intersection	Exclude U-Turn Before Intersection From Signal Analysis
South	-	-
East	-	-
North	-	-
West	-	-

Lane Geometry - Lane Configuration															
Leg Item	Configuration	Type	Control	Slip/Bypass Control	Length	Width	Grade	Full Lane		Island			For Ped Stgn	Short Splitter Isl]	
								[ID	Col]	[Front Width	Back Width	Fill Style			Cnct To
					ft	ft	%			ft	ft				
South Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	-
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	
East 10th Street															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	
North Lewis Street															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	
West Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	

Lanes are numbered from left to right in the direction of travel.

Lane Geometry - Lane Disciplines			
To Approach	Turn	Free Queue Distance ft	Movement Class(es)
From: South App. Lane 1			
West	L2	0	LV, HV
North	T1	0	LV, HV
East	R2	0	LV, HV
From: East App. Lane 1			
South	L2	0	LV, HV
West	T1	0	LV, HV
North	R2	0	LV, HV
From: North App. Lane 1			
East	L2	0	LV, HV
South	T1	0	LV, HV

West	R2	0	LV, HV
From: West	App. Lane 1		
North	L2	0	LV, HV
East	T1	0	LV, HV
South	R2	0	LV, HV

Lane Geometry - Lane Data										
Approach Lane Data										
Approach Lane	Basic Satn Flow	Util Ratio	Satn Speed	Capacity Adj	Use Given Cap Adj in Network Analysis	Set As Dominant Lane	Include SLip/ ByPass Lane in Entry Lane Count	Apply Satn Flow Est	Short Lane Capacity	Delay Model Param
	tcu/h	%	mph	%						
South	Warm Springs									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
East	10th Street									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
North	Lewis Street									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
West	Warm Springs									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
Merge Analysis										
Exit Lane	Merge Lane Number	Apply Merge Analysis	Merge Type	Percent Opposing in Short Lane %	Percent Opposing in Merge Lane %	Critical Gap	Follow-up Headway	Minimum Departures		
						sec	sec	veh/min		
South	Warm Springs									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
East	10th Street									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
North	Lewis Street									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
West	Warm Springs									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-

Lane Movements - Flow Proportions				
Exit Lane	South %	To Exit Leg East %	North %	West %
Light Vehicles (LV)				
From: South	App. Lane 1			
Exit Lane 1	-	100	100	100
From: East	App. Lane 1			
Exit Lane 1	100	-	100	100
From: North	App. Lane 1			
Exit Lane 1	100	100	-	100
From: West	App. Lane 1			
Exit Lane 1	100	100	100	-
Heavy Vehicles (HV)				
From: South	App. Lane 1			
Exit Lane 1	-	100	100	100
From: East	App. Lane 1			
Exit Lane 1	100	-	100	100
From: North	App. Lane 1			

Exit Lane 1	100	100	-	100
From: West	App. Lane 1			
Exit Lane 1	100	100	100	-

Lane Movements - Blockage Calibration				
Exit Lane	South	To Exit Leg East	North	West
From: South	App. Lane 1			
Exit Lane 1	-	1.0	1.0	1.0
From: East	App. Lane 1			
Exit Lane 1	1.0	-	1.0	1.0
From: North	App. Lane 1			
Exit Lane 1	1.0	1.0	-	1.0
From: West	App. Lane 1			
Exit Lane 1	1.0	1.0	1.0	-

Roundabouts - Options	
Roundabout Model Options	
Roundabout Capacity Model	US HCM 6
Roundabout LOS Method	Same as Sign Control
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 2010	-
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 6	No
Other Roundabout Models	
FHWA 2000	No
Use Urban Compact Roundabout	-
HCM 2000	No
NAASRA 1986	No

Roundabouts - Geometry										
Location	Name	Circ. Lanes	Circ. Width	Island Diameter	Inscribed Diameter	Entry Radius	Entry Angle	Raindrop Design	Circ Trans Line	Downstream Circ Lanes
			ft	ft	ft	ft	°			
South	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-
East	10th Street	1	20.0	100.0	-	65.0	30.0	No	No	-
North	Lewis Street	1	20.0	100.0	-	65.0	30.0	No	No	-
West	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-

HCM 6 Roundabout Capacity Model Parameters

Location	Name	Single L.Circ: Single L.Entry		Single L.Circ: Multi L.Entry		Multi L.Circ: Single L.Entry		Multi L.Circ: Dominant Lane		Multi L.Circ: Subdominant Lane	
		Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B
South	Warm Springs	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
East	10th Street	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
North	Lewis Street	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
West	Warm Springs	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920

HCM 6 Roundabout Model Calibration

Location	Name	Model Entry/Circ. Calib. Flow Factor Adjust. (HCM6) (HCM6)	
South	Warm Springs	1.00	None
East	10th Street	1.00	None
North	Lewis Street	1.00	None
West	Warm Springs	1.00	None

Pedestrians - Pedestrian Movements

Unit Time for Volumes: 60 minutes

Peak Flow Period: 15 minutes

Main Crossing/ Slip/Bypass Lane Crossing	Volume	Peak Flow	Flow Scale	Growth Rate
	ped	%	%	%
No Ped Movements				

Pedestrians - Pedestrian Movement Data

Main Crossing/ Slip/ Bypass Lane Crossing	Mov. ID	Crossing Distance	Conflict Zone Length	Oppng Ped.Fac.	P.Deg. Satn	Walking Speed	App. Trav. Distance	Downst. Distance	Queue Space
		ft	ft			ft/sec	ft	ft	ft
No Ped Movements									

Volumes - Vehicle Volumes

Unit Time for Volumes: 60 minutes

Peak Flow Period: 15 minutes

Volume Data Method: Total and %

Movement Class	South veh	To Exit Leg		
		East veh	North veh	West veh
From: South Warm Springs				
Total (veh)	-	82.0	247.0	306.0
LV (%)	-	97.000	97.000	97.000
HV (%)	-	3.000	3.000	3.000
From: East 10th Street				
Total (veh)	24.0	-	28.0	37.0
LV (%)	97.000	-	97.000	97.000
HV (%)	3.000	-	3.000	3.000
From: North Lewis Street				
Total (veh)	106.0	13.0	-	25.0

LV (%)	97.000	97.000	-	97.000
HV (%)	3.000	3.000	-	3.000
From: West		Warm Springs		
Total (veh)	270.0	42.0	24.0	-
LV (%)	97.000	97.000	97.000	-
HV (%)	3.000	3.000	3.000	-

Volumes - Volume Factors				
To Approach	Peak Flow Factor %	Flow Scale %	Growth Rate %/year	
Light Vehicles (LV)				
From: South		Warm Springs		
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
From: East		10th Street		
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North		Lewis Street		
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West		Warm Springs		
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	
Heavy Vehicles (HV)				
From: South		Warm Springs		
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
From: East		10th Street		
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North		Lewis Street		
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West		Warm Springs		
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	

Gap Acceptance - Gap Acceptance Data							
Gap Acceptance Data							
Opposed Movement	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min	Exiting Flow Effect %	% Opp. By Nearest Lane %	Opng. Peds (UnSig)	
South		Warm Springs					
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	
East		10th Street					
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	
North		Lewis Street					
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	

West	Warm Springs					
L2	-	-	2.50	0	0.00	Prg(Flow)
T1	-	-	2.50	0	0.00	Prg(Flow)
R2	-	-	2.50	0	0.00	Prg(Flow)

Gap Acceptance - Settings					
Gap Acceptance Options					
Gap Acceptance Capacity Model : -					
Merge Analysis & Zebra Crossing Analysis Parameters					
Parameters	Zebra Crossing on Slip/ Bypass Lane	Midblock Zebra Crossing	Merge Analysis		
			[Exit Short Lane	Merge Lane]	
Light Vehicles					
Gap Acceptance Factor		1.0	1.0	1.0	1.0
Opposing Vehicle Factor		-	-	1.0	1.0
Continuous Lane Capacity		-	-	1800	1800
Heavy Vehicles					
Gap Acceptance Factor		2.0	2.0	2.0	2.0
Opposing Vehicle Factor		-	-	2.0	2.0
Continuous Lane Capacity		-	-	1800	1800

Vehicle Movement Data - Path Data						
Turn	Approach	Exit	Negotiation	Negotiation	Downstream	Negotiation
	Cruise Speed	Cruise Speed	Speed	Distance	Distance	Radius
	mph	mph	mph	ft	ft	ft
Light Vehicles (LV)						
From: South		Warm Springs				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
From: East		10th Street				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
From: North		Lewis Street				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
From: West		Warm Springs				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
Heavy Vehicles (HV)						
From: South		Warm Springs				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
From: East		10th Street				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
From: North		Lewis Street				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-
From: West		Warm Springs				
L2	40.0	40.0	-	-	-	-
T1	40.0	40.0	-	-	-	-
R2	40.0	40.0	-	-	-	-

Vehicle Movement Data - Calibration

Turn	Queue Space ft	Vehicle Length ft	Vehicle Occupancy pers/veh	Turn Veh Effect [Factor	Radius] ft	Gap Accp Factor	Opng. Veh Factor	Prac. Deg. Of Satn.
Light Vehicles (LV)								
From: South Warm Springs								
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: East 10th Street								
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: North Lewis Street								
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: West Warm Springs								
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
Heavy Vehicles (HV)								
From: South Warm Springs								
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–
From: East 10th Street								
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–
From: North Lewis Street								
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–
From: West Warm Springs								
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–

Site Demand & Sensitivity

Analysis Method: None

Parameter Settings - Options

General Options	
Site Level of Service Method	Delay & v/c (HCM 6)
Site Level of Service Target	LOS D
Pedestrian Level of Service Target	LOS D
Site Performance Measure	Delay
Queue in Output	Average
Percentile Queue	95%
Hours per Year	480 h
Include Short Lanes in determining Approach Queue Storage Ratio	No

Parameter Settings - Model Parameters

Passenger Car Equivalents	
Light Vehicles (LV)	1.00 pcu/veh
Heavy Vehicles (HV)	2.00 pcu/veh
Queue Blockage	

Blockage Tolerance	0
Delay and Queue	
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
HCM Queue Formula	Yes
Midblock Detection Data	
Effective Detection Zone Length	7.0

Parameter Settings - Cost						
Efficiency Parameters						
Movement Class	Desired Speed mph	Lower Limit of Speed Efficiency for TTI				
Light Vehicles (LV)	-	0.1				
Heavy Vehicles (HV)	-	0.1				
Vehicle Cost Parameters						
Movement Class	Veh Cost Method	Veh Operating Cost			Veh Time Cost	
		[Pump Price of Fuel \$/Gal	Fuel Res. Cost Factor	Ratio of Running Cost to Fuel Cost]	[Avg. Income \$/h	Time Value Factor]
Light Vehicles (LV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Heavy Vehicles (HV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Cost Options						
Cost Unit	\$					

Parameter Settings - Vehicle Parameters			
Movement Class	Mass lb	Max Power kW	CO2 to Fuel Rate
Light Vehicles (LV)	3500.0	120	2.35
Heavy Vehicles (HV)	33000.0	170	2.633

