



DRAFT INTERSECTION AND ROADWAY PROJECTS

Date: July 19, 2011 **Project #:** 10633
To: Jim Olson, City of Ashland
Cc: Project Management Team, Planning Commission, and Transportation Commission
From: Susan Wright, P.E. and Erin Ferguson, P.E.
Project: City of Ashland Transportation System Plan Update
Subject: Draft Intersection and Roadway Projects

The purpose of this memorandum is to present draft intersection and roadway projects for inclusion in the City of Ashland's Draft Preferred Transportation System Plan (TSP). During the alternatives analysis phase of the TSP Update process, a number of alternative treatments and projects were presented to:

- Address future operations deficiencies;
- Improve safety;
- Identify potential roundabout locations;
- Align offset intersections;
- Provide railroad crossings at new locations; and
- Enhance the downtown.

Technical Memorandum #7 Alternatives Analysis documents the many different intersection and roadway projects considered related to each of the topics above and the input received through the white paper scorecard process. This memorandum focuses on the group of intersection and roadway projects recommended for inclusion in the Draft Preferred Plan. The projects below were identified based on input received through the white paper process from the Technical Advisory Committee (TAC), Planning Commission (PC), Transportation Commission (TC), and City staff. The draft projects were also developed based on the 2034 future conditions analysis results, safety analysis results, and planning-level feasibility assessments (e.g., is a roundabout physically possible, could the street actually be realigned given adjacent historic structures). The following sections discuss the draft intersection and roadway projects related to each of the topics above. Table 1 summarizes the draft

intersection and roadway projects. Figure 1 illustrates where the projects are located within the City of Ashland.

Table 1 Draft Intersection and Roadway Projects

(Project #) Name	Recommended Project	Reasons for the Project	Priority	Additional Comments
Intersection Projects				
(1) North Main Street (OR 99)/Wimer Street-Hersey Street Intersection	Realign Intersection, Install a Traffic Signal	Improve Safety, Improve Operations	High	This intersection is a safety focus intersection and does not meet operations standards in 2034. Near-Term – Realign Intersection and Monitor Volumes and Crashes Long-Term– Install Traffic Signal A roundabout was considered at this location; however, the right-of-way impact is significant.
(2) Main Street (OR 99 Southbound)/Oak Street	Modify Eastbound (Lithia Plaza Exit) Lane Configuration, Install a Traffic Signal	Improve Safety, Improve Operations	Medium	This intersection is a safety focus intersection and does not meet operations standard in 2034. Near-Term – Convert the northbound lane configuration to a single shared through/right-turn lane. Long-Term – Install Traffic Signal
(3) Siskiyou Boulevard (OR 99)-Lithia Way (OR 99 NB)-Main Street (OR 99 SB)/East Main Street	Improve Visibility of Signal Heads, Install Treatments to Slow Vehicles	Improve Safety	Medium	This intersection is a safety focus intersection. Near-Term – Improve Visibility of Signal Heads and Install Treatments to Slow Vehicles on Northbound Approach Long-Term – Consider Installing a Roundabout
(4) Siskiyou Boulevard (OR 99)/Tolman Creek Road	Install Speed Reduction Treatments, Install Roundabout ¹	Improve Safety, Gateway to Urban Area	Medium	This intersection is a safety focus intersection. Near-Term - Conduct Study and Install Speed Reduction Treatments Long-Term – Install a Roundabout
(5) Ashland Street (OR 66)/Oak Knoll-East Main Street	Realign Intersection, Install Roundabout ¹	Improve Safety, Gateway to Urban Area	Medium	This intersection is a safety focus intersection. Near-Term – Realign Intersection and Install Speed Reduction Treatments Long-Term – Install a Roundabout
(6) Oak Street/Van Ness Avenue – A Street	Realign Intersection	Reduce Conflicts, Improve Street Continuity	Medium	No known or anticipated traffic operations issues. The intersection does have negatively off-set lefts and is part of a bicycle route. Realigning would eliminate some conflicts, make the intersection easier for bicycles and vehicles to travel through, and improve east-west street continuity.
(7) Lithia Way (OR 99 Northbound)/Oak Street	Install a Traffic Signal	Improve Operations	Low	This intersection does not meet operational standards in 2034. Due to the physical constraints surrounding the intersection, installing a traffic signal is the primary feasible alternative for improving operations to meet standards in 2034.
(8) Siskiyou Boulevard (OR 99)/Sherman Street	Realign Intersection	Improve Street Continuity	Low	No known or anticipated traffic operations or safety issues at this intersection. Project could be pursued if and/or when the property in the northeast quadrant redevelops.

