

MEMORANDUM

Date: December 1, 2020 Project #: 23858

To: Project Management Team

From: Mark Heisinger, EIT, Russ Doubleday, Nick Foster, AICP, RSP, and Matt Hughart, AICP;
Kittelison & Associates

Project: City of Ontario, Active Transportation Update and East Idaho Avenue Refinement Area
Plan

Subject: Technical Memo #9: Transportation Solutions

This memorandum provides a proposed set of walking/rolling, biking, and crossing projects to be included in the City of Ontario's update to its 2006 Transportation System Plan (TSP). These projects address the gaps and deficiencies identified in *Technical Memorandum #2: Baseline Transportation Assessment* and along the Safe Routes to School (SRTS) network presented in *Technical Memorandum #6: Draft Design Concepts*, as well as public feedback received through multiple engagement efforts. This memorandum also presents a draft prioritization that emphasizes realistic, lower-cost projects to address critical gaps. The recommended projects in this memorandum will be considered for the final TSP update as part of the review and comment process by the Technical Advisory Committee (TAC), Project Management Team (PMT), and the general public.

PROJECT ALTERNATIVES DEVELOPMENT AND SCREENING

The project team developed project alternatives to address the gaps and deficiencies identified in Technical Memoranda #2 and #6. These gaps and deficiencies were identified through feedback provided by the general public, the TAC and PMT, the project team's technical analysis (i.e., level of traffic stress [LTS] and qualitative multimodal analysis [QMA]), and previous work by the City to develop a SRTS network. The bikeway selection guidance provided in the Oregon Department of Transportation's (ODOT's) *Blueprint for Urban Design* informed the project team's bikeway recommendations.

In many instances, the project team considered multiple project alternatives for a single gap or deficiency. In these instances, the project team evaluated the different alternatives against the evaluation criteria described in *Technical Memorandum #5: Vision Statement and Guiding Principles*. When the evaluation criteria did not produce a clear choice among alternatives, the project team placed additional weight on the overall project vision of making walking/rolling and biking safer and more comfortable all of Ontario's residents and visitors.

City of Ontario Parks and Recreation Master Plan Paths

In 2018, the City of Ontario completed its *Parks and Recreation Master Plan*. This plan included 14 trail recommendations in and around Ontario, and Figure 1 and Figure 4 include the recommended trail network from this plan. Several trail projects coincide with proposed walking and biking improvements. These include:

- The Treasure Valley Connector Trail along Park Boulevard
- The North-South Connector along NW/SW 9th Avenue from Lions Park to the Malheur County Fairgrounds
- The Cross Town Trail on SW 14th Avenue

PRIORITIZATION

Table 1 shows the four criteria that were used to prioritize walking/rolling, crossing, and biking projects in Ontario. The project team built off the evaluation criteria contained in Technical Memorandum #5 to develop the criteria for prioritizing projects.

Table 1. Factor Description and Weighting for Prioritization

Factor	Criteria	Detail	Weight
Safety	ODOT Bicycle/Pedestrian Safety Plan Draft Criteria <ul style="list-style-type: none"> • Roadway classification • Number of roadway lanes • Posted speed • Bike lane presence/sidewalk presence • Mixed-Use zoning • Proximity to schools • Proximity to transit stops • High population of residents over the age of 64 	This criterion is a summation of transportation and land use elements that have been shown to impact crash risk for people walking and biking. The resulting index scores were split so that an approximately equal number of segments fell into each of the high, medium, and low categories.	25%
Equity	Transportation Disadvantaged Populations Index	This criterion comes from ODOT’s Active Transportation Needs Inventory (ATNI). This index is designed to prioritize improvements on highway segments that serve areas with high numbers of transportation disadvantaged residents and environmental justice communities that have been traditionally underserved. It uses the most recent available American Community Survey data at the block group level for the following attributes: <ul style="list-style-type: none"> • Elderly populations (65 and older) • Youth populations (under 18) • Non-white and Hispanic populations • Low-income population (households earning less than 200% of the poverty level as determined by the census) • Limited English proficiency population (aggregate of census populations who speak English “not well” or “not at all”) • Households without access to a vehicle 	25%

Factor	Criteria	Detail	Weight
		<ul style="list-style-type: none"> People with a disability (severe or non-severe disability) <p>Each block group received a single TDP score that applied to all segments within the block group. If a segment touched more than one block group, then the block group that contained the majority of the segment was used.</p>	
Connectivity and Accessibility	Access to key destinations	This criterion examines whether a proposed pedestrian or bicycle project would provide a connection to a key destination (defined as schools, parks, and major job locations). Segments that provide a connection to such a destination received a score of 1 and all other segments received a score of 0.	25%
Cost and Implementation	Project cost and project implementation/feasibility	<p>This criterion examines the relative cost of projects and whether there are any significant physical and legal barriers (i.e. right-of-way).</p> <p>Pedestrian segments were scored on a -1, 0, and 1 scale based on how complete the existing sidewalk segment was (segments received a score of -1 if very little to no sidewalk existed). Since sidewalk construction costs are assumed to be relatively similar, the pedestrian prioritization examines significant physical barriers only.</p> <p>Bike segments were scored on:</p> <ol style="list-style-type: none"> 1) Relative costs scored protected bike lanes as the most costly, buffered bike lanes and standard bike lanes as moderately costly, and shared lanes as the least costly. 2) Physical and legal barriers were assessed on a similar three-tier scale from lacking curb-to-curb width or right-of-way for the specified treatment to having adequate space to implement the treatment. <p>These combined scores (each were scored on a -1, 0, and 1 scale) were added together for an overall bike cost and implementation score.</p>	25%

Full prioritization scores for each project can be found in Attachment “A.”

PROPOSED WALKING/ROLLING PROJECTS

Figure 1 presents the proposed walking/rolling and intersections projects for the Ontario Active Transportation Plan. Attachment “B” includes the project alternatives for each site.

Sidewalk Projects

The City’s Safe Routes to School map and roadway segments that connect to key destinations, such as schools, parks, and major job centers, create the foundation for the city’s desired continuous sidewalk network. Figure 1 shows the proposed sidewalk network in Ontario.

There are 42 sidewalk projects identified in Figure 1. Table 2 prioritizes these projects into high-priority, medium-priority, and low-priority projects for construction using the criteria identified in Table 1. Prioritized projects are shown in Figure 2.

Table 2. Prioritized Sidewalk Improvement Projects

ID	Roadway	Segment	Proposed Project
High-Priority Segments			
S1	E Idaho Ave	I-84 eastbound ramps to Snake River	Build shared-use path on south side of roadway
P1	Sunset Dr	SW 4 th Ave to City Limits	Infill sidewalk on both sides of roadway
P2	SW 8 th Ave/ Alameda Dr/SW 14 th Ave	SW 8 th Ave: Alameda Dr to SW 12 th St Alameda Dr: SW 8 th Ave to SW 14 th Ave SW 14 th : Alameda Dr to Park Blvd	Build shared-use path with parallel parking on Alameda Drive from SW 8 th Avenue to SW 14 th Avenue, infill sidewalk on both sides of roadway along rest of segment
P3	SE 5 th Ave	SE 5 th St to East Ln	Construct sidewalk on both sides of roadway
P4	Verde Dr	NW 4 th Ave to SW 4 th Ave	Construct sidewalk on both sides of roadway
P5	S Dorian Way	W Idaho Ave to SW 4 th Ave	Infill sidewalk on both sides of roadway
P6	SW 10 th St/SW 2 nd Ave	SW 10 th St: W Idaho Ave to SW 2 nd Ave SW 2 nd Ave: SW 10 th St to Ontario Middle School	Infill sidewalk on both sides of roadway
P7	E Idaho Ave	Oregon St to I-84 eastbound ramps	Reconstruct sidewalks where necessary and install barriers to prevent dirt and debris from washing over the sidewalks
P8	Park Blvd	SW 5 th Ave to Evergreen Cemetery	Construct shared-use path on the east side of the road
P9	SW 5 th Ave	SW 12 th St to SE 5 th St	Construct sidewalk on both sides of roadway
P10	SW 14 th Ave/SW 4 th St/Park Blvd	SW 14 th Ave: Park Blvd to SW 4 th St SW 4 th St: SW 14 th Ave to SW 18 th Ave Park Blvd: SW 14 th Ave to SW 18 th Ave	Construct sidewalk on both sides of roadway
P11	Sears Dr/NW 12 th St	Sears Dr: NW 4 th Ave to NW 12 th St NW 12 th St: Sears Dr to W Idaho Ave	Construct sidewalk on both sides of roadway
P12	SW 4 th St	SW 3 rd Ave to SW 11 th Ave	Infill sidewalk on both sides of roadway
P13	SW 7 th St/SW 6 th St/SW 3 rd Ave	SW 7 th St: SW 2 nd Ave to SW 4 th Ave SW 6 th St: SW 2 nd Ave to SW 5 th Ave SW 3 rd Ave: SW 7 th St to SW 6 th St	Infill sidewalk on both sides of roadway
P14	SW 5 th St/SW 1 st Ave	SW 5 th St: W Idaho Ave to SW 1 st Ave SW 1 st Ave: SW 5 th St to SW 4 th St	Infill sidewalk on both sides of roadway
P15	SW 2 nd Ave	SW 2 th St to S Oregon St	Infill sidewalk on both sides of roadway
P16	SW 12 th St /Locust Way/SW 11 th St	SW 12 th St: SW 3 rd Ave to Locust Way Locust Way: SW 12 th St to SW 11 th St SW 11 th St: Locust Way to SW 14 th Ave	Infill sidewalk on both sides of roadway
Medium-Priority Segments			
P17	SW 2 nd St/SW 11 th Ave/Park Blvd	SW 2 nd St: SW 5 th Ave to SW 11 th Ave SW 11 th Ave: SW 2 nd St to Park Blvd Park Blvd: SW 11 th Ave to SW 14 th Ave	Construct sidewalk on both sides of roadway
P18	NW 4 th Ave	N Park Blvd to N Oregon St	Construct sidewalk on both sides of roadway
P19	E Idaho Ave Area Sidewalks	Tapadera Ave: Lincoln Ave to Clarion Inn Access SW 13 th St: SE 1 st Ave to SE 5 th Ave Goodfellow St: E Idaho Ave to End of Roadway	Infill sidewalk on both sides of roadway
P20	SE 2 nd St	E Idaho Ave to SE 18 th Ave	Construct sidewalk on both sides of roadway
P21	SW 18 th Ave	Sunset Dr to SE 2 nd Ave	Construct sidewalk on both sides of roadway
P22	NW 9 th St/NW 10 th St/W Idaho Ave	NW 9 th St: NW 4 th Ave to W Idaho St NW 10 th St: NW 2 nd Ave to W Idaho St W Idaho Ave: NW 9 th St to NW 10 th St	Construct sidewalk on both sides of roadway, construct North-South Connector Trail on east side of NW 9 th St
P23	NW 6 th St	NW 8 th Ave to Ontario Middle School	Construct sidewalk on both sides of roadway
P24	Dorian Dr	NW 4 th Ave to W Idaho Ave	Infill sidewalk on both sides of roadway
P25	NW 8 th Ave/NW 9 th St	NW 8 th Ave: NW 9 th St to N Oregon St NW 9 th St: NW 8 th Ave to NW 4 th Ave	Construct sidewalk on both sides of roadway, construct North-South Connector Trail on east side of NW 9 th St
Low-Priority Segments			