Parameter Settings - Fuel Consumption				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1200	16	0.004	0.1
Heavy Vehicles (HV)	2300	200	0.009	0.075

Parameter Settings - CO Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1620	-138	0.0743	0.294
Heavy Vehicles (HV)	25000	320	-0.06	0.04

Parameter Settings - HC Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	340	-9	0.0031	0.029
Heavy Vehicles (HV)	3000	1	-0.0016	0.0013

Parameter Settings - NOx Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	300	-14	0.0068	0.166
Heavy Vehicles (HV)	44000	2820	0.21	1.9

Parameter Settings - Advanced	
Platoon Dispersion Model	
fpf	0.80

f _{pmin}	1.00
f _{pmax}	1.25
L _{pmin}	200.0 ft
L _{pmax}	1000.0 ft
n	0.60
Exit (Downstream) Short Lane Model	
Minimum Downstream Utilisation Ratio	20 %
Minimum Downstream Distance	100 ft
Distance for Full Lane Utilisation	660 ft
Calibration Parameter	1.2

To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	13	235	49	297	3.0	838	0.354	100	NA	NA
Approach	13	235	49	297	3.0		0.354			
West: Warm Springs										
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.
From W To Exit:	N	E	S			Cap. veh/h	v/c	%	%	No.
Lane 1	41	65	404	511	3.0	991	0.515	100	NA	NA
Approach	41	65	404	511	3.0		0.515			
Total %HV Deg. Satn (v/c)										
Intersection	1461	3.0		0.515						

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis											
	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate % veh/h	Critical Gap sec	Follow-up Headway sec	Lane Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	
South Exit: Warm Springs											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
East Exit: 10th Street											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
North Exit: Lewis Street											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.
West Exit: Warm Springs											
Merge Type: Not Applied											
Full Length Lane	1										Merge Analysis not applied.

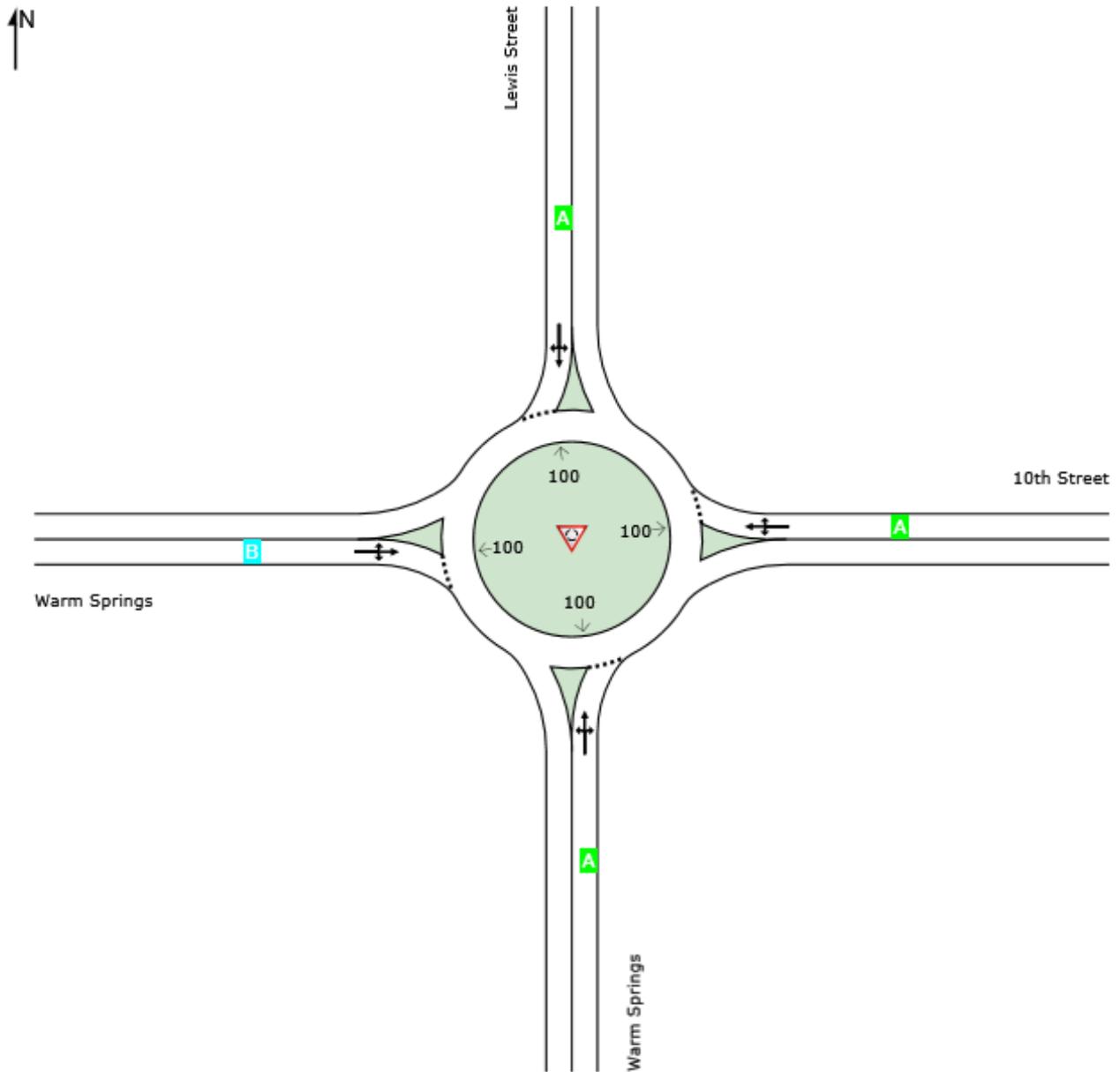
LANE LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Warm Springs Re-Alg. - 2042 Un-Adjusted PM (Site Folder: 2042 Un-Adjusted PM)]**

Warm Springs Re-Aligned Roundabout
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	B	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Sign Control.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Geometric Delay is not included).

INPUT REPORT

Site: 101 [Warm Springs Re-Alg. - 2042 Un-Adjusted PM]

Warm Springs Re-Aligned Roundabout
 Site Category: (None)
 Roundabout

Intersection - Site Data	
Site Name	Warm Springs Re-Alg. - 2042 Un-Adjusted PM
Site ID	101
Site Category	(None)
Site Title	Warm Springs Re-Aligned Roundabout

Intersection - Site Properties	
Site (Intersection) Type	Roundabout
Setup Name	US HCM (Customary)
Base Setup	NA
Drive Rule	Right-hand side of the road
HCM Version	Yes
Units	US
First Created	
Date	1/26/2022 3:35:14 PM
Created By	LMENG
Organisation	HDR, INC.
Version	9.0.3.9771
Last Modified	
Date	8/12/2022 12:23:53 PM
Modified By	BFOCHT
Organisation	HDR, INC.
Version	9.0.3.9771

Intersection - Approach & Exit Data										
Location	Name	Type	No. of App. Lanes	No. of Exit Lanes	Approach Distance	Extra Bunching (Site Analysis)	Extra Bunching (Network Analysis)	Exit Distance	Approach Control	Area Type Factor
					ft	%	%	ft		
South	Warm Springs	Two-way	1	1	1600.0	0	—	—	—	—
East	10th Street	Two-way	1	1	1600.0	0	—	—	—	—
North	Lewis Street	Two-way	1	1	1600.0	0	—	—	—	—
West	Warm Springs	Two-way	1	1	1600.0	0	—	—	—	—

Movement Definitions - Included Movement Classes			
Name	ID	Model Designation	Type
Light Vehicles	LV	Light Vehicle	Standard
Heavy Vehicles	HV	Heavy Vehicle	Standard

Movement Definitions - Origin-Destination Movements		
To Approach	Turn	OD Mov ID
From: South	Warm Springs	
West	L2	3
North	T1	8
East	R2	18
From: East	10th Street	
South	L2	1

West	T1	6
North	R2	16
From: North Lewis Street		
East	L2	7
South	T1	4
West	R2	14
From: West Warm Springs		
North	L2	5
East	T1	2
South	R2	12
Approach		U-Turn Before Intersection
		Exclude U-Turn Before Intersection From Signal Analysis
South	-	-
East	-	-
North	-	-
West	-	-

Lane Geometry - Lane Configuration															
Leg Item	Configuration	Type	Control	Slip/Bypass Control	Length	Width	Grade	Full Lane		Island			For Ped Stgn	Short Splitter Isl]	
								[ID	Col]	[Front Width	Back Width	Fill Style			Cnct To
					ft	ft	%			ft	ft				
South Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	-
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	
East 10th Street															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	
North Lewis Street															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	
West Warm Springs															
Exit Lane 1	Full-Length	-	-	-	1600	13	0		-	-	-	-	-	-	
Rou Splt Isl-1		-	-	-	-	-	-	-	-	0	Solid	-	Yes	Yes	
App. Lane 1	Full-Length	Normal	Yield	-	1600	13	0		-	-	-	-	-	-	

Lanes are numbered from left to right in the direction of travel.

Lane Geometry - Lane Disciplines			
To Approach	Turn	Free Queue Distance ft	Movement Class(es)
From: South App. Lane 1			
West	L2	0	LV, HV
North	T1	0	LV, HV
East	R2	0	LV, HV
From: East App. Lane 1			
South	L2	0	LV, HV
West	T1	0	LV, HV
North	R2	0	LV, HV
From: North App. Lane 1			
East	L2	0	LV, HV
South	T1	0	LV, HV

West	R2	0	LV, HV
From: West	App. Lane 1		
North	L2	0	LV, HV
East	T1	0	LV, HV
South	R2	0	LV, HV

Lane Geometry - Lane Data										
Approach Lane Data										
Approach Lane	Basic Satn Flow	Util Ratio	Satn Speed	Capacity Adj	Use Given Cap Adj in Network Analysis	Set As Dominant Lane	Include SLip/ ByPass Lane in Entry Lane Count	Apply Satn Flow Est	Short Lane Capacity	Delay Model Param
	tcu/h	%	mph	%						
South	Warm Springs									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
East	10th Street									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
North	Lewis Street									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
West	Warm Springs									
App. Lane 1	-	-	-	0.0	No	-	-	-	-	-
Merge Analysis										
Exit Lane	Merge Lane Number	Apply Merge Analysis	Merge Type	Percent Opposing in Short Lane %	Percent Opposing in Merge Lane %	Critical Gap	Follow-up Headway	Minimum Departures		
						sec	sec	veh/min		
South	Warm Springs									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
East	10th Street									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
North	Lewis Street									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-
West	Warm Springs									
Exit Lane 1	-	-	-	-	-	-	-	-	-	-

Lane Movements - Flow Proportions				
Exit Lane	South %	To Exit Leg East %	North %	West %
Light Vehicles (LV)				
From: South	App. Lane 1			
Exit Lane 1	-	100	100	100
From: East	App. Lane 1			
Exit Lane 1	100	-	100	100
From: North	App. Lane 1			
Exit Lane 1	100	100	-	100
From: West	App. Lane 1			
Exit Lane 1	100	100	100	-
Heavy Vehicles (HV)				
From: South	App. Lane 1			
Exit Lane 1	-	100	100	100
From: East	App. Lane 1			
Exit Lane 1	100	-	100	100
From: North	App. Lane 1			

