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DRAFT Technical Memorandum #3- Alternatives Analysis

Project #: 18974

Date: October 15, 2015

To: Technical Advisory Committee & Citizen Advisory Committee

From: Ashleigh Griffin, Nick Foster, AICP, and Marc Butorac, PE, PTOE; Kittelson & Associates
Jeremy Morris, PE; Adkins Consulting Engineering

Subject: Klamath Falls Urban Trail Master Plan – Alternatives Analysis

This memorandum provides an assessment of project alternatives to be included in the Klamath Falls Urban Trail Master Plan. It concludes with the project team's preliminary recommendation for the final set of projects to be included in the plan.

BACKGROUND

The Klamath Falls Urban Trail Master Plan will identify and coordinate opportunities to create seamless connections between the urban trails and nearby attractions as well as nearby pedestrian and bicycle facilities. The intent of the Klamath Falls Urban Trail Plan is to identify key pedestrian and bicycle connections to the existing trail system and to identify key gaps and deficiencies of the trail system. The Plan is not a full pedestrian and bicycle plan; gaps in the pedestrian and bicycle system that do not relate to trail access are not included in this study.

PLAN ELEMENTS

The final Klamath Falls Urban Trail Master Plan will include the following elements, which will be prioritized in the final Plan:

- **Projects** – capital investment made to improve the existing trail system and the bicycle and pedestrian system that connect to it. Examples include new shared-use paths, bicycle lanes, sidewalks, and crosswalks. In some cases, these projects could be implemented as pilot, or test, projects for a certain time period and then modified based on the evaluation during this period for final implementation.
- **Policies** – statements adopted in the Klamath Falls Urban Trail Plan that are intended to influence and guide decisions and actions related to pedestrian and bicycle planning. As an example, policies could relate to requirements for new developments to incorporate bicycle parking or provide pedestrian and bicycle facilities.
- **Programs** – plans of action aimed at accomplishing an identified County or City goal(s) that commonly include details on what work is to be done, by whom, when, and the intended

outcome of the action. An example is implementing a program to install wayfinding signage at all trail crossings and trailheads.

- **Future Studies** – research and investigation to be completed after the Klamath Falls Urban Trail Master Plan is completed. Such studies will not be done during the Urban Trail Master Plan process due to lack of available data, a need for guidance and/or analysis from responsible agencies, and/or the need for a focused public involvement and analysis process beyond the Urban Trail Master Plan scope of work and budget.

Note that the term "project" is used throughout this memorandum to refer to plan elements for ease and brevity. For example, the "projects" for evaluation described in the next section include all elements of the Plan, including capital projects, policies, programs, and future studies.

ALTERNATIVES EVALUATION

Projects have been developed to address the gaps and deficiencies identified in Technical Memorandum #2. These gaps and deficiencies were identified from feedback from the general public and project advisory committees and the project team's evaluation. In many instances, multiple alternative projects for a single gap or deficiency are presented in this memorandum, along with the project team's assessment of the options. Project alternatives are based on feedback from the advisory committee and the general public, the 2012 Klamath Falls Urban Area Transportation System Plan, and the project team's experience with developing bicycle and pedestrian projects.

The project team's recommendations include specific projects (e.g. stripe a bicycle lane, add beacons to a crosswalk) whenever possible. However, there are instances when more information is needed that is beyond the scope of this area-wide plan and the recommendation is for further study.

The recommendations were selected based on the overall project goal of identifying low-cost, easy to implement solutions that provide comfortable and convenient access to the trail system for a wide range of people. For instance, the recommended projects for improving the bicycle system are only those types of facilities that most adults would feel comfortable bicycling on (i.e. Level of Traffic Stress 1 or 2). Table 1 summarizes the potential types of bike facilities that would be required to meet this objective on different types of roads. Note that the table provides general guidelines and site specific characteristics (e.g., number and type of driveways, traffic volumes) are also considered in our recommendations.

