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Technical Memorandum #2- Existing System Conditions and Future System Needs Assessment

Project #: 18974

Date: September 30, 2015

To: Technical Advisory Committee & Citizen Advisory Committee

From: Ashleigh Griffin, Nick Foster, AICP, and Marc Butorac, PE, PTOE; Kittelson & Associates
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Subject: Klamath Falls Urban Trail Master Plan - Existing System Conditions and Future System Needs Assessment

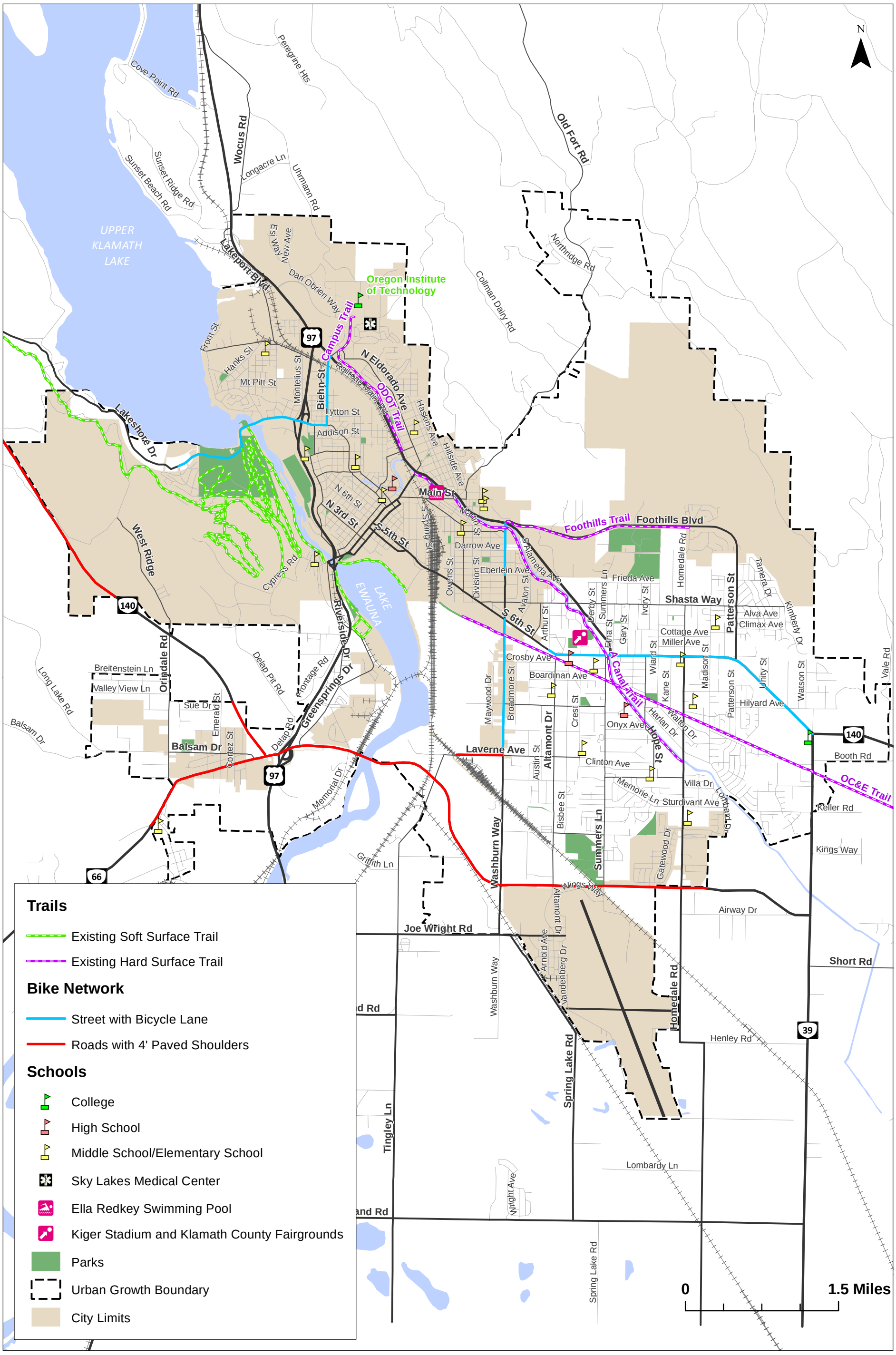
This memorandum provides an overview of the existing urban trail system in Klamath Falls and an assessment of areas in need of improvement, both now and in the future. These findings will form the basis for the recommended projects, policies, programs, pilot projects, and studies that will make up the Klamath Falls Urban Trail Master Plan.

EXISTING CONDITIONS

The following section describes the existing trail system and its condition, as well as health indicators in the Klamath Falls urban area.

Trail System Inventory

Figure 1 illustrates the inventory of the existing trail network, including on-street bicycle facilities and Figure 2 shows the trail network along with an inventory of sidewalks on arterial and collector streets in the Klamath Falls Urban Growth Boundary (UGB). These inventories use the Klamath Falls Urban Area Transportation System Plan as a starting point and have been updated to include information provided by City of Klamath Falls, Klamath County, and Oregon Department of Transportation (ODOT) staff, as well as in-person observations made by the project team and advisory committee members.



Existing Trail Network and On-Street Bicycle Facilities
Klamath Falls, Oregon

Figure **1**

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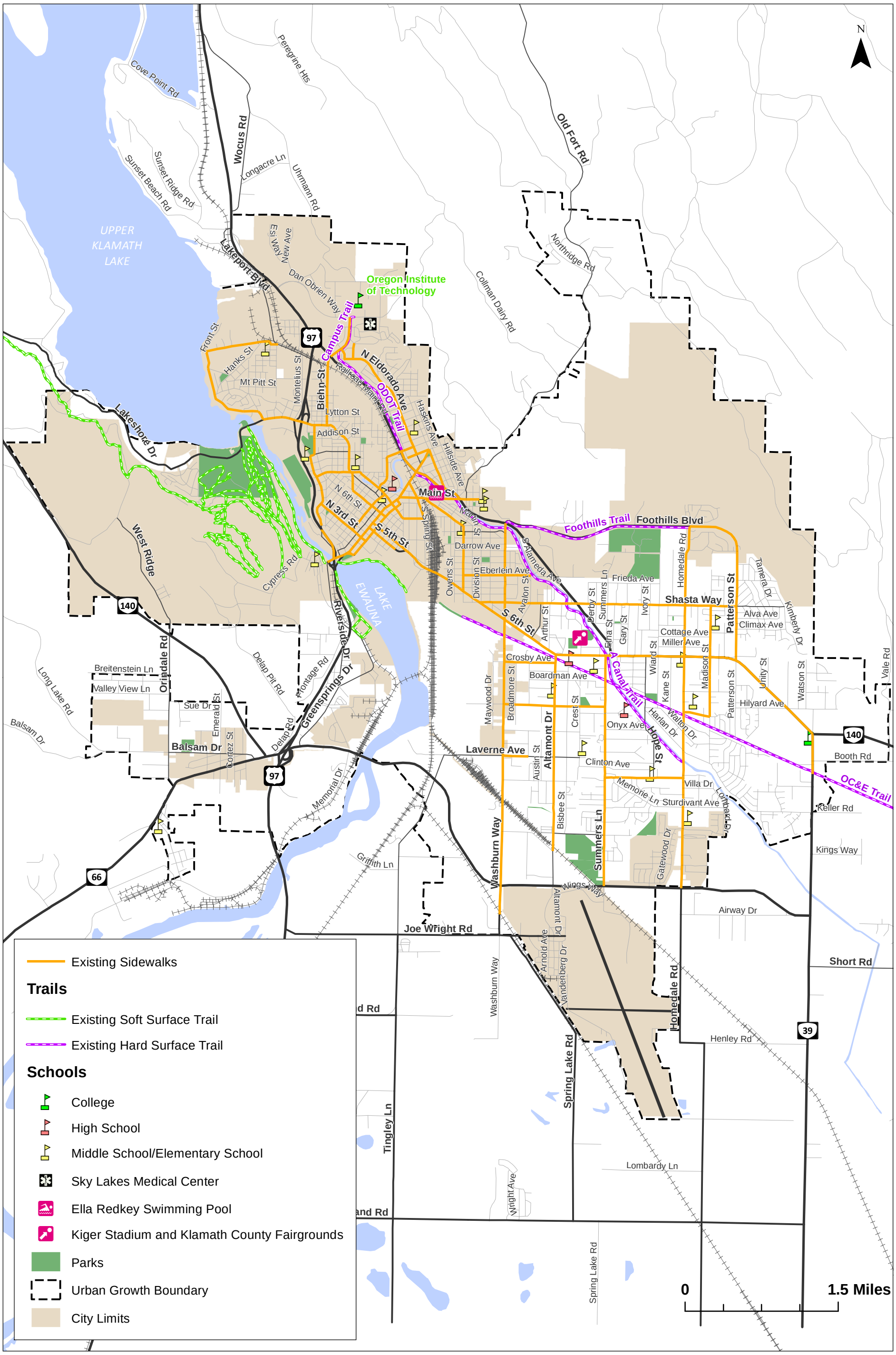

Existing Trail Network and Sidewalk Facilities
Klamath Falls, Oregon

Figure **2**

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Hard Surface Trails

Most of the trails illustrated in Figures 1 and 2 have hard surfaces and are used for both transportation and recreation purposes. These trails include:

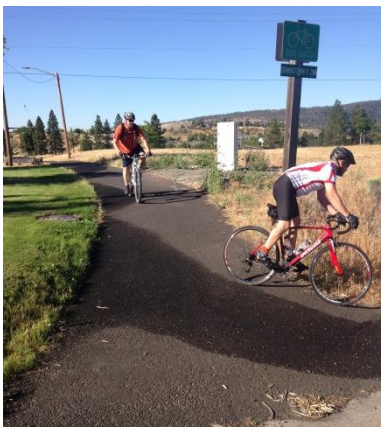
- *OC&E Trail* – This is a rail-to-trail conversion in the former railbed of the Oregon, California, and Eastern Railroad. The trail extends east from Klamath Falls to the community of Olene, before heading northeast to Bly and the Sycan Marsh Preserve. Within the Klamath Falls UGB, the OC&E Trail is 7.5-miles long and runs through neighborhoods in the central and eastern portions of the urbanized area. It nearly connects these neighborhoods to downtown Klamath Falls, but currently ends at the still-active rail tracks east of downtown. The OC&E Trail is maintained by Oregon State Parks.

OC&E Trail West of Washburn Way

- *"A" Canal Trail* – This paved trail, owned by the Bureau of Reclamation, parallels the "A" Canal from Homedale Road in the southeast portion of the urbanized area to Esplanade Avenue north of downtown Klamath Falls. Because the trail is located adjacent to the canal it is grade separated from many of the surrounding neighborhoods. The "A" Canal Trail is 4.1-miles long and crosses the OC&E Trail east of Summers Lane. A ¼-mile connection along Crater Lake Parkway is necessary to reach the Crater Lake Parkway Trail.

"A" Canal Trail West of Washburn Way

- *ODOT Trail* – This trail parallels Crater Lake Parkway (OR 39) from Portland Street to Campus Drive and the Campus Trail, which connects to the Oregon Institute of Technology (OIT) and Sky Lakes Medical Center campuses. The ODOT Trail is 1.5-miles long.
- *Campus Trail* – The Campus Trail is an asphalt path adjacent to Campus Drive and connects the ODOT Trail to Campus Drive on the southern boundary of OIT where it becomes a sidewalk. The Campus Trail is 0.4-miles long.



ODOT Trail at Campus Drive

- *Foothills Trail* – The newest trail to be added to the system, this trail is 1.8 miles long and located within the Foothills Boulevard right-of-way from the Crater Lake Parkway to Homedale Road. In addition to providing access to the surrounding neighborhoods, this trail

connects to the 150-acre Steen Sports Park, which provides facilities for a wide variety of sports and other activities year-round.

These hard surface trails listed above are the primary focus of this planning effort, given the significant role they play in the active (bicycle and pedestrian) transportation system.

Soft Surface Trails

The inventory also includes a number of soft surface (e.g., dirt, gravel) trails that are primarily used for recreation, though they may also receive some utilitarian transportation use. While adding soft surface trails is not the primary focus of this effort, understanding locations of popular recreational trails, such as the ones included in this inventory, is important because they are destinations for people using the area's transportation system. The soft surface trails shown on Figure 1 include:

- Stonehenge Trail
- Split Tree Trail
- Power Line Trail
- Autobahn Trail
- Archery Trail
- 5 Gallon Trail
- Eulalona Trail
- Link River Trail
- Rat Camp Trail
- Sidewinder Trail
- Vampire Trail
- Klamath Ridgeview Trail
- Connection Trail
- Blueberry Trail
- Buzzard Trail
- Jeep Road Trail
- Mudd Trail
- Ridgeline Trail
- Nick's Pick Trail
- Lake Ewauna Trail
- Lake Ewauna Nature Trail

Trail Conditions & Maintenance Needs

The project team reviewed the conditions of the hard-surface trails described above. Understanding the conditions of the trails is important for establishing maintenance needs and identifying priority areas. Trails in poor condition can discourage use or even present hazards to users.

Existing Conditions

The hard-surface trails in the Klamath Falls urban area were installed over many years by different agencies. Most of the trails are in good condition, though there areas of cracking, bumps, and potholes. In general, the newer the trail the better condition it is in. A brief assessment based on a field review of each trail is provided below:

- Foothills Trail (relatively new and in good condition, no major cracks observed)
- ODOT Trail (relatively new and in good condition, no major cracks observed)

- OC&E Trail (generally good condition inside the UGB, although thermal cracks are starting to become present)
- Campus Trail (generally good condition, but a mix of surfaces including concrete and asphalt)
- "A" Canal Trail (generally poor with minor thermal cracks occurring every 40 to 50 feet and major thermal cracks, large bumps, and pot holes occurring every few hundred feet. We understand some people avoid bicycling on the trail due to the presence of large cracks that tend to be repetitive and hard on bikes. In addition, the ramp crossings can be difficult to navigate for novice cyclists)

Patched Crack on OC&E Trail

Maintenance Needs

The goal of any maintenance program is to proactively address declining conditions as soon as possible. Such a program achieves the least cost for maintenance over time and the best condition possible. If maintenance is neglected past a certain point, then more expensive rehabilitation techniques are necessary. For example, related to roadways, chip seals are the least cost method for maintaining a road and cost around $0.25 per square foot, compared to $2.00 per square foot for a two-inch overlay or $8-$10 per square foot for a full roadway rebuild. The catch is that a chip seal program has to be started early in the life cycle of a roadway, it is not a fix all for roads that have alligator cracked. The life cycle costs for a 20 year program for a rebuild is $8-$10 per square foot, while the same life cycle cost for a chip seal would be less than $1 per square foot, assuming a 7 year cycle (i.e. chip sealing would occur approximately 3 times in 20 years).

The usual asphalt distress for multi-use paths is the occurrence of thermal cracks. These cracks are the response of the asphalt to hot, cold, and oxidation of oil over the lifetime of the asphalt. In addition, original construction techniques also influence certain failure mechanisms for asphalt. For instance, it is our understanding that the "A" Canal Trail is a thin lift of asphalt over marginal base. The presence of adjacent water may have also affected the compaction of the subgrade soils and aggregate base. The "A" Canal Trail has the most thermal cracks and pot holes of the local trails.

Table 1 summarizes life cycle maintenance costs broken down into annual costs for maintenance need to maintain the trails in their current condition. The actual costs any given year will vary from the annual costs shown in the table because each action is not performed every year (e.g., a two-inch overlay is prorated over a 20-year period of time). The portion of the estimated annual costs that aren't outlaid each year for maintenance should be put into a long term maintenance account and allowed to build for the years when more maintenance is required.

Table 1 Estimated Annual Maintenance Costs

Maintenance Action	Frequency	Estimated Annual Cost
Site Visit and documentation of conditions, safety hazards	2x/year (Spring/Fall)	$900[1]
Longitudinal striping and repainting of stop bars	Every 5 Years	$2,000[2]
Crack seal minor cracks less than 1" wide	Every 1 Year	$2,700[3]
Crack seal major cracks greater than 1" wide	Every 1 Year	$3,400[4]
Repair pot holes with patch	Every 1 Year	$1,000[5]
Inspect signs and replace as needed	Every 5 Years	$500[5]
2" hot mix overlay	Every 20 Years	$79,000[6]
Total Annual Cost (with 20-year overlay)		**$89,500**
Total Annual Cost (without 20-year overlay)		**$10,500**

[1]0.5 hours/mile x 15.3 trail miles x 2 times/year
[2]$0.50 x 15.3 miles x 5,280 feet/mile x 25% length / 5 years
[3]Assumes topical crack seal applied at a cost of $1/foot of crack, with cracks occurring every 100 feet on 10-foot wide trails.
[4]Assumes sawcutting and hot mix patch is necessary at a cost of $5/foot of crack, with cracks occurring every 200 feet on 10-foot wide trails.
[5]Lump sum estimate
[6]2" overlay x 0.0065 tons/inch/square foot x 15.3 miles x 5,280 feet/mile x 10 feet wide x $150/ton / 20 yrs.

Please note the costs outlined above are for 2015. An annual inflation rate of 3 to 5 percent should be applied when projecting costs to the future.

Existing Trail Use

Oregon State Parks uses automated counters to estimate the number of people walking and biking at two entrances to the OC&E Trail; one near the Main entrance off Crosby Street and one near Wiard Park. Figure 3 illustrates the average monthly count at these two locations from January 2012 through July 2015. Per discussions with Oregon State Parks staff, these counts should be considered approximate as many people who pass by these entrances do not walk or bike by the counters themselves. Therefore, actual usage is likely higher than shown in the figure.

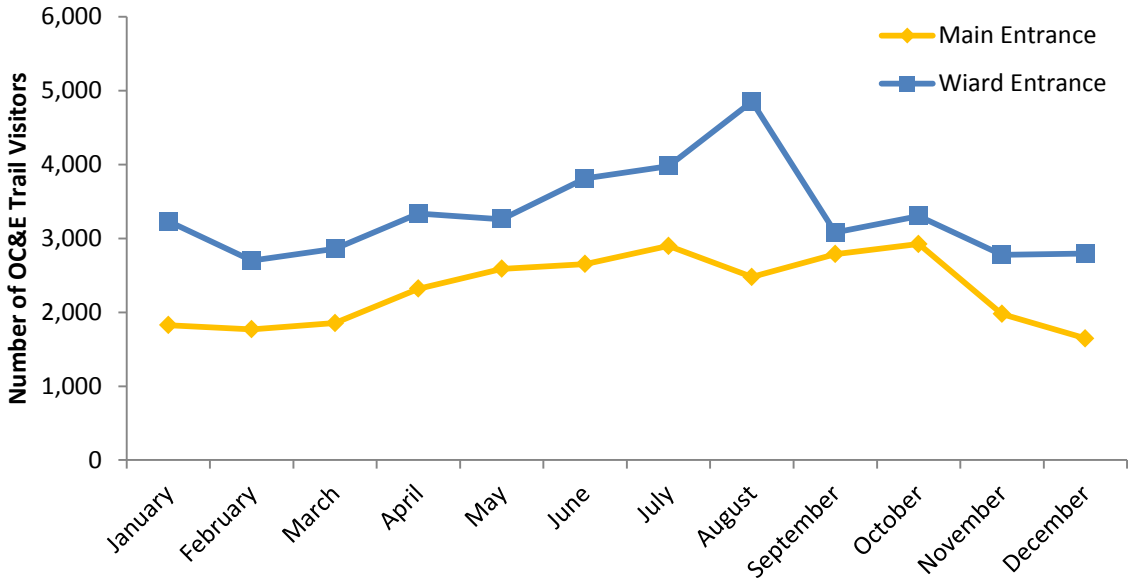


Figure 3 Average Monthly Counts at OC&E Trail Entrances (January 2012 – July 2015)

Both entrances see peak usage during the summer months. Wintertime counts are approximately 50-70% of peak summertime use.