Exit Lane 1	100	100	-	100
From: West	App. Lane 1			
Exit Lane 1	100	100	100	-

Lane Movements - Blockage Calibration				
Exit Lane	South	To Exit Leg East	North	West
From: South	App. Lane 1			
Exit Lane 1	-	1.0	1.0	1.0
From: East	App. Lane 1			
Exit Lane 1	1.0	-	1.0	1.0
From: North	App. Lane 1			
Exit Lane 1	1.0	1.0	-	1.0
From: West	App. Lane 1			
Exit Lane 1	1.0	1.0	1.0	-

Roundabouts - Options	
Roundabout Model Options	
Roundabout Capacity Model	US HCM 6
Roundabout LOS Method	Same as Sign Control
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 2010	-
Apply the SIDRA Model for Unbalanced Flow Conditions for HCM 6	No
Other Roundabout Models	
FHWA 2000	No
Use Urban Compact Roundabout	-
HCM 2000	No
NAASRA 1986	No

Roundabouts - Geometry										
Location	Name	Circ. Lanes	Circ. Width	Island Diameter	Inscribed Diameter	Entry Radius	Entry Angle	Raindrop Design	Circ Trans Line	Downstream Circ Lanes
			ft	ft	ft	ft	°			
South	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-
East	10th Street	1	20.0	100.0	-	65.0	30.0	No	No	-
North	Lewis Street	1	20.0	100.0	-	65.0	30.0	No	No	-
West	Warm Springs	1	20.0	100.0	-	65.0	30.0	No	No	-

HCM 6 Roundabout Capacity Model Parameters

Location	Name	Single L.Circ: Single L.Entry		Single L.Circ: Multi L.Entry		Multi L.Circ: Single L.Entry		Multi L.Circ: Dominant Lane		Multi L.Circ: Subdominant Lane	
		Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B	Para. A	Para. B
South	Warm Springs	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
East	10th Street	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
North	Lewis Street	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920
West	Warm Springs	1380.0	0.001020	1420.0	0.000910	1420.0	0.000850	1420.0	0.000850	1350.0	0.000920

HCM 6 Roundabout Model Calibration

Location	Name	Model Entry/Circ. Calib. Flow Adjust.	
		Factor (HCM6)	(HCM6)
South	Warm Springs	1.00	None
East	10th Street	1.00	None
North	Lewis Street	1.00	None
West	Warm Springs	1.00	None

Pedestrians - Pedestrian Movements

Unit Time for Volumes: 60 minutes

Peak Flow Period: 15 minutes

Main Crossing/ Slip/Bypass Lane Crossing	Volume	Peak Flow	Flow Scale	Growth Rate
	ped	%	%	%
No Ped Movements				

Pedestrians - Pedestrian Movement Data

Main Crossing/ Slip/ Bypass Lane Crossing	Mov. ID	Crossing Distance	Conflict Zone Length	Oppng Ped.Fac.	P.Deg. Satn	Walking Speed	App. Trav. Distance	Downst. Distance	Queue Space
		ft	ft			ft/sec	ft	ft	ft
No Ped Movements									

Volumes - Vehicle Volumes

Unit Time for Volumes: 60 minutes

Peak Flow Period: 15 minutes

Volume Data Method: Total and %

Movement Class	South veh	To Exit Leg		
		East veh	North veh	West veh
From: South	Warm Springs			
Total (veh)	–	35.0	131.0	319.0
LV (%)	–	97.000	97.000	97.000
HV (%)	–	3.000	3.000	3.000
From: East	10th Street			
Total (veh)	36.0	–	24.0	56.0
LV (%)	97.000	–	97.000	97.000
HV (%)	3.000	–	3.000	3.000
From: North	Lewis Street			
Total (veh)	216.0	12.0	–	45.0

LV (%)	97.000	97.000	-	97.000
HV (%)	3.000	3.000	-	3.000
From: West Warm Springs				
Total (veh)	372.0	60.0	38.0	-
LV (%)	97.000	97.000	97.000	-
HV (%)	3.000	3.000	3.000	-

Volumes - Volume Factors				
To Approach	Peak Flow Factor %	Flow Scale %	Growth Rate %/year	
Light Vehicles (LV)				
From: South Warm Springs				
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
From: East 10th Street				
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North Lewis Street				
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West Warm Springs				
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	
Heavy Vehicles (HV)				
From: South Warm Springs				
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
From: East 10th Street				
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
North	92.0	100.00	2.00	
From: North Lewis Street				
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	
West	92.0	100.00	2.00	
From: West Warm Springs				
North	92.0	100.00	2.00	
East	92.0	100.00	2.00	
South	92.0	100.00	2.00	

Gap Acceptance - Gap Acceptance Data							
Gap Acceptance Data							
Opposed Movement	Critical Gap sec	Follow-up Headway sec	Minimum Departures veh/min	Exiting Flow Effect %	% Opp. By Nearest Lane %	Opng. Peds (UnSig)	
South Warm Springs							
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	
East 10th Street							
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	
North Lewis Street							
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	

West	Warm Springs						
L2	-	-	2.50	0	0.00	Prg(Flow)	
T1	-	-	2.50	0	0.00	Prg(Flow)	
R2	-	-	2.50	0	0.00	Prg(Flow)	

Gap Acceptance - Settings						
Gap Acceptance Options						
Gap Acceptance Capacity Model : -						
Merge Analysis & Zebra Crossing Analysis Parameters						
Parameters	Zebra Crossing on Slip/ Bypass Lane		Midblock Zebra Crossing	Merge Analysis [Exit Short Lane Merge Lane]		
	Light Vehicles					
Gap Acceptance Factor			1.0	1.0	1.0	1.0
Opposing Vehicle Factor			-	-	1.0	1.0
Continuous Lane Capacity			-	-	1800	1800
Heavy Vehicles						
Gap Acceptance Factor			2.0	2.0	2.0	2.0
Opposing Vehicle Factor			-	-	2.0	2.0
Continuous Lane Capacity			-	-	1800	1800

Vehicle Movement Data - Path Data							
Turn	Approach	Exit	Negotiation	Negotiation	Downstream	Negotiation	
	Cruise Speed	Cruise Speed	Speed	Distance	Distance	Radius	
	mph	mph	mph	ft	ft	ft	
Light Vehicles (LV)							
From: South		Warm Springs					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
From: East		10th Street					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
From: North		Lewis Street					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
From: West		Warm Springs					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
Heavy Vehicles (HV)							
From: South		Warm Springs					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
From: East		10th Street					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
From: North		Lewis Street					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-
From: West		Warm Springs					
L2	40.0	40.0	-	-	-	-	-
T1	40.0	40.0	-	-	-	-	-
R2	40.0	40.0	-	-	-	-	-

Vehicle Movement Data - Calibration

Turn	Queue Space ft	Vehicle Length ft	Vehicle Occupancy pers/veh	Turn Veh Effect [Factor	Radius] ft	Gap Accp Factor	Opng. Veh Factor	Prac. Deg. Of Satn.
Light Vehicles (LV)								
From: South		Warm Springs						
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: East		10th Street						
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: North		Lewis Street						
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
From: West		Warm Springs						
L2	25.00	17.00	1.20	1.05	–	1	1	–
T1	25.00	17.00	1.20	1	–	1	1	–
R2	25.00	17.00	1.20	1.18	–	1	1	–
Heavy Vehicles (HV)								
From: South		Warm Springs						
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–
From: East		10th Street						
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–
From: North		Lewis Street						
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–
From: West		Warm Springs						
L2	45.00	36.00	1.20	1.05	–	2	2	–
T1	45.00	36.00	1.20	1	–	2	2	–
R2	45.00	36.00	1.20	1.18	–	2	2	–

Site Demand & Sensitivity

Analysis Method: None

Parameter Settings - Options

General Options	
Site Level of Service Method	Delay & v/c (HCM 6)
Site Level of Service Target	LOS D
Pedestrian Level of Service Target	LOS D
Site Performance Measure	Delay
Queue in Output	Average
Percentile Queue	95%
Hours per Year	480 h
Include Short Lanes in determining Approach Queue Storage Ratio	No

Parameter Settings - Model Parameters

Passenger Car Equivalents	
Light Vehicles (LV)	1.00 pcu/veh
Heavy Vehicles (HV)	2.00 pcu/veh
Queue Blockage	

Blockage Tolerance	0
Delay and Queue	
Exclude Geometric Delay	Yes
HCM Delay Formula	Yes
HCM Queue Formula	Yes
Midblock Detection Data	
Effective Detection Zone Length	7.0

Parameter Settings - Cost						
Efficiency Parameters						
Movement Class	Desired Speed mph	Lower Limit of Speed Efficiency for TTI				
Light Vehicles (LV)	-	0.1				
Heavy Vehicles (HV)	-	0.1				
Vehicle Cost Parameters						
Movement Class	Veh Cost Method	Veh Operating Cost			Veh Time Cost	
		[Pump Price of Fuel \$/Gal	Fuel Res. Cost Factor	Ratio of Running Cost to Fuel Cost]	[Avg. Income \$/h	Time Value Factor]
Light Vehicles (LV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Heavy Vehicles (HV)	Operating Cost	2.500	0.700	3.00	29.00	0.400
Cost Options						
Cost Unit	\$					

Parameter Settings - Vehicle Parameters			
Movement Class	Mass lb	Max Power kW	CO2 to Fuel Rate
Light Vehicles (LV)	3500.0	120	2.35
Heavy Vehicles (HV)	33000.0	170	2.633

Parameter Settings - Fuel Consumption				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1200	16	0.004	0.1
Heavy Vehicles (HV)	2300	200	0.009	0.075

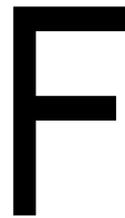
Parameter Settings - CO Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	1620	-138	0.0743	0.294
Heavy Vehicles (HV)	25000	320	-0.06	0.04

Parameter Settings - HC Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	340	-9	0.0031	0.029
Heavy Vehicles (HV)	3000	1	-0.0016	0.0013

Parameter Settings - NOx Emission				
Movement Class	fi	A	B	Beta
Light Vehicles (LV)	300	-14	0.0068	0.166
Heavy Vehicles (HV)	44000	2820	0.21	1.9

Parameter Settings - Advanced	
Platoon Dispersion Model	
fpf	0.80

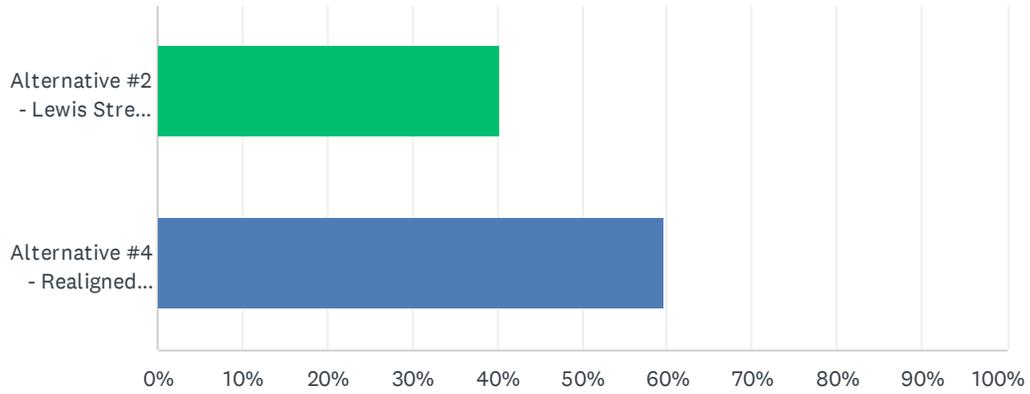
f _{pmin}	1.00
f _{pmax}	1.25
L _{pmin}	200.0 ft
L _{pmax}	1000.0 ft
n	0.60
Exit (Downstream) Short Lane Model	
Minimum Downstream Utilisation Ratio	20 %
Minimum Downstream Distance	100 ft
Distance for Full Lane Utilisation	660 ft
Calibration Parameter	1.2



Second Public Meeting
Summary

Q1 Which option do you prefer?