ID	Roadway	Segment	Proposed Project
P26	Sunset Dr	City Limit to SW 18 th Ave	Construct sidewalk on both sides of roadway
P27	Alameda Dr	SW 14 th Ave to SW 18 th Ave	Construct sidewalk on both sides of roadway
P28	SE 5 th St/SE 6 th Ave	SE 5 th St: SE 5 th Ave to SE 6 th Ave SE 6 th Ave: SE 5 th St to SE 6 th St	Construct sidewalk on both sides of roadway
P29	SE 9 th Ave	SE 2 nd St to SE Claude Road	Construct sidewalk on both sides of roadway
P30	SE 3 rd St	E Idaho Ave to SE 5 th Ave	Infill sidewalk on both sides of roadway
P31	NW 5 th St/NW 3 rd Ave/NW 4 th St	NW 5 th St: NW 4 th Ave to NW 3 rd Ave NW 4 th St: NW 4 th Ave to NW 3 rd Av NW 3 rd Ave: NW 5 th St to NW 4 th St	Construct sidewalk on both sides of roadway
P32	N Oregon St	NW 9 th St to NW 8 th Ave	Construct sidewalk on both sides of roadway
P33	SW 18 th Ave	Sunset Dr to Highway 201	Construct sidewalk on both sides of roadway
P34	Hunter Ln	Western End of Road to Verde Dr	Construct sidewalk on both sides of roadway
P35	SE Claude Rd	SE 5 th Ave to SE 13 th Ave	Construct sidewalk on west side of roadway
P36	Rieter Dr/Arata Way/Sears Dr	Rieter Dr: NW 4 th Ave to Arata Way Arata Way: Reiter Dr to Sears Dr Sears Dr: Arata Way to NW 12 th St	Construct sidewalk on both sides of roadway
P37	SW 4 th Ave	SW 33 rd St to Highway 201	Construct sidewalk on south side of roadway
P38	NW 4 th Ave	Highway 201 to N Dorian Dr	Construct sidewalk on both sides of roadway
P39	Washington Ave/Verde Dr	Washington Ave: Verde Dr to Highway 201 Verde Dr: Washington Ave to Highway 201	Construct sidewalk on both sides of roadway
P40	Malheur Dr/Park Blvd	Malheur Dr: Verde Dr to Park Blvd Park Blvd: Malheur Dr to NW 4 th Ave	Construct sidewalk on both sides of roadway
P41	Fortner St	N Oregon St to NW 4 th Ave	Construct sidewalk on both sides of roadway
P42	NW 12 th St	North End of Roadway to NW 4 th Ave	Construct sidewalk on both sides of roadway

Crossing Projects

Figure 1 shows 28 proposed crossing projects. These projects are divided into short-term, mid-term, and long-term priority locations in Table 3 using the criteria from Table 1. Crossings in the East Idaho Avenue Refinement Area (see inset in Figure 3) have been evaluated according to methods outlined in National Cooperative Highway Research Program (NCHRP) Research Report 562. The NCHRP Research Report 562 sheets are included in Attachment “C.”

All recommended crossing projects in Table 3 are based on a preliminary review of the site. An engineering study consistent with the Manual on Uniform Traffic Control Devices (MUTCD) should be conducted prior to installing any crossing treatments.



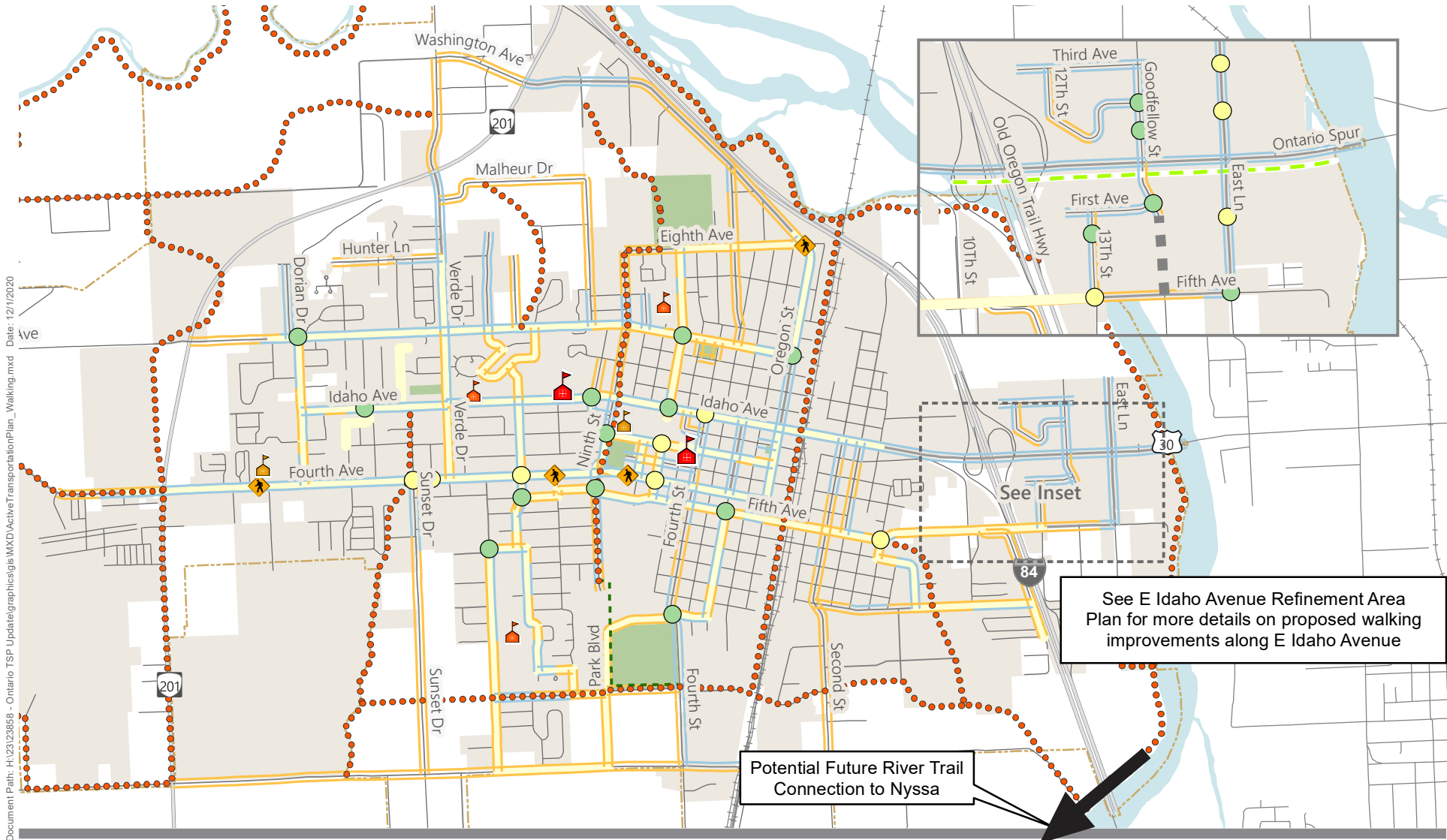
The images on this page showcase the various intersection crossing treatments recommended for Ontario. Clockwise from top: a rectangular rapid flashing beacon, an advanced STOP bar for pedestrians, a continental-style crosswalk, and a curb ramp.



Table 3. Prioritized Intersection Crossing Improvement Projects

ID	Intersection	Proposed Project
High-Priority Projects		
I1	Sunset Dr and SW 4 th Ave	Install a rectangular rapid flashing beacon across SW 4 th Ave at the existing marked crosswalk
I2	Hillcrest Dr and SW 4 th Ave	Install a rectangular rapid flashing beacon across SW 4 th Ave at the existing marked crosswalk
I3	SW 12 th St and SW 4 th Ave	Install a rectangular rapid flashing beacon across SW 4 th Ave at existing marked crosswalk
I4	SW 6 th St and SW 4 th Ave	Install a rectangular rapid flashing beacon across SW 4 th Ave on the east side of the intersection at existing marked crosswalk
I5	SE 5 th Ave and East Ln	Create all-way stop by removing free southbound right turn
I6	GameStop Lot/Walmart Lot and East Ln	Mark crosswalk and install a rectangular rapid flashing beacon across East Ln on the south side of the intersection
I7	Waremart Lot and East Ln	Mark crosswalk and install a rectangular rapid flashing beacon across East Ln on south side of the intersection with the existing pedestrian path through the parking lot, install curb ramps on both sides of the street at the new crosswalk location
I8	SW 9 th St and SW 2 nd Ave	Stripe crosswalks and complete curb ramp installation on the south side of the intersection
I9	SW 6 th St and W Idaho Ave	Add stop bar for pedestrian crossing and improve pedestrian crossing signage (W11-2 or R1-5b/R1-5c) on W Idaho Ave approaches
I10	Park Blvd and SW Fifth Ave	Stripe crosswalk across Park Blvd to connect offset intersection, stripe crosswalks across SW Fifth Ave in both locations to connect to existing sidewalks, and complete curb ramp installation at all corners without curb ramps (2)
Medium-Priority Projects		
I11	Alameda Dr and SW 8 th Ave	Stripe crosswalk across Alameda Dr to connect offset intersection, complete curb ramp installation on west side of Alameda Dr
I12	SW 10 th St and W Idaho Ave	Add stop bar for pedestrian crossing and improve pedestrian crossing signage (W11-2 or R1-5b/R1-5c) on W Idaho Ave approaches, complete curb ramp installation on south side of W Idaho Ave
I13	SW 6 th St and SW 2 nd Ave	Study intersection for all-way stop-control; uncontrolled intersection is located at a major hub for Ontario Middle School
I14	SW 4 th St and W Idaho Ave	Study intersection for all-way stop control, install a rectangular rapid flashing beacon across W Idaho Ave on the west side of the intersection
I15	SW 4 th St and SW 11 th Ave	Add stop bar for pedestrian crossing and improve pedestrian crossing signage (W11-2 or R1-5b/R1-5c) on SW 4 th St approaches, complete curb ramp installation at northeast corner of the intersection
I16	SW 12 th St and SW 5 th Ave	Stripe crosswalks across the north and east side of the intersection, install curb ramps at all intersection corners
I17	SE 5 th Ave and SE 13 th St	Study intersection for potential enhanced crossing alternatives