(Project #) Name	Recommended Project	Reasons for the Project	Priority	Additional Comments
(9) Siskiyou Boulevard (OR 99)/Park Street	Realign Intersection	Reduce Conflicts, Improve Street Continuity	Low	No known or anticipated traffic operations issues. Intersection has negatively off-set left-turn movements onto the minor street, which creates additional vehicle conflicts. Project could be pursued if and/or when the property in the southeast quadrant redevelops.
(10) Siskiyou Boulevard (OR 99)/Terra Avenue-Faith Avenue	Realign Intersection	Reduce Conflicts, Improve Street Continuity	Low	No known or anticipated traffic operations issues. Intersection has negatively off-set left-turn movements onto the minor street, which creates additional vehicle conflicts. Project could be pursued if and/or when the property in the southeast quadrant redevelops.
Railroad Crossing Projects				
(11) 4 th Street	Pursue At-Grade Crossing ²	Response to Citizen Requests, Improve North-South Connectivity	Low	Would improve north-south connectivity for pedestrians, bicyclists, and autos. Initiated in response to citizen requests. Preliminary support from Planning Commission, Transportation Commission and City Staff.
(12) Washington Street	Pursue At-Grade Crossing ²	Facilitate Development	Development Driven	Would improve connectivity within and to the Croman Mill Development, when the project site develops. Pursuing an at-grade crossing at this location is consistent with input received through the white paper process.
(13) Normal Street	Upgrade to a Public Crossing ²	Improve North-South Connectivity	Depends on Normal St Extension	If Normal Street is extended to connect to East Main Street, the current private crossing would need to be upgraded to a public at-grade railroad crossing.
(14) Glenn Street	Potential Closure of At-Grade Crossing	Enable City to Open a New At-Grade Crossing	Depends on Need to Open New Crossing	If the City chooses to pursue an ODOT rail order for a new crossing without closing an existing and is successful in obtaining one, then this project would not be needed to open a new at-grade crossing.
(15) Wightman Street	Potential Closure of At-Grade Crossing	Enable City to Open a New At-Grade Crossing	Depends on Need to Open New Crossing	If the City chooses to pursue an ODOT rail order for a new crossing without closing an existing and is successful in obtaining one, then this project would not be needed to open a new at-grade crossing.
Downtown Projects				
(16) Main Street (OR 99 Southbound)	Modify Roadway Cross-Section	Create Space for Bikes, Sidewalks, and/or More Parking	High	Convert Main Street (OR 99 Southbound) to a two-lane street (remove one vehicle travel lane) between Oak Street and East Main Street. Reallocate the space, per Option B shown in Figure 9, to provide a buffered bicycle lane, and space for truck loading/unloading.
(17) Lithia Way (OR 99 Northbound)	Modify Roadway Cross Section	Provide a Striped buffer for Bicycle Lane	Medium	Providing a striped buffered area adjacent to the existing bicycle lane on Lithia Way will help increase the comfort of the existing lane and encourage bicycle travel. The vehicle lanes and parking will need to be narrowed to create space for the buffered area.

(Project #) Name	Recommended Project	Reasons for the Project	Priority	Additional Comments
Downtown Policies/Programs				
Downtown Area	Wider Sidewalks	Improve Environment for Pedestrians	N/A ³	Incorporate wider sidewalks into downtown improvement projects when feasible.
Downtown Area	Preferred Pedestrian Treatments	Improve Environment for Pedestrians	N/A ³	Integrate preferred pedestrian treatments (i.e., pedestrian countdown signals, landscape buffers, pedestrian refuge islands, and benches), into downtown improvements projects as applicable.
Downtown Area	Green Street Treatments	Improve Water Quality of Runoff	N/A ³	Incorporate green street treatments into downtown improvement projects as feasible.
Downtown Area	Alley Enhancements	Improve Environment for Pedestrians and Bicyclists	N/A ³	Establish a policy supporting alley enhancements to encourage property owners in downtown to make alleys more pedestrian friendly and attractive.
Downtown Area	Bicycle Parking	Improve Environment for Bicyclists	N/A ³	Integrate bicycle parking with planned projects to increase bicycle parking available in downtown.

Notes:

¹Initial roundabout operations analysis and high-level feasibility assessment were performed to confirm a roundabout appears physically and operationally feasible. A more detailed preliminary roundabout design and study should be conducted before activities such as right-of-way acquisition and/or developing detailed design plans.

²Due to ODOT rail policy, the City would need to close an existing at-grade crossing or go through a potentially timely and costly rail order process to obtain an additional new public crossing within Ashland.

³N/A indicates not applicable to policies or programs – policies and programs are prioritized separately from projects. Project priorities are used to allocate future funds to improvements. Timing of implementing policies and programs are driven by interest from the community and City staff.

Figure 1

Draft Intersection Projects

Intersections were identified for projects based on their forecasted traffic operations performance in 2034 and crash history over the last 10 years. Specific consideration was also given to offset intersections and opportunities to align those intersections. While roundabouts were originally presented as a separate topic area, in this memorandum they are integrated with the future traffic operations and safety discussions as potential treatments for improving traffic operations and/or reducing crashes. The following sub-sections discuss the intersections identified, alternatives considered and the recommended draft projects for the intersections.

2034 FUTURE TRAFFIC OPERATION CONSIDERATIONS

There are two basic elements of the 2034 traffic operations considerations. One is the 2034 traffic operations analysis conducted for study intersections and documented in Technical Memorandum #5 Future Conditions Analysis. The second element addresses interests expressed by the Planning and Transportation Commissions about installing a roundabout at the Ashland Street (OR 66)/Sutton Place intersection as means for serving U-Turn movements. The purpose of the roundabout would be to mitigate the impact of a potential center median on Ashland Street documented in the Interchange Area Management Plan (IAMP) for the I-5/Ashland Street (OR 66) interchange. This subsection first discusses the 2034 traffic operations analysis documented in Technical Memorandum #5 Future Conditions Analysis and then presents considerations for the Ashland Street (OR 66)/Sutton Place intersection.

Draft Intersection Projects Associated with the 2034 Future Conditions Analysis

As documented in Technical Memorandum #5 Future Conditions Analysis, there are three intersections forecasted not to meet mobility standards in 2034. These intersections are:

- (Project #1) North Main Street (OR 99)/Wimer Street-Hersey Street;
- (Project #2) Main Street (OR 99 Southbound)/Oak Street; and
- (Project #7) Lithia Way (OR 99 Northbound)/Oak Street.

Two of these intersections, North Main Street (OR 99)/Wimer Street-Hersey Street and Main Street (OR Southbound 99)/Oak Street, are also identified as safety focus intersections based on their crash history. In identifying alternatives and potential projects at these two intersections, safety as well as traffic operations were considered. Alternative improvements to improve traffic operations for each of these intersections are summarized in Table 2.