Table 1 Bicycle Facility Suitability Matrix

Speed Limit	# of Lanes	Suitable Bike Facility Types				
		Shared Lane[1]	Bike Lane	Buffered Bike Lane	Protected Bike Lane	Shared-use Path
<=25 MPH	2-3	Y	Y	Y	Y	Y
	>3	-	-	Y	Y	Y
30 MPH	2-3	M[2]	Y	Y	Y	Y
	>3	-	-	Y	Y	Y
35 MPH[3]	2-3	-	-	Y	Y	Y
	>3	-	-	Y	Y	Y
>=40 MPH[3]	2-3	-	-	-	Y	Y
	>3	-	-	-	Y	Y

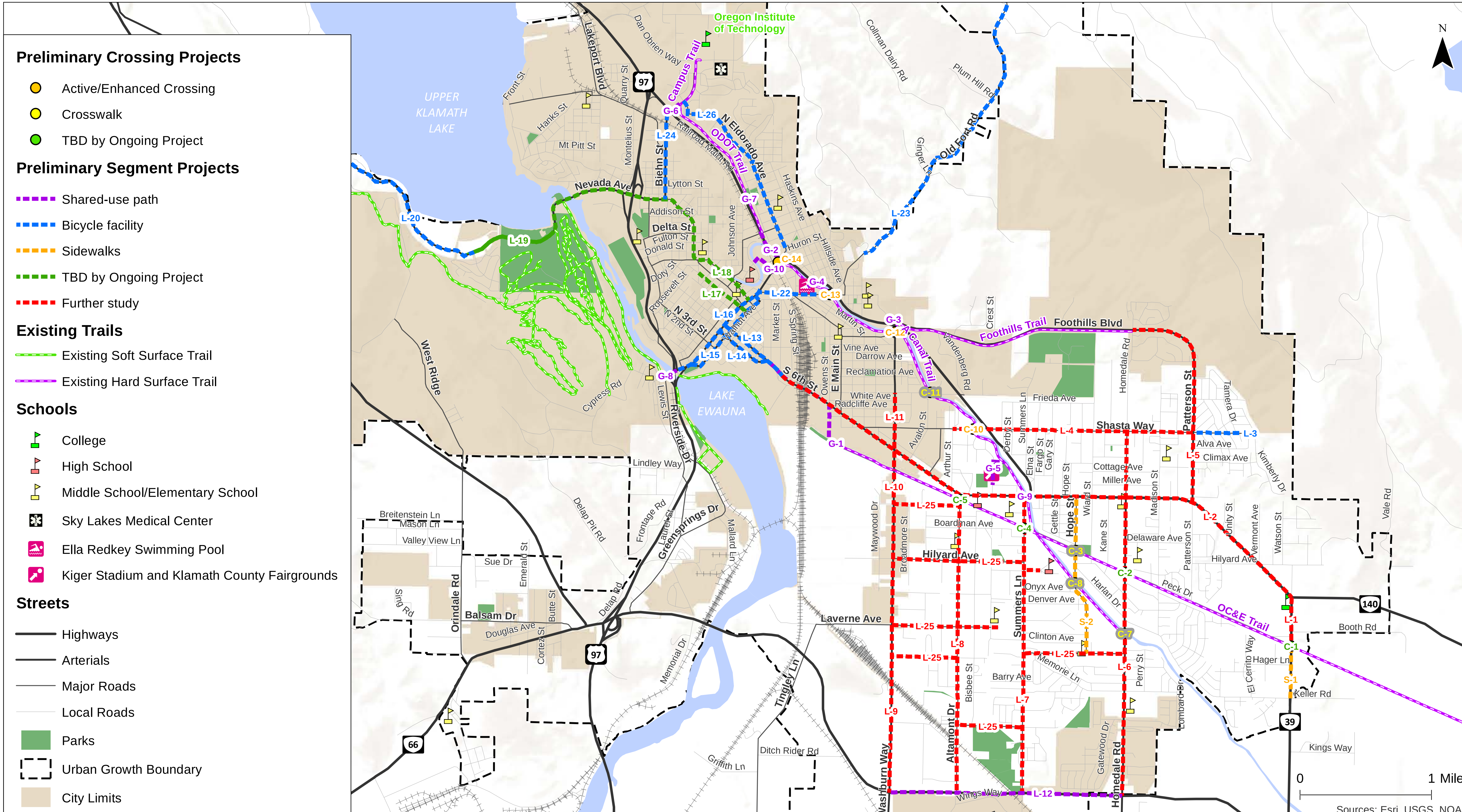
[1]Includes streets with sharrows
[2]Suitable treatment only if traffic volumes are low and there is no centerline on the roadway
[3]On higher speed roadways where a protected bike lane is not feasible and/or desirable, the best option may be to provide a parallel route on lower speed roadways