ID	Intersection	Proposed Project
I18	Staples Lot and SE 13 th St	Stripe crosswalk across SE 13 th Ave, install curb ramp at the location of the crosswalk on the east side of the street
I19	SE 1 st Ave and Goodfellow St	Stripe crosswalks across Goodfellow St on the south side of the intersection, install curb ramp at southeast corner of intersection with new crosswalk
I20	Dairy Queen Lot and Goodfellow St	Stripe crosswalk across Goodfellow St, install curb ramps on both sides of the street at the new crosswalk location
Low-Priority Projects		
I21	SW 2 nd St and SW 5 th Ave	Stripe crosswalk across SW 5 th Ave on the west side of the intersection, install curb ramps at all corners of the intersection
I22	SE 5 th St and SE 5 th Ave	Install a rectangular rapid flashing beacon across SW 5 th Ave at existing marked crosswalk, complete curb ramp installation at all corners without curb ramps (2)
I23	Tapadera Ave and Goodfellow St	Stripe crosswalk across Goodfellow St on north side of the intersection, install curb ramps on both sides of the street at the new crosswalk location
I24	NW 6 th St and NW 4 th Ave	Stripe crosswalk across NW 6 th St on the north side of the intersection, install curb ramps at all corners of the intersection
I25	NE 18 th St and W Idaho Ave	Stripe crosswalks across W Idaho Ave, complete curb ramp installation on north side of the intersection
I26	Dorian Dr and NW 4 th Ave	Stripe crosswalk across NW 4 th Ave on the west side of the intersection
I27	N Oregon St and NW 4 th Ave	Add stop bar for pedestrian crossing and improve pedestrian crossing signage (W11-2 or R1-5b/R1-5c) on N Oregon St approaches
I28	Walmart Lot and East Ln	Restripe existing crossing across East Ln with continental striping, add signage on East Ln approaches

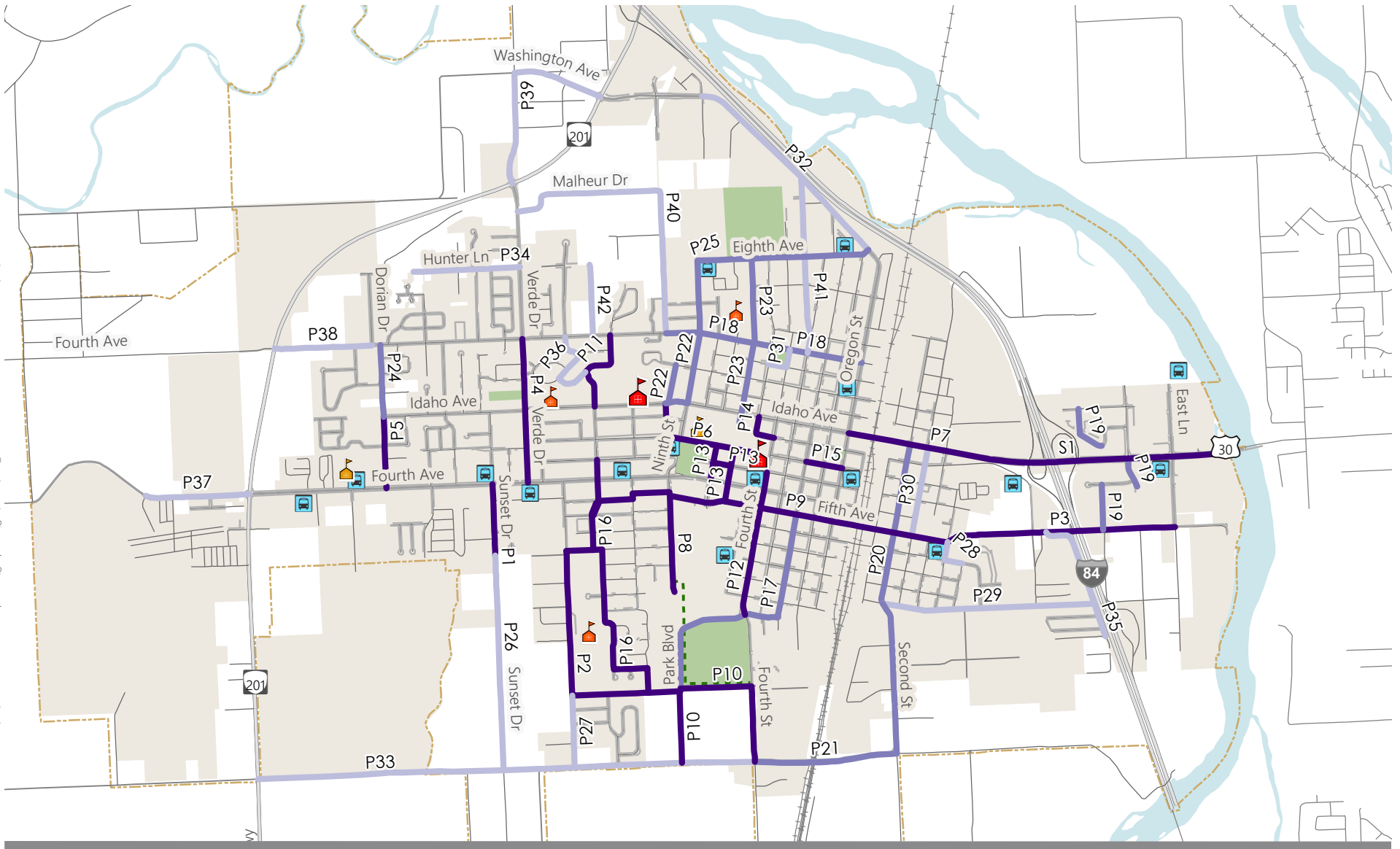


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| Existing Sidewalk | Proposed Improvements | Elementary School | Multi-Use Path (Under Construction) |
| Existing Rectangular Rapid Flashing Beacon | Proposed Sidewalk | Junior/Senior High School | Parks |
| Existing Safe Routes to School Route | E Idaho Ave Proposed Shared-Use Path | Private School/Charter School | Urban Growth Boundary |
| Road Extension (Already Programmed) | Enhanced Crossing | Signing and/or Marking Improvements | City Limits |
| | Proposed Shared-Use Paths
(from Ontario Parks and Recreation Master Plan) | | |

Figure 1
City of Ontario Active Transportation Plan
Proposed Sidewalk and Crossing Projects





Pedestrian Prioritization

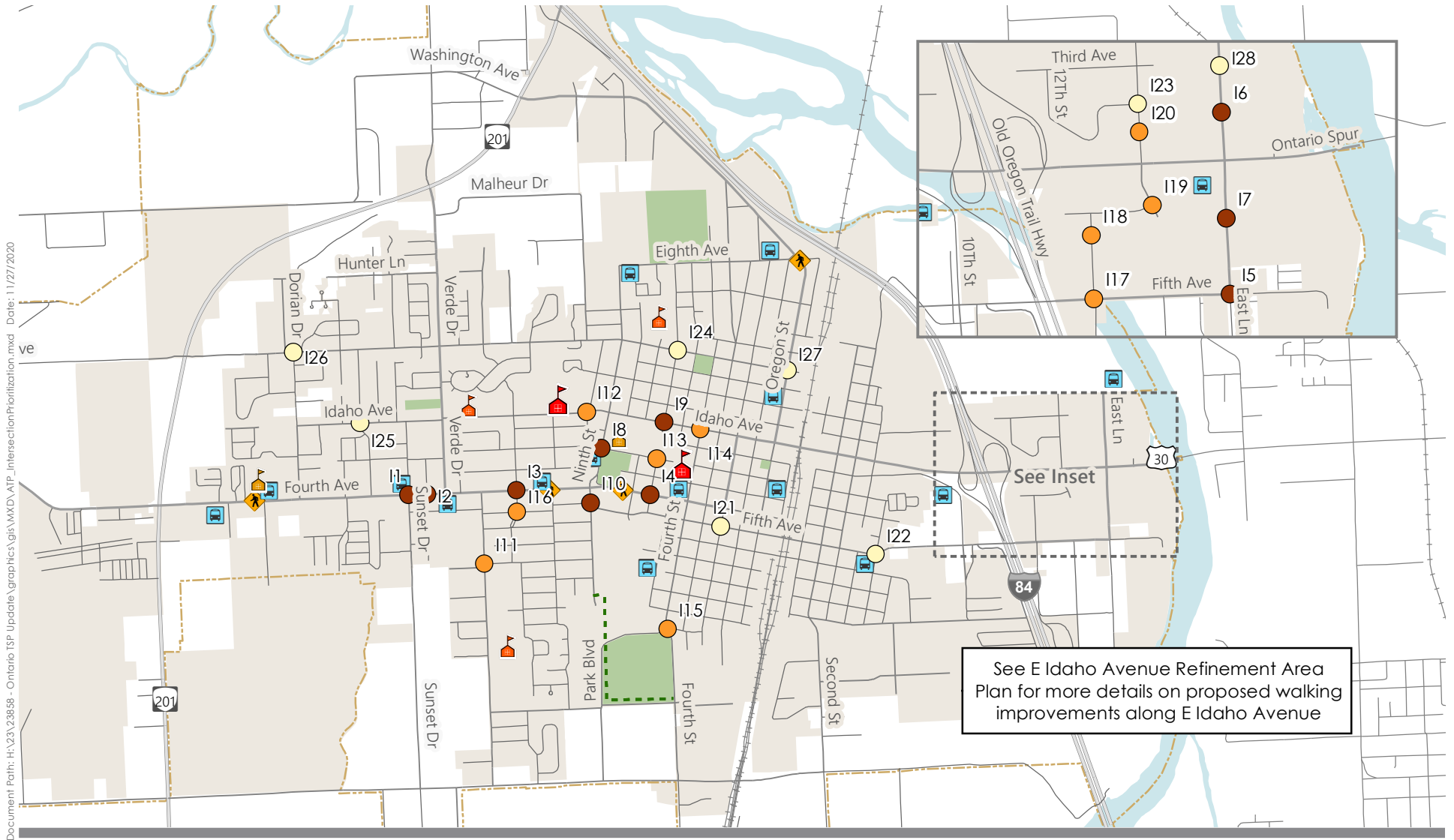
- High-Priority Projects
- Medium-Priority Projects
- Low-Priority Projects