Table 2 Alternative Treatments to Improve Intersection Traffic Operations

(Project #) Intersection	Alternative	Volume-to-Capacity (v/c) Ratio	Delay (seconds)	Level-of-Service	Meet Standard?
(1) North Main Street (OR 99)/Hersey Street - Wimer Street	No Build ^a	>1.00	>50	F	No
	Modify Lane Configurations on Eastbound (Wimer Street) Approach to Provide a Shared Left-Turn/Through Lane and an Exclusive Right-Turn Lane	0.95	>50	F	Yes
	Restrict Turn Movements to Right-In/Right-Out/Southbound Left-In	0.59	27.5	D	Yes
	Align Hersey Street – Wimer Street	>1.00	>50	F	No
	Install Traffic Signal ^b	0.68	10.2	B	Yes
	Install a Single-Lane Roundabout ^c	0.94	9.8 ^d	A	Yes
	Install a Multilane Roundabout ^e	0.49	4.8 ^f	A	Yes
(2) Main Street (OR 99 Southbound)/Oak Street	No Build ^a	>1.00	>50	F	No
	Modify Eastbound (Lithia Plaza Exit) Lane Configurations to a Single Shared Through/Right-Turn Lane	>1.00	>50	F	No
	Install Traffic Signal with Modified Eastbound (Lithia Plaza Exit) Lane Configurations	0.63	18.8	B	Yes
(7) Lithia Way (OR 99 Northbound)/Oak Street	No Build ^a	>1.00	>50	F	No
	Install Traffic Signal	0.61	19.0	B	Yes

Notes:

^aKeep existing lane configurations and traffic control.

^bAssumes Hersey Street-Wimer Street is aligned.

^cAssumes road diet is implemented on North Main Street and Hersey Street-Wimer Street is aligned.

^dDelay reported in Table 2 corresponds to the roundabout approach with the highest v/c ratio. The approach with the highest delay has a delay of 37.2 seconds, which corresponds to LOS E.

^eAssumes four lanes (two lanes in each direction) on North Main Street (i.e., no road diet).

^fDelay reported in Table 2 corresponds to the roundabout approach with the highest v/c ratio. The approach with the highest delay has a delay of 11.7 seconds, which corresponds to LOS B.

It should be noted the 2034 forecast traffic volumes do not meet the Manual on Uniform Traffic Control Devices (MUTCD) traffic volume warrants for installing a signal at any of the three intersections above. However, there are alternative warrants based on crash history and maintaining progression in a street network that may be feasible to use to install a traffic signal (see Warrant 7 and Warrant 6, respectively). Based on the alternatives analysis summarized in Table 2, we recommend the projects below for the Draft Preferred Plan.

- **(Project #1) North Main Street (OR 99)/Wimer Street-Hersey Street** – There is a near-term and long-term project identified for this intersection.

- **Near Term - Align the intersection** and continue to monitor traffic volumes and crashes. The purpose of aligning the Wimer Street and Hersey Street approaches is to eliminate the negative offset left-turn movements at the intersection. The current offset between the Wimer Street and Hersey Street approaches creates additional conflicts for vehicles turning left off of North Main Street (OR 99) onto Hersey Street or Wimer Street. Aligning these two approaches will eliminate those additional conflicts, which is anticipated to help reduce crashes at the intersection. Monitoring traffic volumes and crashes will help identify the timing of the suggested long term project discussed below. Figure 2 illustrates the approximate impacts of aligning the Wimer Street and Hersey Street approaches.

- **Long Term** - At a point in the future when traffic volume warrants are met and/or the crash history does not improve, **install a traffic signal**. The MUTCD does allow for a traffic signal to be installed for the purpose of mitigating crashes even if volume warrants are not met (see Warrant 7 in the MUTCD). While a single-lane roundabout and multilane roundabout are forecasted to meet mobility standards, the right-of-way and access impacts of a roundabout at this location are relatively significant. Figure 3 and Figure 4 illustrate the approximate footprint for a single-lane and multilane roundabout, respectively. These footprints take into account the need to accommodate truck movement, particularly the southbound left-turn movement onto Hersey Street and the topographical challenges due to the relatively steep approach grade on Wimer Street. A roundabout with a footprint smaller than what is shown in Figure 3 is not recommended for this location because of the southbound left truck movement and the steep approach grade on Wimer Street. A smaller footprint than what is shown in Figure 3, is more likely to have operational issues due to trucks' slowing to navigate the intersection, is more likely to have maintenance issues because trucks would have to travel over the central island on a regular basis, and would limit the quality of the pedestrian and bicycle facilities provided at the intersection. Overall, a roundabout is not recommended at this location due to the estimated physical impacts to the surrounding properties.

Figure 2 – Hersey/Wimer Realignment

Figure 3- Hersey/Wimer Street Single Lane Roundabout Footprint

Figure 4 – Hersey/Wimer Multilane Roundabout Approximate Footprint

- **(Project #2) Main Street (OR 99 Southbound)/Oak Street** – There is a near-term and long-term project identified for this intersection.
 - **Near Term - Modify the eastbound (Lithia Plaza Exit) lane configuration** to be a single shared through/right-turn lane and continue to monitor traffic volumes and crashes (see Figure 5). Under existing conditions, a free flowing right-turn lane is provided on the northbound approach. The purpose of removing that lane and creating a single shared through/right-turn lane is to eliminate conflicts occurring at and near the intersection and thereby reduce crashes. The current free flow right-turn lane is inconsistent with slower speed environment desired in the downtown core; a slower speed environment enhances the attractiveness and safety of downtown for pedestrians and bicyclists. Monitoring traffic volumes and crashes will help identify the timing of the suggested long term project discussed below.
 - **Long Term** - At a point in the future when traffic volume warrants are met and/or the crash history does not improve, **install a traffic signal**. The MUTCD does allow for a traffic signal to be installed for the purpose of mitigating crashes even if volume warrants are not met (see Warrant 7 in the MUTCD). To meet mobility standards, the primary treatment available is to install a traffic signal. There are limited additional alternatives feasible for this intersection primarily because it is physically constrained due to its location in the downtown core of Ashland. Adding lanes to the intersection and/or constructing a roundabout would have significant impacts to surrounding land uses and the relatively closely spaced adjacent intersections.

