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TECHNICAL MEMORANDUM #2

McCall Transportation Master Plan

Project Alternatives Analysis

Date:	August 29, 2017 *(Revised December 5, 2017)*	Project #: 19638.0
To:	Nathan Stewart, PE; City of McCall	
From:	Nick Foster, AICP; Jamie Markosian, EIT; and John Ringert, PE	
cc:	Bruce Meighen, Megan Moore, Krissy Gilmore; Logan Simpson	

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Introduction

This memorandum describes and analyzes potential project alternatives and policies to be included in the City of McCall's Transportation Master Plan. These projects and policies cover a range of topics, including:

- Roadway functional classification and cross-sections
- Roadway projects
- Parking strategies
- Pathways, sidewalks, and bike lanes
- Transit

Once reviewed and confirmed with City staff, the recommendations from this memorandum will be carried into the draft Transportation Master Plan for presentation to the general public.

1.0 PROJECT SUMMARY

The following is a summary of the proposed projects described in this memorandum. These projects are the result of a combination of previous plans, public input gathered as part of this project, and technical analysis completed for this project.

Policies

- Adopt an updated functional classification map
- Adopt revised typical cross-sections
- Establish policy that assigns ownership, maintenance and funding responsibilities for urban streetscape infrastructure including: sidewalks, landscaping, lighting, stormwater, and snow removal
- Adopt an updated capital improvements plan (CIP) and maintenance improvement plan (MIP) – *documented under a separate memo prepared by Horrocks Engineers*
- Update City code and engineering standard drawings to reflect current City policies, Comprehensive Plan, and industry practices

Plans

- Develop a parking management plan focused on improving efficiency of existing parking supply, managing demand, and opportunistically providing long-term capacity
- Work with Mountain Community Transit to evaluate and develop a plan for enhanced transit service, including options for increased summertime service in key areas
- Work with the McCall Renewal Agency (MRA) to define future transportation projects in their boundary
- Update pavement management inventory every three years and revise CIP and MIP project lists and implementation schedules annually
- Complete a public works facilities capacity and needs analysis to assess and identify the City's physical and fiscal needs related to equipment, maintenance facilities, and staffing, along with an implementation schedule for ensuring the City is able to maintain its infrastructure in a sustainable manner
- Conduct an analysis of the feasibility of different streetscape and multimodal infrastructure improvements along 3rd Street between Colorado Street and Deinhard Lane

Infrastructure Projects to Investigate Further

- Install a traffic signal at the 3rd Street/Railroad Avenue-Lenora Street intersection
- Install a traffic signal at the 3rd Street/Park Street intersection
- Construct a roundabout or traffic signal at the Boydstun Street/Lake Street intersection
- Incrementally implement Deinhard Lane-Boydstun Street between 3rd Street and Lake Street as a bypass to State Highway (SH) 55
- Implement urban design treatments at the Lake Street/3rd Street intersection
    - Also investigate treatments to further enforce the existing right-out only movement from Lake Street onto SH 55 at this intersection
- Investigate whether all-way stop-control is the most appropriate treatment for the Pine Street/Roosevelt Street intersection
- Providing an additional connection from the central part of McCall to Spring Mountain Boulevard via either:
    - Extending Floyde Street to intersect with Spring Mountain Boulevard across from Woodlands Drive
    - Extending Samson Trail to intersect with Spring Mountain Boulevard across from Woodlands Drive, which would also require improving and re-opening existing portions of the road

- Build-out the McCall Area Pathways Master Plan with the following changes:
  - Changes to the downtown core streets per the *McCall Downtown Master Plan*
  - Add pedestrian facilities along Park Street-Thompson Avenue from Samson Trail to Davis Avenue.
  - Add a pathway from SH 55 to the Bear Basin Trailhead.
  - Look for opportunities to add shared-use paths, instead of bike lanes, in the following locations if right-of-way and utility constraints can be overcome or consider providing curb-protected walkways instead of bike lanes:
    - Lake Street: from the Lardo Bridge to the Bear Basin Connector Trail
    - Davis Avenue: from Wanda Avenue to Ponderosa State Park
    - Mission Street: from Idaho Street to Lake Street
  - Consider interim pedestrian improvements on 3rd Street south of Colorado Street
  - Connect Rio Vista Boulevard to Mather Road via a non-motorized bridge over the Payette River
- Develop the transportation hub planned for the southwest corner of the 2nd Street/Park Street intersection

2.0 FUNCTIONAL CLASSIFICATION

As noted in Technical Memorandum #1, roads in McCall are divided into four functional classifications: Principal Arterial, Major Collector, Minor Collector, and Local. Functional classification is based on the role and the character of service for a particular roadway in moving traffic through the network. After reviewing existing functional classifications with City staff, the following changes are proposed to how individual roads are classified, including the addition of the Minor Arterial classification:

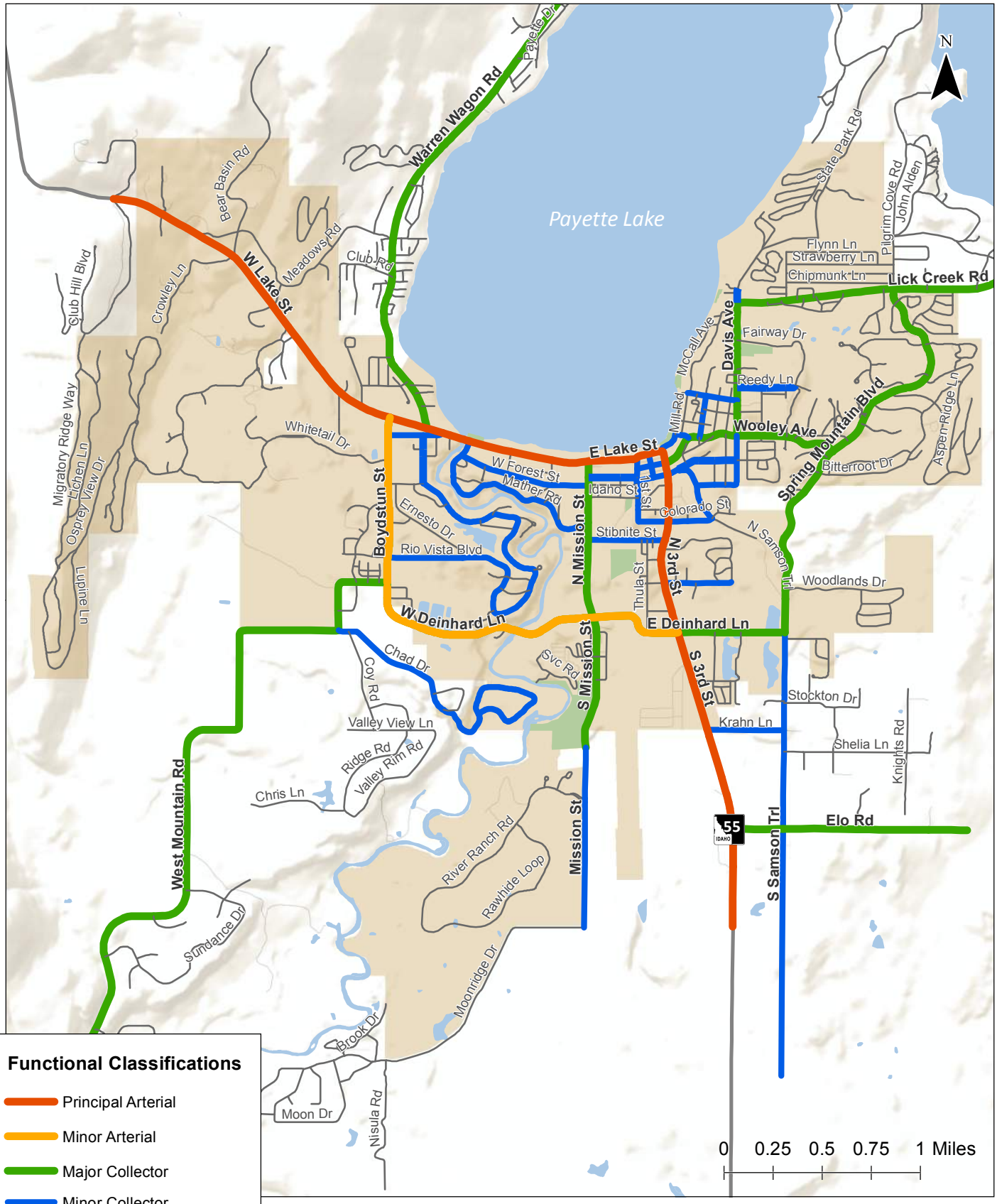
- Downgrades from Minor Collector to Local – These streets do not currently function as collector streets (e.g., they are short connections, serve a limited number of parcels, or are unimproved narrow roads) and are not likely to in the future, based on current plans.
  - Forest Street, Mission Street - 1st Street
  - Mill Road, Hemlock Street – Pine Street
- Upgrades from Local to Minor Collector – These streets either function as a collector today or will in the future based on potential development
  - Park Street/Thompson Avenue, Samson Trail – Davis Avenue
    - This roadway segment provides an important connection to 3rd Street (State Highway (SH) 55) from neighborhoods east of the highway. Traffic

volumes are likely to increase on this road as congestion worsens on 3rd Street north of Park Street.

- Reedy Lane, Davis Avenue – Fairway Drive
  - This roadway segment serves several local streets and a major commercial use. There is also the potential for future development in the surrounding area.
- Rowland Street, Lakeside Avenue – Pinedale Street/Rio Vista Boulevard
  - This roadway segment provides a primary connection for traffic from Rio Vista Boulevard (a Minor Collector) to travel eastbound (i.e., into the city) on Lake Street (SH 55). There is also the potential for future development in the surrounding area.
- Davis Avenue, end of City ownership (approximately Agate Street) – Lick Creek Road
  - This roadway segment provides primary access to Ponderosa State Park, one of McCall's top summertime destinations. Average daily volume exceeds 2,000 vehicles during the summertime and it is also an important route for people walking and biking.
- Park Street, Mission Street – 1st Street
  - This roadway replaces the section of Forest Street described previously and proposed for downgrading to a local road.

- Upgrades from Major Collector to Minor Arterial
  - Deinhard Lane/Boydstun Street, Lake Street – 3rd Street
    - These roadways serve as an alternate route for regional through traffic wishing to bypass downtown McCall and there is desire to increase its use in the future, as discussed later in this memorandum.

The proposed functional classification map with these changes is shown in Figure 1. Coordination with the Idaho Transportation Department (ITD) will be required to implement these changes to the Federal Functional Classification designations, which are part of determining how funding is allocated to the City and to specific projects.



Proposed Roadway Functional Classifications McCall, Idaho

Figure 1

H:\19\19638 - McCall Comprehensive Plan\gis\XX Proposed Functional Roadway Classifications.mxd - jmarkosian - 8:55 AM 8/23/2017

Kittelson & Associates, Inc.
Transportation Engineering/Planning

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Data Source: City of McCall, Topo Data Sources: Esri, USGS, NOAA

Table 1 summarizes the mileage of City owned roadways by functional classification. A detailed listing of each Minor Collector and above roadway, along with existing and projected volumes, can be found in Attachment "A."

Table 1 City Roadway Mileage by Functional Classification

Functional Classification	Mileage	% of Roadway Network
Principal Arterial	N/A[1]	N/A[1]
Minor Arterial	2.5	1.5%
Major Collector	7.4	4.4%
Minor Collector	5.7	3.3%

[1]SH 55 is the only Principal Arterial and is owned by ITD, not the City

3.0 ROADWAY CROSS-SECTIONS

As a part of the Transportation Master Plan update, the City is updating several street sections, including its typical sections contained in the current comprehensive plan, and planned cross-sections for several specific streets.

3.1 Typical Street Sections

The typical roadway cross-sections based on functional classification contained in the current Comprehensive Plan have been reviewed. Updates are proposed to them based on the values identified in the public outreach effort for this plan, the City's Complete Streets policy, and plans that have been adopted since the current Comprehensive Plan was adopted. They have been designed to be flexible so that they can be adapted, as necessary, to the surrounding land-use context and physical constraints, but also provide the required components (e.g., drive lanes, sidewalks, shoulders) that can be used to guide future development and land use application requirements throughout McCall. These cross-sections are shown in Figure 2, Figure 3, and Figure 4.

3.2 Street-Specific Sections

The City has developed planned cross-sections for several streets as part of focused planning efforts with detailed public involvement including adjacent property and business owners. These streets include:

- Mission Street: Deinhard Lane – Smokejumper Base
- Lake Street: Mather Road – 1st Street
- Idaho Street: Mission Street – 1st Street
- Davis Avenue: Wanda Avenue – Lick Creek Road
- Wooley Avenue: Davis Avenue – Spring Mountain Boulevard

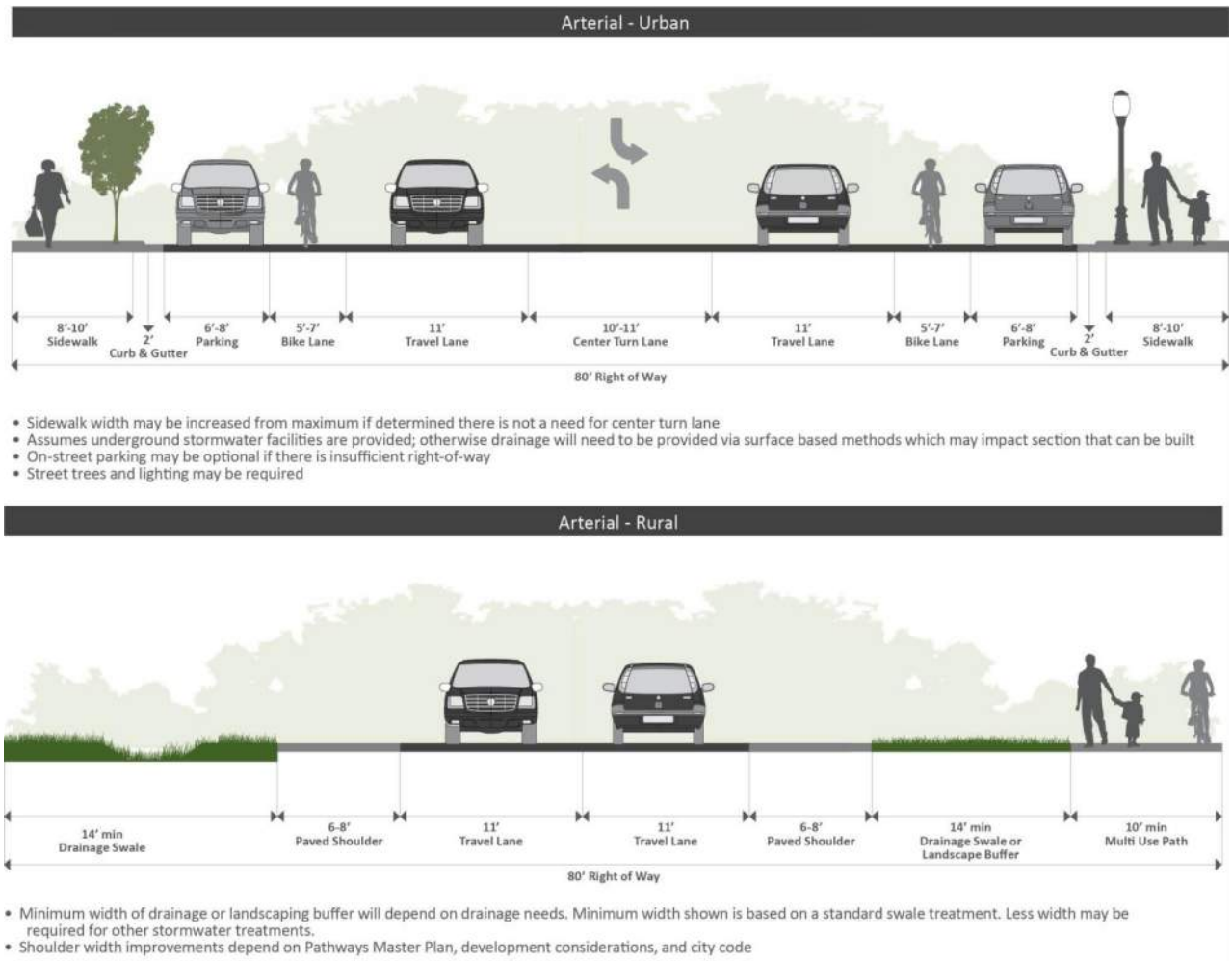
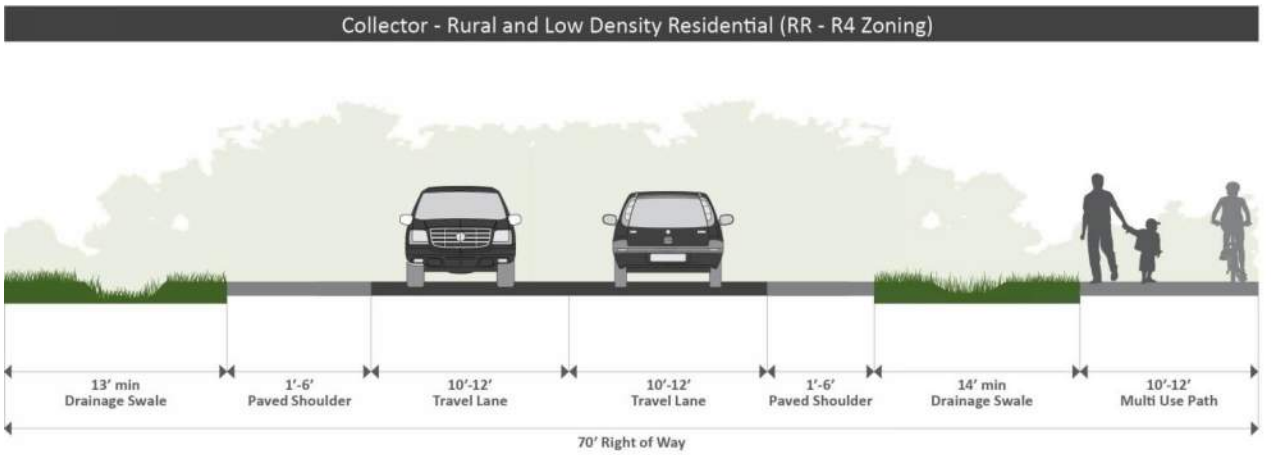
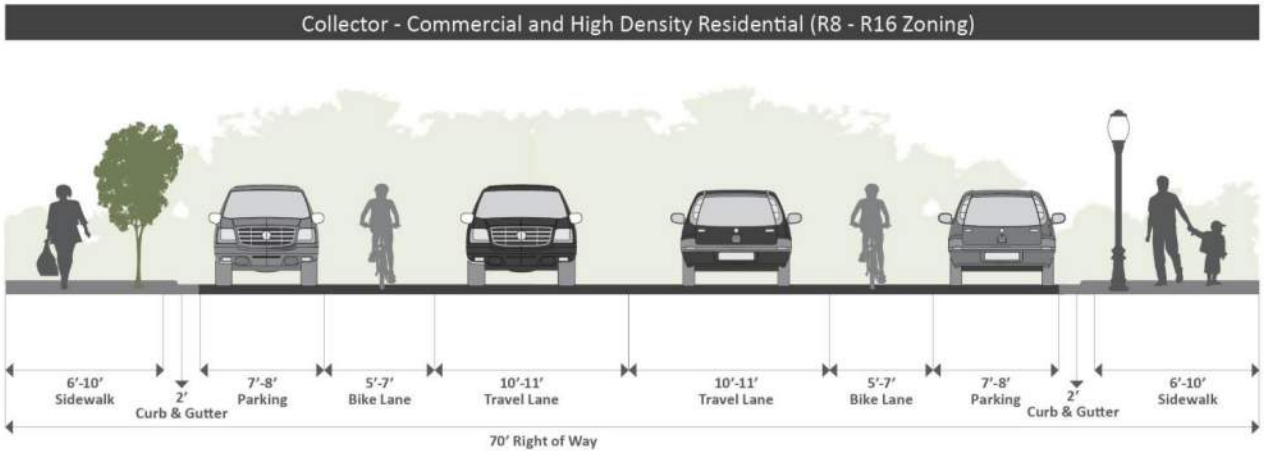


Figure 2 Proposed Arterial Cross-Sections

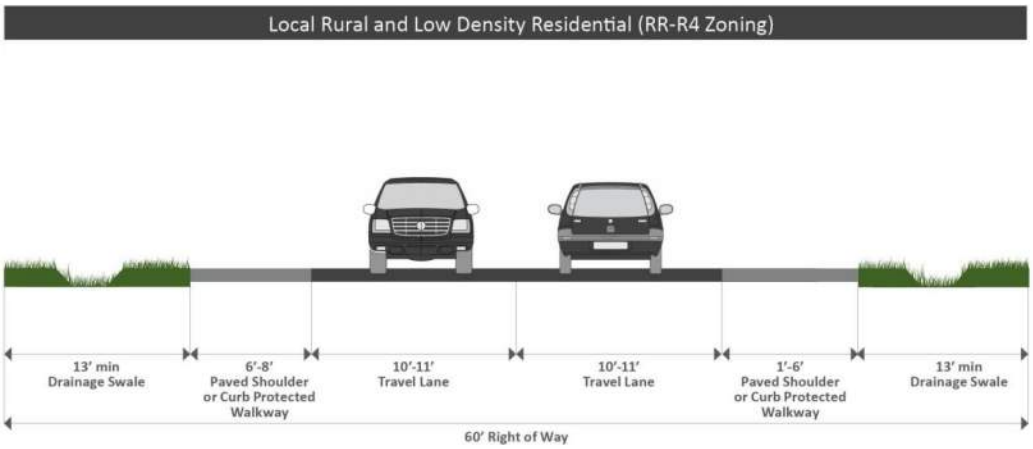


- Minimum width of drainage or landscaping buffer will depend on drainage needs. Minimum width shown is based on a standard swale treatment. Less width may be required for other stormwater treatments
- Provision of a path or bike lane is dependent on designation in McCall Area Pathways Master Plan or McCall Transportation Master Plan. Consult with City staff

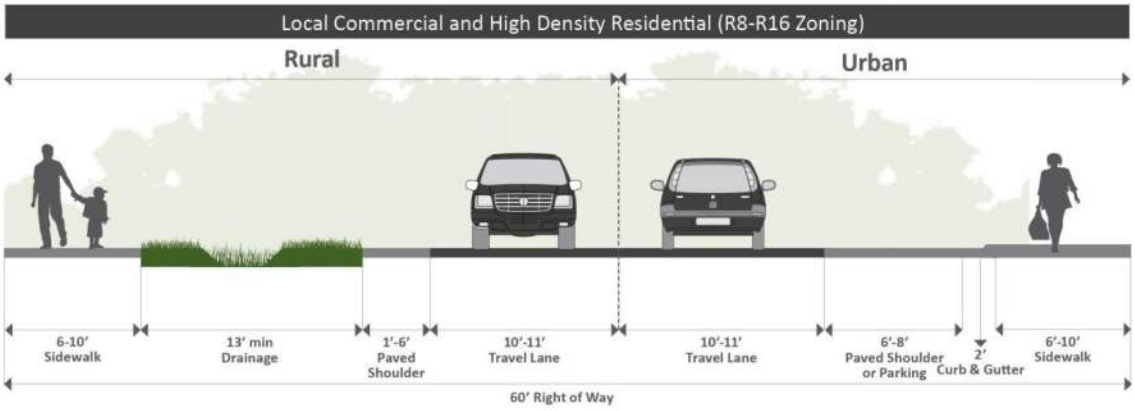


- Assumes underground stormwater facilities are provided; otherwise drainage will need to be provided via surface based methods which may impact section that can be built
- Provision of a bike lane is dependent on McCall Area Pathways Master Plan or McCall Transportation Master Plan and consultation with City staff
- On street parking is dependent on right-of-way and need for center turn lane
- Street trees and lighting may be required

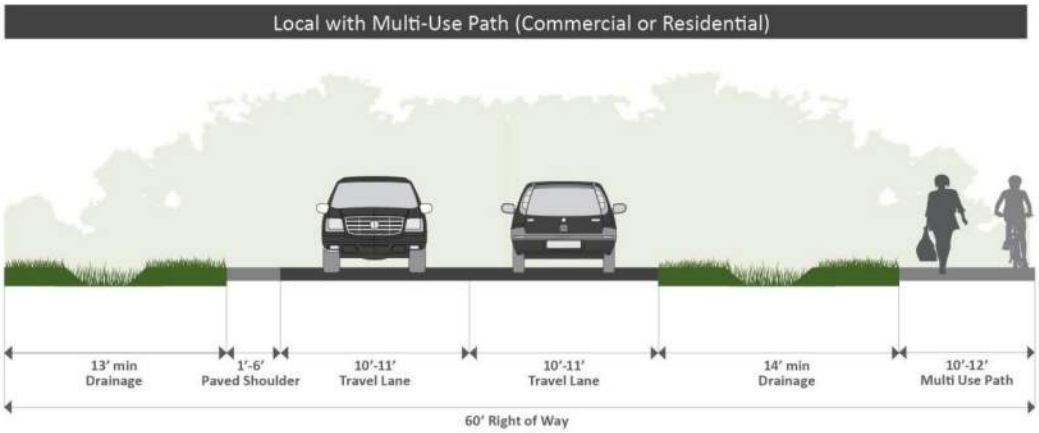
Figure 3 Proposed Collector Cross-Sections



- Minimum width of drainage or landscaping buffer will depend on drainage needs. Minimum width shown is based on a standard swale treatment. Less width may be required for other stormwater treatments
- Shoulder width improvements depend on Pathways Master Plan, development considerations, and city code
- Minimum drainage assumes city's standard swale. Less width may be required for other storm water treatments



- Minimum width of drainage or landscaping buffer will depend on drainage needs. Minimum width shown is based on a standard swale treatment. Less width may be required for other stormwater treatments
- Urban section assumes underground stormwater facilities are provided; otherwise drainage will need to be provided via surface based methods
- Shoulder width improvements depend on Pathways Master Plan, development considerations, and city code
- Minimum drainage assumes city's standard swale. Less width may be required for other storm water treatments



- Minimum width of drainage or landscaping buffer will depend on drainage needs. Minimum width shown is based on a standard swale treatment. Less width may be required for other stormwater treatments
- Can be applied to commercial or residential streets
- Shoulder width improvements depend on Pathways Master Plan, development considerations, and city code
- Minimum drainage assumes city's standard swale. Less width may be required for other storm water treatments

Figure 4 Proposed Local Street Cross-Sections

- Downtown core streets (i.e., 3rd Street, Lake Street, 2nd Street, Lenora Street, Park Street, and 1st Street)
- Roads within the McCall Business Park (i.e., Krahn Lane, Samson Trail)

These sections are included as Attachment "B." The attachment also includes a write-up describing the public involvement process used to develop the first five sections listed above. The Downtown street sections are taken from the McCall Downtown Master Plan (Reference 1) and the McCall Business Park sections are taken from a plan developed for that area (Reference 2).

4.0 ROADWAY PROJECTS

Potential roadway projects have been identified from the following sources:

- Adopted plans (e.g., McCall Downtown Master Plan, current Comprehensive Plan)
    - Projects from the McCall Downtown Master Plan have recently been analyzed and vetted with the public; therefore, they will be carried over into the draft Transportation Master Plan.
- Public input
- Analysis completed for Technical Memorandum #1: Existing and Future Conditions Assessment

Based on feedback from the public and the analysis completed in the previous technical memorandum, projects to address the following issues have been evaluated:

- Seasonal congestion at the intersections of Park Street/3rd Street and Railroad Avenue-Lenora Street/3rd Street
- Potential future congestion at the Lake Street/Boydstun Street intersection
- Rerouting truck and through traffic out of downtown McCall
- Necessity of the all-way stop control at the Railroad Avenue/Roosevelt Street intersection
- Improving pedestrian crossings and improving compliance with turning movement restrictions at the Lake Street/3rd Street intersection
- Improving connectivity in southeast McCall

4.1 3rd Street Intersections

Public feedback and traffic operations analyses performed at the Park Street and Railroad Avenue-Lenora Street intersections (Figure 5) have identified the following concerns:

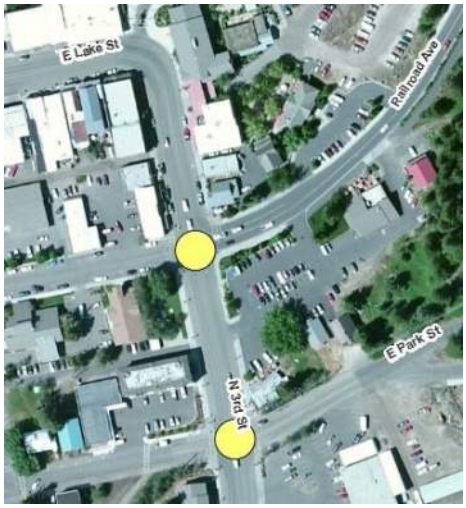


Figure 5 3rd Street Intersections

- Delay for side street (i.e., Park Street and Railroad Avenue-Lenora Street) left-turn and through movements during the summertime peak tourism season.
    - The existing side street approaches operate at LOS "F" during the weekday p.m. peak period in the summertime.
    - Eight-hour, four-hour, and peak-hour signal warrants are met at the 3rd Street/Park Street intersection based on a count performed by ITD on Wednesday, June 1, 2016.
    - Similar warrants are met at the 3rd Street/Railroad Avenue-Lenora Street intersection based on a count performed by ITD on Thursday, May 14, 2015.
- Mitigating conflicts for the high number of pedestrians that cross 3rd Street at both intersections. While pedestrian traffic counts have not been conducted, observations identified two key issues:
    - Conflicts between left-turning vehicles and pedestrians create the potential for collisions.
    - The additional delay for turning vehicles due to the number of pedestrians crossing during the peak periods and the lack of platooning of theses crossings

Alternatives Evaluated

In response to the above concerns, the following potential solutions have been identified and evaluated:

- Signalization of one or both intersections
- Installation of a pedestrian hybrid beacon (PHB, aka HAWK) at one or both intersections across 3rd Street
- Roundabout at one or both intersections

Table 2 provides an initial assessment of these options.

As described in Table 2, the signalization and roundabout alternatives are the only options that serve both the pedestrians and the side street traffic movements. While the PHB alternatives provide improvement for pedestrians crossing 3rd Street and may reduce the delay for northbound and southbound traffic compared to a signal, they will not improve the level of service for the side street left-turning movements at the intersection.

Table 2 3rd Street Intersections Alternatives Assessment

Signal at Both Intersections[1]	PHBs at Both Intersections	PHBs at One Intersection	Roundabouts at Both Intersections[2]
Advantages			
Serves all pedestrian movements	Serves pedestrians crossing 3rd Street at both intersections	Serves pedestrians crossing 3rd Street at one intersection	Serves all pedestrian movements
Serves all side-street movements and left-turns from 3rd Street	May open up gaps for certain side-street movements and left-turns from 3rd Street at both intersections	May open up gaps for certain side-street movements and left-turns from 3rd Street at one intersection	Serves all side-street movements and left-turns from 3rd Street
Can use signal timing progression to minimize delay to through traffic on 3rd Street	Potential for less delay for through traffic on 3rd Street than traffic signals, depending on the number of pedestrian crossings	Less delay for through traffic on 3rd Street than traffic signals, depending on the number of pedestrian crossings	Limited delay incurred to 3rd Street through traffic during off-peak season
Disadvantages			
Delay to through traffic on 3rd Street	Difficult to coordinate operations, so may result in more delay to 3rd Street traffic than signals during some peak time periods	Does not serve all side-street movements or left-turns from 3rd Street	Potential property impacts
Not warranted most of the year	Does not serve all side-street movements or left-turns from 3rd Street	Does not serve all pedestrian movements	Single-lane roundabouts may not provide long-term capacity
Moderate cost and ongoing maintenance	Does not serve all pedestrian movements	Does not serve both intersections	High cost

[1]The assessment of a single signal is similar, except it primarily benefits only one intersection and there is the potential for queues from the signalized intersection to back up through the intersection that is not signalized.
[2]The assessment of a single roundabout is similar, except it primarily benefits and impacts only one intersection.

Table 3 provides a summary of the preliminary traffic operations analysis completed for the signalization and roundabout options for a typical weekday in the summertime. Synchro and Highway Capacity Software (HCS) reports may be found in Attachment "C."

Table 3 3rd Street Intersection Alternatives Operations Evaluation

Alternative	Timeframe	LOS[1]
Signalization	Existing Summertime Conditions	B/(B)
	Projected Year 2040 Summertime Conditions	C/(B)
Roundabout	Existing Summertime Conditions	B/(A)
	Projected Year 2040 Summertime Conditions	E/(D)

[1]Operations are reported for each intersection as Railroad-Lenora/(Park)

Additional key findings from the preliminary analysis include:

- Signalization alternative:
  - Signal timing will need to be evaluated to minimize possibility of queue spillback between the two intersections.
- Roundabout alternative:
  - All approaches are projected to be under capacity under existing peak summertime conditions at both intersections.
  - The northbound approach at the Railroad Avenue-Lenora Street intersection is projected to reach capacity under year 2040 peak summertime conditions

Other Alternatives

Other alternatives that were considered include restricting Railroad Avenue to one-way traffic eastbound (i.e., forming a couplet with Lake Street), restricting left-turns from Railroad Avenue and Lenora Street onto 3rd Street, and creating an alternate connection between Railroad Avenue and Park Street. These options have not been evaluated further due to the limited roadway network options and their potential impacts to local businesses and property.

Short-term Alternatives

The alternatives described previously are potential long-term solutions. Possible options for improving conditions at either intersection in the short-term include:

- Improving intersection sight distance for side-street vehicles turning onto 3rd Street by restricting parking on 3rd Street adjacent to the intersection(s), which may reduce the potential for collisions and decrease the anxiety drivers feel when turning onto 3rd Street.
- Hiring one or more individuals to manually control traffic, similar to a flagger or traffic cop, during peak periods, which:
  - Can be implemented for as needed and not impact off-peak period traffic conditions;
  - Potentially has a lower near-term cost; and
  - May be less efficient and result in more traffic congestion than a signal during peak periods.
  - Installing a temporary traffic signal, which could be a low-cost method to evaluate the effectiveness of signalization, but may not be able to adequately serve pedestrians without a semi-permanent installation

Each of these short term alternatives should be further evaluated before implementation and reviewed after implementation.

ITD Coordination

ITD has jurisdiction of 3rd Street (SH 55) and therefore, implementing any project at these two intersections will require ITD approval. Kittelson & Associates, Inc. (KAI) and City staff met with ITD staff on February 6, 2017 to discuss the alternatives analysis at these intersections described above. Key takeaways from this meeting include:

- Providing signals at both Railroad Avenue-Lenora Street and Park Street would not meet the recommended signal spacing of 0.5 miles, as described in IDAPA 39.03.42.
    - Any follow-up study of a two-signals option would need to examine the potential additional delay added by the second signal and the potential for queues to stack between the two signals.
- Improvements at either intersection may not be competitive under ITD's current funding structure without a financial partnership from the City.

Recommendations

Based on the information summarized in the previous sections, we recommend that traffic signals at both intersections be advanced into the Transportation Master Plan. Key reasons behind this recommendation include:

- PHBs will not address the issue of side street traffic being able to turn out onto 3rd Street. Additionally, people may not congregate at the PHB controlled crossing instead of crossing at the most convenient location;
- Roundabouts will have property impacts and a higher cost than signals; and
- Signalization of these intersections is consistent with the current Comprehensive Plan

Further, in the event that only one signal is approved and/or only one can be funded, we recommend that the Railroad Avenue-Lenora Street/3rd Street intersection be the priority location for signal installation. This is because there is higher demand from the side streets and for left-turns from 3rd Street at this location and it is located closer to downtown destinations than Park Street.

An engineering study will be required before a signal could be approved by ITD. This study should further evaluate the feasibility and potential impacts of a signal at one or both locations, including potential pole and cabinet locations. It may also include daily directional counts at all approaches, if the estimated splits used here are determined to not be adequate.

4.2 3rd Street/Lake Street Intersection

The 3rd Street/Lake Street intersection is important to how people access the lakefront and the downtown, as well as providing one of the key aesthetics in the City. Public input received during this project has expressed a desire for a more pedestrian-focused environment at this intersection. Potential solutions could include colored/texture pavement, a raised intersection, and enhanced streetscape features. A conceptual rendering of possible improvements is shown in Figure 6. 3rd Street and Lake Street are SH 55, so the City will need to work with ITD to implement any improvements at this intersection.

Figure 6 3rd Street/Lake Street Conceptual Rendering
(image: Logan-Simpson Design)

4.3 Boydstun Street/Lake Street Intersection

The Boydstun Street/Lake Street intersection (Figure 7) is forecast to experience increased congestion and meet signal warrants by the year 2040 during the summertime peak period. This is more likely to be the case if SH 55 bypass strategies are implemented as described in the following section.

Both a roundabout and a traffic signal were evaluated for this intersection. The results of this analysis are shown in Table 4 below.

Figure 7 Boydstun Street/Lake Street Intersection

Table 4 Boydstun Street/Lake Street Alternatives Operations Evaluation

Alternative	Timeframe	LOS
Signalization	Projected Year 2040 Off-Peak Conditions	B
	Projected Year 2040 Summertime Conditions	B
Roundabout	Projected Year 2040 Off-Peak Conditions	A
	Projected Year 2040 Summertime Conditions	A

Both options are expected to result in acceptable operations. The traffic signal will result in extra delay for vehicles on Lake Street (SH 55) during most of the year, since the signal is forecast to be

warranted only in the summertime peak period. Further, a roundabout at this intersection could provide a gateway treatment into the City and help slow traffic as it enters from the north. Unlike at the 3rd Street intersections described above, there do not appear to be built environment constraints or significant grade issues; though further study will be required to determine this. Therefore, it is recommended that the City and ITD plan for a roundabout at this intersection. While this is not as high of a priority as addressing the 3rd Street intersections, early work could be done to develop and evaluate concepts so that right-of-way can be obtained, if necessary, as development occurs in the area. The ultimate timing of the roundabout should be based on funding availability and coordinated with the bypass treatments described below.

4.4 SH 55 Bypass

Public input has expressed a desire to reroute heavy truck traffic away from downtown McCall. Further, diverting traffic traveling through McCall on SH 55 away from downtown could help manage seasonal congestion. The Deinhard Lane-Boydstun Street connection, shown in Figure 8, provides a potential bypass route of downtown McCall.

Figure 8 Potential SH 55 Bypass Route

Designating the Deinhard Lane-Boydstun Street connection as a bypass would reduce some traffic demand and the number of trucks on 3rd Street and Lake Street. Because a majority of the traffic in McCall is not through traffic, 3rd Street and Lake Street would remain the primary routes for local traffic.

Given that the route exists today, this evaluation focuses on strategies to enhance its use as a bypass of downtown McCall. Potential options to accomplish this objective include, in order of complexity and likely fiscal implications:

- *Lowest Cost and Complexity:* Signing the route as an alternate freight and/or through route:
    - City staff has expressed concern about the City's capability to provide an adequate level of snow removal during the winter on the bypass route, so it may not be desirable to designate the route as the primary freight or through route.
    - City staff has also noted that the curb radii in the southwest corner of the 3rd Street/Deinhard Lane intersection may need to be modified to better accommodate trucks turning right from Deinhard lane onto southbound SH 55.

    - Increased traffic on this route will accelerate the need for improvements to the Boydstun Street/Lake Street intersection (see analysis later in this section).

- *Moderate Cost and Complexity*: Designating the route as SH 55:
    - The City and ITD would likely need to enter into an agreement to turn control and maintenance over to ITD.
    - ITD may require the City to take over the current SH 55 alignment from Deinhard Lane to Boydstun Street.
- *Highest Cost and Complexity*: Modifying the intersections at 3rd Street/Deinhard Lane and Boydstun Street/Lake Street so that the natural through movement is to continue on the bypass route and not on the existing SH 55 alignment:
    - This option would likely only be implemented if the bypass route were to become the designed alignment of SH 55.
    - These modifications would include:
        - Realigning the approaches at the 3rd Street/Deinhard Lane intersection or installing a roundabout.
        - Either changing stop control at the Boydstun Street/Lake Street intersection so that the eastern Lake Street approach is the only stop-controlled approach or installing a roundabout or traffic signal at the intersection.

The options above would have varying levels of effectiveness at rerouting traffic away from downtown and are listed in their likely order of effectiveness (i.e., signing would not have as much impact as intersection modifications), as well as the probable level of effort required to implement them.

Traffic Operations Analysis

ITD has previously considered constructing a bypass of McCall. The Environmental Assessment (EA, Reference 3) completed for the potential bypass estimated that approximately 25% of all traffic on SH 55 south of McCall would use the bypass. This estimate was made before Deinhard Lane was extended to Boydstun Street, so it is likely that a portion of the traffic that was estimated to use the bypass is now using the Deinhard Lane-Boydstun Street connection. This existing connection is not signed as a bypass, nor is it built as a high-way level connection, so there is likely opportunity for more through traffic to use the connection.

Therefore, in order to estimate the potential effectiveness of the above options it is assumed that up to 20% of through traffic on SH 55 at Colorado Street (the southernmost location for which turning movement counts are available) could still be diverted around downtown if the most intensive option above were implemented (i.e., designation of the route as SH 55 and intersection modifications at

both ends of the bypass at Deinhard Lane and Boydstun Street). The potential re-routed daily volumes during the existing summertime peak season and the projected year 2040 off-peak and peak seasons are shown in Figure 9.

Traffic operations were analyzed at key intersections (i.e., those discussed in the preceding sections) during each of these time periods in order to estimate the effect the bypass might have on traffic operations in downtown McCall. The results of these analyses are compared to the no-build condition examined in Technical Memorandum #1 in Table 5 below. Signal warrant worksheets and Synchro reports are included in Attachment "D."

Table 5 SH 55 Bypass Traffic Operations Analysis Results

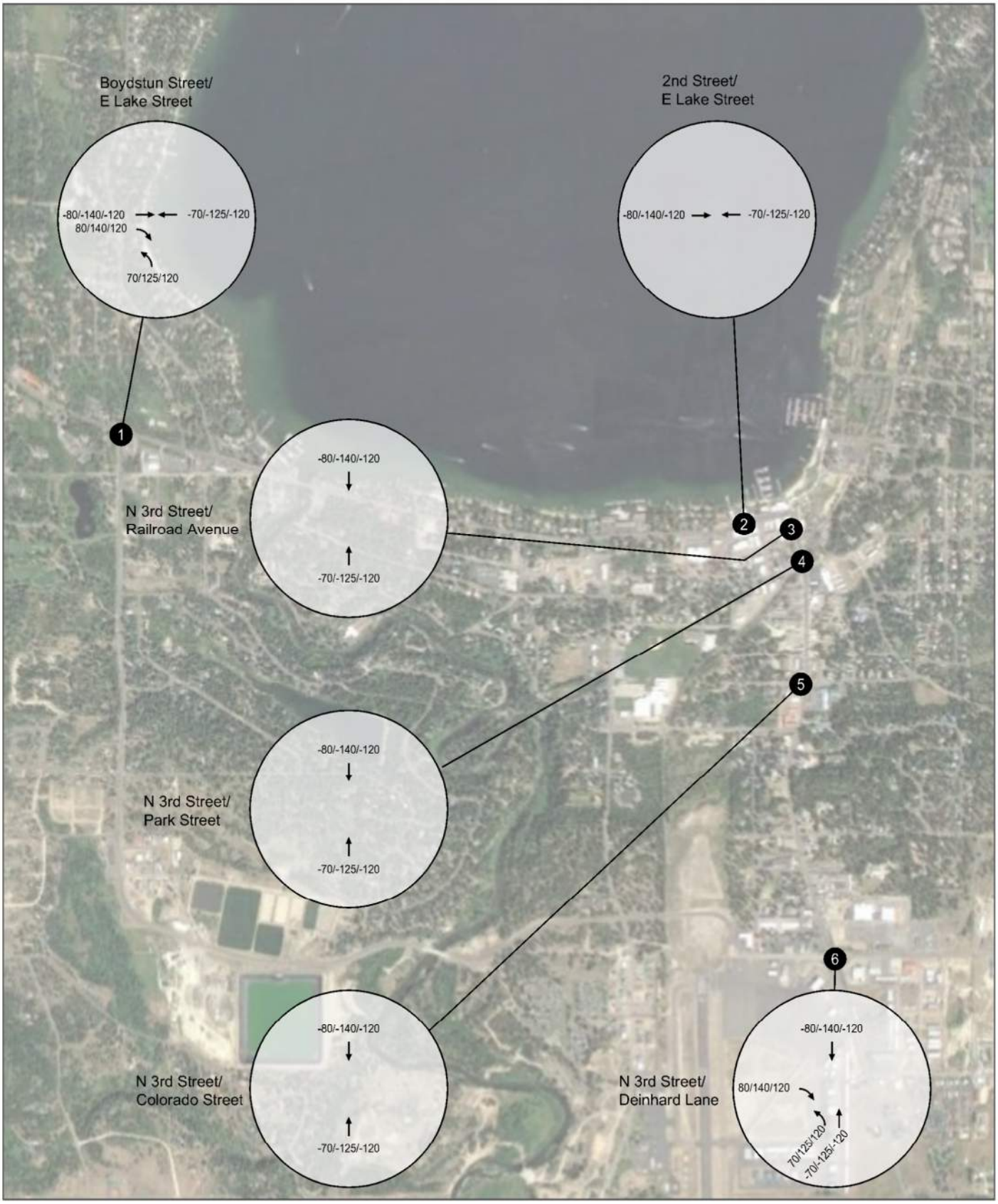
Intersection	No-Build			With Bypass Treatments		
	LOS[1]	V/C[1]	Signal Warrant Met?[2]	LOS[1]	V/C[1]	Signal Warrant Met?
Existing Summertime						
Park St/3rd St	F	0.61	Yes[3]	E	0.45	No
Railroad Ave-Lenora St/3rd St	F	>1.0	Yes[3]	F	>1.0	Yes
Lake St/Boydstun St	B	0.19	N/A[4]	B	0.29	N/A[4]
Year 2040 Off-Peak						
Park St/3rd St	E	0.66	Yes[5]	C	0.42	No
Railroad Ave-Lenora St/3rd St	F	>1.0	Yes[5]	F	>1.0	Yes[6]
Lake St/Boydstun St	B	0.26	N/A[4]	B	0.42	N/A[4]
Year 2040 Summertime						
Park St/3rd St	F	>1.0	Yes	F	>1.0	Yes[5]
Railroad Ave-Lenora St/3rd St	F	>1.0	Yes	F	>1.0	Yes[5]
Lake St/Boydstun St	D	0.57	Yes[5]	E	0.84	Yes[5]

[1]LOS is reported for the worst minor-street approach. V/C ratio is reported for the critical movement.
[2]Eight-hour, four-hour, and peak-hour warrants, unless otherwise indicated.
[3]Based on 24-hour counts taken by ITD on weekdays on June 1, 2016 (Park) and May 14, 2015 (Railroad-Lenora)
[4]Signal warrants only reviewed when the minor street approach is LOS "D" or worse.
[5]Based on extrapolating peak hour turning volumes to daily counts using volume profiles from ITD daily counts.
[6]Eight-hour and four-hour warrants are met.

The results of this analysis show that under the most aggressive measures to encourage use of the bypass for all through traffic that:

- The short-term need for a traffic signal at the Railroad Avenue-Lenora Street/3rd Street intersection will persist; though it may be temporarily alleviated at the Park Street/3rd Street intersection.
- A signal may be warranted at the Lake Street/Boydstun Street intersection in the future during both the peak and off-peak seasons.

These findings are dependent on 20% of traffic on SH 55 south of Colorado Street rerouting onto the bypass. An origin-destination study and detailed analysis should be completed to better estimate the



LEGEND

Existing Peak Season/Future Peak Season/Future Off-Peak Season

- Negative (-) numbers indicate locations where trips were re-routed to use bypass instead
- Positive numbers indicate locations where re-routed trips were added, using the bypass

SH 55 Bypass Re-routed Trips
McCall, Idaho

Figure
9

H:\19\19638 - McCall Comprehensive Plan\dwgs\figs\19638_Existing_Traffic_Operations.dwg Aug 23, 2017 - 8:56am - jmarkosian Layout Tab: Bypass Re-routed Trips

potential for additional traffic to be routed onto the bypass before any complex measures are implemented.

Recommendations

Given these findings and the desire to manage demand through downtown McCall, particularly heavy truck traffic, we recommend the following incremental approach:

- Work with ITD to sign the Deinhard Lane-Boydstun Street connection as an alternate freight route during the summer.
  - Prior to implementing this, evaluate the curb radii at the southwest corner of the 3rd Street/Deinhard Lane intersection to determine if modifications may be warranted.
  - Engage the freight community to make them aware of the impending change.
  - Evaluate the effectiveness of the signed alternate route through before and after counts using either City or ITD counting equipment and interviews with the freight community.
- Depending on the results of the first step and an origin-destination study, evaluate options for enhancing the use of the bypass through:
  - Intersection improvements and signing at 3rd Street/Deinhard Lane and Boydstun Sreet/Lake Street.
  - Designating the bypass as SH 55 and taking over 3rd Street and Lake Street from Deinhard Lane to Boydstun Street.