Further, whenever possible, the lowest cost means to implement a project is recommended. This consideration typically occurs when evaluating how to install some type of bike lane or provide an enhanced crossing. Restriping a roadway to provide a bike lane, as opposed to widening the roadway, is generally recommended. Instances where restriping may necessitate the removal of a motor vehicle travel lane or center turn lane will likely require further study and detailed public involvement before they can be implemented.

PROPOSED PROJECT LIST

Table 2 summarizes the preliminary project list. The locations of each project are shown in Figure 1. The complete evaluation matrix, which includes all alternatives that were considered, is provided in *Attachment A*. The columns in the table below describe:

- **ID:** unique identifying number assigned to each proposed project, corresponding to the need identified in Technical Memorandum #2.
- **Location Name/Description:** general description of the location of the issue, including the boundary of the issue.
- **Issue:** description of the issue (gap, deficiency, etc.)
- **Project Description:** a description of the proposed project with key elements identified
- **Category:** projects are classified into general categories based on plan element type, with capital projects further categorized into shared-use path, crossing, bicycle facility, and sidewalk.
- **Benefits:** a brief discussion of the benefits of the proposed project.
- **Cost estimate:** planning-level cost estimate, intended to provide a sense of magnitude.
- **Considerations:** other site-specific characteristics or factors that warrant unique consideration in the project development phase.



Preliminary Projects
Klamath Falls, Oregon

Figure
1

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Table 2 Preliminary Project List