- Elementary School
- Junior/Senior High School
- Private School/Charter School
- MCOACS Bus Stops

- Parks
- Multi-Use Path (Under Construction)
- Sidewalks
- Urban Growth Boundary
- City Limits



Figure 2
City of Ontario Active Transportation Plan
Walking Projects Prioritization



Intersection Prioritization

- High-Priority Projects
- Medium-Priority Projects
- Low-Priority Projects

- Elementary School
- Junior/Senior High School
- Private School/Charter School
- MCOACS Bus Stops
- Rectangular Rapid Flashing Beacon

- Multi-Use Path (Under Construction)
- Parks
- Urban Growth Boundary
- City Limits

See E Idaho Avenue Refinement Area Plan for more details on proposed walking improvements along E Idaho Avenue



PROPOSED BIKING PROJECTS

Figure 4 presents the proposed biking projects for the Ontario Active Transportation Plan. Proposed biking projects include a shared-use path, protected bike lanes, buffered bike lanes, standard bike lanes, and shared lane routes. Shared lane routes are low-vehicle volume and speed roads where people biking and motor vehicle traffic can comfortably share the same space. This plan identified two classes of these routes, standard shared routes and enhanced bike routes. Enhanced bike routes are where bicycle travel should be elevated to a higher priority than motor vehicle traffic, typically accomplished through the use of traffic calming/diversion techniques. The proposed routes are based on a number of factors, including motor vehicle volumes, roadway classification, number of lanes, travel speeds, street network connectivity, and surrounding land use and the project’s goal to create bicycle routes that are comfortable for a wide range of ages and abilities.

Some projects can be implemented by marking and signing the new facilities, while other projects may require widening the existing pavement or studying whether it’s possible to reallocate the existing roadway space (e.g., on some streets, it may be possible to reduce the number of motor vehicle lanes in order to add in the proposed bicycling facility). Figure 4 highlights roadway sections where such a possible roadway reallocation could be studied to create room for bicycle infrastructure.

Figure 5 and Table 4 prioritize the biking projects using the criteria from Table 1.

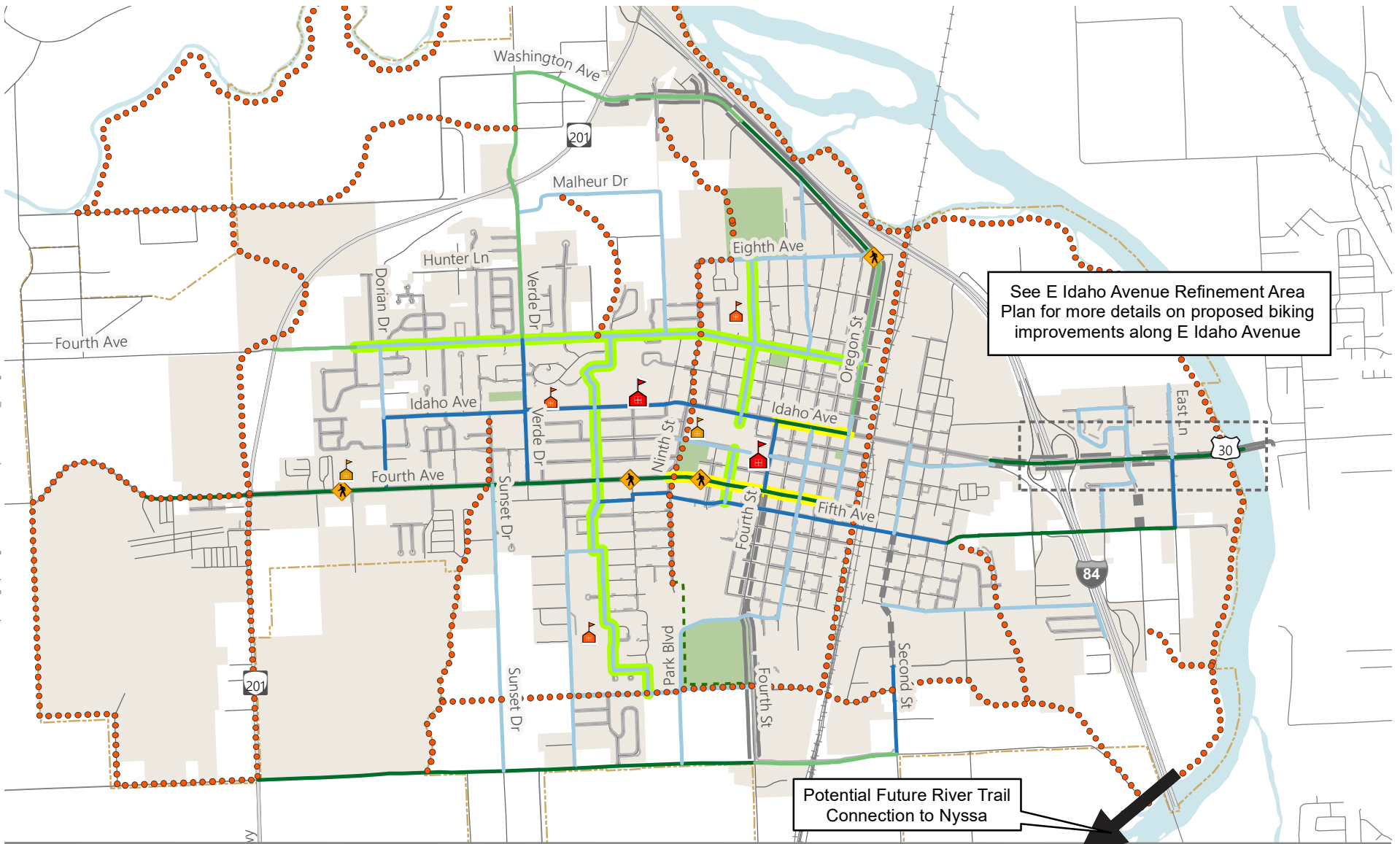
The images on this page showcase the various bike treatments recommended for Ontario. Clockwise from top: a shared-use path, a protected bike lane, a buffered bike lane using paint, a standard bike lane, and a shared lane roadway.



Table 4. Prioritized Bike Improvement Projects

ID	Roadway	Segment	Proposed Project
High-Priority Projects			
S1	E Idaho Ave	I-84 eastbound ramps to Snake River	Construct shared-use path on south side of road
B1	SW 4 th Ave	Highway 201 to 9 th St	Construct protected bike lanes
B2	Verde Dr	NW 4 th Ave to SW 4 th Ave	Stripe bike lanes
B3	Sears Dr/NW 12 th St	Sears Dr: NW 4 th Ave to NW 12 th St NW 12 th St: Sears Dr to SW 4 th Ave	Create enhanced bike route through shared lane markings, wayfinding signage, and enhanced crossings and traffic calming, if necessary
B4	S Oregon St	NW 1 st Ave to SW 4 th Ave	Add shared lane markings and wayfinding signage
B5	SW 2 nd St/SW 11 th Ave	SW 2 nd St: W Idaho Ave to SW 11 th Ave SW 11 th Ave: SW 2 nd St to SW 4 th St	Add shared lane markings and wayfinding signage
B6	W Idaho Ave	Dorian Way to SW 4 th St	Stripe bike lanes
B7	Dorian Way	W Idaho Ave to SW Fourth Ave	Stripe bike lanes
B8	SW 6 th St	SW 2 nd Ave to SW 5 th Ave	Create enhanced bike route through shared lane markings, wayfinding signage, and enhanced crossings and traffic calming, if necessary
B9	SW 2 nd Ave	SW 10 th St to S Oregon Ave	Add shared lane markings and wayfinding signage
B10	SW 12 th St/Locust Way/SW 11 th St	SW 12 th St: SW 4 th Ave to Locust Way Locust Way: SW 12 th St to SW 11 th St SW 11 th St: Locust Way to SW 14 th Ave	Create enhanced bike route through shared lane markings, wayfinding signage, and enhanced crossings and traffic calming, if necessary
B11	E Idaho Ave/SE 1 st Ave	E Idaho Ave: I-84 eastbound ramps to 650 feet west of ramps SE 1 st Ave: SE 2 nd St to E Idaho Ave	Construct shared-use path on south side of E Idaho Avenue, connect E Idaho Avenue and SE 1 st Avenue at the narrowest point between the two roads with a path across the vacant lot, and add shared lane markings and wayfinding signage on SE 1 st Avenue
B12	NW 6 th Ave	NW 8 th Ave to Ontario Middle School	Create enhanced bike route through shared lane markings, wayfinding signage, and enhanced crossings and traffic calming, if necessary
B13	SW 8 th Ave/Alameda Dr	SW 8 th Ave: Alameda Dr to SW 12 th St Alameda Dr: SW 8 th Ave to SW 18 th Ave	Add shared lane markings and wayfinding signage
Medium-Priority Projects			
B14	E Idaho Ave Area Roadways	East Ln: North End of Road to W Idaho Ave Goodfellow St: North End to South End of Road Lincoln Ave: Tapadera Ave to Goodfellow St Tapadera Ave: Lincoln Ave to Goodfellow St SE 1 st Ave: Goodfellow St to SE 13 th St SE 13 th St: SE 1 st Ave to SE 5 th Ave	Add shared lane markings and wayfinding signage
B15	SW 11 th Ave/Park Blvd	SW 11 th Ave: SW 4 th St to Park Blvd Park Blvd: SE 11 th Ave to SE 18 th Ave	Add shared lane markings and wayfinding signage
B16	Sunset Dr	SW 4 th Ave to SW 18 th Ave	Add shared lane markings and wayfinding signage or construct shared-use path
B17	NW 9 th St/SW 9 th St/ Park Blvd/	NW/SW 9 th St: NW 8 th Ave to SW 4 th Ave Park Blvd: SW 4 th Ave to End of Road	Construct shared-use path as outlined in the City of Ontario's Parks and Recreation Master Plan
B18	SE 9 th Ave/SE Claude Road	SE 9 th Ave: SE 2 nd Ave to SE Claude Road SE Claude Road: SE 9 th Ave to SE 13 th Ave	Add shared lane markings and wayfinding signage
B19	SE 2 nd St	E Idaho Ave to SE 5 th Ave	Add shared lane markings and wayfinding signage
B20	NW 4 th Ave	Tori Dr to N Oregon St	Create enhanced bike route through shared lane markings, wayfinding signage, and enhanced crossings and traffic calming, if necessary