Public Health

According to County Health Rankings, a program of the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, Klamath County[1] is in the bottom third of Oregon counties for health outcomes and factors (Reference 1). Table 2 provides a summary of how Klamath County compares to the rest of the state with respect to specific factors that are most likely to be directly impacted by transportation choices.

Table 2 Health Factors Impacted by Transportation - Klamath County Compared to Oregon Averages

Factor	Klamath County Measure	Oregon Average
% of Adults Considered Obese	29%	27%
% of Adults Reporting No Physical Activity	19%	16%
% of Adults Living Near a Park or Recreational Facility	70%	89%
Driving Alone to Work	75%	72%
Driving Alone to Work (>30 Minute Commute)	14%	26%

[1] Data is not available for the urbanized area of Klamath Falls, so Klamath County data is used.

Klamath County is generally below the Oregon state average with respect to physical activity measures. However, Klamath County residents are less likely to drive alone for a longer commute. Physical activity measures are important to consider because inactivity is associated with a higher risk for poor health outcomes, such as heart disease, diabetes, early deaths, and depression (Reference 2).

Improving Public Health

Parks and designated recreational facilities are not the only means to provide opportunities for physical activity. Constructing transportation infrastructure that provides for active transportation modes (i.e., walking and biking) and implementing policies and programs that promote these modes are other means. Urban design infrastructure and policies have also been proven to have an impact on physical activity levels (Reference 3).

Healthy Klamath, a consortium of health focused organizations in Klamath County, is actively working to improve public health in Klamath County. The group completed a Community Health Improvement Plan in 2013 (Reference 4). The plan identifies a goal of increasing the number of adults who engage in regular physical activity from 58.7 to 60 percent. A number of measurable objectives are identified in the plan for use in evaluating progress towards increasing physical activity. These include:

- Reducing the number of people with a body mass index greater than 25 from 26 to 21 percent;
- Reducing the number of low-income preschoolers who are obese from 12.7 to 8.7 percent;
- Reducing the number of people with diabetes from 7.3 to 5.0 percent;
- Reducing the number of people with high blood pressure from 29.4 to 25 percent; and
- Reducing the number of people with high cholesterol from 34.3 to 30 percent.

SYSTEM GAPS AND DEFICIENCIES

The following section documents gaps and deficiencies in the existing system. Potential solutions to address these issues will be the focus of the next phase of this project.

The existing trail network has been reviewed to identify gaps and deficiencies. A gap is defined as a missing link in the network, such as a missing off-street trail link or an on-street connection on a collector or arterial roadway that is missing sidewalks or a designated bicycle facility. A deficiency, or obstacle, is defined as a bicycle or pedestrian facility that is not up to standards or sufficient to meet users' needs. Examples of deficiencies include:

- On-street connection on a collector or arterial roadway that has a Bicycle Level of Traffic Stress rating greater than 2 (Interested but Concerned)
- Arterial or collector roadway crossing where enhancement may be warranted
- Sidewalks that are too narrow to meet ADA standards or crossings without a curb ramp

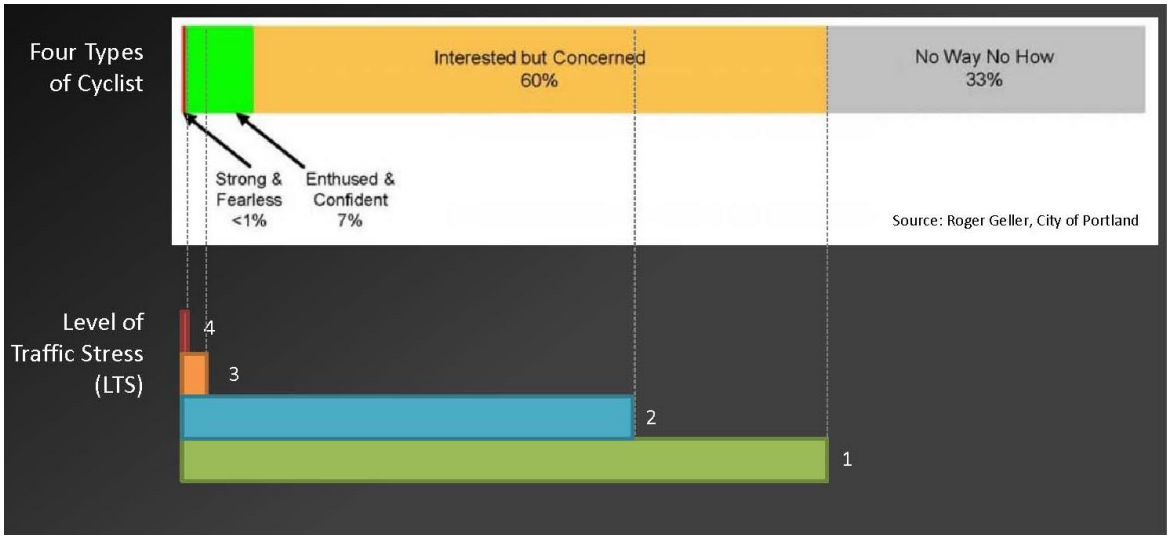
Bicycle Level-of-Traffic Stress

Bicycle Level of Traffic Stress (LTS) analyses have been performed on key arterial and collector level on-street connections in accordance with the procedures described in the Mineta Transportation Institute report *Low Stress Bicycling and Network Connectivity*, as referenced in the ODOT Analysis Procedures Manual (APM, Reference 5). The LTS methodology defines criteria to assess how stressful a street may feel for a person bicycling and what type of person may feel comfortable bicycling on the street. The criteria are primarily based on whether a bicycle lane (with or without on-street parking) is provided and how wide it is, the number of motor vehicle lanes on the road (as a surrogate for traffic volume), and the posted speed limit of the road. These criteria are used to classify roadways into one of four stress levels described in Table 3.

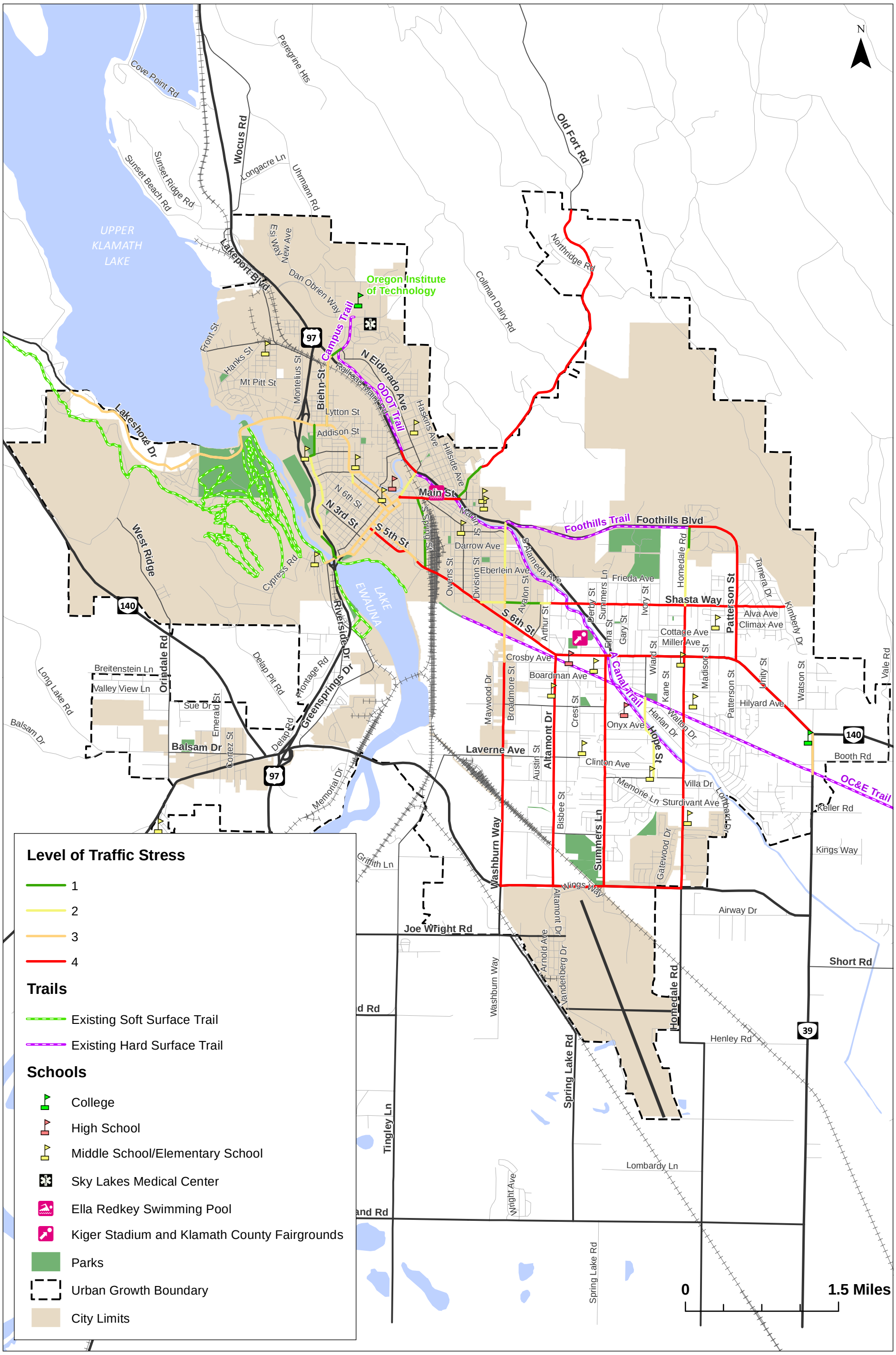
Table 3 Traffic Stress Levels

LTS Level	Description
1	Suitable for most people, including children whom are comfortable bicycling across intersections
2	Comfortable for most adults
3	Suitable for most people who are already bicycling today
4	Likely only the most confident bicyclists will ride on roads at this LTS

Figure 4 shows the results of the LTS analysis. Many of the streets have an LTS of 3 or 4. These are typically streets with higher speeds (30 MPH or higher) and usually without bike lanes. Streets with an LTS of 3 or 4 will be examined for potential improvements to create more accessible connections to the trail system.



How LTS Relates to the Type of Person Who Might Ride on a Facility



Bicycle Level of Traffic Stress Results
Klamath Falls, Oregon

Figure **4**

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Safety Analyses

Safety analyses include reviewing historical crash data and examining roadway crossings, as described in the following sections

Crash Data

Crash records were obtained from ODOT for the period of January 1, 2009 through December 31, 2013 for the Klamath Falls urban area. Figure 5 shows the locations of all pedestrian and bicycle related crashes in the Klamath Falls Urban Growth Boundary (UBG) during that time. *Attachment A* provides the crash data summary sheets.

As shown in Table 4, there were 33 reported pedestrian crashes and 19 reported bicycle crashes in the urban area. All of these crashes resulted in some level of injury, with one crash resulting in a fatality.

Table 4 Reported Pedestrian and Bicycle Crashes by Severity (2009 – 2013)

Crash Type	Crash Severity					*Total Number of Crashes*
	Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only	
Pedestrian	1	5	14	13	0	*33*
Bicycle	0	3	10	6	0	*19*
Total	*1*	*8*	*24*	*19*	*0*	*52*

Bicycle Crashes

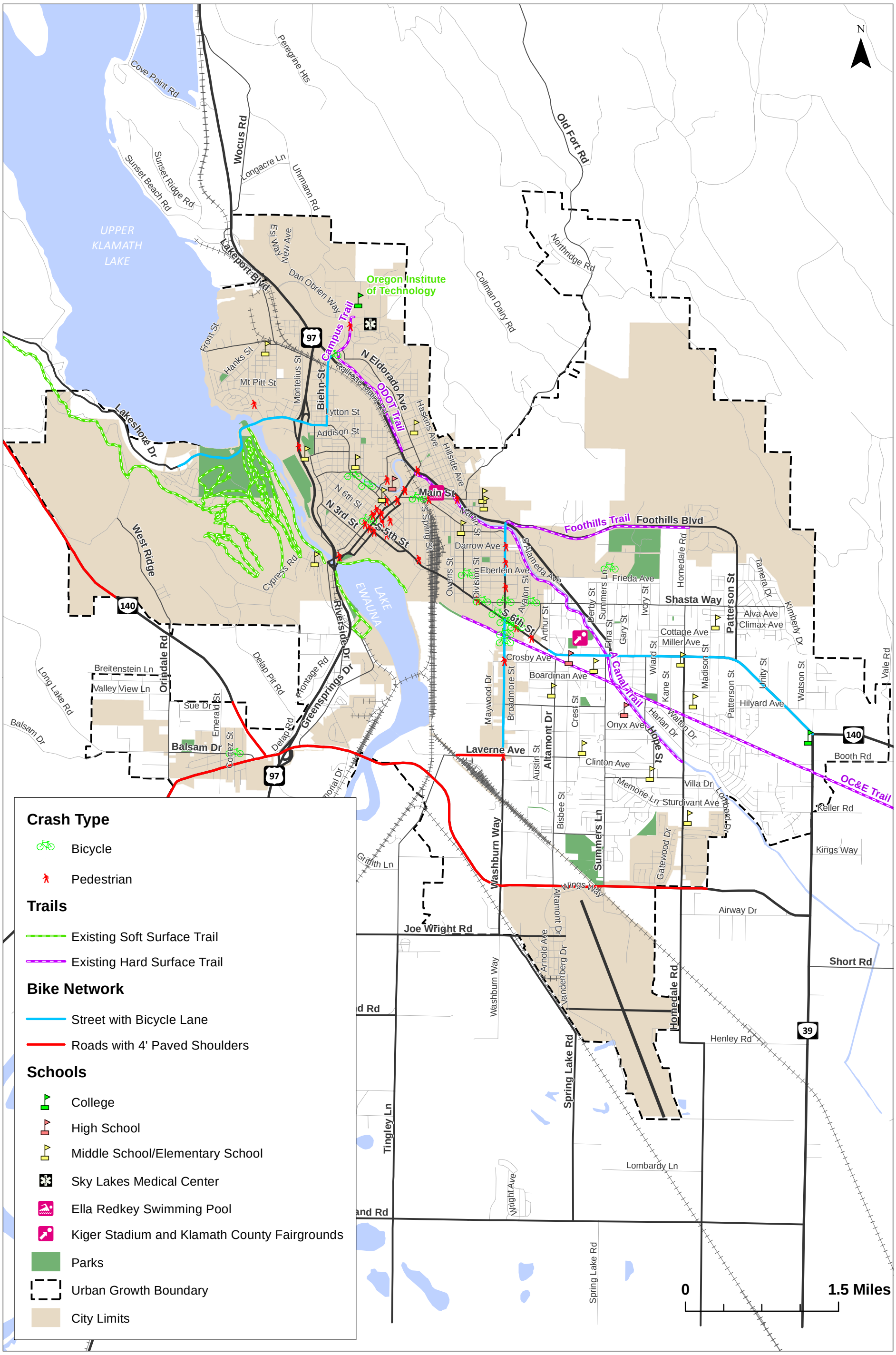
Nearly all, 18 of the 19, bicycle crashes were classified as angle or turning movement crashes, indicating they likely occurred at a conflict point such as a driveway, intersection, or trail crossing. The majority of the bicycle crashes (16 out of 19) occurred on roadways that did not have a designated bicycle lane or adjacent trail. Only two bicycle crashes occurred during non-daylight light conditions.

Ten bicycle-related crashes occurred near the S 6th Street/Washburn Way intersection. All of these crashes were categorized as turning movement or angle crashes. The intersection is large with relatively high motor vehicle volumes and speeds. The OC&E trail crosses Washburn way approximately 0.15-miles south of the intersection. Therefore, people using the trail to access downtown Klamath Falls may pass through this intersection to access the trail.

Pedestrian Crashes

The majority of the pedestrian crashes occurred at intersections. Four pedestrian crashes were reported at midblock locations. Failure to yield right-of-way, on behalf of either the person driving or walking, was the most commonly cited contributing factor (26 crashes).

The highest concentration of pedestrian crashes occurred in downtown Klamath Falls. All of the pedestrian crashes downtown occurred during weekdays (Monday through Friday) and during daytime



Reported Pedestrian and Bicycle Crashes (2009-2013)
Klamath Falls, Oregon

Figure **5**

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hours (between 7:00 AM and 5:00 PM), which is likely when the highest levels of pedestrian activity occur. The majority of the downtown pedestrian crashes occurred at intersections; only one of the crashes was reported at a midblock location.

Roadway Crossings

Trail crossings on arterial and collector roadways have been reviewed to determine whether the type of crossing currently present may warrant enhancement. This review includes assessing the crossings using National Cooperative Highway Research Program (NCHRP) Report 562 *Improving Pedestrian Safety at Unsignalized Crossings* procedures (Reference 6). NCHRP Report 562 provides guidance on the type of treatments that should be considered for an unsignalized crossing given a number of factors, including the speed limit of the roadway being crossed, pedestrian volumes, motor vehicle traffic volumes, length of the crossing, walk time, and expected compliance of motor vehicle drivers. Treatment categories include no treatment, crosswalk, active/enhanced (measures such as rectangular rapid flashing beacon) and signal. These analyses use future volumes (year 2035) from the recently adopted Klamath Falls Urban Area TSP. Existing volumes will be used later in the project to help identify priority locations.

Table 5 and Figure 6 summarize the results of this analysis for the sixteen intersections where a trail crosses an arterial or collector roadway.