Figure 5 – Modified Eastbound (Lithia Plaza Exit) at Main Street/Oak Street

- **(Project #7) Lithia Way (OR 99 Northbound)/Oak Street** – Continue to **monitor traffic volumes** at this location and plan to **install a traffic signal** once volume warrants are met or once deemed appropriate to maintain downtown vehicle progression. The MUTCD does allow for a traffic signal to be installed for the purpose of maintaining progression within a one-way street network (see Warrant 6 in the MUTCD). To meet mobility standards, the primary treatment available is to install a traffic signal. There are limited additional alternatives feasible for this intersection primarily because it is physically constrained due to its location in the downtown core of Ashland. Adding lanes to the intersection and/or constructing a roundabout would have significant impacts to surrounding land uses and the relatively closely spaced adjacent intersections.

Table 3 in the *Summary of Draft Intersection Projects* subsection provides a succinct summary of the draft projects above and indicates their draft priority (i.e., low, medium, or high).

Ashland Street (OR 66)/Sutton Place Intersection Consideration

Prior to the start of City of Ashland's Transportation System Plan Update project, a draft IAMP was developed for the I-5/Ashland Street (OR 66) interchange. The IAMP documents traffic operations improvements at the interchange as well as modifications extending along Ashland Street (OR 66). One of the modifications documented, is a center median along Ashland Street (OR 66). The center median would be constructed for access management purposes near the interchange. The interchange ramp terminal intersections are currently being reconstructed as traffic signals. The Planning Commission, Transportation Commission, and City staff expressed interest in installing a roundabout near the interchange to facilitate U-Turn movements that will likely result from the center median. The Ashland Street (OR 66)/Sutton Place intersection was identified as a potential roundabout location.

Traffic volumes were not available to for the Ashland Street (OR 66)/Sutton Place intersection; therefore, a traffic operations analysis could not be conducted. However, based on roundabout traffic operations analysis conducted (and discussed below) at the adjacent Ashland Street (OR 66)/Oak Knoll – East Main Street intersection, a single-lane roundabout at Sutton Place is anticipated to operate acceptably in 2034. Figure 6 illustrates the approximate footprint of a roundabout at the Ashland Street (OR 66)/Sutton Place intersection. The primary challenges of installing a roundabout at this location are the modifications needed to the residential neighborhood access/circulation to the south and the Windmill Inn access to the north. The current accesses to both of these land uses would need to be redesigned and may require purchasing right-of-way in

Figure 6 – Ashland Street 90R 66)/Sutton Place SLR Footprint

addition to the right-of-way needed for the intersection project. Accesses along Ashland Street (OR 66) would also be impacted; some would possibly need to be consolidated and/or converted to right-in/right-out access only.

Based on the impacts to the residential neighborhood to the south and the Windmill Inn to the north of Ashland Street (OR 66), we do not recommend a roundabout at this location. We recommend pursuing alternative ways to facilitate U-Turns in the event a center median is installed on Ashland Street (OR 66). One alternative is to locate a roundabout at the Ashland Street (OR 66)/East Main Street intersection; this alternative is discussed in more detail below and as shown below could be located closer to Sutton Place and the interchange to better serve U-Turn movements.

SAFETY FOCUS INTERSECTION CONSIDERATIONS

As documented in Technical Memorandum #4 Existing Conditions and the Safety Focus Intersection White Paper, there are six intersections in Ashland identified as safety focus intersections based on their crash history. These intersections are:

- (Project #1) North Main Street (OR 99)/Hersey Street-Wimer Street;
- (Project #2) Main Street (OR 99 Southbound)/Oak Street;
- (Project #3) Siskiyou Boulevard (OR 99)/Lithia Way – East Main Street;
- (Project #4) Siskiyou Boulevard (OR 99)/Tolman Creek Road
- (Project #5) Ashland Street (OR 66)/East Main Street – Oak Knoll Drive; and
- Ashland Street (OR 66)/Tolman Creek Road.

Preliminary suggestions for potential countermeasures to reduce crashes at each of these locations were provided in Technical Memorandum #4 Existing Conditions and the Safety Focus Intersection White Paper. These intersections and initial suggestions were considered more closely resulting in the following recommended projects for the Draft Preferred Plan.

- **(Project #1) North Main Street (OR 99)/Hersey Street-Wimer Street** – As noted above, in the near-term align the Wimer Street and Hersey Street approaches. In the long-term, install a traffic signal.
- **(Project #2) Main Street (OR 99 Southbound)/Oak Street** – As noted above, in the near-term modify the eastbound (Lithia Plaza Exit) lane configuration to a single shared through/right-turn lane. In the long-term, install a traffic signal.

