

## Task 1: Multimodal Transportation Gap Summary

- Multimodal Transportation Gap Summary Memo



# Multimodal Gap Summary

Bend Central District – April 25, 2025 Revised



CITY OF BEND

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# Introduction

The Bend Central District (BCD) is one of ten candidate Climate Friendly Areas within Bend<sup>1</sup>. As a result of Oregon Administrative Rule (OAR) 660-012-0310, jurisdictions in Oregon over a specific population threshold are required to designate Climate Friendly Areas (CFA). A CFA is an area designated for high-density residential uses, a high concentration of employment opportunities, and is served by high-quality pedestrian, bicycle, and transit services.

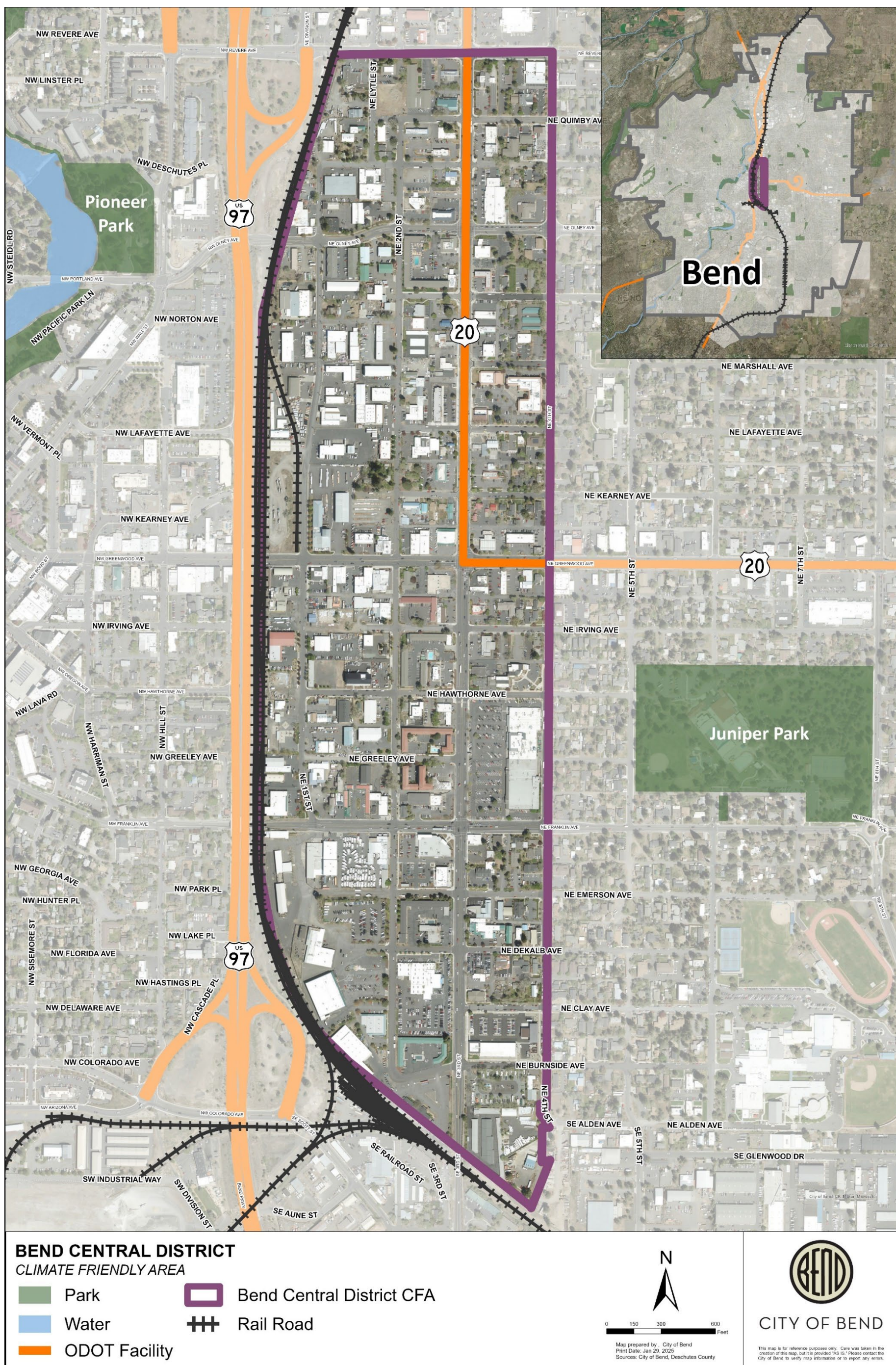
As a part of OAR 660-012-0325, jurisdictions are required to conduct a Multimodal Gap Summary for each of their designated CFAs. The summary identifies gaps in pedestrian and bicycle networks within the designated CFA, including those affecting people with disabilities. The objective of this memo is to help meet the goals of OAR Division 12 by providing an overview of the current state of the BCD multimodal network and identifying gaps in the multimodal system.

The BCD CFA is shown in **Figure 1**. The area is bounded by NE 4<sup>th</sup> Street to the east, the railroad to the west and south, and NW Revere Ave to the north. Under the City's current zoning code, it maintains underlying zoning of Mixed Employment or Limited Commercial, however the entire district is within the Bend Central District Special Planned District. This overlay zone allows for higher density mixed-use development throughout the district. Today, the BCD consists primarily of single and two story commercial and industrial uses including grocery stores, restaurants, and retail establishments, as well as some warehousing, wholesale, and construction businesses. In addition, there are some limited residential units primarily located along NE 2<sup>nd</sup> Street and NE 4<sup>th</sup> Street

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<sup>1</sup> The City of Bend. 2024. "Climate Friendly Area Study." Executive Summary.  
<https://www.bendoregon.gov/home/showpublisheddocument/58440/638490243478730000>.







# Inventory Methodology

Information about the existing infrastructure was provided by the City of Bend GIS team. The City's most recent comprehensive data update was during the development of the 2020 Bend Transportation System Plan (TSP), in 2019. Other layers are updated at various frequencies and the City is currently in the process of improving its GIS data storage and methodology for updating active transportation layers at the time of this document's development. Therefore, information provided in the BCD was generally checked and updated based on a review of recent aerial maps and confirmed with a site visit by City staff. However, the Level of Traffic Stress Information has not been updated since the 2020 TSP update.

To supplement this information, data was also summarized from the Bend Pedestrian Network Implementation Plan and Design Standards Part VI, Appendix C. According to the Pedestrian Network Implementation Plan (adopted in June of 2023), a street segment was categorized as a high priority for improvement if there was no existing sidewalk or the current sidewalk condition was determined to be poor quality. Prioritization for improved crossings was given to intersections determined to be either a Safe Routes to School Connector, a Key Crossing, or a TSP Key Walking and Bicycling Route (Key Route). A Key Route is a route designed to be "low stress for pedestrians and bicyclists, to provide safe and appealing connections to schools, parks, and other destinations, as well as for cross-City travel". All Key Routes are a part of the planned bicycle Low Stress Network which was identified in TSP Figure 5-1. The Design Standards Part VI, Appendix C incorporates the full low-stress network to identify areas for crosswalk enhancement needs and sidewalk infill needs. These resources were used to help determine the locations of multimodal gaps within the BCD.