Answered: 151 Skipped: 0



ANSWER CHOICES	RESPONSES	
Alternative #2 - Lewis Street Roundabout	40.40%	61
Alternative #4 - Realigned Roundabout	59.60%	90
Total Respondents: 151		

Q2 What do you like most about your preferred choice?

Answered: 113 Skipped: 38

#	RESPONSES	DATE
1	better sight lines at 10th street	10/17/2022 10:05 AM
2	Least amount of change to surrounding areas.	10/17/2022 9:43 AM
3	Simple	10/17/2022 7:04 AM
4	Thinking that maybe we don't need such a large roundabout in this location perhaps the smaller 3 way will work fine and be less impactful to other streets.	10/16/2022 9:46 PM
5	simpler, cheaper	10/16/2022 6:03 PM
6	the sharp turn off of 10th is avoided. safer for people walking and biking.	10/16/2022 1:53 PM
7	Solves all the traffic and safety problems	10/16/2022 9:10 AM
8	There isn't that much traffic coming from 10th. And this looks like it would be the less expensive option.	10/16/2022 9:05 AM
9	It takes care of the difficult sight lines at 10th street, but at what cost? There is no discussion of costs and I'm concerned that this solution will be much more costly! If there were a way to realigned the roads at 10th street without taking private property that would be a better solution!	10/16/2022 7:54 AM
10	I works	10/16/2022 12:27 AM
11	It will better disperse the traffic and allow it to flow helping eliminate congestion at that intersection.	10/15/2022 11:27 PM
12	Looks like it will flow better	10/15/2022 10:24 PM
13	Seems more logical and balanced for traffic safety. Also will look better. Provides for better future growth of 10th street.	10/15/2022 8:38 PM
14	Affordable housing	10/15/2022 8:03 PM
15	Illuminates unprotected turns	10/15/2022 7:17 PM
16	I had to choose in order to submit. This survey is missing other choices and the cost of these should be available to evaluate.	10/15/2022 6:04 PM
17	Straightforward	10/15/2022 5:58 PM
18	better flow of traffic	10/15/2022 5:57 PM
19	That it has less impact on private property and will be less expensive	10/15/2022 5:05 PM
20	Access to 10th st	10/15/2022 4:47 PM
21	reduces number of interruptions on warm springs. consolidate into one traffic circle	10/15/2022 4:25 PM
22	Least invasive, roundabouts are excellent.	10/15/2022 4:13 PM
23	Better alignment and less confusion.	10/15/2022 3:15 PM
24	I feel it will make traffic flow better than alternative 2	10/15/2022 1:53 PM
25	better pedestrian safety	10/15/2022 1:08 PM
26	Eliminates blind turns and congestion on tenth by Basecamp and Ketchum auto	10/15/2022 1:07 PM
27	Not as annoying.	10/15/2022 1:06 PM
28	If you're going to fix it, fix it fully. Not partially.	10/15/2022 12:57 PM

Warm Springs Road & the Main Street corridor

29	It will allow me to drive much faster.	10/15/2022 12:48 PM
30	Less renovation to surrounding properties	10/15/2022 12:47 PM
31	It keeps 10th street still intact.	10/15/2022 12:40 PM
32	Ease to go any direction without left turns into oncoming traffic	10/15/2022 12:07 PM
33	#4 is more functional and that landowner is doing nothing with their valuable property, which could solve many housing issues for Ketchum, they deserve to have an eminent domain taking.	10/15/2022 11:58 AM
34	It addresses the access problem from 10th street and Lewis Street to access warm springs road without creating more angles and disrupting the Albertson property.	10/15/2022 9:45 AM
35	affordability, likely online sooner	10/15/2022 9:43 AM
36	2 is enough	10/15/2022 9:24 AM
37	I will not have to make a left turn into traffic from 10th street	10/15/2022 8:22 AM
38	10th street needs to be included into the roundabout design. The Basecamp gas station obscures the view of traffic coming down Warm Springs road from Highway 75, especially from cars on 10th street. It's dangerous now, and you're always guessing if it's safe to pull onto ERM Springs Road.	10/15/2022 6:58 AM
39	Roundabout but calm	10/15/2022 5:48 AM
40	I like how it includes 10th st.	10/14/2022 9:52 PM
41	It includes 10th Street	10/14/2022 7:03 PM
42	Less impactful on private property	10/14/2022 6:11 PM
43	Coming down 10th to get to Hemingway in the morning is too dangerous now - you can hardly see cars coming behind gas station.	10/14/2022 4:03 PM
44	Planning farther ahead	10/14/2022 3:00 PM
45	Roundabouts can be stressful to negotiate, especially in snowy/slippery conditions. Having three streets come into the roundabout should cause less problems than having four streets come into the roundabout.	10/14/2022 2:51 PM
46	I like both. #4 because it alleviates frequently difficult left turn from 10th onto Warm Springs.	10/14/2022 2:40 PM
47	Less impactful to private property.	10/14/2022 2:29 PM
48	It addresses all impacted intersections; but there must be some guidance/support for any displaced property owners (Alberstons?)	10/14/2022 2:24 PM
49	Clean. Easy to understand flow. No impact to current property owner (still have hopes that one day soon the owners will see this property as a perfect spot for community housing)	10/14/2022 2:24 PM
50	It will be a better flow for the left turning traffic from 10th to Lewis	10/14/2022 2:23 PM
51	Better traffic flow from Hwy 75	10/14/2022 2:02 PM
52	It improves the visibility situation on 10th. Alternative 2 doesn't seem to do that. Also seems more seamless.	10/14/2022 1:25 PM
53	Removes a blind corner	10/14/2022 1:20 PM
54	improves blind spots at the basecamp left turn on 10th street	10/12/2022 12:50 PM
55	Neither but the "survey" did not allow that as an option, you had to check one of your comments would not post - it is not clear what has been presented as the actual problem, which makes it impossible to determine if this will solve the problem. Statements such as "enhance public realm" and "traffic calming" are not quantifiable terms to define a problem and its resolution. One of the main problems with the appearance and traffic flow issues on 10th Street are public roadways being used as storage areas for auto repair businesses. Resolving that issue would not cost the city anything and would vastly increase the connectivity of 10th Street. Putting concrete or other structures in the middle of the roadway has not been shown to	10/11/2022 3:38 PM

Warm Springs Road & the Main Street corridor

be effective in the past, i.e., remember the median that was installed by the Elkhorn traffic light

56	It has less of an impact to private property.	10/11/2022 3:37 PM
57	ease of access to gas station	10/11/2022 10:29 AM
58	It provides ease of access to the main routes most utilized and in need of improvement for traffic flow and safety without impacting private property. Tenth street coming westbound from 75 gets far less access, so impact to private property seems less justifiable (and less needed) in my opinion.	10/11/2022 6:56 AM
59	Much less confusion with motorists unfamiliar with the intersection and better for small cars with big trucks.	10/10/2022 6:17 PM
60	Less disruptive	10/10/2022 4:05 PM
61	This seems more likely to execute and that will make sense for the street space.	10/10/2022 11:02 AM
62	If there was a stop light or other way to manage the flow of traffic from 10th street to highway 75 then the realignment would make more sense.	10/10/2022 9:49 AM
63	Better traffic flow	10/9/2022 11:14 PM
64	Better traffic flow	10/9/2022 2:25 PM
65	It i simply less reconfiguration, less construction, less large, less city like. Although both options are too city like.	10/9/2022 12:05 PM
66	less costly	10/9/2022 11:00 AM
67	Traffic from 10 street E flows into the roundabout, instead of there being traffic trying to negotiate the roundabout exit trying to cross Warm Springs rd or turn southbound. Better road alignment and sight lines in general.	10/9/2022 8:47 AM
68	It doesn't require the government to our base land from the Albertsons family which would be very expensive.	10/9/2022 7:00 AM
69	I like the 3-way Lewis street roundabout since folks who are trying to go left onto WS off of Lewis can simply turn right, go around the roundabout, and head the way they want. This seems like the easiest solution and people can still use the roundabout off of Lewis without making it a massive and therefore time wasting roundabout with 4 lanes feeding into it.	10/9/2022 6:25 AM
70	Doing something useful with that abandoned lot	10/8/2022 7:56 PM
71	Least expense to city...	10/8/2022 3:58 PM
72	If its going to get done do it all the way!	10/8/2022 3:07 PM
73	The gradual turn form 10th.	10/8/2022 10:20 AM
74	It takes out the 10th street debacle. Ideally it will also offer wider than average sidewalks or a true "bike path" extension and put non car traffic first.	10/8/2022 10:15 AM
75	Less confusing	10/8/2022 9:19 AM
76	Better traffic long term	10/8/2022 8:58 AM
77	Less confusing	10/8/2022 8:30 AM
78	Roundabouts are far more efficient, I like this option that creates a better thoroughfare and has less impact on existing property.	10/8/2022 8:12 AM
79	Takes care of all intersections And let Albertsons build a grocery store!! The location suits it, it has parking!	10/8/2022 7:40 AM
80	Much better Access to/from WS and 75 Main Street	10/7/2022 8:56 PM
81	It accounts for the traffic at the 10th st intersection as well as Lewis st	10/7/2022 7:34 PM
82	straight forward, less invasive to private property - less expensive and equally effective.	10/7/2022 7:29 PM
83	I don't like either. If the Albertsons lot is going to be housing and the YMCA lots then there will	10/7/2022 6:59 PM

Warm Springs Road & the Main Street corridor

be a lot more pedestrians. Roundabouts are not pedestrian friendly, they're super intimidating and dangerous.