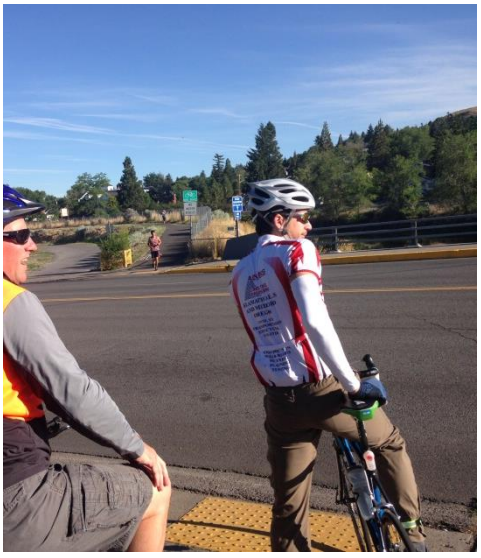
Table 5 NCHRP Report 562 Crossing Analysis Results

ID	Roadway	Trail	Current Condition	NCHRP 562 Treatment Recommendation	Enhancement Potentially Needed?
C-1	OR 39	OC&E	Sign	Active/ Enhanced	Yes
C-2	Homedale Road	OC&E	No Treatment	Crosswalk	Yes
C-3	Hope Street	OC&E	Sign	Crosswalk	Yes
C-4	Summers Lane	OC&E	Sign	Active/ Enhanced	Yes
C-5	Altamont Drive	OC&E	Sign	Crosswalk	Yes
C-6	Washburn Way	OC&E	Signal	Signal	No
C-7	Homedale Road	A Canal	Sign	Crosswalk	Yes
C-8	Hope Street	A Canal	Sign	Crosswalk	Yes
C-9	6th Street	A Canal	Signal[1]	Signal	No
C-10	Shasta Way	A Canal	Sign	Active/ Enhanced	Yes
C-11	Eberlein Avenue	A Canal	Sign	Crosswalk	Yes
C-12	Washburn Way	A Canal	Sign/Signal[1]	Active/ Enhanced	Yes
C-13	Main Street	A Canal	No Treatment	Active/ Enhanced	Yes
C-14	Esplanade Avenue	A Canal	No Treatment	Active/ Enhanced	Yes
C-15	Portland Street (Crossing Crater Lake Parkway)	ODOT	Hybrid Beacon	Signal	No
C-16	Dahlia Street	Campus	Signal[1]	N/A	No

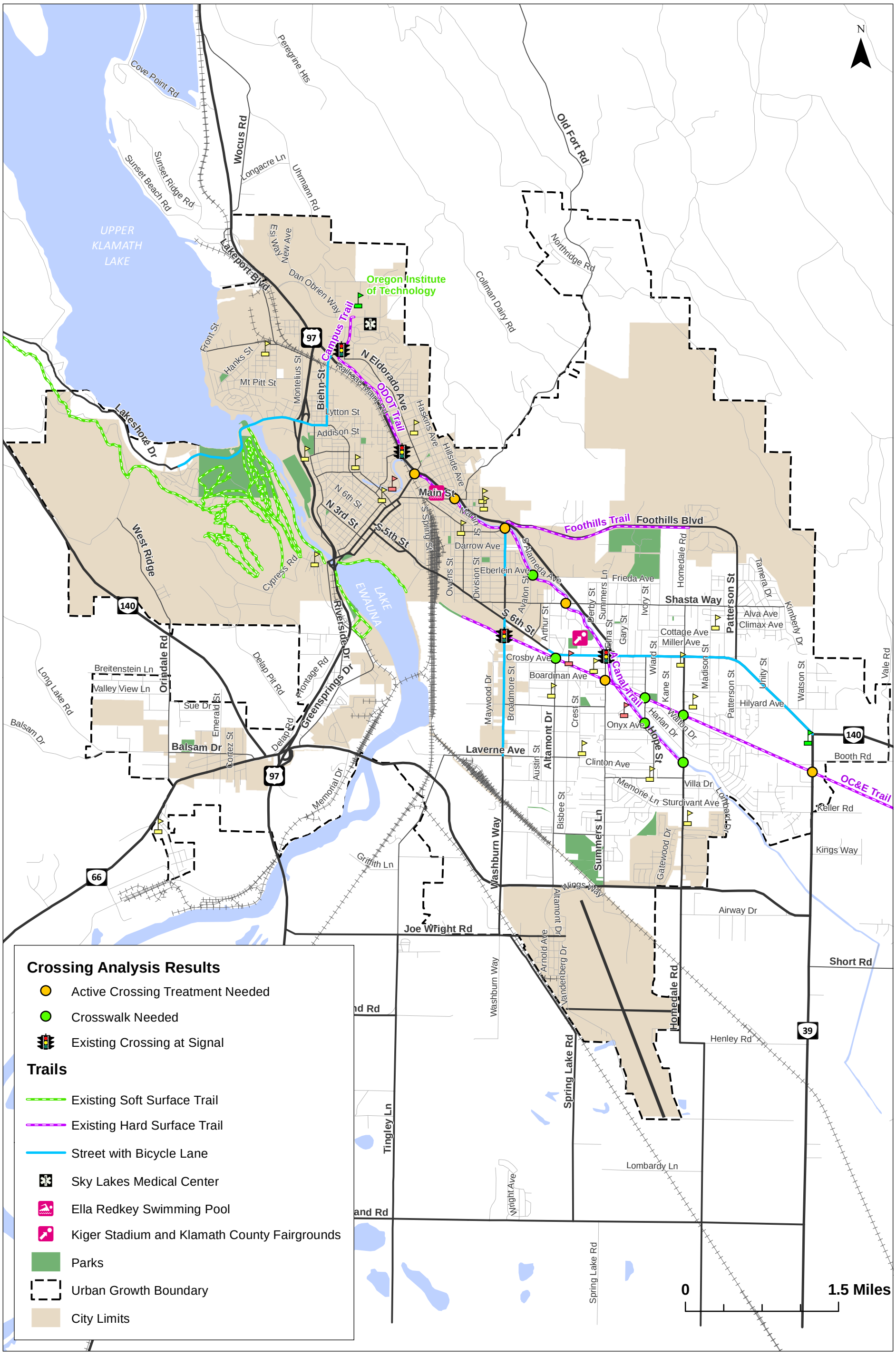
[1]Requires use of the sidewalk to access signal

Note that a count of crossings at these locations is not available. The analysis used for this project *assumes that there are at least 20 crossings in the peak hour at each of these crossings*. That may be higher than what exists today at certain locations, but this analysis is based on future conditions (i.e. year 2035 motor vehicle volumes) and the goal to achieve higher usage of these trails. For locations with fewer than 20 crossings in the peak hour, the NCHRP Report 562 methodologies recommend treatments to shorten the crossing and/or calm traffic (e.g. curb extensions, raised median islands), in lieu of the treatment shown above.

Based on this analysis, improvements may be warranted at 12 out of the 16 intersections once they reach 20 crossings in a single hour.



Unmarked "A" Canal Trail Crossing



Crossing Analysis Results

- Active Crossing Treatment Needed
- Crosswalk Needed
- Existing Crossing at Signal

Trails

- Existing Soft Surface Trail
- Existing Hard Surface Trail
- Street with Bicycle Lane
- Sky Lakes Medical Center
- Ella Redkey Swimming Pool
- Kiger Stadium and Klamath County Fairgrounds
- Parks
- Urban Growth Boundary
- City Limits

Crossing Analysis Results
Klamath Falls, Oregon

Figure **6**

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Other System Gaps

In addition to the gaps and deficiencies identified above, the project team has identified the following specific gaps to be addressed in this planning effort.

End of the OC&E Trail

1. *OC&E Trail Connection to Downtown Klamath Falls* – The current TSP contains a planned project to extend the OC&E across the railroad tracks. Other options will also be examined.
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.
3. *Connecting the "A" Canal Trail to the Foothills Trail* – There is a short gap and a crossing of Crater Lake Parkway.
4. *Connecting the "A" Canal Trail to the Ella Redkey Swimming Pool* – The trail is grade separated from the pool.
5. *Connecting the "A" Canal Trail to the Kiger Stadium and Klamath County Fairgrounds* – The trail is grade separated from these locations.
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.
7. *Connecting the ODOT Trail to Kit Carson Park* – The ODOT Trail is adjacent to the park, but a fence separates the park from the trail.
8. *Veteran's Park Trail Connections* – There are not connections between the multiple trails that meet near Veteran's Park.
9. *"A" Canal Trail Crossing at SW 6th Street/Summers Lane* – The connection from the trail to the Summers Lane crossing of 6th Street requires using the sidewalk.
10. *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

No Connection from the "A" Canal Trail to the Foothills Trail

Crater Lake Parkway Crossing Between Campus Trail and Biehn Street

the trail system for residents and visitors.

11. *Bicycle Parking* – Bicycle parking is absent from many destinations, including some parks.

The project team also reviewed sidewalk connections on collector level and arterial streets to the existing trail system. Based on the inventory shown in Figure 2, Hope Street and OR 39 are missing sidewalks. Hope Street, which is crossed by the "A" Canal trail and the OC&E trail, lacks sidewalks from Bristol Avenue to SW 6th Street. OR 39 lacks sidewalks south of the OC&E trail crossing.

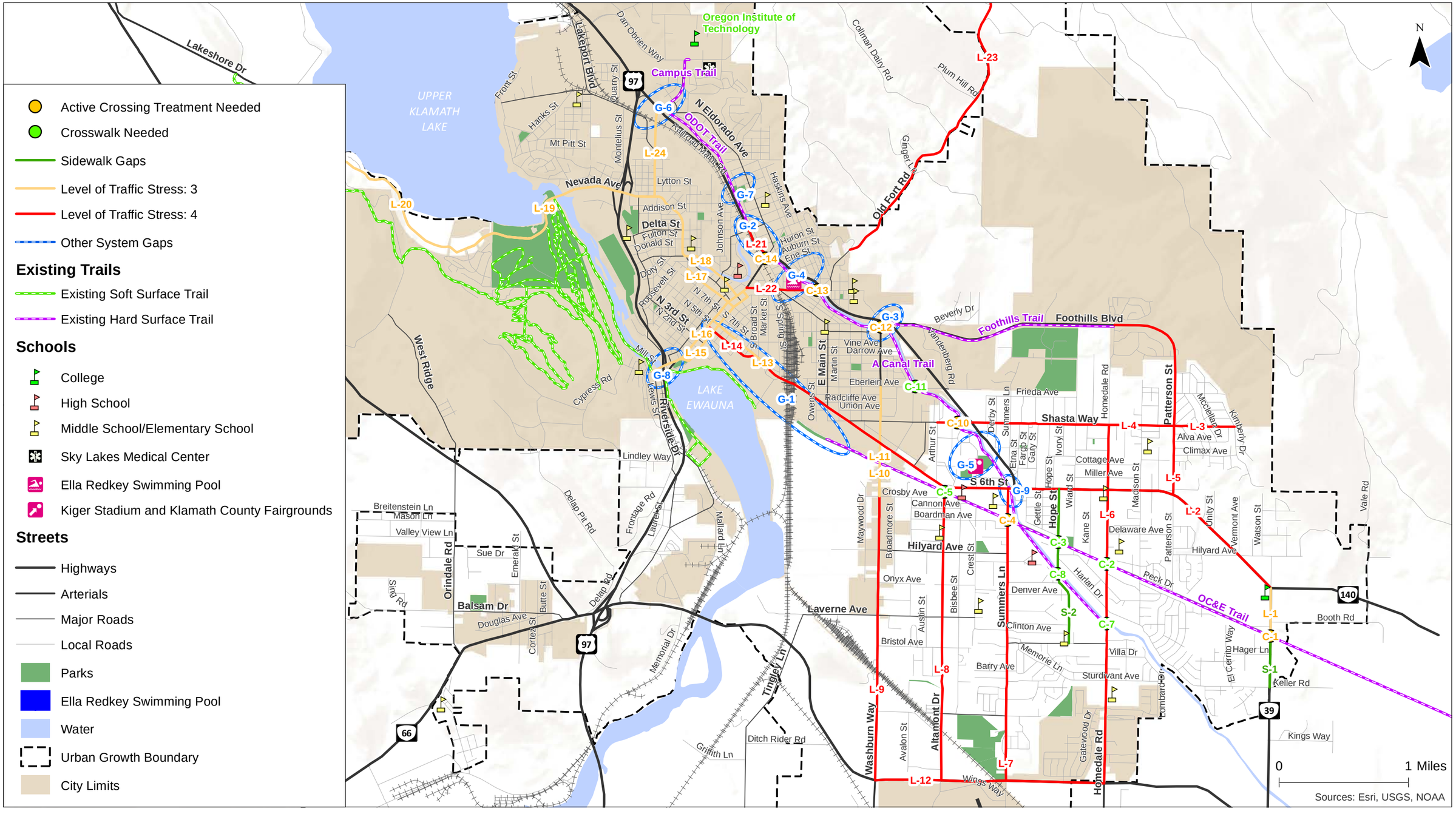
The system gaps and deficiencies identified in this section were identified based on an initial field visit and data analysis. As summarized in the Next Steps section, input will be gathered from the PAC and public to refine and expand the list of gaps and deficiencies for a final comprehensive list.

Summary

Figure 7 summarizes the initial set of locations that have been identified in the above sections for further review for potential treatments in the next phase of this project. *Attachment B contains tables referencing the project identification numbers shown in Figure 7*. These have been identified based on a field visit, feedback from the TAC and CAC, feedback from the general public, and the project team's analysis, described previously.

NEXT STEPS

This memorandum was reviewed by the TAC and CAC on September 9, 2015. The findings from this memo were also reviewed with the general public through a virtual open house. *Feedback from the virtual open house is summarized in Attachment C.* The memorandum was updated based on feedback received from the TAC, CAC, and general public. Moving forward with the development of the Urban Trail Master Plan, the deficiencies and gaps identified in this memorandum will be reviewed to identify potential solutions using the treatments contained in the toolbox attached to this memorandum (*Attachment D*).



Locations for Further Study
Klamath Falls, Oregon

Figure **7**

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6. National Cooperative Highway Research Program (NCHRP) Report 562 *Improving Pedestrian Safety at Unsignalized Crossings.* Transportation Research Board, 2006.

Attachment A Crash Data

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area

January 1, 2009 through December 31, 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
PEDESTRIAN	1	4	0	5	1	4	0	5	0	4	1	4	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	0	2	0	2	0	2	0	0
2013 TOTAL	1	6	0	7	1	6	0	7	0	6	1	6	0	0
YEAR: 2012														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
PEDESTRIAN	0	7	0	7	0	7	0	6	1	5	2	7	0	0
TURNING MOVEMENTS	0	4	0	4	0	4	0	4	0	4	0	4	0	0
2012 TOTAL	0	12	0	12	0	12	0	11	1	10	2	12	0	0
YEAR: 2011														
ANGLE	0	2	0	2	0	2	0	2	0	2	0	1	0	0
PEDESTRIAN	0	12	0	12	0	12	0	12	0	9	3	8	1	0
SIDESWIPE - MEETING	0	1	0	1	0	2	0	0	1	1	0	0	0	1
TURNING MOVEMENTS	0	2	0	2	0	2	0	1	1	2	0	1	0	0
2011 TOTAL	0	17	0	17	0	18	0	15	2	14	3	10	1	1
YEAR: 2010														
PEDESTRIAN	0	3	0	3	0	4	0	2	1	1	2	3	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	1	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	0	0	1
2010 TOTAL	0	5	0	5	0	6	0	4	1	2	3	3	0	1
YEAR: 2009														
ANGLE	0	5	0	5	0	5	0	5	0	4	1	1	0	0
PEDESTRIAN	0	6	0	6	0	6	0	4	2	4	2	4	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	0	0	0
2009 TOTAL	0	12	0	12	0	12	0	10	2	9	3	5	0	0
FINAL TOTAL	1	52	0	53	1	54	0	47	6	41	12	36	1	2

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

004 THE DALLES-CALIFORNIA

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00029	Y	N	N	N	N	01/06/2011	KLAMATH	1	14		CURVE		N		Y	CLR	PRKD MV	01	NONE	0	STRGHT									013,089,005	01
STATE						Thu	KLAMATH FALLS	0	0	THE DALLES-CAL HY	N	(NONE)	UNKNOWN		N	ICE	SS-M		PRVTE		N S								001	013	00
						3P	KLAM FLS UA	273.85		SB EF NEVADA AVE	08				N	DAY	INJ		PSNGR CAR			01	DRVR	INJC	76	M	OR-Y		047	017		01
												(04)														OR>25					
																		02	NONE	0	PRKD-I										
																			PRVTE		S N								008	089	00
																			PSNGR CAR											
																		03	NONE	1	PRKD-P										
																			PUBLC		S N								008		00
																			PSNGR CAR											
																					UNK	01	PED	INJB	54	F		05	000	050	005	00
																					UN UN										

020 KLAMATH FALLS-LAKEVIEW

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPEED	ALCHL	DRUGS	SCHL	WORK	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# / COMPNT / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00247	N	N	N	N	N	03/21/2011	KLAMATH	1	14		STRGHT		N	N	CLR	PED	01	NONE	STRGHT										18,19
CITY						Mon	KLAMATH FALLS	0	0	MAIN ST	SW	(NONE)	NONE	N	DRY	PED		PRVTE	NE SW									000	00
						8P	KLAM FLS UA	0.10		PAYNE ALLEY	03			N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		000	000	00
												(02)							STRGHT NW SE	01	PED	INJC	47	M		04	028	037	18,19

050 KLAMATH FALLS-MALIN

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# COMPNT / MLG / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00621	N	N	N	N	N	08/31/2011	KLAMATH	2 14			INTER	CROSS	N	N	CLR	BIKE	01	NONE	STRGHT										082	04
CITY						Wed	KLAMATH FALLS	0 0		CAMPUS DR	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	SE NW								000		00
						12P	KLAM FLS UA	- 6.41		CRATER LK PKY	02	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	82	M	OR-Y OR<25		000	000		00
																			STRGHT SW NE	01	BIKE	INJB	70	M		01	020	035		04
00804	N	N	N	N	N	11/16/2011	KLAMATH	1 14			INTER	CROSS	N	N	CLD	PED	01	NONE 0	TURN-R											02,19
CITY						Wed	KLAMATH FALLS	0 0		CRATER LK PKY	SE		TRF SIGNAL	N	DRY	PED		PRVTE	W SE								000		00
						3P	KLAM FLS UA	- 4.97		ESPLANADE ST	05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y OR<25		016,029	000		02
																			STRGHT W E	01	PED	INJC	28	F		01	000	035		19

CITY OF KLAMATH FALLS, KLAMATH COUNTY

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00363	Y	N	N	N	N	06/19/2009	19	10TH ST	STRGHT		N	N	CLR	BIKE	01	NONE	STRGHT										082	32,01,12
CITY						Fri	20	LINCOLN ST	SE	(NONE)	UNKNOWN	N	DRY	ANGL		PRVTE	SE NW									000		00
						5P			06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y		050,052	000	082	32,01
										(02)													OR<25					
																	TURN-L	01	BIKE	INJB	11	M		04	057,028	037		12
																	SE SW											
00450	N	N	N			06/08/2011	16	6TH ST	STRGHT		N	N	CLR	PED													110	02,18
CITY						Wed	150	SHASTA WAY	NW	(NONE)	UNKNOWN	N	DRY	PED														
						3P			07			N	DAY	INJ			STRGHT	01	PED	INJB	60	M		05	028,057	037	110	02,18
										(04)							S N											
															01	NONE	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	94	F	OR-Y		000	000		00
																							OR<25					
00077	N	N	N			01/28/2009	16	6TH ST	ALLEY		N	N	CLR	BIKE	01	NONE	TURN-R											02,12
CITY						Wed	500	WASHBURN WAY	NW	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	NE NW									018		00
						10A			07			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y		027	000	084	02
										(04)													OR<25					
																	STRGHT	01	BIKE	INJB	70	M		08	060	040		12
																	NW SE											
00735	N	N	N	N	N	11/19/2012	16	AUSTIN ST	INTER	CROSS	N	N	CLD	PED	01	NONE 0	TURN-L											02
CITY						Mon	0	S 6TH ST	SE		TRF SIGNAL	N	DRY	PED		PRVTE	NE SE									000		00
						7P			05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	38	F	OTH-Y		029	000		02
																							N-RES					
																	STRGHT	01	PED	INJC	35	F		01	000	035		00
																	NE SW											
00022	N	Y	N	N	N	01/15/2012	16	AVALON ST	INTER	3-LEG	N	N	CLR	PED	01	NONE	STRGHT											04,19
CITY						Sun	0	6TH ST	SE		TRF SIGNAL	N	DRY	PED		PRVTE	NW SE									000		00
						10P			05	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	27	F	NONE		000	000		00
																							OR<25					
																	STRGHT	01	PED	INJB	32	M		01	020	035		04,19
																	NE SW											
00397	N	N	N	N	N	07/06/2012	14	AVALON ST	INTER	3-LEG	N	N	CLR	BIKE													110	32,02
CITY						Fri	0	6TH ST	SE		TRF SIGNAL	N	DRY	TURN														
						11A			06	0		N	DAY	INJ			STRGHT	01	BIKE	INJB	61	F		02	000	041		00
																	SE NW											
															01	NONE 0	TURN-R											
																PRVTE	SE NE									000		00
																PSNGR CAR		01	DRVR	NONE	81	F	OR-Y		052,027	000		32,02
																							OR<25					
00578	N	N	N	N	N	09/05/2012	16	AVALON ST	INTER	3-LEG	N	N	CLR	BIKE	01	NONE 0	STRGHT											04
CITY						Wed	0	6TH ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000		00
						7P			03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y		000	000		00
																							OR<25					
																	TURN-L	01	BIKE	INJB	50	F		02	055,020	035		18,19
																	SW NW											