ID*	Location	Issue	Project Description	Category	Benefits	Cost Estimate^	Considerations
G-1	End of the OC&E Trail to Downtown Klamath Falls	Trail ends without obvious connection to downtown.	Connect the trail via 6th Street bridge by widening sidewalk to provide for shared-use path.	Shared-use path; crossing	Lower cost and easier to implement than dedicated bridge.	$507,000	May require the crossing of 6th Street and ramps on/off the bridge; Requires trail users to travel to 6th Street.
G-2	Connecting the "A" Canal Trail to the ODOT Trail	There is currently a ¼-mile gap between these two trails and a crossing of Crater Lake Parkway.	Connect the trail using US 97 by widening the sidewalks to provide for shared-use path.	Shared-use path	Lower cost to implement and maintain.	$68,000	Requires crossing Crater Lake Highway; Requires a trail crossing of Esplanade Avenue; Requires widening the sidewalk on the bridge to connect the A Canal Trail to the signalized intersection.
G-3	Connecting the "A" Canal Trail to the Foothills Trail	The Foothills Trail ends at the intersection of Foothills Boulevard/Crater Lake Parkway, and there is a gap between the intersection and the "A" Canal trail south of the canal.	Widen the sidewalk on one side (east) of the bridge to provide a shared use path between the intersection and the "A" Canal trail, and install an enhanced trail crossing of Washburn Way where the "A" Canal trail crosses. Tighten the curb radius for NB right-turns onto Crater Lake Parkway.	Shared-use path; crossing	This option uses the existing signalized crossing as well as sidewalks and bike lanes south of OR 39 to complete the transition. By expanding the sidewalk to a path on the east side, it allows southbound bicyclists to continue from the Foothills Trail to the "A" Canal trail eastbound with only one crossing. Project could be phased in. Tightening the curb radius will slow down right-turn making the crossing more comfortable.	$60,000	Accommodating the shared-use path on the bridge may require either removing the bike lanes or lane width reductions; Requires a trail crossing of Washburn Way.
G-4	Connecting the "A" Canal Trail to the Ella Redkey Swimming Pool	The trail is grade separated from the pool.	Connect the trail by installing a shared-use path between the parking lot/front entrance to the pool and the existing "A" Canal Trail.	Shared-use path	Low cost, short trail connection needed.	$15,000	May require right-of-way or an easement.
G-5	Connecting the "A" Canal Trail to the Kiger Stadium and Klamath County Fairgrounds	The trail is grade separated from these locations.	Install a shared-use path from the "A" Canal Trail to Crest Street (just north of the Kiger Stadium parking lot) with a short connection to Kiger Stadium, and continue the shared use path south along Crest Street to the fairgrounds.	Shared-use path	Provides facility for both pedestrians and bicyclists; Separates pedestrians and bicyclists from vehicles at Kiger Stadium.	$145,000	May require right-of-way or an easement to reach Crest Street; More costly than only connecting to the Stadium.
G-6	Campus Trail to Biehn Street Connection	There is a gap between the Campus Trail and the bike lane on Biehn Street, which connects to Oregon Avenue and downtown Klamath Falls.	Widen the sidewalk on the south side of Campus Drive to complete the shared-use path connection.	Shared-use path	This connection would also connect with the ODOT trail; Uses the existing intersection of Crater Lake Parkway/Biehn Street to complete the highway crossing.	$47,000	Southbound cyclists coming from the Campus Trail would use the crosswalks at the signalized intersection to transition to bike lanes; Modifications to the Crater Lake Parkway intersection may be required to create a comfortable crossing.
G-7	Connecting the ODOT Trail to Kit Carson Park	The ODOT Trail travel adjacent to the park, but a fence separates the park from the trail.	Construct a connection between the trail and the parking lot or existing sidewalk connecting the street to the park.	Shared-use path	Low cost, short trail connection needed.	$18,000	May require right-of-way or an easement.
G-8	Veteran's Park Trail Connections	There are no bicycle connections between Veteran's Park and the Link River Trail.	Widen the sidewalk on the north side of Main Street to provide for a shared use path to connect Veteran's Park with the Link River Trail. Install a crossing across Main Street west of the park road's access to Main Street to connect Veteran's Park with the path.	Shared-use path; crossing	Provides a separated facility for pedestrians and bicyclists between two popular destinations.	$51,000	Lanes will have to be narrowed on the bridge to accommodate the shared-use path; An additional crossing of Main Street may be needed on the west side of the bridge.
G-9	"A" Canal Trail Crossing at SW 6th Street	The trail crosses SW 6th Street approximately 40 feet east of the crosswalk at the signalized intersection of Summers Lane/SW 6th Street.	Widen the sidewalk on the south side of SW 6th Street to better accommodate bicyclists connecting to the signalized crossing.	Shared-use path	Low cost; requires minimal out of direction travel.	$7,000	Will need to verify there is sufficient right-of-way.
G-10	"A" Canal Trail Connection to Klamath Union High School	There is no connection for bicyclists between the "A" Canal Trail and the high school.	Widen the sidewalk on the north side of Esplanade Avenue to provide a shared-use path to the high school.	Shared-use path	There appears to be adequate width available under the railroad bridge to complete the widening. Provides connection for bicyclists between the trail and high school.	$127,000	The trail will likely need to come in through the schools's ball fields on the peninsula due to limited width on the southern section of Esplanade. ROW/easement will be needed from the school. The bridge will need to be used to complete the crossing from this direction.
G-11	Trail Signing/Wayfinding	Wayfinding and trail signs are generally absent, including near the OC&E trailheads. Signage provides an opportunity to increase awareness and use of the trail system for residents and visitors.	Develop a program to install and maintain wayfinding signage at all trailheads and trail crossings of public streets.	Program	Signage provides an opportunity to increase awareness and use of the trail system for residents and visitors.	--	Will need to determine who is responsible for the signs.
G-12	Bicycle Parking	Bicycle parking is absent from many destinations, including some parks.	Develop policy that requires bicycle parking to be provided at key locations and pursue grant funding to provide it at key locations where it is missing.	Policy/Program	The policy would help future developments or redevelopment locations obtain bicycle parking. Pursuing grant funding for existing locations in need will help fill-in existing gaps.	--	
C-1	OR 39: OC&E Trail Crossing	This crossing is currently only marked with a sign. The NCHRP 562 treatment recommendation is an Active/Enhanced crossing.	TBD by ongoing ODOT and Oregon Parks study	Crossing			
C-2	Homedale Road: OC&E	This crossing is currently not marked or signed. The NCHRP 562	TBD by ongoing ODOT and Oregon Parks study	Crossing			