84	Not as over constructed. More reasonable.	10/7/2022 6:29 PM
85	As a result of the access from Highway 75	10/7/2022 5:58 PM
86	It would make Ketchum Automotive not be on the busiest street in the core. The city has allowed them to make 10th a dangerous situation for many years.	10/7/2022 5:46 PM
87	includes all 4 intersecting roads	10/7/2022 5:24 PM
88	It helps with the line of sight issues at 10th St that are so scary and it's one less intersection for those going down WS Rd	10/7/2022 5:22 PM
89	That private land is just sitting there being useless to the community.	10/7/2022 5:12 PM
90	More route options that are safer and more efficient.	10/7/2022 4:51 PM
91	It seems guaranteed that people in this valley are going to STRUGGLE to learn roundabouts. A four way roundabout seems more complex to me.	10/7/2022 4:27 PM
92	10th street inclusion, safety	10/7/2022 4:22 PM
93	includes the traffic on 10th street. might help parking for autos at Ketchum Auto. small use of Alberstons LLC's awkward corner. open up more business on 10th.	10/7/2022 4:17 PM
94	It focuses on the streets and intersection where there are problems	10/7/2022 4:16 PM
95	Fewer difficult left hand turns	10/7/2022 4:05 PM
96	Better traffic control	10/7/2022 4:01 PM
97	Crossing to the south by Base Camp is a nightmare. #4 solves that too...total no brainer.	10/7/2022 3:59 PM
98	It looks less expensive	10/7/2022 3:51 PM
99	less impact to private property	10/7/2022 3:50 PM
100	Better for traffic flow	10/7/2022 3:49 PM
101	more in scale with small town leaves more room for the development of parcel labeled Albertson's LLC...affordable housing?	10/7/2022 3:38 PM
102	It eliminates the dangerous traffic that occurs in and out of the base camp gas station by rerouting the traffic that comes from 10st	10/7/2022 3:33 PM
103	Test	10/7/2022 3:20 PM
104	Traffic flow and safety	10/7/2022 2:17 PM
105	It addresses both intersections.	10/7/2022 1:59 PM
106	Combines the 10th street intersection to reduce potential conflicts	10/7/2022 1:56 PM
107	better sight lines. turning left onto warm springs from 10th is a challenge to see around the gas station	10/7/2022 12:41 PM
108	Alternative #4 makes the most sense for traffic management - while allowing for bikes and pedestrians.	10/7/2022 12:37 PM
109	Coming down 10th street; I can never make a left turn to go to Moss Nursery.....or if I was on Lewis Street....stick your neck out there and "could get hit" by oncoming cars. This roundabout will be very important to the city in the future years with the school and fire department.	10/7/2022 12:04 PM
110	I think #4 is better suited for long-term traffic issues. #2 is half ass in my opinion. just a temporary fix.	10/7/2022 11:58 AM
111	Solves issue coming off 10th to Warm Springs and vice versa better. That is a horrible intersection presently. Many missed accidents with cars trying to pull out of 10th quickly	10/7/2022 11:29 AM
112	Solves the blind spot at 10th street	10/7/2022 11:27 AM
113	Should hold up longer in the future. As Ketchum develops there will be more traffic between 75	10/7/2022 11:19 AM

Warm Springs Road & the Main Street corridor

and the LI zone and 4 addresses that. If we don't do that in this iteration, it will be another Ketchum cheap out mistake.

Q3 What do you dislike about the other option?

Answered: 91 Skipped: 60

#	RESPONSES	DATE
1	Wipes out existing buildings on 10th Street.	10/17/2022 9:43 AM
2	Complex	10/17/2022 7:04 AM
3	Maybe just too large overall for this area if the smaller one will work well enough.	10/16/2022 9:46 PM
4	too complicated, too expensive	10/16/2022 6:03 PM
5	keeps the sharp turn where people tend to accelerate quickly to avoid getting hit. dangerous for people walking/biking.	10/16/2022 1:53 PM
6	Doesn't address the lack of visibility for drivers on 10th st.	10/16/2022 9:10 AM
7	I like option 4 too, but 3 look like it can be completed faster and for less money.	10/16/2022 9:05 AM
8	It ignores the difficult sight lines when exiting 10th onto WS Road.	10/16/2022 7:54 AM
9	Taking private property	10/16/2022 12:27 AM
10	Doesn't seem as balanced as a roundabout	10/15/2022 8:38 PM
11	No affordable housing	10/15/2022 8:03 PM
12	Still has the 4 way intersection	10/15/2022 7:17 PM
13	Alt 1 is the better of two poor options. Alt 2 leaves land in a circumstance where it would be difficult and costly to develop. What do these options cost?	10/15/2022 6:04 PM
14	Doesn't seem as beneficial to long term planning	10/15/2022 5:57 PM
15	I don't dislike the other option.	10/15/2022 5:05 PM
16	Pulling out on 10 th	10/15/2022 4:47 PM
17	it feels to me that 75% or more of the traffic continues on warm springs, which means that ALL that traffic has to traverse a full 3/4 of the traffic circle. this seems needlessly complicated	10/15/2022 4:25 PM
18	No reason for it to be that big.	10/15/2022 4:13 PM
19	A mix of the two may be confusing to folks.	10/15/2022 3:15 PM
20	I feel there will still be traffic congestion.	10/15/2022 1:53 PM
21	Annoying	10/15/2022 1:06 PM
22	I don't dislike it, but again if you're going to fix it, fix it.	10/15/2022 12:57 PM
23	It would slow traffic too much.	10/15/2022 12:48 PM
24	Too much work to propeties	10/15/2022 12:47 PM
25	Higher cost, more private space eaten up	10/15/2022 12:47 PM
26	Eliminating 10th st access to main st.	10/15/2022 12:40 PM
27	Still a challenging intersection at base camp and 10th	10/15/2022 12:07 PM
28	I don't. They are both great.	10/15/2022 11:58 AM
29	Too convoluted	10/15/2022 9:45 AM
30	cost, time to establish, no need to change 10th St	10/15/2022 9:43 AM
31	Might be more than enough	10/15/2022 9:24 AM

Warm Springs Road & the Main Street corridor

32	I hate making left turns into traffic, which I will still have to do if the roundabout does not include 10th St.	10/15/2022 8:22 AM
33	It doesn't include 10th street.	10/15/2022 6:58 AM
34	Too large. Too much of an impact bringing 75 traffic down to warm springs by a major route	10/15/2022 5:48 AM
35	Assume 10th St would have a stop sign... You'd be waiting forever to turn south onto Warm Springs rd from 10th St.	10/14/2022 9:52 PM
36	Turning from 10th St onto Warm Springs Road in either direction is difficult as vision is blocked by the gas station.	10/14/2022 7:03 PM
37	Doesn't solve traffic at 10th coming on to Warm springs road	10/14/2022 4:03 PM
38	Less is not as efficient	10/14/2022 3:00 PM
39	I foresee work trucks coming out of Lewis Street, entering the roundabout heading towards downtown, and then needing to stop in the middle waiting for an opening in the south traveling lane. This could block the main traffic flow heading out Warm Springs and create snow-day collisions.	10/14/2022 2:51 PM
40	Doesn't address the 10th Street intersection. It's frequently difficult left turn from 10th onto Warm Springs.	10/14/2022 2:40 PM
41	Requires a lot more private property.	10/14/2022 2:29 PM
42	Addresses only part of the congestion issues...	10/14/2022 2:24 PM
43	Leaves a blind corner	10/14/2022 1:20 PM
44	doesn't address #2	10/12/2022 12:50 PM
45	Neither but the "survey" did not allow that as an option, you had to check one of your comments would not post - it is not clear what has been presented as the actual problem, which makes it impossible to determine if this will solve the problem. Statements such as "enhance public realm" and "traffic calming" are not quantifiable terms to define a problem and its resolution. One of the main problems with the appearance and traffic flow issues on 10th Street are public roadways being used as storage areas for auto repair businesses. Resolving that issue would not cost the city anything and would vastly increase the connectivity of 10th Street. Putting concrete or other structures in the middle of the roadway has not been shown to be effective in the past, i.e., remember the median that was installed by the Elkhorn traffic light	10/11/2022 3:38 PM
46	It was has more of an impact to private property.	10/11/2022 3:37 PM
47	seems like it would be tough to get to tenth	10/11/2022 10:29 AM
48	The opposite almost exactly to my answer in #2.	10/10/2022 6:17 PM
49	If anything is ever built on the Albertsons' lot it would be very challenging to enter with #4. Also the sight issue isn't resolved since there is still a business access that will be used frequently for the gas station.	10/10/2022 11:02 AM
50	It encourages a faster pace off hwy75 down into Warm Springs corridor because of easier non slowed traffic. It encourages continuation without mindful slowing as we enter WmSpgs residential area & other direction speeding into town.	10/9/2022 12:05 PM
51	more costly	10/9/2022 11:00 AM
52	Doesnt take 10th street into consideration, which is a messy and congested intersection with the gas station traffic.	10/9/2022 8:47 AM
53	It is potentially very expensive.	10/9/2022 7:00 AM
54	How's through private property, more pavement, I like smaller roundabouts since they seem more efficient and more cars can get into them.	10/9/2022 6:25 AM
55	3 way roundabout is fine too, but better to go all the way	10/8/2022 7:56 PM
56	Expense of both options seems very unnecessary	10/8/2022 3:58 PM

Warm Springs Road & the Main Street corridor

57	Just fixing half the problem and probably create my more confusion	10/8/2022 3:07 PM
58	Often times people are so focused on car traffic they forget about people walking. Also- the left turn from 10th is dangerous for everyone.	10/8/2022 10:20 AM
59	It's a bandaid on the issue of both of those intersections.	10/8/2022 10:15 AM
60	Takes away private property	10/8/2022 9:19 AM
61	Taking private property	10/8/2022 8:30 AM
62	It looks too big, and assuming the impact to surrounding private property triggers legal action, I don't think it's worth the time, energy or added expense when you have a viable alternative.	10/8/2022 8:12 AM
63	It doesn't help 10th st at all	10/7/2022 7:34 PM
64	invasive to immediate businesses and property and presumably a much more of an expense.	10/7/2022 7:29 PM
65	Lose more of the Albertsons lot for housing.	10/7/2022 6:59 PM
66	The intersection isn't that busy. It looks overbuilt and requires changing the entire layout of the thoroughfare.	10/7/2022 6:29 PM
67	Turning off of 10th will still suck.	10/7/2022 5:46 PM
68	not much	10/7/2022 5:24 PM
69	It doesn't solve the 10th St issue	10/7/2022 5:22 PM
70	Getting out of the gas station and tenth street needs to be improved.	10/7/2022 5:12 PM
71	I don't dislike it, I just think alternative 4 is more efficient than alternative 2.	10/7/2022 4:51 PM
72	Complexity of a four way, especially in such a small zone	10/7/2022 4:27 PM
73	10th st not included - that is the biggest problem!	10/7/2022 4:22 PM
74	doesn't include 10th st.	10/7/2022 4:17 PM
75	Seems unnecessary complicated	10/7/2022 4:16 PM
76	You still have to try and turn left onto Warm Springs from 10th and you can't see past the gas station to see if it's safe	10/7/2022 4:05 PM
77	Doesn't solve all of the problems	10/7/2022 3:59 PM
78	Seems like you're adding unneeded additional routes	10/7/2022 3:51 PM
79	impact to private property	10/7/2022 3:50 PM
80	Doesn't solve the issue	10/7/2022 3:49 PM
81	Too large, too massive for small town...too impactful on private property	10/7/2022 3:38 PM
82	It ignores the congestion and blind corners in and around base camp gas station.	10/7/2022 3:33 PM
83	Test	10/7/2022 3:20 PM
84	Still have to pull out onto WS Road from 10th street. Yikes!	10/7/2022 2:17 PM
85	Doesn't address saddle road problem.	10/7/2022 1:59 PM
86	Does not streamline access and causes two areas of traffic concerns	10/7/2022 1:56 PM
87	same as above	10/7/2022 12:41 PM
88	Alternative #3 seems short-sighted, it does not allow for future growth.	10/7/2022 12:37 PM
89	#2 looks sloppy.	10/7/2022 11:58 AM
90	Doesn't solve 10th street issues	10/7/2022 11:29 AM
91	Still a blind spot at 10th	10/7/2022 11:27 AM

Q4 Is there anything we missed/haven't considered?