4.5 Pine Street/Roosevelt Street Intersection

City staff noted they have received complaints about the all-way stop-control present at the Pine Street/Roosevelt Street intersection (Figure 10). The primary concern has been that the westbound approach (i.e., on Railroad Avenue heading toward downtown) can become slick in the winter, making it difficult to stop for the stop sign.

Figure 10 Pine Street/Roosevelt Street Intersection

The project team has reviewed the information available for this plan at this

intersection. This includes off-peak volumes collected by the City and aerial imagery. Based on this review, further study should be undertaken before a decision is made regarding removing stop signs from Railroad Avenue. A future engineering study of this intersection should include:

- Reviewing sight distance on all approaches. The intersection sight distance for vehicles turning from Roosevelt Street onto Pine Street may be limited by vertical and horizontal curves to the east, as well as trees and other vegetation.
- Reviewing summertime peak volumes against the warrants contained in Section 2B.07 in the Manual on Uniform Traffic Control Devices (MUTCD, Reference 4).
- Consideration of potential impacts to people walking and biking across the intersection.

4.6 Southeast McCall Connections

There is currently a gap in connections from the 3rd Street area to the Spring Mountain Boulevard area between Wooley Avenue and Deinhard Lane. City staff has identified the following as possible connections:

- Extending Floyde Street to intersect with Spring Mountain Boulevard across from Woodlands Drive (identified in the current comprehensive plan)
- Extending Samson Trail to intersect with Spring Mountain Boulevard across from Woodlands Drive, which would also require improving and re-opening existing portions of the road

4.7 Southeast McCall Connections

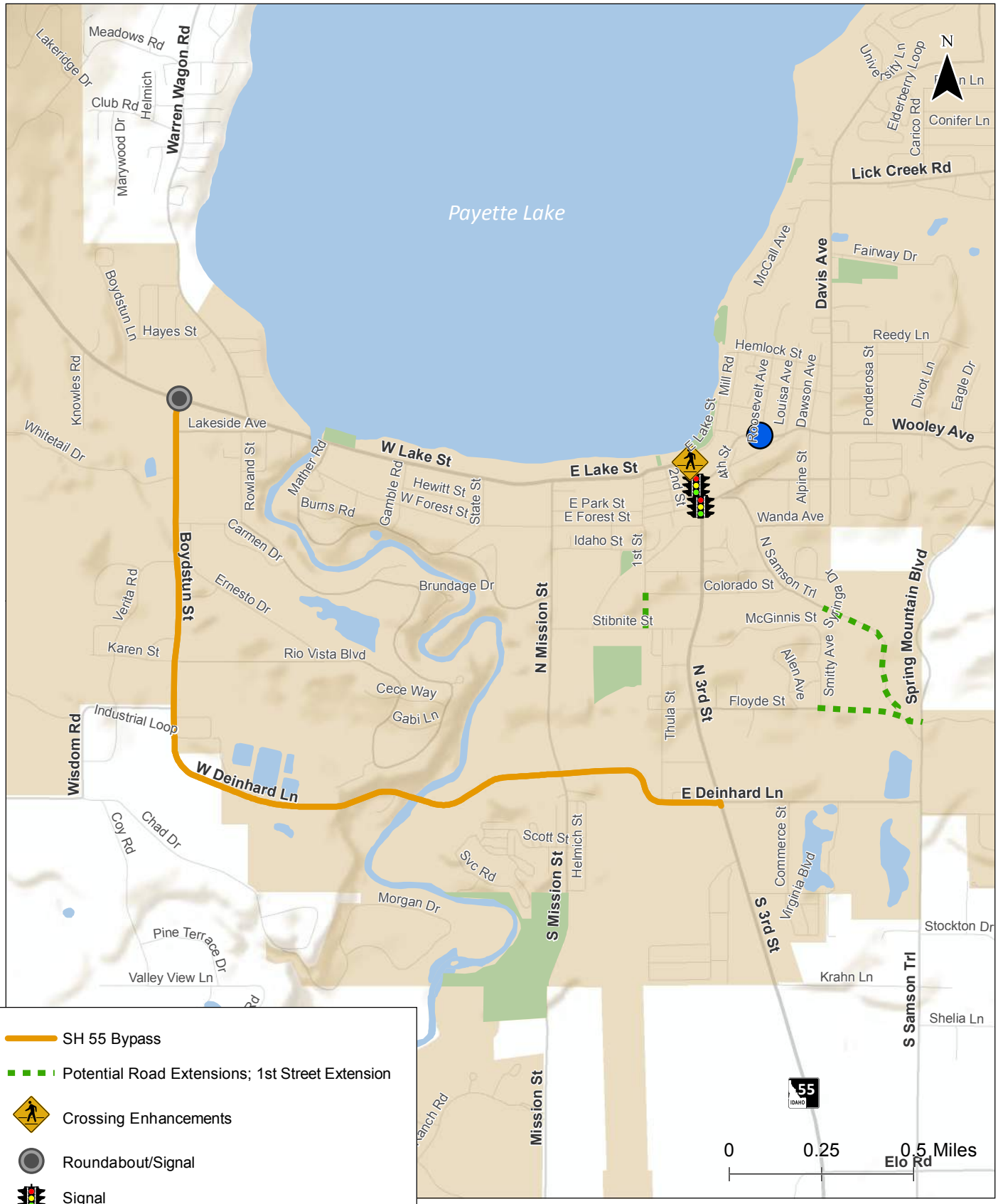
1st Street currently has a southern terminus at Colorado Street. Feedback received from the public requested the City consider extending 1st Street from Colorado Street to Stibnite Street. This extension (via Thula Street) would provide another option for people to travel from Deinhard Lane to Lake Street and downtown McCall without using 3rd Street. This extension would require obtaining privately owned right-of way, so potentially affected landowners would need to be engaged in further discussions of this possible extension.

4.8 Roadway Project Summary

In conclusion, the following roadway projects are recommended, as described above and shown in Figure 11:

- Install traffic signals at 3rd Street/Railroad Avenue-Lenora Street and 3rd Street/Park Street
    - An engineering study will be required before the signals are approved by ITD
    - The Railroad Avenue-Lenora Street is the highest priority

- Work with ITD to implement improved pedestrian crossings and streetscape enhancements at the 3rd Street/Lake Street intersection
    - Also investigate treatments to further enforce the existing right-out only movement form Lake Street onto SH 55 at this intersection
- Plan for a roundabout at the Boydstun Street/Lake Street intersection
    - A traffic signal may be an alternative option if a roundabout is not feasible or desirable
- Incrementally enhance the Deinhard Lane-Boydstun Street connection as a bypass to SH 55 through McCall
    - Evaluate the effectiveness of treatments at each step before moving forward with the next one
- Evaluate whether the stop signs on Pine Street at Roosevelt Street are warranted or desirable through further engineering study of sight distance, summertime volumes, and pedestrian/bicycle impacts
- Provide an additional connection from the central part of McCall to Spring Mountain Boulevard via either:
    - Extending Floyde Street to intersect with Spring Mountain Boulevard across from Woodlands Drive (identified in the current comprehensive plan)
    - Extending Samson Trail to intersect with Spring Mountain Boulevard across from Woodlands Drive, which would also require improving and re-opening existing portions of the road
- Explore extending 1st Street from Colorado Street to Stibnite Street.



Proposed Roadway Projects McCall, Idaho

Figure 11

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KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Data Source: City of McCall, Topo Data Sources: Esri, USGS, NOAA

5.0 PARKING STRATEGIES

Similar to traffic volumes, parking demand fluctuates seasonally in McCall. City staff observed parking demand during the off-peak and summertime peak seasons, as document in Technical Memorandum #1. The following are key findings from an analysis of these observations, including demand projections through the year 2036:

- **Off-peak season:**
  - There is expected to be adequate parking capacity in downtown McCall through the year 2036 in downtown McCall, including in all zones and parking space types (i.e., public, private, on-street, and off-street).
- **Summertime peak season:**
  - Parking demand is projected to be below the overall supply through the year 2036, but will exceed the desirable capacity target of 85% utilization during the highest times of demand (i.e., 93% on midday Saturday). Additionally, some parking areas near the waterfront already reach capacity under existing conditions.
    - Approximately 170 additional parking spaces would be needed in downtown McCall by the year 2036 to maintain a utilization of 85% or less during times of peak demand, which is consistent with the 2009 Downtown Parking Study (Reference 5), which estimated about 114-240 spaces would be needed in 20 years.
  - Demand is forecast to exceed capacity in certain areas (e.g., near Legacy Park, along and east of 3rd Street) by the year 2026.

Given these findings, it is recommended that the City: 1) manage demand to ensure efficient use of the existing parking supply; and 2) look for opportunities to increase parking supply in and/or near downtown. The highest priority should be given to managing demand to ensure existing supply is efficiently used, since it is projected to provide adequate overall capacity for most time periods. Further, focusing on management strategies should help avoid overbuilding parking capacity that will only be used for a limited time throughout the year and allow downtown land to be used more productively.

5.1 Parking Management Strategies

The following are general strategies the City should consider as it looks to manage the use of its parking supply. These strategies are taken from the 2009 Downtown Parking Master Plan, a review of strategies in other resort towns, and our own experience with parking management. More detailed information on these strategies and a list of accomplishments since the 2009 plan are included in Attachment "E." They should be further evaluated and prioritized as part of a holistic parking management plan.

- Code changes to reduce private parking requirements in exchange for fees to be used for parking management/supply
- Implementing paid parking to encourage turnover
    - Some resort jurisdictions exempt year-round residents
- Increasing wayfinding signage for existing public parking lots
- Clarifying public parking within the Timbercrest garage
- Identify areas for snow storage or other snow removal strategies to minimize wintertime parking supply impacts
- Manage boat and snowmobile trailer parking
- Provide more options for traveling to and within downtown including:
    - Expanding the existing downtown sidewalk network
    - Providing additional bikeways and walkways to downtown
    - Providing adequate bicycle parking throughout downtown
    - Enhancing transit service to and within downtown (also see the Transit section of this memo)
- Enforcement strategies to ensure compliance with turnover goals
- Using technology to improve the efficient of use of existing parking supply
- Monitoring use of parking supply and adapting strategies, as necessary
- Working with downtown businesses to encourage employee parking in less utilized locations
- Providing for electric vehicle charging stations, including potential public locations and potential requirements for private development to provide them

5.2 Parking Capacity Expansion

The City has reduced private parking requirements in downtown McCall in order to enhance development opportunities. Walkability in downtown is also a key priority. Given these priorities, options the City could consider for increasing parking capacity include:

- Fully develop existing public lots and on-street parking
- Look for opportunities to provide structured parking to reduce the amount of land that parking occupies
- Co-locating public parking (lots or structures) with private development may be a cost-effective approach that is also compatible with surrounding land-uses

- Provide parking outside the downtown core that is either within walking distance of downtown or can be served by a shuttle service during peak periods
- Identify shared parking opportunities with businesses that have open parking during weekend or evening peak periods

6.0 PATHWAYS, SIDEWALKS, AND BIKE LANES

The McCall Area Pathways Master Plan (Reference 6) outlines a vision for future pathways, sidewalks, and bike lanes within the City. Since the plan was adopted, the following projects have been completed:

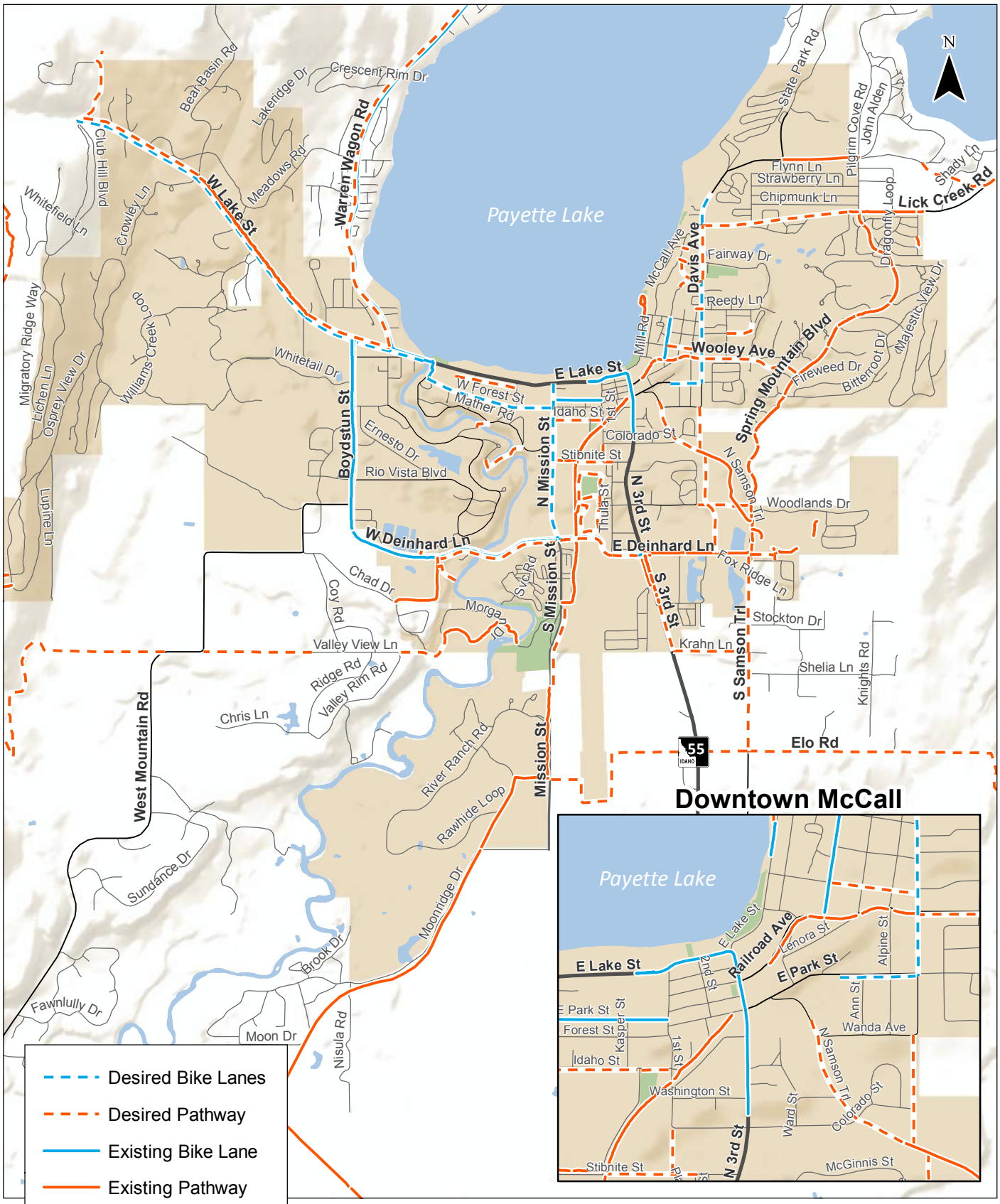
- Bike lanes were striped on 3rd Street and Lake Street from Colorado Street to west of 1st Street.
- The Bear Basin Trail Connection created a shared-use path paralleling SH 55 from Zachary Road to approximately 100 feet south of Bear Basin Road.
- Shared lane markings were added to Lake Street between Fir Street and McCall Avenue.

In addition, the McCall Downtown Master Plan refined recommendations in the downtown core, including replacing the desired bike lanes on Lenora Street with shared lane markings and adding shared lane markings to Park Street and 2nd Street.

Based on the additional analysis as part of this project, the following are recommended:

- Pedestrian facilities along Park Street-Thompson Avenue from Samson Trail to Davis Avenue. This is consistent with the upgrade of this road to a Minor Collector.
- A pathway from SH 55 to the Bear Basin Trailhead.
- Look for opportunities to add shared-use paths, instead of bike lanes in the following locations if right-of-way and utility constraints can be overcome:
    - Lake Street: from the Lardo Bridge to the Bear Basin Connector Trail
    - Davis Avenue: from Wanda Avenue to Ponderosa State Park
    - Mission Street: from Idaho Street to Lake Street
- Connect Rio Vista Boulevard to Mather Road via a non-motorized bridge over the Payette River

The updated planned network is shown in Figure 12 and Figure 13.



Planned Bikeway Network
McCall, Idaho

Figure
12

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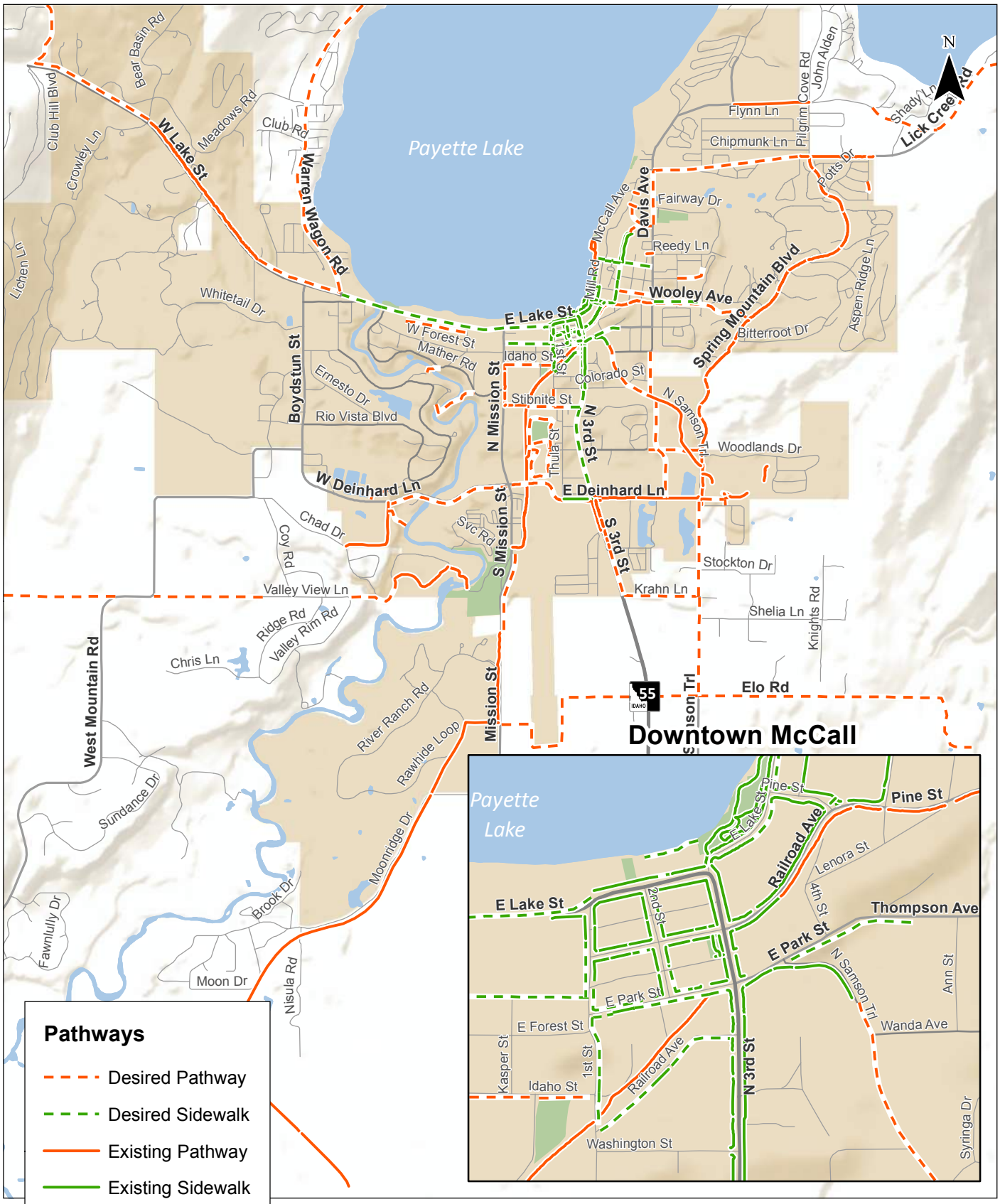
KITTELSON & ASSOCIATES

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Data Source: City of McCall, Topo Data Sources: Esri, USGS, NOAA



Planned Walkway Network
McCall, Idaho

Figure
13

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Kittelson & Associates, Inc.
Transportation Engineering/Planning

Coordinate System: NAD 1983 StatePlane Idaho West FIPS 1103 Feet
Data Source: City of McCall, Topo Data Sources: Esri, USGS, NOAA

If the shared-use paths listed above are determined to not be feasible, but a bike lane or shoulder could be provided, then consideration should be given to providing some type of physical buffer that allows for drainage to function as exists, such as extruded curbing or plastics posts or bollards, to create a more comfortable walking environment. These treatments could be put in as permanent or temporary (i.e., removed before snow falls). If curbing, or another low-height treatment, is installed on a permanent basis, the City may want to consider installing snow markers on them during the winter.

Extruded curb and flexpost separated walkway sections on Hill Road (Boise, ID) ***Images Source: Google Streetview***

Providing such a walkway could also be an interim solution for 3rd Street, south of Colorado Street, until sidewalks or a pathway are built. Coordination with ITD would be required prior to installing any barrier type along 3rd Street. To this end, a study should be completed of this section of 3rd Street that further evaluates what treatments may be feasible to enhance the walking, biking, and streetscape environments.

6.1 Downtown Snow Removal and Landscaping Maintenance

Current City code requires that adjacent property owners clear snow from sidewalks and maintain landscaping planted in the buffer space between the sidewalk and the roadway. Some concern about these requirements in downtown has been expressed by City staff and downtown landowners and business owners, including:

- Timing for when sidewalks are cleared and streets are cleared
- Snow removed from sidewalks is often placed into the roadway which creates a problem when the streets have already been plowed
- Maintaining infrastructure to monitor landscaping irrigation water usage for each downtown parcel
- Consistent maintenance of landscaping, streetscape amenities, and supporting infrastructure (e.g., power outlets)

One possible solution to these issues is for the City to assume responsibility for maintaining downtown sidewalks and landscaping. This would provide for consistent maintenance practices and simplify enforcement efforts. Taking on this additional responsibility would have a fiscal impact, so

the City should work with downtown landowners and business owners to evaluate financial models for how this would work. Another option to explore would include having a downtown business association assume responsibility for the maintenance.

Examples from Other Cities

Examples of alternative approaches from other winter cities include:

- Having a business association or business improvement district (BID) take responsibility for snow removal.
  - This model is used in Bend, Oregon; Anchorage, Alaska; and Boston, Massachusetts. The Downtown Bend Business Association (DBBA), also loans out snow shovels to downtown businesses, which are responsible for shoveling out their storefronts and curb accesses (the DBBA focuses on clearing the main walkway section of the sidewalk)
- A public agency takes responsibility for snow removal
  - Jackson, Wyoming hires a contractor for downtown sidewalk snow removal

The Cities of Sandpoint and Ketchum, Idaho both require adjacent property owners to clear their sidewalks, similar to McCall.

7.0 CITY MAINTENANCE CAPACITY AND FACILITY NEEDS

As McCall adapts to its growing tourist-based economy, the City's Streets Department faces new challenges for maintaining the City's transportation infrastructure. Over the past 15 years, the City's roadway lane miles have grown with new residential developments and new multimodal features have been constructed along existing roadways. In addition to this growth in the system, a number of other factors contribute to increasing maintenance needs:

1. *Substandard Construction and Deferred Maintenance*: Many of the City's original roads were built with unsuitable local materials or simply built in place without importing proper aggregates and pavement required for McCall's harsh climate and increasing traffic loads. On many streets, proper subgrade and sub-base materials do not exist. Compounding this issue, the majority of the City's paved roadways have not received the necessary routine, preventative and restorative maintenance needed to keep them in an efficient state of repair. Years of deferred maintenance has resulted in a large number of lane miles, including many of the City's high use roads, that are now in need of complete reconstruction.
2. *Lack of Stormwater Management:* Many of the City's roads were originally constructed with roadside swales and driveway culverts. Over time, encroachment by property owners and lack of maintenance (both private and public) has led to swales being filled in and culverts being buried. The result is insufficient drainage, which leads to ponding and saturation of road

structural sections. This leads to premature roadway degradation, but also can cause more serious problems. Localized flooding (especially during spring snow melt) can cause significant property damage and create challenges for emergency services when roads become impassible.

3. *Urban multimodal facilities*: To address the community's desire for high quality pedestrian and bicycle facilities, new sidewalks, pathways, street lights, and landscaping projects have been implemented and are planned in the near future. These facilities require maintenance to ensure storm drains are cleaned, snow is cleared, street trees grow, and street lights stay on. For example, in the downtown core, all snow is hauled to select storage areas, which requires manpower and equipment. Consistent snow removal also increases wear and tear on these facilities. Pavement surfaces and curb and gutters can be damaged by private and public snow plows. Structures within the sidewalks (tree grates, light poles, ADA ramps, etc.) can be impacted when they are buried in snow and difficult to locate.
4. *Snow gate technology*: In 2014, the City, in response to citizen complaints regarding driveway snow berms, implemented snow gate technology on select equipment. Snow gates allow plow operators to briefly hold back snow within the plow to minimize driveway berms. According to City staff, their use does require that operators reduce operating speeds by more than 50% over traditional plows. Not all of the City's equipment has snow gates, so only select areas of the City do receive this treatment.
5. *Limited Maintenance Seasons:* McCall's climate limits the number of days in which the Streets Department can conduct roadway maintenance. Typically, new asphalt can only be installed between June 1 and October 1 due to lack of availability (from local asphalt plants) and required warm temperatures needed for proper placement. During the shoulder seasons (March-May and October-November) staff must balance between preparing equipment and streets for snow plowing vs. continuing with construction season maintenance projects.

One major step forward in addressing funding and maintenance needs has been the City's adoption of the Streets Local Option Tax (Streets LOT), which will increase the City's investment in its streets by more than 300%, according to City staff. Increased funding will allow for the implementation of the MIP and CIP, described in Technical Memorandum #3 prepared by Horrocks Engineers, which list significant improvement projects that will be funded and completed by hired contractors.

However, according to City staff, the Streets Department's workload has also increased threefold. In-house summer and winter maintenance responsibilities will continue to grow as the City strategizes on how to efficiently and cost effectively implement maintenance to meet management goals (i.e., average roadway remaining service life (RSL) of 12-15 years). It is understood that current labor and equipment resources are not at levels necessary to ensure all required maintenance is completed on all roadways throughout the network. Ultimately, enhanced staff and resources (equipment and facilities) will be required to increase maintenance productivity to the levels the City's transportation infrastructure will require over the next 10 to 20 years.

Identifying appropriate staffing levels, equipment and support facilities will occur through thorough analysis and fiscal planning. The City has allocated funding in the fiscal year (FY) 2018 budget to complete a Streets Department and Facility Needs Assessment. The goals of this assessment include determining the appropriate physical and fiscal needs for:

- *Heavy Equipment*: identifying necessary maintenance and snow removal equipment to complete required activities, specifically additional equipment needed to face current challenges (i.e., stormwater drainage and snow removal)
- *Maintenance Facilities:* evaluation of the City's current facilities (offices, equipment storage, mechanics, materials stockyards, dust abatement equipment, snow storage areas) to determine future needs
- *Funding Depreciation*: identifying annual funding investment needed for sustaining equipment leasing and/or replacement over time.
- *Street Crew Staff Levels*: determining the appropriate staff levels required to complete the workload requirements so that proper maintenance can be implemented in a timely manner.
- *Administrative Staff Levels*: assessing necessary administrative, project management and support staff necessary to oversee and inspect CIP and MIP projects.
- *Implementation Schedule*: developing a facilities and staff implementation schedule will guide the Department and the City Council on allocating necessary funding levels over time as part of the City annual budget development.

8.0 TRANSIT

Public transportation in McCall provides mobility for year-round residents and helps manage travel demand during the summertime and other peak periods. Opportunities to enhance public transportation in McCall have been developed based on a review of previous plans (i.e., the current McCall Comprehensive Plan, the 2013 Multimodal Transit Center Location Analysis (Reference 7)), input received from the public, a review of transit service strategies in other resort towns (e.g., Ketchum, Sandpoint, and Victor/Driggs, Idaho; Mammoth and Truckee, CA; Sisters, OR; Park City, UT; and Whitefish, MT), and our own experience with transit planning. These opportunities include:

- Develop the transportation hub planned for the southwest corner of the 2nd Street/Park Street intersection
- Better publicize transit schedules
    - Examples of how this could be accomplished include posting schedules at more stops, partnering with businesses to advertise the service, and using a bus tracker app
- Increase route frequency

  - Reducing current hour headways to 30 minutes could make the service more attractive to potential riders
  - For cost-efficiency purposes, the increased service could be limited to the summertime and other peak periods (several of the reviewed cities provide additional frequency, routes, and/or service hours during their peak seasons)
- Evaluate providing transit service along Spring Mountain Boulevard instead of looping back on Strawberry Lane
  - This could possibly be a summertime only change
- Evaluate a summertime loop that is more compact (e.g., focuses on the 3rd Street-Lake Street corridor between Deinhard Lane and Rotary Park and adjacent areas) and therefore able to provide greater frequencies for circulation in and around downtown
  - This should be coordinated with the parking management plan
  - The current extra service provided for Winter Carnival could be a starting point for a model of how extra summer service may look
- Coordinate Red Line service within McCall with the Green Line route to Cascade to better help residents who need to access the County offices or other services along the route, as well as to help inbound visitors reach their ultimate destination within McCall
- Bike share is emerging as a popular form of public transportation. To date, its deployment is primarily in larger cities; though Hailey and Ketchum, Idaho do have a bike share system. Further investigation would be needed to determine the economic feasibility of such a program (partnerships with businesses would be important to its success)
  - Social Bicycles and Zagster both provide bike share systems that do not rely on docking stations and are therefore more flexible with how they are implemented
  - This would also need to be coordinated with a parking management plan

Idaho does not have a dedicated source of public transportation funding. Some potential creative ways to cost effectively implement the above improvements could include:

- Partnering with businesses for funding service (e.g., through voluntary donations, advertising, fees paid in lieu of parking)
- Partnering with other transportation providers to share equipment (e.g., private organizations with buses or vans that are not always in use, the McCall-Donnelly School District)

9.0 NEXT STEPS

This memorandum has been reviewed with the City staff and with the public in April 2017. It has been revised based on feedback received from staff and the public. The recommendations from this memo will be incorporated into the Transportation Master Plan.

10.0 REFERENCES

1. City of McCall. *McCall Downtown Master Plan*. Adopted December 2013.
2. Harmony Design & Engineering. *Business Park Planning & Design Charrette: Conclusions, Recommendations and Framework Plan*. February 2010.
3. Idaho Transportation Department. *McCall Alternate Route, Environmental Assessment*. September 2006.
4. US Department of Transportation. *Manual on Uniform Traffic Control Devices, 2009 Edition.* May 2012.
5. DESMAN Associates. *City of McCall Downtown Parking Study & Needs Assessment.* November 2009.
6. Harmony Design & Engineering. *McCall Area Pathways Master Plan*. Adopted May 2012.
7. City of McCall. *Multimodal Transit Center Location Analysis*. January 2013.

Attachment A Functional Classification Information Table

City of McCall Transportation Master Plan Roadway Functional Classifications							
Road Name	From	To	Mileage	% City Road Network	Existing Year 2016 AADT (veh)	Projected Year 2040 AADT (veh)	Projected Over Capacity?
Principal Arterial							
3rd Street, Lake Street, HWY 55	Krahn Street	Club Hill Boulevard	4.6	2.71%	3,920 - 11,530	14,120 - 19,830	Yes*
Minor Arterial							
W Deinhard Lane	3rd Street	Boydstun Street	1.6	0.94%	2,610 - 4,100	4,490 - 7,050	No
Boydstun St	W Deinhard Street	W Lake Street	0.9	0.53%	2,180 - 2,610	3,750 - 4,490	No
Major Collector							
Davis Avenue	Wooley Avenue	Lick Creek Road	0.7	0.41%	1,670 - 2,280	2,870 - 3,920	No
E Deinhard Lane	3rd Street	Samson Trail	0.5	0.29%	2,670 - 4,920	4,590 - 8,460	No
Lick Creek Road	Davis Avenue	Pilgrim Cove Road	0.9	0.53%	1,340	2,300	No
N Mission Street	Lake Street	Deinhard Lane	0.8	0.47%	1,310 - 1,570	2,250 - 2,700	No
S Mission Street	Deinhard Lane	Riverfront Park	0.6	0.35%	1,820	3,130	No
Pine Street	Railroad Avenue	Louisa Street	0.1	0.06%	n/a	n/a	No
Railroad Avenue	3rd Street	Pine Street	0.2	0.12%	3,430	5,900	No
N Samson Trail	Deinhard Lane	Woodlands Drive	0.2	0.12%	1,650	2,840	No
Spring Mountain Boulevard	Woodlands Drive	Lick Creek Road	2.2	1.29%	870	1,500	No
Warren Wagon Road	Lake Street	Quaker Hill Conference Center	0.6	0.35%	1,620 - 1,780	2,790 - 3,060	No
Wooley Avenue	Louisa Street	Spring Mountain Boulevard	0.6	0.35%	1,650	2,840	No
Minor Collector							
1st Street	Lake Street	Colorado Street	0.3	0.18%	650	1,120	No
2nd Street	Lake Street	Park Street	0.1	0.06%	1,060	1,820	No
Colorado Street	1st Street	N Samson Trail	0.4	0.24%	n/a	n/a	No
Davis Avenue	Wanda Avenue	Wooley Avenue	0.3	0.18%	n/a	n/a	No
E Lake Street	3rd Street	Fir Street	0.2	0.12%	n/a	n/a	No
Floyde Street	3rd Street	Smitty Avenue	0.3	0.18%	n/a	n/a	No
W Forrest Street	Mather Road	Mission Street	0.7	0.41%	940	1,620	No
Hemlock Street	Lake Street	Davis Avenue	0.3	0.18%	n/a	n/a	No
Lakeside Avenue	Boydstun Street	Lake Street	0.3	0.18%	n/a	n/a	No
Lenora Street	1st Street	3rd Street	0.1	0.06%	n/a	n/a	No
Mather Road	Lake Street	Mission Street	1.1	0.65%	n/a	n/a	No
Park Street	Mission Street	Thompson Avenue	0.6	0.35%	1,760	3,850	No
Pine Street	Lake Street	Railroad Avenue	0.06	0.04%	n/a	n/a	No
Reedy Lane	Davis Avenue	McCall Golf Club	0.3	0.18%	n/a	n/a	No
Rio Vista Boulevard	Boydstun Street	Pinedale Street	2.1	1.24%	n/a	n/a	No
Roosevelet Avenue	Hemlock Street	Pine Street	0.2	0.12%	780	1,340	No
Rowland Street	Lake Street	Pinedale Street	0.2	0.12%	n/a	n/a	No
N Samson Trail	Colorado Street	Park Street	0.3	0.18%	n/a	n/a	No
Stibnite Street	Mission Street	3rd Street	0.4	0.24%	740	1,270	No
Thompson Avenue	Park Street	Davis Avenue	0.2	0.12%	1,480	2,250	No
Wanda Avenue	Samson Trail	Davis Avenue	0.2	0.12%	n/a	n/a	No

*N 3rd Street and E Lake Street are projected to experience LOS E-F during the peak season (summertime) and only N 3rd Street is projected to experience LOS E-F during off-peak season (non-summertime)

Attachment B Street Sections

Street Sections for Mission, Wooley, Davis, Idaho, and Lake
(Provided by Horrocks Engineers)

Street Sections Public Meetings

The City of McCall hosted public meetings with residents and stakeholders to brainstorm possible design options for five regionally significant streets that have been identified for re-construction in the next 10 years. The purpose of these meetings was to allow the community an opportunity to provide input on the future street section, and identify areas of concern, so that these design considerations can be planned for in the future roadway reconstruction projects for these corridors. The recommended street sections will also serve to guide the right-of-way requirements and pathways planning as future development occurs along these corridors. The five street sections that were discussed at public open houses held on April 19, 2017 and April 20, 2017 were:

- Mission Street between Deinhard Lane and the smokejumper base
- Lake Street between Mather Road and 1st Street
- Idaho Street between Mission Street and 1st Street
- Davis Avenue between Wooley Avenue and Agate Street
- Wooley Avenue between Davis Avenue and Spring Mountain Ranch Boulevard

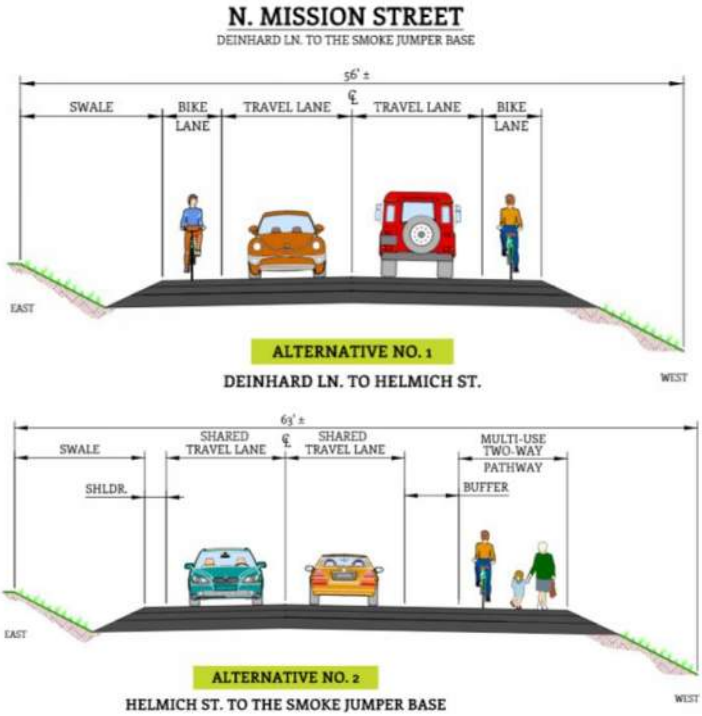
Participants identified general themes, locations of significance, street priorities, and design preferences for each street. The documentation and summaries of the public input received at these meetings can be viewed later in this attachment.

Recommended Street Sections

Each of the streets discussed during the public meetings, held April 19 and 20, 2017, has its own design challenges and individual character. Meeting attendees expressed their ideas and important design priorities of each street, which are summarized below in order of frequency. As a result of the meeting, the consultant team and City staff developed the following recommended street sections. These sections take into consideration various design constraints, such as the existing topography and right-of-way, while still providing accommodations for the many pedestrians and bicyclists that travel these roadways. These recommended street sections should be carried forward for planning purposes. However, these sections may be modified in the future based on topographical, right-of-way, funding or other design constraints that will be evaluated during the design phase of each individual project. The complete findings from each meeting can be viewed later in this attachment.

Mission Street

Approximately 8 people participated in the Mission Street public meeting on April 19, 2017, and provided input on how the street should be designed for the future. It was determined that Mission Street from Deinhard Lane to the smokejumper base has the opportunity for two different roadway sections. It is recommended that the section from Deinhard Lane to Helmich Street include bike lanes. A separated pathway is recommended from Helmich Street to the smokejumper base to connect the existing pathway that ties into Mission Street south of Helmich Street to the existing pathway that was recently constructed south of the smokejumper base. Below are the recommended street sections:

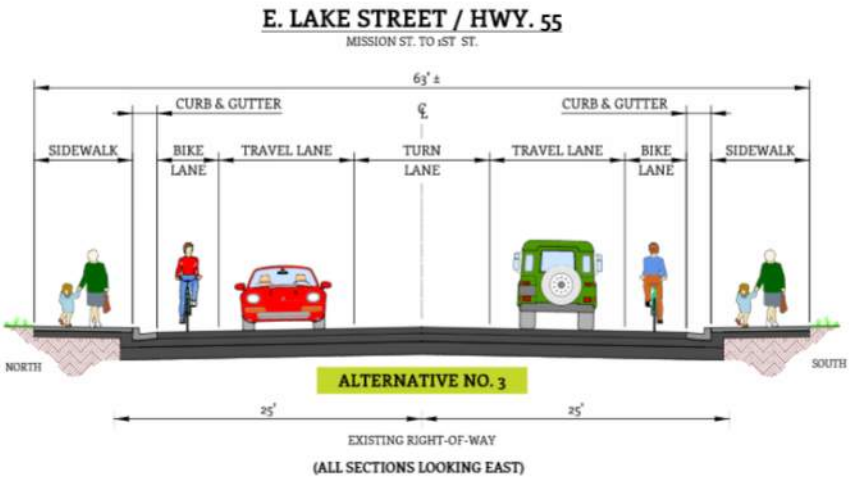


Mission Street Design Priorities: bike lanes, crosswalks/crossings, multi-use pathway, stormwater/drainage, signage, visibility, snow removal/storage, driveway access

Lake Street

Approximately 7 people participated in the Lake Street public meeting on April 19, 2017, and provided input on how the street should be designed for the future. Lake Street is under the jurisdiction of the Idaho Transportation Department, therefore all future design efforts will need to be coordinated between the City and ITD. Lake Street/SH-55 has a narrow 50' existing right-of-way with significant development on both the north and south side of the roadway which presents design constraints that were taken into consideration when developing the proposed roadway sections. These design constraints are the reason for the differing sections from Mission Street to 1st Street and Mission Street to Mather Road as shown. Below are the recommended street sections based on these existing constraints as well as the input received at the public meeting:

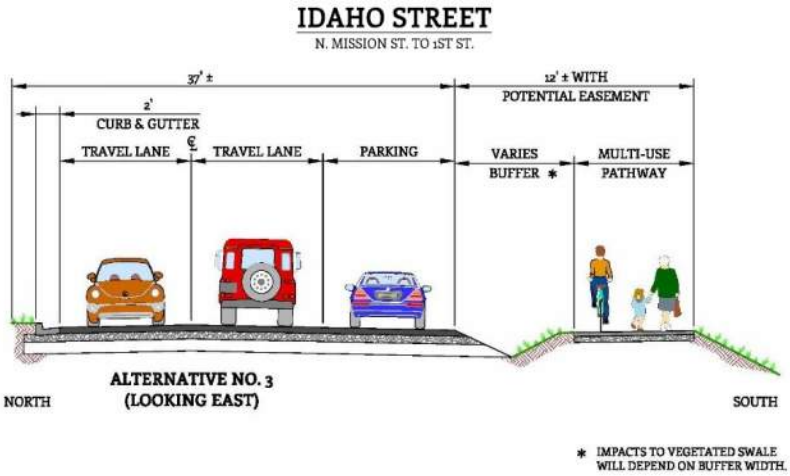
(sidewalk on the north side where possible and separated pathway on the south side where possible)



W. Lake Street and E. Lake Street Design Priorities: bike lanes, sidewalks, multi-use pathway, crosswalk/crossings, stormwater/drainage, snow removal/storage, private property

Idaho Street

Approximately 10 people participated in the Idaho Street public meeting on April 19, 2017, and provided input on how the street should be designed for the future. Based on this input it was determined that the preference was for parking on the south side with curb and gutter from Mission Street to Kasper Street on the north side of the roadway. Below was the recommended street section based on this public input:



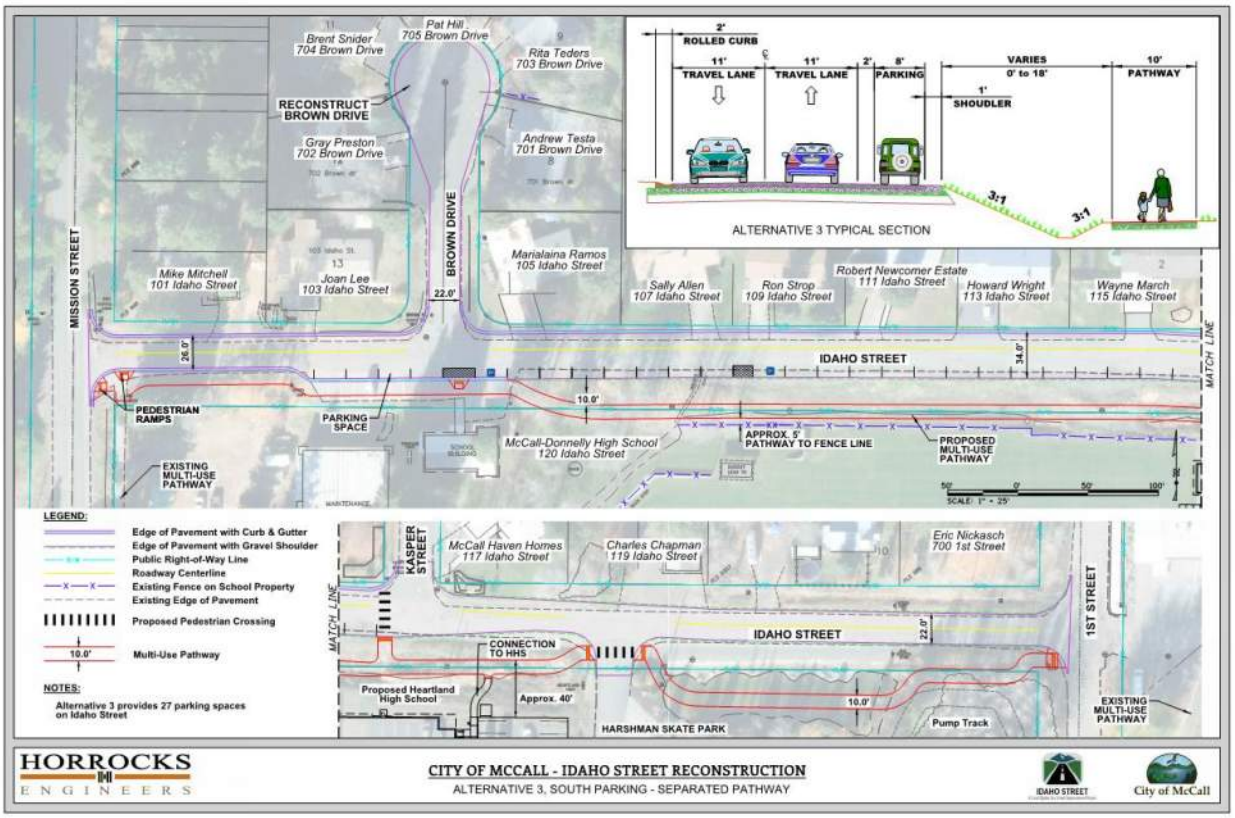
Idaho Street Design Priorities: stormwater/drainage, multi-use pathway, parking, snow removal/storage, driveway access/private property, landscaping, better road surface, slower vehicle speeds

Idaho Street is programmed for construction in 2018, therefore an additional public meeting was held on August 21 to present design alternatives for the project. Three alternatives were presented:

- Alternative 1, parking on the north side,

- Alternative 2, parking on south side with adjacent pathway, and
- Alternative 3, parking on south side with separated pathway.