ID*	Location	Issue	Project Description	Category	Benefits	Cost Estimate^	Considerations
	Trail Crossing	treatment recommendation is a crosswalk.					
C-3	Hope Street: OC&E Trail Crossing	This crossing is currently marked with a sign. The NCHRP 562 treatment recommendation is a crosswalk.	Install striped crosswalk and appropriate signage.	Crossing	Low cost.	$2,000	Consider installing illumination at the crossing as well (it is currently located nearby but not at the crossing).
C-4	Summers Lane: OC&E Trail Crossing	This crossing is currently only marked with a sign. The NCHRP 562 treatment recommendation is an Active/Enhanced crossing.	TBD by ongoing ODOT and Oregon Parks study	Crossing			
C-5	Altamont Drive: OC&E Trail Crossing		TBD by ongoing ODOT and Oregon Parks study				
C-7	Homedale Road: A Canal Trail Crossing	This crossing is currently marked with a sign. The NCHRP 562 treatment recommendation is a crosswalk.	Install marked crosswalk and appropriate signage.	Crossing	Low cost.	$2,000	Consider installing illumination at the crossing as well (there is not existing illumination on Homedale Road in the crossing vicinity).
C-8	Hope Street: A Canal Trail Crossing	This crossing is currently marked with a sign. The NCHRP 562 treatment recommendation is a crosswalk.	Install marked crosswalk and appropriate signage.	Crossing	Low cost.	$2,000	Consider installing illumination at the crossing as well (there is no existing illumination in the vicinity); Sight distance from the south should be verified.
C-10	Shasta Way: A Canal Trail Crossing	This crossing is currently only marked with a sign. The NCHRP 562 treatment recommendation is an Active/Enhanced crossing.	Install pedestrian refuge island and RRFBs where the trail crosses.	Crossing	Provides a refuge for pedestrians; Does not require out of direction travel to use the crossing; Existing pavement width would accommodate the refuge.	$46,000	Would likely require closing the westbound left-turn lane.
C-11	Eberlein Avenue: A Canal Trail Crossing	This crossing is currently marked with a sign. The NCHRP 562 treatment recommendation is a crosswalk.	Install marked crosswalk and appropriate signage.	Crossing	Low cost.	$2,000	
C-12	Washburn Way: A Canal Trail Crossing	This crossing is currently only marked with a sign. However, it is in close proximity to a traffic signal. The NCHRP 562 treatment recommendation is an Active/Enhanced crossing.	Install enhanced crossing with refuge island and RRFBs at the trail crossing (near-term). Install grade-separated crossing (long-term).	Crossing	Does not require out of direction travel to use the crossing.	$56,000	Would restrict the length of the northbound left-turn lane at the intersection of Washburn Way/OR 39 if a pedestrian refuge island is installed; Advanced RRFBs may installed to warn vehicles turning onto Washburn Way when a pedestrian has activated the RRFB.
C-13	Main Street: A Canal Trail Crossing	This crossing is currently not marked or signed. The NCHRP 562 treatment recommendation is an Active/Enhanced Crossing.	Install enhanced crossing with refuge island and RRFBs at the trail crossing (near-term). Install grade-separated crossing (long-term).	Crossing	Does not require out of direction travel to use the crossing.	$56,000	The 4-lane cross section is approximately 60-ft of pavement, which may provide adequate width to widen for a refuge island; Queuing from the intersection of Main Street/OR 39 may block the crossing at times; Advanced RRFBs may installed to warn vehicles turning from Crater Lake Parkway onto Main Street when a pedestrian has activated the RRFB.
C-14	Esplanade Avenue: A Canal Trail Crossing	This crossing is currently not marked or signed. The NCHRP 562 treatment recommendation is an Active/Enhanced Crossing.	Install enhanced crossing with refuge island and RRFBs at the trail crossing (near-term). Install grade-separated crossing (long-term).	Crossing	Provides a direct crossing. The island provide the potential for a two-stage crossing.	$56,000	Advanced RRFBs may be needed on OR 39. Queuing from the intersection of Esplanade Avenue/OR 39 may block the crossing at times. The left-turn lane on Esplanade Avenue may need to be shortened to accommodate a refuge island.
L-3	Shasta Way (Patterson Street to Kimberly Drive)	This segment has a LTS of 4. It Is currently a two-lane road with a marked centerline and pavement width of approximately 22 feet.	Install sharrows and traffic calming.	Bicycle Facility	Width is not sufficient for bike lanes. Appears to be relatively low-volume street. The sharrows would alert vehicles that bicyclists share the road. Does not require roadway widening.	$43,000	Sharrows alone will not do much for the comfort of people bicycling. Traffic calming will also be required to lower the speed people are driving.
L-12	OR 140 (Washburn Way to Homedale Road)	This segment has a LTS of 4.	Install shared-use path.	Shared-use path	Installing it along the north side of the road would minimize the number of bicycle crossings of OR 140. Provides physical separation between bikes and vehicles. Provides facility for pedestrians too.	$820,000	One crossing of the railroad is involved. Requires some type of transition between OR 140 and Washburn Way (which is connected by on/off ramps). May require purchasing right-of-way. Treatments may be needed at crossings with minor streets.
L-13	6th Street (Market Street to Main Street)	This segment has a LTS of 3. There are no existing bicycle facilities on the road. The road is one-way with two travel lanes and a total pavement width of 46 feet. In the downtown area there are turn lanes and on-street parking.	Install bike lane.	Bicycle Facility	No roadway widening is required.	$8,000	One side of on-street parking may need to be removed.
L-14	5th Street (Main Street to 6th Street)	This segment has a LTS of 4. There are no existing bicycle facilities on the road. The road is one-way with two travel lanes and a total pavement width of 45 feet. In the downtown area there are turn lanes and on-street parking.	Install bike lane.	Bicycle Facility	No roadway widening is required.	$9,000	
L-15	Klamath Avenue (Conger Avenue to Commercial Street)	This segment has a LTS of 3. This is a one-way eastbound segment with no bike lanes.	Install bike lanes.	Bicycle Facility	No roadway widening is required.	$15,000	May require the removal of on-street parking on at least one side of the road to accommodate the bike lane width.
L-16	Main Street (Esplanade Avenue to Mill Street)	This segment has a LTS of 3. This is a one-way westbound segment with no bike lanes.	Install bike lanes.	Bicycle Facility	No roadway widening is required.	$15,000	
L-17	9th Street (Klamath Avenue to Prospect Street)	This segment has a LTS of 3. There are no bicycle lanes; the 2-way roadway has a minimum pavement width of 26 feet.	TBD by ongoing project				
L-18	N 11th Street (Oregon Avenue to Klamath	This segment has a LTS of 3. There are no bicycle lanes. The 2-lane roadway has a minimum pavement width of 25 feet.	TBD by ongoing project				