ID	Roadway	Segment	Proposed Project
B21	SW/SE 5 th Ave	SW 12 th St to SE 5 th St	Stripe bike lanes, improve rail crossing for bicyclists
B22	SW 4 th Ave	SW 9 th St to S Oregon St	Construct protected bike lanes - this will likely require removing one or more motor vehicle lanes
B23	Washington Ave	Highway 201 to NW 8 th St	Construct buffered bike lanes
B24	Idaho Ave	SW 4 th St to I-84 EB Ramps	Construct protected bike lanes – this will likely require removing one or more motor vehicle lanes
B25	Dorian Dr	NW 4 th Ave to W Idaho Ave	Add shared lane markings and wayfinding signage
B26	SW 4 th St	W Idaho Ave to SW 4 th Ave	Stripe bike lanes
Low-Priority Projects			
B27	SE 2 nd St	SE 12 th Ave to SE 18 th Ave	Stripe bike lanes
B28	East Ln	E Idaho Ave to south end of road	Stripe bike lanes
B29	N Oregon St	NW 1 st Ave to NW 8 th Ave	Construct buffered bike lanes
B30	Malheur Drive/Park Blvd	Verde Dr to NW 4 th Ave	Add shared lane markings and wayfinding signage
B31	NW 8 th Ave	NW 9 th St to N Oregon St	Add shared lane markings and wayfinding signage
B32	SW/SE 18 th Ave	SW 4 th St to SE 2 nd St	Construct buffered bike lanes
B33	SW 14 th St	Alameda Dr to SW 4 th St	Add shared lane markings and wayfinding signage
B34	Fortner St	N Oregon St to NW 4 th Ave	Add shared lane markings and wayfinding signage
B35	Verde Dr	Highway 201 to NW 4 th Ave	Construct buffered bike lanes
B36	SW 4 th Ave	SW 33 rd St to Highway 201	Construct protected bike lanes
B37	SE 5 th Ave	SE 5 th St to East Ln	Construct protected bike lanes
B38	NW 4 th Ave	Highway 201 to Tori Dr	Construct buffered bike lanes
B39	Washington Ave/Verde Dr	Washington Ave: Verde Dr to Highway 201 Verde Dr: Washington Ave to Highway 201	Construct buffered bike lanes
B40	SW 18 th Ave	Highway 201 to SW 4 th St	Construct protected bike lanes
B41	N Oregon St	NW 8 th St to NW 8 th Ave	Construct protected bike lanes



See E Idaho Avenue Refinement Area Plan for more details on proposed biking improvements along E Idaho Avenue

Potential Future River Trail Connection to Nyssa

Existing Infrastructure

- Existing Bike Lane
- - - Multi-Use Path (Under Construction)
- Sidewalks
- ⬆ Rectangular Rapid Flashing Beacon
- Road Extension (Already Programmed)
- - - Bike Lanes (Under Construction)

Proposed Bike Treatment

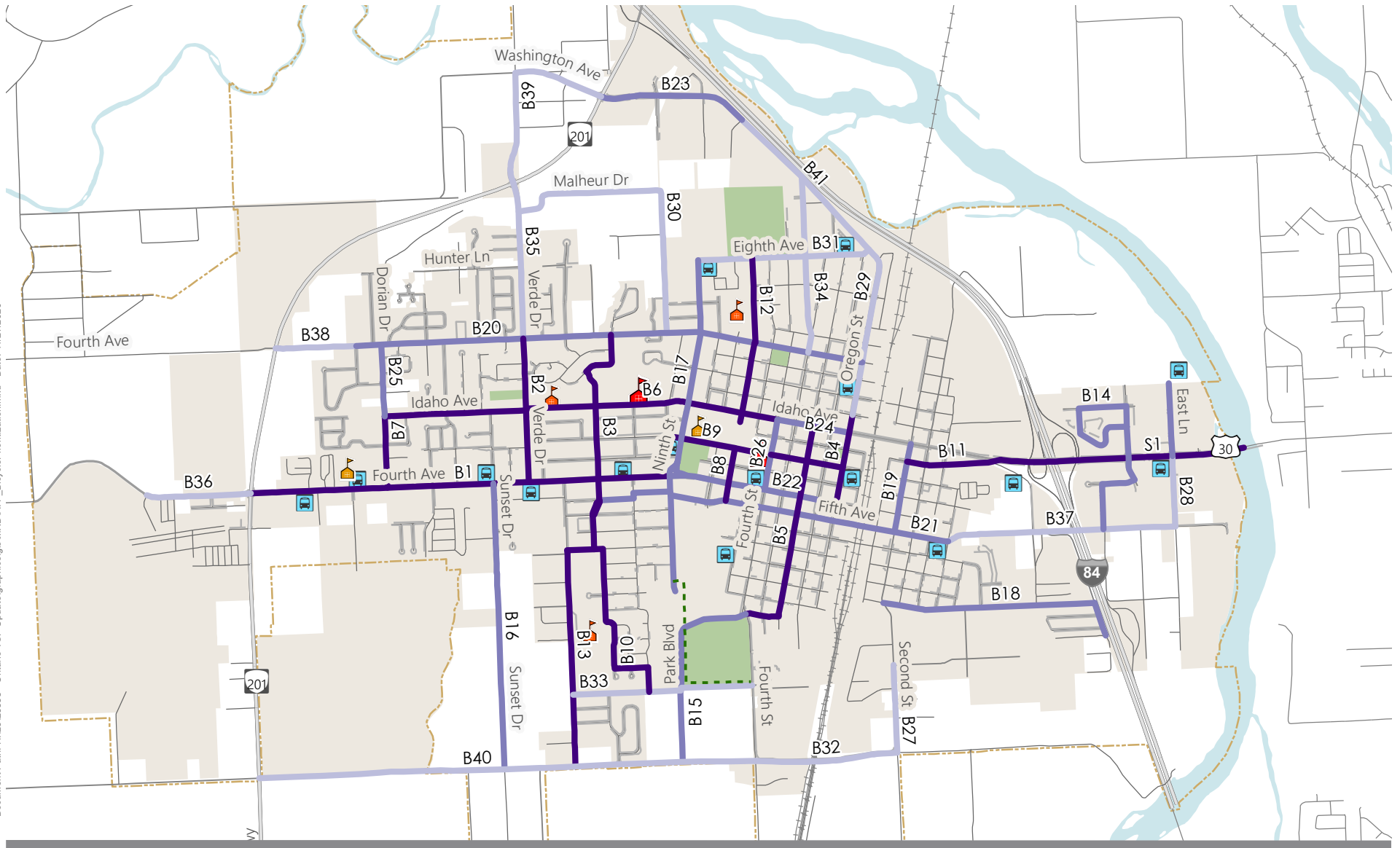
- Shared-Use Path or Protected Bike Lane
- Buffered Bike Lane
- Bike Lane
- Shared Lane Bike Route
- Potential Lane Reduction
- Enhanced Bike Route
- Proposed Shared-Use Paths (from Ontario Parks and Recreation Master Plan)

- 🏠 Elementary School
- 🏫 Junior/Senior High School
- 🏫 Private School/Charter School

- 🌳 Parks
- ⬆ Urban Growth Boundary
- City Limits



Figure 4
City of Ontario Active Transportation Plan
Proposed Bike Projects



Prioritization

- █ High-Priority Projects
- █ Medium-Priority Projects
- █ Low-Priority Projects

- Elementary School
- Junior/Senior High School
- Private School/Charter School
- MCOACS Bus Stops

- Parks
- Multi-Use Path (Under Construction)
- Sidewalks
- Urban Growth Boundary
- City Limits



Figure 5
City of Ontario Active Transportation Plan
Bicycling Projects Prioritization

EAST IDAHO AVENUE REFINEMENT AREA

The East Idaho Avenue area is a special focus area of the Ontario Transportation System Plan update. The East Idaho Avenue Refinement Area Plan includes walking and biking connectivity and accessibility improvements, as well as streetscape improvements. The plan includes a proposed shared-use path along the south side of the roadway, which will connect to a future riverfront path along the Snake River. Potential crossings along the side streets in the Refinement Area were evaluated at several locations using the NCHRP 562 methodology. Figure 3 shows these crossing locations, and Table 3 describes the proposed crossing improvements.

PUBLIC TRANSPORTATION ENHANCEMENTS AND CONNECTIONS

The Malheur Council on Aging and Community Services (MCOACS) operates fixed-route bus service in Ontario, connecting the E Idaho Avenue commercial area, downtown Ontario, Treasure Valley Community College, the SW 4th Avenue commercial corridor, and residential areas in the northern part of town.

MCOACS has received Statewide Transportation Improvement Program (STIP) funds from ODOT for a redesign of their fixed-route service and other enhancements. MCOACS expects that the redesigned service will increase service frequency and expand the service area. Other planned improvements include additional bus stops and new shelters at stops that do not currently have them. The specific details of the redesigned service and where the new bus stop enhancements will be installed will be determined at a future date, expected to be in about the next year, after funds are received. Expanding the service area and improving the frequency at which buses run may address many of the comments received to date for this project regarding the service and address the chief shortcomings noted in the analysis in Technical Memorandum #2.

Much of the MCOACS current fixed-route service is centered along SW 4th Avenue. As shown in Figure 2, much of the high-priority sidewalk infill network is centered around improving access from residential neighborhoods onto SW 4th Avenue. There are several intersections where planned improvements for pedestrians will help provide access to existing bus stops, both along SW 4th Avenue and at streets just west of the downtown area. In addition, the biking network on both SW 4th Avenue and on E Idaho Avenue will provide greater protection for people who are riding along these corridors and connecting to existing transit service.

2006 TSP MODIFICATION

The proposed projects described in this memorandum will result in modifications or elimination of the following projects from the 2006 TSP.