The following sections describe the existing pedestrian network, bicycle network, and transit network and associated gaps.

# Pedestrian Network

A summary of the existing sidewalk infrastructure in the BCD is shown in

**Figure 3** on the following page. NE 3<sup>rd</sup> Street (US 20) is the only north-south corridor within the BCD with continuous sidewalks. The following east-west streets within the BCD also have continuous sidewalks:

- Clay Ave
- Franklin Ave
- Greenwood Ave
- Norton Ave
- Olney Ave
- Revere Ave



**Figure 2** shows an example of pedestrian infrastructure within the BCD. In addition to the existing sidewalk infrastructure, curb ramps and crosswalks are also shown within

**FIGURE 2. SIDEWALK AND CURB RAMP GAPS AT THE INTERSECTION OF HAWTHORNE AVE & NE 1<sup>ST</sup> ST**

**Figure 3** on the following page. NE 3<sup>rd</sup> Street is also the only street in the area with curb ramps that meet ADA standards at all corners within the BCD. There are marked crossings at six intersections in the BCD:

- Revere Ave & 3<sup>rd</sup> Street (signalized)
- Olney Ave & 3<sup>rd</sup> Street (signalized)
- Greenwood Ave & 3<sup>rd</sup> Street (signalized)
- Hawthorne Ave & 3<sup>rd</sup> Street (enhanced with rapid flashing beacon)
- Hawthorne Ave & 4<sup>th</sup> Street

Gaps in the sidewalk network are shown in Figure 4 below. The Bend Pedestrian Network Implementation plan called for improved pedestrian crossings at unsignalized intersections along Low Stress Routes, but the plan did not include the area within the BCD. Applying those same criteria and flagging intersections identified within the previously mentioned Bend Design Standards results in four intersections with crossing needs, identified as pinpoints on **Figure 4**.

The 2019 Bend Area Transportation Safety Action Plan identified that lighting is a key missing feature at many intersections throughout the city. According to the plan, 13% of collisions in Bend occurred in darkness with no streetlights present which is a higher proportion of the total crashes compared to peer cities (Corvallis, Medford, and Springfield). According to the City of Bend Design standards, “Street lights (luminaires) are required at all street intersections with collectors and arterials, including private street intersections with collectors and arterials”. It also states that “enhanced crosswalks (marked, signed at a minimum) including mid-block crosswalks shall be illuminated on both approaches.

Areas without proper lighting within the BCD should be addressed in addition to the areas without sidewalk infrastructure, which are listed in **Table 1**.