CITY OF KLAMATH FALLS, KLAMATH COUNTY

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00617	N	N	N			09/15/2009	16	AVALON ST	INTER	CROSS	N	N	CLR	BIKE	01	NONE 0	STRGHT										001	04
CITY						Tue	0	SHASTA WAY	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	E W										000	00
						4P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y OR<25		000	000		00
																	STRGHT S N	01	BIKE	INJA	14	M		02	020	035	001	04
00580	N	N	N	N	N	09/11/2012	17	BALSAM DR	INTER	CROSS	N	N	CLR	BIKE	01	NONE 0	TURN-L											02
CITY						Tue	0	CORTEZ ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	N E									015		00
						8A			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y OR<25		027	000		02
																	STRGHT E W	01	BIKE	INJB	32	M		02	000	041		00
00650	N	N	N	N	N	10/23/2012	19	CALIFORNIA AVE	INTER	3-LEG	N	N	CLD	PED	01	NONE 0	STRGHT											18
CITY						Tue	0	HILL ST	NW		UNKNOWN	N	WET	PED		PRVTE	NW SE									001		00
						7A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y OR<25		000	000		00
																	STRGHT SW NE	01	PED	INJB	05	M		03	016	034		18
00757	N	N	N	N	N	10/28/2011	16	CAMPUS DR	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Fri	0	DAGGETT AVE	N		STOP SIGN	N	DRY	PED		PRVTE	W N									015		00
						2P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		029	000		02
																	STRGHT E W	01	PED	INJA	54	F		01	000	034		00
00870	N	N	N	Y		10/19/2013	17	CRESCENT AVE	INTER	3-LEG	N	N	CLR	PED														110,084	03,18
CITY						Sat	0	CROSS ST	CN		STOP SIGN	N	DRY	PED															
						5P			01	0		N	DAY	FAT			TURN-R SE NE	01	CONV	KILL	18	M		02	021,047	000	110	18
															01	NONE 0	STRGHT NE SW									001		00
																PSNGR CAR		01	DRVR	NONE	64	F	OR-Y OR<25		000	000	084	00
00628	N	N	N			09/21/2010	16	CROSBY AVE	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Tue	0	WASHBURN WAY	N		TRF SIGNAL	N	DRY	PED		PRVTE	W N									000		00
						7A			05	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	44	M	OR-Y OR<25		029,017	026		02
																	STRGHT W E	01	PED	INJB	52	M		01	000	035		00
00896	N	N	N	N	N	12/23/2011	16	CROSBY AVE	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-R											02
CITY						Fri	0	WASHBURN WAY	W		TRF SIGNAL	N	DRY	PED		PRVTE	N W									000		00
						5P			05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y OR<25		029	000		02
																	STRGHT N S	01	PED	INJB	15	F		01	000	000		00

CITY OF KLAMATH FALLS, KLAMATH COUNTY

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00620	N	Y	N	N	N	10/13/2012	16	DIVISION ST	INTER	3-LEG	N	N	CLR	BIKE	01	NONE 0	TURN-R											18,19
CITY						Sat	0	SHASTA WAY	N		STOP SIGN	N	DRY	ANGL		PRVTE	N W									015		00
						3P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	62	M	OR-Y OR<25		027	000		00
																	STRGHT W E	01	BIKE	INJB	46	M		01	060,021	040		18,19
00425	N	N	N	N	N	06/26/2010	17	EBERLEIN AVE	STRGHT		N	N	CLR	BIKE													110	05,18
CITY						Sat	120	E MAIN ST	E	(NONE)	NONE	N	DRY	SS-O														
						2P			08			N	DAY	INJ			STRGHT W E	01	BIKE	INJC	11	M		05	060,080	040	110	05,18
										(02)																		
															01	NONE 0	STRGHT E W									000		00
																PRVTE												
																PSNGR CAR		01	DRVR	NONE	27	F	OR-Y OR<25		000	000		00
00112	N	N	N	N	N	02/15/2012	17	ELDORADO BLVD	INTER	4-LEG	N	N	CLR	PED	01	NONE	STRGHT											02
CITY						Wed	0	MAIN ST	E		TRF SIGNAL	N	DRY	PED		PRVTE	W E									000		00
						8A			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	59	F	OR-Y OR<25		029	000		02
																	STRGHT N S	01	PED	INJB	09	F		01	000	035		00
00660	N	N	N	Y		09/21/2009	17	ESPLANADE ST	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Mon	0	WALL ST	NE		STOP SIGN	N	DRY	PED		PRVTE	NW NE									015		00
						7A			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		029	026		02
																	STRGHT SE NW	01	PED	INJB	15	F		01	000	034		00
00074	N	N	N	Y	N	01/31/2013	16	ESPLANADE ST	INTER	CROSS	N	N	CLR	PED	01	NONE	STRGHT										083	02
CITY						Thu	0	WALL ST	SW		UNKNOWN	N	DRY	PED		PRVTE	NE SW									000		00
						4P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	45	F	OR-Y OR<25		029	026	083	02
																	STRGHT SE NW	01	PED	INJA	16	M		01	000	034		00
00878	N	Y	N	N	N	12/16/2009	19	EX 6TH ST EB	CURVE		N	N	CLD	PED	01	NONE	STRGHT											18,19
CITY						Wed	40	6TH ST	SW	(NONE)	NONE	N	WET	PED		PRVTE	SW NE									000		00
						6P			06			N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y OR<25		000	000		00
										(01)																		
																	STRGHT SE NW	01	PED	INJC	20	M		04	028,057	037		18,19
00656	N	N	N	N	N	09/17/2009	16	KLAMATH AVE	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Thu	0	5TH ST	NE		ONE-WAY	N	DRY	PED		PRVTE	NW NE									000		00
						7A			06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y OR<25		029	026		02
																	STRGHT NW SE	01	PED	INJC	58	F		01	000	035		00

CITY OF KLAMATH FALLS, KLAMATH COUNTY

Pedestrian and/or Bicycle Involved Crashes In Klamath Falls City and Urban Area
January 1, 2009 through December 31, 2013

SER# / INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00264	N	N	N			04/25/2012	16	KLAMATH AVE	INTER	CROSS	N	N	CLD	PED	01	NONE	TURN-L											02
CITY						Wed	0	7TH ST	NE		TRF SIGNAL	N	DRY	PED		PUBLC	NW NE									000		00
						12P			05	0		N	DAY	INJ		OTH BUS		01	DRVR	NONE	55	F	OR-Y OR<25		029	000		02
																	STRGHT NW SE	01	PED	INJA	54	F		01	000	042		00
00549	N	N	N			08/12/2009	16	KLAMATH AVE	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02,32
CITY						Wed	0	7TH ST	NE		TRF SIGNAL	N	DRY	PED		PRVTE	NW NE									000		00
						9A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y OR<25		029,052	000		02,32
																	STRGHT SE NW	01	PED	INJA	52	F		02	055	035		00
00215	N	N	N	N	N	03/25/2010	16	LAVERNE AVE	INTER	CROSS	N	N	CLD	PED	01	NONE 0	STRGHT											04,18
CITY						Thu	0	WASHBURN WAY	S		TRF SIGNAL	N	WET	PED		PRVTE	N S									000		00
						10P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		000	000		00
																	STRGHT W E	01	PED	INJA	14	F		01	055	035		04,18
																	STRGHT W E	02	PED	INJA	16	F		01	055	035		04,18
00207	N	N	N	N	N	03/04/2011	16	MAIN ST	STRGHT		Y	N	CLD	PED	01	NONE	STRGHT										082	02
CITY						Fri	15	12TH ST	SW	(NONE)	UNKNOWN	N	DRY	PED		PRVTE	NE SW									000		00
						8A			05			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y OR<25		000	000		00
										(02)																		
																	STRGHT SE NW	01	PED	INJB	23	M		04	057,028	037		02
00755	N	N	N	N	N	10/27/2011	16	MAIN ST	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Thu	0	5TH ST	SE		TRF SIGNAL	N	DRY	PED		PRVTE	NE SE									000		00
						2P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y OR<25		029	000		02
																	STRGHT NE SW	01	PED	INJC	59	M		01	000	035		00
00617	N	N	N			08/30/2011	16	MAIN ST	INTER	CROSS	N	N	CLR	PED	01	NONE	TURN-L											02
NONE						Tue	0	8TH ST	SW		TRF SIGNAL	N	DRY	PED		PRVTE	SE SW									000		00
						5P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		029	000		02
																	STRGHT NW SE	01	PED	INJC	22	F		01	000	035		00
00356	N	N	N	N	N	04/28/2011	16	MAIN ST	INTER	CROSS	N	N	CLR	PED	01	NONE	TURN-R											02
CITY						Thu	0	8TH ST	NW		TRF SIGNAL	N	DRY	PED		PRVTE	NE NW									000		00
						12P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	F	OR-Y OR<25		029	038		02
																	STRGHT NE SW	01	PED	INJB	24	F		01	000	035		00
00545	N	N	N			09/27/2013	17	MAIN ST	STRGHT		N	N	CLD	PED	01	NONE 0	STRGHT											02
CITY						Fri	150	CRATER LK PKY	E	(NONE)	NONE	N	DRY	PED		PRVTE	W E									000		00
						7A			08			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	54	F	OR-Y N-RES		000	026		00
										(04)																		

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SER# / INVEST	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	STRGHT S N	01	PED	INJB	14	M		04	028	037		02
00252	N	N	N	N	N	03/15/2011	17	MAIN ST	INTER	CROSS	N	N	RAIN	BIKE	01	NONE	TURN-R											02,12
CITY						Tue	0	SPRING ST	SE		TRF SIGNAL	N	WET	TURN		PRVTE	SE E									016		00
						12P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	47	F	OR-Y OR<25		027	000		02
																	STRGHT E W	01	BIKE	INJC	44	M		01	062	042		12
00385	Y	N	N	N	N	07/15/2013	17	MAIN ST	INTER	CROSS	N	N	CLR	BIKE	01	NONE 0	TURN-R											01
CITY						Mon	0	SPRING ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE E									000		00
						5P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y OR<25		047	000		01
																	STRGHT SE NW	01	BIKE	INJC	22	M		02	000	000		00
00915	N	N	N			12/06/2010	19	OAK AVE	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-R											02
CITY						Mon	0	7TH ST	NE		STOP SIGN	N	DRY	PED		PRVTE	NE NW									015		00
						10A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR>25		029	026		02
																		02	PSNG	NO<5	01	M			000	000		00
																	STRGHT SE NW	01	PED	INJC	71	M		01	000	000		00
00374	N	N	N	N	N	06/26/2009	19	PERSHING WAY	ALLEY		N	N	CLR	BIKE	01	NONE	STRGHT											12,27
CITY						Fri	150	AVALON ST	NW	(NONE)	UNKNOWN	N	DRY	ANGL		PRVTE	NW SE									000		00
						11A			06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		000	000		00
										(02)							TURN-L NW NE	01	BIKE	INJB	13	M		04	016,028,057	038		12,27
00352	N	N	N	N	N	04/27/2011	16	PINE ST	ALLEY		N	N	CLR	PED													110	02,18
CITY						Wed	150	11TH ST	SW	(NONE)	UNKNOWN	N	DRY	PED														
						3P			07			N	DAY	INJ			STRGHT NW SE	01	CONV	INJC	20	M		04	028,057	037	110	02,18
										(02)																	
															01	NONE	STRGHT											
																PRVTE	NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	78	F	OR-Y OR<25		000	000		00
00121	N	N	N	N	N	02/04/2011	14	PINE ST	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Fri	0	5TH ST	SE		STOP SIGN	N	DRY	PED		PRVTE	NE SE									000		00
						5P			05	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		029	000		02
																	STRGHT NE SW	01	PED	INJC	80	F		01	000	034		00
00882	N	N	N	N	N	10/06/2010	17	PINE ST	ALLEY		N	Y	CLR	BIKE													001,110	06
CITY						Wed	111	6TH ST	SW	(NONE)	UNKNOWN	N	DRY	TURN														
						6A			07			N	DLIT	INJ			STRGHT NE SW	01	BIKE	INJC	40	F		05	019	039	001,110	06
										(02)																	

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															01	NONE 0 PRVTE PSNGR CAR	TURN-R NE NW									019		00
																		01	DRVR	NONE	53	M	OR-Y OR<25		000	000		00
00692	N	N	N			10/16/2009	16	PINE ST	INTER	CROSS	N	N	CLR	PED	01	NONE 0	STRGHT											02
CITY						Fri	0	7TH ST	SW		STOP SIGN	N	DRY	PED		PRVTE	NE SW									001		00
						3P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y OR<25		029	000		02
																	STRGHT NW SE	01	PED	INJB	58	F		01	000	034		00
00581	N	N	N	N	N	09/14/2012	16	PINE ST	INTER	CROSS	N	N	CLR	PED	01	NONE 0	STRGHT											02
CITY						Fri	0	7TH ST	SW		UNKNOWN	N	DRY	PED		PRVTE	NE SW									000		00
						4P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR>25		016,029	000		02
																	STRGHT SE NW	01	PED	INJB	79	M		01	000	034		00
00861	N	N	N			12/07/2011	16	PINE ST	INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L											02
CITY						Wed	0	8TH ST	SW		STOP SIGN	N	DRY	PED		PRVTE	SE SW									015		00
						12P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	55	F	OR-Y OR<25		029	000		02
																	STRGHT NW SE	01	PED	INJC	58	M		01	000	000		00
00608	N	N	N	N	N	10/21/2013	17	PROSPECT ST	INTER	3-LEG	N	N	CLR	BIKE	01	NONE 0	TURN-R											02
CITY						Mon	0	ROSE ST	CN		UNKNOWN	N	DRY	TURN		PRVTE	E N									000		00
						3P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y OR<25		027	000		02
																	STRGHT E W	01	BIKE	INJB	20	M		02	000	000		00
00301	N	N	N			04/30/2012	16	RADCLIFFE AVE	INTER	3-LEG	N	N	CLR	PED	01	NONE	TURN-L											02
CITY						Mon	0	WASHBURN WAY	S		STOP SIGN	N	DRY	PED		PRVTE	E S									018		00
						4P			05	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		029	000		02
																	STRGHT W E	01	PED	INJC	16	F		01	000	034		00
00272	N	N	N	N	N	05/20/2013	16	RECLAMATION AVE	INTER	4-LEG	N	N	CLR	PED	01	NONE 0	TURN-L											02
NONE						Mon	0	WASHBURN WAY	N		UNKNOWN	N	DRY	PED		PRVTE	W N									000		00
						11A			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	55	F	OR-Y OR<25		029	000		02
																	STRGHT S N	01	CONV	INJB	57	M		02	000	000		00
00429	N	N	N	N	N	07/12/2012	16	SHASTA WAY	INTER	CROSS	N	N	CLR	BIKE													110	18,19
CITY						Thu	0	WASHBURN WAY	N		TRF SIGNAL	N	DRY	TURN														
						1P			05	0		N	DAY	INJ			STRGHT E W	01	BIKE	INJC	32	F		01	059,020	039		18,19

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															01	NONE 0 PRVTE PSNGR CAR	TURN-R E N									000		00
																		01	DRVR	NONE	62	M	OR-Y OR<25		016	000		00
00291 CITY	N	N	N	N	N	03/31/2011 Thu 8A	19 100	SUMMERS LN ADELAIDE AVE	ALLEY N 07	(NONE) (02)	N NONE	N N	CLR DRY DAY	BIKE ANGL INJ	01	NONE PRVTE PSNGR CAR	STRGHT S N									000		02 00 00
																		01	DRVR	NONE	34	M	OR-Y OR<25		000	000		00
																		02	PSNG	NO<5	01	M			000	000		00
																		03	PSNG	NO<5	01	M			000	000		00
																	STRGHT E W	01	BIKE	INJA	16	M		04	028	037		02
00863 CITY	N	N	N	N	N	12/31/2013 Tue 5P	19 0	WALNUT AVE 8TH ST	INTER SE 05	CROSS 0	N STOP SIGN	N N	CLR DRY DLIT	PED PED INJ	01	NONE 0 PRVTE PSNGR CAR	TURN-R SW SE									000		02 00 02
																		01	DRVR	NONE	51	F	OR-Y OR<25		029	000		00
																	STRGHT SW NE	01	PED	INJB	69	F		01	000	000		00
00967 CITY	N	N	N	N	N	12/08/2009 Tue 4P	16 800	WASHBURN WAY 6TH ST	STRGHT S 08	(RSDMD) (04)	N SP PED SIG	N N	CLR DRY DUSK	BIKE ANGL INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT S N									000		32,02 00 32,02
																		01	DRVR	NONE	36	M	OR-Y OR<25		052,027	000		32,02
																	STRGHT W E	01	BIKE	INJB	48	M		15	000	000		00
00658 CITY	N	N	N	N	N	09/18/2009 Fri 5P	16 150	WASHBURN WAY CRATER LK PKY	STRGHT S 07	(NONE) (04)	N UNKNOWN	N N	CLR DRY DAY	BIKE ANGL INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT N S									000	001	02 00 00
																		01	DRVR	NONE	32	F	OR-Y OR<25		000	000		00
																	STRGHT E W	01	BIKE	INJA	14	M		04	057	037	001	02
00280 NO RPT	N	N	N			03/31/2011 Thu 4P	16 1,000	WASHBURN WAY CROSBY AVE	ALLEY N 08	(NONE) (04)	N UNKNOWN	N N	CLR DRY DAY	BIKE TURN INJ	01	NONE PRVTE PSNGR CAR	TURN-R W S									018		02,12 00 02
																		01	DRVR	NONE	58	F	OR-Y OR<25		027	000		02
																	STRGHT S N	01	BIKE	INJC	00	M		09	060	040		12
00084 CITY	N	N	N	N	N	02/22/2009 Sun 12P	16 150	WASHBURN WAY VINE AVE	STRGHT S 07	(NONE) (02)	N UNKNOWN	N N	RAIN WET DAY	PED PED INJ	01	NONE PRVTE PSNGR CAR	STRGHT N S									007		18,19 00 00
																		01	DRVR	NONE	23	F	OR-Y OR>25		000	000		00
																	STRGHT W E	01	PED	INJC	12	F		04	057,028	037		18,19

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NOT VISIBLE: DARK / NON-REFLECTIVE CLOTHING
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1TURN	FROM OPPOSITE DIRECTION - ONE TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAYON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

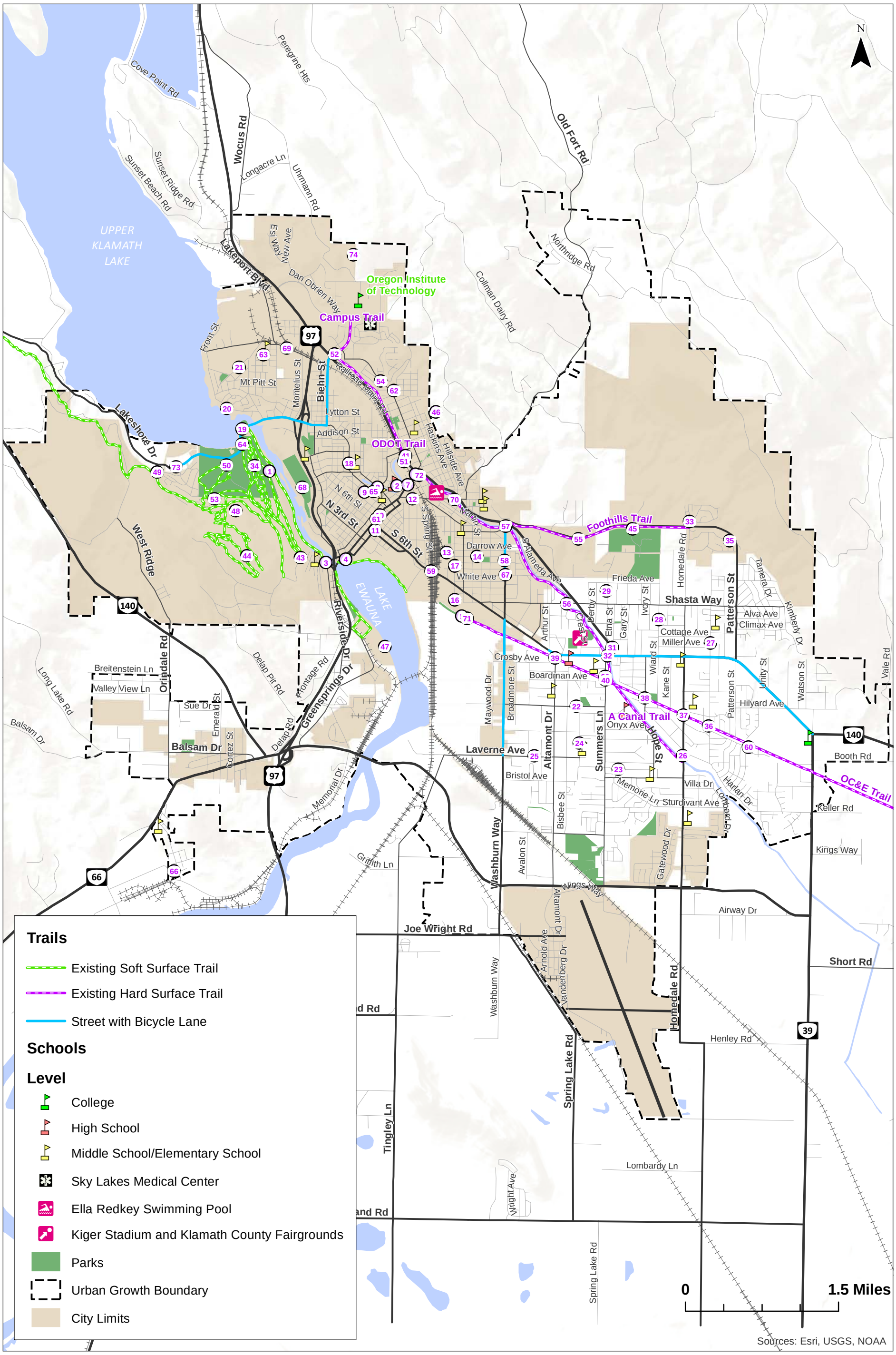
Attachment B Tables Summarizing Locations of Future Needs