Table 5. 2006 TSP Modification for Bicycle Treatments

Roadway	Segment	2006 TSP Treatment	Updated Treatment	Justification
NW 4 th Ave	Verde Dr to Oregon St	Bike lanes	Enhanced bike route	Enhanced bike route should be sufficient given the roadway classification.
NW/SW 6 th St	SW 5 th Ave to NW 8 th Ave	Bike lanes	Enhanced bike route	Enhanced bike route should be sufficient given the roadway classification.
SW 12 th St	Locust Way to SW 4 th Ave	Bike lanes	Enhanced bike route	Enhanced bike route should be sufficient given the roadway classification.
Locust Way	SW 11 th St to SW 12 th St	Bike lanes	Enhanced bike route	Enhanced bike route should be sufficient given the roadway classification.
SW 11 th St	Locust Way to SW 14 th Ave	Bike lanes	Enhanced bike route	Enhanced bike route should be sufficient given the roadway classification.
SW 8 th Ave	SW 12 th St to Alameda Dr	Bike lanes	Shared lane	Shared lane is sufficient, road connects to an enhanced bike route.
SW 14 th Ave	SW 11 th St to Park Blvd	Bike lanes	Shared lane	Shared lane is sufficient, road connects to an enhanced bike route.
SW 11 th Ave	Park Blvd to SW 2 nd St	Bike lanes	Shared lane	Shared lane is sufficient.
SW 2 nd St	SW 5 th Ave to SW 11 th Ave	Bike lanes	Shared lane	There is a parallel facility with bike lanes two blocks to the west on SW 4 th Street.
Claude Rd	SE 9 th Ave to SE 11 th Ave	Bike lanes	Shared lane	This is a dead-end residential street with low traffic volumes, bike lanes are not needed.
SE 9 th Ave	SE 7 th St to Claude Rd	Bike lanes	Shared lane	This is a dead-end roadway network connecting to Claude Road with low traffic volumes.
SE 7 th St	SE 6 th Ave to SE 9 th Ave	Bike lanes	Shared lane	This is a dead-end roadway network connecting to Claude Road with low traffic volumes.
SE 5 th St	SE 5 th Ave to SE 6 th Ave	Bike lanes	Shared lane	This is a dead-end roadway network connecting to Claude Road with low traffic volumes.

NEXT STEPS

The project team will review the proposed projects with the TAC and public. Feedback received from the TAC and the community will be used to refine the proposed projects. The final projects resulting from this process will be advanced into the final proposed TSP update.

ATTACHMENTS

- A. Prioritization Scores
- B. Project Alternatives
- C. NCHRP 562 Research Report Sheets

Attachment A Prioritization Scores

Pedestrian Prioritization Scores

ID	Location	Evaluation Score	
35	SUNSET - SW 4th Ave to City Limits	169.9	
13	ALAMEDA - Alameda Dr to SW 12th St, SW 8th Ave to SW 14th Ave, Alameda Dr to Park Blvd	154.7	
17	FIFTH - SE 5th St to East Ln	150.6	
4	VERDE - NW 4th Ave to SW 4th Ave	142.9	
37	DORIAN - W Idaho Ave to SW 4th Ave	142.9	
26	SECOND SW - W Idaho Ave to SW 2nd Ave, SW 10th St to Ontario Middle School	135.2	
45	IDAHO - Oregon St to I-84 eastbound ramps	135.0	
22	PARK - SW 5th Ave to Evergreen Cemetery	132.4	High
19	FIFTH - SW 12th St to SE 5th St	122.8	Priority
43	14TH - Park Blvd to SW 4th St, SW 14th Ave to SW 18th Ave, SW 14th Ave to SW 18th Ave	119.1	Projects
24	SEARS - NW 4th Ave to NW 12th St, Sears Dr to W Idaho Ave	117.9	
44	IDAHO - I-84 southbound ramps to Snake River	110.0	
14	FOURTH - SW 3rd Ave to SW 11th Ave	108.1	
21	SIXTH - SW 2nd Ave to SW 4th Ave, SW 2nd Ave to SW 5th Ave, SW 7th St to SW 6th St	108.1	
33	FIFTH - W Idaho Ave to SW 1st Ave, SW 5th St to SW 4th St	108.1	
34	SECOND - SW 2th St to S Oregon St	108.1	
11	12TH - SW 3rd Ave to Locust Way, SW 12th St to SW 11th St, Locust Way to SW 14th Ave	107.4	
12	SECOND - SW 5th Ave to SW 11th Ave, SW 2nd St to Park Blvd, SW 11th Ave to SW 14th Ave	105.3	
6	FOURTH - N Park Blvd to N Oregon St	100.8	
18	13TH - Lincoln Ave to Clarion Inn Access, SE 1st Ave to SE 5th Ave, E Idaho Ave to End of Roadway	93.1	
15	SECOND - E Idaho Ave to SE 9th Ave	92.5	
40	18TH - SW 4th Ave to SE 2nd Ave	90.1	Medium
27	NINTH - NW 4th Ave to W Idaho St, NW 2nd Ave to W Idaho St, NW 9th St to NW 10th St	85.2	Priority
20	SIXTH - NW 8th Ave to Ontario Middle School	83.1	Projects
38	DORIAN - NW 4th Ave to W Idaho Ave	83.1	
41	18TH - Sunset Dr to SW 4th Ave	77.3	
8	NINTH - NW 4th Ave to W Idaho St, NW 2nd Ave to W Idaho St, NW 9th St to NW 10th St	75.8	
30	SECOND - SE 9th Ave to SE 18th Ave	74.9	
36	SUNSET - City Limit to SW 18th Ave	69.9	
39	ALAMEDA - SW 14th Ave to SW 18th Ave	69.1	
28	FIFTH - SE 5th Ave to SE 6th Ave, SE 5th St to SE 6th St	67.5	
29	NINTH - SE 2nd St to SE Claude Road	67.5	
16	THIRD - E Idaho Ave to SE 5th Ave	63.0	
9	THIRD - NW 4th Ave to NW 3rd Ave, NW 4th Ave to NW 3rd Av, NW 5th St to NW 4th St	60.1	
1	OREGON - NW 9th St to NW 8th Ave	55.9	
42	18TH - Sunset Dr to Highway 201	48.8	Low
32	HUNTER - Western End of Road to Verde Dr	48.6	Priority
31	CLAUDE FRONTAGE - SE 5th Ave to SE 13th Ave	47.6	Projects
25	REITER - W 4th Ave to Arata Way, Reiter Dr to Sears Dr, Arata Way to NW 12th St	47.5	
23	FOURTH - SW 33rd St to Highway 201	46.7	
5	FOURTH - Highway 201 to N Dorian Dr	41.5	
2	WASHINGTON - Verde Dr to Highway 201, Washington Ave to Highway 201	36.1	
3	MALHEUR - Verde Dr to Park Blvd, Malheur Dr to NW 4th Ave	34.2	
7	FORTNER - N Oregon St to NW 4th Ave	25.8	
10	12TH - North End of Roadway to NW 4th Ave	23.6	

Intersection Prioritization Scores

ID	Location	Evaluation Score	
201	Sunset Dr & SW 4th Ave	159.3	
202	Hillcrest Dr & SW 4th Ave	159.3	
10	SW 12th St & SW 4th Ave	140.3	
2	SW 6th St & SW 4th Ave	131.3	High Priority Projects
107	SE 5th Ave & East Ln	127.9	
106	GameStop Lot & East Ln	127.7	
108	Winco Lot & East Ln	127.7	
19	SW 9th St & SW 2nd Ave	126.5	
18	SW 6th St & W Idaho Ave	124.4	
11	Park Blvd & SW 5th Ave	120.9	
103	Alameda Dr & SW 8th Ave	118.1	
17	SW 10th St & W Idaho Ave	114.0	
20	SW 6th St & SW 2nd Ave	111.9	Medium Priority Projects
24	SW 4th St & W Idaho Ave	111.9	
6	SW 4th St & SW 11th Ave	108.4	
9	SW 12th St & SW 5th Ave	108.4	
101	SE 5th Ave & SE 13th St	107.9	
102	Staples Lot & SE 13th St	102.7	
105	SE 1st Ave & Goodfellow St	102.7	
111	Dairy Queen Lot & Goodfellow St	102.7	
4	SW 2nd St & SW 5th Ave	99.3	
3	SE 5th St & SE 5th Ave	96.5	
110	Tapadera Ave & Goodfellow St	93.1	Low Priority Projects
22	NW 6th St & NW 4th Ave	91.2	
14	NW 18th St & W Idaho Ave	82.2	
13	Dorian Dr & NW 4th Ave	80.5	
1	N Oregon St & NW 4th Ave	75.7	
109	Walmart Lot & East Ln	68.1	

Bike Prioritization Scores

ID	Location	Evaluation Score	
1	FOURTH - Highway 201 to 9th St	150.5	
38	VERDE - NW 4th Ave to SW 4th Ave	145.2	
33	12TH - NW 4th Ave to NW 12th St, Sears Dr to SW 4th Ave	138.7	
9	OREGON - NW 1st Ave to SW 4th Ave	137.6	
23	SECOND - W Idaho Ave to SW 11th Ave, SW 2nd St to SW 4th St	137.6	
3	IDAHO - Dorian Way to SW 4th St	136.8	
36	DORIAN - W Idaho Ave to SW 4th Ave	136.8	
5	IDAHO - I-84 southbound ramps to Snake River	131.1	
22	SIXTH - SW 2nd Ave to SW 5th Ave	128.7	
41	SECOND - SW 10th St to S Oregon Ave	128.7	
32	12TH - SW 4th Ave to Locust Way, SW 12th St to SW 11th St, Locust Way to SW 14th Ave	125.9	
46	FIRST - I-84 Eastbound Ramps to SE 2nd St (on SE First Ave)	121.1	
21	SIXTH - NW 8th Ave to Ontario Middle School	120.8	
30	ALAMEDA - Alameda Dr to SW 12th St, SW 8th Ave to SW 18th Ave	118.0	
43	13TH - North End of Road to W Idaho Ave, North End to South End of Road, Tapadera Ave to Goodfellow St, Lincoln Ave to Goodfellow St, Goodfellow St to SE 13th St, SE 1st Ave to SE 5th Ave	117.7	
24	11TH - SW 4th St to Park Blvd, SE 11th Ave to SE 18th Ave	115.9	
25	SUNSET - SW 4th Ave to SW 18th Ave	115.9	
42	NINTH - NW 8th Ave to SW 5th Ave	113.7	
26	NINTH - SE 2nd Ave to SE Claude Road, SE 9th Ave to SE 13th Ave	113.5	
28	SECOND - E Idaho Ave to SE 9th Ave	113.5	
18	FOURTH - Tori Dr to N Oregon St	113.4	
7	FIFTH - SW 12th St to SE 5th St	111.3	
2	FOURTH - SW 9th St to S Oregon St	106.1	
12	OREGON - Highway 201 to NW 8th St	105.9	
4	IDAHO - SW 4th St to I-84 EB Ramps	104.9	
37	DORIAN - NW 4th Ave to W Idaho Ave	103.9	
8	FOURTH - W Idaho Ave to SW 4th Ave	103.7	
27	SECOND - SE 9th Ave to SE 18th Ave	89.1	
29	EAST - E Idaho Ave to south end of road	88.7	
17	FOURTH - NW 9th St to Tori Dr	87.6	
10	OREGON - NW 1st Ave to NW 8th Ave	84.3	
15	MALHEUR - Verde Dr to NW 4th Ave	79.7	
19	EIGHTH - NW 9th St to N Oregon St	71.3	
34	18TH - SW 4th St to SE 2nd St	68.7	
31	14TH - Alameda Dr to SW 4th St	67.8	
20	FORTNER - N Oregon St to NW 4th Ave	63.4	
14	VERDE - Highway 201 to NW 4th Ave	59.2	
40	FOURTH - SW 33rd St to Highway 201	51.9	
6	FIFTH - SE 5th St to East Ln	42.9	
16	FOURTH - Highway 201 to Tori Dr	42.9	
13	WASHINGTON - Verde Dr to Highway 201, Washington Ave to Highway 201	39.4	
35	18TH - Highway 201 to SW 4th St	37.7	
11	OREGON - NW 8th St to NW 8th Ave	30.6	