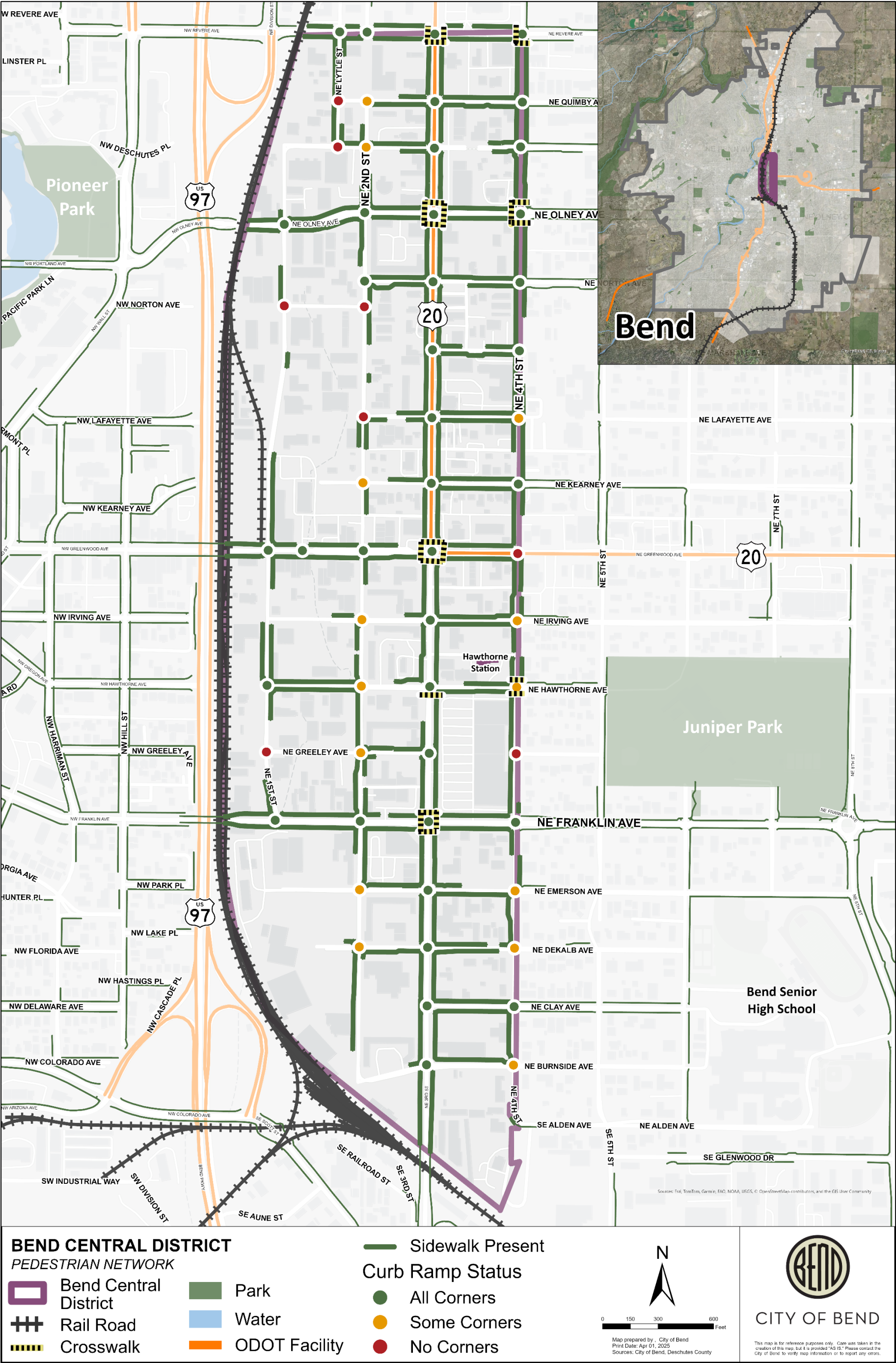


FIGURE 3. BEND CENTRAL DISTRICT PEDESTRIAN INFRASTRUCTURE



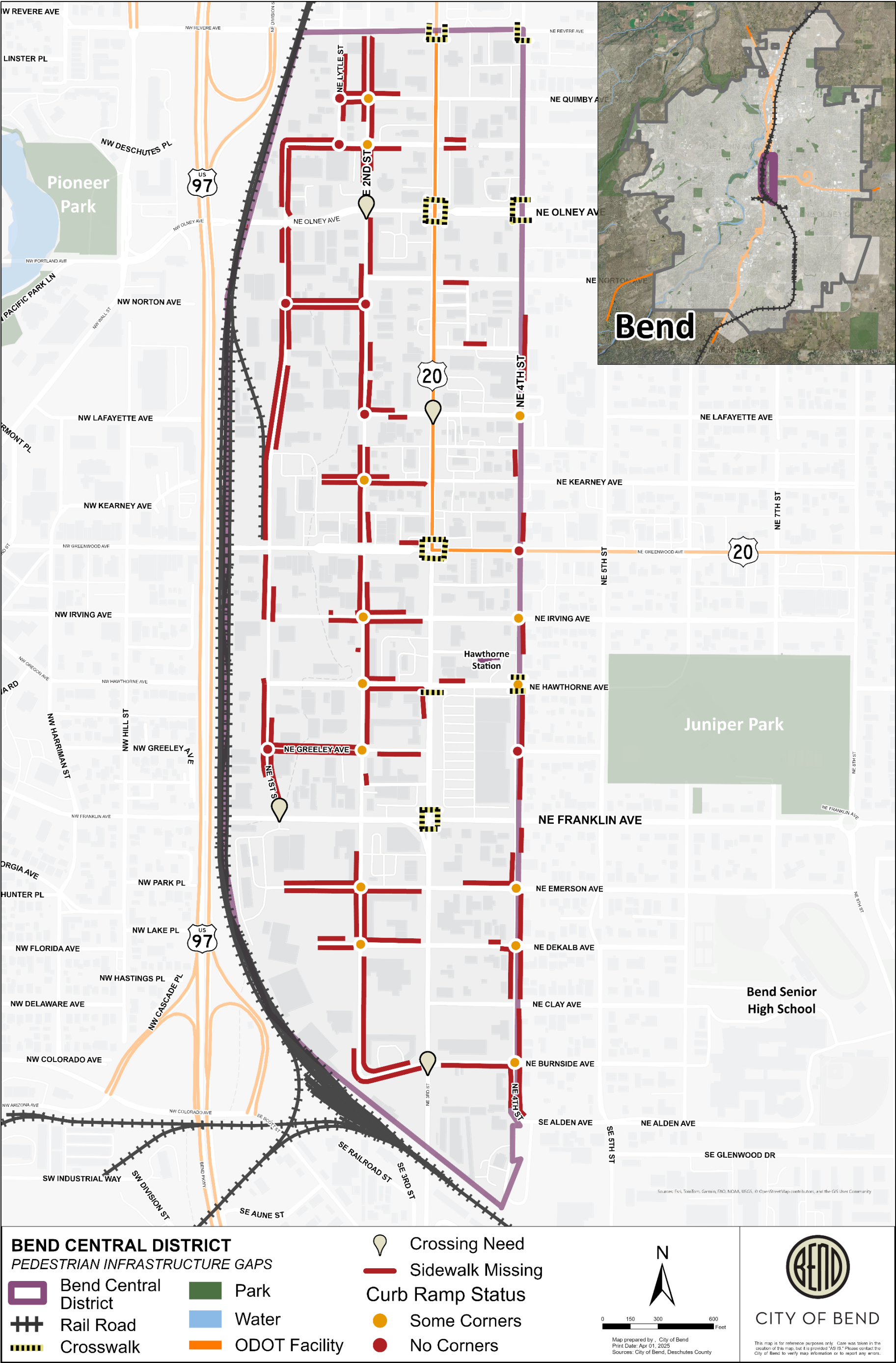


FIGURE 4. PEDESTRIAN INFRASTRUCTURE GAPS

**TABLE 1. MISSING SIDEWALK INFRASTRUCTURE**

Street	From	To
NE Burnside	NE 4 <sup>th</sup> St	NE 2 <sup>nd</sup> St
NE Dekalb Ave	NE 3 <sup>rd</sup> St	NE 2 <sup>nd</sup> St
NE Emerson Ave	NE 4 <sup>th</sup> St	West End
NE Hawthorne Ave	NE 2 <sup>nd</sup> St	NE 3 <sup>rd</sup> St
NE Irving Ave	NE 2 <sup>nd</sup> St	NE 3 <sup>rd</sup> St
NE Kearney Ave	NE 3 <sup>rd</sup> St	West End
NE Norton Ave	NE 1 <sup>st</sup> St	NE 2 <sup>nd</sup> St
NE Penn Ave	NE 4 <sup>th</sup> St	NE 1 <sup>st</sup> St
NE Quimby Ave	NE 2 <sup>nd</sup> St	NE Lytle St
NE Greeley Ave	NE 2 <sup>nd</sup> St	NE 1 <sup>st</sup> St
NE 2 <sup>nd</sup> St	NE Burnside Ave	NE Emerson Ave
NE 2 <sup>nd</sup> St	NE Greeley Ave	NE Olney Ave
NE 2 <sup>nd</sup> St	NE Penn Ave	NE Revere Ave
NE 1 <sup>st</sup> St	Franklin Ave	Hawthorne Ave
NE 1 <sup>st</sup> St	Irving Ave	NE Penn Ave



# Bicycle Network

Bend has two designations for the bicycle network in the TSP:

- **Low Stress Network (LSN)** - The aim of the Low Stress Network (LSN) identified in the 2020 TSP is to provide bicycle facilities spaced at approximate half-mile intervals so people can access the routes within a ¼ mile range of where they live, work, and play.
- **Key Walking and Bicycling Routes (Key Routes)** – Key Routes are a part of the LSN and include street segments that already have low-stress biking and walking facilities, segments that have funded improvement projects, and segments that do not yet have funded low-stress improvement projects (and are high-stress today). The Key Routes were designated to prioritize funding and construction timing for new bicycle facilities.

**Figure 5** shows an example of existing bike lanes in the BCD.

**Figure 6** on the following page shows the LSN and the location of existing bike lanes in the network. In the BCD, there are currently marked bike lanes along the following routes:

- Franklin Ave
- NE 3<sup>rd</sup> Street from Burnside Ave to NE Greenwood Ave
- NE Greenwood Ave from NE 3<sup>rd</sup> Street to NE 5<sup>th</sup> Street
- NE Olney Ave

In addition to marked bike lanes on the LSN, there are also streets designated as Neighborhood Greenways. Neighborhood Greenways are streets built with signing, striping, and other design features to have lower vehicle volumes and speeds, improving safety and comfort for people biking. There are no separated or raised bike lanes within the area.