Based on the input received at the public meeting, and through the on-line survey, Alternative 3 was chosen as the preferred alternative that would be carried forward to design:



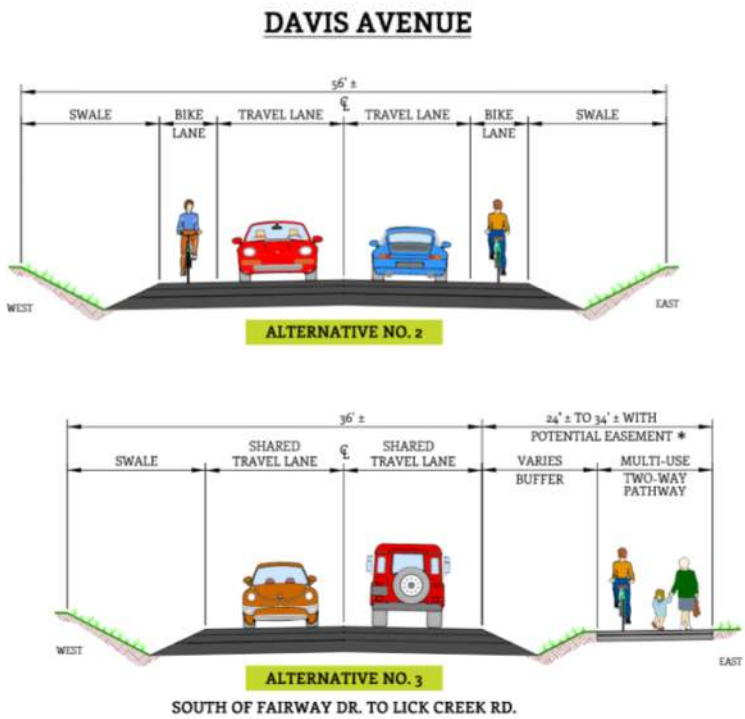
Davis Avenue

Approximately 10 people participated in the Davis Avenue public meeting on April 20, 2017, and provided input on how the street should be designed for the future. There were three subsections of Davis identified based on the varying roadway characteristics within this corridor:

- **SOUTH** (Wooley Ave. to Wanda Ave.) – retain low-volume neighborhood character with no major changes to roadway design
- **MIDDLE** (Wooley Ave. to Lick Creek Rd.) – better accommodate mix of roadways users and better separate pedestrians and less experienced bikers from vehicle traffic
- **NORTH** (Lick Creek Rd. to Agate St.) – prefer pathway to transition to park and open space

Based on the public input it was determined that Davis Avenue, south of Wooley Avenue should maintain the current roadway section with shared travel lanes and no bike lanes. Davis Avenue from Wooley Avenue to Fairway Drive, as well as Davis Avenue from Lick Creek Road to Agate Street, should provide for bike lanes. A pathway was considered from Lick Creek Road to Agate Street based on public

input, however the limited right-of-way will make this difficult. Davis Avenue from Fairway Drive to Lick Creek Road could potentially allow for a separated pathway along the golf course, therefore the preferred roadway section shows a pathway on the east side of the roadway. The preferred roadway sections are shown below:



Davis Avenue Design Priorities: multi-use pathway, snow removal/storage, signage, crosswalk/crossings, bike lanes, safer bus stops, stormwater/drainage, better road surface, wider shoulders, lighting

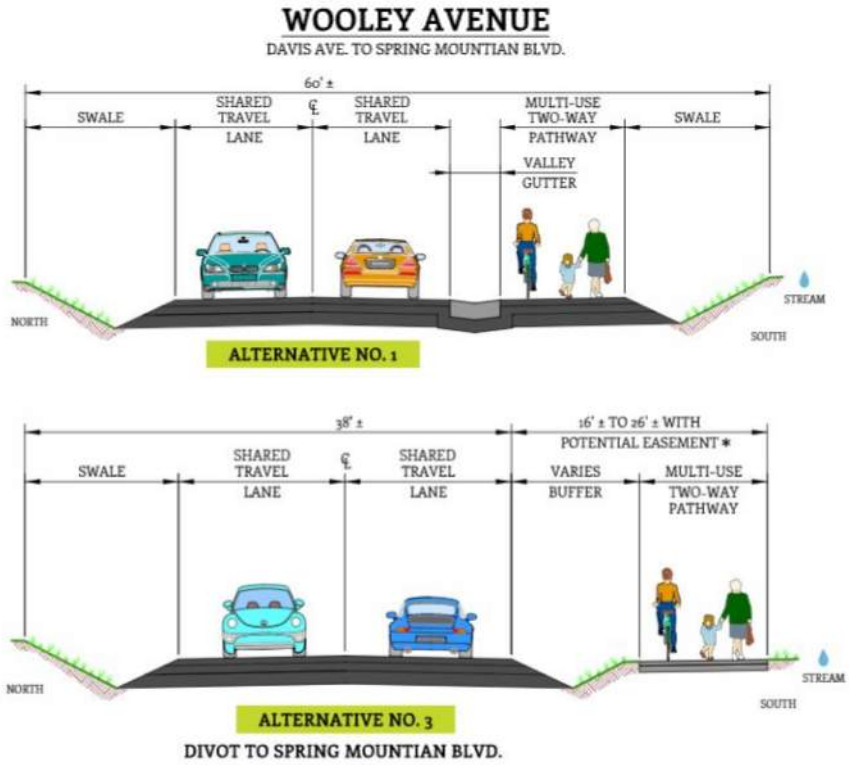
Wooley Avenue

Approximately 12 people participated in the Wooley Avenue public meeting on April 20, 2017, and provided input on how the street should be designed for the future. Highlights from the meeting discussions as well as a review of written feedback shows support and preferences for the following design elements and approaches on Wooley Avenue:

- Participants agreed that Wooley Avenue is a critical bike/ped connection that is heavily used, and better accommodations for these uses should be made.
- Participants were enthusiastic about the idea of a separated pathway wherever possible along Wooley. A “boardwalk style,” separated path was particularly appealing.
- Where a separated pathway is not possible, participants generally liked at least some separation from the vehicle lanes (e.g., valley gutter, bollards, temporary curb, etc.)

Based on the public input, preferred roadway sections were developed for two segments of Wooley Avenue: one segment being from Davis Avenue to Divot Lane and one being Divot Lane to Spring Mountain Ranch Boulevard. The Davis Avenue to Divot Lane segment has limited opportunities for a separated pathway due to the existing development adjacent to the roadway. Therefore, an attached multi-use pathway is shown in this area. However, a separated pathway could potentially be

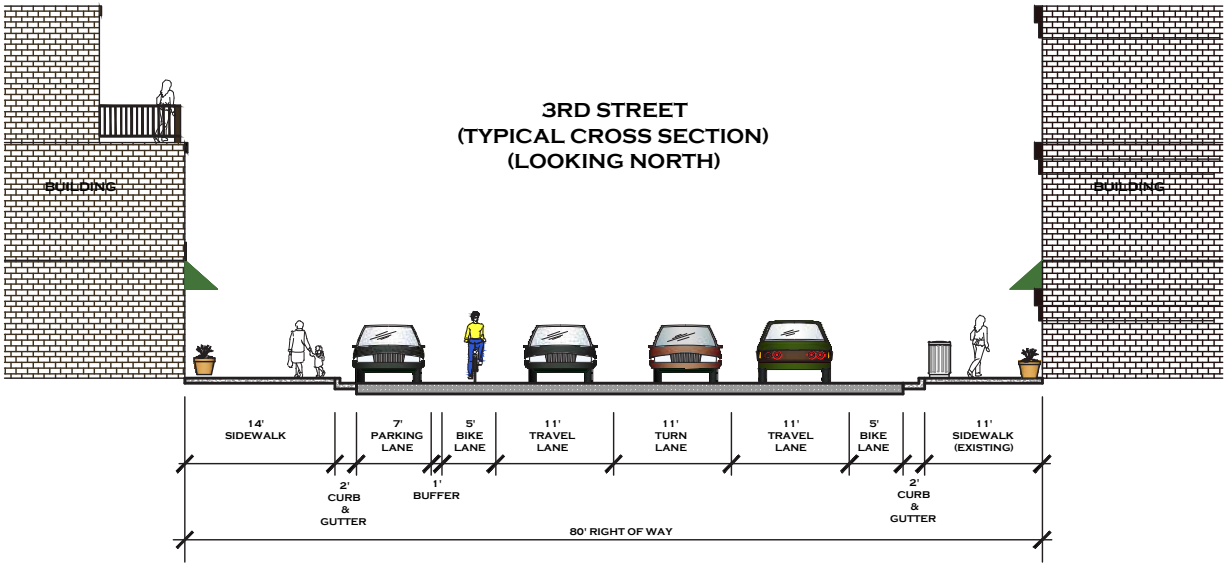
constructed in the wetlands area on the south side of Wooley Avenue between Divot Lane and Spring Mountain Ranch Boulevard. The recommended roadway sections are shown below:

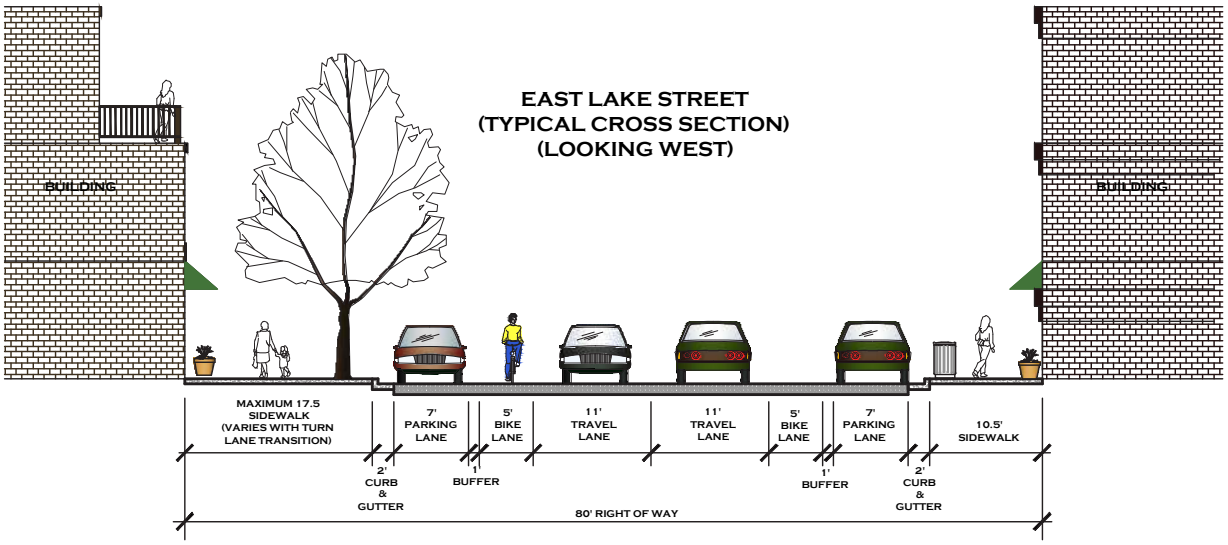


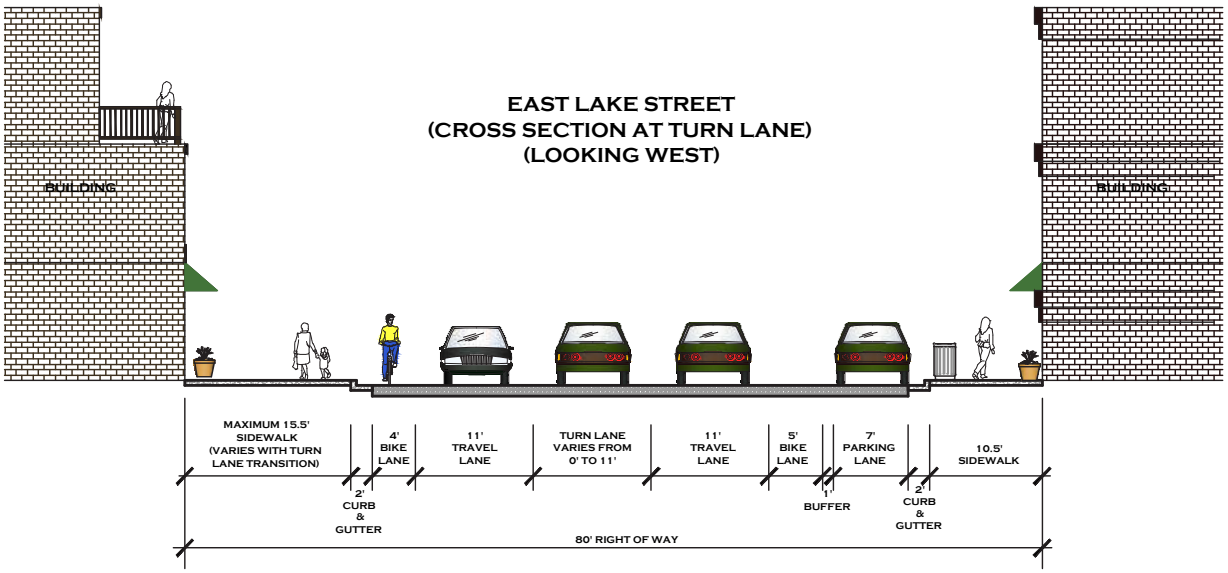
(separated pathway on the south side where possible)

Wooley Avenue Design Priorities: multi-use pathway, stormwater/drainage, bike lanes, crosswalks/crossings, snow removal/storage, sidewalks, slower vehicles, better road surfaces, slower vehicles, driveway access, signage, natural areas, visibility, private property

McCall Downtown Master Plan Street Sections

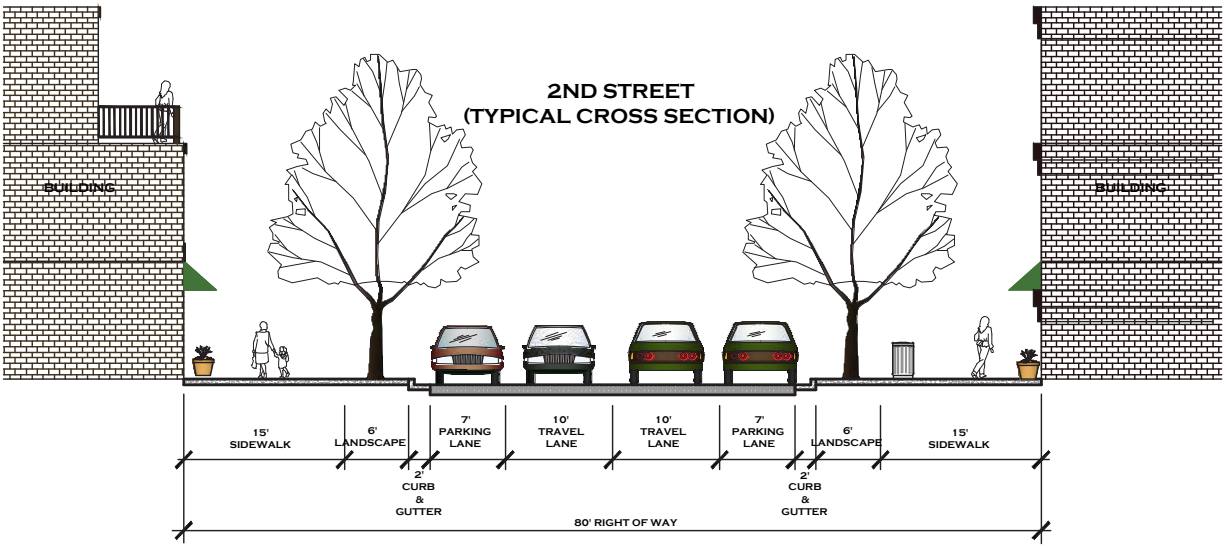






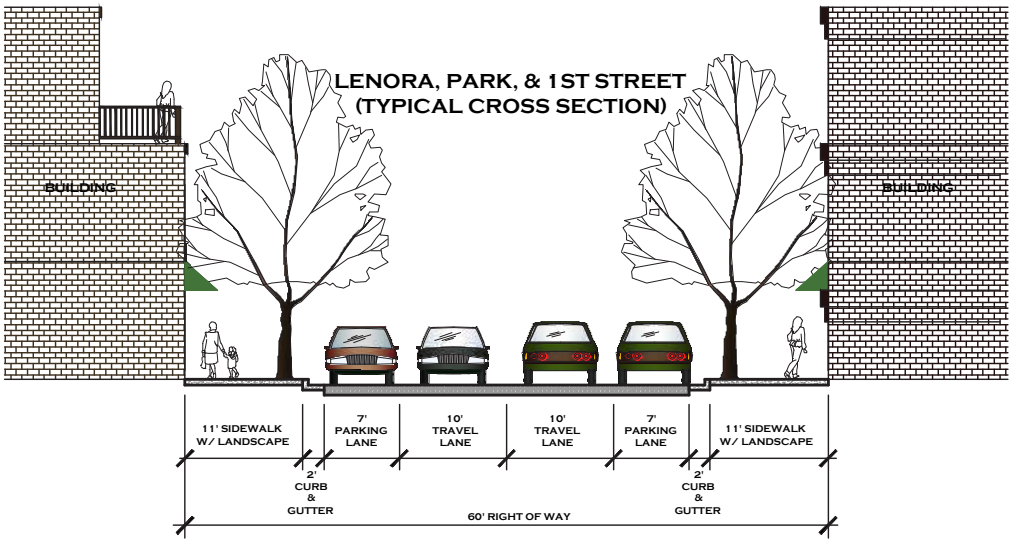
3rd St. and E. Lake St. (Hwy 55) cross section

Second Street concept plan - intersection of Second and Lenora



Second Street cross section

Park Street, Lenora Street and First Street concept plan



Park Street, Lenora Street and First Street cross section

McCall Business Park Street Sections

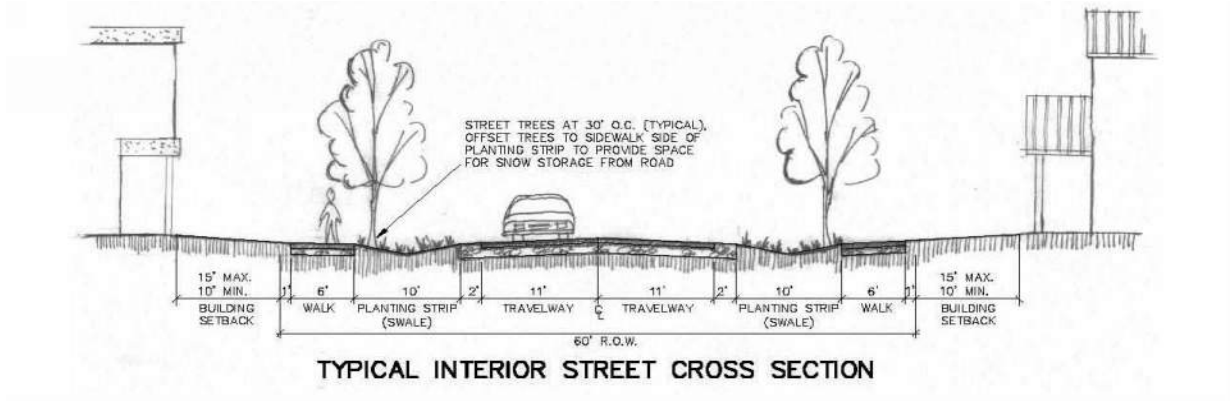


Figure 20: Typical Interior Street Cross Section

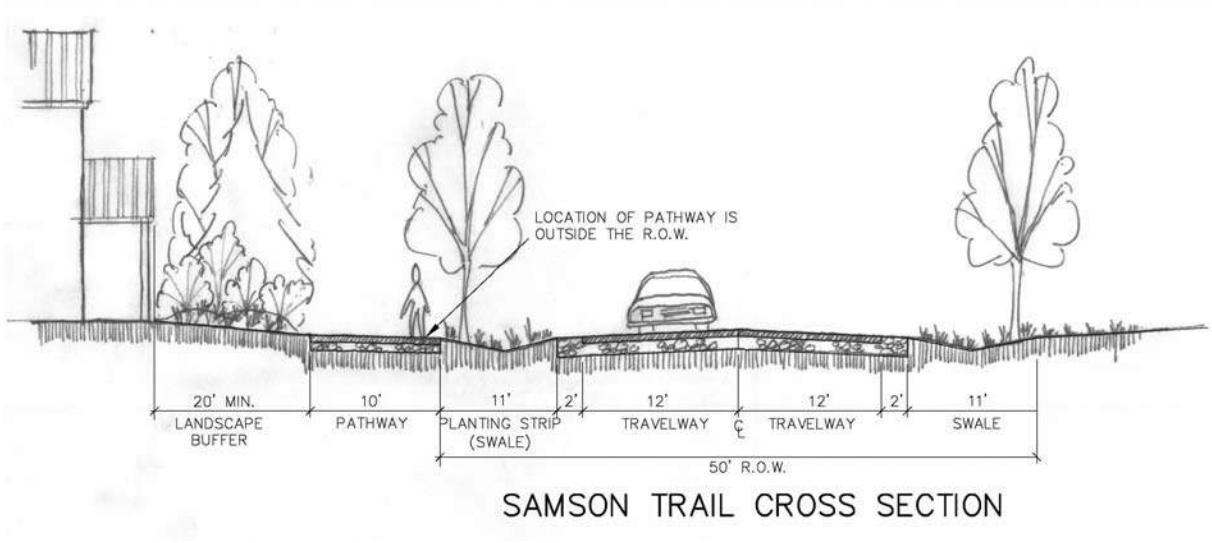


Figure 21: Samson Trail Cross Section

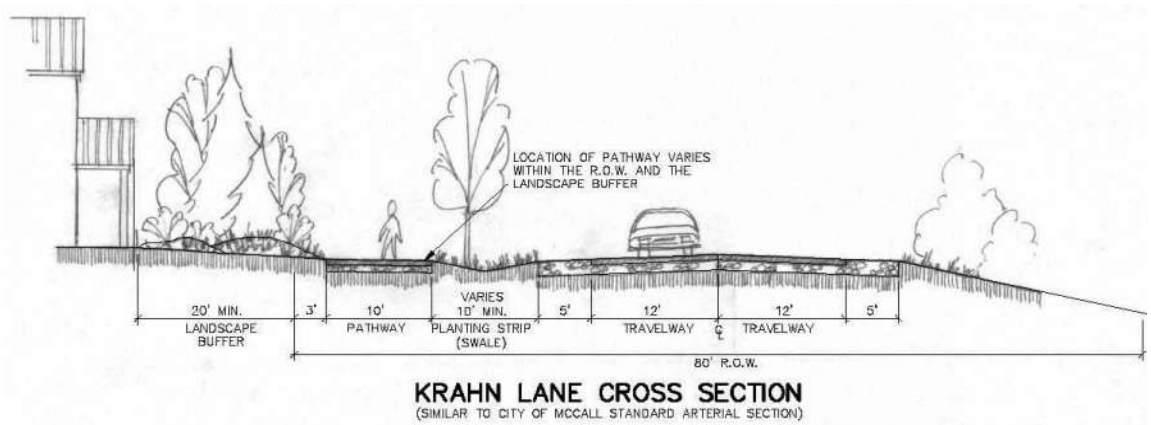


Figure 22: Krahn Lane Cross Section

Mission, Wooley, Davis, Idaho, and Lake Public Involvement Summaries (Provided by Horrocks Engineers)

WOOLEY STREET

APRIL 20, 2017
Public Meeting Summary

Approximately 12 people participated in the Wooley Street public meeting on April 20, 2017, and provided input on how the street should be designed for the future. Below is a summary of this input, which is reflective of the input from meeting participants. Scans of the original feedback materials are attached, for reference.

In addition to raising awareness with the public around design options and limitations, the public meeting provided useful initial input for street planning, engineering and design. Initial public reaction to possible street designs can be used to:

- Refine options for further testing with the public as each street nears the design stage, and
- Planning at longer-term and/or larger scales (e.g., pathways planning, ROW or easement acquisition, etc.)

Feedback from this meeting is grouped into four sections:

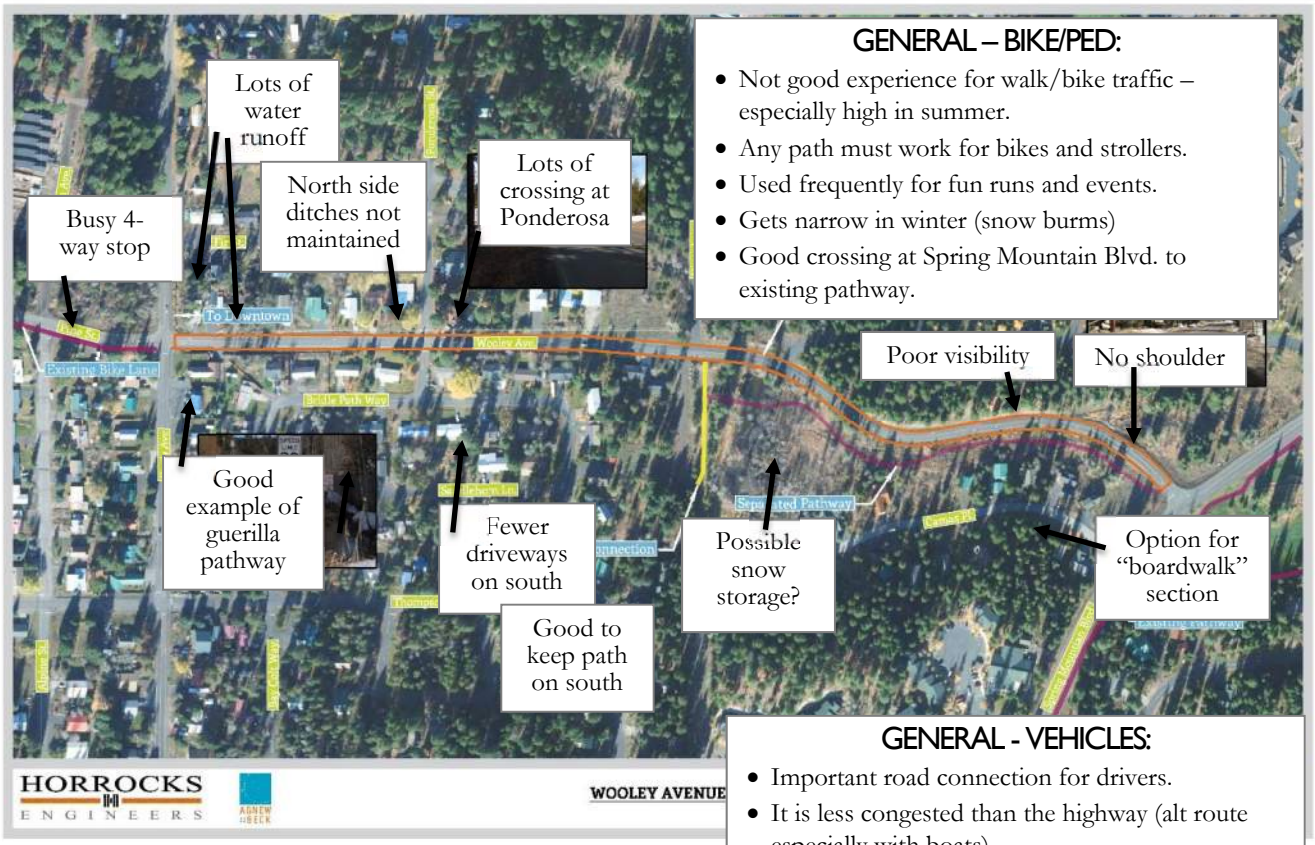
1. General themes
2. Locations of significance (see map)
3. Street priorities (see table)
4. Design preferences (see annotated sections)

General Themes

Highlights from the meeting discussion as well as review of written feedback shows support and preferences for the following design elements and approaches on Wooley Avenue:

- Participants agreed that Wooley Avenue is a critical bike/ped connection that is heavily used, and better accommodations for these uses should be made.
- Participants were enthusiastic about the idea of a separated pathway wherever possible along Wooley. A "boardwalk style," separated path was particularly appealing.
- Where a separated pathway is not possible, participants generally liked at least some separation from the vehicle lanes (e.g., valley gutter, bollards, temporary curb, etc.)
- Participants agreed that snow storage should be accommodated on Wooley, and were also hoping swales could be cleaned out more regularly.

Locations of Significance



GENERAL – BIKE/PED:

- Not good experience for walk/bike traffic – especially high in summer.
- Any path must work for bikes and strollers.
- Used frequently for fun runs and events.
- Gets narrow in winter (snow burms)
- Good crossing at Spring Mountain Blvd. to existing pathway.

GENERAL - VEHICLES:

- Important road connection for drivers.
- It is less congested than the highway (alt route especially with boats).
- Access to/from east side of the lake.

Street Priorities

	Priorities	Comments
VERY IMPORTANT	Multi-use pathways – 7 Stormwater/drainage – 5 Bike lanes – 5 Crosswalks/crossings – 5 Snow removal/storage – 4 Sidewalks – 3 Slower vehicles – 2 Road surfaces – 2 Slower vehicles – 2 Driveway access Signage Natural areas Visibility Private property	Like the idea of multi-use pathway on boardwalk "I'm happy to give up part of my driveway to achieve a safe pathway situation." "It costs more to move snow out." (should accommodate snow storage at/near Wooley.)
SOMEWHAT IMPORTANT	Snow removal/storage– 3 Signage – 3 Stormwater/drainage– 2 Landscaping – 2 Slower vehicles – 2 Driveway access – 2 Road surfaces Natural areas Visibility Access to golf course Views	"Slowing vehicles may be less important with improved pathways."
UNIMPORTANT	Parking – 3 Sidewalks Landscaping Turn lanes Slower vehicles Views Curb and gutter	

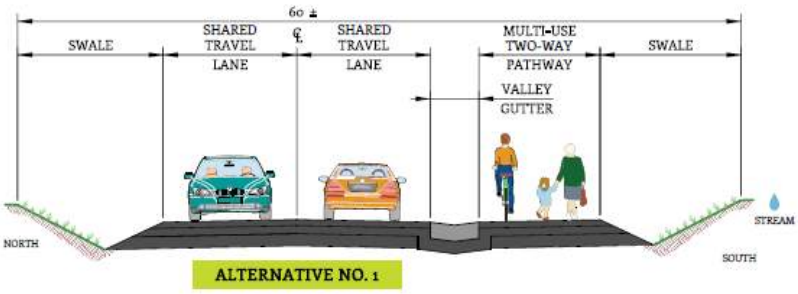
Design Preferences

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

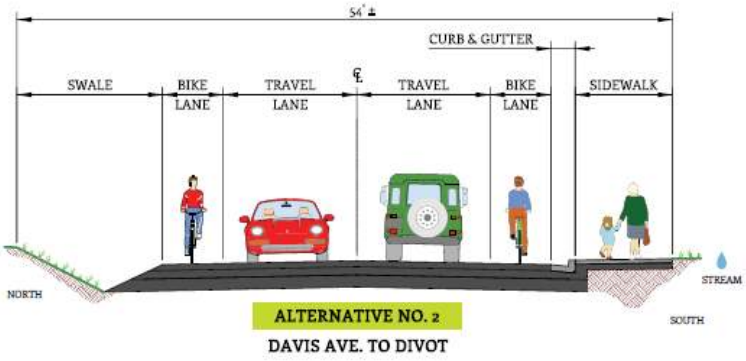
PROS

- Great
- Bike/walk lane
- Easy to maintain (water/snow)



CONS

PROS

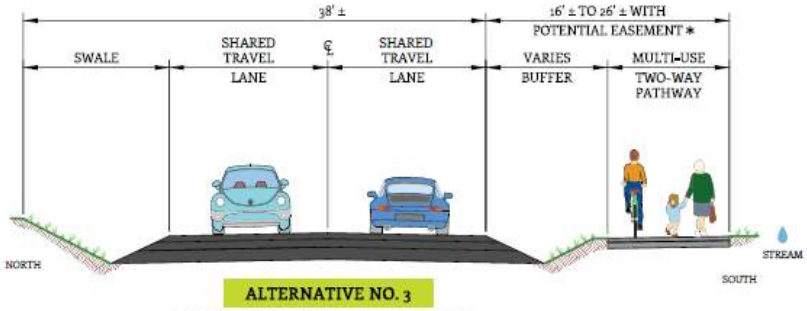


DAVIS AVE. TO DIVOT

CONS

PROS

- Love bridge-walkway
- Good pedestrian situation

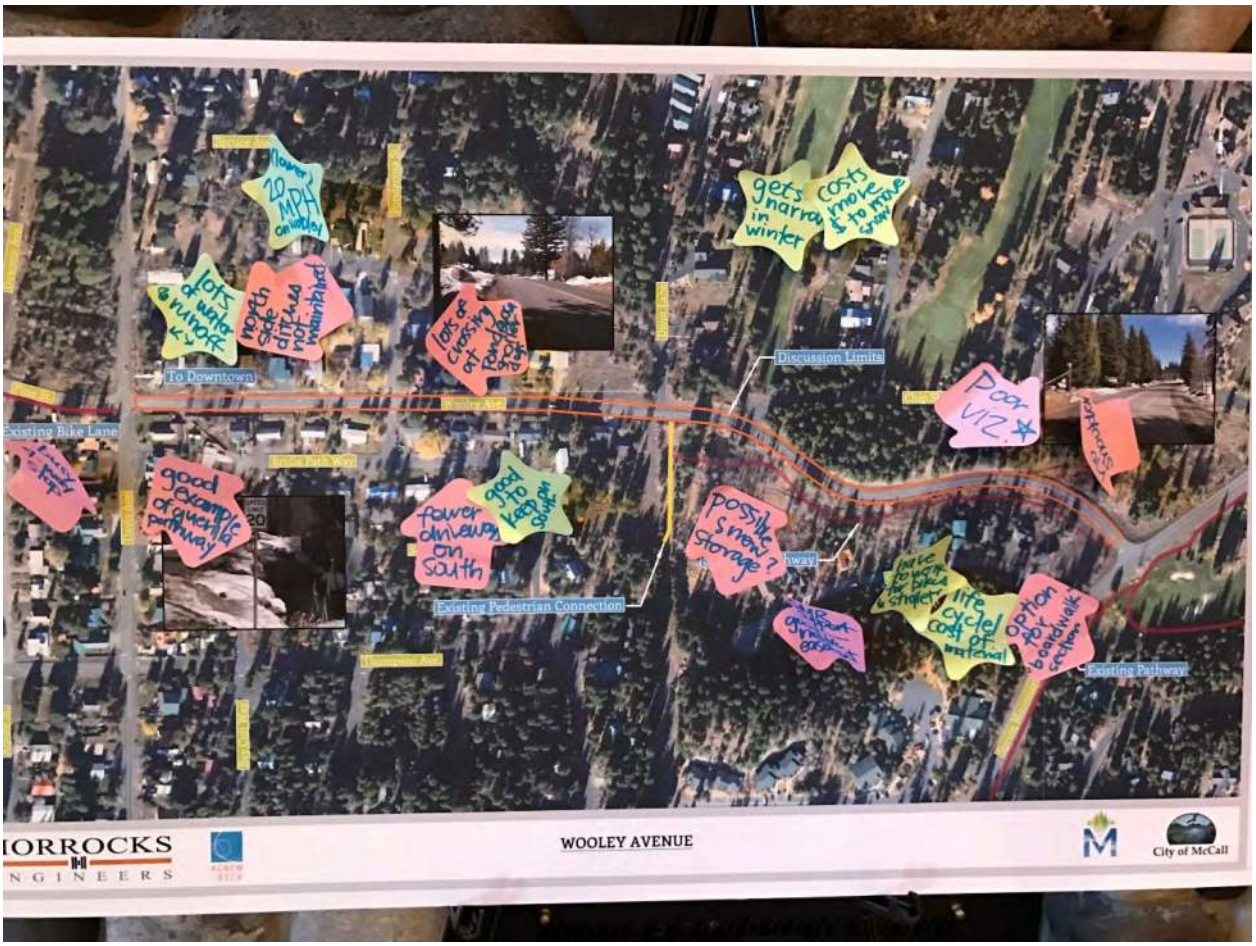


DIVOT TO SPRING MOUNTIAN BLVD.

CONS

- Requires more space
- Extra swale means extra maintenance (water/culvert)
- Lifecycle cost of boardwalk material is important to consider

Attachments – Original Meeting Notes and Materials



- important road connection (vehicles)
- used frequently for fun runs & events
- less congested than the Hwy. → "alt route" esp. w/boats
- access from East Side of the lake

WOOLET

- "currently a death trap" → for peds & bikes
- lots of walking & biking → esp. summer
- crossing at SMB Blvd
- enough ROW to accomodate? w/o loss of private property
- high speed traffic

SIGN-IN SHEET

Project Name – McCall Street Improvements Public Meeting: Woolley
Date & Time: April_____ , 2017 at _____
Location:

FIRST NAME	LAST NAME	PHONE (optional)	EMAIL (to receive any updates)
JAMES	LARKIN	880-0244	LARKINTEK@GMAIL.COM
DAVE	CARTER	315-2472	carter.dave1007@gmail.
Fallon	Feneday	315-2170	fcfeneday@gmail.com
Christine	Dolce	315-3258	NA
Jackie	Agnew		
[illegible]		585-7938	
[illegible]		634-6462	
Valerie	Berg	5730264	valerie_berg@yahoo.com

STREET PRIORITIES for: WOOLEY (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: golf course
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

slower vehicles
bike lanes/path
drainage (N side)
snow removal/storage
better road surface
crosswalk
private property/driveway access

SOMEWHAT IMPORTANT

natural areas
good visibility
signage
access to golf course

UNIMPORTANT

sidewalk
landscaping
parking
views
turn lanes

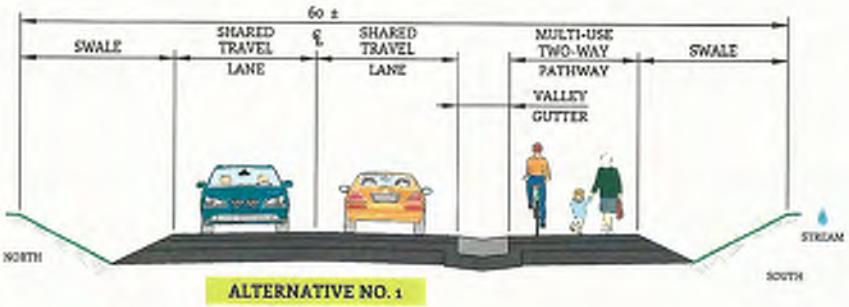
OTHER COMMENTS

YOUR NAME: NIC SWANSON

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

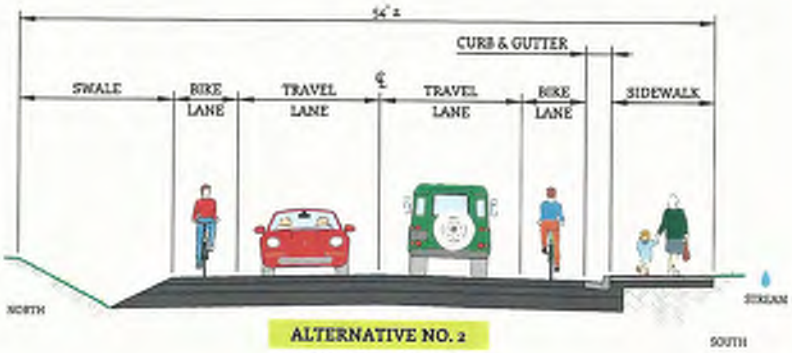
PROS



ALTERNATIVE NO. 1

CONS

PROS

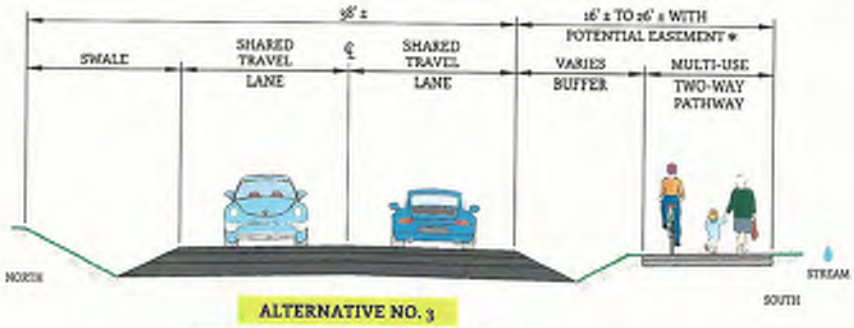


ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: Woolley (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

multiuse pathway — BOARD WALK — (5)
natural areas slower vehicles

SOMEWHAT IMPORTANT

storm H2O drainage | snow removal.

UNIMPORTANT

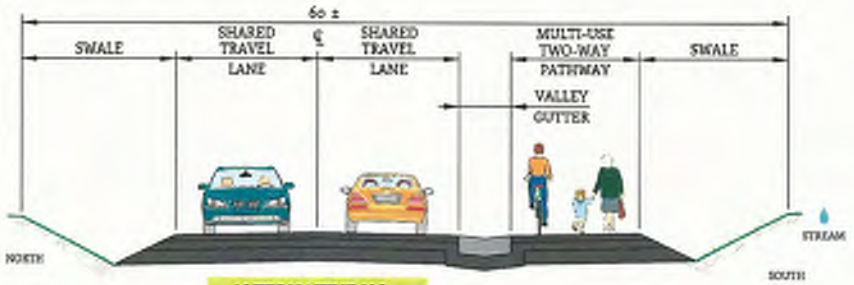
OTHER COMMENTS

YOUR NAME: _____

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

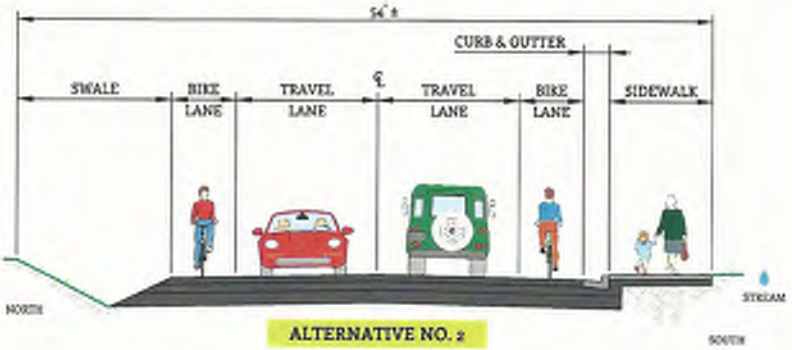
PROS



ALTERNATIVE NO. 1

CONS

PROS

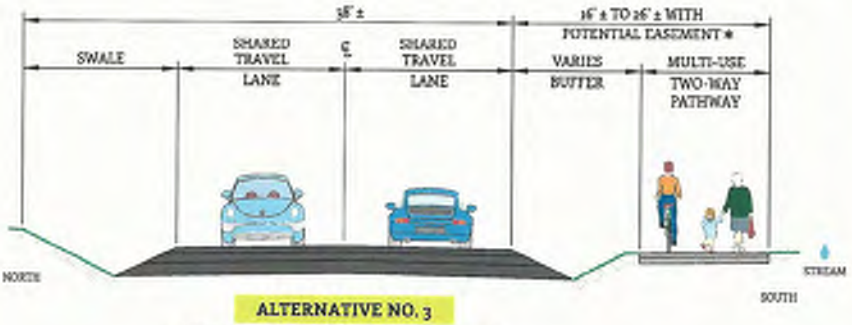


ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: WOOLEY (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT
+ landsaping		

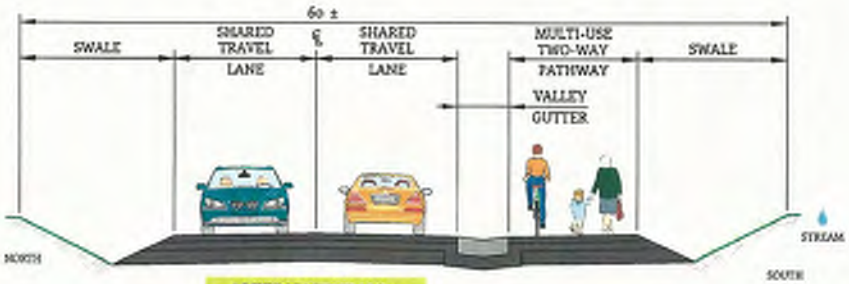
OTHER COMMENTS

YOUR NAME: JAVE CARTER

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

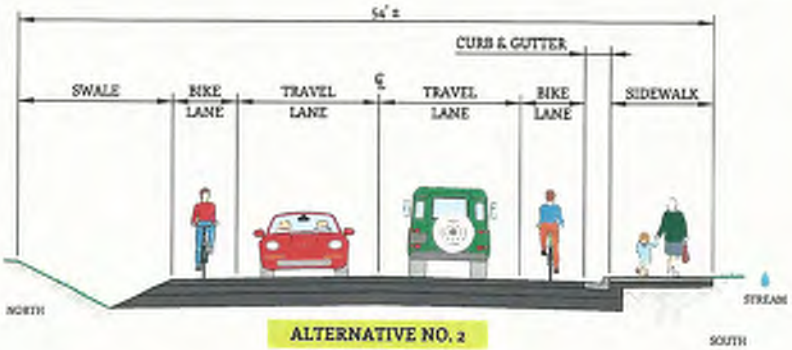
PROS



ALTERNATIVE NO. 1

CONS

PROS

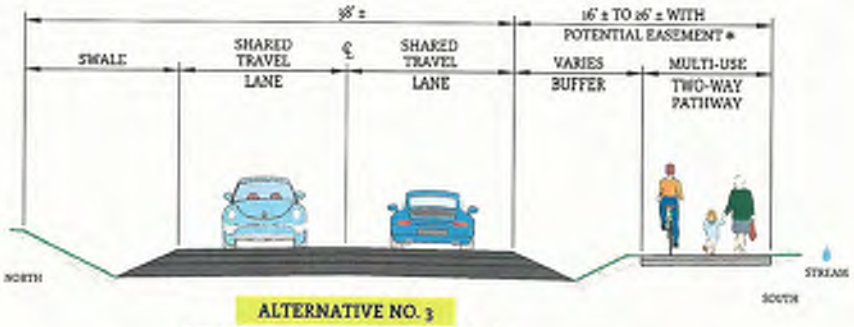


ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: Woolley (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

ALTERNATE 1 is PREFERRED
DO NOT FORGET DENALI CT.

SOMEWHAT IMPORTANT

UNIMPORTANT

OTHER COMMENTS

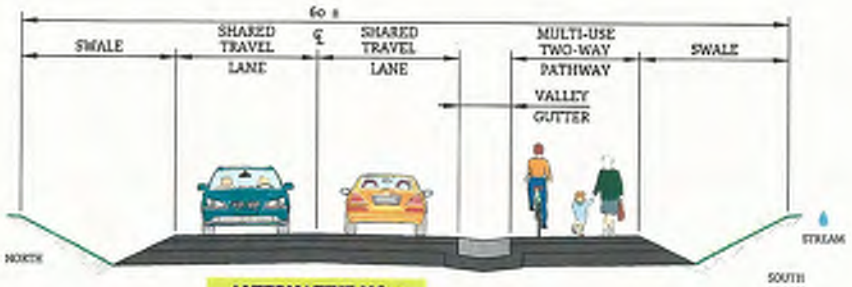
PRESENTATION WAS EXCELLENT.

YOUR NAME: JIM GARKIN

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

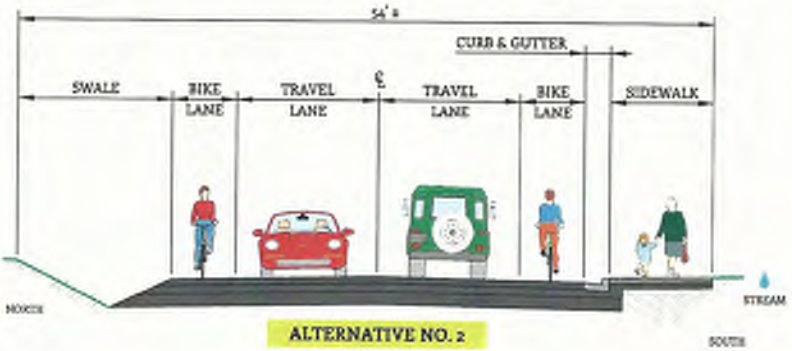
PROS



ALTERNATIVE NO. 1

CONS

PROS

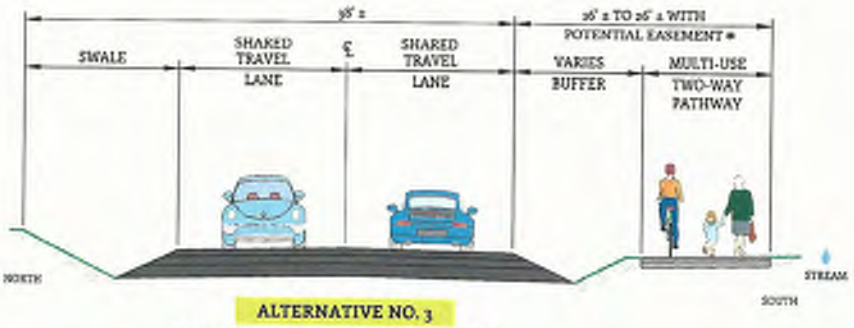


ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: Wooley (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

bike lane
~~pathways~~
crosswalk
drainage
snow removal

SOMEWHAT IMPORTANT

landscaping

UNIMPORTANT

parking
views

OTHER COMMENTS

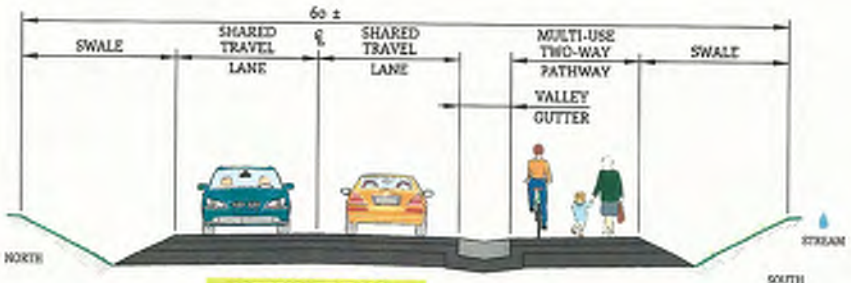
Anything is better than what we have now! :)

YOUR NAME: Fallon Fereday

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

PROS



ALTERNATIVE NO. 1

CONS

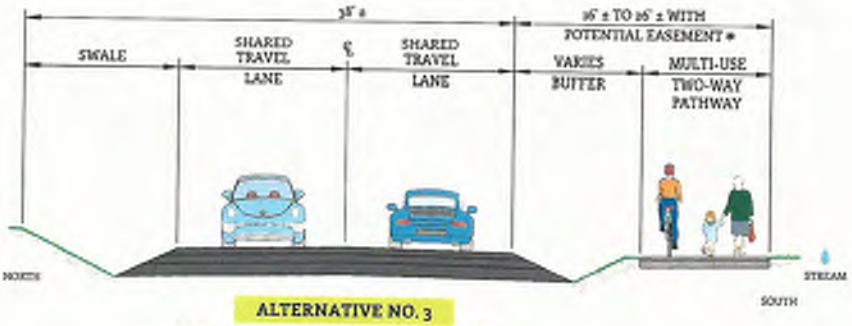
PROS

ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: Wooley (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- X bike lanes
- X sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: Davisto Springmn
- signage
- better road surface
- X slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

time line (soon!:)) bike/sidewalks!! slower vehicles - although might be better if walking path is done -

SOMEWHAT IMPORTANT

UNIMPORTANT

OTHER COMMENTS

Thanks for all you do for this amazing city!