Summary of Gaps and Deficiencies	
Segments with Level of Traffic Stress (LTS) Above 2	
L-1	OR 39 (OC&E Trail to OR 140)
L-2	6th Street (Market Street to OR 39)
L-3	Shasta Way (Patterson Street to Kimberly Drive)
L-4	Shasta Way (Patterson Street to Crater Lake Parkway)
L-5	Patterson Street (6th Street to Foothills Boulevard)
L-6	Homedale Road (OR 140 to Shasta Way)
L-7	Summers Lane (OR 140 to SW 6th Street)
L-8	Altamont Drive (OR 140 to OC&E Trail)
L-9	Washburn Way (Crosby Avenue to OR 140)
L-10	Washburn Way (OC&E Trail to Crosby Avenue)
L-11	Washburn Way (Eberlein Avenue to OC&E Trail)
L-12	OR 140 (Washburn Way to Homedale Road)
L-13	6th Street (Market Street to Main Street)
L-14	5th Street (Main Street to 6th Street)
L-15	Klamath Avenue (Conger Avenue to Commercial Street)
L-16	Main Street (Esplanade Avenue to Mill Street)
L-17	9th Street (Klamath Avenue to Prospect Street)
L-18	N 11th Street (Oregon Avenue to Klamath Avenue)
L-19	Oregon Avenue-Nevada Street-Lakeshore Drive (Moore Park to Upham Street)
L-20	Lakeshore Drive (Lynnewood Blvd to West UGB)
L-21	Crater Lake Highway (Main Street to Portland Street)
L-22	Main Street (Esplanade Avenue to Crater Lake Parkway)
L-23	Old Fort Road (Loma Linda Drive to UGB)
L-24	Biehn Street (Crater Lake Parkway to Oregon Avenue)*
Sidewalk Gaps	
S-1	OR 39 between the OC&E Trail and Keller Road
S-2	Hope Street between Bristol Avenue and SW 6th Street
Summary of Trail Crossing Locations	
C-1	OC&E Trail Crossing of OR 39
C-2	OC&E Trail Crossing of Homedale Road
C-3	OC&E Trail Crossing of Hope Street
C-4	OC&E Trail Crossing of Summers Lane
C-5	OC&E Trail Crossing of Altamont Drive
C-7	A Canal Trail Crossing of Homedale Road
C-8	A Canal Trail Crossing of Hope Street
C-10	A Canal Trail Crossing of Shasta Way
C-11	A Canal Trail Crossing of Eberlein Avenue
C-12	A Canal Trail Crossing of Washburn Way
C-13	A Canal Trail Crossing of Main Street
C-14	A Canal Trail Crossing of Esplanade Avenue
Other System Gaps & Deficiencies	
G-1	OC&E Trail Connection to Downtown Klamath Falls
G-2	Connecting the “A” Canal Trail to the ODOT Trail
G-3	Connecting the “A” Canal Trail to the Foothills Trail
G-4	Connecting the “A” Canal Trail to the Ella Redkey Swimming Pool
G-5	Connecting the “A” Canal Trail to the Kiger Stadium and Klamath County Fairgrounds
G-6	Campus Trail to Biehn Street Connection
G-7	Connecting the ODOT Trail to Kit Carson Park
G-8	Veteran’s Park Trail Connections
G-9	“A” Canal Trail Crossing at SW 6th Street
G-10	Trail Signing/Wayfinding
G-11	Bicycle Parking

**Biehn Street's calculated LTS rating was a 2. However, public comments indicated that the bike lane is narrow and vehicle speeds feel fast on this road.*

Grey boxes indicate a project that is currently scheduled to be designed and completed by ODOT.

Attachment C Results of Virtual Workshop



Virtual Workshop #1 Comments
Klamath Falls, Oregon

Figure
C-1

H:\proj\file18974 - Klamath Falls Trail Master Plan\GIS\TM2\VirtualWorkshop_Comments.mxd - agriffin - 12:00 AM 9/29/2015

Virtual Workshop Comments Received			
Comment ID	Note	Comment	Number of Likes
1		I'm not positive, but pretty sure that this link between the Link River Trail (PacifiCorp property) and Powerline Trail (Moore Park, City property) isn't formalized or sanctioned by landowners. Perhaps this has changed, but it is worth looking at and clarifying since I've heard rumors of bad blood about such a linkage. Connecting the Link River Trail and Moore Park System would be great, but to my knowledge such a link does not exist.	4
2		Would like to see more bike lanes leading to/from Klamath Union High School.	4
3		Would like to see bike lanes or rec. paths leading to/from the Link River Trail.	5
4		Would like to see the short paved MUP at Veterans Park connected to something. A connection to the OC&E trail would be great, but seems difficult. A connection to the Link River Trail, a downtown path or bike lane system, or a trail that goes farther to the east and south-east around Lake Ewauna would be great too. It just needs to go to something :)	5
5		The Path to Nowhere -- perhaps the most egregious issue with the Klamath Falls trails system. Personally, nothing makes me feel less safe and disappointed in a trail system than ending up on a path that abruptly ends in the middle of nowhere. I think this loose end is a pretty big and embarrassing deal. It needs to go somewhere.	3
6		Would love to see the A Canal path continue along the canal to KU campus.	5
7		Sharrows on Esplanade please.	2
8		Sharrows in the right lane of 11th please.	3
9		Sharrows on 9th St. please	4
10		Sharrows on Main St. please	3
11		Sharrows on Klamath Ave please	5
12		Bike lanes on Main St. east of Esplanade please	5
13		Bike routes (sharrows?) or MUP connecting Mills Little League Park to trails system or bike route system	1
14		Make Applegate Ave a designated bike route (sharrows or bike lanes and no stop signs from Richmond to Washburn).	1
15		Make Owens a designated bike route (sharrows or bike lanes) and no stops between East Main and S. 6th, except at intersection with Richmond (also a bike route).	0
16		Connect Owens St. to OC&E trail.	2
17		THIS IS A CORRECTED COMMENT. Make Owens a designated bike route (sharrows or bike lanes) and no stops between East Main and S. 6th, except at intersection with APPLEGATE (also a bike route)	1
18		Bike lanes on Oregon Ave please	4
19		Wider bike lanes on Nevada between HWY 97 and Moore Park.	7
20		Make Front St. a designated bike route with bike lanes or sharrows.	1
21		Make Hanks St. a designated bike route with bike lanes or sharrows.	1
22		Make Hilyard a designated bike route with bike lanes or sharrows.	1
23		Make Clinton a designated bike route with bike lanes or sharrows	0
24		Make Crest a designated bike route with bike lanes or sharrows	1
25		Make Laverne a designated bike lane with bike lanes or sharrows.	2
26		Bike lanes on Homedale please	1
27		Make Madison a designated bike route with lanes or sharrows and few stop signs.	0
28		Make Wiard a designated bike route with lanes or sharrows and few stop signs	0
29		Make Summers Ln a designated bike route with lanes or sharrows and few stop signs.	0
30		Bike lanes on Summers Ln south of South 6th please	2
31		Improve bike/ped access connecting Summers Ln and South 6th. use Etna St. dead end?	0
32		This intersection is a mess, both for cars and pedestrians. Uhg, good luck!	2
33		There is currently a Multi use path on the west side from Foothills Blvd to Basin View Dr.	0
34		There are a lot of Culturally sensitive areas here! Have these been addressed? Has the Tribe looked into this?	1
35		Please finish the loop! The Foothills Path was not completed!	4
36	OC&E Trail	Pedestrian cross walk needed. Traffic does not stop for walkers the majority of the time. There have been several instances where a walker has started to cross because a car has slowed down only to have the car continue traveling through or a car will see a pedestrian waiting to cross and attempt to make a quick stop (because there was not a crosswalk or warning for them and they are making a last minute attempt) and the car behind them rear ends them or almost causes a collision. I see this daily as I use the trail and I also have a walking group of elderly women that I lead. I'm afraid of a fatal accident. There have been many accidents involving two cars as it is.	1
37	OC&E Trail	Pedestrian cross walk needed. Traffic does not stop for walkers the majority of the time. There have been several instances where a walker has started to cross because a car has slowed down only to have the car continue traveling through or a car will see a pedestrian waiting to cross and attempt to make a quick stop (because there was not a crosswalk or warning for them and they are making a last minute attempt) and the car behind them rear ends them or almost causes a collision. I see this daily as I use the trail and I also have a walking group of elderly women that I lead. I'm afraid of a fatal accident. There have been many accidents involving two cars as it is.	1
38	OC&E Trail	Pedestrian cross walk needed. Traffic does not stop for walkers the majority of the time. There have been several instances where a walker has started to cross because a car has slowed down only to have the car continue traveling through or a car will see a pedestrian waiting to cross and attempt to make a quick stop (because there was not a crosswalk or warning for them and they are making a last minute attempt) and the car behind them rear ends them or almost causes a collision. I see this daily as I use the trail and I also have a walking group of elderly women that I lead. I'm afraid of a fatal accident. There have been many accidents involving two cars as it is.	1
39	OC&E Trail	Pedestrian cross walk needed. Traffic does not stop for walkers the majority of the time. There have been several instances where a walker has started to cross because a car has slowed down only to have the car continue traveling through or a car will see a pedestrian waiting to cross and attempt to make a quick stop (because there was not a crosswalk or warning for them and they are making a last minute attempt) and the car behind them rear ends them or almost causes a collision. I see this daily as I use the trail and I also have a walking group of elderly women that I lead. I'm afraid of a fatal accident. There have been many accidents involving two cars as it is.	1
40	OC&E Trail	Pedestrian cross walk needed. Traffic does not stop for walkers the majority of the time. There have been several instances where a walker has started to cross because a car has slowed down only to have the car continue traveling through or a car will see a pedestrian waiting to cross and attempt to make a quick stop (because there was not a crosswalk or warning for them and they are making a last minute attempt) and the car behind them rear ends them or almost causes a collision. I see this daily as I use the trail and I also have a walking group of elderly women that I lead. I'm afraid of a fatal accident. There have been many accidents involving two cars as it is.	2

41		Connection between A canal trail and Kit Carson trail needs some work -- this is sidewalk very much in need of repair at the moment and is not a smooth connection for cycling or jogging.	5
42		Klamath Ridge View Trail needs to connect to the Running Y trail Network. Right now, there's no "destination" at the end of this trail.	3
43		Signage directing people to the Eulalona trailhead from downtown (or at least down the hill) is needed. For that matter, signage at the trailhead so that it's clear from the road that this is an official trailhead is also needed.	3
44		This area is not city property, and the status of these trails on top of Moore Mountain has often been in question. Trail easements or land acquisitions (or clear signage) are important.	2
45		Well-signed connections between the Foothills Blvd paved path and soft-surface trails in Steens would be great -- right now, these connections are hard to find if you don't already know about them.	1
46		Is there anything that can be done to "officially" connect or develop informal trails up above Pacific Terrace -- perhaps connect the "K" all the way around to the OIT "O"?	2
47		Extending the WingWatchers Trail south would be highly desirable -- in the long run, a loop trail all the way around Lake Ewauna (with a pedestrian bridge over the Klamath River) would be amazing!	4
48		The "Existing Soft Surface" layer doesn't include the relatively new "Big Sky" Trail in Moore Park.	0
49		The map appears to be missing the Lynnewood connector to the Ridge View Trail.	0
50		The paved trail overlooking Moore Park is an embarassment, with the asphalt in general disrepair. This is a nice short walk that I'd love to regularly take out-of-town visitors to, because of the spectacular lake views, but I'm embarassed to, because of the state of maintenance.	3
51		This could be a nice area for a junction to connect Kit Carson, the A-Canal, and an Oregon Avenue bike lane. A-Canal should continue to the high school. Oregon Avenue should have a protected bike lane to connect Lakeshore to Downtown and the A-Canal.	6
52		Campus Drive, especially crossing the highway from Biehn ST is not a good experience on bike. A safer connection between Biehn and Campus DR and the Kit Carson trail would be nice.	7
53		The "Soft Surface Trail" layer appears to be missing many of the "lower" trails in Moore Park.	0
54		There is a short gap in sidewalk connectivity here. This is a lot of foot traffic down El Dorado especially for those working at Skylakes and OIT. The sidewalks are generally good so it would take a minimal investment to just make the connection so people don't have to walk in the road.	1
55	Foothills Trail	Trees would be nice.	2
56		Signal crossing needed on A-Canal.	3
57		Signal crossing needed on A-Canal.	5
58	Street with Bicycle Lane	Bicycle lane is not adequately protected for such a busy road. Cyclists and drivers are both at risk and will be apprehensive until there is a solution. In my opinion there must be a barrier, even if it's bushes or a line or trees between traffic and pedestrians and bikes. If there is not enough road width for a protected bike lane, can we turn one sidewalk into a multiuse paved trail?	2
59		Many people travel over the 6th St via duct and it's quite scary on a bicycle. I see many people bike on the sidewalk. A bike lane would be nice just to alert drivers and give cyclists some security. The best option would be a protected bike lane. Also, with the closure of downtown Safeway/Haggens, many lower income people on bikes will have to travel over the via duct to get to grocery stores. Otherwise they have to go way off course on the A Canal trail...	2
60		OC&E is great, but I'd compare it to the A Canal with large cracks that are quite jarring on a bike.	2
61		I would love to see sharrows, but this would also be a great place to see protected bike lanes, as it would add to beautification AND result in safer bike - car interactions.	2
62		I would love to see bike lanes on eldorado as well	0
63		Construct sidewalks in the Pelican School area to allow and promote more walking to school from this entire neighborhood.	0
64		Create protected bike lanes from Moore Park to downtown to encourage biking to the city center.	1
65		Painting bike sharrows on 10th St.--connecting Main St. and Oregon Ave.--may be the most ideal approach to create better access for cyclists and to inform drivers. I bike this road on an almost daily basis. Traffic is moderate at the Pine, High and Washington St. intersections--signage at these intersections may help. Traveling further north on 10th, traffic is low/moderate as the street becomes a one-way until it intersects Prospect St.	1
66		A connection (and permission to use) to the Weyerhaeuser road as an alternative to riding Highway 66 would really help. That highway is frequently ridden by local riders and does not lend itself well to such. A route that keeps people off that highway would give locals easy access to some of the best cycling in the state.	0
67		There is a really awkward merge if a cyclist is traveling north on Washburn here.	1
68		Packed walking or biking path loop in the conger heights area.	1
69		Make bike lanes to Jeldwen to promote cycling to work. Lakeport is extremely dangerous to cyclist and there is no other direct route there (without having to go all the way around to the lake).	2
70		Putting bike sensing inducting loops into the stop lights crossing the parkway would really help. Cyclist do not like to have to use the crosswalks.	1
71	OC&E Trail	Having this trail connect to The end of East Main as well as continuing west towards Downtown with out having to use S 6th or East Main st to get Downtown.	1
72	A Canal Trail	The Canal Trail has been neglected and needs paving & lights to make it safe & rideable.	1
73		It would be really great if the bike lane continued on Lakeshore Drive west of Moore Park. At the very least, instead of a "Bike Lane Ends" sign, there should be a "Bikes and cars share the road" sign.	1
74		Bike lanes on/around campus would promote student, faculty, and staff active transportation to work.	0

OTHER COMMENTS RECEIVED FROM WEBSITE

Scott Meredith
coachmeredith@yahoo.com
707 599-8391

Seriously need a sidewalk on Lakeport Blvd. Children and everyone else is in danger as cars pass by close and fast. Pelican Elementary school kids use the route. It connects the entire Harbor Isles area to the city.

Also need speed bumps on Harbor Isle Blvd as people speed tremendously there and it has been used as a drag strip where cars race.

Linda
suicidalsigyn@gmail.com
5039563228

I love the idea of expanding hiking/walking/biking trails in Klamath Falls. My only concern is that many towns in the past have removed horse or dog access as they have expanded bicycle access. I don't want to remove current access. Horse riding groups volunteer and do a significant amount of trail maintenance and clearing. People who want to walk with their dog should not be delegated to walk on busy streets. We want to be open to everyone who wants to enjoy the outdoors. Respect should be encouraged for everyone rather than exclusion. We don't want to exclude outdoor enthusiasts or have another snobby trail system that needs to be policed to enforce a bunch of exclusionary rules. Please don't remove current access and please don't be exclusionary. Otherwise I am excited!

Jaime
guajardo888@gmail.com
5418101611

I have lived in Klamath Falls for 15 years and I always hear about hiking and biking trails. The problem I have is that I do not know where they are. I think it would be nice to have a kiosk like the ones at Highway Rest Areas someplace downtown or even in a major Park like Veterans Park or Moore Park or both. You could have a map opened up showing the trails and even leave brochures to take. You could put up info about upcoming outdoor events and you could sell the extra space to businesses to help pay for it.
Unless there is already one there and I am unaware of it then you need to just spread the word.

David Scott
david.keith.scott@gmail.com
319 270 6768

Great job with the map! I've listed numerous comments and found no problems with the map functions. My only suggestion involves symbology. Consider changing the color for bike lanes. Light blue usually indicates waterways and the color may be hard to distinguish on some screens.