- **(Project #3) Siskiyou Boulevard (OR 99)/Lithia Way – East Main Street** – A near-term and long-term project was identified for this location.
 - **Near Term** – Improve visibility of the signal for motorists approaching on the northwest-bound Siskiyou Boulevard (OR 99) approach. The majority of the reported crashes are associated with disobeying the signal, which may be because the signal is hidden by the horizontal curve and building in the southwest quadrant of the intersection. In the near-term, advanced signals and treatments to slow vehicles on the northwest-bound Siskiyou Boulevard (OR 99) approach are suggested to help reduce crashes.
 - **Long Term** – Continue to monitor crash history at the location. If crash history does not improve, consider installing a roundabout. Traffic operations analysis indicates a multilane roundabout (two lanes entering and exiting on Siskiyou Boulevard to maintain a two-lane cross-section for the northbound and southbound couplet) would operate acceptably in 2034. The multilane roundabout is forecasted to have a v/c ratio of 0.66 for the critical approach and a delay of 4 to 15 seconds depending on the approach. National research documented in the Highway Safety Manual (HSM) also indicates roundabouts reduce crashes by 34 to 55%. However, as can be seen in Figure 7, the footprint of the roundabout is anticipated to have significant right-of-way and access impacts to the area as well as require significant reconstruction to the couplet terminus.
- **(Project #4) Siskiyou Boulevard (OR 99)/Tolman Creek Road** – A near-term and long-term project were identified for this intersection.
 - **Near Term** – Conduct a study to identify treatments to slow vehicle speeds on approach to the intersection, specifically the northwest-bound approach on Siskiyou Boulevard (OR 99). Treatments from the National Cooperative Highway Research Program (NCHRP) Report 613 *Guidelines for Selection of Speed Reduction Treatments at High-Speed Intersections* should be considered for near-term implementation.
 - **Long Term** – Continue to monitor crash history at the location. If crash history does not improve, consider feasibility of acquiring right-of-way to install a roundabout. Traffic operations analysis indicates a single-lane roundabout would operate acceptably at this location in 2034 with a v/c ratio of 0.32 and less than

10 seconds of delay. National research documented in the HSM also indicates roundabouts reduce crashes by 34 to 55%. However, as can be seen in Figure 8, due to the skew of the intersection and the current adjacent land uses, the approximate physical footprint of a roundabout is anticipated to have significant right-of-way needs.

Figure 7 – Siskiyou Blvd/Main Street/Lithia Way

Figure 8 – Siskiyou Blvd/Tolman Creek SLR Footprint

- **(Project #5) Ashland Street (OR 66)/East Main Street – Oak Knoll Drive** - A near-term and long-term project was identified for this location.
 - **Near Term** – Align the East Main Street and Oak Knoll Drive approaches to eliminate the negative offset alignment (see Figure 9). Conduct a study to identify treatments to slow vehicle speeds approaching the intersection, specifically the northwest-bound approach on Ashland Street (OR 66). Treatments from NCHRP Report 613 *Guidelines for Selection of Speed Reduction Treatments at High-Speed Intersections* should be considered for near-term implementation.
 - **Long Term** – Monitor crash history and the need to facilitate U-Turns due to potential changes on Ashland Street (OR 66) near the I-5 interchange. If crash history does not improve and/or U-Turns need to be accommodated due to a center median on Ashland Street (OR 66), install a roundabout (see Figure 10). Traffic operations analysis indicates a single-lane roundabout at this location would operate acceptably in 2034 with a v/c ratio of 0.36 and delay of 5 to 15 seconds depending on the approach. As noted previously, national research also indicates roundabouts reduce crashes by 34 to 55%. However, as can be seen in Figure 10, the footprint of the roundabout is anticipated to significantly impact right-of-way and access in the area. Due to the alignment of Ashland Street (OR 66) and East Main Street, a roundabout would need to be located north of the current intersection, where there is a relatively steep hillside. As a result, the roundabout would be constructed on fill likely supported by retaining walls and the roadway approaches would be partially reconstructed. Access to local business and residential areas on East Main Street and Ashland Street (OR 66) would need to be considered given the roadway realignments. Based on these considerations, a roundabout is recommended as a long-term project for the City to pursue if needed to reduce crashes and/or facilitate U-Turns.
- **Ashland Street (OR 66)/Tolman Creek Road** - Continue to monitor the crash history at this intersection. While identified as a safety focus intersection, the crash history of the intersection was only marginally over the threshold to be considered a safety focus intersection. Preliminary review of the crash types and physical characteristics of the intersection did not reveal definitive opportunities or treatments for reducing crashes.

Table 3 in the *Summary of Draft Intersection Projects* subsection provides a succinct summary of the draft projects above and indicates their draft priority (i.e., low, medium, or high).

Figure 9 – Oak Knoll-East Main Street/Ashland Street Alignment

Figure 10 – East Main Street/Ashland Street Roundabout Footprint

OFFSET INTERSECTION CONSIDERATIONS

In the Offset Intersection White Paper, 17 offset intersections were identified and discussed as potential intersections to be aligned. Input gathered through the white paper process clearly indicated Planning and Transportation Commissioners felt investments to realign intersections should focus on locations where realignment could provide traffic operations and/or safety benefits. Therefore, the intersections identified for realignment here are anticipated to benefit from an operational and/or safety perspective. Results from the white paper process also indicated there are three intersections the Planning and Transportation Commissions clearly support aligning. These three intersections are:

- (Project #1) North Main Street (OR 99)/Hersey Street – Wimer Street (see Figure 2);
- (Project #5) Ashland Street (OR 66)/Oak Knoll Drive – East Main Street (see Figure 9);
and
- (Project #6) A Street – Van Ness Avenue/Oak Street (see Figure 11).

In addition to these three intersections, we also recommend realigning:

- (Project #8) Siskiyou Boulevard (OR 99)/Sherman Street (see Figure 12);
- (Project #9) Siskiyou Boulevard (OR 99)/Park Street (See Figure 13); and
- (Project #10) Siskiyou Boulevard (OR 99)/ Terra Avenue – Faith Avenue (see Figure 14).