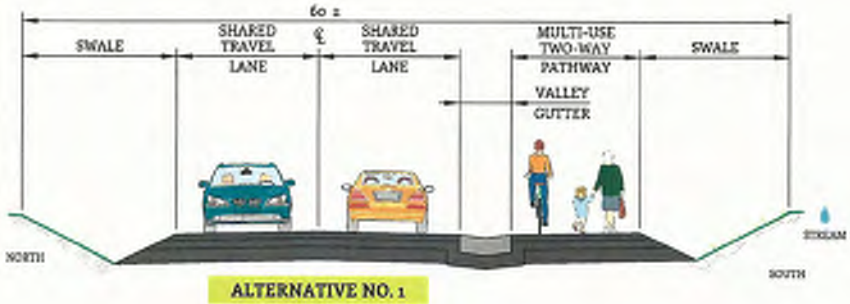
YOUR NAME: Valerie Berg

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

PROS

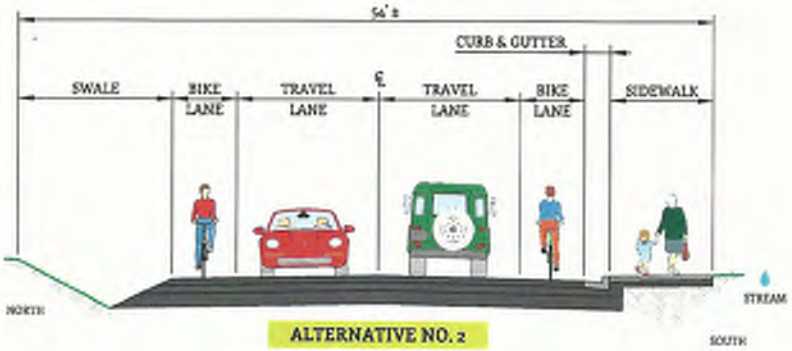
great



ALTERNATIVE NO. 1

CONS

PROS



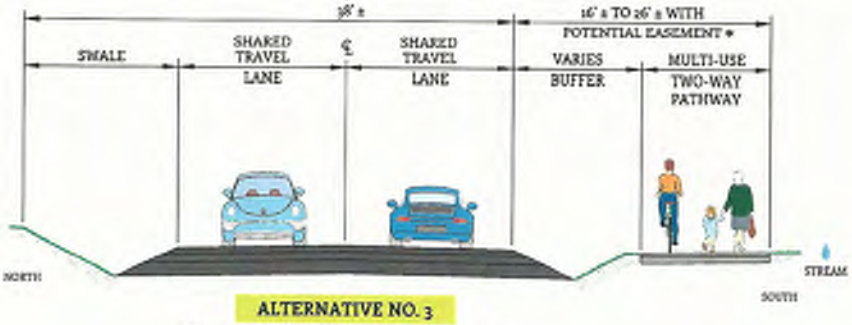
ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS

bridge-walkway



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: Wooley (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

Drainage of Stormwater on Northside of street between Ponderosa & Davis

Pedistrian / Bike pathway

Sinoage for Speed & Caution for pedestrians

SOMEWHAT IMPORTANT

Snow removal / storage

Slower Vehicles (20 mph fine speed but not always observed)

UNIMPORTANT

OTHER COMMENTS

Even if this is 10 years in the future this will be a FANTASTIC improvement for Wooley Ave as it is a heavily used road Many pedestrians use this road. year round. Currently, family groups, walk side by side ignoring oncoming traffic

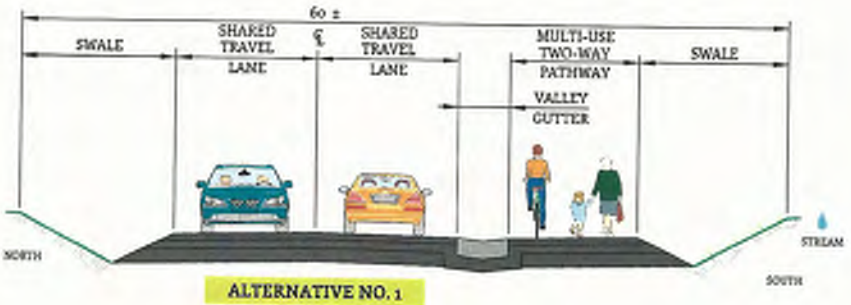
YOUR NAME: Joe & Christine Dolce

Thank you for giving us this opportunity :)

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

PROS



ALTERNATIVE NO. 1

CONS

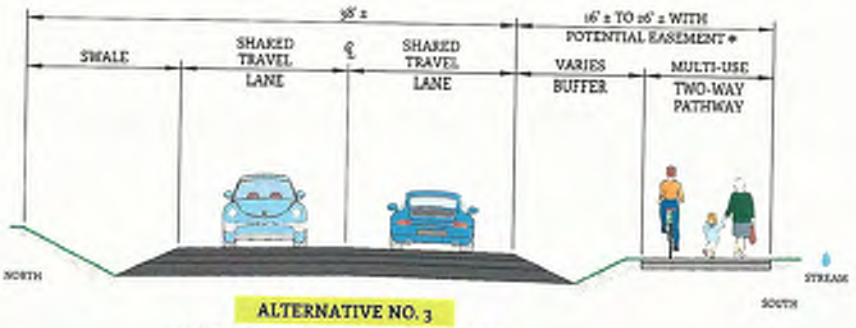
PROS

ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: Woolf (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT

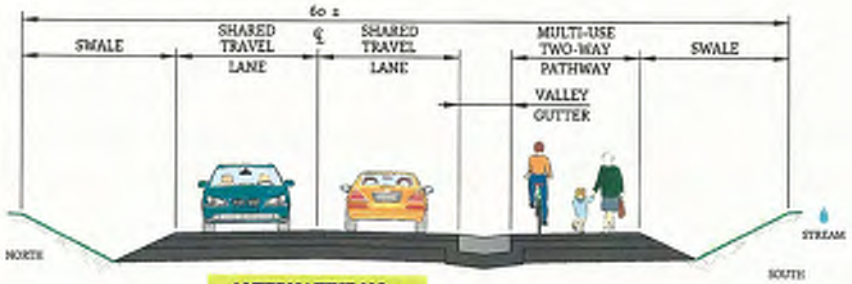
OTHER COMMENTS

YOUR NAME: _____

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

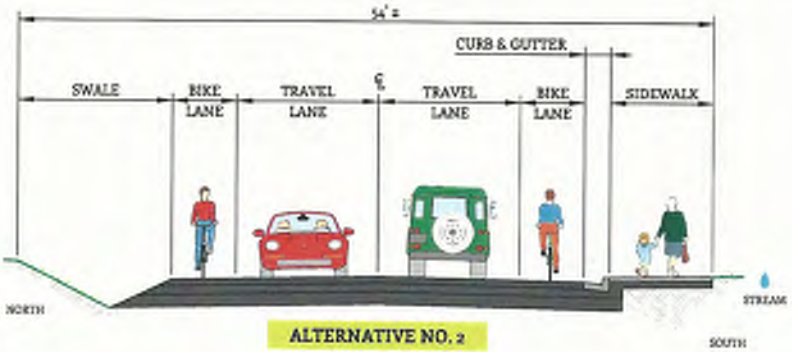
PROS



ALTERNATIVE NO. 1

CONS

PROS

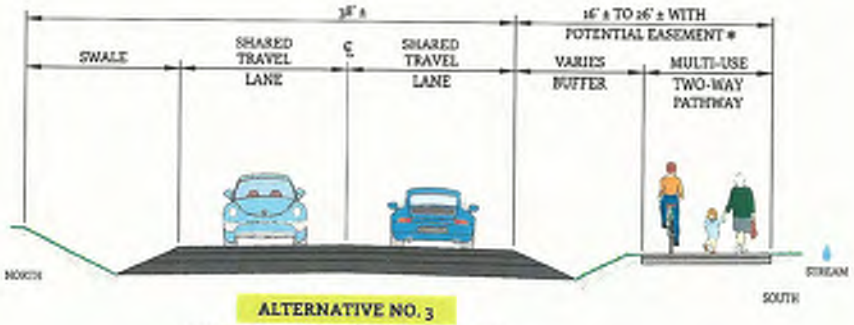


ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

STREET PRIORITIES for: _____ (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT	SOMEWHAT IMPORTANT	UNIMPORTANT

OTHER COMMENTS

Im happy to ~~[illegible]~~ sacrifice a bit of my Driveway / property to achieve any type of pathway (safe travel) situation.

YOUR NAME: SCOTT FEREDAY

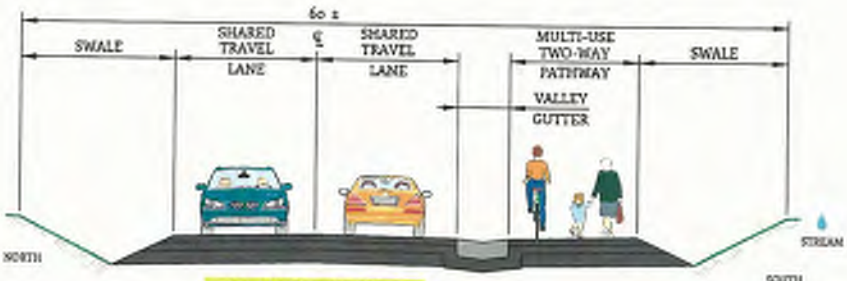
WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

PROS

Bike/walk lane

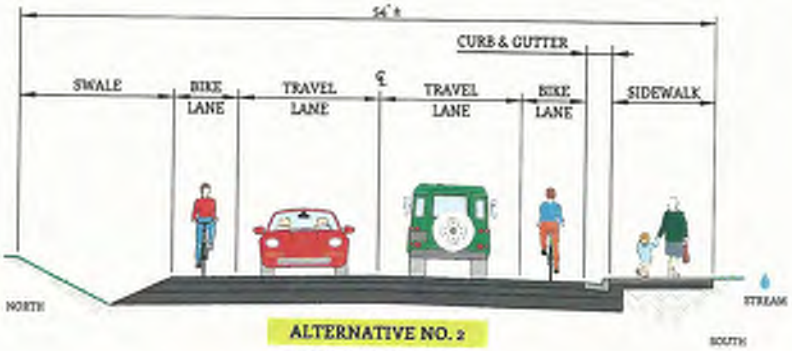
Easy to maintain (water/snow)



ALTERNATIVE NO. 1

CONS

PROS



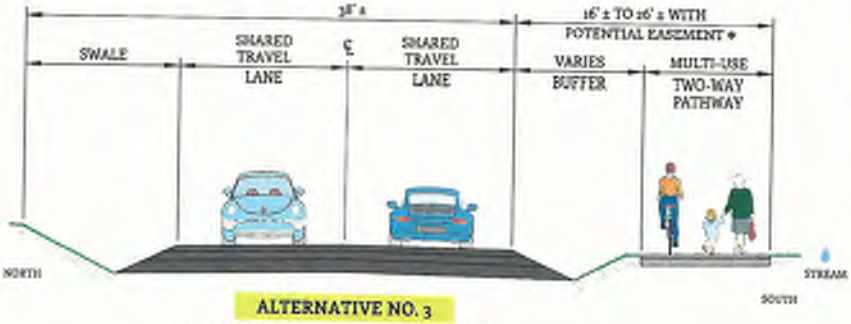
ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS

Good pedestrian separation



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

- requires lots of space
- Extra swale means extra maintenance (water/culverts

STREET PRIORITIES for: Woolley (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

keep on south side of the Road

Board walk sounds awesome

SOMEWHAT IMPORTANT

UNIMPORTANT

curb & gutter - we like swales

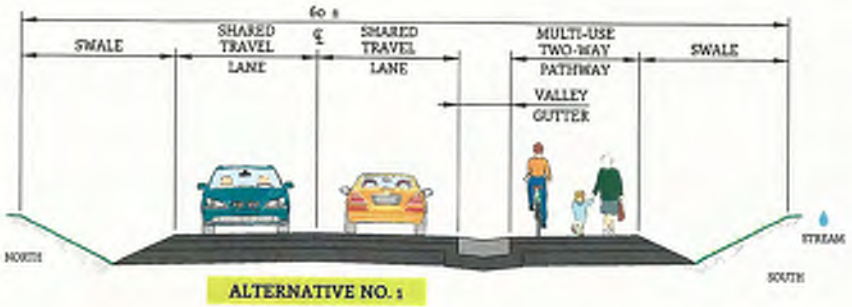
OTHER COMMENTS

YOUR NAME: Morrisons

WOOLEY AVENUE

DAVIS AVE. TO SPRING MOUNTIAN BLVD.

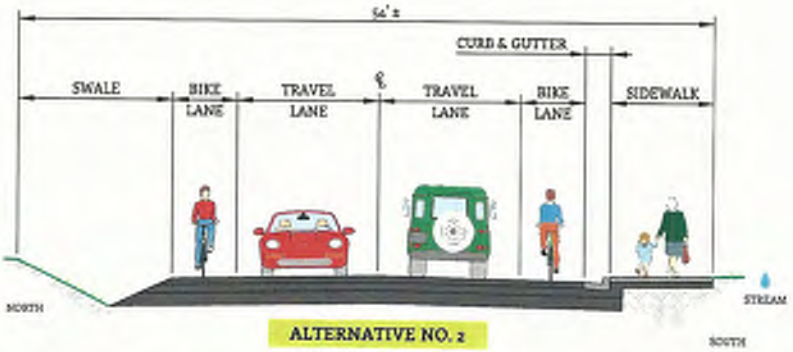
PROS



ALTERNATIVE NO. 1

CONS

PROS

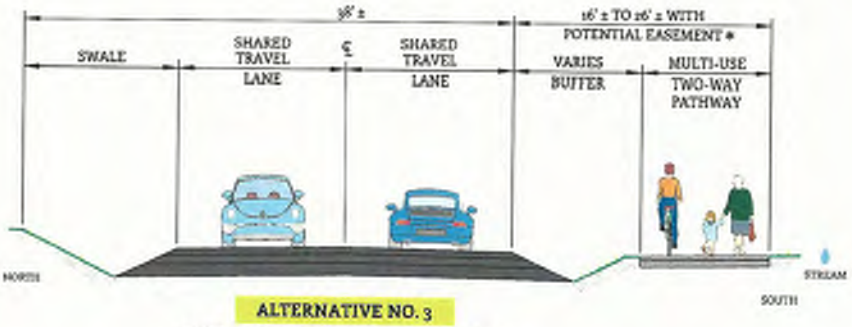


ALTERNATIVE NO. 2

DAVIS AVE. TO DIVOT

CONS

PROS



ALTERNATIVE NO. 3

DIVOT TO SPRING MOUNTIAN BLVD.

CONS

MISSION STREET

APRIL 19, 2017
Public Meeting Summary

Approximately 8 people participated in the Mission Street public meeting on April 19, 2017, and provided input on how the street should be designed for the future. Below is a summary of this input, which is reflective of the input from meeting participants. Scans of the original feedback materials are attached, for reference.

In addition to raising awareness with the public around design options and limitations, the public meeting provided useful initial input for street planning, engineering and design. Initial public reaction to possible street designs can be used to:

- Refine options for further testing with the public as each street nears the design stage, and
- Planning at longer-term and/or larger scales (e.g., pathways planning, ROW or easement acquisition, etc.)

Feedback from this meeting is grouped into four sections:

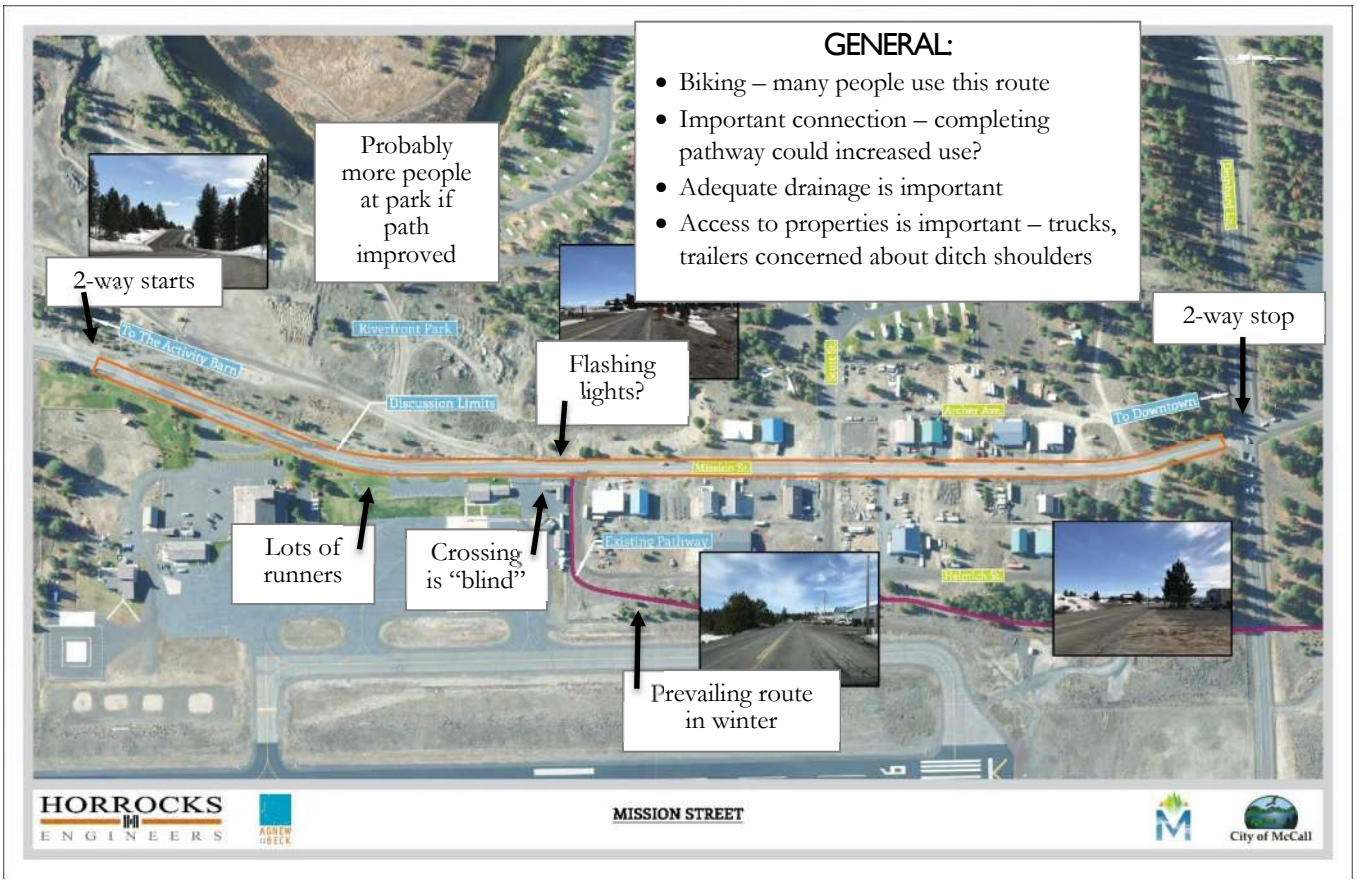
1. General themes
2. Locations of significance (see map)
3. Street priorities (see table)
4. Design preferences (see annotated sections)

General Themes

Highlights from the meeting discussion as well as review of written feedback shows support and preferences for the following design elements and approaches on Lake Street:

- Generally, participants seemed slightly in favor of linking the current pathway along Mission with a clearly-marked crossing and connecting to the existing two-way path south of the smokejumper base.
- There was some interest in also having bike lanes to connect the park entrance to Deinhart.
- Being mindful of the depth of the swales to allow truck traffic access to private parcels is also important.
- "I think in this area of town – beauty is less important than practicality."

Locations of Significance



Street Priorities

	Priorities	Comments
VERY IMPORTANT	Bike lanes – 2 Sidewalks Multi-use pathways – 3 Crosswalks/crossings – 3 Signage – 2 Visibility – 2 Stormwater/drainage – 3 Snow removal/storage Bike lanes – 3 Driveway access	Crossing on Mission at pathway entrance is a critical design element for users. "A relatively blind junction, it would need both visual and safety measures to be effective." "24x7 lights blinking would not be good for the night sky."
SOMEWHAT IMPORTANT	Snow removal/storage Signage Road surface Crosswalks/crossings	
UNIMPORTANT	Views Landscaping Turn lanes	

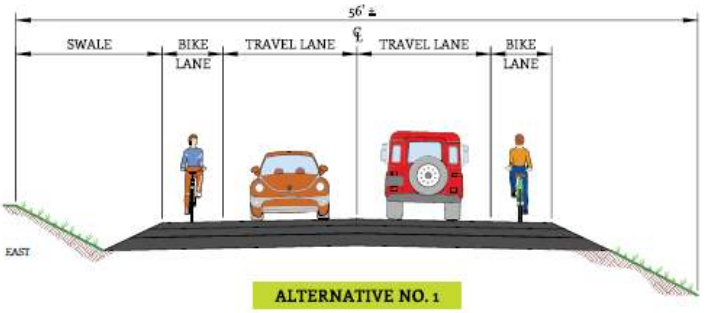
Design Preferences

N. MISSION STREET

DEINHARD LN. TO THE SMOKE JUMPER BASE

PROS

- Traditional bike path design



ALTERNATIVE NO. 1

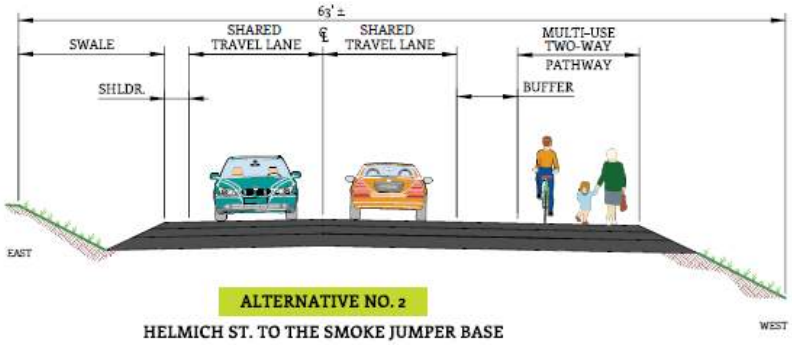
DEINHARD LN. TO HELMICH ST.

CONS

- No direct access to pathway (Mission NB)
- Dead end paths

PROS

- Similar to current pathway (south of area)
- Wider path is easier to navigate for less experienced road bikers/peds



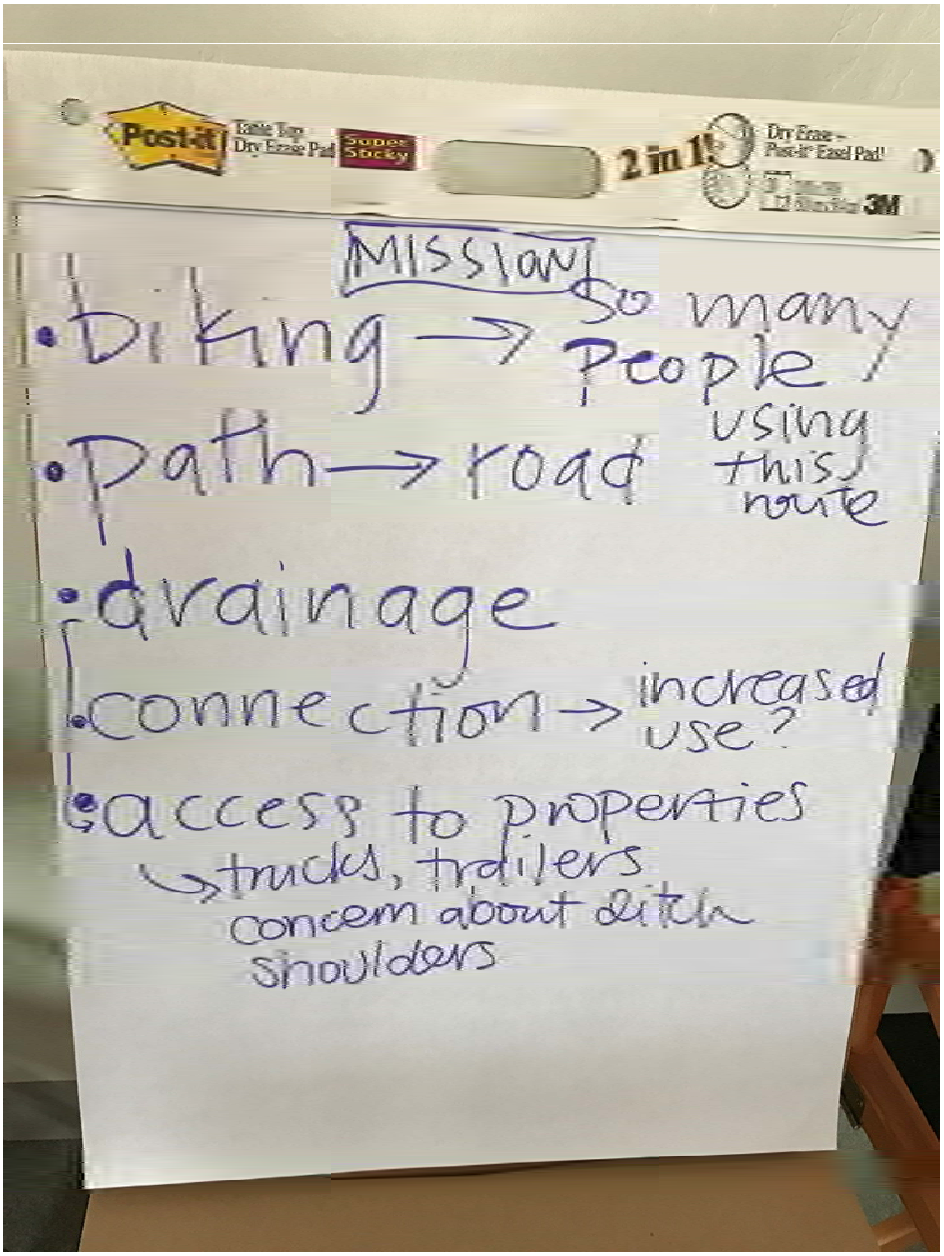
ALTERNATIVE NO. 2

HELMICH ST. TO THE SMOKE JUMPER BASE

CONS

- Increased bike traffic impinges on foot traffic
- Southbound peds have to cross Mission to get to path; blind entrance from existing path

Attachments – Original Meeting Notes and Materials


Post-it
Table Top Dry Erase Pad
Super Sticky
2 in 1!
Dry Erase - Post-it® Easel Pad!
3M
MISSION
• Biking → So many People using this route
• Path → road
• drainage
• connection → increased use?
• access to properties
→ trucks, trailers
concern about ditch shoulders

SIGN-IN SHEET

Project Name – McCall Street Improvements Public Meeting: MISSION STREET
Date & Time: April 19 **, 2017 at** 4:30
Location:

FIRST NAME	LAST NAME	PHONE (optional)	EMAIL (to receive any updates)
* Debbie Gray / Dave Byars		208-315-5210	debbiig149@gmail.com
Erin	Vandenheit	208-841-6820	erin.vandenheit@gmail.com
Samantha	Orient	208-421-0765	samantha.germa@gmail.com
Dennis	Edwards	208-315-5518	dustyden100@hotmail.com
Amy	Pemberton	208-315-1364	amy@mpmplan.com
KALEN	DODGE		
Jenna	Dodge		Jennadodge@hotmail.com

* Sent copy Mission Mag.

STREET PRIORITIES for: Mission Street (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

storm water / Drainage
Bike lanes
Pathways

SOMEWHAT IMPORTANT

crosswalk

UNIMPORTANT

Turn Lanes

OTHER COMMENTS

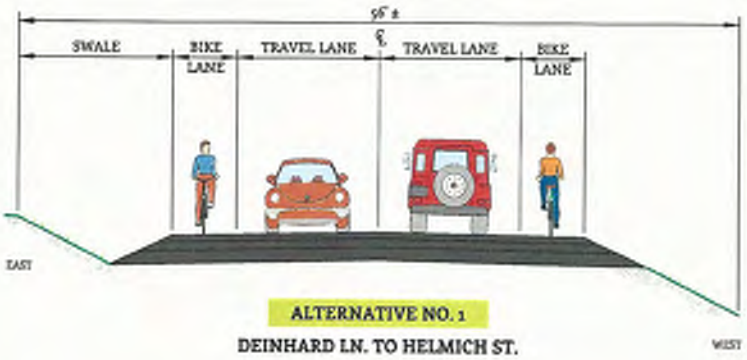
YOUR NAME: Jenna Poole

N. MISSION STREET

DEINHARD LN. TO THE SMOKE JUMPER BASE

PROS

CONS

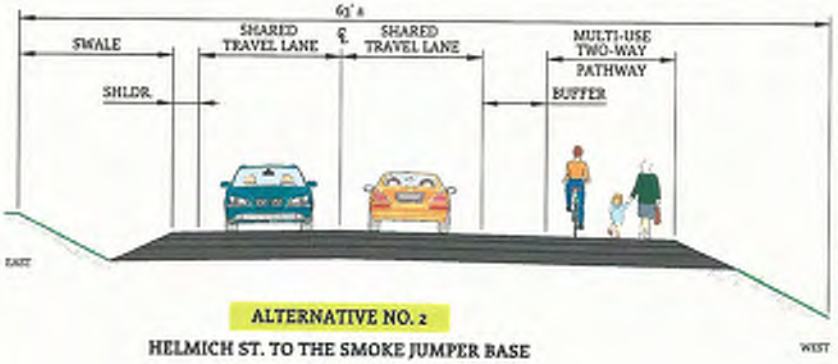


ALTERNATIVE NO. 1

DEINHARD LN. TO HELMICH ST.

PROS

CONS



ALTERNATIVE NO. 2

HELMICH ST. TO THE SMOKE JUMPER BASE

STREET PRIORITIES for: Mission St (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

bike lanes
pathway
good visibility
driveway access

SOMEWHAT IMPORTANT

UNIMPORTANT

landscaping
views

OTHER COMMENTS

I think in this area of town - beauty is less important than practicality. Giving people good pathways for walking + biking is great. One comment on a flashing light @ a crossing - 24 X 7 lights blinking would not be good for the night sky.

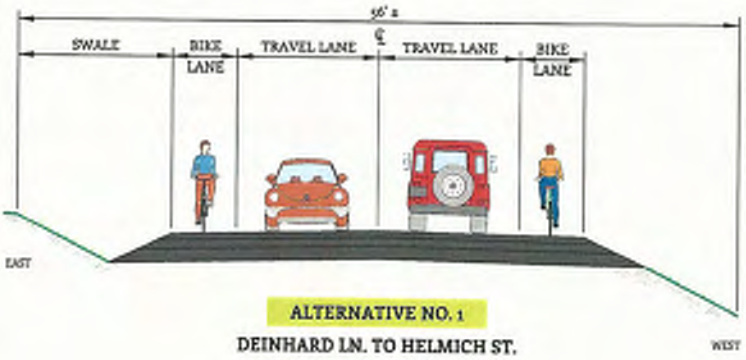
YOUR NAME: Amy Pemberton

N. MISSION STREET

DEINHARD LN. TO THE SMOKE JUMPER BASE

PROS

CONS

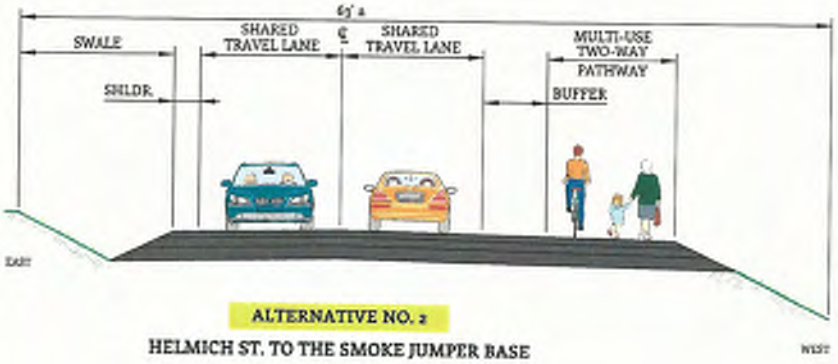


ALTERNATIVE NO. 1

DEINHARD LN. TO HELMICH ST.

PROS

CONS



ALTERNATIVE NO. 2

HELMICH ST. TO THE SMOKE JUMPER BASE

STREET PRIORITIES for: Mission (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

- drainage
~~[illegible]~~ crosswalk
walk / bike safety - lanes

SOMEWHAT IMPORTANT

snow
Signage
road surface

UNIMPORTANT

OTHER COMMENTS

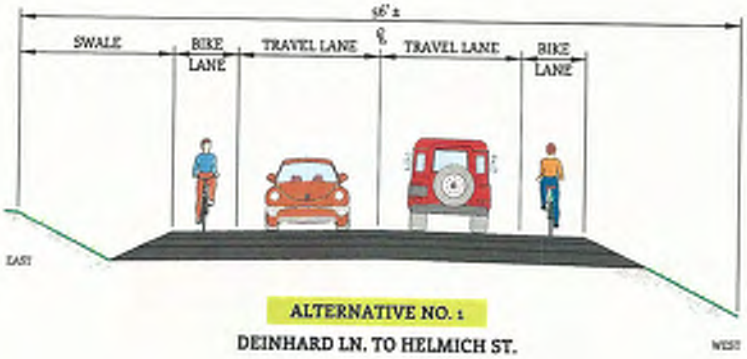
YOUR NAME: Byers

N. MISSION STREET

DEINHARD LN. TO THE SMOKE JUMPER BASE

PROS

CONS

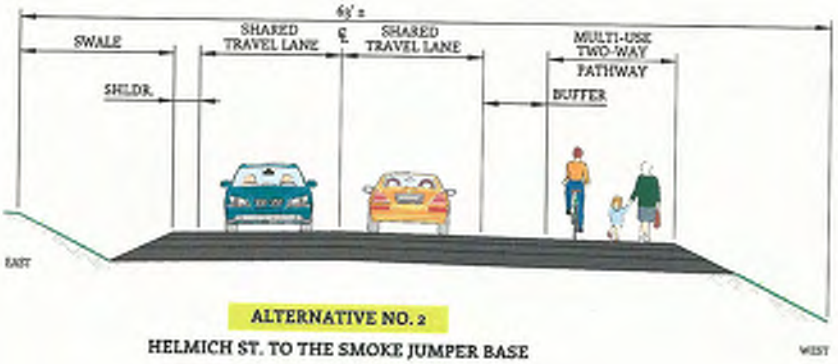


ALTERNATIVE NO. 1

DEINHARD LN. TO HELMICH ST.

PROS

CONS



ALTERNATIVE NO. 2

HELMICH ST. TO THE SMOKE JUMPER BASE

STREET PRIORITIES for: Mission Street (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

Crossings, Mission @ current pathway entrance
(+ crossings as path continues)

SOMEWHAT IMPORTANT

UNIMPORTANT

OTHER COMMENTS

The bike path/walking situation has improved drastically since I was a kid BUT the crossings are dangerous & ambiguous to drivers, especially since so many are out-of-towners.

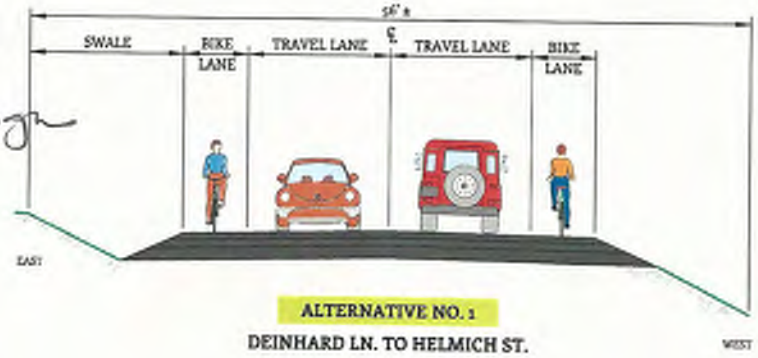
YOUR NAME: Erin Vanderheit

N. MISSION STREET

DEINHARD LN. TO THE SMOKE JUMPER BASE

PROS

*traditional bike path design



ALTERNATIVE NO. 1

DEINHARD LN. TO HELMICH ST.

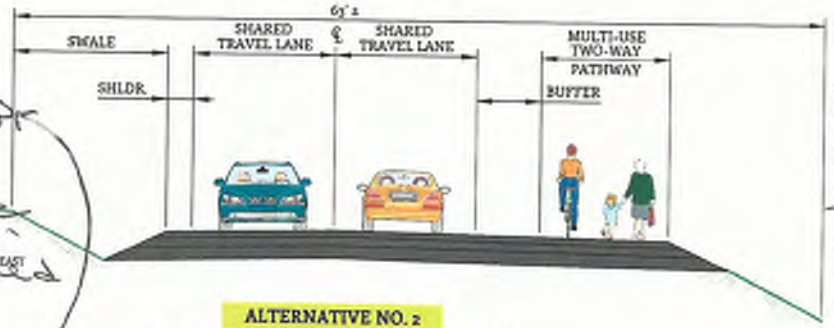
CONS

* no direct access to pathway (Mission NB)
* dead end paths

PROS

*similar to current pathway
* wider path is easier to navigate for less experienced road bikers/peds.

(south of area)



ALTERNATIVE NO. 2

HELMICH ST. TO THE SMOKE JUMPER BASE

CONS

* Increased bike traffic impinges on foot traffic
* ~~SB~~ southbound peds have to cross Mission to get to path; blind entrance from existing path

STREET PRIORITIES for: Mission (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

A bike lanes
sidewalk
pathway
C crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
B signage
better road surface
slower vehicles
turn lanes
D good visibility
private property
other: _____

A B C D	VERY IMPORTANT
	SOMEWHAT IMPORTANT
	UNIMPORTANT

OTHER COMMENTS

The transition from bike ~~lane~~ trail existing pathway to Alternative 2 going south seems critical. A relatively blind junction, it would need both visual + safety measures to be effective

YOUR NAME: Dennis Edwards

N. MISSION STREET

DEINHARD LN. TO THE SMOKE JUMPER BASE

PROS

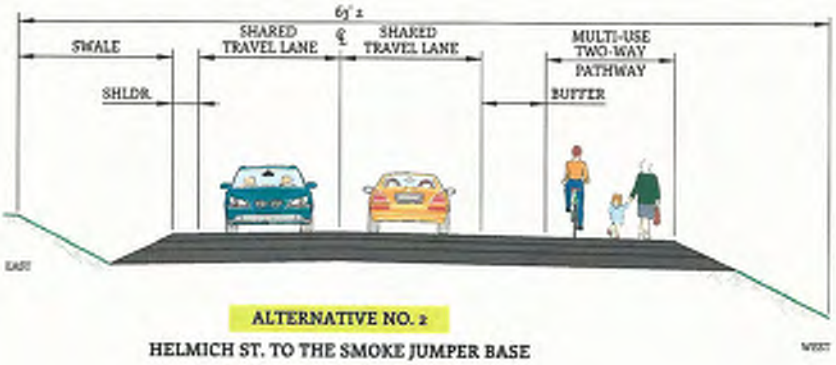
CONS

ALTERNATIVE NO. 1

DEINHARD LN. TO HELMICH ST.

PROS

CONS



ALTERNATIVE NO. 2

HELMICH ST. TO THE SMOKE JUMPER BASE

LAKE STREET

APRIL 19, 2017
Public Meeting Summary

Approximately 7 people participated in the Lake Street public meeting on April 19, 2017, and provided input on how the street should be designed for the future. Below is a summary of this input, which is reflective of the input from meeting participants. Scans of the original feedback materials are attached, for reference.

In addition to raising awareness with the public around design options and limitations, the public meeting provided useful initial input for street planning, engineering and design. Initial public reaction to possible street designs can be used to:

- Refine options for further testing with the public as each street nears the design stage, and
- Planning at longer-term and/or larger scales (e.g., pathways planning, ROW or easement acquisition, etc.)

Feedback from this meeting is grouped into four sections:

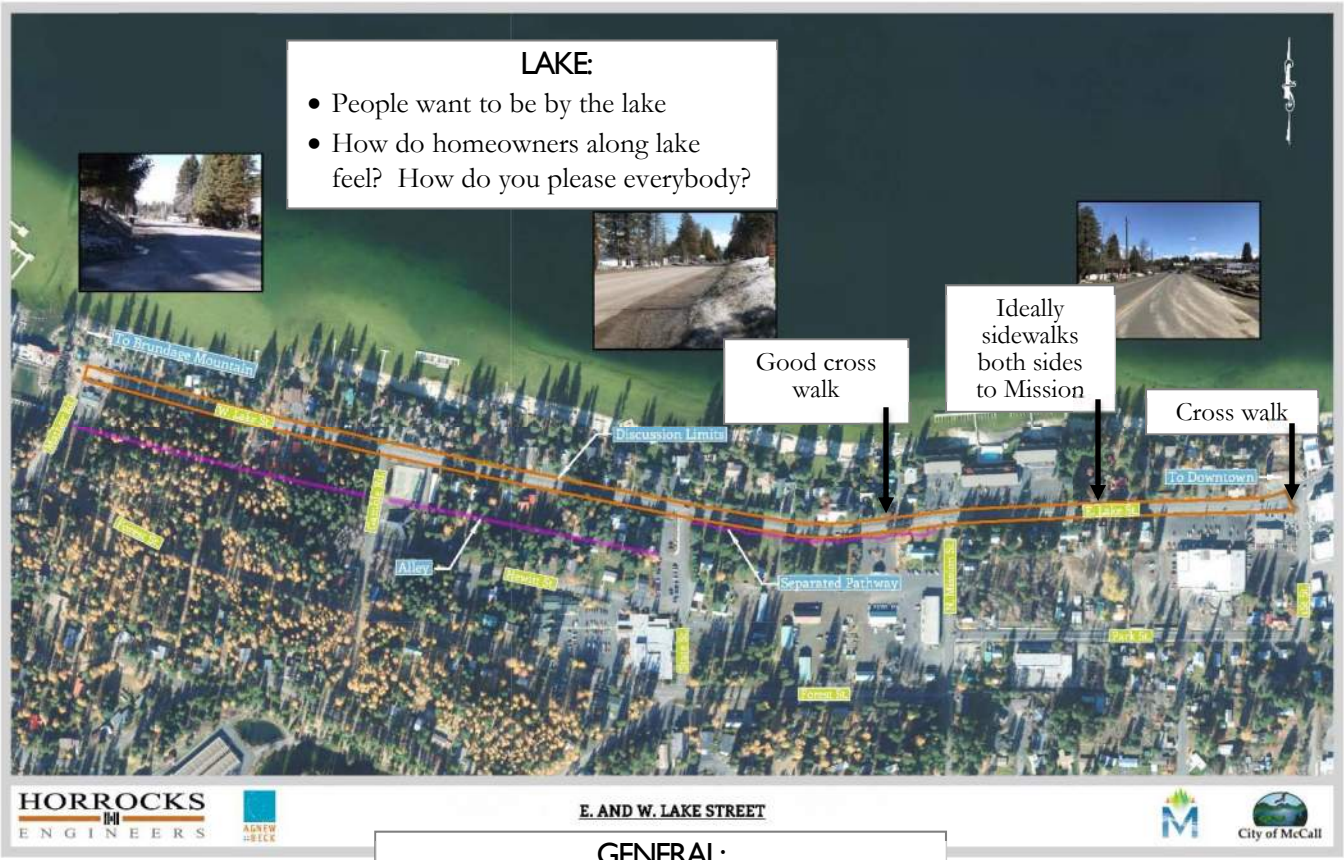
1. General themes
2. Locations of significance (see map)
3. Street priorities (see table)
4. Design preferences (see annotated sections)

General Themes

Highlights from the meeting discussion as well as review of written feedback shows support and preferences for the following design elements and approaches on Lake Street:

- Participants agreed that improving pedestrian and bike access on Lake St. is important.
- Participants also saw views of the lake and walking lakeside as an important community asset.
- They also understood the difficulties of the right-of-way and private property constraints.
- There seemed to be general interest and support for:
    - Including bike lanes on Lake Street
    - Creating a continuous sidewalk/pathway on the south side of Lake
    - Considering options to create a sidewalk or path on the north side of Lake Street, at least to Mission
    - Routing trucks to Deinhard and allowing Lake Street to become more of a local road, connecting visitors and residents from downtown to Warren Wagon, Bear Basin, etc. by walking, biking and driving.
- Participants voiced the importance of private property rights in roadway planning.
- "We are a tourist community. Need to allow tourists and locals safe route from Shore Lodge to town. If we are going to spend money on streetscapes, this is the place to do our best."

Locations of Significance



GENERAL:

- Locals happy to use alley or Forest Street
- Would be nice to be able to bike from town west to Bear Basin etc. (Warren Wagon)
- What's best for visitors? – Lake and 3rd are streets for tourists – "we want them to be happy."
- Do we need turn lane?
- Should get ped/bike count on Lake.
- Too hard to get easements/row on north
- Interest in formal truck route on Deinhard – maybe even becomes Hwy 55
- Cost to maintain sidewalk and snow removal is important ocnsideratiion.
- Walking in roadway during winter

Street Priorities

	Priorities	Comments
VERY IMPORTANT	Bike lanes – 6 Sidewalks – 5 Multi-use pathways – 4 Crosswalk/crossings – 3 Stormwater/drainage Snow removal/storage Private property	-Sidewalks on at least one side of the street -Need safest option on both sides of the road -Keep trucks off Lake St.
SOMEWHAT IMPORTANT	Turn lanes – 3 Stormwater/drainage – 2 Bike lanes Snow removal/storage Driveway access Crosswalk/crossings Sidewalks	-Bike lanes on both sides of Lake St. -Turn lanes at hospital
UNIMPORTANT	Natural areas Driveway access Landscaping Turn lanes Parking	

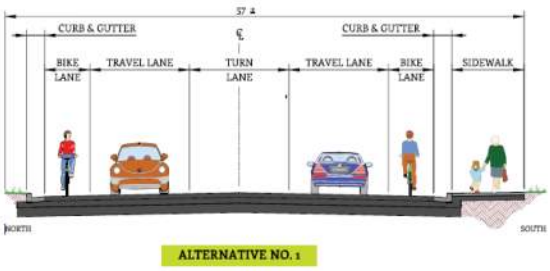
Design Preferences

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

PROS

- Bike lane

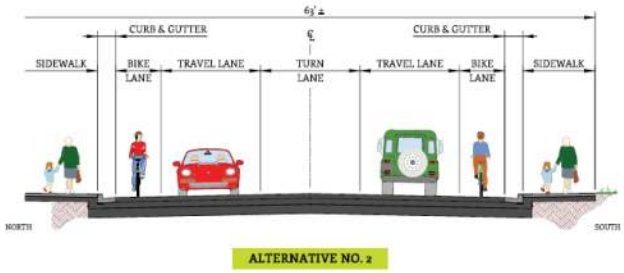


CONS

- No bike lane
- Multi-use path (could go on either side)

PROS

- Definitely both sides if possible
- No sidewalk this side



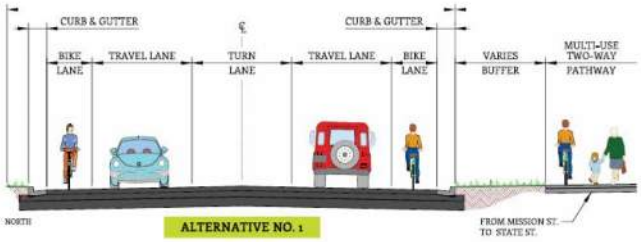
CONS

- Minimum need a sidewalk
- Want it all the way to WW Rd.