Regarding the trails system. I would like to see three things:
1) better connectivity between existing trails infrastructure
2) better signage to help residents and visitors access and enjoy existing trails infrastructure
3) use existing mid- to low-volume roadways to create designated bike routes around town. These roadways should have bike lanes or sharrows, lower speed limits for cars and few stop signs which discourage bike travel

For #3, I would prefer a strategy that utilizes secondary streets for bike travel rather than a strategy that tries to make major roads (ie. South 6th, Crater Lake Parkway) more bike friendly

Klamath Falls Urban Trail Plan: Additional Comments Received

Date: 09/30/2015

1. Washburn way b/w Eberlein and S. 6th : Pretty obvious gap in the bike lane on either side of Washburn, thought the ROW doesn't look like it could accommodate a bike lane between these two streets. Looks like a challenging spot, but would be great to have that connection given the bike traffic to Fred Meyer and Our Place to Grow (daycare center at the corner of Eberlein and Washburn)
2. Washburn Way/A-Canal Crossing: Northbound cyclists have a crosswalk before the stop light at Crater Lake parkway, but it could be improved with the addition of a flashing pedestrian or bike crossing, similar to the one on Washburn at the Fred Meyer, and on the Washburn/OC&E crossing
3. A-Canal paved trail: Already saw some comments on the condition of the trail, so just re-iterating the need for re-surfacing. Adding lanes would be beneficial as well.
4. Main Street/A-canal trail crossing: Same situation here as the Washburn/A-canal crossing, the addition of a flashing pedestrian signal would be helpful.
5. A-Canal extension to Klamath Union High School: Agree on the extension of the trail, if ROW allows. Looks like you're getting pretty close to the rail line, and we all know how protective they are of their rail ROW.
6. OC&E dead-end: Potentially pave this section to connect with Owens street. Seems like an easy fix.
7. S. 6th bridge over the Railroad Tracks near downtown: Already a comment on the need for a bike lane on the bridge. Bikes currently use the sidewalks. Challenge here is the physical constraints of the bridge itself with the existing lanes. Maybe a separate pedestrian/bike bridge that parallels the vehicle bridge, and connects with Spring street? I'm already hearing the cash registers…

Attachment D Bicycle and Pedestrian Treatments Toolbox

TOOL BOX

The treatments are organized into the categories listed above, with headers and footers indicating the categories. Where applicable, the treatments are organized from highest level of protection to lowest level of protection. Typically, the treatments that provide the most protection will have the highest appeal to a wide variety of users. For example, bicycle treatments are commonly categorized by the level of separation they provide bicyclists from motor vehicles. Separated facilities have been found to attract more bicyclists of a variety of ages and abilities and are generally considered “lower stress” facilities. However, separated facilities must be carefully designed to allow for safe crossings and turning movements for both motor vehicles and bicyclists at intersections. As another example, treatments for pedestrian mid-block crossings range from a high-level of protection with a pedestrian signal to a lower level of protection with a high-visibility crosswalk. Intermediary levels of protection can be provided with a pedestrian hybrid beacon or rectangular rapid flashing beacon.

Table 1 summarizes the treatments provided in the toolbox by category. The toolbox that follows provides more detail on each facility type, benefits, other considerations, and common applications.

Table 1. Toolbox Contents

	Page #	Treatment	Image	Level of Separation / Protection
Bicycle Facilities	BF-1	Multi-Use Path		High Level of Separation/Protection
	BF-2	One-Way Separated Bike Lane (Cycle Track)		
	BF-3	Two-Way Separated Bike Lane (Cycle Track)		
	BF-4	Buffered Bike Lane		
	BF-5	Standard Bike Lane		
	BF-6	Advisory Bike Lane		
	BF-7	Paved Shoulder		
	BF-8	Bicycle Boulevard		
	BF-9	Shared Lane Roadways		Low Level of Separation/Protection

Pedestrian Facilities	PF-1	Multi-Use Path		**High Level of Separation/Protection**
	PF-3	Sidewalk		
	PF-2	Pedestrian Path (Sidepath)		
	PF-4	Shoulder Pedestrian Facility		**Low Level of Separation/Protection**
General Crossing Treatments	CT-1	Grade Separated Crossing		**High Level of Separation/Protection**
	CT-2	Pedestrian Signal		
	CT-3	Pedestrian Hybrid Beacon		
	CT-4	Rectangular rapid Flashing Beacon		
	CT-5	Crossing Island (Pedestrian Refuge)		
	CT-6	Bulb-Out/Curb Extension		
	CT-7	Raised Pedestrian Crossing		
	CT-8	High Visibility Crosswalk		**Low Level of Separation/Protection**

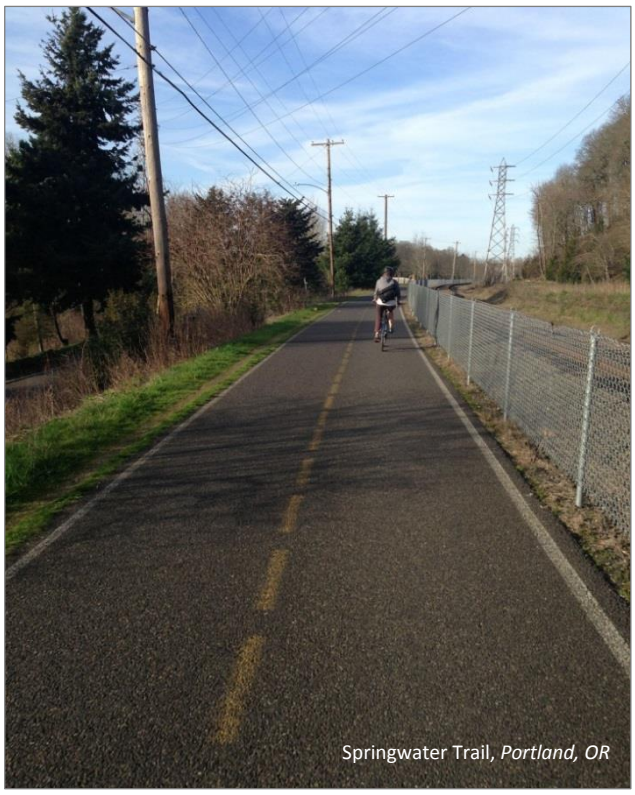
	CT-9	Leading Pedestrian Interval (LPI)		Not Applicable
Railroad Crossing Treatments	RR-1	Automatic Pedestrian Gate		**High Level of Separation/Protection**
	RR-2	"Active" Treatments		
	RR-3	Basic "Passive" Treatments		
	RR-4	Other "Passive" Treatments		**Low Level of Separation/Protection**
Bicycle Intersection Treatments	BI-1	Bike Signal		**High Level of Separation/Protection**
	BI-2	Bike Boxes		
	BI-3	Two-Stage Left Turn Boxes		
	BI-4	Pavement Markings Through Intersections		**Low Level of Separation/Protection**

Pedestrian/Bicycle Amenities	A-1	Bicycle Parking		Not Applicable
	A-2	Street Furniture and Lighting		Not Applicable
	A-3	Transit Stop Shelters		Not Applicable
Traffic Calming Treatments	TC-1	Rumble Strips		Not Applicable
	TC-2	Speed Bumps, Speed Humps, Speed Tables		Not Applicable
	TC-3	Reduced Curb Radii		Not Applicable

Bicycle Facilities

MULTI-USE PATH

Cost: $$$



Springwater Trail, *Portland, OR*

OC&E Trail, *Klamath Falls, OR*

Multi-use paths are paved, bi-directional, trails away from roadways that can serve both pedestrians and bicyclists. Multi-use paths can be used to create longer-distance links within and between communities and provide regional connections. They play an integral role in recreation, commuting, and accessibility due to their appeal to users of all ages and skill levels.

Benefits

- Provides facility for both pedestrians and bicyclists in less space than separate facilities.
- Separation from motor vehicles can attract users of all levels.

Constraints

- May be unsafe in areas with frequent crossings or driveways.
- When parallel to roadways, requires substantial space for buffer.
- Potential for conflicts between bicyclists and pedestrians due to shared facility.
- Isolated paths may introduce personal security concerns.

Typical Applications

- Medium- to long-distance links within and between communities that also serve as recreational facilities.
- Parallel to roads in rural areas where sidewalks and on-street facilities are not present.

Design Considerations

- Best suited in areas where roadway crossings can be minimized (such as parallel to travel barriers such as highways, railroad tracks, rivers, shorelines, natural areas, etc.).
- Necessitate high-visibility treatments for crossings.
- A minimum width of 10 feet is recommended for low-pedestrian/bicycle-traffic contexts; 12 to 20 feet should be considered in areas with moderate to high levels of bicycle and pedestrian traffic.
- Pavement markings can be used to indicate distinct space for pedestrian and bicycle travel.

Additional Guidance

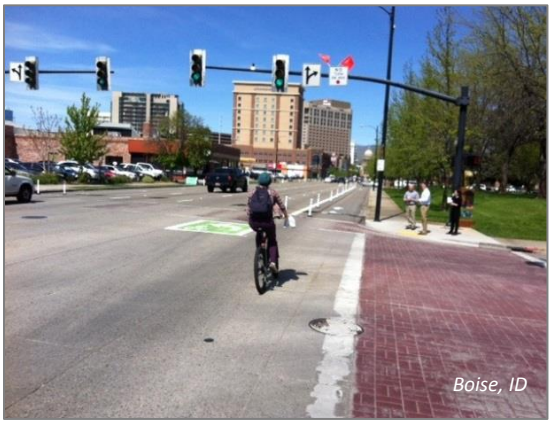
- AASHTO Guide for the Development of Bicycle Facilities
- ODOT Highway Design Manual

ONE-WAY SEPARATED BIKE LANE (CYCLE TRACK)

Cost: $-$$$


NE Cully Boulevard
Portland, OR


NE Multnomah Street
Portland, OR


Boise, ID

A one-way separated bike lane (SBL), also known as a cycle track or protected bike lane, is a bicycle facility within the street right-of-way separated from motor vehicle traffic by a buffer and a physical barrier, such as planters, flexible posts, parked cars, or a mountable curb. On two-way streets, a one-way SBL would be found on each side of the street, like a standard bike lane.

Benefits

- Provides physical separation from motor vehicle traffic, which can attract users of all levels.
- Buffer can provide opportunities for landscaping.
- Reduced risk of "dooring" when parked cars are present.

Constraints

- Requires additional right-of-way over standard bike lane.
- Construction may be more expensive than standard bike lane.
- May introduce street maintenance considerations, depending on buffer type.

Typical Applications

- Roadway segments with sufficient right-of-way or where a "road diet" (vehicle lane reduction) can be implemented.
- Key segments of the bicycle network where more protection is desirable, such as areas with higher traffic volumes or speeds, or routes to common destinations, like schools.
- Roadways with infrequent driveways and side street accesses.

Design Considerations

- Intersections must be designed to ensure visibility of bicyclists using the facility. Treatments include separate signal phases for bicyclists and high visibility pavement markings.
- Buffer type can vary depending on context, presence of parking, and available right-of-way.
- Green pavement markings or striping can add visibility and awareness in "conflict areas" or intersections where bicycle and vehicle travel paths cross.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- CROW Design Manual for Bicycle Traffic
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide
- FHWA Separated Bike Lane Planning and Design Guide

TWO-WAY SEPARATED BIKE LANE (CYCLE TRACK)

Cost: $-$$$

Davis, CA

Broadway
Seattle, WA

A two-way separated bike lane (SBL), also known as a two-way cycle track or protected bike lane, is a facility within the street right-of-way separated from motor vehicle traffic by a buffer and a physical barrier, such as planters, flexible posts, parked cars, or a mountable curb. Two-way SBLs serve bi-directional bicycle travel within the facility on one side of the street.

Benefits

- Requires less right-of-way than a one-way SBL, due to the need for only one buffer.
- Provides physical separation from motor vehicle traffic, which can attract users of all levels.
- Reduced risk of "dooring" when parked cars are present.

Constraints

- May be less intuitive due to apparent "wrong-way" travel on one side of street.
- Concern about crashes in areas with frequent crossings or driveways.
- Construction may be more expensive than standard bike lane.
- May introduce street maintenance considerations, depending on buffer type.

Typical Applications

- On-street connections between off-street multi-use paths.
- Roadways with infrequent driveways and side street accesses.
- Key segments of the bicycle network where more protection is desirable, such as areas with higher traffic volumes or speeds or routes to common destinations, like schools.
- On one-way streets where two-way bicycle travel is desirable.

Design Considerations

- Intersections must be designed to ensure visibility of bicyclists using the facility. Treatments include separate signal phases for bicyclists and high visibility pavement markings.
- Buffer type can vary depending on context, presence of parking, and available right-of-way.
- Green pavement markings or striping can add visibility and awareness in "conflict areas" or intersections where bicycle and vehicle travel paths cross.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- CROW Design Manual for Bicycle Traffic
- FHWA Separated Bike Lane Planning and Design Guide

BUFFERED BIKE LANE

Cost: $-$$$

Capitol Boulevard
Boise, ID

Buffered bicycle lanes are on-street lanes that include an additional striped buffer of typically 2-3 feet between the bicycle lane and the vehicle travel lane and/or between the bicycle lane and the vehicle parking lane.

Benefits

- A parking-edge buffer on streets with on-street parking can reduce the likelihood of "dooring."
- Increased separation from motor vehicles (over standard bicycle lanes) can increase bicyclist comfort.

Constraints

- Does not provide physical protection and therefore may not attract bicyclists of all levels.
- The additional width provided by the buffer may invite motorists to illegally park in the lane if not adequately signed and enforced.

Typical Applications

- Long-distance links within and between communities.
- Streets with sufficient pavement width to provide a buffer.
- Widely applicable in both urban and rural settings.
- Segments of the bicycle network with moderate vehicle speeds or volumes.

Design Considerations

- Typical buffer width is 2-3 feet, in addition to standard bicycle lane width of 5-6 feet, but a combined width of 6 feet is acceptable.
- Green pavement markings or striping can add visibility and awareness in "conflict areas" or intersections where bicycle and vehicle travel paths cross.
- Buffer space can have markings or rumble strips to deter vehicles from traveling or parking in the space.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- NACTO Urban Bikeway Design Guide
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide

STANDARD BIKE LANE

Cost: $-$$$

A standard bike lane is an on-street facility that provides space designated for bicyclists, separated from vehicles by pavement markings.

Benefits

- Provides a designated facility for bicyclists using the minimum pavement width.
- Provides increased visibility for bicyclists.
- Relatively inexpensive treatment when pavement width is available.

Constraints

- Can position bicyclists in the "door zone" if located adjacent to parked vehicles without a buffer.
- Motorists may illegally park in the lane if not adequately signed and enforced.
- Does not provide physical protection or horizontal buffer from vehicles and therefore does not attract bicyclists of all levels.

Typical Applications

- Arterials, collectors, and other non-local streets with speeds higher than 25 mph or over 3,000 average daily motorized traffic volumes.
- Streets without sufficient right-of-way or pavement width for buffered bike lanes or separated bike lanes (SBLs).

Design Considerations

- Typical bike lane width is 6 feet, with 5 feet in constrained locations. A minimum 4-foot width can be used on constrained segments where on-street parking is not present.
- Green pavement markings or striping can add visibility and awareness in "conflict areas" or intersections where bicycle and vehicle travel paths cross.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- NACTO Urban Bikeway Design Guide
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide

ADVISORY BIKE LANE

Cost: $

Hanover, NH
Photo: Danny Kim, *The Dartmouth*

Hanover, NH
Photo: Danny Kim, *The Dartmouth*

Advisory bike lanes, also known as "suggestion lanes," are bicycle lanes that motor vehicles can use to pass oncoming motor vehicles after yielding to bicyclists. Advisory bicycle lanes are used in combination with a single center lane (without a centerline) for bi-directional motor vehicle travel on relatively low-volume streets.

Benefits

- Provides striped bicycle facility on roadways with very limited right-of-way or pavement width.
- Encourages slower motor vehicle speeds and yielding to bicyclists.
- Very inexpensive treatment consisting of only signing and striping.

Constraints

- Motorists may not initially understand advisory lanes due to limited applications in the US to date.
- Does not provide physical protection from vehicles and may not attract bicyclists of all levels.

Typical Applications

- Streets with less than 6,000 average daily motorized traffic that do not have sufficient width for exclusive bicycle facilities.
- Can be applied in urban or rural contexts.

Design Considerations

- Advisory bike lanes can be striped as 5-7 foot lanes with a single center motorized vehicle lane of 10 to 18 feet.
- Explanatory signage may be helpful in US contexts to communicate to motorists that they must yield to bicyclists before passing oncoming vehicles.

Additional Guidance

- CROW Design Manual for Bicycle Traffic (Netherlands Design Guide)

PAVED SHOULDER

Cost: $-$$

Tucson, AZ


Hawaii

A paved road shoulder can serve as a bicycle facility that provides space separated from motor vehicle traffic in rural areas.

Benefits

- Provides a space separated from motorists.
- Requires less right-of-way than a separated multi-use path.

Constraints

- Does not provide physical protection from vehicles and may not attract bicyclists of all levels.
- Shoulders serving other uses, such as broken-down vehicles, may force bicyclists into travel lanes.

Typical Applications

- Typically applied on rural roadways.
- Also used as an interim treatment in urbanizing areas.

Design Considerations

- A 6-foot width is preferred to accommodate bicycle travel, with a 4-foot minimum in constrained areas. Greater widths can be used in higher-speed locations.
- Rumble strips or profiled striping can be used to enhance safety and minimize motorists encroaching on the shoulder.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide

BICYCLE BOULEVARD

Cost: $

Portland, OR


SE Spokane Street
Portland, OR

Bicycle boulevards are low-volume, low-speed streets where bicycles and motorized vehicles share road space, but where bicycle movements are prioritized and optimized through use of motorized vehicle restrictions, traffic calming elements, and intersection crossing treatments.

Benefits

- Typically does not require additional right-of-way.
- Can create a comfortable space for bicyclists of all levels.
- Enhances connectivity of the network for bicyclists.

Constraints

- Bicycle boulevards may reduce through routes for motorized vehicles
- Some treatments, such as traffic circles or chicanes, may be expensive.

Typical Applications

- Local routes parallel to larger, higher-traffic roadways, such as arterials or collectors.
- Low-traffic neighborhood routes that can enhance the bicycle network connectivity.

Design Considerations

- A variety of traffic calming elements can be employed, including speed humps, traffic circles, chicanes, median barriers, and traffic diverters in order to keep traffic volumes low and minimize through-traffic.
- Consider providing “bicycle-only” through movements at intersections, where motorists are required to turn off the bicycle boulevard.
- Include shared lane markings and wayfinding signage for bicyclists.
- Recommended for streets with posted speeds of 25 mph or lower and volumes less than 3,000 average daily motorized traffic.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- Manual on Uniform Traffic Control Devices (MUTCD)

SHARED LANE ROADWAYS

Cost: <$

Prince George's County, MD

Cornell Road,
Portland, OR


Pennsylvania

Shared lane roadways include roadways without separate bicycle facilities on which bicycle travel is not prohibited. Most roadways, with the exception of some limited access freeways, are "shared lane roadways" if they do not have a different type of bicycle facility. Shared lane roadways that are part of a designated bicycle network may include shared lane markings ("sharrows") or signage to indicate the legal presence of bicyclists in the travel lane.

Benefits

- Allows for bicycle travel when other treatments are not feasible.
- Low- to no-cost.

Constraints

- Does not provide any separation from vehicles.
- Without additional traffic-calming treatments, it is likely to attract only strong and fearless bicyclists.

Typical Applications

- Rural roadways without shoulders often use "share the road" signage to indicate to road users that bicyclists may be present.
- Sharrows are typically used in urban or suburban locations on bicycle network links where other facilities are not present.

Design Considerations

- Sharrows should be placed at least 4 feet from the edge of the curb or on-street parking.

Additional Guidance

- ODOT Bicycle and Pedestrian Design Guide
- ODOT Highway Design Manual
- Manual on Uniform Traffic Control Devices (MUTCD)

Pedestrian Facilities

MULTI-USE PATH

Cost: $$$

Springwater Trail
Portland, OR

Hawthorne Bridge
Portland, OR

Orlando, FL

Multi-use paths are paved, bi-directional, trails away from roadways that can serve both pedestrians and bicyclists. Multi-use paths can be used to create longer-distance links within and between communities, provide regional connections and play an integral role in recreation, commuting, and accessibility due to their appeal to users of all ages and skill levels.

Benefits

- Provides opportunity for a scenic recreational pedestrian facility.
- Hard surface allows for universal accessibility.

Constraints

- Pedestrian and bicycle conflicts may occur in shared space.
- When parallel to roadways, require substantial space for buffer.
- Isolated paths may introduce personal security concerns.

Typical Applications

- Medium- to long-distance links within and between communities that also serve as recreational facilities.
- Rural areas where sidewalks and on-street facilities are not present.

Design Considerations

- Best suited in areas where roadway crossings can be minimized (such as parallel to travel barriers such as highways, railroad tracks, natural areas, rivers, shorelines, etc.).
- Necessitate high-visibility treatments for crossings.
- A minimum width of 10 feet is recommended for low-pedestrian/bicycle-traffic contexts; 12 to 20 feet should be considered in areas with moderate to high levels of bicycle and pedestrian traffic.
- Pavement markings can be used to indicate distinct space for pedestrian and bicycle travel

Additional Guidance

- ODOT Bicycle and Pedestrian Design Guide
- AASHTO Guide for the Development of Bicycle Facilities

Pedestrian Facilities

SIDEWALK

Cost: $$$


Portland, OR


SE 17th Avenue
Portland, OR

Milwaukee Ave
Portland, OR

A sidewalk is a dedicated pedestrian facility adjacent to the roadway and separated from traffic by a curb.