These three additional intersections are identified for one or more of the following reasons:

- The minor street approaches are negatively offset resulting in additional conflicts for left-turn movements off of the major street onto the minor streets;
- Aligning the minor street approaches will improve street continuity providing a stronger and easier to navigate network of neighborhood streets for motorists, bicyclists, and pedestrians to use as alternatives to busier streets; and/or
- Aligning the minor street approaches seems feasible due to lack of adjacent historic properties/buildings and/or the need for only one intersection quadrant to redevelop.

Therefore, the six intersections above are identified as realignment projects recommended for inclusion in the Draft Preferred Plan. The priority of each of these projects is shown in Table 3 in the following subsection.

Figure 11 – A Street – Van Ness Avenue/Oak Street Alignment

Figure 12 - Siskiyou Boulevard (OR 99)/Sherman Street Alignment

Figure 13 - Siskiyou Boulevard (OR 99)/Park Street Alignment

Figure 14 - Siskiyou Boulevard (OR 99)/ Terra Avenue – Faith Avenue Alignment

SUMMARY OF DRAFT INTERSECTION PROJECTS

Table 3 summarizes the draft intersection projects to address the operational deficiencies, safety focus locations and offset intersections identified through the existing conditions analysis, future conditions analysis and white paper process.

Table 3 Summary of Draft Intersection Projects

(Project #) Intersection	Recommended Project	Reasons for the Project	Priority	Additional Comments
(1) North Main Street (OR 99)/Wimer Street-Hersey Street Intersection	Realign Intersection, Install a Traffic Signal	Improve Safety, Improve Operations	High	This intersection is a safety focus intersection and does not meet operations standards in 2034. Near Term – Realign Intersection and Monitor Volumes and Crashes Long- Term– Install Traffic Signal A roundabout was considered at this location; however, the right-of-way impact is significant.
(2) Main Street (OR 99 Southbound)/Oak Street	Modify Eastbound (Lithia Plaza Exit) Lane Configuration, Install a Traffic Signal	Improve Safety, Improve Operations	Medium	This intersection is a safety focus intersection and does not meet operations standard in 2034. Near Term – Convert the northbound lane configuration to a single shared through/right-turn lane. Long Term – Install Traffic Signal
(3) Siskiyou Boulevard (OR 99)-Lithia Way (OR 99 NB)-Main Street (OR 99 SB)/East Main Street	Improve Visibility of Signal Heads, Install Treatments to Slow Vehicles	Improve Safety	Medium	This intersection is a safety focus intersection. Near Term – Improve Visibility of Signal Heads and Install Treatments to Slow Vehicles on Northbound Approach Long Term – Consider Installing a Roundabout
(4) Siskiyou Boulevard (OR 99)/Tolman Creek Road	Install Speed Reduction Treatments, Install Roundabout ¹	Improve Safety, Gateway to Urban Area	Medium	This intersection is a safety focus intersection. Near Term - Conduct Study and Install Speed Reduction Treatments Long Term – Install a Roundabout
(5) Ashland Street (OR 66)/Oak Knoll-East Main Street	Realign Intersection, Install Roundabout ¹	Improve Safety, Gateway to Urban Area	Medium	This intersection is a safety focus intersection. Near Term – Realign Intersection and Install Speed Reduction Treatments Long Term – Install a Roundabout
(6) Oak Street/Van Ness Avenue – A Street	Realign Intersection	Reduce Conflicts, Improve Street Continuity	Medium	No known or anticipated traffic operations issues. The intersection does have negatively off-set lefts and is part of a bicycle route. Realigning would eliminate the additional conflicts, make the intersection easier for bicycles and vehicles to travel through, and improve east-west street continuity.
(7) Lithia Way (OR 99 Northbound)/Oak Street	Install a Traffic Signal	Improve Operations	Low	This intersection does not meet operational standards in 2034. Due to the physical constraints surrounding the intersection, installing a traffic signal is the primary feasible alternative for improving operations to meet standards in 2034.
(8) Siskiyou Boulevard (OR 99)/Sherman Street	Realign Intersection	Improve Street Continuity	Low	No known or anticipated traffic operations or safety issues at this intersection. Project could be pursued if and/or when the property in the northeast quadrant redevelops.

(Project #) Intersection	Recommended Project	Reasons for the Project	Priority	Additional Comments
(9) Siskiyou Boulevard (OR 99)/Park Street	Realign Intersection	Reduce Conflicts, Improve Street Continuity	Low	No known or anticipated traffic operations issues. Intersection has negatively off-set left-turn movements onto the minor street, which creates additional vehicle conflicts. Project could be pursued if and/or when the property in the southeast quadrant redevelops.
(10) Siskiyou Boulevard (OR 99)/Terra Avenue-Faith Avenue	Realign Intersection	Reduce Conflicts, Improve Street Continuity	Low	No known or anticipated traffic operations issues. Intersection has negatively off-set left-turn movements onto the minor street, which creates additional vehicle conflicts. Project could be pursued if and/or when the property in the southeast quadrant redevelops.

Notes:

¹Initial roundabout operations analysis and high-level feasibility assessment were performed to confirm a roundabout appears physically and operationally feasible. A more detailed preliminary roundabout design and study should be conducted before activities such as right-of-way acquisition and/or developing detailed design plans.

The priorities noted in Table 3 are based on the severity of the traffic operation deficiency and/or the crash history at the intersection.

Draft Railroad Crossing Projects

Several potential railroad crossing projects were discussed as part of the alternatives analysis within the white paper process. As documented in the Railroad Crossings White Paper, three locations were identified as potential locations for new at-grade crossings. These locations are: 4th Street, 2nd Street, and Washington Street. Input obtained through the white paper process indicated 4th Street and Washington Street are the desired locations for new at-grade railroad crossing. Input from the white paper process also indicated, if needed, Wightman Street and/or Glenn Street could be considered for closing to be able to open 4th Street and/or Washington Street. However, the primary preference expressed by the Planning and Transportation Commission is to first pursue the ODOT Rail Order Process to have a new crossing opened without closing an existing crossing. These projects are summarized in Table 4 along with a project to upgrade the private at-grade crossing on Normal Avenue to a public at-grade crossing; however, this project is only needed if Normal Avenue is extended to East Main Street.