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

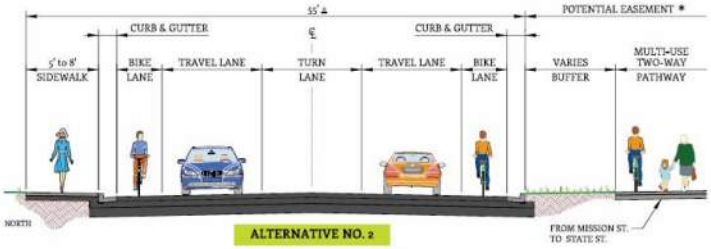
PROS



CONS

PROS

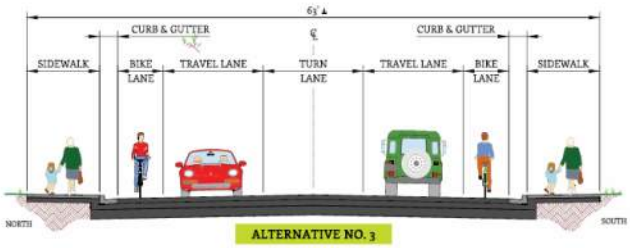
- Yes, along the FS and city property



CONS

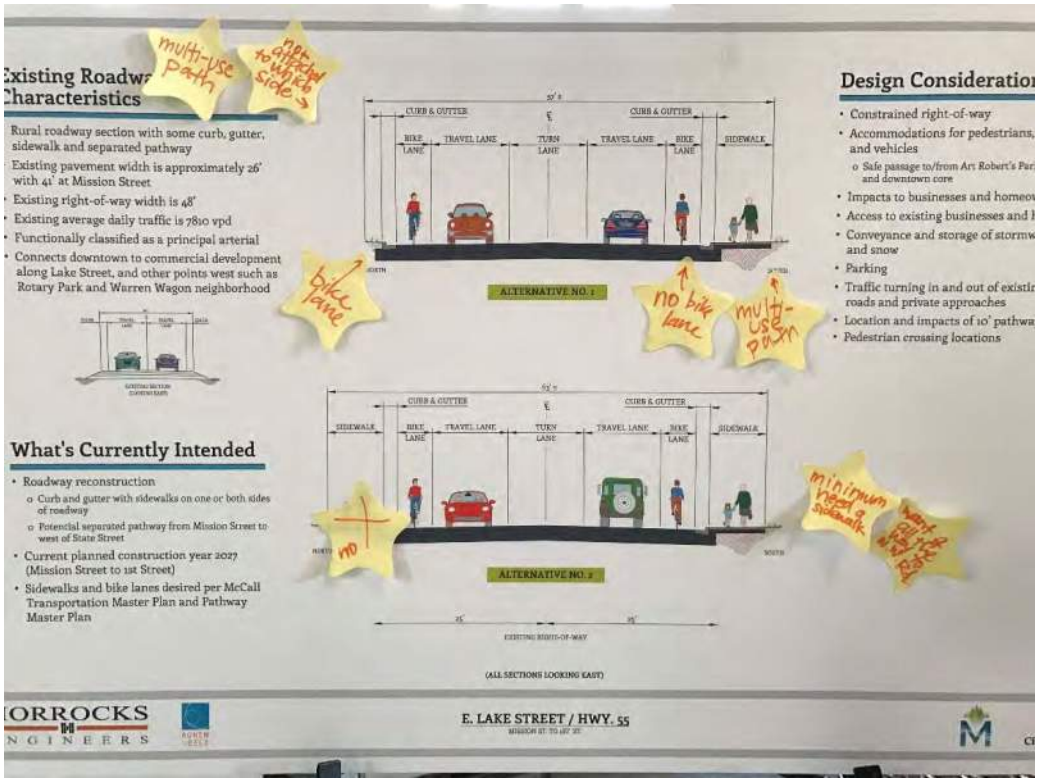
PROS

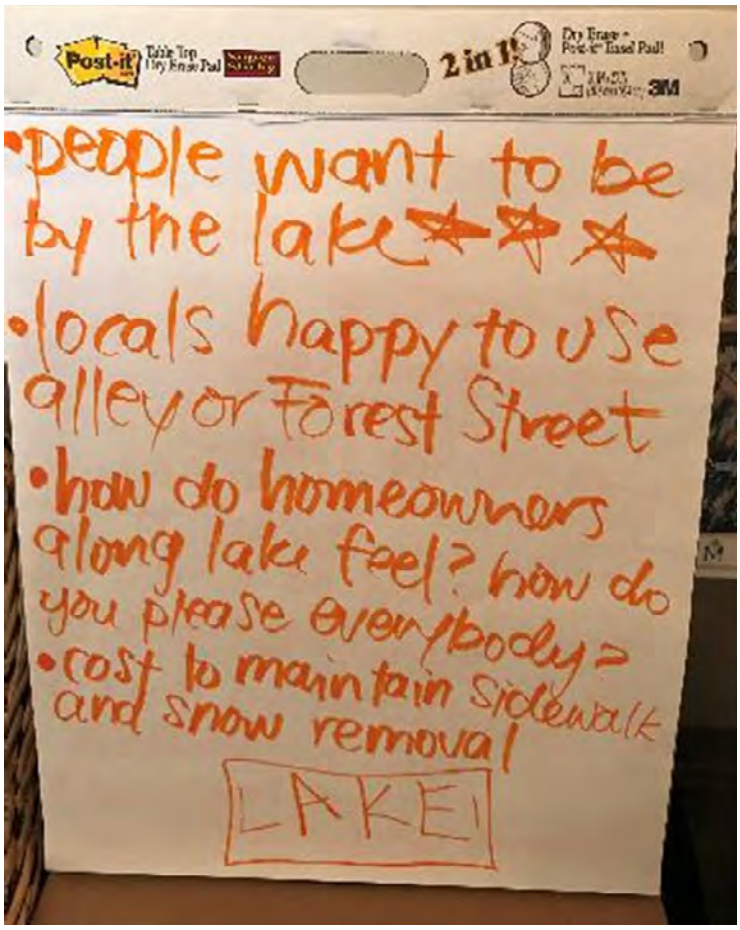
- Yes, as MUCH as possible – people WILL walk on the north side of the street

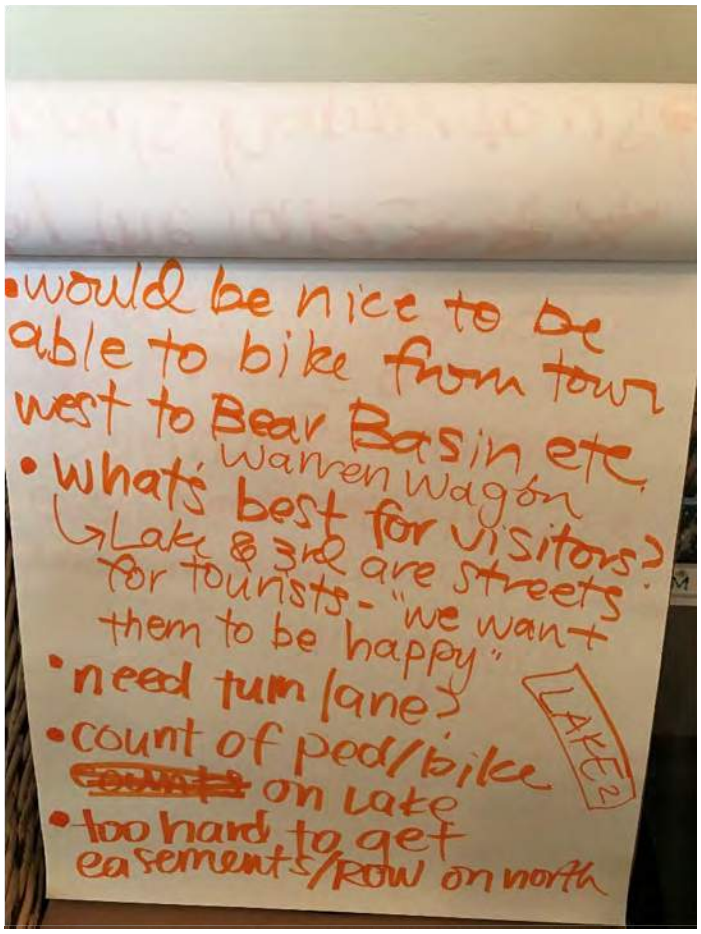


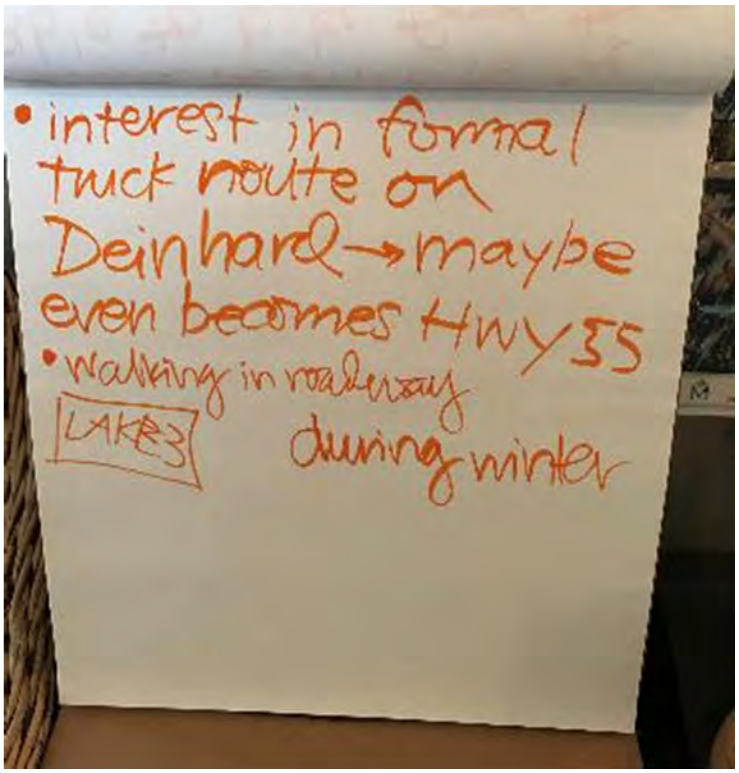
CONS

Attachments – Original Meeting Notes and Materials




• people want to be by the lake ★★★
• locals happy to use alley or Forest Street
• how do homeowners along lake feel? how do you please everybody?
• cost to maintain sidewalk and snow removal
LAKE 1


• would be nice to be able to bike from town west to Bear Basin etc.
• what's best for visitors? Warren Wagon
↳ Lake & 3rd are streets for tounsts - "we want them to be happy"
• need turn lane?
• count of ped/bike ~~counts~~ on lake
• too hard to get easements/ROW on north
LAKE 2


• interest in formal truck route on Deinhard → maybe even becomes Hwy 55
• walking in roadway during winter
LAKE 3

SIGN-IN SHEET

Project Name – McCall Street Improvements Public Meeting: LAKE ST.
Date & Time: April 19 **, 2017 at** 6:30pm
Location:

FIRST NAME	LAST NAME	PHONE (optional)	EMAIL (to receive any updates)
Janice	Reinhard	2085731326	janicereinhard@yahoo.com
Mary	Martin	208 376 4025	dksooner@cableone.net
Bryant	Reinhard	208 860 6464	bryant@boisemccallrealestate.com
Brent	Loveless	208-866-9405	bnloveless@hotmail.com
Amy	Pemberton	315-1364	amy@npnplaw.com
Dennis	Edwards	315-5518	dustydew100@hotmail.com
Jackie	Aymon		

4/19/17

STREET PRIORITIES for: E Lake Street (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

Sidewalk on at least one side of street. Multi use path on one side

SOMEWHAT IMPORTANT

Bike lanes on both sides of lake street

UNIMPORTANT

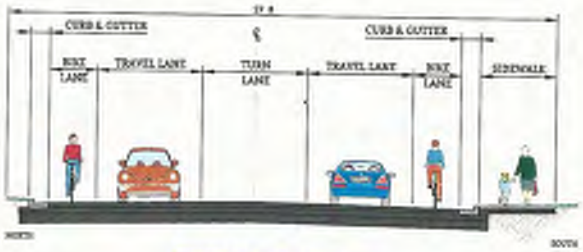
OTHER COMMENTS

YOUR NAME: _____

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

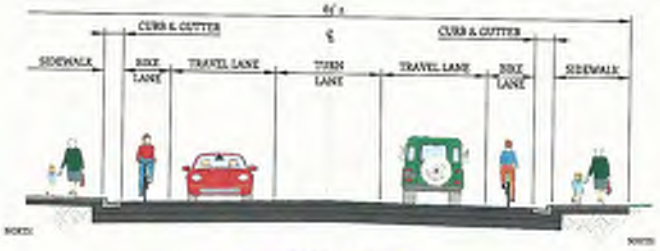
PROS



ALTERNATIVE NO. 1

CONS

PROS



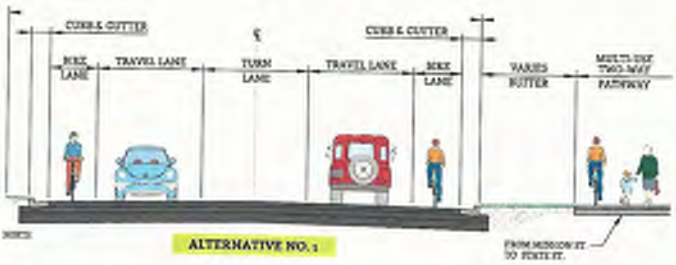
ALTERNATIVE NO. 2

CONS

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

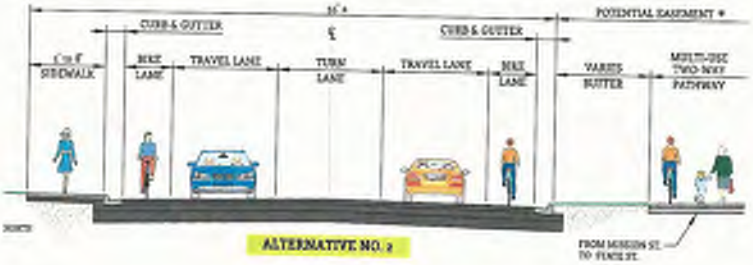
PROS



ALTERNATIVE NO. 1

CONS

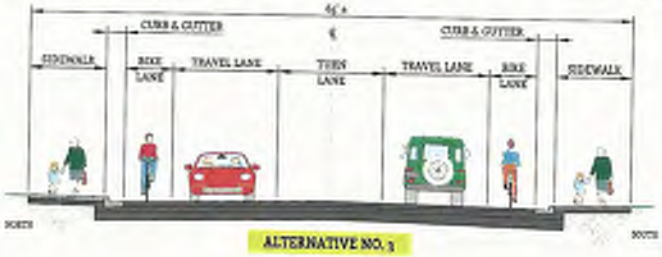
PROS



ALTERNATIVE NO. 2

CONS

PROS



ALTERNATIVE NO. 3

CONS

STREET PRIORITIES for: Lake Street (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes ✓
- sidewalk ✓
- pathway ✓
- crosswalk/crossing ✓
- parking ✓
- stormwater/drainage ✓
- snow removal/storage ✓
- views ✓
- landscaping ✓
- natural areas ✓
- driveway access ✓
- access to: _____
- signage
- better road surface
- slower vehicles ✓
- turn lanes ✓
- good visibility ✓
- private property
- other: _____

VERY IMPORTANT

sidewalk
crossing
proper drainage
bike lanes

SOMEWHAT IMPORTANT

turn lanes

UNIMPORTANT

natural areas
driveway access

OTHER COMMENTS

Safety is important!
User friendly is always good too.
Like 1 Bike lane, 1 pedestrian lane on S Side Lake St.

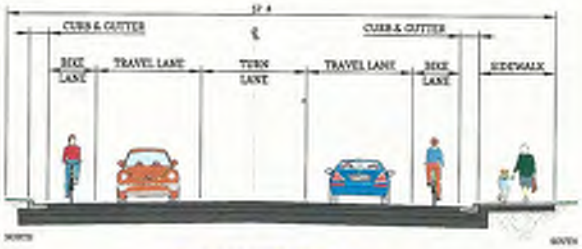
YOUR NAME: Janice Reinhard

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

PROS

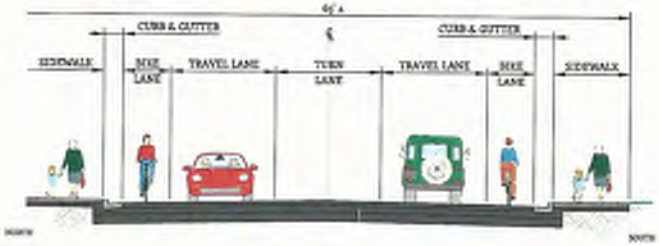
CONS



ALTERNATIVE NO. 1

PROS

CONS



ALTERNATIVE NO. 2

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

PROS

CONS

ALTERNATIVE NO. 1

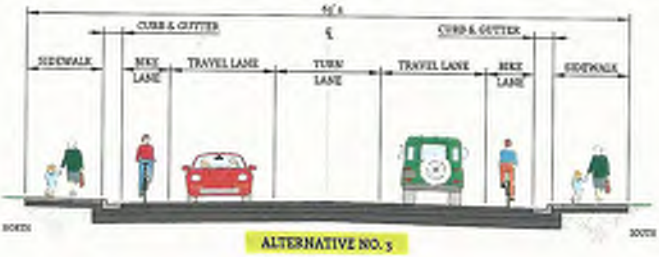
PROS

CONS

ALTERNATIVE NO. 2

PROS

CONS



ALTERNATIVE NO. 3

STREET PRIORITIES for: Lake St (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

WHETHER IT IS A PATHWAY, BIKE LANE, SIDEWALK — NEED THE SAFEST METHOD OF TRANSPORTATION for walkers + bikers on both sides of the road.

SOMEWHAT IMPORTANT

UNIMPORTANT

turn lanes — W of Mission — unimportant — E of Mission — more important

OTHER COMMENTS

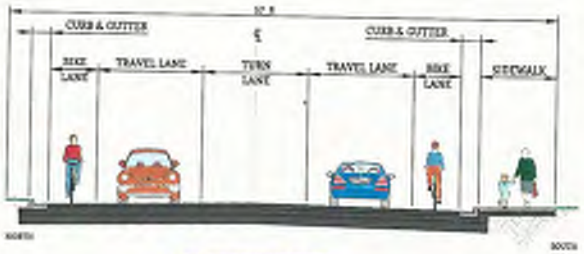
We are a tourist community. Need to allow tourists + locals safe route from Shoe lodge to town. If we are going to spend $ on street scape — this is the place to do our best.

YOUR NAME: Amy Pemberton

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

PROS

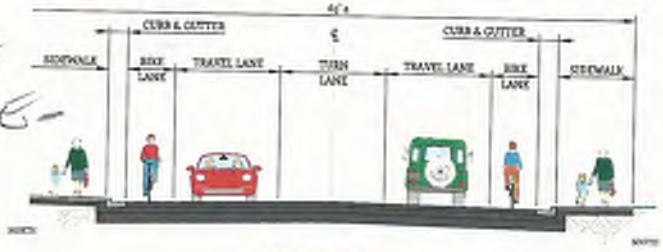


ALTERNATIVE NO. 1

CONS

PROS

DEFINITELY BOTH SIDES IF POSSIBLE -



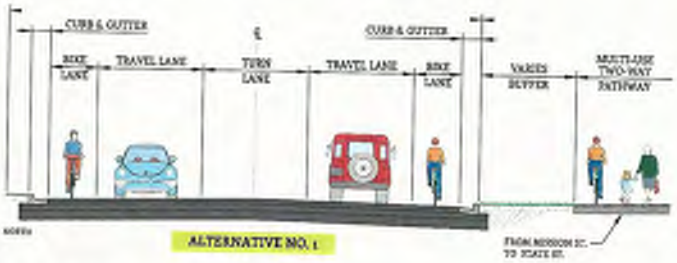
ALTERNATIVE NO. 2

CONS

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

PROS



ALTERNATIVE NO. 1

CONS

PROS

yes - along the PS + City property

ALTERNATIVE NO. 2

CONS

PROS

yes as much as possible - PEOPLE WILL WALK ON THE NORTH SIDE OF THE STREET

ALTERNATIVE NO. 3

CONS

STREET PRIORITIES for: _____ (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

Trucks off Lake St

multiuse pathway on south side
bike lane on North side

SOMEWHAT IMPORTANT

Storm H2O
snow storage

turn lanes at hospital, Alpha Mother

UNIMPORTANT

parking

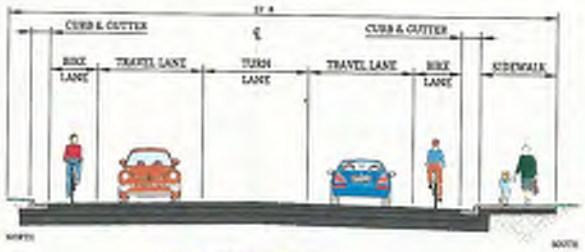
OTHER COMMENTS

YOUR NAME: _____

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

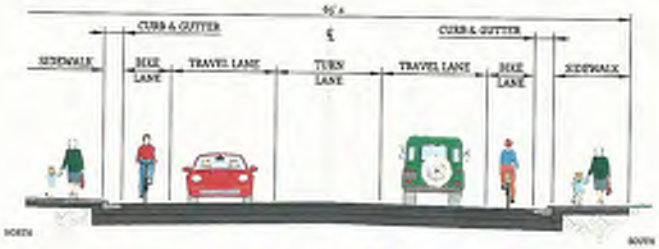
PROS



ALTERNATIVE NO. 1

CONS

PROS



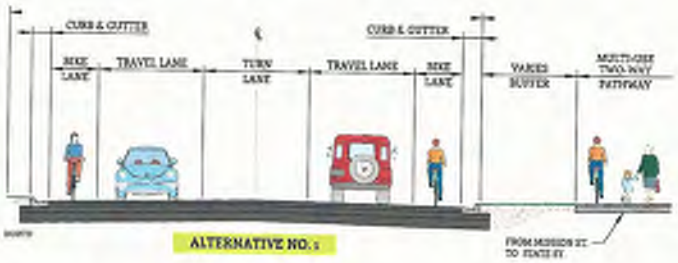
ALTERNATIVE NO. 2

CONS

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

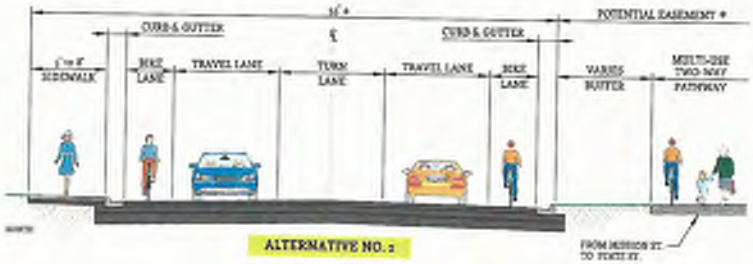
PROS



ALTERNATIVE NO. 1

CONS

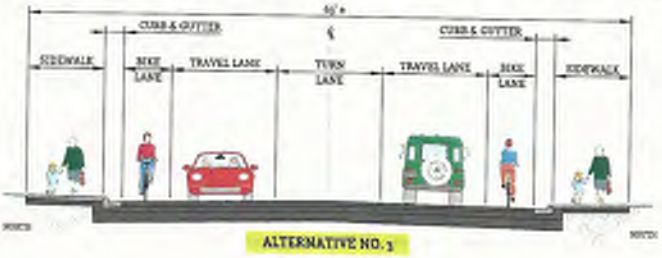
PROS



ALTERNATIVE NO. 2

CONS

PROS



ALTERNATIVE NO. 3

CONS

STREET PRIORITIES for: Lake St (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

A bike lanes
B sidewalk
C pathway
D crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

A B C D	VERY IMPORTANT
	SOMEWHAT IMPORTANT
	UNIMPORTANT

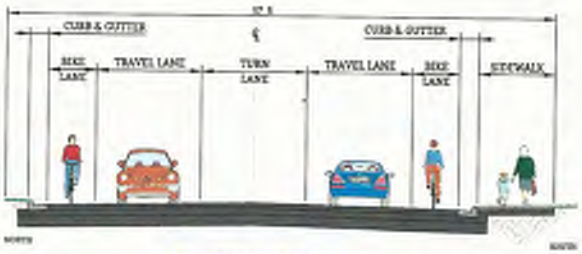
OTHER COMMENTS

YOUR NAME: Danni Edwards

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

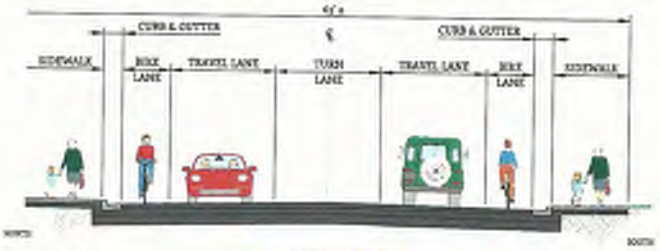
PROS



ALTERNATIVE NO. 1

CONS

PROS



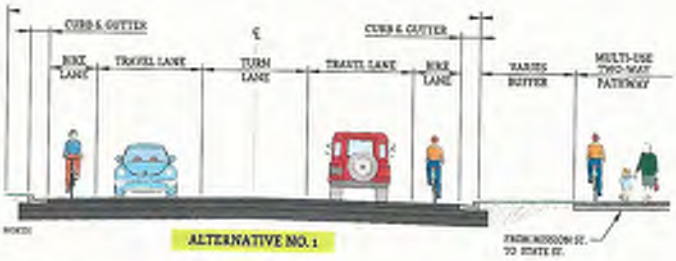
ALTERNATIVE NO. 2

CONS

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

PROS



ALTERNATIVE NO. 1

CONS

PROS

ALTERNATIVE NO. 2

CONS

PROS

ALTERNATIVE NO. 3

CONS

STREET PRIORITIES for: Lake Street (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

bike Lanes, sidewalks
Crossings

SOMEWHAT IMPORTANT

driveway access, turn Lanes

~~Sto~~

UNIMPORTANT

OTHER COMMENTS

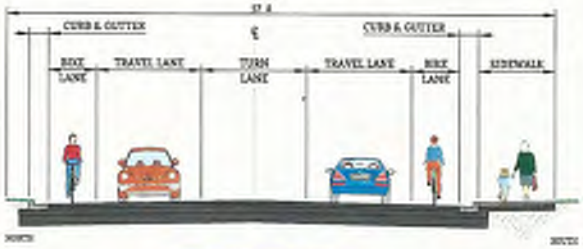
Good Job!

YOUR NAME: Reinhard

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

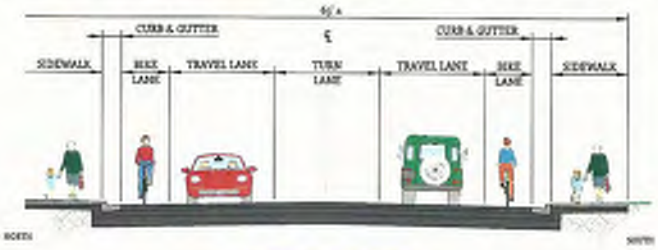
PROS



ALTERNATIVE NO. 1

CONS

PROS



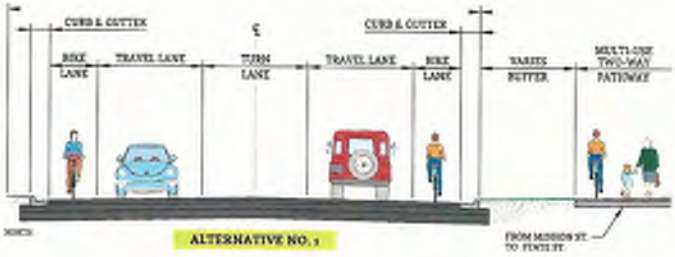
ALTERNATIVE NO. 2

CONS

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

PROS



ALTERNATIVE NO. 1

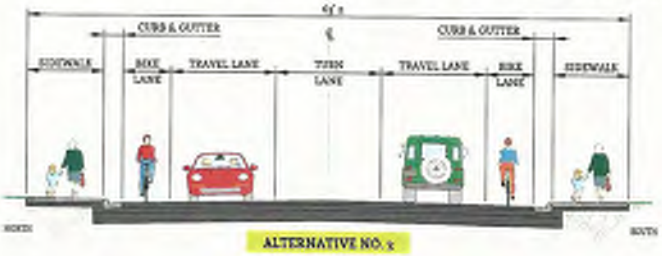
CONS

PROS

ALTERNATIVE NO. 2

CONS

PROS



ALTERNATIVE NO. 3

CONS

STREET PRIORITIES for: W LAKE (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

bike lane
snow removal
private property

SOMEWHAT IMPORTANT

sidewalks
storm water
cross walk

UNIMPORTANT

landscaping

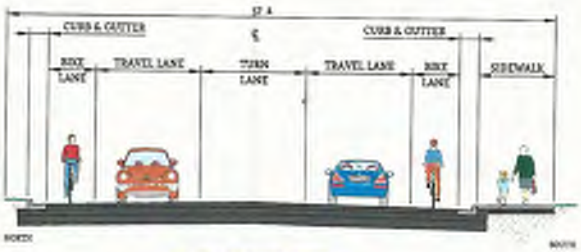
OTHER COMMENTS

YOUR NAME: _____

E. LAKE STREET / HWY. 55

MISSION ST. TO 1ST ST.

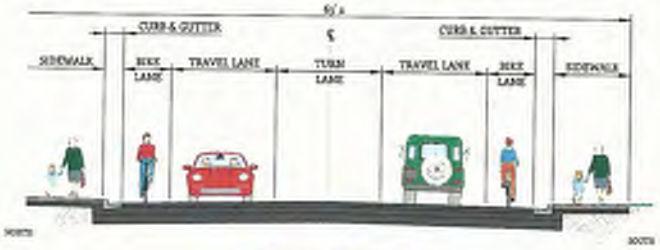
PROS



ALTERNATIVE NO. 1

CONS

PROS



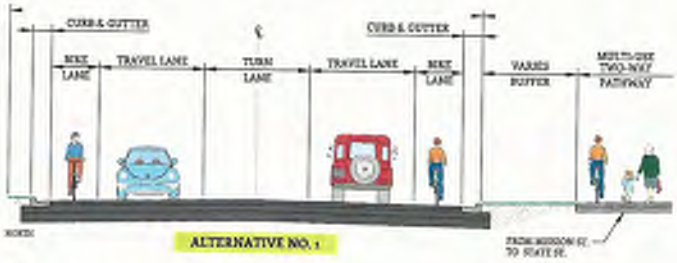
ALTERNATIVE NO. 2

CONS

W. LAKE STREET / HWY. 55

MISSION ST. TO MATHER RD.

PROS



ALTERNATIVE NO. 1

CONS

PROS

ALTERNATIVE NO. 2

CONS

PROS

ALTERNATIVE NO. 3

CONS

IDAHO STREET

APRIL 19, 2017

Public Meeting Summary

IDAHO STREET

Approximately 10 people participated in the Idaho Street public meeting on April 19, 2017, and provided input on how the street should be designed for the future. Below is a summary of this input, which is reflective of the input from meeting participants. Scans of the original feedback materials are attached, for reference.

In addition to raising awareness with the public around design options and limitations, the public meeting provided useful initial input for street planning, engineering and design. Initial public reaction to possible street designs can be used to:

- Refine options for further testing with the public as each street nears the design stage, and
- Planning at longer-term and/or larger scales (e.g., pathways planning, ROW or easement acquisition, etc.)

Feedback from this meeting is grouped into four sections:

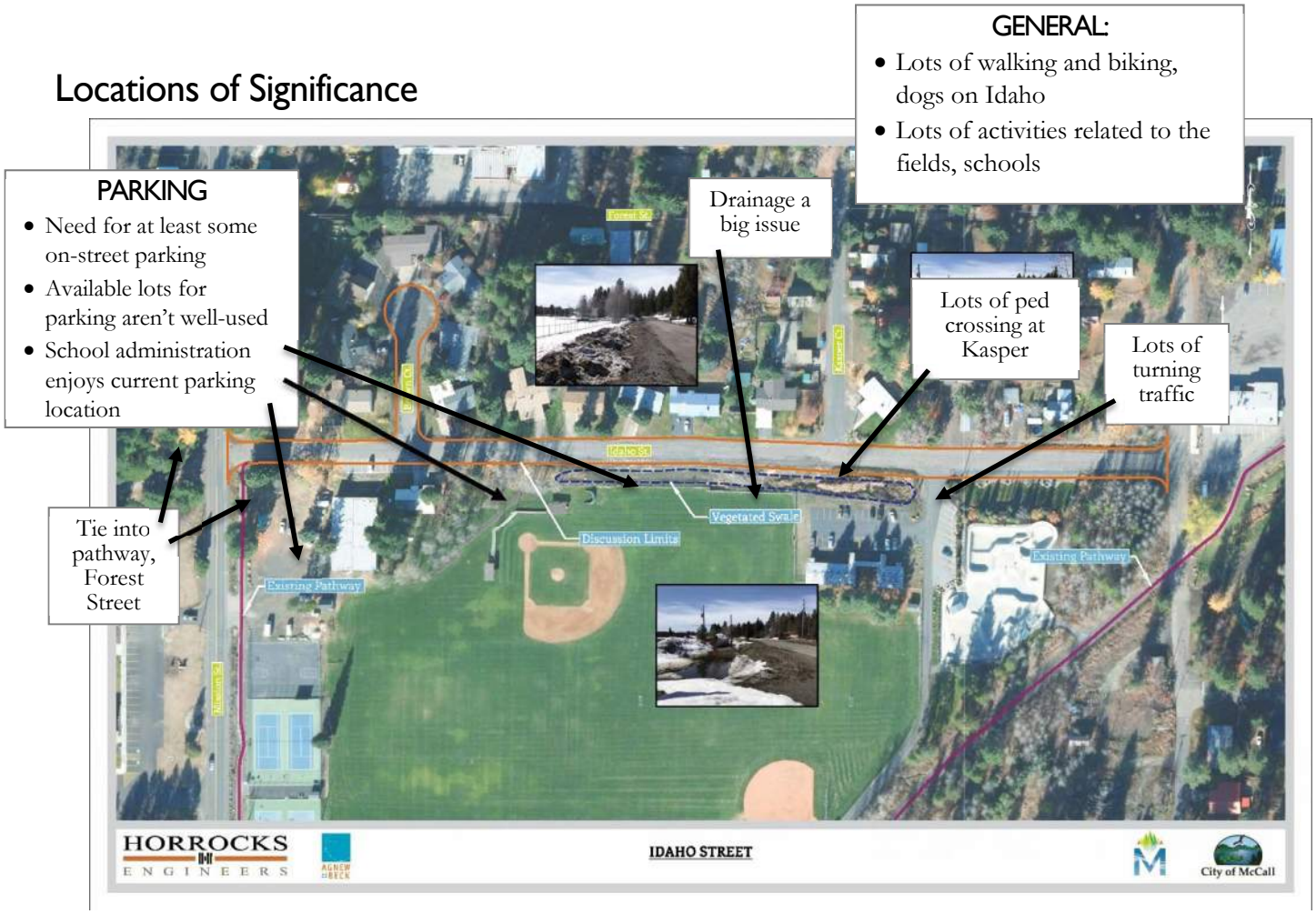
1. General themes
2. Locations of significance (see map)
3. Street priorities (see table)
4. Design preferences (see annotated sections)

General Themes

Highlights from the meeting discussion as well as review of written feedback shows support and preferences for the following design elements and approaches on Idaho Street:

- Participants agreed that the road needs to be resurfaced/rebuilt.
- Addressing stormwater/drainage needs and maintaining good accommodations for snow storage and related melt is the number one priority for the design of this road. Drainage should not flood residents' properties.
- This road has a significant amount of walking and biking traffic, including school-aged kids, people with dogs and with strollers. Street design should accommodate and give preference to these uses, including a clearly marked pedestrian crossing to Kasper and tying in with the pathway along Mission (south), and Forest (north). Traffic turning into the school should be alerted about bikes and pedestrians.
- Participants were in favor of the following design elements:
    - Separated multi-use pathway
    - Accommodations for parking (especially for public use of school ballfields) – mixed feelings and inconclusive discussion about where this parking should go, how much is needed, and if it should be allowed on-street ("people will park there no matter what") or directed toward large, existing lots.
    - Option for curb and gutter on north side of the street (should not prevent driveway access)
    - Connectivity to school, ballfields from street
- Participants were interested in landscaping and natural areas.
- Participants were not supportive of:
    - Sidewalk
    - Swales adjacent to existing driveways that are deep/filled with water

Locations of Significance



Street Priorities

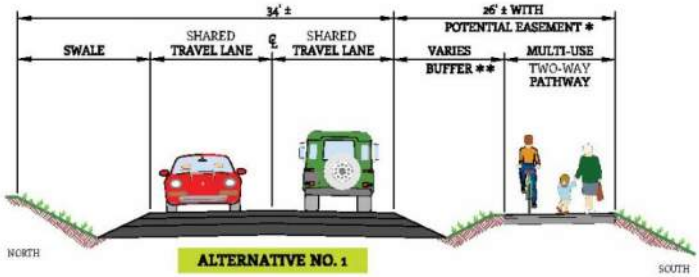
	Priorities	Comments
VERY IMPORTANT	Stormwater/drainage – 5 Multi-use pathway – 4 Parking – 4 Snow removal/storage – 2 Driveway access/Private property – 2 Better road surface Landscaping Slower vehicle speeds	No barrier curb Crosswalk at Kasper
SOMEWHAT IMPORTANT	Snow removal/storage – 2 Signage Visibility Natural areas Slower vehicles Better road surface	
UNIMPORTANT	Sidewalk – 2 Parking Bike lane Turn lane Natural areas	Landscaping not necessary – have ballparks

Design Preferences

IDAHO STREET

N. MISSION ST. TO 1ST ST.

PROS



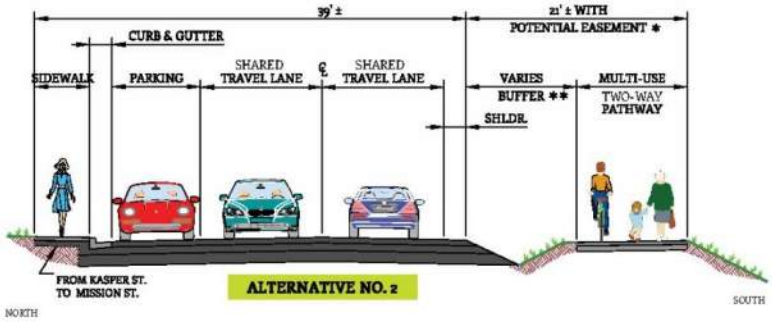
CONS

- Don't like ditches ("terrified" of them)
- Concerned about height/elevation of street causing too much drainage into yards

---

PROS

- Pathway – "yes!" At least 10 feet wide. On south side, where most people want to walk (with good crossing to Kasper)
- Many people like the idea of curb/gutter, no sidewalk ("wasted space")
- Allow for parking on at least one side (north and/or south)



CONS

- Shouldn't include parking – use parking lots instead and reduce need for easement

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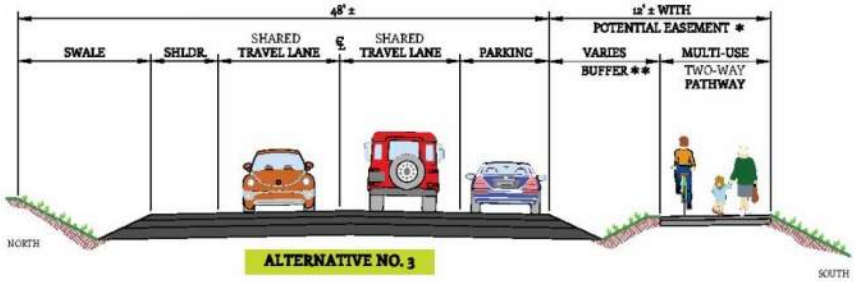
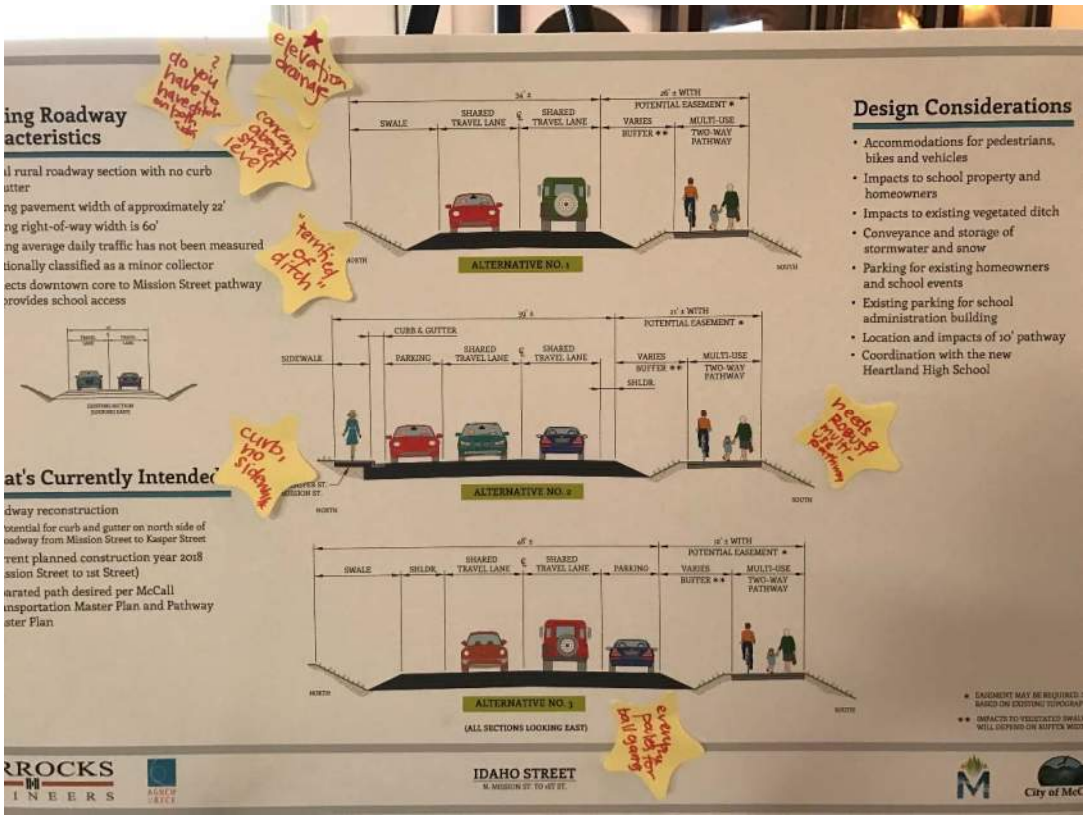
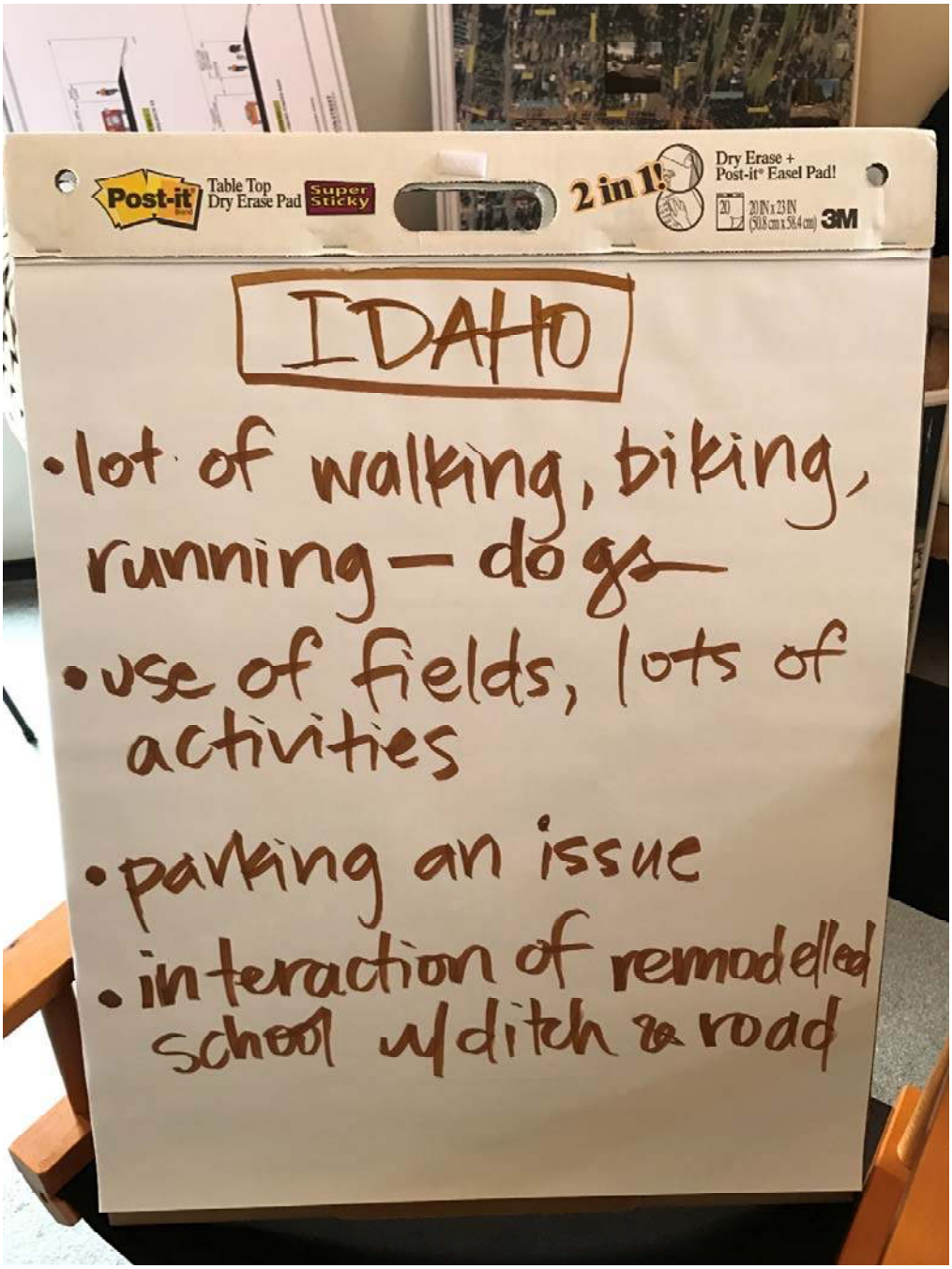
PROS



CONS

Attachments – Original Meeting Notes and Materials




Post-it
Table Top Dry Erase Pad
Super Sticky
2 in 1!
Dry Erase + Post-it® Easel Pad!
20 IN x 23 IN (50.8 cm x 58.4 cm)
3M
IDAHO
• lot of walking, biking, running — dogs
• use of fields, lots of activities
• parking an issue
• interaction of remodelled school w/ditch & road

DAVIS AVENUE

APRIL 20, 2017 Public Meeting Summary

Approximately 10 people participated in the Davis Avenue public meeting on April 20, 2017, and provided input on how the street should be designed for the future. Below is a summary of this input, which is reflective of the input from meeting participants. Scans of the original feedback materials are attached, for reference.

In addition to raising awareness with the public around design options and limitations, the public meeting provided useful initial input for street planning, engineering and design. Initial public reaction to possible street designs can be used to:

- Refine options for further testing with the public as each street nears the design stage, and
- Planning at longer-term and/or larger scales (e.g., pathways planning, ROW or easement acquisition, etc.)