Answered: 64 Skipped: 87

#	RESPONSES	DATE
1	If go with #2, can coming off 10th Street be restricted to right-turns only, to minimize traffic delays and/or wrecks from people trying to turn left or go straight?	10/17/2022 9:43 AM
2	what does the traffic patterns suggest ass far as overall size of roundabout, seems like the 4 way may be too large for this location if the smaller one accomplishes what is most needed.	10/16/2022 9:46 PM
3	added convenience and efficiency (and safety) for fire department in response to certain calls	10/16/2022 6:03 PM
4	On #2: Move the south section of the road WEST from the south end of round-a-bout to better align with the road from Ketchum. It would require taking several feet from the very wide parking area in front of the group of stores that includes Janie's photos. Once done, 10th Ave road & stop sign on the east side of 10th could be moved forward to give drivers a better sight line to see cars heading north on WS road.	10/16/2022 7:54 AM
5	You say #4 will impact private property. That is unfortunate.	10/15/2022 10:24 PM
6	No	10/15/2022 8:38 PM
7	Affordable housing	10/15/2022 8:03 PM
8	Nope love adding a roundabout! Makes us all safer!	10/15/2022 7:17 PM
9	Why no choice for do nothing? Alternate traffic patterns? Cost should be available in the choice description...	10/15/2022 6:04 PM
10	Just hope it's easy for bikes and pedestrians.	10/15/2022 4:47 PM
11	would be nice to see an alternative that has warm springs traffic flow smoothly and consistently and moves the peripheral traffic (lewis and 10th) off the main artery to cut down on the total amount of traffic and to ease the flow. think of a summer Friday when thousands of RV's and huge trailers are trying to go north...and they all have to go around 3/4 of the traffic circle.	10/15/2022 4:25 PM
12	Na	10/15/2022 3:15 PM
13	Bike and pedestrian options are extremely important as well. This is a dangerous and confusing intersection for pedestrian and bike traffic as well	10/15/2022 3:08 PM
14	Purchasing and removing the 1007 building and straightening the road	10/15/2022 1:07 PM
15	Not doing it at all. Use the money to increase the affordable housing chances.	10/15/2022 1:06 PM
16	Pretty much everything. But you do you.	10/15/2022 12:48 PM
17	Not to me	10/15/2022 12:40 PM
18	I would buy the Albertsons property even with #4. Nick.Thomson@KinshipCapital.com (full time Ketchum resident)	10/15/2022 11:58 AM
19	Be sore snow removal is not an issue and the round about is large enough for large trailer trucks	10/15/2022 9:45 AM
20	Creating this solution in either scenario is much better than doing nothing!	10/15/2022 9:24 AM
21	We must look forward and realize there will be increased traffic. # 4 makes more sense.	10/15/2022 6:58 AM
22	what are the projected costs? why does a mandatory question fail to included options to answer no change or undecided?	10/14/2022 3:49 PM
23	What is truck apron? I'm 'thinking' it would be a very tight turn.	10/14/2022 3:00 PM
24	I believe that the main reason for these plans is to make it easier for traffic from Lewis St to	10/14/2022 2:51 PM

Warm Springs Road & the Main Street corridor

get onto Warm Springs Rd which is the major traffic flow. An alternative would be to connect Lewis directly to the proposed revision of 10th street so that it bypasses this intersection entirely and routes southbound traffic from Lewis St directly up to the highway thereby avoiding impacting Warm Springs Rd altogether. The lesser amount of traffic from Lewis heading towards Warm Springs neighborhoods would head north on Lewis and connect to Warm Springs by taking Northwood Way to Saddle Rd and then to the YMCA intersection. This would provide a free flow of traffic between Lewis St and downtown as well as heading south towards Hailey via 10th St to Hwy 75 without impacting Warm Springs Rd or the current intersection. The lesser amount of Lewis St traffic heading out Warm Springs would be re-routed by just a couple of blocks by using Northwood Way to Saddle Rd. This solution eliminates the congestion at the Warm Springs Rd and Lewis St intersection, provides for a continued smooth flow of traffic on Warm Springs Rd, and provides Lewis St with smooth access to Hwy 75 going north or south. The couple of extra blocks to access Warm Springs neighborhoods from Lewis street is a small price to pay for the other advantages. We live in the Warm Springs area and already use the Saddle Rd/ Northwood Way route to access Lewis St because it avoids the problem intersection. I think having a roundabout on the major access to the Warm Springs area is asking for trouble on winter days with slick roads.

25	Not sure.	10/14/2022 2:29 PM
26	Possibly: (1)use of the additional non-traffic surface created by the 4th alternative and the impact on the business (gas station) now cut off from direct access to the former main traffic flow. (2) review of any parking considerations/needs in that area; (3) Hopefully there is an involvement of merchants/landlords impacted so they feel their concerns/interests/dreams are heard and feel part of the process for betterment of the whole area. Listen to them! Maybe there is a more comprehensive assessment needed for the whole area.	10/14/2022 2:24 PM
27	3 way stop...WS Rd to town/Lewis St/WS Rd heading out towards Y (put stop sign just before the turn off to Lewis). Still have free right coming from town onto Lewis.	10/14/2022 2:24 PM
28	Neither but the "survey" did not allow that as an option, you had to check one of your comments would not post - it is not clear what has been presented as the actual problem, which makes it impossible to determine if this will solve the problem. Statements such as "enhance public realm" and "traffic calming" are not quantifiable terms to define a problem and its resolution. One of the main problems with the appearance and traffic flow issues on 10th Street are public roadways being used as storage areas for auto repair businesses. Resolving that issue would not cost the city anything and would vastly increase the connectivity of 10th Street. Putting concrete or other structures in the middle of the roadway has not been shown to be effective in the past, i.e., remember the median that was installed by the Elkhorn traffic light	10/11/2022 3:38 PM
29	I wonder how it affects the busses for the school	10/11/2022 10:29 AM
30	You have not provided the overall cost to the community along with these two options. To make an informed decision, this should be provided (including costs associated with taking the private property, whether through eminent domain or through purchase from the property owner).	10/11/2022 6:56 AM
31	N/A	10/10/2022 6:17 PM
32	Addressing the 10th street corridor. Evaluation of traffic in and out of the Basecamp gas station.	10/10/2022 9:49 AM
33	We are constantly putting bandaids on situations, rarely getting to the root cause; therefore we do not solve problems but exacerbate them. We must reclaim the culture of Ketchum. 'Ketchum time' is all but disappeared. New people expect their city ways to carry over here without realizing what they are doing. Too fast, too money focused, too entitled makes Ketchum into a city of greed & fast paced lifestyle. It's not just about being kind as city propaganda states. It's about being a small town with values of neighbors, a ski town & outdoor lifestyles where the more affluent & the less affluent coexists harmoniously, where we consider others all the time as humans. Period. Slow down in every way on every level including in vehicles. A tiny decrease in your speed allows the left hand turning car that you can easily see time to make that turn without any fuss or major infrastructure changes. if we constantly accommodate the newcomers we become just like anyplace else. We loose our magic our charm. This is not about stopping 'progress' or living in a vacuum it is about preserving our culture. Listen to this!!!!	10/9/2022 12:05 PM

Warm Springs Road & the Main Street corridor

34	Need a crosswalk on Warm Springs at 10th.	10/9/2022 11:00 AM
35	You're asking questions of the public without providing full information to the public. Statements like: "is more impactful on private property" don't paint a comprehensive picture. What would it cost? How would the transaction work? How would alt 4 proceed? Is one option less expensive than the other? By how much (estimated)? Etc.	10/9/2022 7:00 AM
36	You haven't stated the cost difference between the two. Won't that be important for everyone's decision?	10/8/2022 7:56 PM
37	Status quo is just wonderful	10/8/2022 3:58 PM
38	I couldn't make the meetings, so I don't know the full changes.	10/8/2022 10:20 AM
39	Expanding the sidewalks and non motorized path areas. The explosion of e bikes and scooters needs to be addressed and made room for.	10/8/2022 10:15 AM
40	This is a waste of time. Without more information, such as cost, traffic, impacts on private property, etc, you've asked me which picture I like best. This is an uninformed, useless pick. I hope you don't pay attention to this survey.	10/8/2022 8:01 AM
41	No left turns out of the industrial area, route that traffic to 75. Or Monorail from Ketchum to Hailey	10/7/2022 8:10 PM
42	Police enforcement of existing speed limits instead of this project that's unneeded	10/7/2022 7:54 PM
43	No	10/7/2022 7:34 PM
44	no	10/7/2022 7:29 PM
45	Increased density = more pedestrians	10/7/2022 6:59 PM
46	The intersection of warm springs and Broadway. Way heavier traffic and pedestrian use. Extremely unsafe with lack of cross walks or 40th stop to slow downhill traffic.	10/7/2022 6:29 PM
47	Driver Education would be a good start.	10/7/2022 5:46 PM
48	snow removal?	10/7/2022 5:24 PM
49	Pedestrian/sidewalk options along 10th street going up the hill towards Knob Hill and along warm springs in front of Grumpy's.	10/7/2022 4:51 PM
50	How will bikes get through? This may be solved for an just not seeing it from these graphics	10/7/2022 4:27 PM
51	ideally reviewing ability to turn north on warm springs from the 8th, 9th, 10th streets...it's so hard with cars coming down fast from main and lots of traffic the other direction too...hopefully this will help but anything else to make those turns more visible/safe would be good	10/7/2022 4:22 PM
52	You have done a good job with due diligence. Thanks	10/7/2022 4:05 PM
53	Not sure	10/7/2022 3:59 PM
54	What if you just added a light	10/7/2022 3:51 PM
55	where wii the mountain ride bus stop/stops be relocated? Also pedestrian crosswalk safety to access the bus stop in new location	10/7/2022 3:50 PM
56	Mutli-lane roundabout	10/7/2022 3:49 PM
57	concrete median on both alternatives will be subject to snowplow damage! traffic flow to Warm Springs off Main St. now seems to work well...making 10th Street as another major entry to and from Warm Springs could create traffic issues on Main St. and 10th...unintended consequence?	10/7/2022 3:38 PM
58	Where will the bus stops be and how might this affect the route?	10/7/2022 3:33 PM
59	Test	10/7/2022 3:20 PM
60	Thoughtful landscaping - you have an opportunity to make it even more carbon-emissions-lowering by planting thoughtfully.	10/7/2022 2:17 PM
61	Taking down the power lines on warm springs road.	10/7/2022 1:59 PM