Table 4 Draft Railroad Crossing Projects

(Project #) Railroad Crossing Location	Recommended Project	Reasons for the Project	Priority
(11) 4 th Street	Pursue an At-Grade Crossing ¹	Response to Citizen Requests, Improve North-South Connectivity	Low
(12) Washington Street	Pursue an At-Grade Crossing ¹	Facilitate Development, Connectivity within and to Croman Mill Development	Development Driven
(13) Normal Street	Upgrade to a Public Crossing ¹	Improve North-South Connectivity	Dependent Upon Normal Street Extension ²
(14) Glenn Street	Potential Closure of At-Grade Crossing	Enable the City to Open a New At-Grade Crossing	Dependent Upon the Need to Open a New Crossing
(15) Wightman Street	Potential Closure of At-Grade Crossing	Enable the City to Open a New At-Grade Crossing	Dependent Upon the Need to Open a New Crossing

Notes:

¹ Due to ODOT rail policy, the City would need to close an existing at-grade crossing or go through a potentially timely and costly rail order process to obtain an additional new public crossing within Ashland.

² If Normal Street is extended to East Main Street, the current private crossing would need to be upgraded to a public at-grade railroad crossing.

The priority noted by each project is based on the general need of an additional rail crossing within Ashland. The current number and spacing of rail crossings in Ashland do not create acute transportation deficiencies for motorists, bicyclists or pedestrians, therefore, the new crossings are prioritized as either a low priority or as driven by development.

Draft Downtown Projects

A number of considerations were discussed through the white paper process and alternative analysis regarding potential projects to enhance the downtown. Most of the potential policies and projects influencing the downtown were covered in the Downtown White Paper, which is discussed below. However, two additional topics were brought up in meetings that were not explicitly addressed in the Downtown White Paper. These two topics are: 1) Installing a roundabout at the Main Street (OR 99)/Helman Street intersection; and 2) Converting Main Street (OR 99 Southbound) and Lithia Way (OR 99 Northbound) to two-way streets (as opposed to the current one-way operation). These two topics are discussed in the following subsections followed by the Downtown White Paper policy and project discussion.

POTENTIAL ROUNDABOUT AT MAIN STREET (OR 99)/HELMAN STREET

Potential right-of-way impacts and the operational feasibility of installing a roundabout at the northern downtown couplet terminus (i.e., Main Street (OR 99)/Helman Street) were explored and found to result in significant right-of-way and access impacts. From an operations perspective, a

multilane roundabout with two-lanes entering and exiting on Main Street (OR 99) is anticipated to operate acceptably in 2034. However, as shown in Figure 15, the right-of-way impacts of a roundabout at this intersection is anticipated to affect the frontage and access to the land uses north and south of intersection as well as the alignment of Church Street and Helman Street. Furthermore, the intersection is forecasted to meet mobility standards in 2034 with its current configuration and was not identified as a safety focus intersection based on its crash history. Therefore, from an operations and safety perspective, there is not a clear need to modify the intersection. Based on operations considerations, safety considerations, and the likely impacts to the surrounding properties and roadways, a roundabout is not recommended for this location.

CONVERTING MAIN STREET (OR 99 SOUTHBOUND) AND LITHIA WAY (OR 99 NORTHBOUND) TO TWO-WAY STREETS

Another idea brought forth in meeting discussions, is the feasibility to convert Main Street and Lithia Way in downtown to two-way operation instead of the current one-way operation. We considered this alternative; however, due to the disadvantages of two-way operation, we recommend maintaining one-way operations. The disadvantages of two-way operations downtown are below.

- Two-way operation would require substantially reconstructing the current couplet terminuses (Main Street/Helman Street and Siskiyou Boulevard-Lithia Way/Main Street intersections) to be able to accommodate turn and through movements on the approaches. The reconstruction would likely have negative impacts to land uses adjacent to the intersections.
- Two-way operation would require reconstructing intersections in downtown to, at a minimum, install traffic signal infrastructure (e.g., signal heads, poles, detection) on the southbound approaches on Lithia Way and the northbound approaches on Main Street. It would also require restriping and resigning the roadways, modifying the on-street parking configurations, and dedicating truck loading/unloading zones outside of the vehicle travel lanes.
- Two-way operation would result in less efficient intersection operations, queuing issues, and loss of signal progression. The traffic signals in downtown would have to be converted from their current two-phase signals to three- or four-phase signals. Two-phase signals are the most efficient form of signal timing with regards to serving traffic in a downtown with closely spaced intersections; the one-way operation on Lithia Way and Main Street make two-phase signals feasible. Two phases means vehicles, bicyclists, and/or pedestrians waiting at a light, wait for at most one phase to be given the right-of-

way. Two phase signals also make it easier to maintain progression through downtown, which helps control vehicle speed and reduces stop and go traffic. Three- or four-phase signals are needed once two two-way streets intersect. At a three- or four-phase signal, travelers tend experience longer delays, longer queues, and there is increased potential for queues to extend from one intersection into another.

- Two-way operation would increase the number of conflicts at downtown intersections, which increases the opportunities for crashes between vehicles, pedestrians, and bicyclists. A conflict is when a vehicle's path crosses or joins the path of another vehicle, pedestrian, and/or bicyclist when turning or moving through an intersection.

Overall, the downtown operates well with the current one-way couplet system. Due to the expense in converting Main Street and Lithia Way in downtown to two-way operation and the associated disadvantages with regards to operations and safety, we recommend maintaining the one-way operation.