Feedback from this meeting is grouped into four sections:

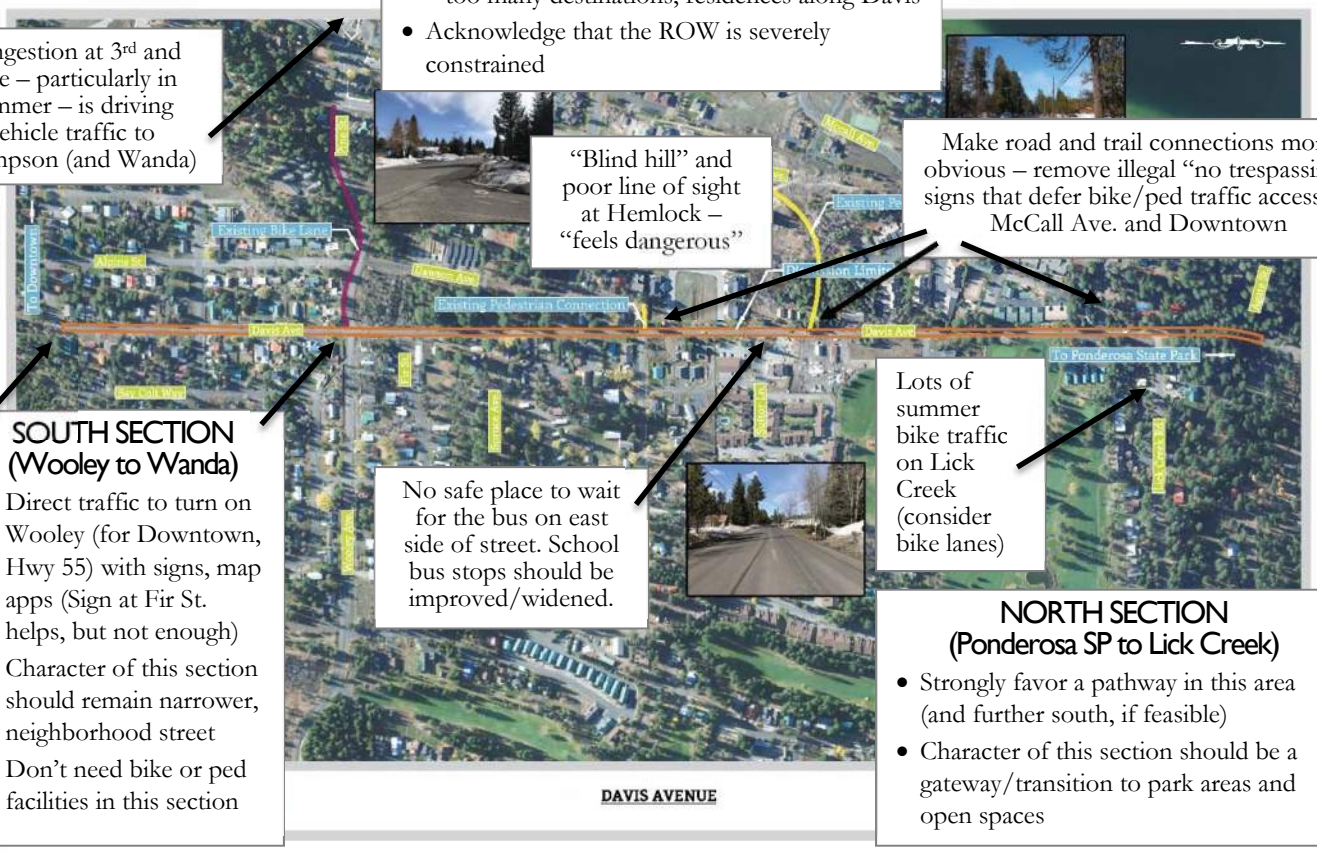
1. General themes
2. Locations of significance (see map)
3. Street priorities (see table)
4. Design preferences (see annotated sections)

General Themes

Highlights from the meeting discussion as well as review of written feedback shows support and preferences for the following design elements and approaches on Davis Avenue:

- There were three subsections of Davis identified:
    - **SOUTH** (Wooley Ave. to Wanda Ave.) – retain low-volume neighborhood character with no major changes to roadway design
    - **MIDDLE** (Lick Creek Rd. to Wooley Ave.) – better accommodate mix of roadways users and better separate pedestrians and less experienced bikers from vehicle traffic
    - **NORTH** (Ponderosa State Park to Lick Creek Rd.) – prefer pathway to transition to park and open space
- Participants agreed that pedestrian and biking accommodations should be improved on Davis, and acknowledged that private property and ROW constraints make simple solutions difficult. Discussion seemed to support the idea of identifying both short-term (bike lanes and/or path in existing ROW) and longer-term solutions (acquiring easements or widening ROW).
- This road has a significant amount of walking and biking traffic, including children, dogs, people with strollers in both summer and winter seasons. Street design should work to better accommodate these uses, and also create clearer opportunities (e.g., clear signage, crossings) to move bike/ped traffic off of Davis toward lower-volume streets such as McCall Ave. and Roosevelt Ave.
- Participants were in favor of the following design elements:
    - Separated multi-use pathway, wherever possible
    - Space between peds/bikes and vehicles (e.g., wider traffic lanes w/bike lanes or 2-way path)
    - More/improved bus stop areas
- Seemed to be a preference for snow storage on Davis.

Locations of Significance



MIDDLE SECTION (Lick Creek to Wooley)

- Lots of walking, biking and vehicle traffic
- Unlikely that this traffic can be diverted entirely – too many destinations, residences along Davis
- Acknowledge that the ROW is severely constrained

Congestion at 3rd and Pine – particularly in summer – is driving vehicle traffic to Thompson (and Wanda)

"Blind hill" and poor line of sight at Hemlock – "feels dangerous"

Make road and trail connections more obvious – remove illegal "no trespassing" signs that defer bike/ped traffic accessing McCall Ave. and Downtown

Lots of summer bike traffic on Lick Creek (consider bike lanes)

No safe place to wait for the bus on east side of street. School bus stops should be improved/widened.

SOUTH SECTION (Wooley to Wanda)

- Direct traffic to turn on Wooley (for Downtown, Hwy 55) with signs, map apps (Sign at Fir St. helps, but not enough)
- Character of this section should remain narrower, neighborhood street
- Don't need bike or ped facilities in this section

NORTH SECTION (Ponderosa SP to Lick Creek)

- Strongly favor a pathway in this area (and further south, if feasible)
- Character of this section should be a gateway/transition to park areas and open spaces

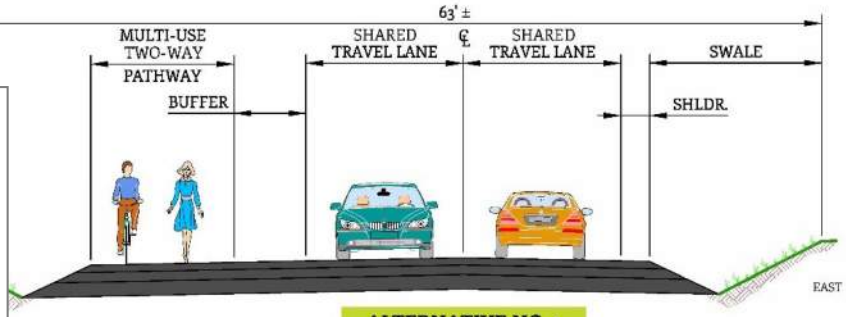
Street Priorities

	Priorities	Comments
VERY IMPORTANT	Multi-use pathways – 4 Snow removal/storage – 3 Signage – 2 Crosswalks/crossings – 2 Bike lanes – 2 Safer bus stops – 2 Stormwater/drainage Road surfaces Wider shoulders Lighting	• Reduce traffic from Davis/Wooley junction South to Wanda Street • Pathway linking Ponderosa Park to intersection of Lick Creek and Davis
SOMEWHAT IMPORTANT	Visibility – 2 Stormwater/drainage Turn lanes Natural areas	
UNIMPORTANT	Turn lanes Curb and gutter	"we like swales better"

Design Preferences

PROS

- Allows more space between people and traffic
- This would be good if driving lanes were wider for more serious bikers

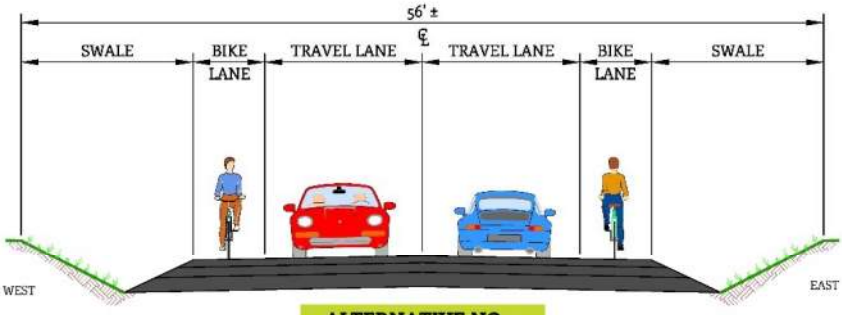


ALTERNATIVE NO. 1

CONS

- Counter-flow traffic on path is "tricky"
- Bikes and people will still use both sides of street (lots of crossings, etc.)

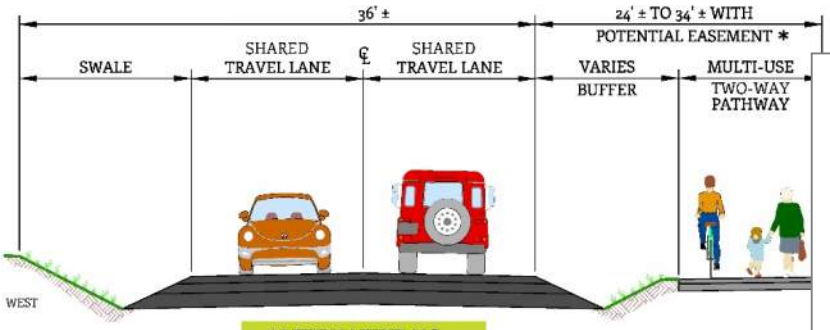
- Bike lanes (Park Street example)
- Accommodates traffic on both sides (can accommodate pedestrians in bike lanes)



ALTERNATIVE NO. 2

- Lanes too close to traffic/lanes should be much wider in section from Lick Creek to Pine Street
- Not much room for pedestrians (unless bike lanes widened)

- Safer for trail users
- Most space between people and traffic
- This is ideal for entire road, but…



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

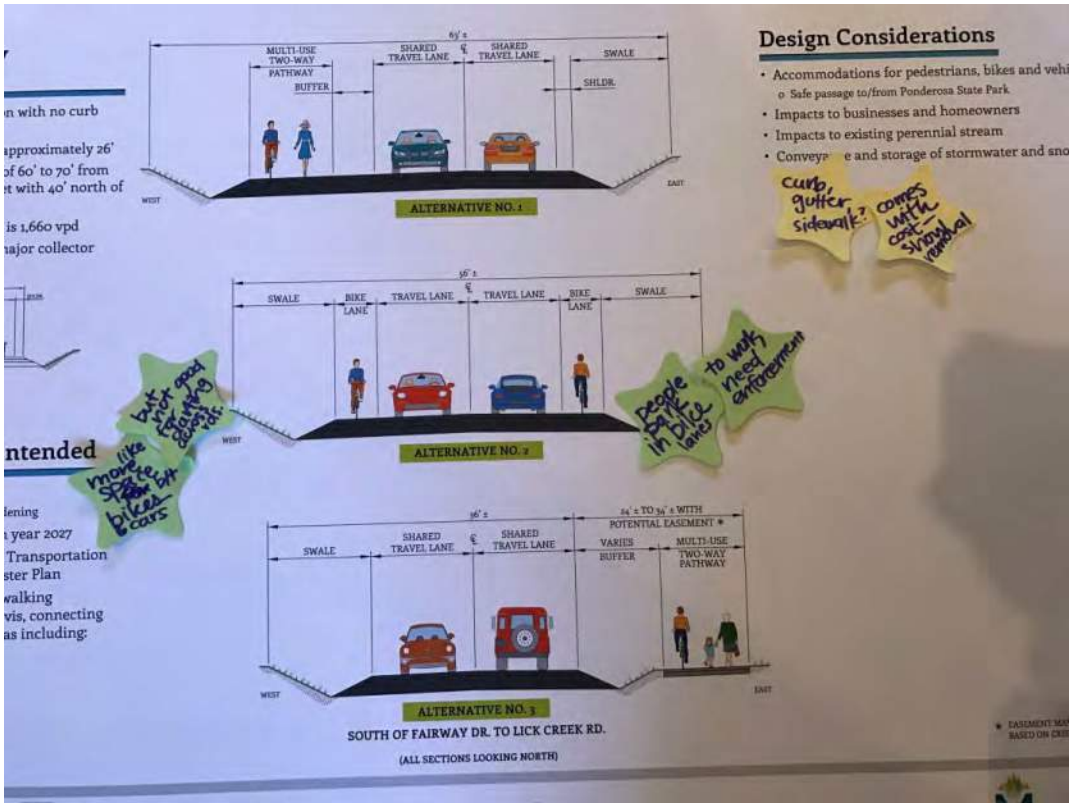
(ALL SECTIONS LOOKING NORTH)

- Cost more to implement? (larger footprint/requires easements)
- …not ideal if imminent domain is used to acquire

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

Attachments – Original Meeting Notes and Materials



SIGN-IN SHEET

Project Name – McCall Street Improvements Public Meeting: DAVIS
Date & Time: April_____ , 2017 at _____
Location:

FIRST NAME	LAST NAME	PHONE (optional)	EMAIL (to receive any updates)
Robert	S. Giles	208-869-1561	~~rs~~ bobsgiles@gmail.com
GLENN	JACOBSEN	208 634-2521	gjacobsen@frontiernet.net
Jean-Claude	Aymon	208-634-2058	jjaymon@frontiernet.net
Monica	Mawson		mcwallinske@hotmail.com
BRENT	MORRISON		Buddym_75@Hotmail.com
DAVE	CARTER	315.2472	carter.dave1007@gmail.com
Karen	Lannom		
Sandra	Dingman		sandeedingman@gmail.com

STREET PRIORITIES for: Davis (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

signage on Woolery to lead back into town
crosswalk/crossing
snow removal storage

SOMEWHAT IMPORTANT

UNIMPORTANT

OTHER COMMENTS

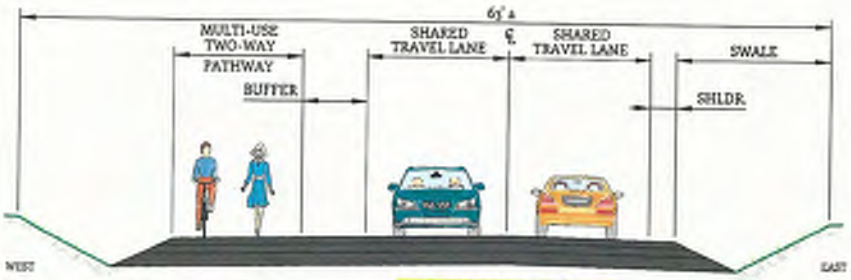
Make street imp. & signages to reduce traffic from Davis/Wooly junction south to Wanda St.

YOUR NAME: Glenn Jacobsen

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

PROS



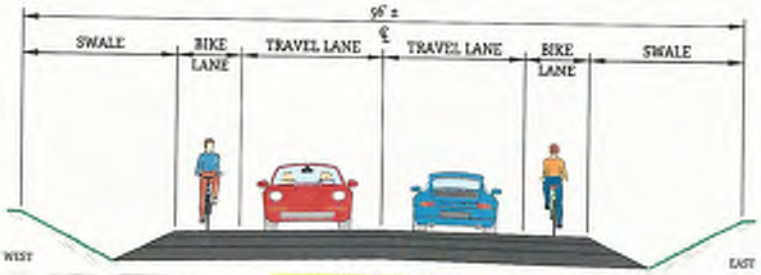
ALTERNATIVE NO. 1

CONS

PROS

BIKE LANE

Park St. example



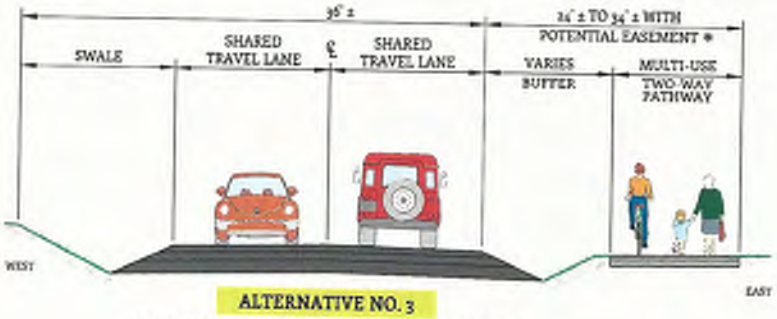
ALTERNATIVE NO. 2

CONS

Bob
Cell phone 869-1561

PROS

more easement,



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

CONS

STREET PRIORITIES for: DAVIS (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

SOMEWHAT IMPORTANT

UNIMPORTANT

OTHER COMMENTS

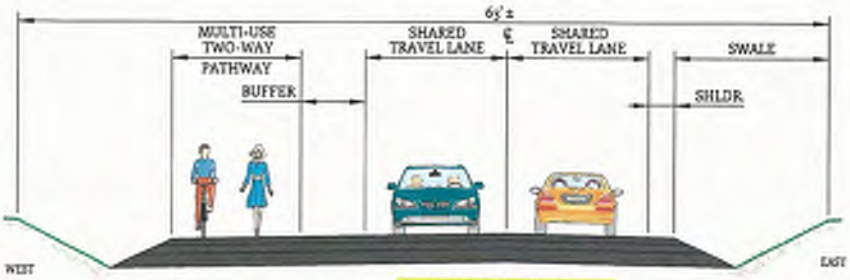
WHY IS THERE NOT AN OPTION W/CURB + SIDEWALK?

YOUR NAME: _____

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

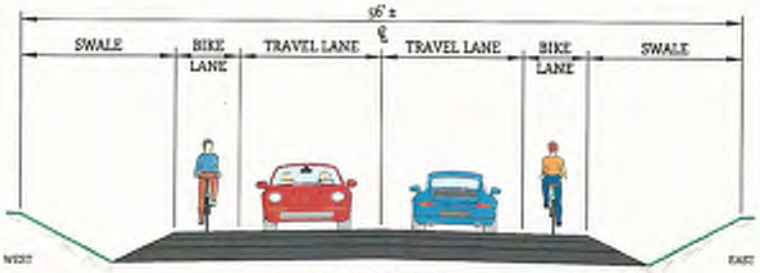
PROS



ALTERNATIVE NO. 1

CONS

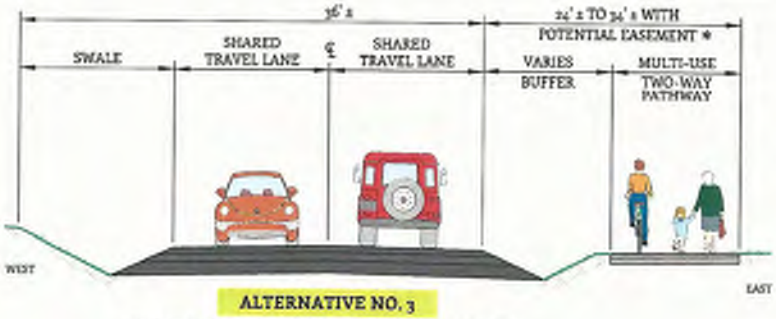
PROS



ALTERNATIVE NO. 2

CONS

PROS



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

CONS

STREET PRIORITIES for: _____ (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

Pathway

SOMEWHAT IMPORTANT

UNIMPORTANT

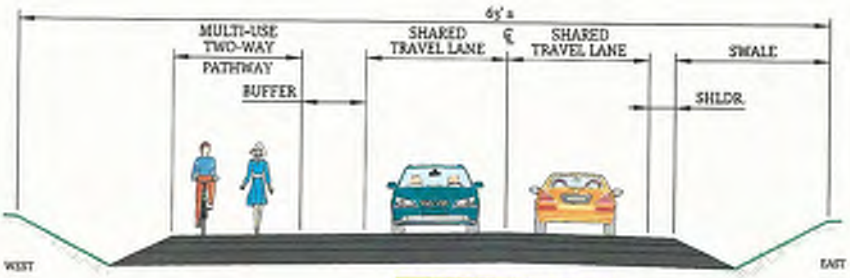
OTHER COMMENTS

YOUR NAME: _____

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

PROS



ALTERNATIVE NO. 1

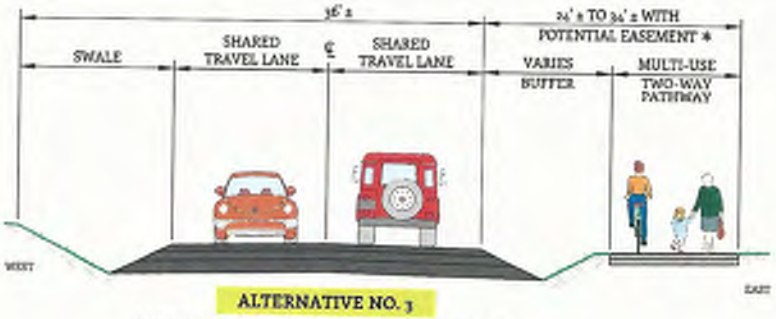
CONS

PROS

ALTERNATIVE NO. 2

CONS

PROS



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

CONS

STREET PRIORITIES for: Davis (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

pathway or ~~Sidewalk~~ Bike lanes	**VERY IMPORTANT** ~~Storm~~ Snow removal
	SOMEWHAT IMPORTANT Good visibility Stormwater
	UNIMPORTANT turn lanes

OTHER COMMENTS

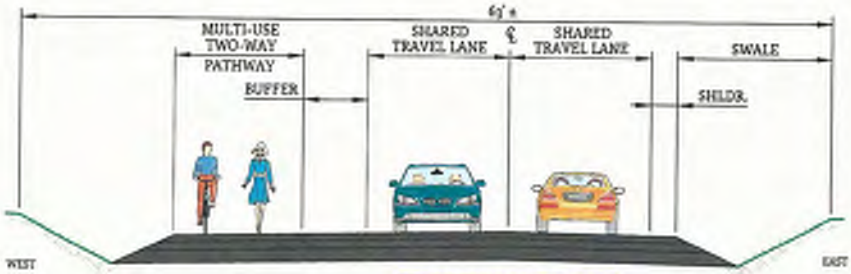
Need to think about wide spots for bus stops. There's both city and school bus routes here and no safe place to stand except the Aspen Market Kiosk

YOUR NAME: Sandra Dingman resident on Fairway Dr.

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

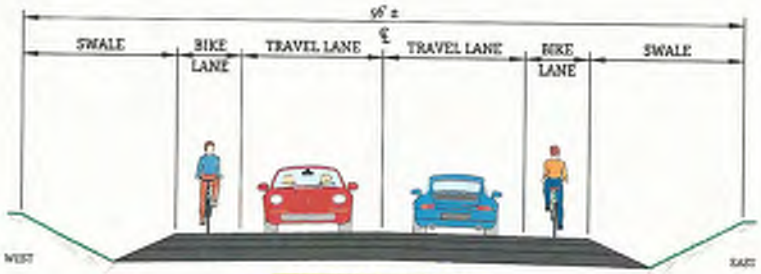
PROS



ALTERNATIVE NO. 1

CONS

PROS



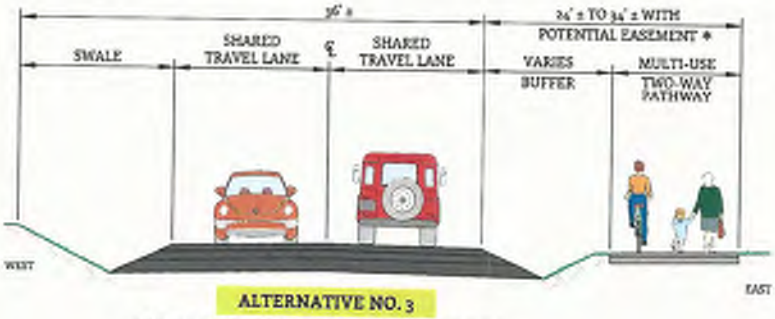
ALTERNATIVE NO. 2

CONS

Too close to traffic

PROS

I think this is safer for trail users



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

CONS

Cost more? Larger footprint?

STREET PRIORITIES for: Davis (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

- bike lanes
- sidewalk
- pathway
- crosswalk/crossing
- parking
- stormwater/drainage
- snow removal/storage
- views
- landscaping
- natural areas
- driveway access
- access to: _____
- signage
- better road surface
- slower vehicles
- turn lanes
- good visibility
- private property
- other: _____

VERY IMPORTANT

bike lanes
pathway
crosswalk
drainage
snow removal
signage
better road surface

SOMEWHAT IMPORTANT

~~park~~
good visibility
turn lanes
natural areas

UNIMPORTANT

parking
slower vehicles

OTHER COMMENTS

separate pathway that links Ponderosa Park to the intersection of Lick Creek and Davis. Better signage for ~~foot~~ and bike traffic onto Ruby Street. Option 2 - wider on both sides from intersection of Davis and Lick Creek to Pine Street. - To accomodate pedestrians on both sides of Davis.

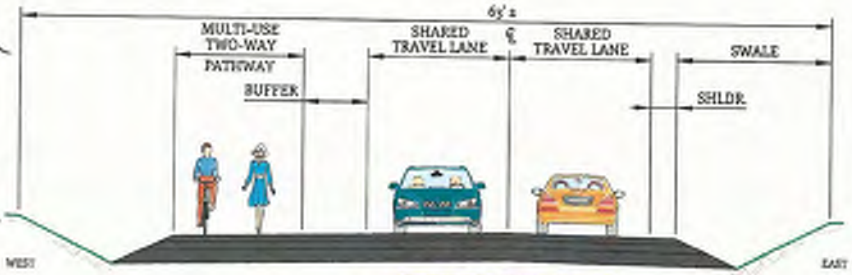
YOUR NAME: Karen Lannom

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

PROS

more seperation between traffic and pedestrians.



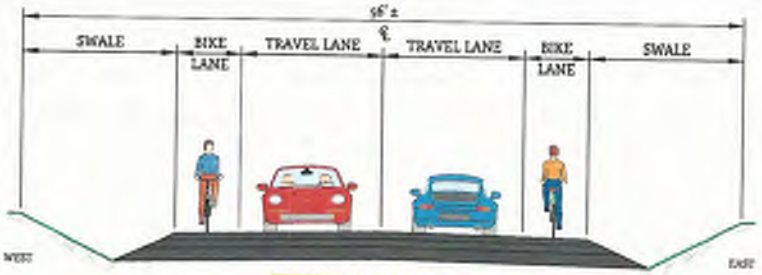
ALTERNATIVE NO. 1

CONS

bikes and people on both sides of street could be tricky

PROS

accomodates pedestrians on both sides



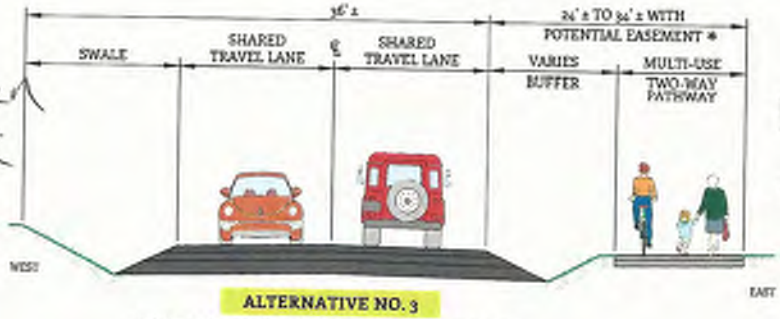
ALTERNATIVE NO. 2

CONS

not much room for walkers

PROS

most space between people and traffic



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

CONS

requires easements

STREET PRIORITIES for: Davis (insert street name)

Provide input about what the high, medium and low priorities should be for this street. Please write up to three priorities in each box. The list below is intended as a guide - please feel free to reword or add your own priorities if they are not listed.

bike lanes
sidewalk
pathway
crosswalk/crossing
parking
stormwater/drainage
snow removal/storage
views
landscaping
natural areas
driveway access
access to: _____
signage
better road surface
slower vehicles
turn lanes
good visibility
private property
other: _____

VERY IMPORTANT

- No need to go (south) beyond if wooley & Pine.
- Better signage
- wider shoulders
- multi use

SOMEWHAT IMPORTANT

UNIMPORTANT

Curb & gutter - we like swales better

OTHER COMMENTS

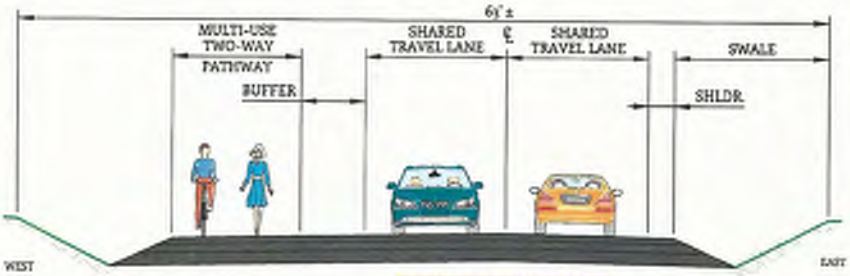
Ideal world is option 3, but not if immenent domain has to happen. Option 1 would be good with wider driving lanes for more serious bikers

YOUR NAME: Morrisons

DAVIS AVENUE

LICK CREEK RD. TO AGATE ST.

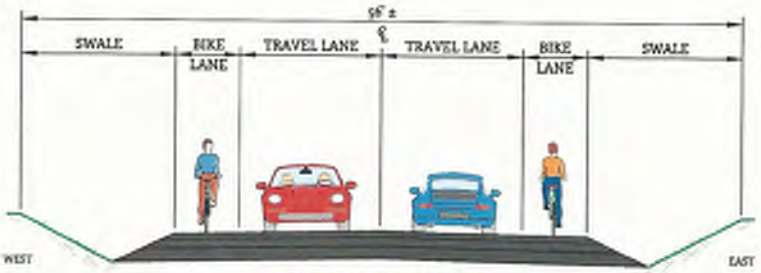
PROS



ALTERNATIVE NO. 1

CONS

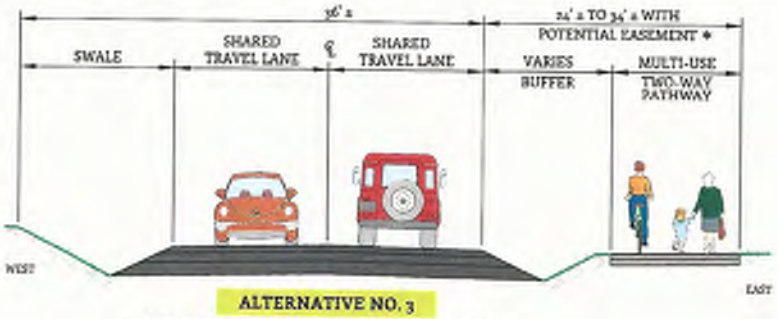
PROS



ALTERNATIVE NO. 2

CONS

PROS



ALTERNATIVE NO. 3

SOUTH OF FAIRWAY DR. TO LICK CREEK RD.

CONS

Attachment C Preliminary Traffic Operations Worksheets

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	220	45	108	43	412	155	273
v/c Ratio	0.69	0.12	0.32	0.07	0.39	0.29	0.23
Control Delay	23.0	16.9	6.9	5.8	6.3	7.8	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	23.0	16.9	6.9	5.8	6.6	7.8	6.0
Queue Length 50th (ft)	35	12	0	4	43	19	31
Queue Length 95th (ft)	93	31	30	19	120	63	83
Internal Link Dist (ft)	314	411			262		210
Turn Bay Length (ft)			55	150		150	
Base Capacity (vph)	448	572	471	606	1068	530	1177
Starvation Cap Reductn	0	0	0	0	232	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.08	0.23	0.07	0.49	0.29	0.23

Intersection Summary

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	101	53	62	56	452	49	334
v/c Ratio	0.04	0.38	0.31	0.26	0.08	0.34	0.08	0.25
Control Delay	17.7	9.5	23.9	9.2	3.8	4.5	3.8	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	9.5	23.9	9.2	3.8	4.5	3.8	4.0
Queue Length 50th (ft)	3	0	14	0	4	42	4	29
Queue Length 95th (ft)	12	31	39	24	16	96	14	68
Internal Link Dist (ft)	329		477			421		262
Turn Bay Length (ft)		40		90	135		135	
Base Capacity (vph)	607	492	399	466	674	1320	612	1359
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.21	0.13	0.13	0.08	0.34	0.08	0.25

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	14	107	4	38	100	40	254	129	144	248	6
Future Volume (veh/h)	84	14	107	4	38	100	40	254	129	144	248	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.84		0.79	0.87		0.79	0.94		0.89	0.97		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	90	15	115	4	41	108	43	273	139	155	267	6
Adj No. of Lanes	0	1	0	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	54	187	82	515	365	622	621	316	510	1008	23
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	402	185	643	54	1772	1256	1040	1115	567	938	1809	41
Grp Volume(v), veh/h	220	0	0	45	0	108	43	0	412	155	0	273
Grp Sat Flow(s),veh/h/ln	1230	0	0	1825	0	1256	1040	0	1682	938	0	1850
Q Serve(g_s), s	5.9	0.0	0.0	0.0	0.0	3.9	1.3	0.0	8.5	6.9	0.0	4.5
Cycle Q Clear(g_c), s	8.7	0.0	0.0	1.0	0.0	3.9	5.9	0.0	8.5	15.4	0.0	4.5
Prop In Lane	0.41		0.52	0.09		1.00	1.00		0.34	1.00		0.02
Lane Grp Cap(c), veh/h	443	0	0	597	0	365	622	0	938	510	0	1031
V/C Ratio(X)	0.50	0.00	0.00	0.08	0.00	0.30	0.07	0.00	0.44	0.30	0.00	0.26
Avail Cap(c_a), veh/h	459	0	0	620	0	382	622	0	938	510	0	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	0.0	15.3	0.0	16.3	8.3	0.0	7.7	12.2	0.0	6.8
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.1	0.0	0.4	0.2	0.0	1.5	1.5	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	0.5	0.0	1.4	0.4	0.0	4.3	2.0	0.0	2.5
LnGrp Delay(d),s/veh	18.7	0.0	0.0	15.3	0.0	16.7	8.5	0.0	9.2	13.7	0.0	7.4
LnGrp LOS	B			B		B	A		A	B		A
Approach Vol, veh/h		220			153			455			428	
Approach Delay, s/veh		18.7			16.3			9.1			9.7	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		21.7		37.5		21.7
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0
Max Q Clear Time (g_c+I1), s		10.5		10.7		17.4		5.9
Green Ext Time (p_c), s		5.8		1.4		5.0		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	8	92	41	7	56	51	365	46	45	296	8
Future Volume (veh/h)	1	8	92	41	7	56	51	365	46	45	296	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.82		0.79	0.82		0.79	0.95		0.89	0.97		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	1	9	101	45	8	62	56	401	51	49	325	9
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	493	350	375	58	350	589	902	115	503	1016	28
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	63	1754	1245	930	206	1245	993	1596	203	906	1797	50
Grp Volume(v), veh/h	10	0	101	53	0	62	56	0	452	49	0	334
Grp Sat Flow(s),veh/h/ln	1817	0	1245	1136	0	1245	993	0	1799	906	0	1847
Q Serve(g_s), s	0.0	0.0	3.7	1.5	0.0	2.2	1.9	0.0	8.5	1.9	0.0	5.6
Cycle Q Clear(g_c), s	0.2	0.0	3.7	1.8	0.0	2.2	7.5	0.0	8.5	10.5	0.0	5.6
Prop In Lane	0.10		1.00	0.85		1.00	1.00		0.11	1.00		0.03
Lane Grp Cap(c), veh/h	578	0	350	433	0	350	589	0	1016	503	0	1044
V/C Ratio(X)	0.02	0.00	0.29	0.12	0.00	0.18	0.10	0.00	0.44	0.10	0.00	0.32
Avail Cap(c_a), veh/h	626	0	384	464	0	384	589	0	1016	503	0	1044
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	16.4	15.7	0.0	15.9	8.7	0.0	7.4	10.4	0.0	6.7
Incr Delay (d2), s/veh	0.0	0.0	0.5	0.1	0.0	0.2	0.3	0.0	1.4	0.4	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.3	0.6	0.0	0.8	0.6	0.0	4.5	0.5	0.0	3.0
LnGrp Delay(d),s/veh	15.2	0.0	16.9	15.8	0.0	16.1	9.0	0.0	8.8	10.8	0.0	7.6
LnGrp LOS	B		B	B		B	A		A	B		A
Approach Vol, veh/h		111			115			508			383	
Approach Delay, s/veh		16.7			16.0			8.8			8.0	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		20.9		37.5		20.9
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0
Max Q Clear Time (g_c+I1), s		10.5		5.7		12.5		4.2
Green Ext Time (p_c), s		5.9		0.8		5.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	375	76	183	72	699	264	464
v/c Ratio	0.97	0.15	0.39	0.17	0.71	0.97	0.43
Control Delay	62.1	18.7	6.2	7.6	13.8	67.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Total Delay	62.1	18.7	6.2	7.6	18.3	67.0	9.0
Queue Length 50th (ft)	117	23	0	12	158	89	90
Queue Length 95th (ft)	#281	52	42	30	281	#238	148
Internal Link Dist (ft)	314	411			262		210
Turn Bay Length (ft)			55	150		150	
Base Capacity (vph)	385	496	470	423	978	272	1077
Starvation Cap Reductn	0	0	0	0	206	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.15	0.39	0.17	0.91	0.97	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	17	168	89	102	94	752	82	556
v/c Ratio	0.06	0.47	0.44	0.34	0.19	0.59	0.22	0.43
Control Delay	17.1	8.6	25.7	8.1	5.7	8.3	6.5	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	17.1	8.6	25.7	8.1	5.7	8.3	6.5	6.5
Queue Length 50th (ft)	4	0	24	0	9	105	8	66
Queue Length 95th (ft)	17	39	58	30	32	256	32	154
Internal Link Dist (ft)	329		477			421		262
Turn Bay Length (ft)		40		90	135		135	
Base Capacity (vph)	606	538	399	495	507	1269	376	1305
Starvation Cap Reductn	0	0	0	0	0	0	0	312
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.31	0.22	0.21	0.19	0.59	0.22	0.56

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	24	184	7	65	172	68	436	221	248	426	10
Future Volume (veh/h)	144	24	184	7	65	172	68	436	221	248	426	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.86		0.78	1.00		0.78	0.97		0.90	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	153	26	196	7	69	183	72	464	235	264	453	11
Adj No. of Lanes	0	1	0	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	36	165	77	493	346	510	653	331	325	1053	26
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.58	0.58	0.58	0.58	0.58	0.58
Sat Flow, veh/h	412	130	593	60	1772	1242	900	1119	567	744	1805	44
Grp Volume(v), veh/h	375	0	0	76	0	183	72	0	699	264	0	464
Grp Sat Flow(s),veh/h/ln	1135	0	0	1832	0	1242	900	0	1686	744	0	1849
Q Serve(g_s), s	16.1	0.0	0.0	0.0	0.0	8.1	3.1	0.0	19.2	18.7	0.0	9.1
Cycle Q Clear(g_c), s	18.1	0.0	0.0	2.0	0.0	8.1	12.2	0.0	19.2	37.9	0.0	9.1
Prop In Lane	0.41		0.52	0.09		1.00	1.00		0.34	1.00		0.02
Lane Grp Cap(c), veh/h	394	0	0	571	0	346	510	0	983	325	0	1078
V/C Ratio(X)	0.95	0.00	0.00	0.13	0.00	0.53	0.14	0.00	0.71	0.81	0.00	0.43
Avail Cap(c_a), veh/h	394	0	0	571	0	346	510	0	983	325	0	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	0.0	17.6	0.0	19.8	10.9	0.0	9.6	24.9	0.0	7.5
Incr Delay (d2), s/veh	33.0	0.0	0.0	0.1	0.0	1.5	0.6	0.0	4.4	19.5	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.0	0.0	1.0	0.0	2.9	0.9	0.0	9.9	6.5	0.0	4.9
LnGrp Delay(d),s/veh	57.9	0.0	0.0	17.7	0.0	21.4	11.5	0.0	14.0	44.4	0.0	8.8
LnGrp LOS	E			B		C	B		B	D		A
Approach Vol, veh/h		375			259			771			728	
Approach Delay, s/veh		57.9			20.3			13.8			21.7	
Approach LOS		E			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.4		22.6		42.4		22.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		37.9		18.1		37.9		18.1
Max Q Clear Time (g_c+I1), s		21.2		20.1		39.9		10.1
Green Ext Time (p_c), s		9.8		0.0		0.0		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	14	158	71	12	96	88	628	79	77	509	14
Future Volume (veh/h)	2	14	158	71	12	96	88	628	79	77	509	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.84		0.79	0.84		0.79	0.98		0.89	1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	2	15	168	76	13	102	94	668	84	82	541	15
Adj No. of Lanes	0	1	1	0	1	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	492	359	371	55	359	431	895	113	295	1007	28
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	85	1715	1252	898	191	1252	833	1598	201	708	1797	50
Grp Volume(v), veh/h	17	0	168	89	0	102	94	0	752	82	0	556
Grp Sat Flow(s),veh/h/ln	1800	0	1252	1090	0	1252	833	0	1799	708	0	1847
Q Serve(g_s), s	0.0	0.0	6.5	3.2	0.0	3.7	4.7	0.0	18.6	5.8	0.0	11.2
Cycle Q Clear(g_c), s	0.4	0.0	6.5	3.6	0.0	3.7	15.9	0.0	18.6	24.4	0.0	11.2
Prop In Lane	0.12		1.00	0.85		1.00	1.00		0.11	1.00		0.03
Lane Grp Cap(c), veh/h	585	0	359	426	0	359	431	0	1008	295	0	1035
V/C Ratio(X)	0.03	0.00	0.47	0.21	0.00	0.28	0.22	0.00	0.75	0.28	0.00	0.54
Avail Cap(c_a), veh/h	617	0	383	446	0	383	431	0	1008	295	0	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	17.3	16.2	0.0	16.3	13.1	0.0	9.8	19.0	0.0	8.1
Incr Delay (d2), s/veh	0.0	0.0	0.9	0.2	0.0	0.4	1.2	0.0	5.0	2.3	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.3	1.1	0.0	1.3	1.2	0.0	10.4	1.3	0.0	6.1
LnGrp Delay(d),s/veh	15.1	0.0	18.2	16.4	0.0	16.7	14.3	0.0	14.8	21.3	0.0	10.1
LnGrp LOS	B		B	B		B	B		B	C		B
Approach Vol, veh/h		185			191			846			638	
Approach Delay, s/veh		18.0			16.6			14.8			11.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.5		21.4		37.5		21.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0
Max Q Clear Time (g_c+I1), s		20.6		8.5		26.4		5.7
Green Ext Time (p_c), s		7.8		1.3		4.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

HCS 2010 Roundabouts Report

General Information

Analyst	JGM
Agency or Co.	City of McCall
Date Performed	1/19/2017
Analysis Year	2017
Time Period	PM Peak Hour
Project Description	Existing Peak Season

Site Information

Intersection	3rd Street/Park Street
E/W Street Name	Park Street
N/S Street Name	3rd Street
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.91
Jurisdiction	ITD

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	1	8	92	0	41	7	56	0	51	365	46	0	45	296	8
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	1	9	104	0	46	8	63	0	58	413	52	0	51	335	9
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	120				120				120				120			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (s)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		114			117			523			395	
Entry Volume veh/h		111			114			508			383	
Circulating Flow (v_c), pc/h	432			472			61			112		
Exiting Flow (v_{ex}), pc/h	112			75			477			485		
Capacity (c_{pce}), pc/h		734			705			1063			1010	
Capacity (c), veh/h		683			656			990			941	
v/c Ratio (x)		0.16			0.17			0.51			0.41	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		7.1			7.5			10.0			8.5	
Lane LOS		A			A			A			A	
95% Queue, veh		0.6			0.6			3.0			2.0	
Approach Delay, s/veh	7.1			7.5			10.0			8.5		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	8.9						A					

HCS 2010 Roundabouts Report

General Information		Site Information	
Analyst	JGM	Intersection	3rd Street/Railroad Avenue
Agency or Co.	City of McCall	E/W Street Name	Railroad Avenue
Date Performed	1/19/2017	N/S Street Name	3rd Street
Analysis Year	2017	Analysis Time Period (hrs)	0.25
Time Period	PM Peak Hour	Peak Hour Factor	0.93
Project Description	Existing Peak Season	Jurisdiction	ITD

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	84	14	107	0	4	38	100	0	40	254	129	0	144	248	6
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	93	16	119	0	4	42	111	0	44	281	143	0	159	275	7
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	120				120				120				120			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (s)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		228			157			468			441	
Entry Volume veh/h		221			152			454			428	
Circulating Flow (v_c), pc/h	438			418			268			90		
Exiting Flow (v_{ex}), pc/h	318			93			485			398		
Capacity (c_{pce}), pc/h		729			744			864			1033	
Capacity (c), veh/h		679			693			805			962	
v/c Ratio (x)		0.33			0.22			0.56			0.45	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		9.5			7.8			12.9			8.9	
Lane LOS		A			A			B			A	
95% Queue, veh		1.4			0.8			3.6			2.3	
Approach Delay, s/veh	9.5			7.8			12.9			8.9		
Approach LOS	A			A			B			A		
Intersection Delay, s/veh | LOS	10.3						B					

HCS 2010 Roundabouts Report

General Information

Analyst	JGM
Agency or Co.	City of McCall
Date Performed	1/19/2017
Analysis Year	2017
Time Period	PM Peak Hour
Project Description	Future Peak Season

Site Information

Intersection	3rd Street/Park Street
E/W Street Name	Park Street
N/S Street Name	3rd Street
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.91
Jurisdiction	ITD

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	2	14	158	0	71	12	96	0	88	628	79	0	77	509	14
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	2	16	179	0	80	14	109	0	100	711	89	0	87	576	16
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	120				120				120				120			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (s)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		197			203			900			679	
Entry Volume veh/h		191			197			874			659	
Circulating Flow (v_c), pc/h	743			813			105			194		
Exiting Flow (v_{ex}), pc/h	192			130			822			835		
Capacity (c_{pce}), pc/h		538			501			1017			931	
Capacity (c), veh/h		500			467			947			867	
v/c Ratio (x)		0.38			0.42			0.92			0.76	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		13.5			15.3			34.3			19.8	
Lane LOS		B			C			D			C	
95% Queue, veh		1.8			2.1			14.1			7.4	
Approach Delay, s/veh	13.5			15.3			34.3			19.8		
Approach LOS	B			C			D			C		
Intersection Delay, s/veh | LOS	25.3						D					

HCS 2010 Roundabouts Report

General Information

Analyst	JGM
Agency or Co.	City of McCall
Date Performed	1/19/2017
Analysis Year	2017
Time Period	PM Peak Hour
Project Description	Future Peak Season

Site Information

Intersection	3rd Street/Railroad Avenue
E/W Street Name	Railroad Avenue
N/S Street Name	3rd Street
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.97
Jurisdiction	ITD

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	144	24	184	0	7	65	172	0	68	436	221	0	248	426	10
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	153	25	195	0	7	69	183	0	72	463	235	0	263	452	11
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	120				120				120				120			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		5.1929			5.1929			5.1929			5.1929	
Follow-Up Headway (s)		3.1858			3.1858			3.1858			3.1858	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		373			259			770			726	
Entry Volume veh/h		362			251			748			705	
Circulating Flow (v_c), pc/h	722			688			441			148		
Exiting Flow (v_{ex}), pc/h	523			152			799			654		
Capacity (c_{pce}), pc/h		549			568			727			975	
Capacity (c), veh/h		511			529			677			908	
v/c Ratio (x)		0.71			0.48			1.10			0.78	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		25.9			15.2			90.3			20.1	
Lane LOS		D			C			F			C	
95% Queue, veh		5.6			2.5			21.7			7.9	
Approach Delay, s/veh	25.9			15.2			90.3			20.1		
Approach LOS	D			C			F			C		
Intersection Delay, s/veh | LOS	45.9						E					