ID*	Location	Issue	Project Description	Category	Benefits	Cost Estimate^	Considerations
	Avenue)						
L-19	Oregon Avenue (Moore Park to Upham Street)	The segment has a LTS of 3. Although there are bike lanes, they are narrow. Actual traffic speeds are expected to be higher than posted.	TBD by ongoing project				
L-20	Lakeshore Drive (Lynnewood Blvd to West UGB)	The segment has a LTS of 3. There are no shoulders or bike lanes.	Widen the pavement to accommodate shoulders or bike lanes.	Bicycle Facility	Provides a facility for bicyclists.	$1,860,000	The road will need to be widened to accommodate paved shoulders, and the some earthwork is likely to be needed with the widening. There may be some ROW impacts associated with roadway widening.
L-22	Main Street (Esplanade Avenue to Crater Lake Parkway)	The segment has an LTS of 4. The eastern portion of the corridor is 4 lanes and 58-60 feet wide. Aerial images indicate this area is also used for on-street parking. The western portion of the corridor is approximately 54 feet wide and has two travel lanes with two sides of on-street parking. (This is also a potential connection that is relevant to project G-1. The undercrossing below the railroad tracks requires cyclists to ride in the lanes or use the narrow tunnel.)	Install bike lanes.	Bicycle Facility	Provides a facility for bicyclists.	$19,000	Between Spring Street and Crater Lake Parkway, elimination of the on-street parking or a road diet would be required to accommodate the bike lanes. The eastbound bike lane would require a transition treatment where E Main Street turns off of Main Street. The pavement width is not adequate for adding a bicycle lane under the railroad, so the sidewalk would need to be widened to accommodate bikes. A transition between the bike lanes and sidewalks would also be needed.
L-23	Old Fort Road (Loma Linda Drive to UGB)	The LTS is 4. The road is higher speed and lacks bike lanes and shoulders. This is a popular recreational route.	Widen the road to add paved shoulders or bike lanes.	Bicycle Facility	The road appears to have some gravel shoulders today, so the additional widening may be minimal.	$2,668,000	This is a long distance to pave (high cost).
L-24	Biehn Street (Crater Lake Parkway to Oregon Avenue)	The road is part of an important link between OIT and downtown. The existing bike lanes are narrow.	Widen the bike lanes by restriping the roadway.	Bicycle Facility	No pavement widening is required.	$22,000	
L-25	East-West Routes in Southeast Klamath Falls	These streets connect neighborhoods to the north-south routes that connect to the trail system.	Review routes to identify which should receive shared lane markings, wayfinding, and/or traffic calming	Bicycle Facility	Low cost improvements that could enhance comfort for people bicycling and increase the use of the trail system.	TBD	Further neighborhood outreach and speed studies may be necessary to identify specific treatments.
L-26	N Eldorado Avenue	This road lacks bicycle facilities and sidewalks on one side of the road. This road is a popular commute route to the hospital, and also connects student apartments to the campus.	Install sharrows and traffic calming.	Bicycle Facility	Posted speed limit indicates that a shared-roadway would be sufficient. The sharrows would alert vehicles that bicyclists share the road. No roadway widening is required.	$23,000	This project does not provide any new pedestrian facilities, but sidewalks exist on one side of the road.
S-1	OR 39 (OC&E trail to Keller Road)	There are no sidewalks.	Install sidewalks on both sides of the road.	Sidewalks		$396,000	May require ROW.
S-2	Hope Street (Bristol Avenue to SW 6th Street)	There are no sidewalks on Hope Street, with the exception of those around Denver Avenue.	Install sidewalks on both sides of the road.	Sidewalks	Provides connection for pedestrians between Peterson Elementary school and the OC&E and A Canal trails. The bridge over the canal already includes sidewalks.	$1,170,000	May require ROW.
					Total Cost	***$8,335,000***	