High
Priority
Projects

Medium
Priority
Projects

Low
Priority
Projects

Attachment B Project Alternatives

Roadway	Start	End	BLTS	Speed	AADT	Lanes per Direction	Curb-to-Curb Width	BUD Urban Context	BUD: Bicyclist Considerations	Preferred alternative	Other options
SW Fourth Ave	Court Ave	Verde Dr	4	35	14,200		2 70 feet	Commercial Corridor	High	Protected bike lane	Shared-use path Buffered bike lane (2-5 foot painted buffer)
SW Fourth Ave	Verde Dr	SW Ninth St	4	35	14,200		2 70 feet	Commercial Corridor	High	Protected bike lane	Shared-use path Buffered bike lane (2-5 foot painted buffer)
SW Fourth Ave	SW Ninth St	SW Second St	4	30	11,100		2 62 feet	Commercial Corridor	High	Protected bike lane	Shared-use path Buffered bike lane (2-5 foot painted buffer)
SW Fourth Ave	SW Second St	S Oregon St	3	20			2 52 feet	Commercial Corridor	High	Protected bike lane	Buffered bike lane (2-5 foot painted buffer)
SW Fifth Ave	SW 12th St	Park Blvd	1	25			1 34 feet	Residential Corridor	Medium	Shared lane (sharrows)	6-foot bike lane
SW/SE Fifth Ave	Park Blvd	SE Fifth Ave	2	25	4,100		1 46 feet	Urban Mix	High	6-foot bike lane	Shared lane with enhanced bike route Buffered bike lane (2-5 foot painted buffer) 5-6 foot standard bike lane with 30 MPH speed limit
SE Fifth Ave	SE Fifth St	SE 13th St	4	35	7,200		1 24 feet	Suburban Fringe	Low	Protected bike lane	6-foot shoulder
SW 18th Ave	Highway 201	SW Fourth St	4	40			1 28 feet	Suburban Fringe	Low	Protected bike lane	Buffered bike lane (2-5 foot painted buffer) with 35 MPH speed limit Protected bike lane
SW 18th Ave	SW Fourth St	SE Second St	4	35			1 36 feet	Suburban Fringe	Low	Buffered bike lane (2-5 foot painted buffer)	4-5 foot shoulder
Dorian Dr	NW Fourth Ave	W Idaho Ave	1	25			1 24 feet	Residential Corridor	Medium	Shared lane (sharrows)	6-foot bike lane Shared lane (sharrows)
Dorian Dr	W Idaho Ave	SW Fourth Ave	3	25	2,100		1 32 feet	Residential Corridor	Medium	6-foot bike lane	Buffered bike lane (2-5 foot painted buffer) Protected bike lane
Verde Dr	Washington Ave	Highway 201	4	35			1 26 feet	Suburban Fringe	Low	Buffered bike lane (2-5 foot painted buffer)	4-5 foot shoulder
Verde Dr	Highway 201	Hunter Ln	4	35			1 36 feet	Residential Corridor	Medium	Buffered bike lane (2-5 foot painted buffer)	6-foot bike lane
Verde Dr	Hunter Ln	NW Fourth Ave	4	35			1 46 feet	Residential Corridor	Medium	Buffered bike lane (2-5 foot painted buffer)	6-foot bike lane
Verde Dr	NW Fourth Ave	SW Fourth Ave	2	25	6,700		1 42 feet	Residential Corridor	Medium	6-foot bike lane	Buffered bike lane (2-5 foot painted buffer) Shared lane
NW/SW Ninth St	NW Eighth Ave	SW Second Ave	3	25	3,300		1 48 feet	Residential Corridor	Medium	6-foot bike lane	Buffered bike lane (2-5 foot painted buffer) Shared lane
SW Ninth St	SW Second Ave	SW Fifth Ave	3	25			1 48 feet	Urban Mix	High	6-foot bike lane	Buffered bike lane (2-5 foot painted buffer) Shared lane
W Idaho Ave	Dorian Dr	SW Fourth St	2	25	1,200		1 46 feet	Residential Corridor	Medium	6-foot bike lane	Buffered bike lane (2-5 foot painted buffer) Buffered bike lane (2-4 foot painted buffer)
W Idaho Ave	SW Fourth St	SW Second St	3	25	9,900		2 46 feet	Urban Mix	High	Protected bike lane	6-foot bicycle lane Buffered bike lane (2-4 foot painted buffer)
W Idaho Ave	SW Second St	Oregon St	4	25	10,300		2 64 feet	Urban Mix	High	Protected bike lane	6-foot bicycle lane
E Idaho Ave	SE Fourth St	Bike Lane Begin	4	30	24,200		2 64 feet	Commercial Corridor	High	Protected bike lane	Shared-use path
E Idaho Ave	Bike Lane Begin	Snake River	3	35	23,900		2 80 feet (or more)	Commercial Corridor	High	Shared-use path	Protected bike lane
N Oregon St	NW Ninth St	A Pl	3	35			1 50 feet	Suburban Fringe	Low	Buffered bike lane (2-5 foot painted buffer)	6-foot bike lane
N Oregon St	A Pl	Manor Way	4	45			1 38 feet	Suburban Fringe	Low	Protected bike lane	Buffered bike lane (2-5 foot painted buffer) with 35 MPH speed limit
N Oregon St	Manor Way	NW Eighth Ave	4	45	2,700		1 42 feet	Suburban Fringe	Low	Protected bike lane	Buffered bike lane (2-5 foot painted buffer) with 35 MPH speed limit
N Oregon St	NW Eighth Ave	NW Fourth Ave	3	30			1 62 feet	Residential Corridor	Medium	Buffered bike lane (2-5 foot painted buffer)	Protected bike lane
N Oregon St	NW Fourth Ave	NW Second Ave	3	30			1 60 feet	Urban Mix	High	Buffered bike lane (2-4 foot painted buffer)	6-foot bike lane
N Oregon St	NW Second Ave	NW First Ave	3	20			1 56 feet	Urban Mix	High	Buffered bike lane (2-4 foot painted buffer)	6-foot bike lane
N/S Oregon St	NW First Ave	SW Fourth Ave	2	20			1	50 Traditional Downtown	High	Shared lane (sharrows)	6-foot bike lane Protected bike lane
Washington Ave	Verde Dr	Highway 201	4	35			1 40 feet	Suburban Fringe	Low	Buffered bike lane (2-5 foot painted buffer)	4-5 foot shoulder
Washington Ave	Highway 201	Park Blvd	3	35			2 72 feet	Suburban Fringe	Low	Buffered bike lane (2-5 foot painted buffer)	Protected bike lane
Washington Ave	Park Blvd	NW Ninth St	3	35			1 50 feet	Suburban Fringe	Low	Buffered bike lane (2-5 foot painted buffer)	Protected bike lane
NW Fourth Ave	City Limit	Tori Dr	4	35			1 24 feet	Residential Corridor	Medium	Buffered bike lane (2-5 foot painted buffer)	6-foot bike lane
NW Fourth Ave	Tori Dr	NW Ninth St	2	25			1 42 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
NW Fourth Ave	NW Ninth St	N Oregon St	2	25			1 34 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows) Shared lane
SW Fourth St	W Idaho Ave	SW Fourth Ave	3	25	2,700		1 46 feet	Urban Mix	High	6-foot bike lane	Buffered bike lane (2-4 foot painted buffer) Shared lane
SW Fourth St	SW Fourth Ave	SW 11th Ave	3	25	2,700		1 46 feet	Residential Corridor	Medium	6-foot bike lane (No improvement needed)	Buffered bike lane (2-5 foot painted buffer)
SW Second St	W Idaho Ave	SW Fourth Ave	3	20			1 46 feet	Traditional Downtown	High	Shared lane (sharrows)	6-foot bike lane
SW Second St	SW Fourth Ave	SW 11th Ave	1	25			1 32 feet	Residential Corridor	Medium	Shared lane (sharrows)	Shared lane with enhanced bike route
SE Second St	E Idaho Ave	SE Ninth Ave	2	25			1 46 feet	Urban Mix	High	Shared lane (sharrows)	Shared lane with enhanced bike route
SE Second St	SE Ninth Ave	City Limit	3	25	1,600		1 28 feet	Suburban Fringe	Low	6-foot bike lane	Shared lane
SE Second St	City Limit	SE 18th Ave	3	35	1,600		1 26 feet	Suburban Fringe	Low	6-foot bike lane	Buffered bike lane (2-5 foot painted buffer)
East Ln	E Idaho Ave	SE Fifth Ave	3	25	9,200		1 42 feet	Commercial Corridor	High	6-foot bike lane	6-foot bike lane Buffered bike lane (2-5 foot painted buffer)
E Idaho Ave Area Roads	N/A	N/A	1 or 2	25			1 50 feet	Commercial Corridor	High	Shared lane (sharrows)	Buffered bike lane (2-5 foot painted buffer)
Sunset Drive	SW Fourth Ave	SW 18th Ave	2	25	850		1 24 feet	Suburban Fringe	Low	Shared lane (sharrows)	
NW Eighth Ave	NW Ninth St	N Oregon St	2	25			1 34 feet	Residential Corridor	Medium	Shared lane (sharrows)	
SW Second Ave	SW 10th St	S Oregon St	1	25			1 44 feet	Traditional Downtown	High	Shared lane (sharrows)	Shared lane with enhanced bike route
SE Ninth Ave	SE Second St	SE Claude Rd	2	25			1 46 feet	Suburban Fringe	Low	Shared lane (sharrows)	
SE Claude Rd	SE Ninth Ave	SE 13th Ave	1	25			1 40 feet	Suburban Fringe	Low	Shared lane (sharrows)	
NW/SW Sixth St	NW Eighth Ave	Ontario MS	1	25			1 36 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
SW Sixth St	Ontario MS	SW Fifth Ave	1	25			1 48 feet	Traditional Downtown	High	Shared lane with enhanced bike route	Shared lane (sharrows)
Fortner St	N Oregon St	NW Fourth Ave	2	25			1 36 feet	Residential Corridor	Medium	Shared lane (sharrows)	
SW 14th St	Alameda Dr	SW Fourth St	2	25			1 36 feet	Suburban Fringe	Low	Shared lane (sharrows)	
Sears Drive	NW Fourth Ave	NW 12th St	1	25			1 36 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
NW/SW 12th St	Sears Drive	SW Fourth Ave	1	25			1 36 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
SW 12th St	SW Fourth Ave	Locust Way	1	25			1 36 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
Locust Way	SW 12th St	SW 11th St	1	25			1 36 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
SW 11th St	Locust Way	SW 14th Ave	1	25			1 34 feet	Residential Corridor	Medium	Shared lane with enhanced bike route	Shared lane (sharrows)
SW Eighth Ave	SW 12th St	Alameda Dr	1	25			1 36 feet	Residential Corridor	Medium	Shared lane (sharrows)	
Alameda Dr	SW Eighth Ave	SW 18th Ave	2	25			1 40 feet	Suburban Fringe	Low	Shared lane (sharrows)	
SW 11th Ave	SW Second St	Park Blvd	1	25			1 26 feet	Suburban Fringe	Low	Shared lane (sharrows)	
Park Blvd	SW 11th Ave	SW 18th Ave	2	25			1 26 feet	Suburban Fringe	Low	Shared lane (sharrows)	
Park Blvd	SW Fifth Ave	End of Roadway	2	25			1 40 feet	Residential Corridor	Medium	Shared lane (sharrows)	