**FIGURE 5. STRIPED BIKE LANE ALONG OLNEY AVENUE NEAR 4<sup>TH</sup> STREET**

**Figure 7** shows the Key Routes. There are four Key Routes that intersect with the BCD:

- Route 2 (Skyliners to Bear Creek)
- Route 3 (Shelvin Park to Neff)
- Route 6 (Oregon to Hawthorne)
- Route 7 (Aune to Alden)



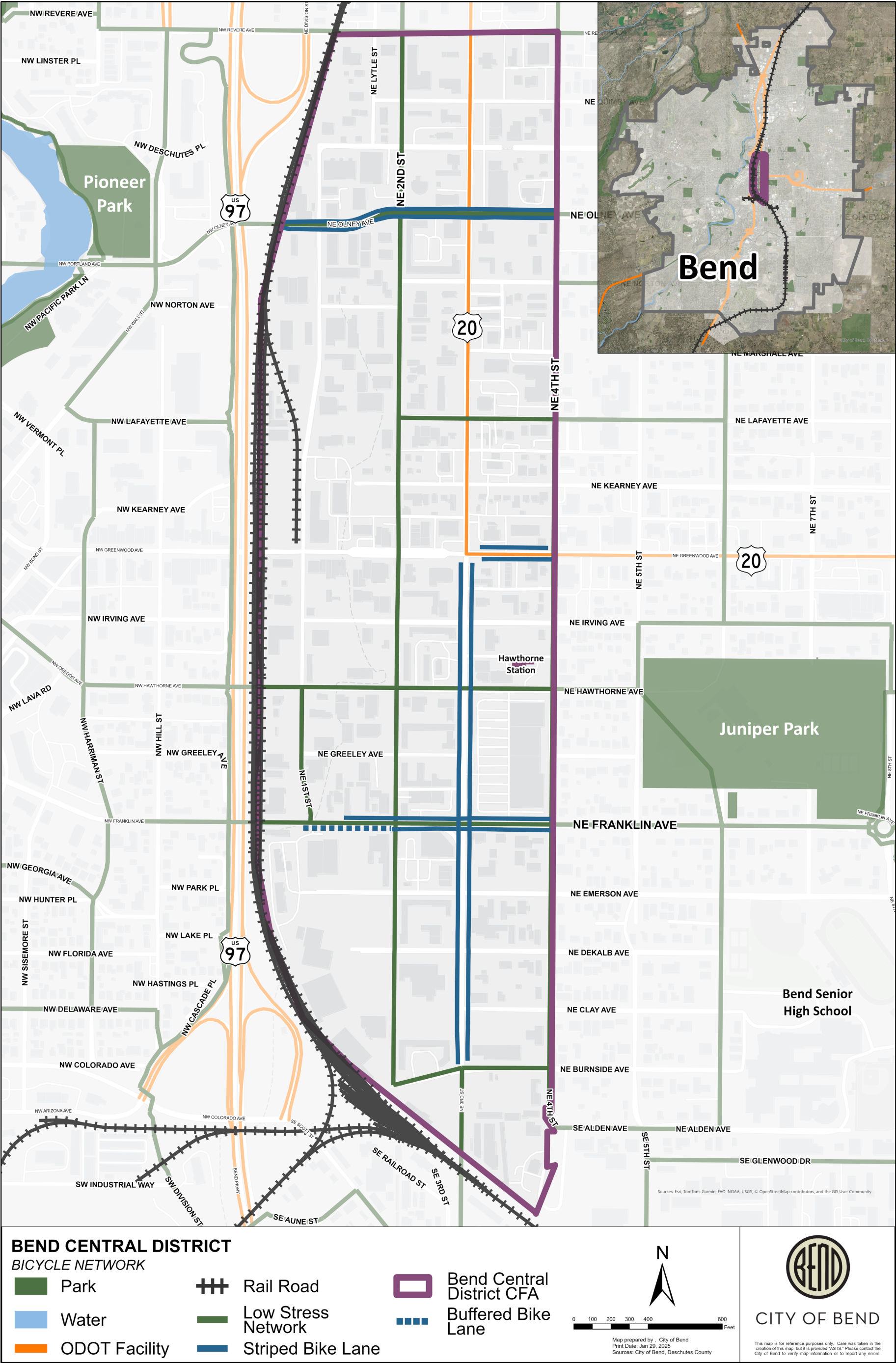
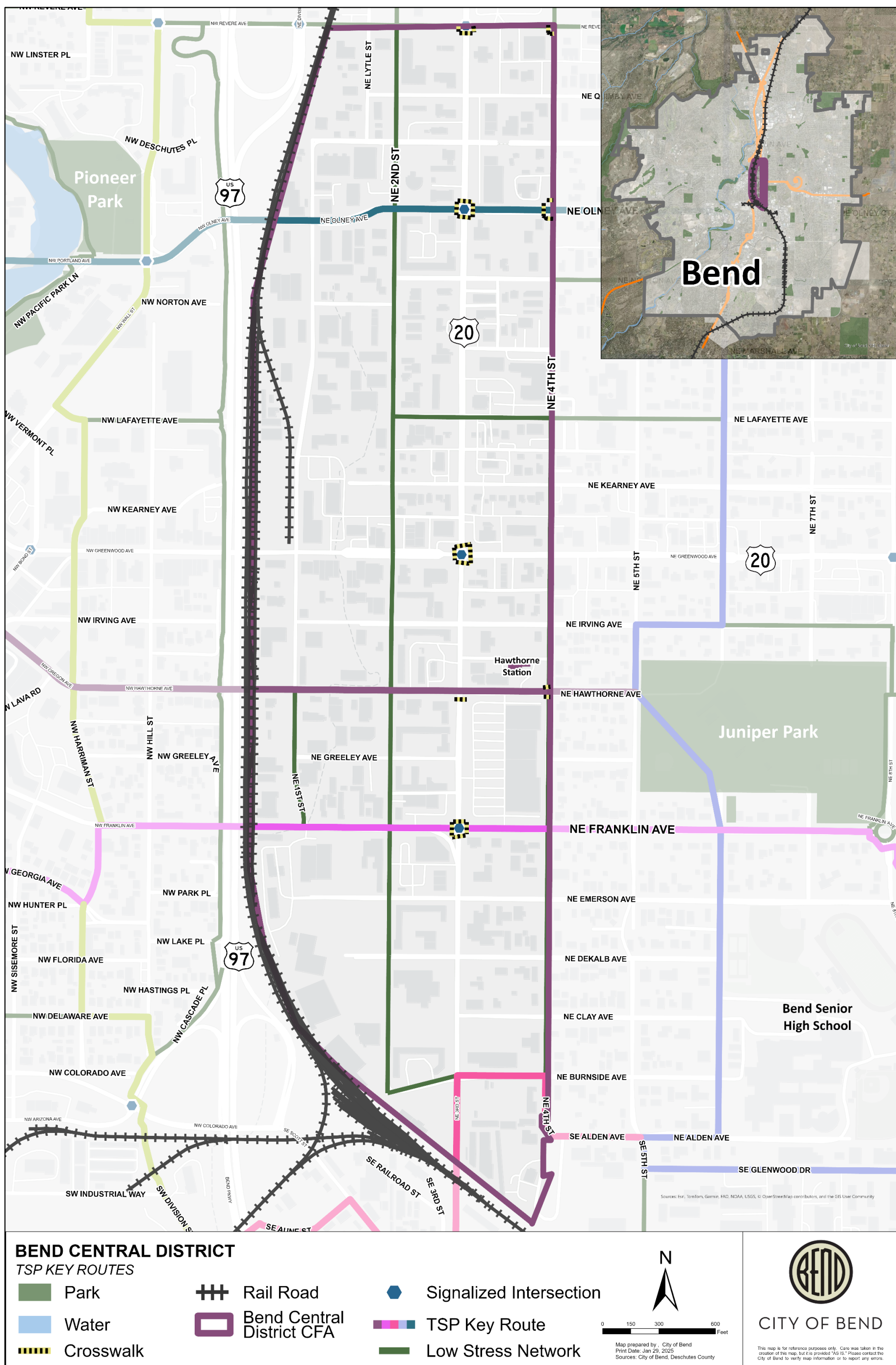