Attachment D Signal Operations and Warrant Worksheets

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	158	66	78	164	72	58
Future Vol, veh/h	158	66	78	164	72	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	174	73	86	180	79	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	246	0	562	210
Stage 1	-	-	-	-	210	-
Stage 2	-	-	-	-	352	-
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	-	-	1332	-	492	835
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1332	-	457	835
Mov Cap-2 Maneuver	-	-	-	-	457	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	457	835	-	-	1332	-
HCM Lane V/C Ratio	0.173	0.076	-	-	0.064	-
HCM Control Delay (s)	14.5	9.7	-	-	7.9	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	380	20	69	420	22	25
Future Vol, veh/h	380	20	69	420	22	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	-	-	60	-	40	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	400	21	73	442	23	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	421	0	998	411
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	587	-
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	-	-	1149	-	273	645
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1149	-	256	645
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	256	645	-	-	1149	-
HCM Lane V/C Ratio	0.09	0.041	-	-	0.063	-
HCM Control Delay (s)	20.5	10.8	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	119.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	14	107	4	38	100	40	254	129	147	252	6
Future Vol, veh/h	84	14	107	4	38	100	40	254	129	147	252	6
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	55	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	90	15	115	4	41	108	43	273	139	158	271	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1279	1328	514	1323	1262	582	397	0	0	532	0	0
Stage 1	710	710	-	548	548	-	-	-	-	-	-	-
Stage 2	569	618	-	775	714	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	144	157	564	135	171	517	1173	-	-	1046	-	-
Stage 1	428	440	-	524	520	-	-	-	-	-	-	-
Stage 2	511	484	-	394	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 50	98	442	58	107	406	1039	-	-	926	-	-
Mov Cap-2 Maneuver	~ 50	98	-	58	107	-	-	-	-	-	-	-
Stage 1	363	323	-	445	442	-	-	-	-	-	-	-
Stage 2	289	411	-	204	322	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 652.9	32.3	0.8	3.5
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1039	-	-	99	99	406	926	-	-
HCM Lane V/C Ratio	0.041	-	-	2.227	0.456	0.265	0.171	-	-
HCM Control Delay (s)	8.6	-	-	$ 652.9	68.8	17	9.7	-	-
HCM Lane LOS	A	-	-	F	F	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	19.4	2	1.1	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	8	92	41	7	56	51	365	46	45	296	8
Future Vol, veh/h	1	8	92	41	7	56	51	365	46	45	296	8
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	90	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	9	101	45	8	62	56	401	51	49	325	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1211	1233	570	1211	1211	666	454	0	0	572	0	0
Stage 1	549	549	-	658	658	-	-	-	-	-	-	-
Stage 2	662	684	-	553	553	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	161	178	525	161	184	463	1117	-	-	1011	-	-
Stage 1	524	520	-	457	464	-	-	-	-	-	-	-
Stage 2	454	452	-	521	518	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	92	125	412	83	129	363	989	-	-	895	-	-
Mov Cap-2 Maneuver	92	125	-	83	129	-	-	-	-	-	-	-
Stage 1	438	435	-	382	388	-	-	-	-	-	-	-
Stage 2	309	378	-	323	434	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.5	52.6	1	1.2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	989	-	-	120	412	88	363	895	-	-
HCM Lane V/C Ratio	0.057	-	-	0.082	0.245	0.599	0.17	0.055	-	-
HCM Control Delay (s)	8.9	-	-	37.7	16.6	94.2	16.9	9.3	-	-
HCM Lane LOS	A	-	-	E	C	F	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	1	2.8	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	26	18	2	7	10	362	20	13	403	3
Future Vol, veh/h	0	3	26	18	2	7	10	362	20	13	403	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	3	28	20	2	8	11	393	22	14	438	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	899	905	440	910	896	404	441	0	0	415	0	0
Stage 1	468	468	-	426	426	-	-	-	-	-	-	-
Stage 2	431	437	-	484	470	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	262	278	621	258	282	651	1130	-	-	1155	-	-
Stage 1	579	565	-	610	589	-	-	-	-	-	-	-
Stage 2	607	583	-	568	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	253	272	621	240	276	651	1130	-	-	1155	-	-
Mov Cap-2 Maneuver	253	272	-	240	276	-	-	-	-	-	-	-
Stage 1	573	558	-	604	583	-	-	-	-	-	-	-
Stage 2	592	577	-	532	556	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	18.8	0.2	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1130	-	-	548	290	1155	-	-
HCM Lane V/C Ratio	0.01	-	-	0.058	0.101	0.012	-	-
HCM Control Delay (s)	8.2	-	-	12	18.8	8.2	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	77	147	78	92	144	58
Future Vol, veh/h	77	147	78	92	144	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	85	162	86	101	158	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	246	0	438	165
Stage 1	-	-	-	-	165	-
Stage 2	-	-	-	-	273	-
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	-	-	1332	-	580	885
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	778	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1332	-	541	885
Mov Cap-2 Maneuver	-	-	-	-	541	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	541	885	-	-	1332	-
HCM Lane V/C Ratio	0.292	0.072	-	-	0.064	-
HCM Control Delay (s)	14.4	9.4	-	-	7.9	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	1.2	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	292	20	69	344	22	25
Future Vol, veh/h	292	20	69	344	22	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	-	-	60	-	40	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	307	21	73	362	23	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	328	0	825	318
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	-	-	4.1	-	7.1	6.2
Critical Hdwy Stg 1	-	-	-	-	6.1	-
Critical Hdwy Stg 2	-	-	-	-	6.1	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1243	-	294	727
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	552	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1243	-	281	727
Mov Cap-2 Maneuver	-	-	-	-	281	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	520	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	281	727	-	-	1243	-
HCM Lane V/C Ratio	0.082	0.036	-	-	0.058	-
HCM Control Delay (s)	19	10.1	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	42.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	14	107	4	38	100	33	127	107	115	167	5
Future Vol, veh/h	84	14	107	4	38	100	33	127	107	115	167	5
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	55	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	90	15	115	4	41	108	35	137	115	124	180	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	955	993	422	1000	937	434	305	0	0	372	0	0
Stage 1	550	550	-	385	385	-	-	-	-	-	-	-
Stage 2	405	443	-	615	552	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	240	247	636	224	267	626	1267	-	-	1198	-	-
Stage 1	523	519	-	642	614	-	-	-	-	-	-	-
Stage 2	626	579	-	482	518	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	108	166	499	112	179	491	1122	-	-	1061	-	-
Mov Cap-2 Maneuver	108	166	-	112	179	-	-	-	-	-	-	-
Stage 1	449	406	-	551	527	-	-	-	-	-	-	-
Stage 2	387	497	-	279	405	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	165.8	20.2	1	3.5
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1122	-	-	190	169	491	1061	-	-
HCM Lane V/C Ratio	0.032	-	-	1.16	0.267	0.219	0.117	-	-
HCM Control Delay (s)	8.3	-	-	165.8	33.9	14.4	8.8	-	-
HCM Lane LOS	A	-	-	F	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	11.2	1	0.8	0.4	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	8	92	41	7	56	51	293	46	45	215	8
Future Vol, veh/h	1	8	92	41	7	56	51	293	46	45	215	8
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	90	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	9	101	45	8	62	56	322	51	49	236	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1043	1065	481	1043	1043	587	365	0	0	493	0	0
Stage 1	460	460	-	579	579	-	-	-	-	-	-	-
Stage 2	583	605	-	464	464	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	209	224	589	209	231	513	1205	-	-	1081	-	-
Stage 1	585	569	-	504	504	-	-	-	-	-	-	-
Stage 2	502	491	-	582	567	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	158	462	113	163	402	1067	-	-	957	-	-
Mov Cap-2 Maneuver	124	158	-	113	163	-	-	-	-	-	-	-
Stage 1	491	478	-	423	423	-	-	-	-	-	-	-
Stage 2	350	412	-	375	476	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	35.2	1.1	1.5
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1067	-	-	153	462	118	402	957	-	-
HCM Lane V/C Ratio	0.053	-	-	0.065	0.219	0.447	0.153	0.052	-	-
HCM Control Delay (s)	8.6	-	-	30.1	15	58.1	15.6	9	-	-
HCM Lane LOS	A	-	-	D	C	F	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.8	2	0.5	0.2	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	26	18	2	7	10	290	20	13	322	3
Future Vol, veh/h	0	3	26	18	2	7	10	290	20	13	322	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	3	28	20	2	8	11	315	22	14	350	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	733	739	352	744	730	326	353	0	0	337	0	0
Stage 1	380	380	-	348	348	-	-	-	-	-	-	-
Stage 2	353	359	-	396	382	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	339	347	696	333	352	720	1217	-	-	1234	-	-
Stage 1	646	617	-	672	638	-	-	-	-	-	-	-
Stage 2	668	631	-	633	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	329	340	696	312	345	720	1217	-	-	1234	-	-
Mov Cap-2 Maneuver	329	340	-	312	345	-	-	-	-	-	-	-
Stage 1	640	610	-	666	632	-	-	-	-	-	-	-
Stage 2	653	625	-	597	609	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	15.6	0.2	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1217	-	-	628	369	1234	-	-
HCM Lane V/C Ratio	0.009	-	-	0.05	0.08	0.011	-	-
HCM Control Delay (s)	8	-	-	11	15.6	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	189	88	46	218	107	46
Future Vol, veh/h	189	88	46	218	107	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	208	97	51	240	118	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	304	0	597	256
Stage 1	-	-	-	-	256	-
Stage 2	-	-	-	-	341	-
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	-	-	1268	-	469	788
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1268	-	447	788
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	692	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	447	788	-	-	1268	-
HCM Lane V/C Ratio	0.263	0.064	-	-	0.04	-
HCM Control Delay (s)	15.9	9.9	-	-	8	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	1	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	399	62	52	339	36	45
Future Vol, veh/h	399	62	52	339	36	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	40	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	420	65	55	357	38	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	485	0	919	453
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	466	-
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	-	-	1088	-	304	611
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1088	-	289	611
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	604	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	611	-	-	1088	-
HCM Lane V/C Ratio	0.131	0.078	-	-	0.05	-
HCM Control Delay (s)	19.3	11.4	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	20.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	17	98	89	24	62	48	283	136	128	310	5
Future Vol, veh/h	7	17	98	89	24	62	48	283	136	128	310	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	55	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	25	25	25	25	25	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	28	68	392	356	96	248	192	1132	544	512	1240	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	4110	4334	1250	4292	4072	1404	1260	0	0	1676	0	0
Stage 1	2274	2274	-	1788	1788	-	-	-	-	-	-	-
Stage 2	1836	2060	-	2504	2284	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 1	~ 2	~ 213	~ 1	~ 3	~ 173	559	-	-	~ 388	-	-
Stage 1	54	77	-	~ 105	135	-	-	-	-	-	-	-
Stage 2	98	99	-	~ 39	~ 76	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	0	~ 213	-	0	~ 173	559	-	-	~ 388	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	35	0	-	~ 69	~ 89	-	-	-	-	-	-	-
Stage 2	~ 2	~ 65	-	-	0	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			1.5	54.8
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	559	-	-	-	-	173	~ 388	-	-
HCM Lane V/C Ratio	0.343	-	-	-	-	1.434	1.32	-	-
HCM Control Delay (s)	14.8	-	-	-	-	274.8	189.5	-	-
HCM Lane LOS	B	-	-	-	-	F	F	-	-
HCM 95th %tile Q(veh)	1.5	-	-	-	-	15.4	23.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	9	139	72	14	59	28	405	48	45	446	6
Future Vol, veh/h	17	9	139	72	14	59	28	405	48	45	446	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	90	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	18	10	148	77	15	63	30	431	51	48	474	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1096	1114	478	1094	1093	456	481	0	0	482	0	0
Stage 1	573	573	-	516	516	-	-	-	-	-	-	-
Stage 2	523	541	-	578	577	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	193	210	591	193	216	609	1092	-	-	1091	-	-
Stage 1	508	507	-	546	538	-	-	-	-	-	-	-
Stage 2	541	524	-	505	505	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	155	195	591	132	201	609	1092	-	-	1091	-	-
Mov Cap-2 Maneuver	155	195	-	132	201	-	-	-	-	-	-	-
Stage 1	494	485	-	531	523	-	-	-	-	-	-	-
Stage 2	458	510	-	355	483	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.9	45.9	0.5	0.8
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1092	-	-	167	591	140	609	1091	-	-
HCM Lane V/C Ratio	0.027	-	-	0.166	0.25	0.653	0.103	0.044	-	-
HCM Control Delay (s)	8.4	-	-	30.8	13.1	69.5	11.6	8.5	-	-
HCM Lane LOS	A	-	-	D	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1	3.6	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	29	15	2	19	7	585	29	21	609	5
Future Vol, veh/h	3	0	29	15	2	19	7	585	29	21	609	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	0	32	16	2	21	8	636	32	23	662	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1388	1393	665	1393	1380	652	667	0	0	667	0	0
Stage 1	710	710	-	667	667	-	-	-	-	-	-	-
Stage 2	678	683	-	726	713	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	121	143	464	120	146	471	932	-	-	932	-	-
Stage 1	428	440	-	451	460	-	-	-	-	-	-	-
Stage 2	445	452	-	419	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	111	138	464	109	141	471	932	-	-	932	-	-
Mov Cap-2 Maneuver	111	138	-	109	141	-	-	-	-	-	-	-
Stage 1	424	429	-	447	456	-	-	-	-	-	-	-
Stage 2	420	448	-	381	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.2	29.3	0.1	0.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	932	-	-	357	187	932	-	-
HCM Lane V/C Ratio	0.008	-	-	0.097	0.209	0.024	-	-
HCM Control Delay (s)	8.9	-	-	16.2	29.3	9	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	67	210	46	101	224	46
Future Vol, veh/h	67	210	46	101	224	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	74	231	51	111	246	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	304	0	401	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	212	-
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	-	-	1268	-	609	858
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	828	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1268	-	583	858
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	792	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	583	858	-	-	1268	-
HCM Lane V/C Ratio	0.422	0.059	-	-	0.04	-
HCM Control Delay (s)	15.6	9.5	-	-	8	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	2.1	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	399	62	52	339	36	45
Future Vol, veh/h	399	62	52	339	36	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	40	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	420	65	55	357	38	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	485	0	919	453
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	466	-
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	-	-	1088	-	304	611
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1088	-	289	611
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	604	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	611	-	-	1088	-
HCM Lane V/C Ratio	0.131	0.078	-	-	0.05	-
HCM Control Delay (s)	19.3	11.4	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	17	98	89	24	62	48	166	136	128	188	5
Future Vol, veh/h	7	17	98	89	24	62	48	166	136	128	188	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	55	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	25	25	25	25	25	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	28	68	392	356	96	248	192	664	544	512	752	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3154	3378	762	3336	3116	936	772	0	0	1208	0	0
Stage 1	1786	1786	-	1320	1320	-	-	-	-	-	-	-
Stage 2	1368	1592	-	2016	1796	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 7	~ 8	408	~ 5	~ 12	324	852	-	-	585	-	-
Stage 1	105	135	-	~ 195	228	-	-	-	-	-	-	-
Stage 2	183	169	-	~ 77	134	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 1	408	-	~ 1	324	852	-	-	585	-	-
Mov Cap-2 Maneuver	-	~ 1	-	-	~ 1	-	-	-	-	-	-	-
Stage 1	81	~ 17	-	~ 151	177	-	-	-	-	-	-	-
Stage 2	~ 15	131	-	-	~ 17	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			1.4	15.9
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	852	-	-	-	-	324	585	-	-
HCM Lane V/C Ratio	0.225	-	-	-	-	0.765	0.875	-	-
HCM Control Delay (s)	10.4	-	-	-	-	44.7	39.8	-	-
HCM Lane LOS	B	-	-	-	-	E	E	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-	-	6	10	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	9	139	72	14	59	28	288	48	45	324	6
Future Vol, veh/h	17	9	139	72	14	59	28	288	48	45	324	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	90	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	18	10	148	77	15	63	30	306	51	48	345	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	843	861	348	839	838	332	351	0	0	357	0	0
Stage 1	444	444	-	391	391	-	-	-	-	-	-	-
Stage 2	399	417	-	448	447	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	286	295	700	288	305	714	1219	-	-	1213	-	-
Stage 1	597	579	-	637	611	-	-	-	-	-	-	-
Stage 2	631	595	-	594	577	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	238	276	700	211	286	714	1219	-	-	1213	-	-
Mov Cap-2 Maneuver	238	276	-	211	286	-	-	-	-	-	-	-
Stage 1	582	556	-	621	596	-	-	-	-	-	-	-
Stage 2	547	580	-	442	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	23.5	0.6	1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1219	-	-	250	700	220	714	1213	-	-
HCM Lane V/C Ratio	0.024	-	-	0.111	0.211	0.416	0.088	0.039	-	-
HCM Control Delay (s)	8	-	-	21.2	11.5	32.5	10.5	8.1	-	-
HCM Lane LOS	A	-	-	C	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.8	1.9	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	29	15	2	19	7	468	29	21	487	5
Future Vol, veh/h	3	0	29	15	2	19	7	468	29	21	487	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	0	32	16	2	21	8	509	32	23	529	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1129	1133	532	1133	1120	524	535	0	0	540	0	0
Stage 1	578	578	-	540	540	-	-	-	-	-	-	-
Stage 2	551	555	-	593	580	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	183	205	551	182	208	557	1043	-	-	1039	-	-
Stage 1	505	504	-	530	524	-	-	-	-	-	-	-
Stage 2	522	516	-	496	503	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	171	199	551	168	202	557	1043	-	-	1039	-	-
Mov Cap-2 Maneuver	171	199	-	168	202	-	-	-	-	-	-	-
Stage 1	501	493	-	526	520	-	-	-	-	-	-	-
Stage 2	497	512	-	457	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	20.6	0.1	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1043	-	-	456	270	1039	-	-
HCM Lane V/C Ratio	0.007	-	-	0.076	0.145	0.022	-	-
HCM Control Delay (s)	8.5	-	-	13.5	20.6	8.5	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	272	114	134	282	124	100
Future Vol, veh/h	272	114	134	282	124	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	299	125	147	310	136	110

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	966	362
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	604	-
Critical Hdwy	-	-	4.1	-	7.1	6.2
Critical Hdwy Stg 1	-	-	-	-	6.1	-
Critical Hdwy Stg 2	-	-	-	-	6.1	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1146	-	236	687
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1146	-	208	687
Mov Cap-2 Maneuver	-	-	-	-	208	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	413	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	32.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	208	687	-	-	1146	-
HCM Lane V/C Ratio	0.655	0.16	-	-	0.128	-
HCM Control Delay (s)	50.2	11.2	-	-	8.6	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	4	0.6	-	-	0.4	-

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	654	34	119	722	38	43
Future Vol, veh/h	654	34	119	722	38	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	40	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	688	36	125	760	40	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	724	0	1717	706
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	1011	-
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	-	-	888	-	100	439
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	355	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	888	-	86	439
Mov Cap-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	305	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	44.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	439	-	-	888	-
HCM Lane V/C Ratio	0.465	0.103	-	-	0.141	-
HCM Control Delay (s)	79	14.1	-	-	9.7	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	1.9	0.3	-	-	0.5	-

Intersection	
Int Delay, s/veh	387.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	144	24	184	7	65	172	68	436	221	252	434	10
Future Vol, veh/h	144	24	184	7	65	172	68	436	221	252	434	10
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	55	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	25	25	25	25	25	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	576	96	736	28	260	688	272	1744	884	1008	1736	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	6872	7184	1996	7158	6762	2426	1896	0	0	2748	0	0
Stage 1	3892	3892	-	2850	2850	-	-	-	-	-	-	-
Stage 2	2980	3292	-	4308	3912	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	~ 76	0	0	~ 42	319	-	-	~ 148	-	-
Stage 1	~ 5	~ 10	-	~ 24	~ 38	-	-	-	-	-	-	-
Stage 2	~ 20	~ 22	-	~ 3	~ 10	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	0	~ 60	-	0	~ 33	283	-	-	~ 131	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	0	0	-	~ 1	~ 1	-	-	-	-	-	-	-
Stage 2	3540	~ 1	-	-	0	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			7.8	$ 1113.8
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	283	-	-	-	-	33	~ 131	-	-
HCM Lane V/C Ratio	0.961	-	-	-	-	20.848	7.695	-	-
HCM Control Delay (s)	83.7	-	-	-	-	$ 9159.$	$ 3076.3	-	-
HCM Lane LOS	F	-	-	-	-	F	F	-	-
HCM 95th %tile Q(veh)	9.4	-	-	-	-	84.9	113	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	145.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	14	158	71	12	96	88	628	79	77	509	14
Future Vol, veh/h	2	14	158	71	12	96	88	628	79	77	509	14
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	90	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	15	168	76	13	102	94	668	84	82	541	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1857	1892	789	1857	1857	950	676	0	0	872	0	0
Stage 1	833	833	-	1017	1017	-	-	-	-	-	-	-
Stage 2	1024	1059	-	840	840	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	57	71	394	~ 57	74	318	925	-	-	782	-	-
Stage 1	366	386	-	289	318	-	-	-	-	-	-	-
Stage 2	286	304	-	363	384	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	17	43	309	~ 13	45	249	819	-	-	693	-	-
Mov Cap-2 Maneuver	17	43	-	~ 13	45	-	-	-	-	-	-	-
Stage 1	287	301	-	227	249	-	-	-	-	-	-	-
Stage 2	125	238	-	123	300	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	43	$ 1371.7	1.1	1.4
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	819	-	-	36	309	14	249	693	-	-
HCM Lane V/C Ratio	0.114	-	-	0.473	0.544	6.307	0.41	0.118	-	-
HCM Control Delay (s)	10	-	-	174.4	29.3	$ 2924.4	29.2	10.9	-	-
HCM Lane LOS	A	-	-	F	D	F	D	B	-	-
HCM 95th %tile Q(veh)	0.4	-	-	1.6	3	12	1.9	0.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	5	45	31	3	12	17	623	34	22	693	5
Future Vol, veh/h	0	5	45	31	3	12	17	623	34	22	693	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	5	49	34	3	13	18	677	37	24	753	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1545	1555	756	1564	1540	696	759	0	0	714	0	0
Stage 1	804	804	-	733	733	-	-	-	-	-	-	-
Stage 2	741	751	-	831	807	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	94	114	411	92	117	445	862	-	-	895	-	-
Stage 1	380	398	-	415	429	-	-	-	-	-	-	-
Stage 2	411	421	-	367	397	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	86	109	411	75	111	445	862	-	-	895	-	-
Mov Cap-2 Maneuver	86	109	-	75	111	-	-	-	-	-	-	-
Stage 1	372	387	-	406	420	-	-	-	-	-	-	-
Stage 2	388	412	-	310	386	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.4	75	0.2	0.3
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	862	-	-	322	98	895	-	-
HCM Lane V/C Ratio	0.021	-	-	0.169	0.51	0.027	-	-
HCM Control Delay (s)	9.3	-	-	18.4	75	9.1	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.3	0.1	-	-

Intersection	
Int Delay, s/veh	15.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	253	134	157	249	100
Future Vol, veh/h	133	253	134	157	249	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	146	278	147	173	274	110

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	752	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	467	-
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	-	-	1146	-	381	759
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1146	-	327	759
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	545	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	41.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	327	759	-	-	1146	-
HCM Lane V/C Ratio	0.837	0.145	-	-	0.128	-
HCM Control Delay (s)	53.4	10.5	-	-	8.6	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	7.3	0.5	-	-	0.4	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	515	34	119	598	38	43
Future Vol, veh/h	515	34	119	598	38	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	40	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	542	36	125	629	40	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	578	0	1440	560
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	880	-
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	-	-	1006	-	148	532
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	409	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1006	-	130	532
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	358	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	27.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	130	532	-	-	1006	-
HCM Lane V/C Ratio	0.308	0.085	-	-	0.125	-
HCM Control Delay (s)	44.5	12.4	-	-	9.1	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	0.3	-	-	0.4	-

Intersection	
Int Delay, s/veh	260.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	144	24	184	7	65	172	68	311	221	252	287	10
Future Vol, veh/h	144	24	184	7	65	172	68	311	221	252	287	10
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	55	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	25	25	25	25	25	25	25	25	25
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	576	96	736	28	260	688	272	1244	884	1008	1148	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	5784	6096	1408	6070	5674	1926	1308	0	0	2248	0	0
Stage 1	3304	3304	-	2350	2350	-	-	-	-	-	-	-
Stage 2	2480	2792	-	3720	3324	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	~ 172	0	0	~ 84	536	-	-	~ 233	-	-
Stage 1	~ 13	~ 22	-	49	~ 70	-	-	-	-	-	-	-
Stage 2	~ 41	~ 41	-	~ 7	~ 21	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	0	~ 135	-	0	~ 66	475	-	-	~ 206	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	~ 5	0	-	~ 19	~ 26	-	-	-	-	-	-	-
Stage 2	1316	~ 16	-	-	0	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			2.5	$ 824.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	475	-	-	-	-	66	~ 206	-	-
HCM Lane V/C Ratio	0.573	-	-	-	-	10.424	4.893	-	-
HCM Control Delay (s)	22.2	-	-	-	-	$ 436$	$ 1796.1	-	-
HCM Lane LOS	C	-	-	-	-	F	F	-	-
HCM 95th %tile Q(veh)	3.5	-	-	-	-	80.9	103.9	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	67.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	14	158	71	12	96	88	503	79	77	370	14
Future Vol, veh/h	2	14	158	71	12	96	88	503	79	77	370	14
Conflicting Peds, #/hr	120	0	120	120	0	120	120	0	120	120	0	120
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	90	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	15	168	76	13	102	94	535	84	82	394	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1576	1611	641	1576	1576	817	529	0	0	739	0	0
Stage 1	685	685	-	884	884	-	-	-	-	-	-	-
Stage 2	891	926	-	692	692	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	90	105	478	90	111	380	1048	-	-	876	-	-
Stage 1	441	451	-	343	366	-	-	-	-	-	-	-
Stage 2	340	350	-	437	448	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	34	66	375	~ 28	70	298	928	-	-	776	-	-
Mov Cap-2 Maneuver	34	66	-	~ 28	70	-	-	-	-	-	-	-
Stage 1	351	357	-	273	291	-	-	-	-	-	-	-
Stage 2	170	279	-	183	355	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.4	$ 524.5	1.2	1.7
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	928	-	-	59	375	31	298	776	-	-
HCM Lane V/C Ratio	0.101	-	-	0.288	0.448	2.848	0.343	0.106	-	-
HCM Control Delay (s)	9.3	-	-	89.1	22.2	$ 1104.3	23.3	10.2	-	-
HCM Lane LOS	A	-	-	F	C	F	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1	2.2	10.4	1.5	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	5	45	31	3	12	17	498	34	22	554	5
Future Vol, veh/h	0	5	45	31	3	12	17	498	34	22	554	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	135	-	-	135	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	5	49	34	3	13	18	541	37	24	602	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1258	1268	605	1277	1252	560	608	0	0	578	0	0
Stage 1	653	653	-	597	597	-	-	-	-	-	-	-
Stage 2	605	615	-	680	655	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	149	170	501	145	174	532	980	-	-	1006	-	-
Stage 1	460	467	-	493	495	-	-	-	-	-	-	-
Stage 2	488	485	-	444	466	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	139	163	501	123	167	532	980	-	-	1006	-	-
Mov Cap-2 Maneuver	139	163	-	123	167	-	-	-	-	-	-	-
Stage 1	452	456	-	484	486	-	-	-	-	-	-	-
Stage 2	464	476	-	386	455	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15	38.3	0.3	0.3
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	980	-	-	415	157	1006	-	-
HCM Lane V/C Ratio	0.019	-	-	0.131	0.318	0.024	-	-
HCM Control Delay (s)	8.7	-	-	15	38.3	8.7	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1.3	0.1	-	-

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Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 2/27/2017
File: C:\Users\nfoster\Documents\19638\excel\Signal Warrant\[19638_SWA_RR&3rd_Peak Season Peak Hour_BypassAdjusted.xls]War #3 - Peak HR
Intersection: Park St/3rd St
Scenario: Existing Peak Volumes w BYPASS

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	267	287	205	142
2nd	Highest Hour	248	267	194	134
3rd	Highest Hour	245	263	190	131
4th	Highest Hour	234	251	195	135
5th	Highest Hour	239	257	184	127
6th	Highest Hour	232	249	187	130
7th	Highest Hour	241	259	121	84
8th	Highest Hour	190	204	162	113
9th	Highest Hour	171	184	131	91
10th	Highest Hour	147	158	113	78
11th	Highest Hour	120	129	92	64
12th	Highest Hour	115	123	88	61
13th	Highest Hour	104	112	80	55
14th	Highest Hour	96	103	74	51
15th	Highest Hour	96	103	74	51
16th	Highest Hour	93	100	72	50
17th	Highest Hour	53	57	41	28
18th	Highest Hour	29	32	23	16
19th	Highest Hour	27	29	21	14
20th	Highest Hour	11	11	8	6
21st	Highest Hour	8	9	6	4
22nd	Highest Hour	8	9	6	4
23rd	Highest Hour	5	6	4	3
24th	Highest Hour	5	6	4	3

Warrant Summary

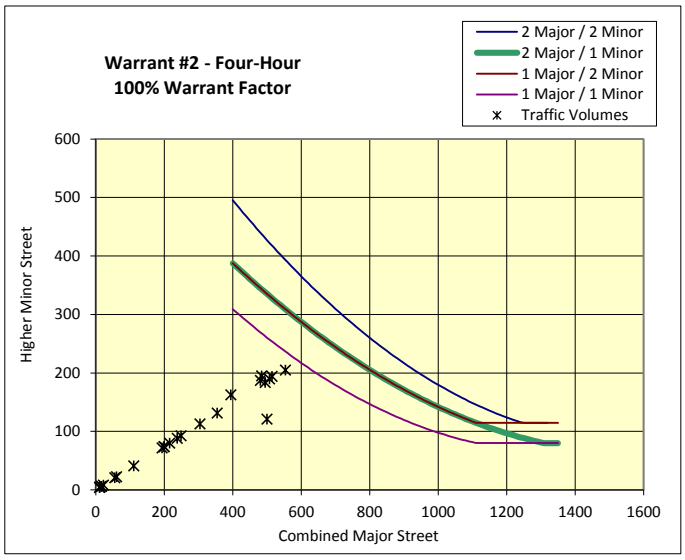
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

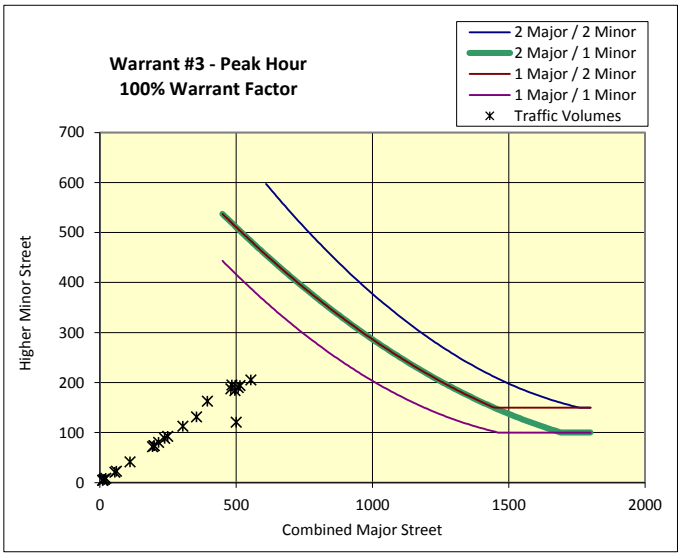
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	3	No	**No**
	B	750	75	0	No	
80%	A	400	120	7	No	**No**
	B	600	60	0	No	
70%	A	350	105	9	Yes	**Yes**
	B	525	53	1	No	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	390	268	101	104
2nd	Highest Hour	362	249	96	98
3rd	Highest Hour	357	246	93	96
4th	Highest Hour	341	234	96	99
5th	Highest Hour	349	240	91	93
6th	Highest Hour	339	233	92	95
7th	Highest Hour	352	242	60	61
8th	Highest Hour	278	191	80	82
9th	Highest Hour	250	172	65	67
10th	Highest Hour	215	147	56	57
11th	Highest Hour	176	121	45	47
12th	Highest Hour	168	115	43	45
13th	Highest Hour	152	105	39	41
14th	Highest Hour	140	96	36	37
15th	Highest Hour	140	96	36	37
16th	Highest Hour	137	94	35	36
17th	Highest Hour	78	54	20	21
18th	Highest Hour	43	29	11	11
19th	Highest Hour	39	27	10	10
20th	Highest Hour	16	11	4	4
21st	Highest Hour	12	8	3	3
22nd	Highest Hour	12	8	3	3
23rd	Highest Hour	8	5	2	2
24th	Highest Hour	8	5	2	2

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
658	104	154	No
611	98	170	No
603	96	174	No
576	99	184	No
588	93	179	No
571	95	186	No
594	61	177	No
469	82	231	No
421	67	254	No
362	57	285	No
296	47	323	No
283	45	331	No
257	41	347	No
237	37	359	No
237	37	359	No
230	36	363	No
132	21	430	No
72	11	473	No
66	10	478	No
26	4	508	No
20	3	514	No
20	3	514	No
13	2	519	No
13	2	519	No
			0

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

No

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	16.3	35.2
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	0.46	1.02
	No	No
Volume on Minor Street Approach During Same Hour	101	104
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	863	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

No

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Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_Boydstun&Lake_future pk.xls]Data Input

Intersection: Boydstun Street/W Lake Street
Scenario: 2040 Peak Future Volumes

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Analysis Traffic Volumes

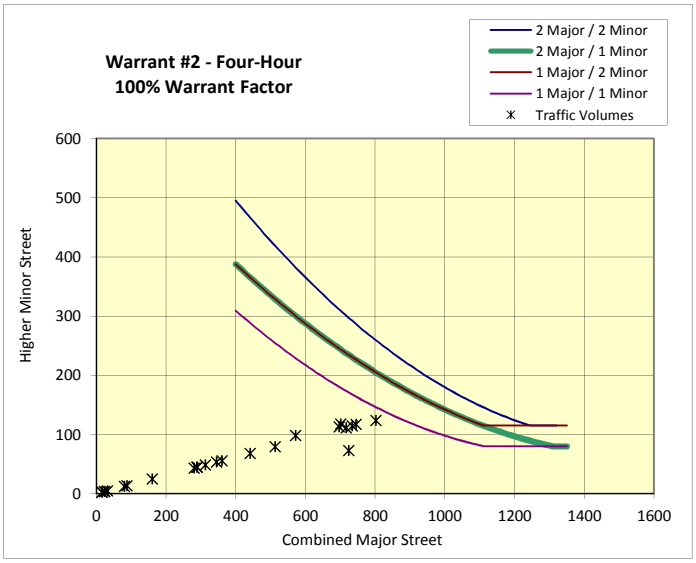
Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:00 PM	5:00 PM	386	416	124	0
2nd	Highest Hour	359	387	117	0
3rd	Highest Hour	354	381	115	0
4th	Highest Hour	338	364	118	0
5th	Highest Hour	345	372	111	0
6th	Highest Hour	335	361	113	0
7th	Highest Hour	349	376	73	0
8th	Highest Hour	275	296	98	0
9th	Highest Hour	247	266	79	0
10th	Highest Hour	212	229	68	0
11th	Highest Hour	174	187	56	0
12th	Highest Hour	166	179	53	0
13th	Highest Hour	151	162	48	0
14th	Highest Hour	139	150	45	0
15th	Highest Hour	139	150	45	0
16th	Highest Hour	135	146	43	0
17th	Highest Hour	77	83	25	0
18th	Highest Hour	42	46	14	0
19th	Highest Hour	39	42	12	0
20th	Highest Hour	15	17	5	0
21st	Highest Hour	12	12	4	0
22nd	Highest Hour	12	12	4	0
23rd	Highest Hour	8	8	2	0
24th	Highest Hour	8	8	2	0

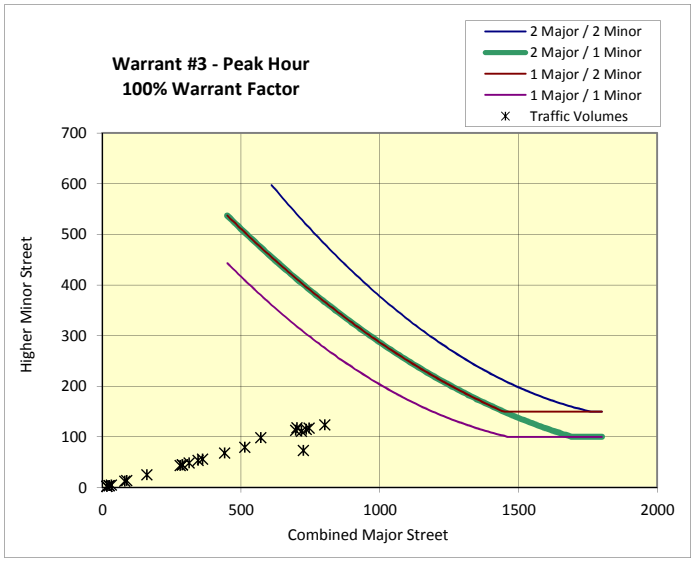
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	**No**
	B	750	75	1	No	
80%	A	400	120	1	No	**No**
	B	600	60	7	No	
70%	A	350	105	6	No	**Yes**
	B	525	53	8	Yes	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:00 PM	5:00 PM	386	416	124	0
2nd	Highest Hour	359	387	117	0
3rd	Highest Hour	354	381	115	0
4th	Highest Hour	338	364	118	0
5th	Highest Hour	345	372	111	0
6th	Highest Hour	335	361	113	0
7th	Highest Hour	349	376	73	0
8th	Highest Hour	275	296	98	0
9th	Highest Hour	247	266	79	0
10th	Highest Hour	212	229	68	0
11th	Highest Hour	174	187	56	0
12th	Highest Hour	166	179	53	0
13th	Highest Hour	151	162	48	0
14th	Highest Hour	139	150	45	0
15th	Highest Hour	139	150	45	0
16th	Highest Hour	135	146	43	0
17th	Highest Hour	77	83	25	0
18th	Highest Hour	42	46	14	0
19th	Highest Hour	39	42	12	0
20th	Highest Hour	15	17	5	0
21st	Highest Hour	12	12	4	0
22nd	Highest Hour	12	12	4	0
23rd	Highest Hour	8	8	2	0
24th	Highest Hour	8	8	2	0

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
802	124	112	Yes
745	117	127	No
735	115	130	No
702	118	140	No
717	111	135	No
696	113	141	No
724	73	133	No
571	98	186	No
513	79	210	No
441	68	244	No
361	56	286	No
345	53	295	No
313	48	313	No
289	45	327	No
289	45	327	No
281	43	332	No
160	25	410	No
88	14	461	No
80	12	467	No
32	5	504	No
24	4	510	No
24	4	510	No
16	2	516	No
16	2	516	No
			1

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

Yes

Condition A Criteria

	NB	SB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	37.8	0.0
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	1.30	0.00
	No	No
Volume on Minor Street Approach During Same Hour	124	0
	Yes	No
Total Entering Volume On All Approaches During Same Hour	926	
Number of Approaches to Intersection	3	
	Yes	

Is Warrant #3 met based on Condition A criteria?

No

KITTELSON & ASSOCIATES, INC.
101 South Capitol Blvd, Suite 301
Boise, Idaho 83702
(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: JGM
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_Boydstun&Lake_future pk w BYPASS ADJUSTED.xls]Data Input
Intersection: Boydstun Street/W Lake Street
Scenario: 2040 Peak Future Volumes w BYPASS

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Input Parameters

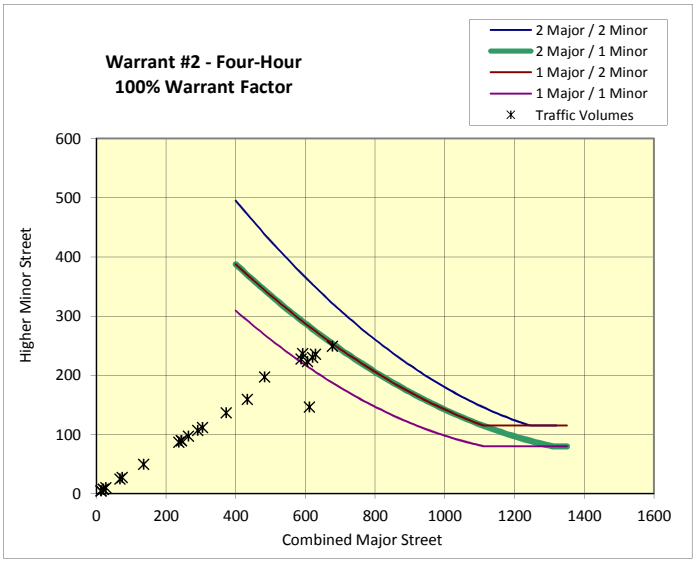
Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

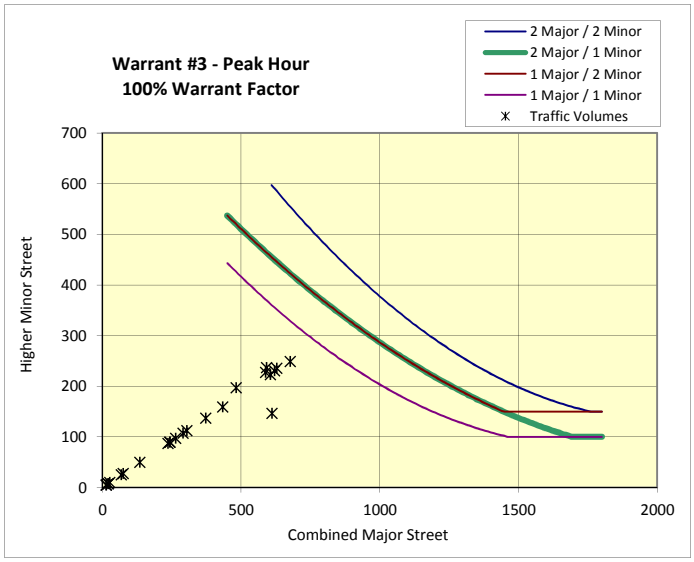
Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:00 PM	5:00 PM	386	291	249	0
2nd	Highest Hour	359	270	236	0
3rd	Highest Hour	354	267	230	0
4th	Highest Hour	338	255	237	0
5th	Highest Hour	345	260	223	0
6th	Highest Hour	335	253	227	0
7th	Highest Hour	349	263	147	0
8th	Highest Hour	275	207	197	0
9th	Highest Hour	247	186	159	0
10th	Highest Hour	212	160	137	0
11th	Highest Hour	174	131	112	0
12th	Highest Hour	166	125	107	0
13th	Highest Hour	151	113	97	0
14th	Highest Hour	139	105	90	0
15th	Highest Hour	139	105	90	0
16th	Highest Hour	135	102	87	0
17th	Highest Hour	77	58	50	0
18th	Highest Hour	42	32	27	0
19th	Highest Hour	39	29	25	0
20th	Highest Hour	15	12	10	0
21st	Highest Hour	12	9	7	0
22nd	Highest Hour	12	9	7	0
23rd	Highest Hour	8	6	5	0
24th	Highest Hour	8	6	5	0

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	6	No	**No**
	B	750	75	0	No	
80%	A	400	120	9	Yes	**Yes**
	B	600	60	5	No	
70%	A	350	105	10	Yes	**Yes**
	B	525	53	7	No	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
4:00 PM	5:00 PM	386	291	249	0
2nd	Highest Hour	359	270	236	0
3rd	Highest Hour	354	267	230	0
4th	Highest Hour	338	255	237	0
5th	Highest Hour	345	260	223	0
6th	Highest Hour	335	253	227	0
7th	Highest Hour	349	263	147	0
8th	Highest Hour	275	207	197	0
9th	Highest Hour	247	186	159	0
10th	Highest Hour	212	160	137	0
11th	Highest Hour	174	131	112	0
12th	Highest Hour	166	125	107	0
13th	Highest Hour	151	113	97	0
14th	Highest Hour	139	105	90	0
15th	Highest Hour	139	105	90	0
16th	Highest Hour	135	102	87	0
17th	Highest Hour	77	58	50	0
18th	Highest Hour	42	32	27	0
19th	Highest Hour	39	29	25	0
20th	Highest Hour	15	12	10	0
21st	Highest Hour	12	9	7	0
22nd	Highest Hour	12	9	7	0
23rd	Highest Hour	8	6	5	0
24th	Highest Hour	8	6	5	0

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
677	249	147	Yes
629	236	164	Yes
620	230	167	Yes
592	237	178	Yes
605	223	173	Yes
588	227	179	Yes
611	147	170	No
482	197	224	No
433	159	248	No
372	137	280	No
305	112	318	No
291	107	326	No
264	97	342	No
244	90	355	No
244	90	355	No
237	87	359	No
135	50	427	No
74	27	472	No
68	25	477	No
27	10	508	No
20	7	513	No
20	7	513	No
14	5	518	No
14	5	518	No
			6

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

Yes

Condition A Criteria

	NB	SB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	41.1	0.0
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	3.98	0.00
	No	No
Volume on Minor Street Approach During Same Hour	349	0
	Yes	No
Total Entering Volume On All Approaches During Same Hour	926	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

No

KITTELSON & ASSOCIATES, INC.
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Boise, Idaho 83702
(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: JGM
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_RR&3rd_Peak Season Daily.xls]Warrant Summary
Intersection: N 3rd Street (SH-55)/Railroad Ave
Scenario: 2015 Thursday May 14, 2015 Daily Volumes

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
12:00 AM	1:00 AM	8	7	0	2
1:00 AM	2:00 AM	5	3	0	1
2:00 AM	3:00 AM	1	2	0	2
3:00 AM	4:00 AM	8	6	2	2
4:00 AM	5:00 AM	13	7	1	2
5:00 AM	6:00 AM	25	17	2	11
6:00 AM	7:00 AM	53	44	3	32
7:00 AM	8:00 AM	180	110	21	88
8:00 AM	9:00 AM	221	153	29	94
9:00 AM	10:00 AM	267	167	57	96
10:00 AM	11:00 AM	295	187	55	105
11:00 AM	12:00 PM	402	215	72	135
12:00 PM	1:00 PM	492	257	92	181
1:00 PM	2:00 PM	501	262	91	171
2:00 PM	3:00 PM	477	243	89	154
3:00 PM	4:00 PM	458	270	80	150
4:00 PM	5:00 PM	402	252	70	151
5:00 PM	6:00 PM	377	251	51	161
6:00 PM	7:00 PM	291	184	36	114
7:00 PM	8:00 PM	183	135	14	75
8:00 PM	9:00 PM	167	114	21	60
9:00 PM	10:00 PM	102	62	13	38
10:00 PM	11:00 PM	61	44	5	19
11:00 PM	12:00 AM	32	23	2	8

Warrant Summary

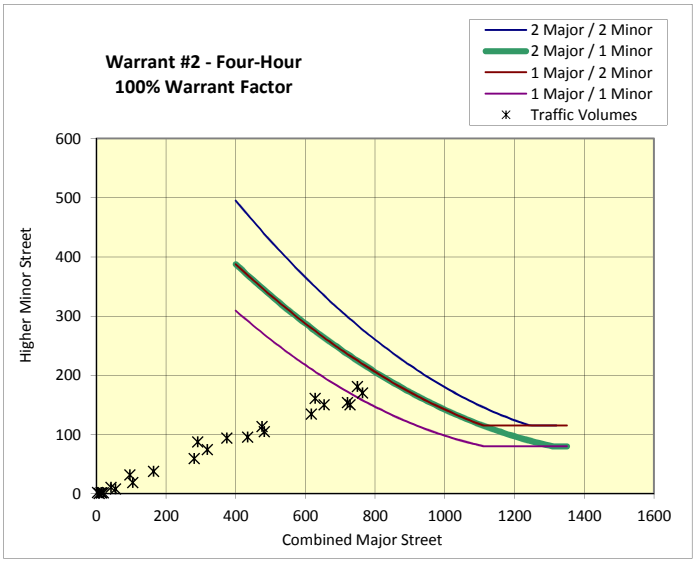
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

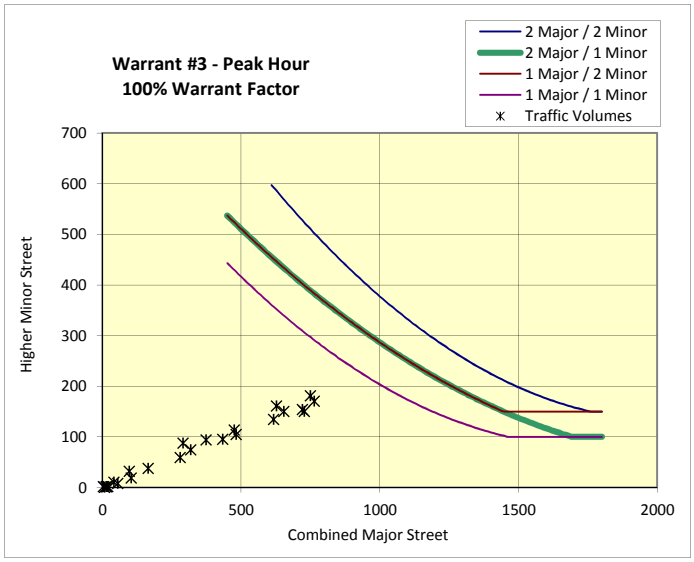
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Daily

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	6	No	**No**
	B	750	75	2	No	
80%	A	400	120	7	No	**No**
	B	600	60	7	No	
70%	A	350	105	9	Yes	**Yes**
	B	525	53	7	No	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
12:00 AM	1:00 AM	8	7	0	2
1:00 AM	2:00 AM	5	3	0	1
2:00 AM	3:00 AM	1	2	0	2
3:00 AM	4:00 AM	8	6	2	2
4:00 AM	5:00 AM	13	7	1	2
5:00 AM	6:00 AM	25	17	2	11
6:00 AM	7:00 AM	53	44	3	32
7:00 AM	8:00 AM	180	110	21	88
8:00 AM	9:00 AM	221	153	29	94
9:00 AM	10:00 AM	267	167	57	96
10:00 AM	11:00 AM	295	187	55	105
11:00 AM	12:00 PM	402	215	72	135
12:00 PM	1:00 PM	492	257	92	181
1:00 PM	2:00 PM	501	262	91	171
2:00 PM	3:00 PM	477	243	89	154
3:00 PM	4:00 PM	458	270	80	150
4:00 PM	5:00 PM	402	252	70	151
5:00 PM	6:00 PM	377	251	51	161
6:00 PM	7:00 PM	291	184	36	114
7:00 PM	8:00 PM	183	135	14	75
8:00 PM	9:00 PM	167	114	21	60
9:00 PM	10:00 PM	102	62	13	38
10:00 PM	11:00 PM	61	44	5	19
11:00 PM	12:00 AM	32	23	2	8

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
15	2	517	No
8	1	523	No
3	2	527	No
14	2	518	No
20	2	513	No
42	11	496	No
96	32	455	No
291	88	326	No
374	94	279	No
434	96	248	No
482	105	225	No
617	135	168	No
749	181	126	Yes
763	171	122	Yes
720	154	134	Yes
728	150	132	Yes
654	151	155	No
627	161	165	No
475	114	228	No
318	75	310	No
281	60	332	No
164	38	407	No
104	19	450	No
55	8	486	No
			4

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

Yes

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	49.0	49.0
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	2.48	4.64
	No	Yes
Volume on Minor Street Approach During Same Hour	182	341
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	2017	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

Yes

KITTELSON & ASSOCIATES, INC.
101 South Capitol Blvd, Suite 301
Boise, Idaho 83702
(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: JGM
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_Park&3rd_Peak Season Daily.xls]War #3 - Peak HR
Intersection: N 3rd Street (SH-55)/Railroad Ave
Scenario: 2015 Thursday May 14, 2015 Daily Volumes