Attachment C NCHRP 562 Research Report Sheets

- ▬▬▬▬ Potential Crossing Improvement
- ▬ Existing Crosswalk
- Bus Stop
- ## Two Way Peak Hour Volume
- Improvement to Existing Crossing



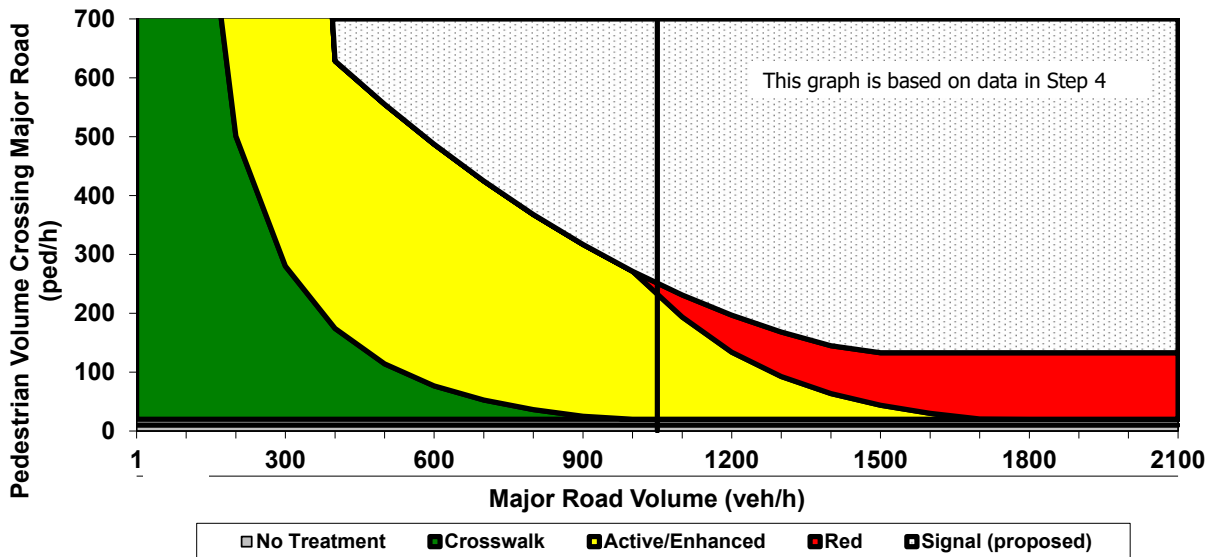
GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

Key	
	Blue fields contain descriptive information.
	Green fields are required and must be completed.
	Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).
	Gray fields are automatically calculated and should not be edited.

This spreadsheet is still under development, please inform TTI if errors are identified.

Analyst and Site Information			
Analyst	KAI	Major Street	East Lane
Analysis Date	September 1, 2020	Minor Street or Location	Walmart Lot Adjacent to Bus Stop
Data Collection Date		Peak Hour	PM
Step 1: Select worksheet:			
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)		1a	25
Is the population of the surrounding area <10,000? (enter YES or NO)		1b	no
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?			
Peak-hour pedestrian volume (ped/h), V_p		2a	10
Result: Consider raised median islands, curb extensions, traffic calming, etc. as feasible.			
Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?			
Major road volume, total of both approaches during peak hour (veh/h), V_{maj-s}		3a	1050
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant		3b	251
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant		3c	251
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter YES or NO)		3d	no
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50%.	% rate of reduction for 3c (up to 50%)	3e	
	Reduced value or 3c	3f	251
Result:			
Step 4: Estimate pedestrian delay.			
Pedestrian crossing distance, curb to curb (ft), L		4a	45
Pedestrian walking speed (ft/s), S_p (suggested speed = 3.5 ft/s)		4b	3.5
Pedestrian start-up time and end clearance time (s), t_s (suggested start-up time = 3 sec)		4c	3
[Calculated automatically] Critical gap required for crossing pedestrian (s), t_c		4d	16
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), V_{maj-d}		4e	1050
Major road flow rate (veh/s), v		4f	0.29
Average pedestrian delay (s/person), d_p		4g	323
Total pedestrian delay (h), D_p The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.		4h	0.9
		4i	
Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.			
Expected motorist compliance at pedestrian crossings in region: enter HIGH for High Compliance or LOW for Low Compliance		5a	high
Treatment Category:		Consider raised median islands, curb extensions, traffic calming, etc. as feasible.	



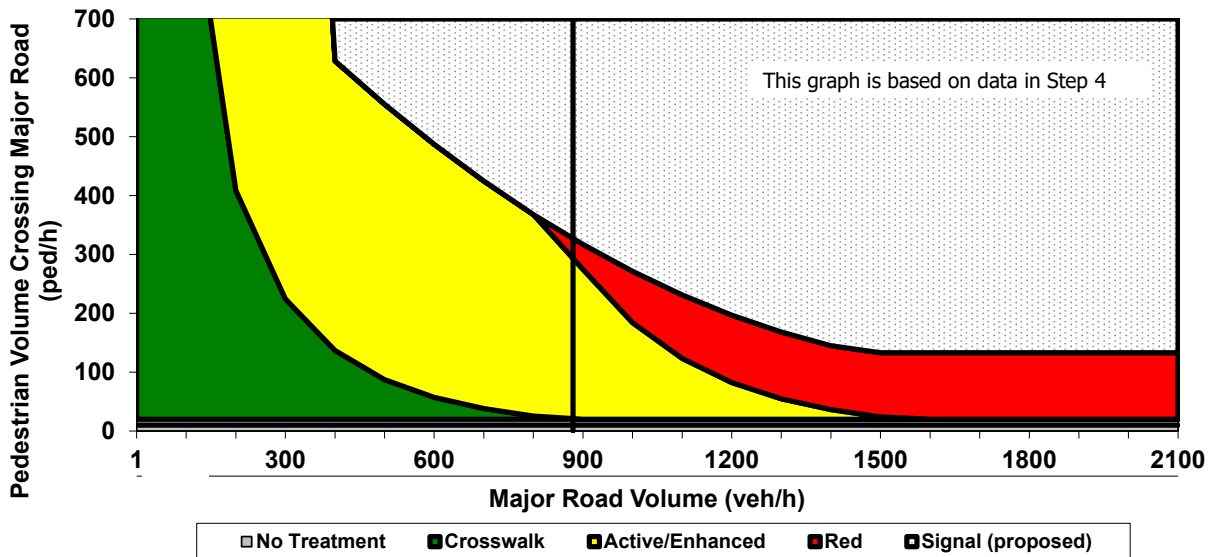
This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.

GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69-70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

Blue fields contain descriptive information.	This spreadsheet is still under development, please inform TTI if errors are identified.
Green fields are required and must be completed.	
Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).	
Gray fields are automatically calculated and should not be edited.	

Analyst and Site Information		
Analyst	KAI	Major Street: East Lane
Analysis Date	September 1, 2020	Minor Street or Location: GameStop and Walmart Parking Lots
Data Collection Date		Peak Hour: PM
Step 1: Select worksheet:		
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)	1a	25
Is the population of the surrounding area <10,000? (enter YES or NO)	1b	no
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?		
Peak-hour pedestrian volume (ped/h), V_p	2a	10
Result: Consider raised median islands, curb extensions, traffic calming, etc. as feasible.		
Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?		
Major road volume, total of both approaches during peak hour (veh/h), V_{maj-s}	3a	880
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant	3b	327
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant	3c	327
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter YES or NO)	3d	no
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce 3c by up to 50%.	% rate of reduction for 3c (up to 50%)	3e
	Reduced value or 3c	3f
Result: 327		
Step 4: Estimate pedestrian delay.		
Pedestrian crossing distance, curb to curb (ft), L	4a	50
Pedestrian walking speed (ft/s), S_p (suggested speed = 3.5 ft/s)	4b	3.5
Pedestrian start-up time and end clearance time (s), t_s (suggested start-up time = 3 sec)	4c	3
[Calculated automatically] Critical gap required for crossing pedestrian (s), t_c	4d	17
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), V_{maj-d}	4e	880
Major road flow rate (veh/s), v	4f	0.24
Average pedestrian delay (s/person), d_p	4g	242
Total pedestrian delay (h), D_p The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.	4h	0.7
	4i	
Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.		
Expected motorist compliance at pedestrian crossings in region: enter HIGH for High Compliance or LOW for Low Compliance	5a	high
Treatment Category:	Consider raised median islands, curb extensions, traffic calming, etc. as feasible.	



This worksheet provides general recommendations on pedestrian crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment for installation. This worksheet does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a pedestrian treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.