FIGURE 6. BEND CENTRAL DISTRICT BICYCLE NETWORK





### FIGURE 7. KEY ROUTES

An existing bicycle facility is considered Low Stress if it has a Level of Traffic Stress (LTS) of either 1 or 2 for cyclists. LTS is a ranking of 1 through 4 based on roadway characteristics and conditions including vehicle speeds, the number of travel lanes, separation from vehicles, width of bicycle facilities, and enhanced crossing treatment types. An LTS of 1 is the lowest stress and most comfortable for cyclists while an LTS of 4 is the highest stress and is typically only used by the most confident of riders. Figure 8 summarizes the existing LTS in the BCD.

**Table 2** summarizes key gaps in the cycling network for the BCD. These were identified as facilities that are a part of the LSN but are not an LTS of 1 or 2 today. Figure 9 highlights the gaps summarized in the table.

During development of the 2020 Bend TSP, LTS for cyclists on all roadways in Bend was determined. At the time of its adoption, the following areas within the BCD were identified as being above an LTS of 3 or higher:

- NE Franklin Ave
- NE Hawthorne Ave across NE 3<sup>rd</sup> Street
- NE 3<sup>rd</sup> Street south of NE Burnside Ave

In addition, the Bend Complete Streets Guide identifies the importance of designing and building low-stress crossings where the route crosses arterial and collector streets. Based on this metric, an improved crossing should be constructed at NE 3<sup>rd</sup> and Burnside Ave. This is the only Key Route crossing without a traffic signal or enhanced crossing. An improved crossing is also needed at NE Lafayette and NE 3<sup>rd</sup> to improve the LSN. Improvements to NE 3<sup>rd</sup> and Burnside will be completed through the Aune Street Extension Project. ODOT will be improving the intersection to NE 3<sup>rd</sup> and Lafayette through the US 20: Empire to Greenwood project.

**TABLE 2. BICYCLE INFRASTRUCTURE GAPS<sup>A</sup>**

Street	From	To
Franklin Ave	NE 1 <sup>st</sup> St	NE 4 <sup>th</sup> St
Hawthorne Ave	NE 2 <sup>nd</sup> St	NE 4 <sup>th</sup> St
Lafayette Ave	NE 2 <sup>nd</sup> St	NE 4 <sup>th</sup> St
Burnside Ave	NE 2 <sup>nd</sup> St	NE 4 <sup>th</sup> St
NE 3 <sup>rd</sup> St	Burnside Ave	South End

A. Gaps are street segments that are a LTS of 3 or 4 but are a part of the Low Stress Network. They are based on information reported in 2019 and do not reflect any construction that may have occurred since then.