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
12:00 AM	1:00 AM	15	16	0	3
1:00 AM	2:00 AM	9	7	0	1
2:00 AM	3:00 AM	2	5	0	4
3:00 AM	4:00 AM	14	13	3	3
4:00 AM	5:00 AM	23	16	1	3
5:00 AM	6:00 AM	46	37	3	21
6:00 AM	7:00 AM	96	97	6	64
7:00 AM	8:00 AM	328	245	42	175
8:00 AM	9:00 AM	402	340	58	188
9:00 AM	10:00 AM	485	371	113	191
10:00 AM	11:00 AM	536	416	109	210
11:00 AM	12:00 PM	731	478	144	269
12:00 PM	1:00 PM	895	571	184	362
1:00 PM	2:00 PM	911	583	182	341
2:00 PM	3:00 PM	868	540	178	308
3:00 PM	4:00 PM	833	599	159	300
4:00 PM	5:00 PM	731	559	140	301
5:00 PM	6:00 PM	685	557	102	322
6:00 PM	7:00 PM	529	409	71	227
7:00 PM	8:00 PM	333	300	27	149
8:00 PM	9:00 PM	303	253	41	119
9:00 PM	10:00 PM	186	138	25	76
10:00 PM	11:00 PM	110	97	10	38
11:00 PM	12:00 AM	58	51	3	16

Warrant Summary

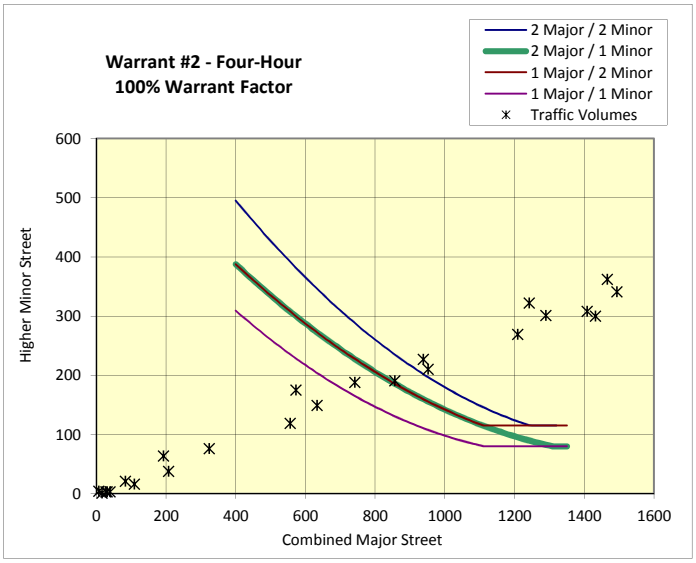
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

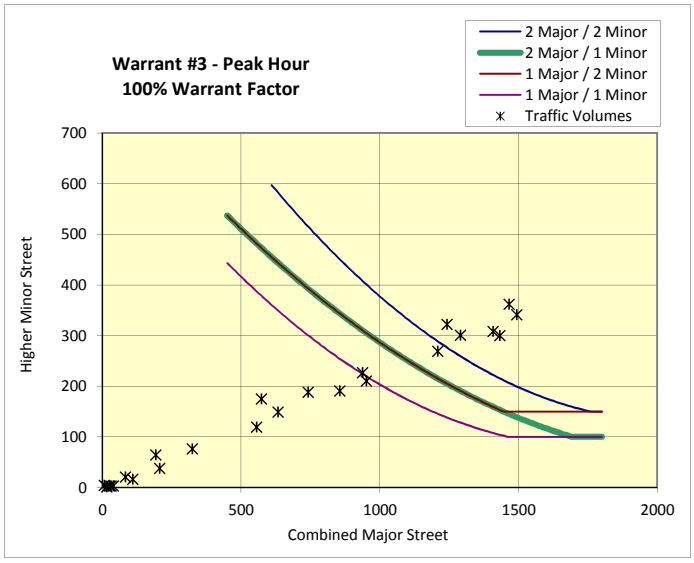
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Daily

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	12	Yes	**Yes**
	B	750	75	10	Yes	
80%	A	400	120	13	Yes	**Yes**
	B	600	60	12	Yes	
70%	A	350	105	14	Yes	**Yes**
	B	525	53	14	Yes	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
12:00 AM	1:00 AM	15	16	0	3
1:00 AM	2:00 AM	9	7	0	1
2:00 AM	3:00 AM	2	5	0	4
3:00 AM	4:00 AM	14	13	3	3
4:00 AM	5:00 AM	23	16	1	3
5:00 AM	6:00 AM	46	37	3	21
6:00 AM	7:00 AM	96	97	6	64
7:00 AM	8:00 AM	328	245	42	175
8:00 AM	9:00 AM	402	340	58	188
9:00 AM	10:00 AM	485	371	113	191
10:00 AM	11:00 AM	536	416	109	210
11:00 AM	12:00 PM	731	478	144	269
12:00 PM	1:00 PM	895	571	184	362
1:00 PM	2:00 PM	911	583	182	341
2:00 PM	3:00 PM	868	540	178	308
3:00 PM	4:00 PM	833	599	159	300
4:00 PM	5:00 PM	731	559	140	301
5:00 PM	6:00 PM	685	557	102	322
6:00 PM	7:00 PM	529	409	71	227
7:00 PM	8:00 PM	333	300	27	149
8:00 PM	9:00 PM	303	253	41	119
9:00 PM	10:00 PM	186	138	25	76
10:00 PM	11:00 PM	110	97	10	38
11:00 PM	12:00 AM	58	51	3	16

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
31	3	505	No
16	1	516	No
7	4	524	No
27	3	508	No
39	3	498	No
83	21	465	No
193	64	388	No
573	175	185	No
742	188	128	Yes
856	191	100	Yes
952	210	84	Yes
1209	269	75	Yes
1466	362	75	Yes
1494	341	75	Yes
1408	308	75	Yes
1432	300	75	Yes
1290	301	75	Yes
1242	322	75	Yes
938	227	86	Yes
633	149	163	No
556	119	192	No
324	76	306	No
207	38	378	No
109	16	446	No
			11

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

Yes

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	49.0	49.0
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	2.48	4.64
	No	Yes
Volume on Minor Street Approach During Same Hour	182	341
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	2017	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

Yes

KITTELSON & ASSOCIATES, INC.
101 South Capitol Blvd, Suite 301
Boise, Idaho 83702
(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_RR&3rd_Peak Season Peak Hour_BypassAdjusted.xls]Warrant Summary
Intersection: Park St/3rd St
Scenario: Existing Peak Volumes w BYPASS

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Analysis Traffic Volumes

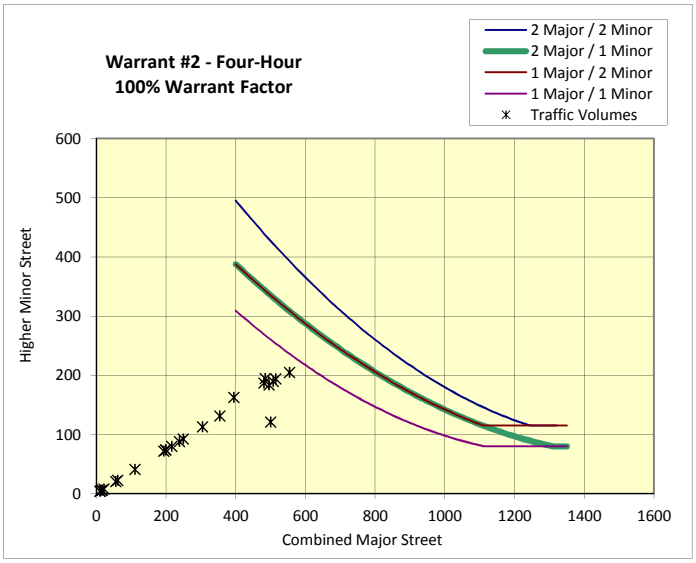
Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	267	287	205	142
2nd	Highest Hour	248	267	194	134
3rd	Highest Hour	245	263	190	131
4th	Highest Hour	234	251	195	135
5th	Highest Hour	239	257	184	127
6th	Highest Hour	232	249	187	130
7th	Highest Hour	241	259	121	84
8th	Highest Hour	190	204	162	113
9th	Highest Hour	171	184	131	91
10th	Highest Hour	147	158	113	78
11th	Highest Hour	120	129	92	64
12th	Highest Hour	115	123	88	61
13th	Highest Hour	104	112	80	55
14th	Highest Hour	96	103	74	51
15th	Highest Hour	96	103	74	51
16th	Highest Hour	93	100	72	50
17th	Highest Hour	53	57	41	28
18th	Highest Hour	29	32	23	16
19th	Highest Hour	27	29	21	14
20th	Highest Hour	11	11	8	6
21st	Highest Hour	8	9	6	4
22nd	Highest Hour	8	9	6	4
23rd	Highest Hour	5	6	4	3
24th	Highest Hour	5	6	4	3

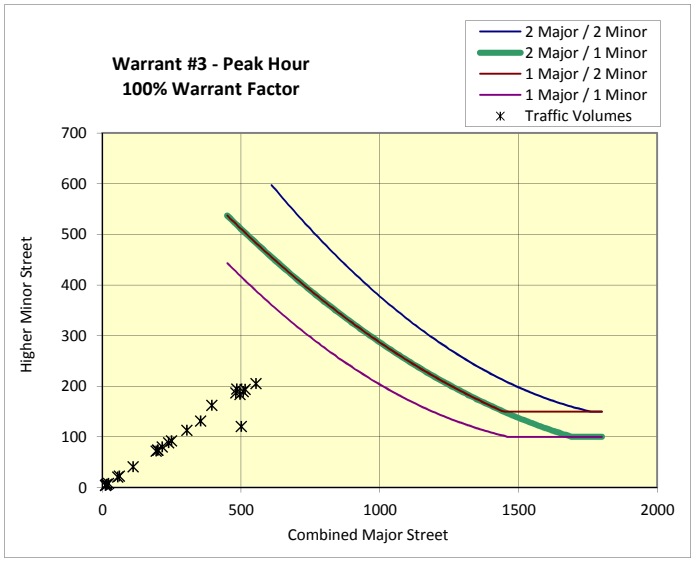
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	3	No	**No**
	B	750	75	0	No	
80%	A	400	120	7	No	**No**
	B	600	60	0	No	
70%	A	350	105	9	Yes	**Yes**
	B	525	53	1	No	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	267	287	205	142
2nd	Highest Hour	248	267	194	134
3rd	Highest Hour	245	263	190	131
4th	Highest Hour	234	251	195	135
5th	Highest Hour	239	257	184	127
6th	Highest Hour	232	249	187	130
7th	Highest Hour	241	259	121	84
8th	Highest Hour	190	204	162	113
9th	Highest Hour	171	184	131	91
10th	Highest Hour	147	158	113	78
11th	Highest Hour	120	129	92	64
12th	Highest Hour	115	123	88	61
13th	Highest Hour	104	112	80	55
14th	Highest Hour	96	103	74	51
15th	Highest Hour	96	103	74	51
16th	Highest Hour	93	100	72	50
17th	Highest Hour	53	57	41	28
18th	Highest Hour	29	32	23	16
19th	Highest Hour	27	29	21	14
20th	Highest Hour	11	11	8	6
21st	Highest Hour	8	9	6	4
22nd	Highest Hour	8	9	6	4
23rd	Highest Hour	5	6	4	3
24th	Highest Hour	5	6	4	3

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
554	205	193	Yes
515	194	210	No
508	190	213	No
485	195	223	No
495	184	218	No
481	187	225	No
500	121	216	No
395	162	268	No
355	131	289	No
305	113	318	No
249	92	351	No
238	88	358	No
216	80	373	No
199	74	383	No
199	74	383	No
194	72	387	No
111	41	445	No
61	23	482	No
55	21	486	No
22	8	512	No
17	6	516	No
17	6	516	No
11	4	520	No
11	4	520	No
			1

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

Yes

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	165.8	20.2
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	9.44	0.80
	Yes	No
Volume on Minor Street Approach During Same Hour	205	142
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	901	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

Yes

KITTELSON & ASSOCIATES, INC.
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(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_Park&3rd_Off-Peak Season Peak Hour_2040.xls]Warrant Summary
Intersection: N 3rd Street (SH-55)/Park Street
Scenario: 2040 off-peak season - RTs removed

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Analysis Traffic Volumes

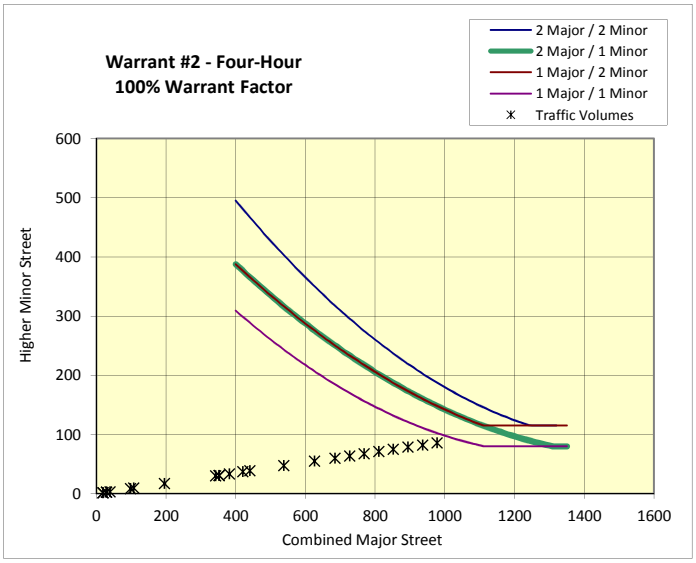
Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:30 PM	5:30 PM	481	497	26	86
2nd	Highest Hour	460	476	25	82
3rd	Highest Hour	440	454	24	79
4th	Highest Hour	419	433	23	75
5th	Highest Hour	399	412	22	71
6th	Highest Hour	378	391	20	68
7th	Highest Hour	357	369	19	64
8th	Highest Hour	337	348	18	60
9th	Highest Hour	308	318	17	55
10th	Highest Hour	265	273	14	47
11th	Highest Hour	216	224	12	39
12th	Highest Hour	207	214	11	37
13th	Highest Hour	188	194	10	34
14th	Highest Hour	173	179	9	31
15th	Highest Hour	173	179	9	31
16th	Highest Hour	168	174	9	30
17th	Highest Hour	96	99	5	17
18th	Highest Hour	53	55	3	9
19th	Highest Hour	48	50	3	9
20th	Highest Hour	19	20	1	3
21st	Highest Hour	14	15	1	3
22nd	Highest Hour	14	15	1	3
23rd	Highest Hour	10	10	1	2
24th	Highest Hour	10	10	1	2

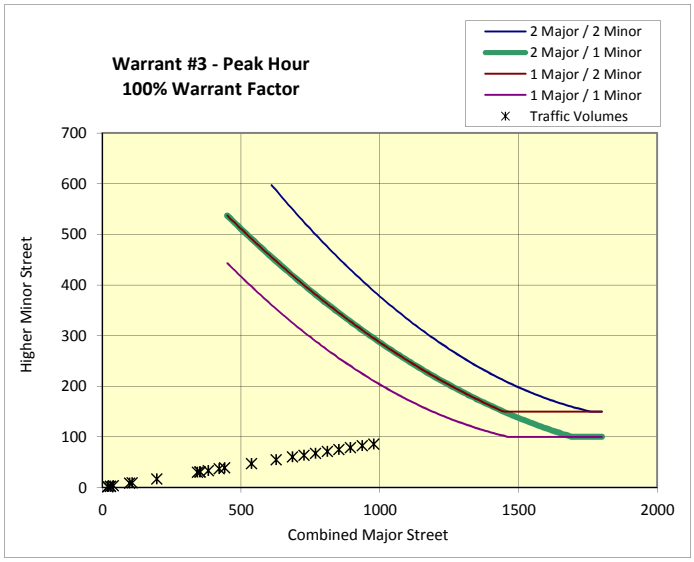
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	70%
Minor Street: 4th-Highest Hour / Peak Hour	87%
Minor Street: 8th-Highest Hour / Peak Hour	70%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	**No**
	B	750	75	4	No	
80%	A	400	120	0	No	**Yes**
	B	600	60	8	Yes	
70%	A	350	105	0	No	**Yes**
	B	525	53	9	Yes	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:30 PM	5:30 PM	481	497	26	86
2nd	Highest Hour	460	476	25	82
3rd	Highest Hour	440	454	24	79
4th	Highest Hour	419	433	23	75
5th	Highest Hour	399	412	22	71
6th	Highest Hour	378	391	20	68
7th	Highest Hour	357	369	19	64
8th	Highest Hour	337	348	18	60
9th	Highest Hour	308	318	17	55
10th	Highest Hour	265	273	14	47
11th	Highest Hour	216	224	12	39
12th	Highest Hour	207	214	11	37
13th	Highest Hour	188	194	10	34
14th	Highest Hour	173	179	9	31
15th	Highest Hour	173	179	9	31
16th	Highest Hour	168	174	9	30
17th	Highest Hour	96	99	5	17
18th	Highest Hour	53	55	3	9
19th	Highest Hour	48	50	3	9
20th	Highest Hour	19	20	1	3
21st	Highest Hour	14	15	1	3
22nd	Highest Hour	14	15	1	3
23rd	Highest Hour	10	10	1	2
24th	Highest Hour	10	10	1	2

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
978	86	81	Yes
936	82	86	No
894	79	93	No
852	75	101	No
810	71	110	No
768	68	120	No
727	64	132	No
685	60	145	No
626	55	165	No
538	47	200	No
440	39	245	No
421	37	254	No
381	34	275	No
352	31	291	No
352	31	291	No
342	30	296	No
196	17	386	No
108	9	447	No
98	9	454	No
39	3	498	No
29	3	506	No
29	3	506	No
20	2	514	No
20	2	514	No
			1

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor? **Yes**

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	16.9	22.2
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	0.47	0.64
	No	No
Volume on Minor Street Approach During Same Hour	101	104
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	1090	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria? **No**

KITTELSON & ASSOCIATES, INC.
101 South Capitol Blvd, Suite 301
Boise, Idaho 83702
(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_Park&3rd_Peak Season Peak Hour_2040_BypassAdjusted.xls]Data Input
Intersection: Park St/3rd St
Scenario: 2040 Peak Future Volumes w BYPASS

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	676	461	174	179
2nd	Highest Hour	628	428	165	169
3rd	Highest Hour	619	422	161	166
4th	Highest Hour	591	403	165	170
5th	Highest Hour	605	412	156	160
6th	Highest Hour	587	400	159	163
7th	Highest Hour	610	416	103	105
8th	Highest Hour	482	328	138	142
9th	Highest Hour	433	295	111	115
10th	Highest Hour	372	254	96	98
11th	Highest Hour	304	207	78	81
12th	Highest Hour	291	198	75	77
13th	Highest Hour	264	180	68	70
14th	Highest Hour	243	166	63	64
15th	Highest Hour	243	166	63	64
16th	Highest Hour	237	161	61	63
17th	Highest Hour	135	92	35	36
18th	Highest Hour	74	51	19	20
19th	Highest Hour	68	46	17	18
20th	Highest Hour	27	18	7	7
21st	Highest Hour	20	14	5	5
22nd	Highest Hour	20	14	5	5
23rd	Highest Hour	14	9	3	4
24th	Highest Hour	14	9	3	4

Warrant Summary

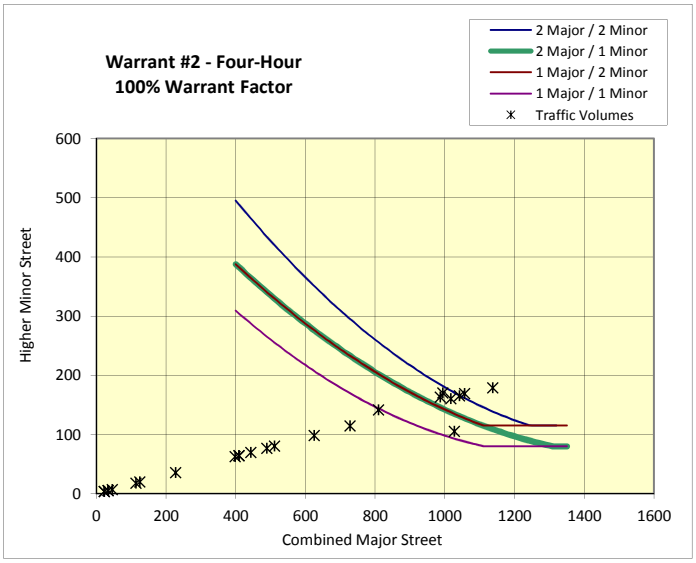
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

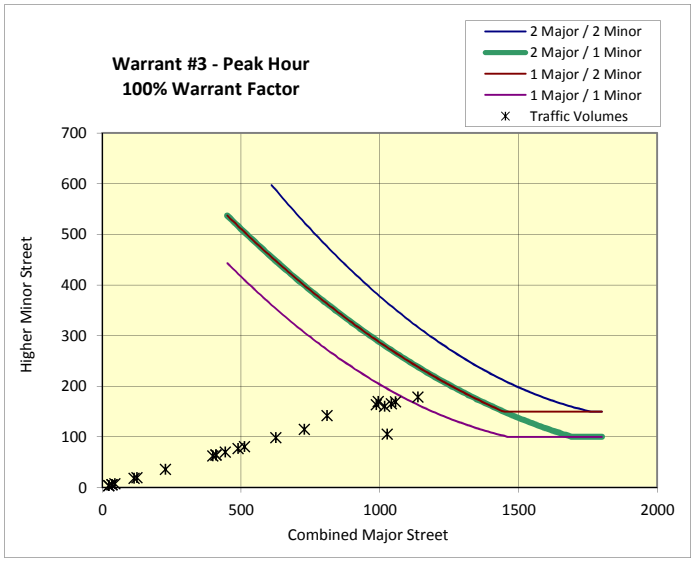
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	6	No	**Yes**
	B	750	75	8	Yes	
80%	A	400	120	7	No	**Yes**
	B	600	60	10	Yes	
70%	A	350	105	9	Yes	**Yes**
	B	525	53	10	Yes	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	676	461	174	179
2nd	Highest Hour	628	428	165	169
3rd	Highest Hour	619	422	161	166
4th	Highest Hour	591	403	165	170
5th	Highest Hour	605	412	156	160
6th	Highest Hour	587	400	159	163
7th	Highest Hour	610	416	103	105
8th	Highest Hour	482	328	138	142
9th	Highest Hour	433	295	111	115
10th	Highest Hour	372	254	96	98
11th	Highest Hour	304	207	78	81
12th	Highest Hour	291	198	75	77
13th	Highest Hour	264	180	68	70
14th	Highest Hour	243	166	63	64
15th	Highest Hour	243	166	63	64
16th	Highest Hour	237	161	61	63
17th	Highest Hour	135	92	35	36
18th	Highest Hour	74	51	19	20
19th	Highest Hour	68	46	17	18
20th	Highest Hour	27	18	7	7
21st	Highest Hour	20	14	5	5
22nd	Highest Hour	20	14	5	5
23rd	Highest Hour	14	9	3	4
24th	Highest Hour	14	9	3	4

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
1137	179	75	Yes
1056	169	75	Yes
1042	166	75	Yes
995	170	79	Yes
1017	160	77	Yes
987	163	80	Yes
1027	105	76	Yes
810	142	110	Yes
728	115	132	No
625	98	165	No
512	81	211	No
489	77	221	No
443	70	243	No
409	64	260	No
409	64	260	No
398	63	266	No
227	36	365	No
125	20	435	No
114	18	443	No
45	7	493	No
34	5	502	No
34	5	502	No
23	4	511	No
23	4	511	No
			8

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

Yes

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	15.0	103.5
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	0.73	5.15
	No	Yes
Volume on Minor Street Approach During Same Hour	174	179
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	1490	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

Yes

KITTELSON & ASSOCIATES, INC.
101 South Capitol Blvd, Suite 301
Boise, Idaho 83702
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Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_Park&3rd_Off-Peak Season Peak Hour_2040_BypassAdjusted.xls]Warrant Summary
Intersection: Park St/3rd St
Scenario: 2040 Off Peak Future Volumes w BYPASS

Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	364	375	26	86
2nd	Highest Hour	338	348	25	81
3rd	Highest Hour	333	344	24	80
4th	Highest Hour	318	328	25	82
5th	Highest Hour	326	335	23	77
6th	Highest Hour	316	326	24	79
7th	Highest Hour	329	339	15	51
8th	Highest Hour	259	267	21	68
9th	Highest Hour	233	240	17	55
10th	Highest Hour	200	206	14	47
11th	Highest Hour	164	169	12	39
12th	Highest Hour	157	161	11	37
13th	Highest Hour	142	146	10	34
14th	Highest Hour	131	135	9	31
15th	Highest Hour	131	135	9	31
16th	Highest Hour	127	131	9	30
17th	Highest Hour	73	75	5	17
18th	Highest Hour	40	41	3	9
19th	Highest Hour	36	38	3	9
20th	Highest Hour	15	15	1	3
21st	Highest Hour	11	11	1	3
22nd	Highest Hour	11	11	1	3
23rd	Highest Hour	7	8	1	2
24th	Highest Hour	7	8	1	2

Warrant Summary

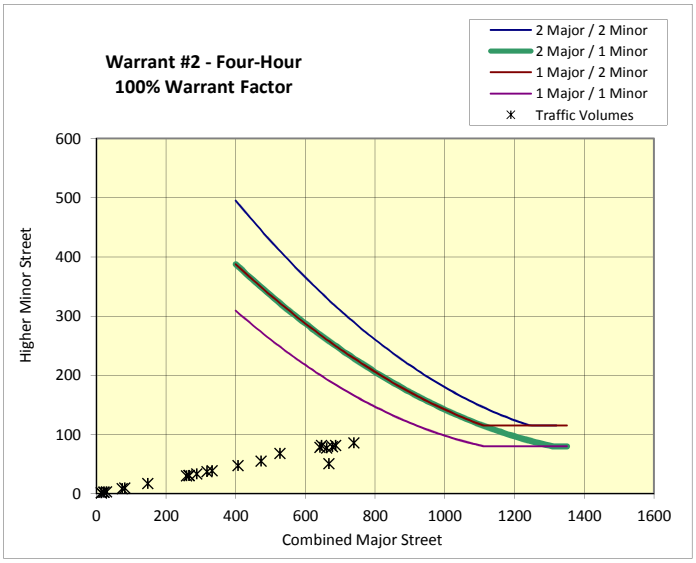
Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

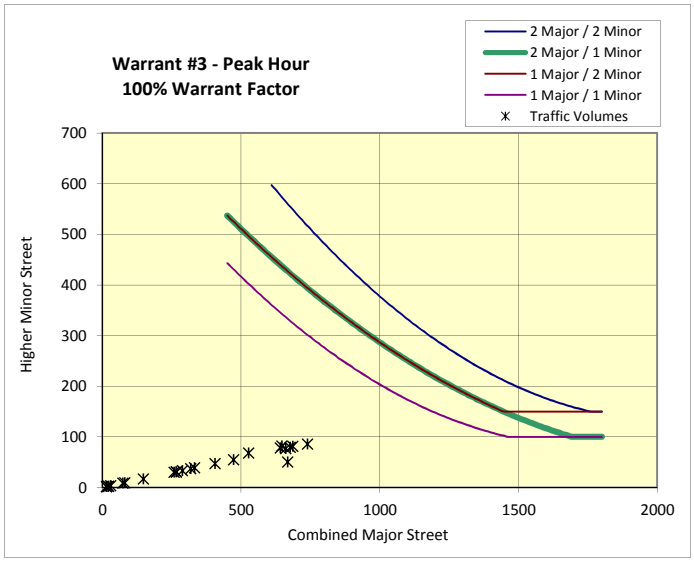
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	**No**
	B	750	75	0	No	
80%	A	400	120	0	No	**No**
	B	600	60	6	No	
70%	A	350	105	0	No	**No**
	B	525	53	7	No	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	364	375	26	86
2nd	Highest Hour	338	348	25	81
3rd	Highest Hour	333	344	24	80
4th	Highest Hour	318	328	25	82
5th	Highest Hour	326	335	23	77
6th	Highest Hour	316	326	24	79
7th	Highest Hour	329	339	15	51
8th	Highest Hour	259	267	21	68
9th	Highest Hour	233	240	17	55
10th	Highest Hour	200	206	14	47
11th	Highest Hour	164	169	12	39
12th	Highest Hour	157	161	11	37
13th	Highest Hour	142	146	10	34
14th	Highest Hour	131	135	9	31
15th	Highest Hour	131	135	9	31
16th	Highest Hour	127	131	9	30
17th	Highest Hour	73	75	5	17
18th	Highest Hour	40	41	3	9
19th	Highest Hour	36	38	3	9
20th	Highest Hour	15	15	1	3
21st	Highest Hour	11	11	1	3
22nd	Highest Hour	11	11	1	3
23rd	Highest Hour	7	8	1	2
24th	Highest Hour	7	8	1	2

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
739	86	129	No
687	81	144	No
677	80	147	No
646	82	158	No
661	77	153	No
642	79	159	No
667	51	151	No
526	68	205	No
473	55	229	No
406	47	262	No
333	39	302	No
318	37	310	No
288	34	327	No
266	31	341	No
266	31	341	No
259	30	345	No
148	17	418	No
81	9	466	No
74	9	472	No
30	3	506	No
22	3	512	No
22	3	512	No
15	2	517	No
15	2	517	No
			0

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

No

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	23.5	0.0
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	0.95	0.00
	No	No
Volume on Minor Street Approach During Same Hour	145	0
	Yes	No
Total Entering Volume On All Approaches During Same Hour	851	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

No

KITTELSON & ASSOCIATES, INC.
101 South Capitol Blvd, Suite 301
Boise, Idaho 83702
(208) 338-2683
Fax: (208) 338-2685

Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: JGM
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_RR&3rd_off-peak FUTURE_ADJUSTED.xls]War #3 - Peak HR
Intersection: N 3rd Street (SH-55)/Railroad Avenue
Scenario: 2040 Off-Peak Season p.m. Peak Hour Volumes

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes*
#4	Pedestrian Volume	No	.
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-

Analysis Traffic Volumes

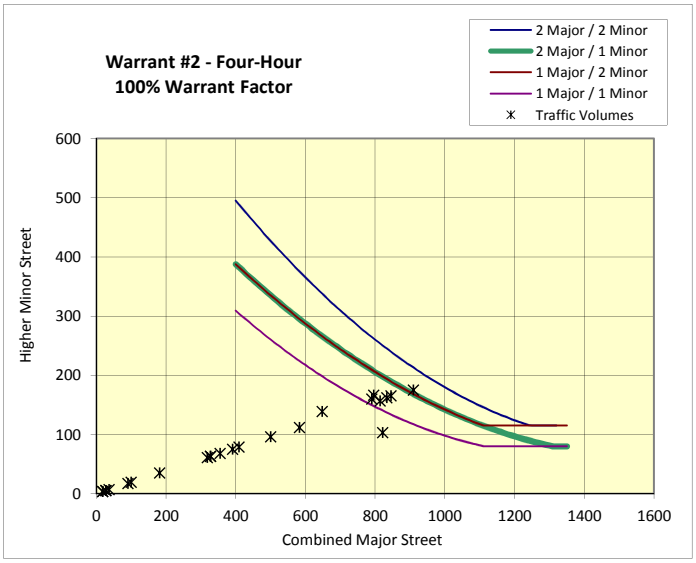
Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	467	443	122	175
2nd	Highest Hour	434	412	115	166
3rd	Highest Hour	428	406	113	162
4th	Highest Hour	408	388	116	166
5th	Highest Hour	418	396	109	157
6th	Highest Hour	405	385	111	160
7th	Highest Hour	422	400	72	103
8th	Highest Hour	333	316	97	139
9th	Highest Hour	299	284	78	112
10th	Highest Hour	257	244	67	96
11th	Highest Hour	210	199	55	79
12th	Highest Hour	201	190	52	75
13th	Highest Hour	182	173	48	68
14th	Highest Hour	168	159	44	63
15th	Highest Hour	168	159	44	63
16th	Highest Hour	163	155	43	61
17th	Highest Hour	93	89	24	35
18th	Highest Hour	51	49	13	19
19th	Highest Hour	47	44	12	18
20th	Highest Hour	19	18	5	7
21st	Highest Hour	14	13	4	5
22nd	Highest Hour	14	13	4	5
23rd	Highest Hour	9	9	2	4
24th	Highest Hour	9	9	2	4

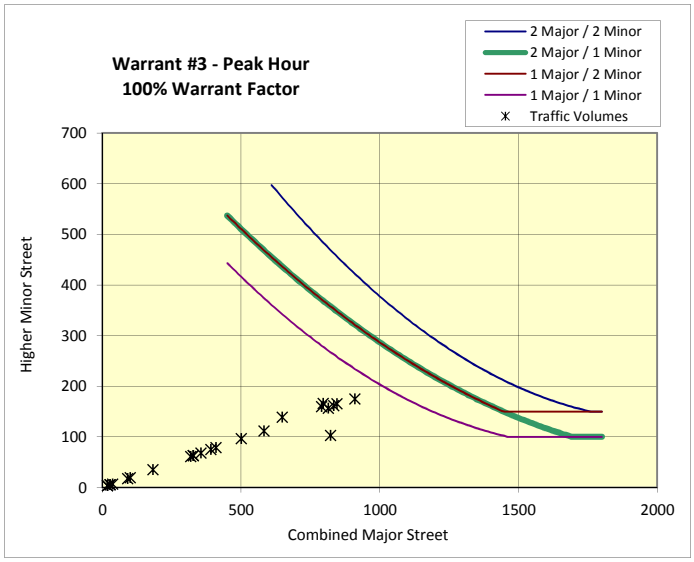
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	6	No	**No**
	B	750	75	7	No	
80%	A	400	120	7	No	**Yes**
	B	600	60	8	Yes	
70%	A	350	105	8	Yes	**Yes**
	B	525	53	9	Yes	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	467	443	122	175
2nd	Highest Hour	434	412	115	166
3rd	Highest Hour	428	406	113	162
4th	Highest Hour	408	388	116	166
5th	Highest Hour	418	396	109	157
6th	Highest Hour	405	385	111	160
7th	Highest Hour	422	400	72	103
8th	Highest Hour	333	316	97	139
9th	Highest Hour	299	284	78	112
10th	Highest Hour	257	244	67	96
11th	Highest Hour	210	199	55	79
12th	Highest Hour	201	190	52	75
13th	Highest Hour	182	173	48	68
14th	Highest Hour	168	159	44	63
15th	Highest Hour	168	159	44	63
16th	Highest Hour	163	155	43	61
17th	Highest Hour	93	89	24	35
18th	Highest Hour	51	49	13	19
19th	Highest Hour	47	44	12	18
20th	Highest Hour	19	18	5	7
21st	Highest Hour	14	13	4	5
22nd	Highest Hour	14	13	4	5
23rd	Highest Hour	9	9	2	4
24th	Highest Hour	9	9	2	4

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
910	175	90	Yes
846	166	102	Yes
834	162	105	Yes
796	166	114	Yes
814	157	109	Yes
790	160	115	Yes
822	103	107	No
648	139	157	No
582	112	182	No
501	96	216	No
410	79	260	No
391	75	269	No
355	68	289	No
328	63	304	No
328	63	304	No
319	61	310	No
182	35	395	No
100	19	453	No
91	18	459	No
36	7	501	No
27	5	508	No
27	5	508	No
18	4	515	No
18	4	515	No
			6

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor? **Yes**

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	14.6	35.9
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	0.49	1.75
	No	No
Volume on Minor Street Approach During Same Hour	122	175
	Yes	Yes
Total Entering Volume On All Approaches During Same Hour	1207	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria? **No**

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Project #: 19638
Project Name: McCall Transportation Master Plan
Analyst: NMF
Date: 3/16/2017
File: H:\projfile\19638 - McCall Comprehensive Plan\excel\Signal Warrant\[19638_SWA_RR&3rd_Off-Peak Season Peak Hour_2040_BypassAdjusted.xls]Warrant Summary
Intersection: Railroad St/3rd St
Scenario: 2040 Off Peak Future Volumes w BYPASS

Warrant Summary

Warrant	Name	Analyzed?	Met?	
#1	Eight-Hour Vehicular Volume	Yes	Yes	**56%**
#2	Four-Hour Vehicular volume	Yes	Yes	
#3	Peak Hour	Yes	No	
#4	Pedestrian Volume	No	.	
#5	School Crossing	No	-	
#6	Coordinated Signal System	No	-	
#7	Crash Experience	No	-	
#8	Roadway Network	No	-	

Analysis Traffic Volumes

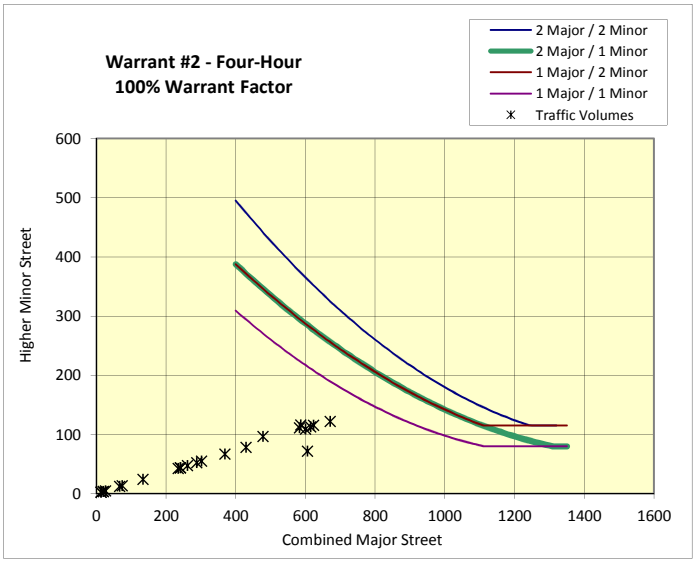
Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	350	321	122	113
2nd	Highest Hour	325	298	115	107
3rd	Highest Hour	321	294	113	105
4th	Highest Hour	306	281	116	107
5th	Highest Hour	313	287	109	101
6th	Highest Hour	304	279	111	103
7th	Highest Hour	316	290	72	67
8th	Highest Hour	249	229	97	90
9th	Highest Hour	224	205	78	72
10th	Highest Hour	193	177	67	62
11th	Highest Hour	158	144	55	51
12th	Highest Hour	151	138	52	49
13th	Highest Hour	137	125	48	44
14th	Highest Hour	126	116	44	41
15th	Highest Hour	126	116	44	41
16th	Highest Hour	123	112	43	40
17th	Highest Hour	70	64	24	23
18th	Highest Hour	39	35	13	12
19th	Highest Hour	35	32	12	11
20th	Highest Hour	14	13	5	5
21st	Highest Hour	11	10	4	3
22nd	Highest Hour	11	10	4	3
23rd	Highest Hour	7	6	2	2
24th	Highest Hour	7	6	2	2

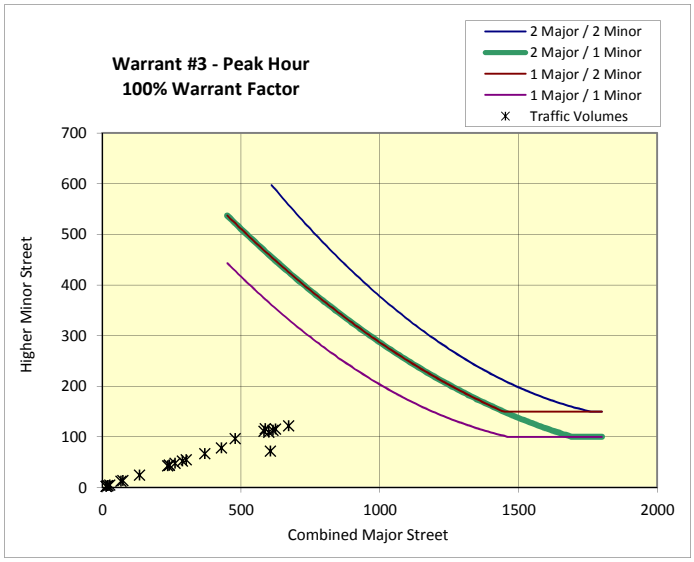
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	87%
Major Street: 8th-Highest Hour / Peak Hour	71%
Minor Street: 4th-Highest Hour / Peak Hour	95%
Minor Street: 8th-Highest Hour / Peak Hour	79%

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	**No**
	B	750	75	0	No	
80%	A	400	120	1	No	**No**
	B	600	60	5	No	
70%	A	350	105	6	No	**No**
	B	525	53	7	No	





Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:00 PM	5:00 PM	350	321	122	113
2nd	Highest Hour	325	298	115	107
3rd	Highest Hour	321	294	113	105
4th	Highest Hour	306	281	116	107
5th	Highest Hour	313	287	109	101
6th	Highest Hour	304	279	111	103
7th	Highest Hour	316	290	72	67
8th	Highest Hour	249	229	97	90
9th	Highest Hour	224	205	78	72
10th	Highest Hour	193	177	67	62
11th	Highest Hour	158	144	55	51
12th	Highest Hour	151	138	52	49
13th	Highest Hour	137	125	48	44
14th	Highest Hour	126	116	44	41
15th	Highest Hour	126	116	44	41
16th	Highest Hour	123	112	43	40
17th	Highest Hour	70	64	24	23
18th	Highest Hour	39	35	13	12
19th	Highest Hour	35	32	12	11
20th	Highest Hour	14	13	5	5
21st	Highest Hour	11	10	4	3
22nd	Highest Hour	11	10	4	3
23rd	Highest Hour	7	6	2	2
24th	Highest Hour	7	6	2	2

Calculations

Combined Major Street	Higher Minor Street	Threshold	Is Threshold Met?
671	122	149	No
623	115	166	No
615	113	169	No
587	116	180	No
600	109	175	No
583	111	181	No
606	72	172	No
478	97	226	No
429	78	250	No
369	67	281	No
302	55	319	No
289	52	327	No
262	48	344	No
242	44	356	No
242	44	356	No
235	43	360	No
134	24	428	No
74	13	472	No
67	12	477	No
27	5	508	No
20	4	513	No
20	4	513	No
13	2	519	No
13	2	519	No
			0

Number of lanes for moving traffic on each approach (Major Street)	1
Number of lanes for moving traffic on each approach (Minor Street)	1
Warrant Factor	70%
Row Index for VLOOKUP	5

Lookup Table

Index	Major Street	Minor Street	Break Point	x^2	x	c	alt	
1	1	1	1460	0.00021	0.74072	734.125	100	100% Factor
2	2 or more	1	1760	0.00015	0.67328	809.779	100	
3	2 or more	2 or more	1690	0.00023	0.93419	1081.658	150	
4	1	2 or more	1450	0.00015	0.67328	809.779	150	
5	1	1	1040	0.00035	0.80083	529.197	75	70% Factor
6	2 or more	1	1160	0.00025	0.73111	586.099	75	
7	2 or more	2 or more	1130	0.00033	0.95887	762.050	100	
8	1	2 or more	1020	0.00025	0.73111	586.099	100	

Is Warrant #3 met based on the applicable warrant factor?

No

Condition A Criteria

	EB	WB
Total Stopped Delay Per Vehicle On Minor Approach (sec)	44.7	0.0
Number Of Lanes On Minor Street Approach	1	1
Vehicle-Hours Of Stopped Delay On Minor Approach	2.17	0.00
	No	No
Volume on Minor Street Approach During Same Hour	175	0
	Yes	No
Total Entering Volume On All Approaches During Same Hour	906	
Number of Approaches to Intersection	4	
	Yes	

Is Warrant #3 met based on Condition A criteria?

No

Attachment E Parking Management Strategies

Attachment D - Parking Management Strategies

Accomplishments Since 2009 Study
Removed minimum parking requirements in the MRA
Parking dimension standards in zoning code adjusted to reflect current standards
Completed construction of Timbercrest garage
Timbercrest garage made available for public parking to support the downtown businesses, including the ice rink patrons
Supplemented the signage for the Timbercrest garage to make parking easier to find
Designated the north side of the Urban Renewal Lot for snow storage while leaving the south and east sides available for parking.
Snow is hauled to Riverfront Park or other pre-selected locations outside the CBD after all designated snow storage sites in the CBD are full during large snow years
Overnight boat trailer parking in Urban Renewal Lot is allowed with the purchase of a pass
Long-term (72-hours max) snowmobile trailer parking is allowed in the Mill Street and golf course parking lots
The McCall Downtown Master Plan has identified street sections with wider sidewalks in the downtown core
Bicycle parking is required for new development

Strategies to Consider in an Updated Parking Management Plan
Strategies from 2009 Parking Study
Code Changes
Modify existing zoning code to reflect current MRA parking requirements in the downtown core assuming downtown property owners are willing to form a BID for public parking improvements, snow removal, and other improvements benefiting the businesses within the CBD zone. The boundaries for the BID should be similar to the CBD zone.
Modify the existing system to reduce the retail/commercial parking requirements, similar to the MRA parking requirements, in the CBD and modify the in-lieu parking fees, if a BID is established for the CBD.
Shared parking agreements: Allow for shared parking agreements when appropriate but modify the code so shared parking needs to be within 400 feet (or another defined "reasonable" distance) instead of the current 300 feet. Adopt a shared parking provision in the zoning ordinance that reflects the Urban Land Institute's shared parking methodology for mixed use developments or uses a reference.
Paid Parking
Install parking meters for the on-street parking in the downtown core. These areas have more demand for parking and higher occupancy so the meters will encourage turnover and require less code enforcement time.
Limit on-street metered parking to 2-hours to encourage turnover.
Implement an introductory public education program.
Opportunities for Increased On-Street Parking
The City of McCall should develop specific street sections to identify locations for on-street parking where it is not currently provided in and near
Timbercrest Garage
Clarify public parking within the structure and update agreements if necessary.
Downtown Snow Removal

Attachment D - Parking Management Strategies

The Public Works Department should develop an official snow removal plan for the downtown.
Identify and set aside other small areas that will not impact public parking areas for overflow snow storage.
Further explore geothermal snow melting systems and the respective cost and environmental impact.

Development of Public Lots

Public lots that are not fully developed like the parking lot behind City Hall and the 1st Street lot should be formalized and developed into functional surface parking lots to encourage people to park in these locations then walk. Appropriate surfacing, stormwater, sidewalks, landscaping, and way-finding signage should be implemented

Boat and Snowmobile Trailer Parking

Do not allow boat or snowmobile trailer parking on city streets.
Designate premium paid boat trailer parking in the Urban Renewal Lot. The City should revisit the grant agreement with IDPR to charge a fee for the area that was designated for boat trailer parking. Methods of collecting payment may be a fee collection box, a multi-space meter, and/or a boat launch fee
Identify additional non-premium (free) and overnight or long-term to park in a designated section of other public lots beyond those already identified

Wayfinding and Regulatory Signage

Install additional blue “Public Parking” signs similar to the ones currently in place. These signs should be slightly larger at the major access points to the public parking areas. Examples would include double sided signs at the intersections of 1st Street, and Lake Street, 3rd Street and Railroad Avenue, and 3rd Street and Park Street. From these points, additional signs should be installed at each turn and public parking lot entrance.

Pedestrian Access / Sidewalks

Construct wider sidewalks in downtown per the recommended street sections in the 2013 McCall Downtown Master Plan
The City will initiate the construction of wider sidewalks using multiple methods, including local option tax funding for street reconstruction and working with business and property owners.

Parking Enforcement

Regular and frequent parking enforcement for all public on-street and off-street parking areas in the City of McCall should be the standard.
Stagger the enforcement officer’s shifts so parking enforcement is more regular and consistent.
Provide hand-held ticket writers to the parking enforcement personnel. With this system, the City will be able to easily track repeat offenders.

Booting/Towing

If there are numerous habitual offenders, the City of McCall should investigate the feasibility of a relatively inexpensive booting or towing program.

Colorado Street

Pave and widen Colorado Street to provide parallel parking where feasible.
Explore shared parking opportunities among businesses.

Sight Distance at Intersections

Evaluate intersections for available sight distance and restrict parking adjacent to intersections as necessary to provide adequate sight distance. Develop a city standard for parking distance from intersections.

Parking Management

Create a mission statement for the City’s parking program.

Attachment D - Parking Management Strategies

Bicycle Parking
Identify areas where additional bicycle parking is needed and look for opportunities to add additional parking in these areas.
Future Structured Parking
When the City of McCall is ready to consider building a parking garage, the following steps should be taken: Determine the demand for the facility, how many spaces, and what other amenities, if any, are required for the garage. Will there be retail/commercial space in the garage? Select a site: Where is the best location for the garage and what sites are available that would accommodate a reasonably efficient parking structure. What is the cost of site acquisition? Look for opportunities to co-locate the garage with development to help offset the cost of the structure with revenue sources (e.g., rents, sales of office/condo space) Develop alternative garage conceptual plans. Develop preliminary cost estimates. Select final garage concept. Parking structure design. Develop financing program.
Strategies to Consider in an Updated Parking Management Plan
Investigate technology to improve the efficiency of the existing parking (e.g., parking sensors, apps)
Investigate adding parking capacity outside the downtown core that is either within walking distance of the core or can be served by a shuttle service during peak periods
Routinely monitor (e.g., every 2-3 years) use of the parking supply and adapt strategies, as necessary
Work with downtown businesses to encourage employee parking in less utilized locations
Provide for electric vehicle charging stations, including potential public locations and potential requirements for private development to provide them