*The prefix on the ID numbers refers to the category of the issue: "G-" refers to general gaps or deficiencies; "L-" refers to segments that were identified due to having a bicycle Level of Traffic Stress (LTS) greater than 2; "C-" refers to locations with crossings that were identified for improvements; and "S-" refers to gaps in the sidewalk system.
^Please note the costs outlined above are for 2015 and are planning level estimates only that do not include right-of-way. An annual inflation rate of 3 to 5 percent should be applied when projecting costs to the future.

'A' Canal Trail Crossings

The 'A' Canal Trail crosses Washburn Way, Main Street, and Esplanade Avenue in close proximity to the Crater Lake Parkway (OR 39). None of these crossings are currently marked and require trail users to divert to the nearest signal or other location to use a marked crossing. The close proximity of the trail to the Crater Lake Parkway can present the following challenges to installing a direct crossing at the trail location:

- The crossing may require shortening the left-turn lane for traffic turning onto the highway from the street being crossed, which could cause queues of left-turning traffic to block the through travel lane.
- Right-turning traffic from the highway onto the street being crossed may be traveling at a relatively high speed and not expecting to have to stop for a person crossing the road. This is particularly a concern at Main Street, where the right-turn from the highway is channelized and not controlled by the signal.

For these locations, especially Main Street, the ideal solution would be a grade-separated crossing (e.g. a bridge over the roadway). This is our ultimate recommendation for these crossings. However, we recognize that building these grade separated crossings is likely cost-prohibitive in the near or intermediate terms and that there is a near-term desire for better crossings. Therefore, our recommendations include providing enhanced at-grade crossings, generally crossings with a median refuge island and rectangular rapid flash beacons (RRFBs) with accompanying features designed to mitigate the two challenges above. These features include advanced RRFB beacons to alert turning traffic the crossing is being used, potentially reconfiguring the free right-turn onto Main Street, and studying the locations further to determine what impact the refuge island may have on left-turn storage and whether the impact can be mitigated with signal timing modifications.