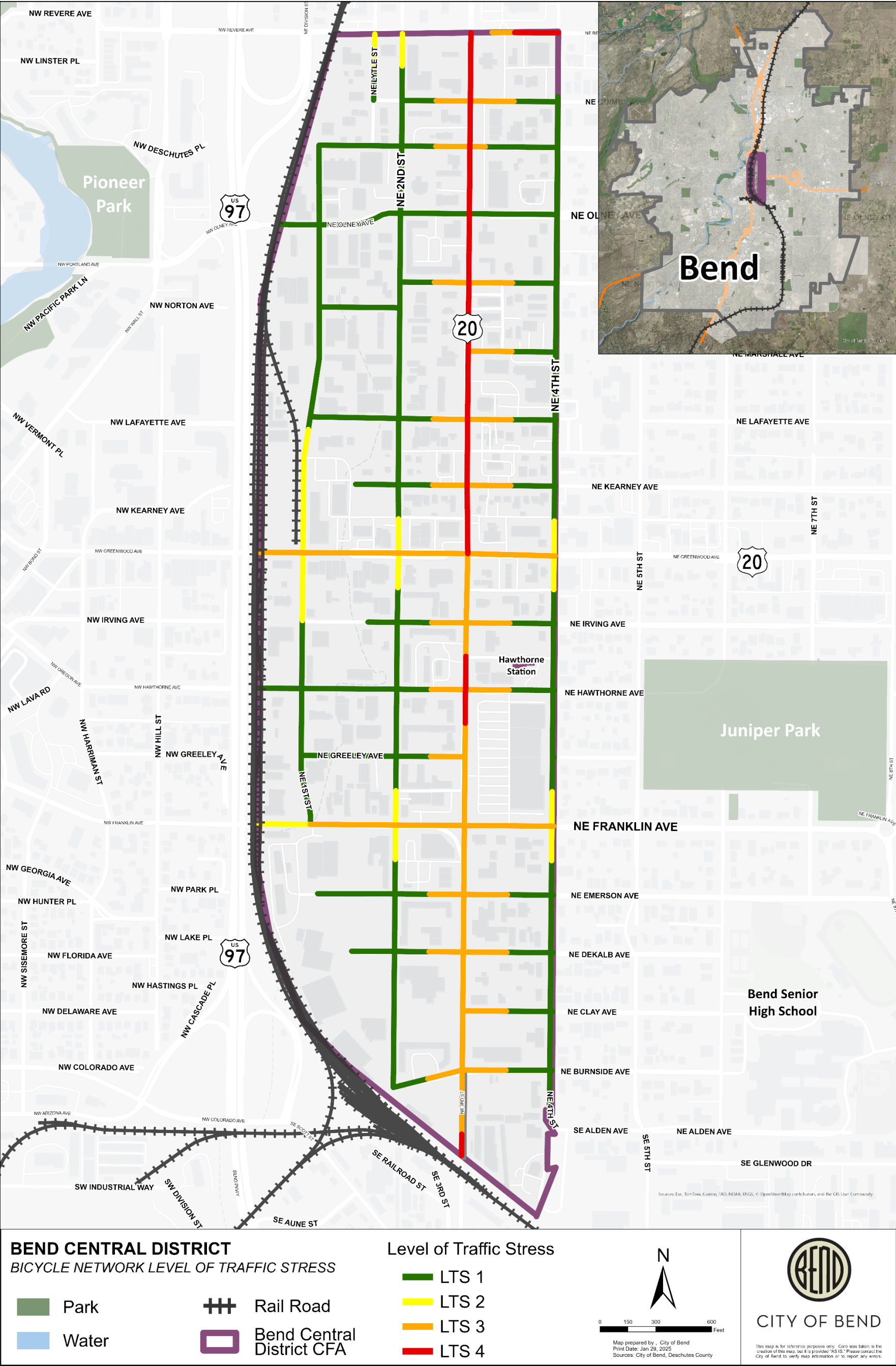
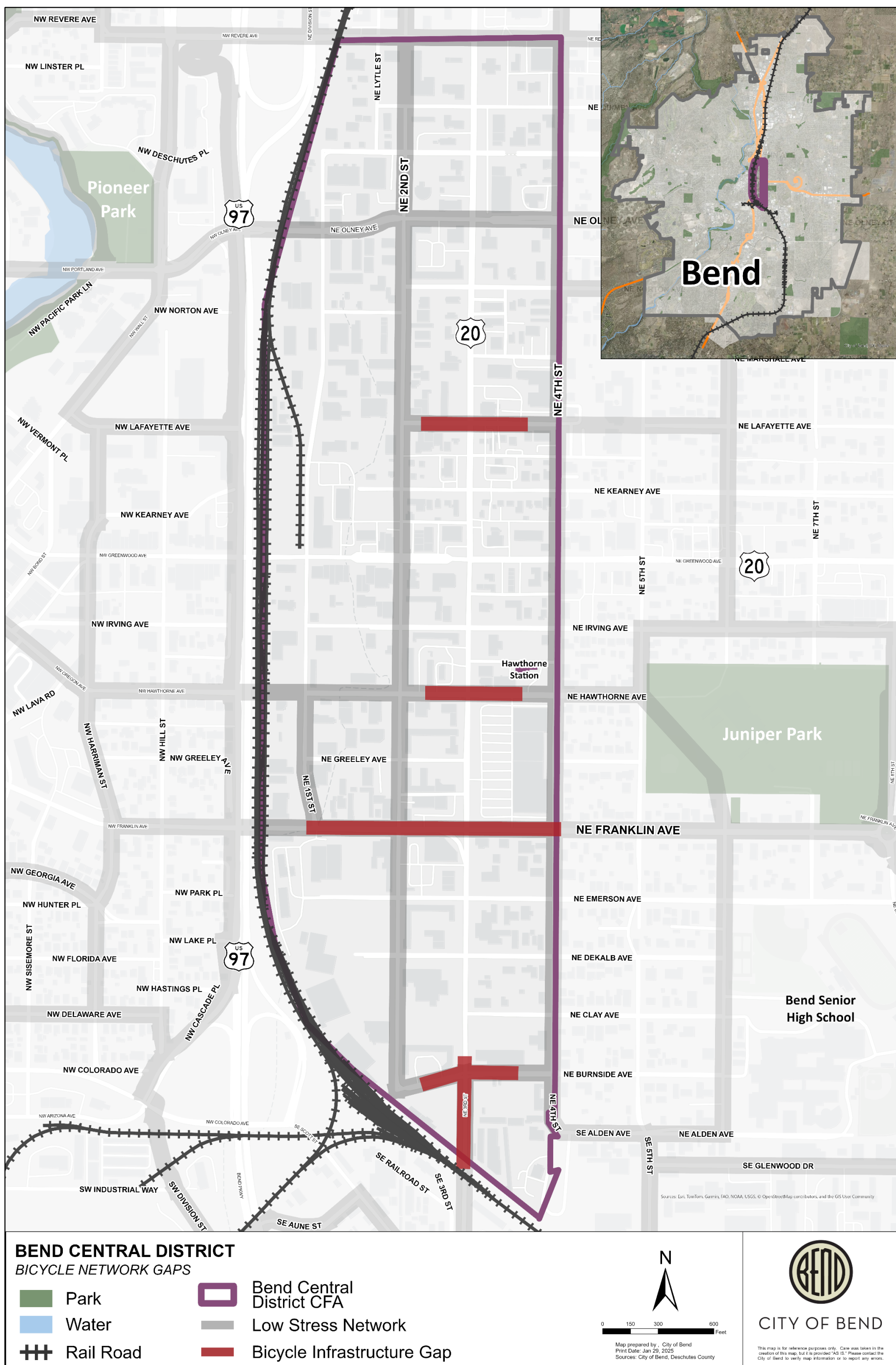


FIGURE 8. BEND CENTRAL DISTRICT BICYCLE LEVEL OF TRAFFIC STRESS<sup>2</sup>

<sup>2</sup> In July of 2024 a “quick build” pilot project installed buffered bike lanes along Greenwood Avenue from Wall Street to NE Second Street. This project was not included in the analysis from the TSP but would result in a lower traffic stress than shown on the map.





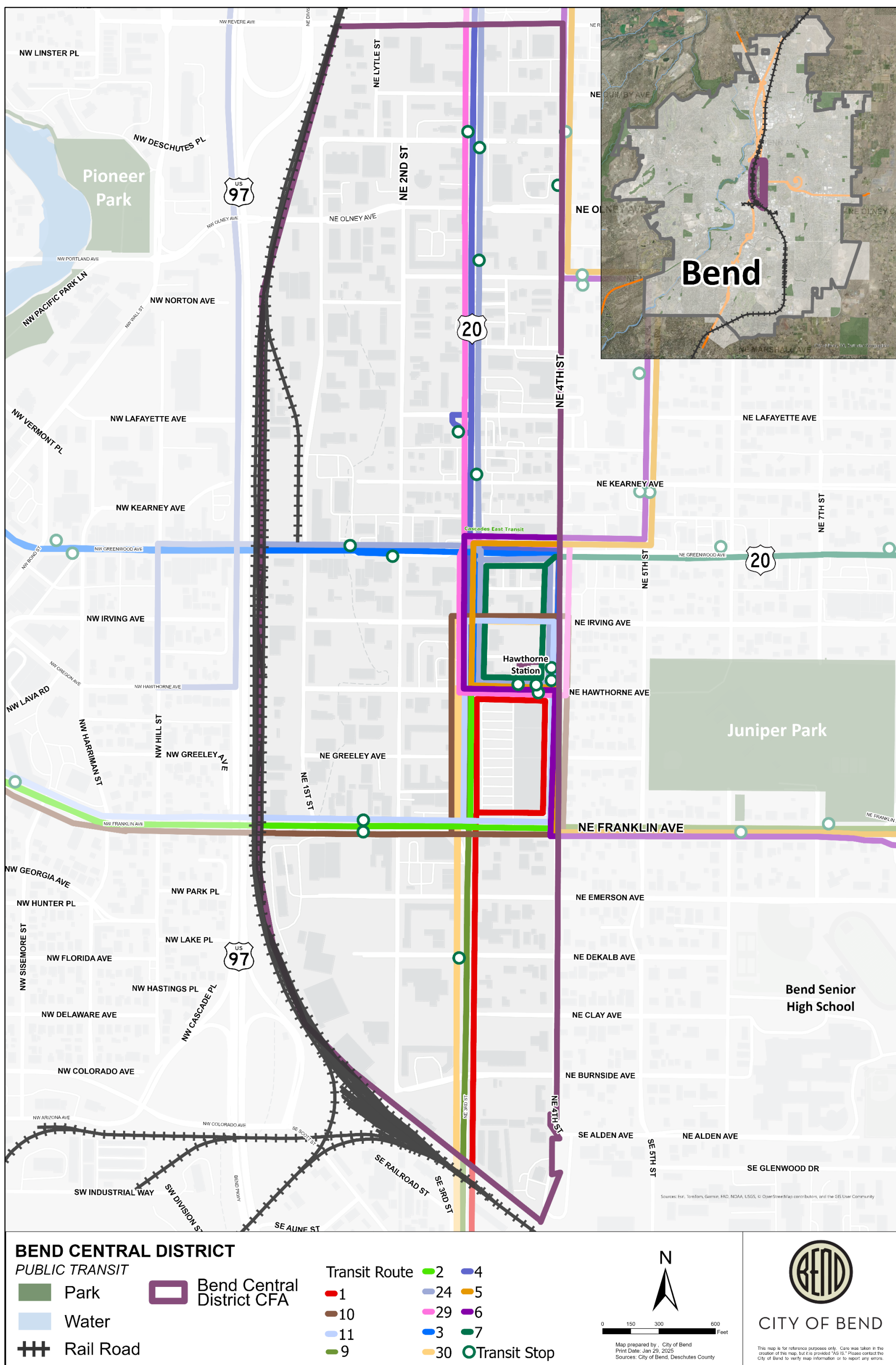
### FIGURE 9. BICYCLE INFRASTRUCTURE GAPS