Benefits

- Provides pedestrians with a dedicated physically-separated space.
- Provides means of mobility for people using wheelchairs, people with strollers, or others who may not be able to travel on an unpaved surface.

Constraints

- Adding a concrete curb and sidewalk to streets adds a substantial expense to the overall construction cost.
- Stormwater drainage needs to be considered when retrofitting existing streets.

Typical Applications

- Typically provided on urban (non-rural) and residential streets, with the exception of limited access freeways.
- Typically added to streets in urbanizing areas as development occurs.

Design Considerations

- Typically 6 to 8 feet wide. Sidewalks should be constructed at least 5 feet wide, with a minimum of 4 feet of clear width, excluding a shy distance of 1.5 feet from the curb and any adjacent obstructions.
- A landscaped buffer is preferable in residential areas and in locations with higher traffic speeds and volumes.
- Wider sidewalks of 12 to 20 feet can be beneficial in commercial or “town center” areas in order to accommodate higher pedestrian volumes, street furniture, pedestrian scale lighting, business signage, bike parking, transit stops, and other amenities.

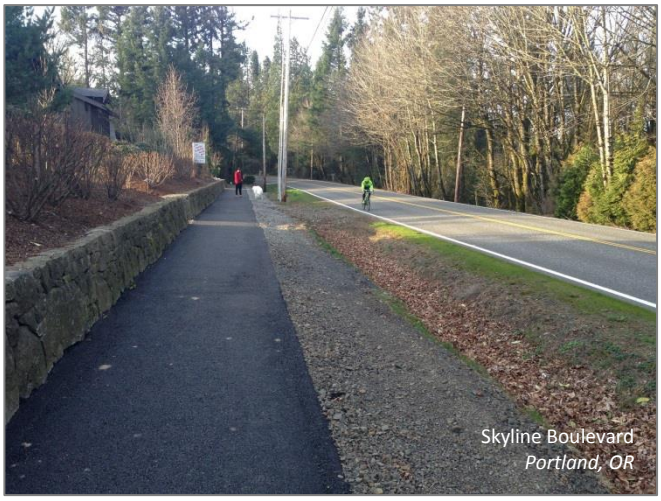
Additional Guidance

- ODOT Highway Design Manual.
- ODOT Bicycle and Pedestrian Design Guide
- AASHTO Green Book
- NACTO Urban Streets Design Guide

PEDESTRIAN PATH (SIDEPATH)

Cost: $$

Skyline Boulevard
Portland, OR



Skyline Boulevard
Portland, OR

A pedestrian path is a hard-surface path adjacent to the roadway in lieu of a sidewalk in areas where other bicycle facilities exist. Similar to a multi-use path, pedestrian paths are narrower in width and generally do not invite bicycle travel.

Benefits

- Provides a hard surface for pedestrians buffered from the roadway.
- Requires less right-of-way than a multi-use path.
- Lower cost than construction of a full sidewalk with curb and gutter.

Constraints

- May also attract bicyclists, creating the potential for conflicts between pedestrians and bicyclists.

Typical Applications

- In constrained rural areas where sidewalks are not present and multi-use paths cannot be accommodated.
- As an interim treatment in urbanizing areas to make connections between sidewalk facilities.

Design Considerations

- Typically 5- to 8-foot wide asphalt surface.
- Pedestrian paths are typically separated from the roadway by a gravel or vegetated buffer instead of a curb and gutter.
- Should follow ADA standards to allow for universal access.
- Though not intended for bicyclists, pedestrian paths may attract bicyclists if a separate bicycle facility is not provided.

Additional Guidance

- FHWA Designing Sidewalks and Trails for Access
- ODOT Highway Design Manual

SHOULDER PEDESTRIAN FACILITY

Cost: $-$$


SE Powell Blvd
Portland, OR


Boise, ID

A paved shoulder facility provides access for pedestrians on a hard surface in rural areas where sidewalks are not present.

Benefits

- Provides a hard surface space separated from motorists.
- Requires less right-of-way than a separated multi-use path.
- More cost-effective than installing sidewalks.

Constraints

- Does not provide physical protection of a curb and may not be comfortable for all users.
- Shoulders serving other uses, such as broken-down vehicles, may force pedestrians into travel lanes.

Typical Applications

- Typically applied on rural roadways.
- Also used as an interim treatment in urbanizing areas.

Design Considerations

- A 6-foot width is preferred to accommodate pedestrian travel, with a 4-foot minimum of paved surface in constrained areas. Greater widths can be used in higher-speed locations.
- Rumble strips or profiled striping can be used to enhance safety and minimize motorists encroaching on the shoulder.

Additional Guidance

- ODOT Highway Design Manual
- AASHTO Green Book

General Crossing Treatments

GRADE SEPARATED CROSSING

Cost: $$$$$


Scottsdale, AZ


Portland, OR


Portland, OR

A grade-separated crossing is a bridge (overcrossing) or a tunnel (undercrossing) that carries non-motorized traffic over or under a motorized corridor or other barrier to travel.

Benefits

- Provides physical separation from motor vehicle traffic, attracting users of all levels.
- Minimizes crash risk and can provide a safe crossing of any type of facility, including railroads and limited access highways.

Constraints

- Grade-separated crossings can be very expensive.
- Depending on topography, may require significant additional space to make grade changes.
- Long under-crossings have the potential to present safety and security issues.

Typical Applications

- Crossings of limited access highways, multi-lane roadways, or railroads.
- Multi-use path crossings often have grade separated crossings in order to provide comfortable and safe crossings for users of all levels.

Design Considerations

- If a substantial slope or out-of-direction travel is required, some bicyclists or pedestrians may avoid using the crossing, so minimize slope and out-of-direction travel if possible.
- In selecting a grade separated crossing, consider the surrounding topography, natural features, and floodplain.
- Consider whether the crossing needs to accommodate equestrians.
- Ensure adequate sight distance for bicyclists entering the facility to see oncoming bicyclists or pedestrians. If not possible, consider requiring bicyclists to dismount.

Additional Guidance

- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings

General Crossing Treatments

PEDESTRIAN SIGNAL

Cost: $$$$

This crossing type can provide pedestrians with a signal-controlled crossing at a mid-block location or at a previously stop-controlled intersection where pedestrian volumes warrant full signalization. The signal remains green for the mainline traffic movement until actuated by a push button to call a red signal for traffic.

Benefits

- Has nearly 100 percent rate of motorist yielding behavior at crossing locations.
- Same appearance as standard traffic signal, so motorist understanding is high.

Constraints

- Must be activated by pedestrians.
- More costly than other crossing treatments.

Typical Applications

- Midblock crossings with high pedestrian or bicycle demand and/or high traffic volumes.
- At locations where multi-use paths intersect with roadways.
- At previously stop-controlled intersections where pedestrian volumes warrant a signal.

Design Considerations

- The push button to activate the pedestrian signal should be easily accessible by pedestrians, wheelchair users, and bicyclists (if applicable).

Additional Guidance

- Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Urban Street Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings

General Crossing Treatments

PEDESTRIAN HYBRID BEACON

Cost: $$$-$$$$

Juneau, AK

Boise, ID

A pedestrian hybrid beacon (sometimes called a HAWK signal) is a pedestrian activated signal that is unlit when not in use. It begins with a yellow light alerting drivers to slow, and then displays a solid red light requiring drivers to remain stopped while pedestrians cross the street. Finally, the beacon shifts to flashing red lights to signal that motorists may proceed after pedestrians have completed their crossing.

Benefits

- Has nearly 100 percent rate of motorist yielding behavior at crossing locations.
- Improves pedestrian safety and reduces pedestrian-involved crashes.
- Less delay to motor vehicle drivers than a signal.

Constraints

- Must be activated by pedestrians.
- More costly than other crossing treatments.

Typical Applications

- Midblock crossings with high pedestrian or bicycle demand and/or high traffic volumes.
- At locations where multi-use paths intersect with roadways.

Design Considerations

- The push button to activate the pedestrian hybrid beacon should be easily accessible by pedestrians, wheelchair users, and bicyclists (if applicable).

Additional Guidance

- Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Urban Street Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings

General Crossing Treatments

RECTANGULAR RAPID FLASHING BEACON (RRFB)

Cost: $$-$$$


Portland, OR


Beaverton, OR

These crossing treatments include signs that have a pedestrian-activated "strobe-light" flashing pattern to attract motorists' attention and provide awareness of pedestrians and/or bicyclists that are intending to cross the roadway.

Benefits

- Provides a visible warning to motorists at eye level.
- Increases motorists yielding behavior at crossing locations over round yellow flashing beacons (80 to 100 percent compliance).
- Allows motorists to proceed after yielding to pedestrians and bicyclists.

Constraints

- Flashing beacons must be activated by pedestrians.
- Motorists may not understand the flashing lights of the RRFB, so compliance may be lower than with a traffic signal.

Typical Applications

- Midblock crossings with medium to high pedestrian or bicycle demand and/or medium to high traffic volumes.
- Locations where multi-use paths intersect with roadways.

Design Considerations

- The push button to activate the RRFB should be easily accessible by pedestrians, wheelchair users, and bicyclists (if applicable).
- Consider adding a push button in the median island for crossings of multi-lane facilities.

Additional Guidance

- Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Urban Street Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings
- ODOT Bicycle and Pedestrian Design Guide

General Crossing Treatments

CROSSING ISLAND (PEDESTRIAN REFUGE)

Cost: $-$$


Portland, OR


Portland, OR

A crossing island in the median provides a protected area in the middle of a crosswalk for pedestrians to stop while crossing the street. Also called pedestrian refuge islands or median refuges, they can be used at intersections or mid-block crossings.

Benefits

- Reduces pedestrian exposure at marked and unmarked crosswalks.
- Requires shorter gaps in traffic to cross the street.
- Allows pedestrians to cross in two phases.

Constraints

- Streets with constrained right-of-way may not have sufficient width to allow for a crossing island.

Typical Applications

- Preferred treatment for crossings of multi-lane streets.
- Often used in areas with high levels of vulnerable pedestrian users, such as near schools or senior centers/housing.
- Often applied in areas with high traffic volumes or with a pedestrian crash history.

Design Considerations

- Must have at least 6 feet of clear width to accommodate people using wheelchairs.
- At crossing locations where bicyclists are anticipated, a width of 10 feet or greater is desirable to accommodate bicycles with trailers or groups of bicyclists.
- Can be applied in conjunction with other traffic control treatments.

Additional Guidance

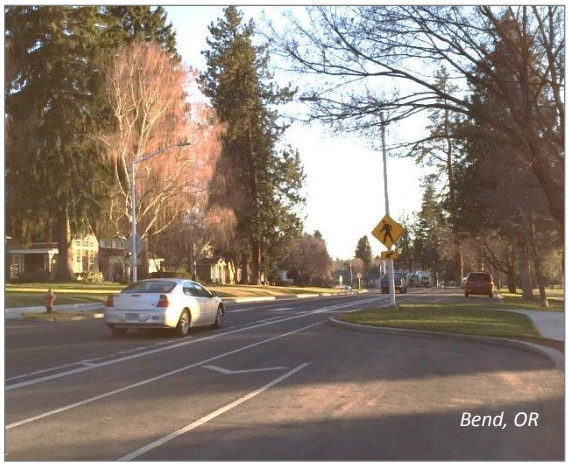
- ODOT Bicycle and Pedestrian Design Guide
- NACTO Urban Streets Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings

General Crossing Treatments

BULB-OUT/CURB EXTENSIONS

Cost: $$

Boston, MA


Bend, OR

An extension of the curb or the sidewalk into the street (in the form of a bulb), usually at an intersection, that narrows the vehicle path, inhibits fast turns, and shortens the crossing distance for pedestrians.

Benefits

- Shortens crossing distances for pedestrians.
- Reduces motorist turning speeds.
- Increases visibility between motorists and pedestrians.
- Enables permanent parking
- Enables tree and landscape planting and water runoff treatment.

Constraints

- Can only be used on streets with unrestricted on-street parking.
- Physical barrier can be exposed to traffic.
- Greater cost and time to install than standard crosswalks.
- Can present turning radius problems to large vehicles.

Typical Applications

- Mid-block or intersection pedestrian crossings on streets with unrestricted on-street parking.
- Streets with on-street parking where pedestrian volumes ≥ 20 pedestrians per hour, ADT ≥ 1,500 vehicles per day, and average right-turn speeds ≥ 15 mph.

Design Considerations

- Include a narrow passage for bicyclists to prevent conflict with vehicles.
- Provide accessible curb ramps and detectible warnings.
- Include landscaping on the curb extension to differentiate path for pedestrian travel, especially for pedestrians with vision impairments.

Additional Guidance

- ITE/FHWA Report Traffic Calming: State of the Practice
- FHWA Designing Sidewalks and Trails for Access *Part II of II: Best Practices Design Guide*

General Crossing Treatments

RAISED PEDESTRIAN CROSSING

Cost: $$


Orlando, FL

Atlanta, GA


Sanford, FL

Raised pedestrian crossings bring the level of the roadway even with the sidewalk, providing a level pedestrian path and requiring vehicles to slow. Raised crossings can be used at midblock crosswalks or intersections.

Benefits

- Provides a better view for pedestrians and motorists
- Slows down motorists.

Constraints

- Can be difficult to navigate for large trucks, snow plows, and low ground clearance vehicles.
- Relatively expensive.

Typical Applications

- Raised crosswalks are typically provided at midblock crossings on two-lane roads where pedestrian volumes ≥ 50 pedestrians per hour and speed control is needed.
- Raised crosswalks may be provided at intersections where low-volume streets intersect with high-volume streets or where a roadway changes character (such as from commercial to residential).
- Raised crosswalks should not be used on transit routes or where there are steep grades or curves.

Design Considerations

- Raised crosswalks should be even with the sidewalk in height and at least as wide as the crossing or intersection.
- Provide detectable warnings for pedestrians where they cross from the sidewalk in to the crossing area.
- Consider drainage needs and provide appropriate treatments.
- Use colored asphalt as opposed to brick or decorative surface materials to make the crossing smoother for those with mobility impairments.

Additional Guidance

- ITE/FHWA Report Traffic Calming: State of the Practice
- FHWA Designing Sidewalks and Trails for Access *Part II of II: Best Practices Design Guide*

General Crossing Treatments

HIGH VISIBILITY CROSSWALK

Cost: $

Portland, OR

Mount Rainier, MD

Boise, ID

High visibility crosswalks consist of reflective roadway markings and accompanying signage at intersections and priority pedestrian crossing locations.

Benefits

- Communicates potential for pedestrian crossings to motorists.
- Designates a preferred crossing location for pedestrians.
- Motorists are required to stop for pedestrians entering crosswalks.
- Low cost.

Constraints

- Can be more effective with other types of traffic control (signals, stop signs).
- At uncontrolled locations (midblock), motorist compliance is not as high as with other treatments.

Typical Applications

- High visibility crosswalks are typically applied at intersections of arterials, collectors, and/or other facilities with moderate to high vehicle volumes and speeds.
- Can be applied at mid-block locations, especially in conjunction with other treatments.

Design Considerations

- Crosswalk striping can vary, and may include continental striping (top photo), ladder striping, zebra striping (middle photo), etc.
- Can be constructed with paint or thermoplastic material.
- Minimum width is 6 feet, but wider crossings are preferred in areas with high number of pedestrians.

Additional Guidance

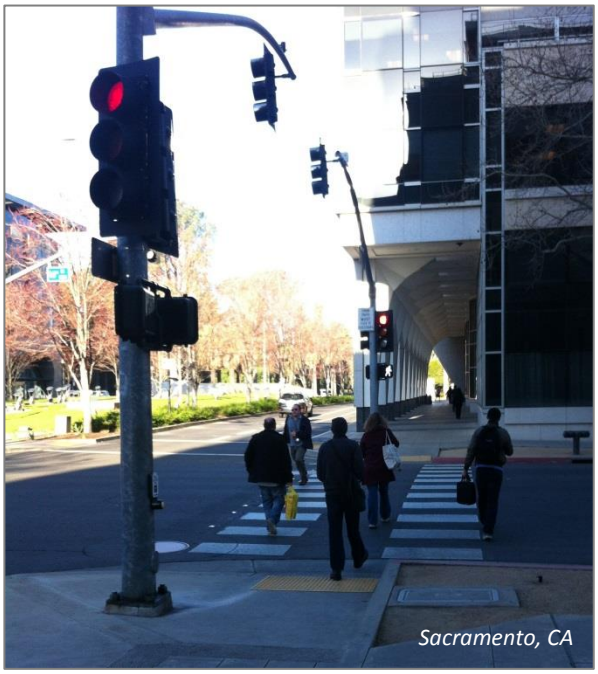
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings
- ODOT Bicycle and Pedestrian Design Guide

General Crossing Treatments

LEADING PEDESTRIAN INTERVAL (LPI)

Cost: $


Orlando, FL


Sacramento, CA

A leading pedestrian interval gives pedestrians a 2-5 second head start before the concurrent vehicle phase turns green to allow pedestrians to enter and occupy the crosswalk before turning vehicles get there.

Benefits

- Pedestrians are more visible in the crosswalk before vehicles start moving.
- Helps reduce conflicts with pedestrians and turning vehicles.

Constraints

- Reduces green time for vehicle movements.
- May add to delays at intersections operating near capacity.

Typical Applications

- Used in areas where right-turning vehicle movements often interfere with pedestrian crossing movements.

Design Considerations

- Only possible when pedestrian signal faces are present.

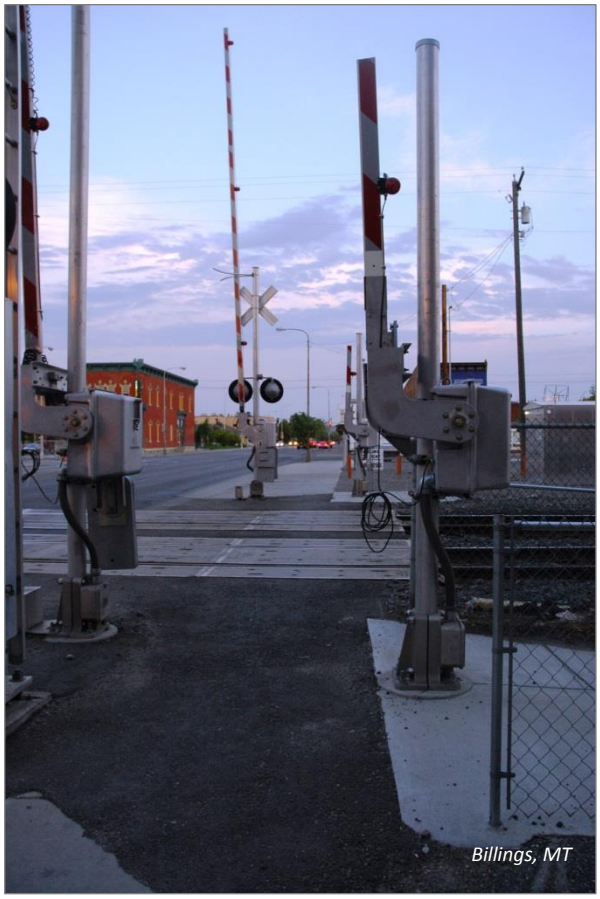
Additional Guidance

- ODOT Signal Design Manual
- ODOT Bicycle and Pedestrian Design Guide

Railroad Crossing Treatments

AUTOMATIC PEDESTRIAN GATE

Cost: $$$$$



This "active" treatment is a gate connected to and activated by the train signal system, and lowers in tandem with the motor vehicle gate. It is designed to prevent pedestrians and bicyclists from crossing when a train is approaching.