Warm Springs Road & the Main Street corridor

62	Definitely- bike access is hugely important and does not appear to be addressed. Access at the existing crossing (between park side and the LI) should be prioritized to keep the flow and safety that currently exists (plan looks to create a problem by making a jog where the path intersects with ws road). And bicycle access through tenth, northwood way and warm springs road should be identified on the plan and should be equally safe even as it will not be the preferred bike path route. It should still be accessible and safe for people to get to and from the LI on bikes, especially since we as a community want to be known as a bike-friendly town and also want to support reducing car trips.	10/7/2022 1:56 PM
63	The City must work hard to convince the residence in formed about this situation and win their vote.	10/7/2022 12:04 PM
64	Is anything being done to improve problems at Main and Warm Springs fork?	10/7/2022 11:29 AM



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Final Concept Exhibits



LEGEND

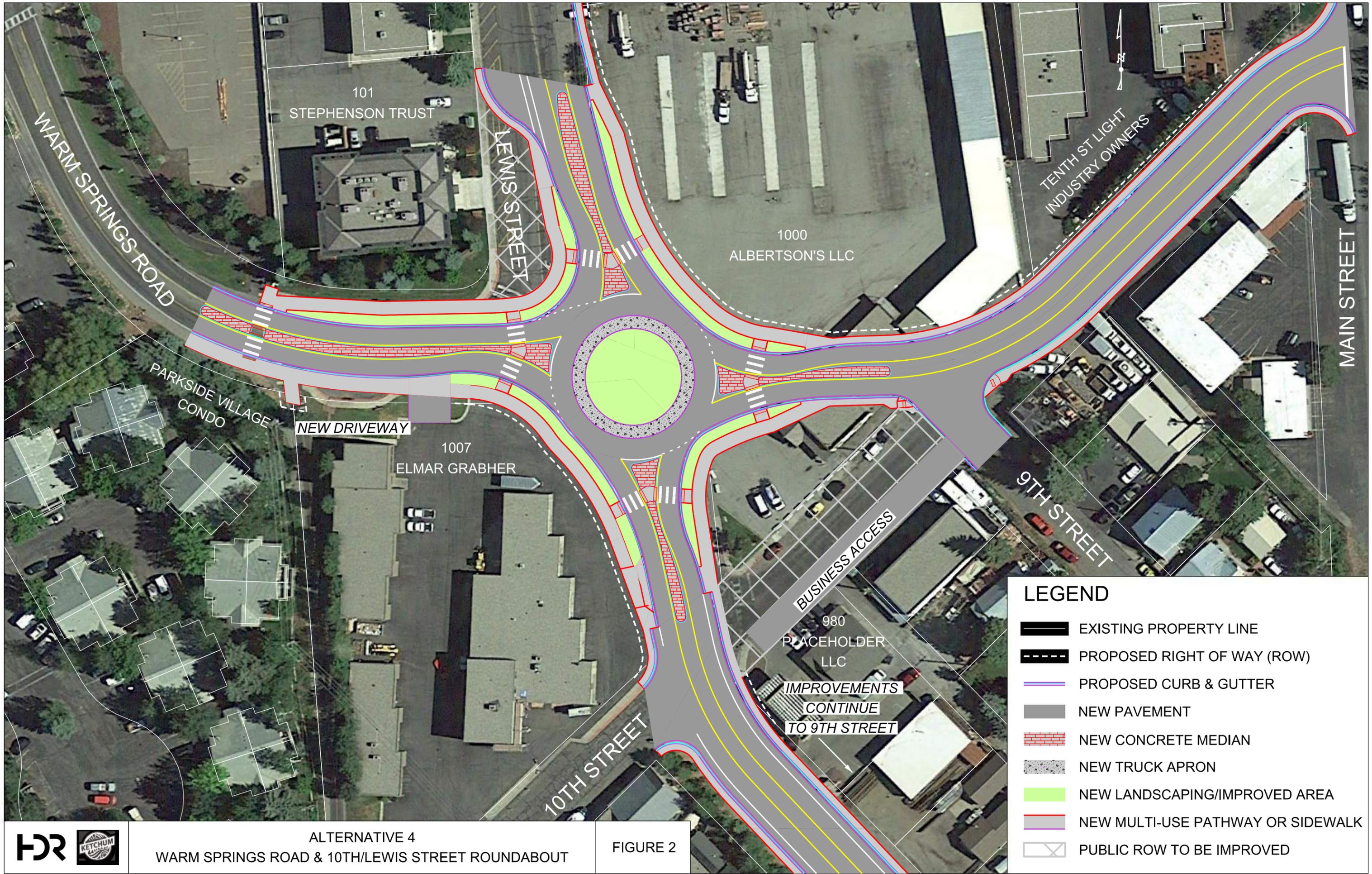
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	PROPOSED RIGHT OF WAY (ROW)
	PROPOSED CURB & GUTTER
	NEW PAVEMENT
	NEW CONCRETE MEDIAN
	NEW TRUCK APRON
	NEW LANDSCAPING/IMPROVED AREA
	NEW MULTI-USE PATHWAY OR SIDEWALK



ALTERNATIVE 2
WARM SPRINGS ROAD & LEWIS STREET ROUNDABOUT

FIGURE 1





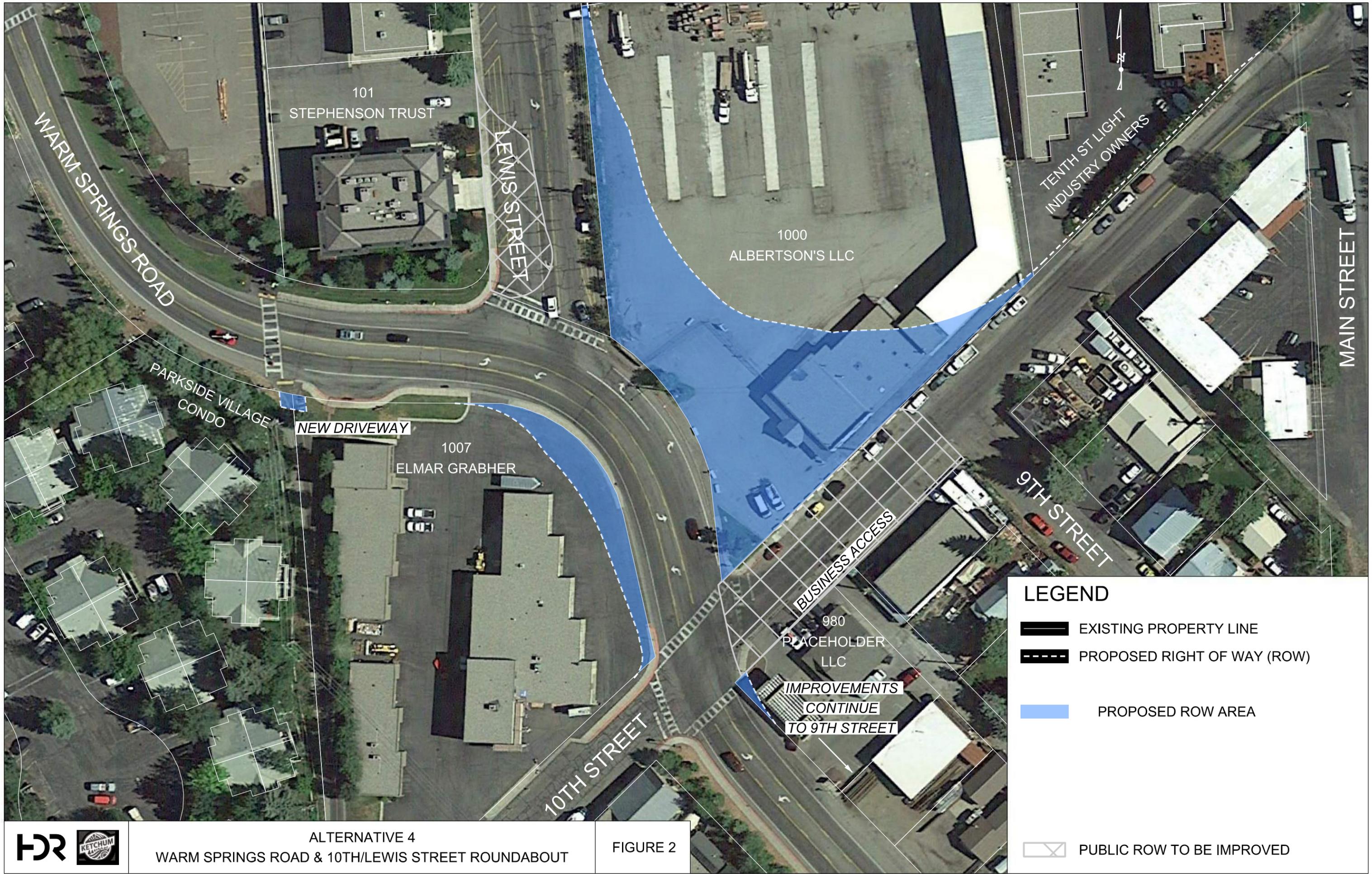
LEGEND

	EXISTING PROPERTY LINE
	PROPOSED RIGHT OF WAY (ROW)
	PROPOSED CURB & GUTTER
	NEW PAVEMENT
	NEW CONCRETE MEDIAN
	NEW TRUCK APRON
	NEW LANDSCAPING/IMPROVED AREA
	NEW MULTI-USE PATHWAY OR SIDEWALK
	PUBLIC ROW TO BE IMPROVED