# Existing Transit Network

Cascades East Transit (CET) is the transit provider within Bend. Hawthorne Station is the primary transit hub for CET, which operates using a hub and spoke service model. Hawthorne Station is located to the east of 4<sup>th</sup> Street on Hawthorne Ave. All CET routes in Bend connect to Hawthorne Station, allowing the BCD to access all CET routes within Bend. In addition to locations within Bend there are also routes to LaPine, Redmond, and Prineville from Hawthorne Station. Transit routes primarily run up and down NE 3<sup>rd</sup> Street, NE Franklin Ave, and NE Greenwood Ave.

Bus stop amenities are limited within the BCD. Most stops are marked by a sign that states which lines stop at that location and the schedule for the stop. According to the 2020 CET Master Plan, of the 253 bus stops that CET manages throughout the service network, only 11% have bus shelters. The existing transit network is show in Figure **10**.





# Proposed Projects

In addition to analyzing the existing multimodal network, this multimodal gap summary is required to list proposed projects to help fill the determined gaps. The Bend Capital Improvement Plan and Transportation GO Bond schedule include the following projects planned to help improve multimodal connectivity within the BCD Area. Currently programmed projects are shown in **Table 3** and mapped in Figure 11.

**TABLE 3. CURRENTLY PROGRAMMED PROJECTS**

Project	Description	Source
Greenwood Avenue Pilot Project	The quick-build is a pilot project with surface treatments that will be evaluated for a year before deciding the eventual full-build construction in the summer of 2025. The project includes buffered bike lanes from Wall Street to Second Street.	In Progress
Aune Street Extension (East)	Enhanced crossings along Third Street at Franklin and between the railroad and Wilson	GO Bond
Olney Pedestrian and Bike Improvements	Enhanced crossing at the intersection of 2 <sup>nd</sup> and Olney Ave and protected bike lanes along Olney Ave	GO Bond
NE Revere Intersection Improvements	Intersection improvements at 4th and 8th St along Revere Avenue.	GO Bond
NE Olney Intersection Improvements	Intersection improvements at 4th and 8th St along Olney Avenue.	GO Bond
Enhanced Access to Transit	Leverage Cascade East Transit funding for capital projects like mobility hubs, shelters, and bus pull outs.	GO Bond
2 <sup>nd</sup> Street Streetscape Improvements		Bend CIP
Crosstown Bikeways	East-west and North-south Crosstown Bikeway Routes and Shared-use Path Adjacent to 9th Street between Reed Market and Wilson Avenue.	Bend CIP
Midtown Pedestrian & Bicycle Crossings	A study was completed in 2022. The study recommended the following improvements: Concept 2: Lower and Widen Sidewalks for Greenwood Avenue, Concept 1: Straight Bridge and Approach Ramps for Hawthorne Avenue and Concept 2: Full Rebuild/Widen Undercrossing Opening for Franklin Ave.	Bend CIP