Locations for Further Study

Table 3 summarizes the locations that were identified for further study. These locations include streets where a motor vehicle travel lane or center turn lane will need to be removed in order to provide the recommended bicycle facility. A more detailed technical analysis will better identify the specific impacts such a change would have and a focused public involvement effort will determine the community's preference. In some cases, the result may be that it is more desirable to provide a parallel route on lower speed and lower volume streets that provides a similar level of connectivity.

Table 3 Locations for Further Study

ID	Location	Issue
L-1	OR 39 (OC&E Trail to OR 140)	This segment has a LTS of 3. There are no existing bicycle lanes.
L-2	6th Street (Market Street to OR 39)	This segment has a LTS of 4. This is a four-lane road with a center turn lane. There are no bike lanes.
L-4	Shasta Way (Patterson Street to Crater Lake Parkway)	This segment has a LTS of 4. No bike lanes are present, and the existing pavement width is approximately 37' wide with one travel lane in each direction and center turn lanes throughout.
L-5	Patterson Street (6th Street to Foothill Boulevard)	The segment has a LTS of 4. There are no existing bicycle lanes.
L-6	Homedale Road (OR 140 to Shasta Way)	This segment has a LTS of 4. The 3-lane cross section is approximately 37' wide throughout.
L-7	Summers Lane (OR 140 to SW 6th Street)	This segment has a LTS of 4. The 3-lane cross section is approximately 37' wide throughout.
L-8	Altamont Drive (OR 140 to OC&E Trail)	This segment has a LTS of 4. The pavement width is approximately 28' with two travel lanes.
L-9	Washburn Way (Crosby Avenue to OR 140)	This segment has a LTS of 4. Five-foot wide bike lanes are present and the cross section is 5-lanes. The pavement width is 70' wide.
L-10	Washburn Way (OC&E Trail to Crosby Avenue)	This segment has a LTS of 3. Five-foot wide bike lanes are present and the cross section is 5-lanes. The pavement width is 68' wide.
L-11	Washburn Way (Eberlein Avenue to OC&E Trail)	This segment has a LTS of 3. South of OR 39, bike lanes exist. North of OR 39, bike lanes end, and the section is 5-lanes wide (60' of pavement).

Parallel Routes

In instances where a parallel route is determined to be the most desirable way forward, wayfinding signage should be used to direct trail users to the route and to destinations along the route. Appropriate crossings of major streets should also be provided. Enhancing the route for bicycle travel through traffic calming and/or diversion measures should also be considered.

East-West Routes in Southeast Klamath Falls

East-west routes in southeastern Klamath Falls (i.e., the area roughly bounded by OR 140 to the south, Washburn Way to the west, Homedale Road to the east, and the OC&E Trail to the north) were not analyzed in Technical Memorandum #2 primarily because these routes do not provide direct trail connections. At the request of Advisory Committee members, we have reviewed the major east-west routes in this area, shown as project L-25 in Figure 1, for this memorandum. These streets generally have one travel lane in each direction, sidewalks, and posted speed limits of 25 MPH.

Given these conditions, these streets are likely to operate comfortably for many adults as shared streets for bicycling. Shared lane markings (i.e., sharrows) along with wayfinding signage would be an appropriate treatment for these routes. Traffic calming measures (e.g., bulb-outs, chicanes) could also be deployed on these streets if people are driving faster than the posted 25 MPH speed limit.

NEXT STEPS

This memorandum and preliminary project list will be reviewed by the Technical Advisory Committee (TAC) and Citizen Advisory Committee (CAC) at the next meeting on October 21, 2015. TAC and CAC

members will be invited to comment on the project list, suggest any additional alternatives that should be considered, suggest any changes to the preliminary project list, and provide their input on priorities. The project team will update this memorandum and the project list based on their feedback.

Attachment A Alternatives Evaluation Matrix