ALTERNATIVE 4
 WARM SPRINGS ROAD & 10TH/LEWIS STREET ROUNDABOUT

FIGURE 2





ALTERNATIVE 4
 WARM SPRINGS ROAD & 10TH/LEWIS STREET ROUNDABOUT

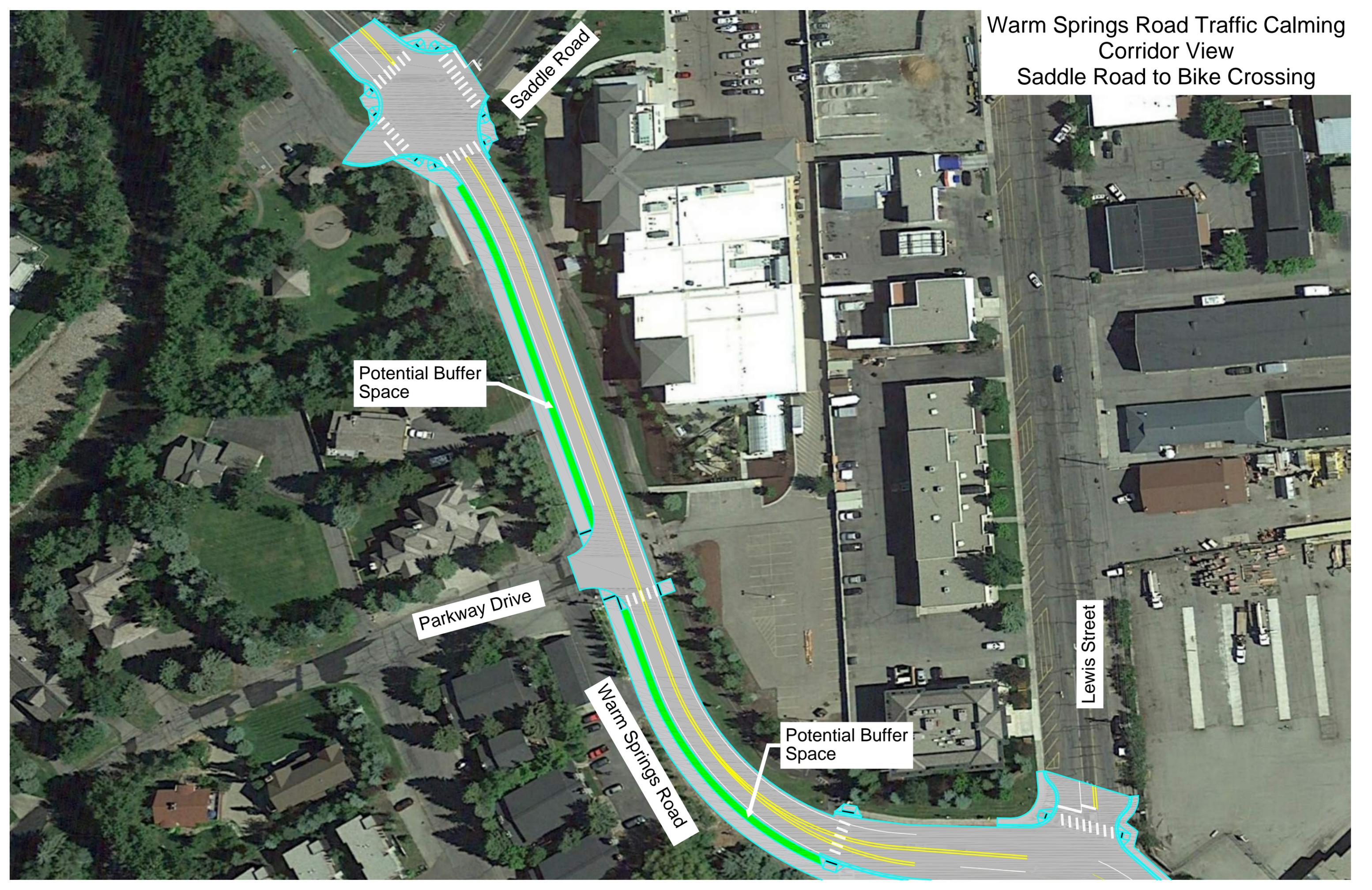
FIGURE 2





Additional Improvement Concepts

Warm Springs Road Traffic Calming
Corridor View
Saddle Road to Bike Crossing



Saddle Road

Potential Buffer Space

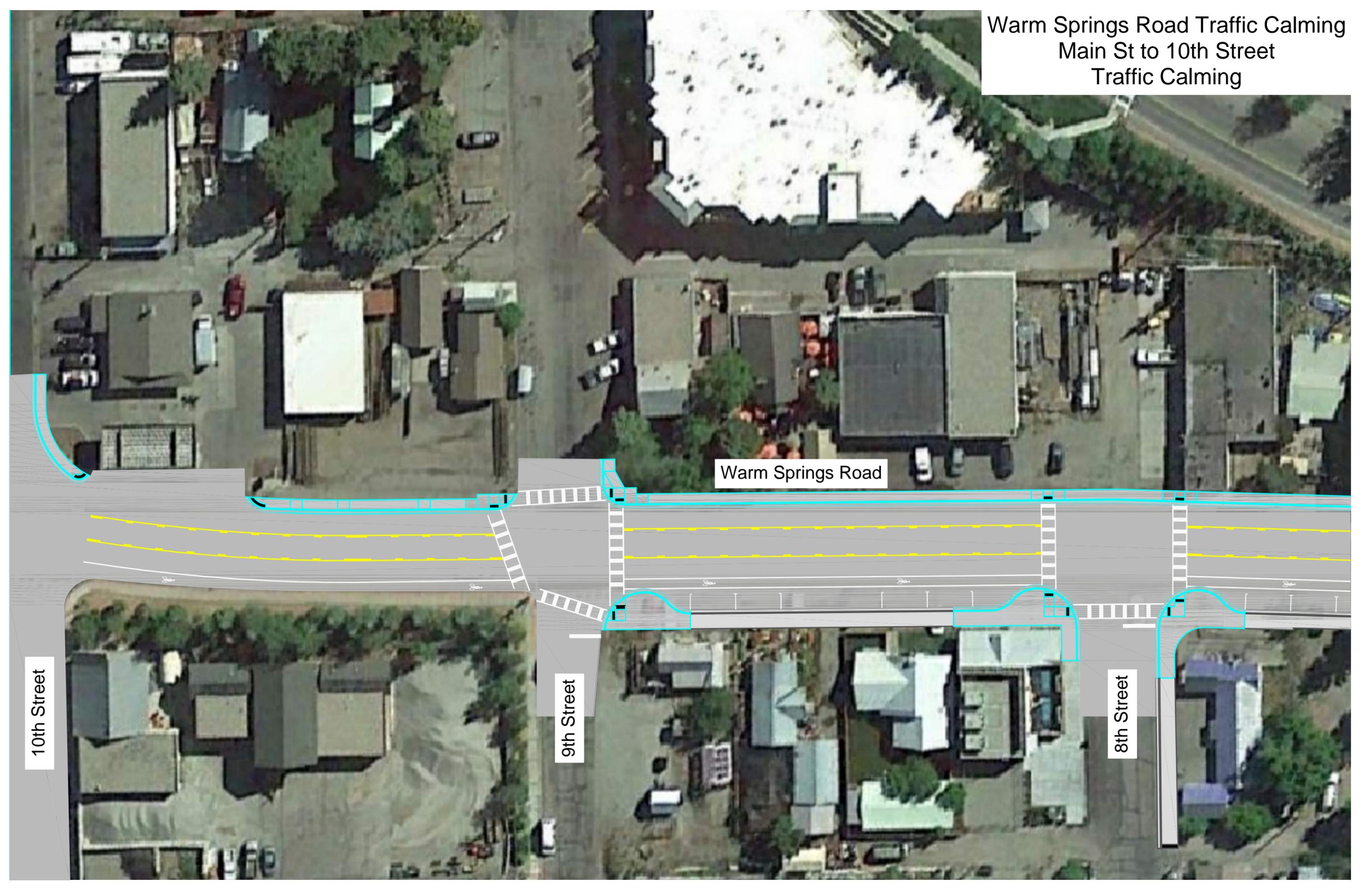
Parkway Drive

Warm Springs Road

Potential Buffer Space

Lewis Street

Warm Springs Road Traffic Calming
Main St to 10th Street
Traffic Calming



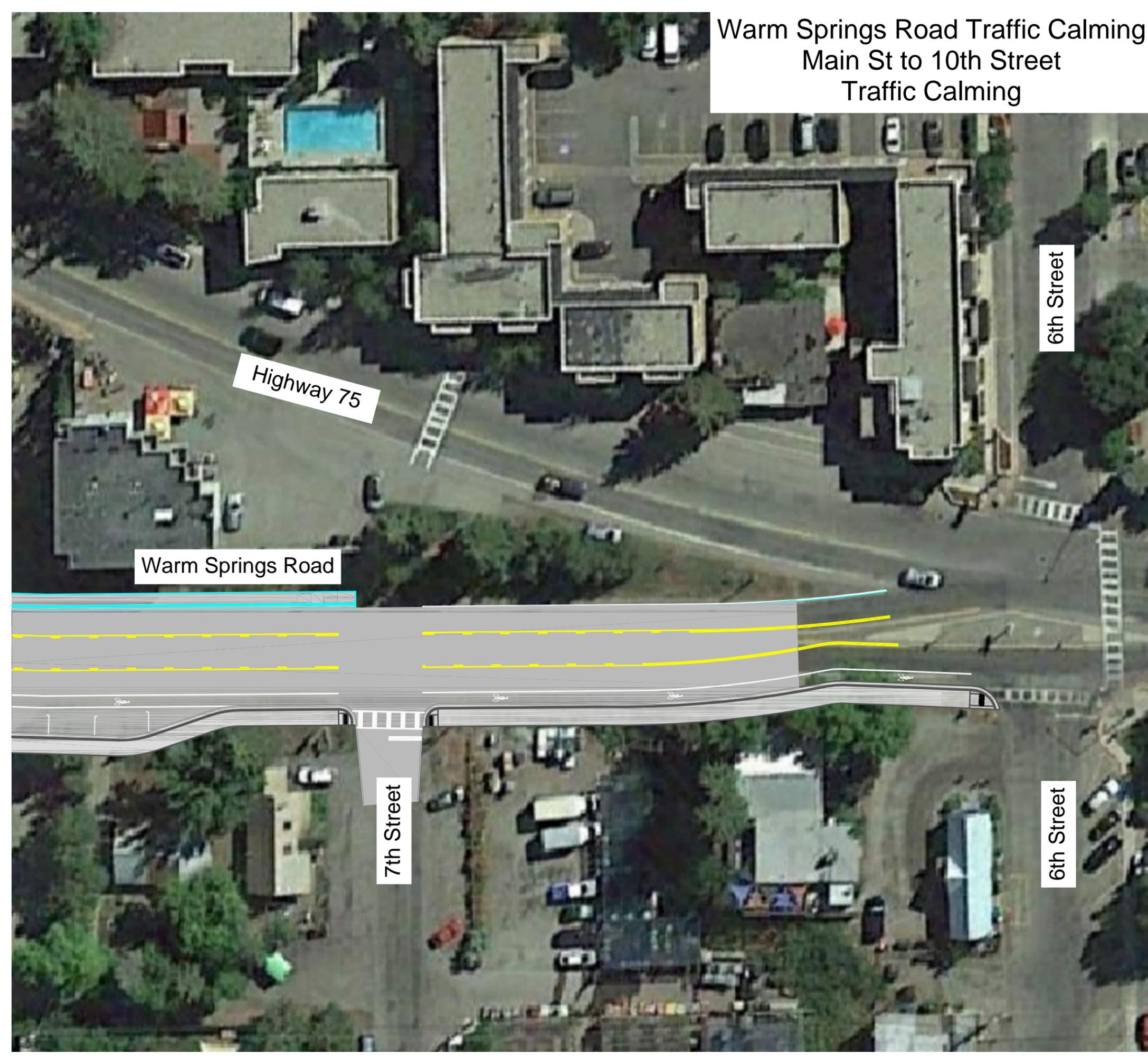
Warm Springs Road

10th Street

9th Street

8th Street

Warm Springs Road Traffic Calming
Main St to 10th Street
Traffic Calming



Highway 75

Warm Springs Road

6th Street

7th Street

6th Street

Warm Springs Road Traffic Calming
Optional "No Build" Improvements

Lewis Street

Warm Springs Road

10th Street

Leadville Avenue