DOWNTOWN WHITE PAPER POLICIES AND PROJECTS

The Downtown White Paper presented a mixture of policies, programs, and projects applicable to the downtown area. Listed below are the policies and programs recommended for inclusion in the Draft Preferred Plan.

- Incorporate wider sidewalks into downtown improvement projects when feasible.
- Integrate preferred pedestrian treatments (i.e., pedestrian countdown signals, landscape buffers, pedestrian refuge islands, and benches), into downtown improvements projects as applicable.
- Incorporate green street treatments into downtown improvement projects as feasible.
- Establish a policy supporting alley enhancements to encourage property owners in downtown to make alleys more pedestrian friendly and attractive.
- Integrate bicycle parking with planned projects to increase bicycle parking available in downtown.

The policies and programs above are suggested for inclusion in the Draft Preferred Plan, because they support the City's goals of improving pedestrian facilities, bicycle facilities, and being a leader in green transportation. The potential projects discussed related to downtown focused on modifying Main Street (OR 99 Southbound) and Lithia Way (OR 99 Northbound); each is presented below.

Figure 15

(Project #16) Main Street OR 99 Southbound – Modify the roadway cross-section between Oak Street and East Main Street from three southbound lanes to two southbound lanes. Reallocate the space from the third vehicle lane to bicycle lanes, wider sidewalks and/or on-street parking. Figure 16 illustrates three basic alternative cross-sections: Option A; Option B; and Option C. The attributes of each options is highlighted below along with the Consultant Team recommendation.

- *Option A* – Consists of a 6-foot bicycle lane and angle parking. This option would provide designated space on Main Street for bicyclists, which currently does not exist. It could also provide more on-street on-parking; however, specific areas along Main Street would need to be designated as truck loading/unloading zones. Parking would need to be prohibited in these areas or restricted to specific times of day. The extent to which on-street parking spaces would increase would depend on the number and size of truck loading/unloading zones.
- *Option B* – Consists of a 10- to 12-foot striped buffered bicycle lane and maintains existing on-street parking. The buffered bicycle lane would also serve trucks needing to load/unload goods for local businesses. The striped buffered bicycle lane would provide a designated space for bicyclists on Main Street and provide more physical separation between bicyclists and vehicles. The additional separation would increase comfort for bicyclists and help encourage cycling as a means to get to and from downtown.
- *Option C* – Consists of increasing the sidewalk width by 6 to 8 feet and adding a 6-foot bicycle lane. Similar to Option A, designated truck loading/unloading zones would be needed to prevent one of the two vehicle travel lanes from being blocked. Therefore, parking would need to be prohibited and truck loading/unloading zones established for portions of some downtown blocks. The number of on-street parking spaces would likely decrease and the amount it would decrease would depend on the extent to which it is replaced or limited by the truck loading/unloading zones.
- *Consultant Team Recommendation* – Option B is recommended as it represents a cost effective approach to providing a bicycle facility on Main Street, while maintaining the existing number of on-street parking spaces and addressing truck unloading/loading concerns. Options A and C would likely result in loss of on-street parking due to the truck unloading/loading zones. Option C is also the most expensive option of the three because it involves reconstructing the sidewalks on one side of Main Street.

Figure 16

(Project #17) Lithia Way OR 99 Northbound – Modify the roadway cross-section between East Main Street and Oak Street to provide a striped buffer between the bicycle lane and vehicle lane. To create 2 to 3 feet of buffer space, the existing travel lanes and/or on-street parking spaces would need to be narrowed.

Project 16 and Project 17 are recommended for inclusion in the Draft Preferred Plan based on the City’s and community’s goals of improving pedestrian facilities, bicycle facilities, and being a leader in green transportation. These two projects will enhance the downtown for pedestrians and bicyclists (i.e., encourage non-auto travel) and provide opportunities to incorporate green street treatments.

SUMMARY OF DOWNTOWN PROJECTS

Table 5 summarizes the recommended downtown projects above as well as the intersection projects previously discussed that are within the downtown area.

Table 5 Draft Downtown Projects

(Project #) Project Location	Recommended Project	Reasons for the Project	Priority
(16) Main Street (OR 99 Southbound)	Modify Roadway Cross-Section	Create space for bicycle lanes, wider sidewalks, and/or more on-street parking.	High
(17) Lithia Way (OR 99 Northbound)	Modify Roadway Cross-Section to Provide Striped Buffer for Bicycle Lane	Increase comfort of existing bicycle lane to encourage bicycle travel.	Medium
(4) Siskiyou Boulevard (OR 99)-Lithia Way (OR 99 NB)-Main Street (OR 99 SB)/East Main Street ¹	Improve Visibility of Signal Heads on NB Approach, Consider Treatments to Slow NB Vehicles	Improve Safety	Medium
(2) Main Street (OR 99 Southbound)/Oak Street ¹	Modify Northbound Lane Configuration, Install a Traffic Signal	Improve Safety, Improve Operations	Medium
(7) Lithia Way (OR 99 Northbound)/Oak Street ¹	Install a Traffic Signal	Improve Operations	Low

Notes:

¹ This project was discussed above in the Draft Intersection Projects summary table; it is repeated here, because it is located in the downtown area.

It should be noted there are two bicycle boulevard projects proposed for streets in the downtown area: B Street and 1st Street. Those proposed projects will be discussed as part of the Draft Preferred Plan specific to bicyclists and pedestrians.

Next Steps

The Planning and Transportation Commissioners will be able to use this information to help inform their discussions and decisions about which roadway and intersection improvements they would like included in the Draft Preferred Plan. Commissioners are also encouraged to use this information to identify priorities for different roadway and intersection improvements; priorities will help inform the development of the Draft Cost Constrained Plan.