Benefits

- Provide positive control and effectively communicates to pedestrians and bicyclists the need to stop at the railroad crossing.

Constraints

- More costly than other crossing treatments.
- Without channelization, pedestrians may walk around the gate.

Typical Applications

- Locations with limited sight distance at the pedestrian crossing.
- Locations with high-speed train operation.

Design Considerations

- Must provide sufficient clear space between gate and railroad crossing, so that pedestrians or bicyclists do not get trapped if the gates descend while they are crossing.

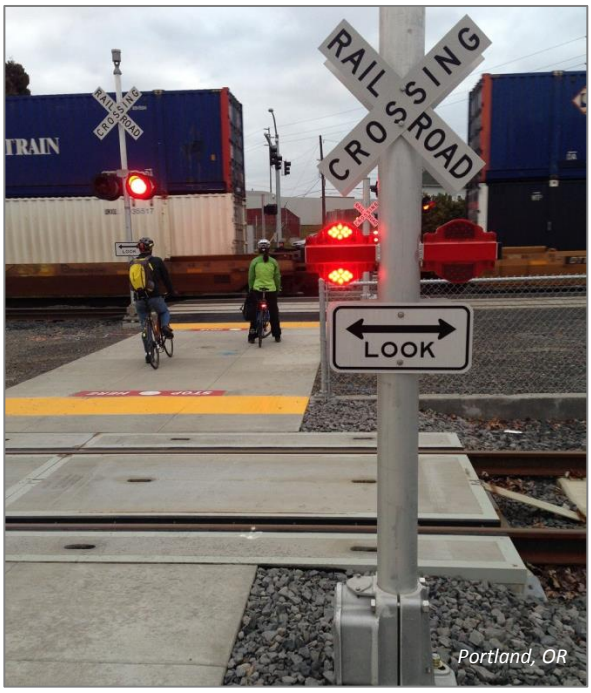
Additional Guidance

- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety

Railroad Crossing Treatments

"ACTIVE" TREATMENTS: FLASHING LIGHT SIGNALS AND AUDIBLE WARNINGS

Cost: $$$



Portland, OR

Lehi, UT

Flashing light signals consist of two light units that flash alternately at a rate of 45 to 65 times per minute and are typically applied at motorized vehicle crossings. Smaller variations of flashing light signals, located at eye level, can be used at pedestrian and bicycle crossing locations. Audible warning bells can accompany the flashing lights. These treatments are "active" in that they only operate when a train is approaching.

Benefits

- Actively communicate the approach of a train to pedestrians and bicyclists.
- Allows pedestrians to rely on active warning instead of needing to make a crossing judgment.

Constraints

- More costly than passive crossing treatments.
- Audible warnings may have impact on surrounding community.

Typical Applications

- At roadway intersections, active treatments are often used to control motorized vehicles and can also apply to adjacent pedestrian and bicycle facilities.
- At exclusive pedestrian or bicycle crossings, active treatments are used in locations where trains are traveling at moderate speeds, where pedestrian and bicycle volumes are moderate to high, or in cases with limited sight distance.

Design Considerations

- Eye-level variations of typical flashing light signals can be used for exclusive pedestrian and bicycle crossings.
- Audible warning devices are generally installed in conjunction with flashing light signals.

Additional Guidance

- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety

Railroad Crossing Treatments

BASIC "PASSIVE" TREATMENTS

Cost: $

Portland, OR

Portland, OR

Basic treatments that can be used at rail crossings include "Stop Here" pavement markings, tactile warnings, and "look both ways" signage. These passive treatments are used to signal to pedestrians and bicyclists the correct location to stop when a train is approaching at a crossing and reminds them to look both ways before proceeding. "Passive" treatments are always present, as opposed to "active" treatments, which are operational only when a train is approaching.

Benefits

- Clearly indicates the safe stopping location to pedestrians and bicyclists in locations where it may be unclear.

Constraints

- Used alone, does not provide an active warning to pedestrians of an approaching rail vehicle, so pedestrians must make a judgment on when they can cross safely.

Typical Applications

- Used in crossing locations where the safe stopping location may not be clear.
- Generally used at signalized or unsignalized crossings where trains are moving at lower speeds.
- Can be used in conjunction with other crossing treatments. At intersections, pedestrian and bicyclists may also be alerted by audible and flashing light signals that warn motorists of approaching trains and may be controlled by pedestrian or bicycle signal heads.

Design Considerations

- Signs generally located on the right-hand side of the crossing, but should be located to optimize visibility.
- "Stop Here" and tactile warnings should be located in an area that provides safe queuing space for bicycles and pedestrians.

Additional Guidance

- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- ODOT Bicycle and Pedestrian Design Guide
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety

Railroad Crossing Treatments

OTHER "PASSIVE" TREATMENTS

Cost: $-$$

Other "passive" treatments include channeling (railing, fencing, or landscaping treatments) of pedestrian and bicycle movements to a specific location and swing gates that require a positive action by users, who must pull them open in order to cross the tracks.

Benefits

- Channelization can slow pedestrians and bicyclists and position them to look both ways prior to crossing railroad tracks.
- Swing gates prevent pedestrians and bicyclists from crossing without stopping, increasing the likelihood that they will look both ways for trains.

Constraints

- Channelization and swing gates must be carefully designed to ensure they are ADA accessible.
- Pedestrians must make judgment about when it is safe to cross.

Typical Applications

- Used in crossing locations where pedestrians or bicyclists may cross tracks without looking or may fail to look both ways before crossing.

Design Considerations

- Ensure that channel and swing gate dimensions allow for ADA access.
- Can be paired with "active" warning devices such as flashing light signals and audible warnings to further enhance effectiveness.

Additional Guidance

- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety

Bicycle Intersection Treatments

BIKE SIGNAL

Cost: $$$$


Portland, OR

Portland, OR

Bicycle-only signals can be used at intersections to provide a separate signal phase that is dedicated to bicyclists.

Benefits

- Provides bicycles with a dedicated signal phase without potential motor vehicle conflicts.
- Provides increased protection for bicyclists.

Constraints

- May increase intersection delay for motorists and bicyclists with the addition of a signal phase.

Typical Applications

- Roadway intersections with multi-use trails.
- At intersections with separated bike lanes on the roadways, or at transitions to and from two-way separated bike lanes.
- At intersections where large numbers of turning vehicles have the potential to conflict with through bicycle movements.

Design Considerations

- Ensure that signal heads are clearly visible to cyclists.
- Install painted indicators on bicycle detectors to show bicyclists where to wait.
- Consider prohibiting right-turn-on-red for motorists if right turns conflict with bicycle movements.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- FHWA Separated Bike Lane Planning and Design Guide

Bicycle Intersection Treatments

BIKE BOXES

Cost: $

Bicycle boxes are designated spaces at signalized intersections, placed between a set-back stop bar and the pedestrian crosswalk, that allow bicyclists to queue in front of motor vehicles at red lights.

Benefits

- Increases the visibility of queued bicyclists.
- Allows bicyclists to start up and enter the intersection in front of motor vehicles when the signal turns green and/or position for a left-turn.
- Provides queuing capacity for bicycles at signals beyond a typical bike lane.

Constraints

- Driver compliance rates vary.
- Bike boxes may prevent drivers from making right-turn-on-red movements.

Typical Applications

- Signalized intersections, particularly those with high bicycle volumes.
- Signalized intersections where a designated bicycle route turns left.

Design Considerations

- Minimum depth of the bike box should be 10 feet, and it should extend across the bike lane, any buffer space, and at least one adjacent vehicle travel lane.
- Can be extended across multiple vehicle lanes on multilane streets to allow bicyclists to position for left turns.

Additional Guidance

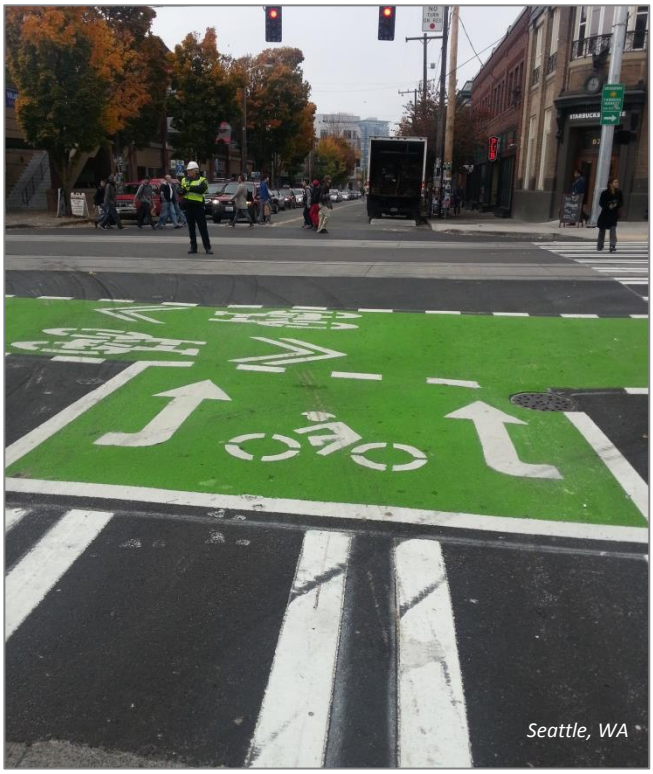
- Manual on Uniform Traffic Control Devices (experimental status)
- FHWA Separated Bike Lane Planning and Design Guide

Bicycle Intersection Treatments

TWO-STAGE LEFT TURN BOXES

Cost: $


Portland, OR


Seattle, WA

Two-stage left-turn boxes allow bicyclists to safely and comfortably make left-turns at multilane intersections from a right-side bicycle lane or cycle track. Bicyclists arriving on a green light travel into the intersection and pull out into the two-stage turn queue box away from through-moving bicycles and in front of cross street traffic, where they can wait to proceed through on the next green signal.

Benefits

- Provides a low-stress option for left turns, so that bicyclists do not need to merge into traffic.
- Provides a clear and visible location for queuing bicyclists waiting to cross.

Constraints

- May be difficult to accommodate within a constrained intersection geometry.

Typical Applications

- At signalized intersections with multi-lane roadways.
- At locations where a low-stress left turn movement for bicyclists is desirable.

Design Considerations

- Should be located out of the way of through bicyclists, usually between the bike lane and the crosswalk. If there is on-street parking, space may be available between the bike lane and vehicle travel lane.
- Consider using passive bicycle detection in the two-stage left turn box to call the green signal phase for bicyclists.

Additional Guidance

- Manual on Uniform Traffic Control Devices (experimental status)
- FHWA Separated Bike Lane Planning and Design Guide

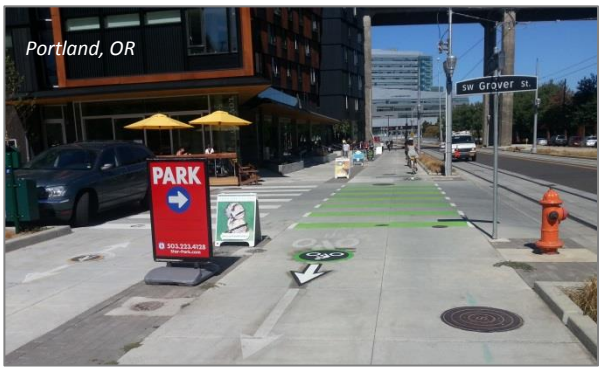
Bicycle Intersection Treatments

PAVEMENT MARKINGS THROUGH INTERSECTIONS

Cost: $


Portland, OR


Portland, OR



Portland, OR

Pavement markings can be extended through the intersection for both cycle tracks and bicycle lanes. Green paint can be used in "conflict zones" where vehicles and bicycles may cross paths in intersections, at driveways, or at right turn pockets.

Benefits

- Green paint can alert drives of a conflict zone.
- Paint through an intersection can help bicyclists know where to cross and alert drivers to look for bicyclists.

Constraints

- Paint may wear more quickly in intersections and require additional maintenance due to vehicles crossing it more frequently.

Typical Applications

- Intersections and conflict zones, especially in high-traffic or high-speed areas.

Design Considerations

- Use white dashed lines at a minimum to extend a treatment through an intersection or across a conflict zone. Dashed green pavement can enhance awareness and visibility.
- Other non-standard treatments, such as solid green paint or bicycle "chevron" markings have been used in locations throughout the US.

Additional Guidance

- Manual on Uniform Traffic Control Devices (experimental status)
- FHWA Separated Bike Lane Planning and Design Guide
- NACTO Urban Bikeway Design Guide

Bicycle/Pedestrian Amenities

BICYCLE PARKING

Cost: $


Corvallis, OR


Banks, OR


Portland, OR

Devices and/or areas that allow secure bicycle parking, often located at areas of high bicycle and pedestrian traffic such as bus stations, shopping centers, schools, and multi-use trails.

Benefits

- Provides a secure location to store and lock bicycles.
- Relatively inexpensive and easy installation.
- Encourages community bicycle use and makes local attractions/businesses more accessible to bicyclists.

Constraints

- Requires space in potentially busy areas, such as sidewalks.
- May remove on-street parking space if located on the roadway.

Typical Applications

- Typically provided at areas of high bicycle and pedestrian traffic such as bus stations, shopping centers, schools, and multi-use trails.

Design Considerations

- The size and design of the bicycle rack can vary based on the estimated number of users and available space.
- Covered bicycle parking can provide protection from the weather for parked bicycles and people as they lock and unlock bikes. Bike lockers can provide additional security.
- If possible, bicycle racks should be placed immediately adjacent to the entrance/location they serve.
- Rack should not be placed to block the entrance of a building or inhibit pedestrian flow.
- Racks should be easy to find, convenient, and secure.

Additional Guidance

- APBP Bicycle Parking Guidelines

Bicycle/Pedestrian Amenities

STREET FURNITURE AND LIGHTING

Cost: $$-$$$

Austin, TX

Ft Lauderdale, FL

Street furniture includes pedestrian seating, information/ wayfinding structures, and trash cans. Street furniture and lighting can be used to enhance the pedestrian experience and encourage pedestrian activity on a street.

Benefits

- Encourages walking and sense of comfort and security for pedestrians.
- Relatively inexpensive and easy installation.
- Encourages foot traffic and can make local attractions/ businesses inviting.

Constraints

- Requires space in potentially busy areas, such as sidewalks.
-

Typical Applications

- Typically provided at areas of high bicycle and pedestrian traffic such as bus stations, shopping centers, schools, and multi-use trails.
- Street furniture and pedestrian-scale lighting is usually provided on corridors with commercial activity and anticipated high-pedestrian use.

Design Considerations

- Street furniture should not be placed to block the entrance of a building or inhibit pedestrian flow.
- The type and size of street furniture should be based on the available space and anticipated demand.
- Street furniture should be accessible to all users.

Additional Guidance

- AASHTO Roadway Lighting Design Guide

TRANSIT STOP SHELTERS

Cost: $$$

Portland, OR

Orlando, FL

Transit stop shelters help protect passengers waiting to load the bus from the elements and provides a great level of comfort. They also increase the visibility of transit stops and attractiveness for riders.

Benefits

- Provides protection from the elements and a place to sit for people waiting for transit.
- Provides a prominent visual cue about where the transit stop is located.

Constraints

- Costs more than a simple signed bus stop.
- Require additional sidewalk width beyond a standard 6-foot width.

Typical Applications

- Typically provided at bus stops with higher levels of activity or those that serve major transfer points, senior communities, schools, or major trip generators.
- May be paired with other bus stop amenities, like benches and bicycle parking.
- Shelters can be fully enclosed or just an overhead canopy, although semi-enclosed shelters are most common.

Design Considerations

- The style of the transit stop shelter can depend on the preferences of the local jurisdiction.
- At stops with a high number of daily boardings (i.e. over 100), a larger shelter or multiple shelters should be considered.
- Shelters should be cleaned and maintained regularly.
- Shelters should have transparent sides for greater visibility and panels should be resistant to fading or clouding.

Additional Guidance

- TCRP Report 19: Guidelines for the Location and Design of Bus Stops

Traffic Calming Measures

RUMBLE STRIPS

Cost: <$

Pavement surface treatments intended to cause drivers to experience vehicular vibrations signaling them to slow down. Rumble strips can be raised pavement markers across the roadway or grooves along the shoulder or centerline. Rumble strips are best used in conjunction with other traffic calming treatments.

Benefits

- Low cost.
- Speed reduction and increase in driver awareness.

Constraints

- Vibration noise created may be inappropriate in residential areas.
- Perceived more as a warning to slow down, than a physical measure that forces slower speeds.
- Impact the comfort and control of bicyclists.
- Potential impacts on pavement deterioration based on pavement quality and placement.

Typical Applications

- Roadways with high speeds or where driver inattention is an issue.
- Rumble strips can be used on shoulders to alert drivers they are entering a part of the roadway not intended for use.
- Roadway rumble strips placed across the roadway are used to alert drivers of a changing roadway condition or the need for speed reduction.

Design Considerations

- All road users need to be considered and accommodated. Bicycles need particular attention, especially if they are expected to use the roadway or shoulders.
- There are a variety of types of rumble strips, so the site application should be considered to determine the most appropriate design.

Additional Guidance

- FHWA Technical Advisory: Shoulder and Edge Line Rumble Strips

Traffic Calming Measures

SPEED BUMPS, SPEED HUMPS, SPEED TABLES

Cost: $$


Howard County, MD


Austin, TX

There are a number of raised treatments that can be used in the roadway to slow vehicular traffic, including speed bumps, humps and tables.

Speed humps utilize a larger vertical radius than speed bumps that results in wider widths and a gentler crossing by vehicles.

Speed tables are wide mountable obstructions installed on the pavement surface across travel lanes, and intended to cause vehicles to slow. Speed tables are wider flat-top speed humps, and are gentler on vehicles. They can be used on higher order roads than bumps or humps, because they allow a smoother ride and higher speeds.

Benefits

- Relatively inexpensive.
- Effectively slows vehicle speeds, with speed bumps and humps reducing speeds more than speed tables.
- Easily navigated by bicyclists.

Constraints

- May be considered noisy by nearby residents.
- Forces emergency vehicles to slow down.
- Inappropriate on streets with bus traffic due to rider comfort and reduced travel speeds.

Typical Applications

- Speed bumps or humps can be used on lower order roadways, whiles speed tables are appropriate on higher order roadways.
- Roadways where a reduction in speeds and traffic calming is desired.
- Speed bumps, humps, or tables work well with curb extensions.

Design Considerations

- Drainage needs should be considered and accommodated.
- Treatments should be used midblock, not at intersections.
- Treatments are not appropriate on roadways with grades over 8%.
- Advance signing and pavement markings on the treatment can be provided.
- Typically preferred for treatment not to cover a bike lane.

Additional Guidance

- ITE Traffic Calming Measures

Traffic Calming Measures

REDUCED CURB RADII

Cost: $$


Lake Oswego, OR


Lake Oswego, OR

Orlando, FL

Street corner is reconstructed with a smaller radius to reduce vehicle turning speeds.

Benefits

- Forces sharper turn by right-turning motorists and thus slower speeds.
- Improves safety of pedestrians by reducing crossing width and slowing motorists.

Constraints

- Requires additional space that may not be available.
- Makes turning movements more challenging for large vehicles and may not accommodate all trucks.

Typical Applications

- Typically used at intersections with high vehicle speeds and high pedestrian volumes where space is available.

Design Considerations

- The street type, angle of intersection, land uses, etc. should be considered when designing the curbs.
- Maintenance vehicles, emergency vehicles, school buses, and other anticipated large vehicles should be provided for in the design.
- The effective turning radius (considering presence of parking, bike lanes, medians, etc.) should be used to evaluate the ability of vehicles to make a turn, not the curb return radius.
- In locations where reducing the curb radius is challenging based on design vehicles, consider using a compound radius, at-grade paving treatments, or advance stop lines.

Additional Guidance

- FHWA Signalized Intersections: An Informational Guide
- FHWA Pedestrian Safety Guide for Transit Agencies
- NACTO Best Practices for Pedestrian Master Planning and Design