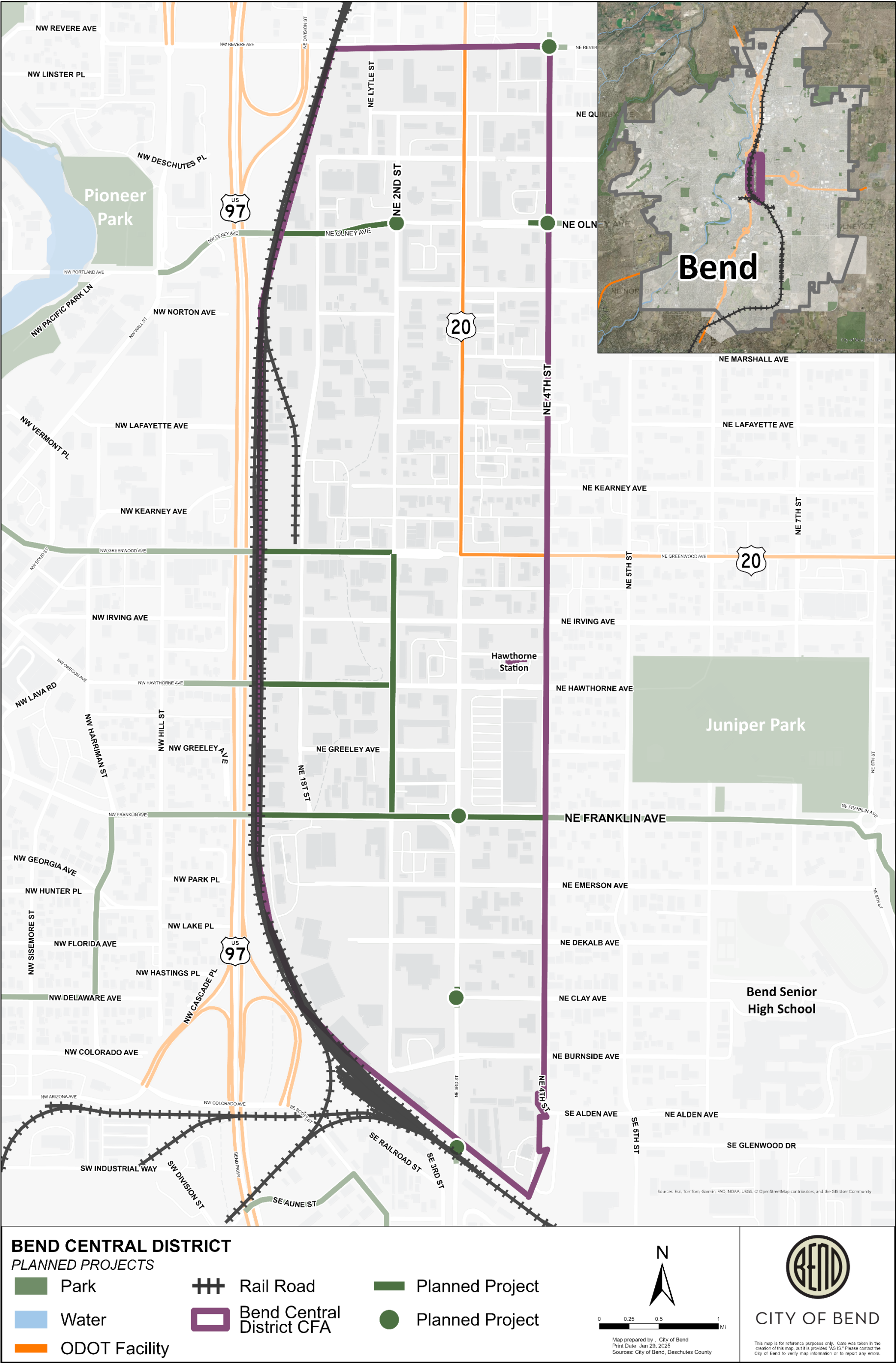


FIGURE 11. BEND CENTRAL DISTRICT PLANNED PROJECTS

# Proposed Transit Improvements

As part of the Bend Mobility Hubs Feasibility Study, Hawthorne Station is anticipated to be developed as a mobility hub, to provide greater services to a variety of multi-modal users. According to the CET Master Plan<sup>3</sup>, “mobility hubs are places designed to facilitate convenient, safe, and accessible connections to and between multimodal mobility services”. The agency also hopes to transition from the hub-and-spoke fixed route system to a more multi-centric model. Proposed changes to Bend’s service are shown in **Figure 12**. Greenwood Avenue and 3<sup>rd</sup> Street are both defined as potential high-frequency service corridors in the plan which will prioritize transit improvements for riders within the BCD. These transit improvements are currently unfunded. Future funding for transit improvements is expected to come from the State Transportation Improvement Fund, Federal Grants, and local property or payroll taxes.

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<sup>3</sup> Cascades East Transit. 2020. “Cascades East Transit 2040 Transit Master Plan”.





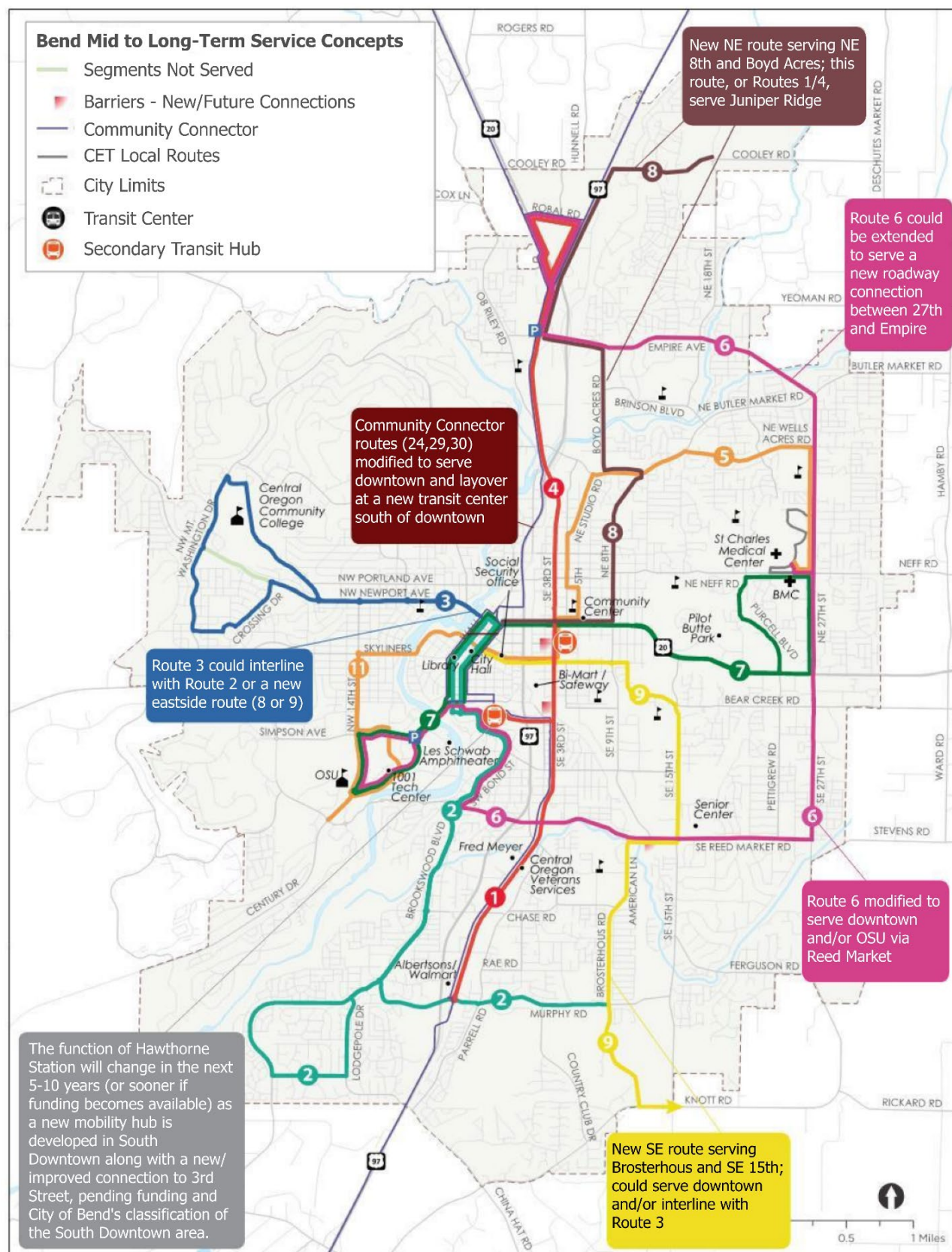


FIGURE 12. CET LONG TERM SERVICE PLAN<sup>3</sup>

# Unfunded Projects

In addition to the already funded commitments to improve active transportation in the BCD, the following table (**Table 4**) shows projects that will be required to fill the remaining gaps.

**TABLE 4. CURRENTLY UNFUNDED PROJECTS**

Project	Description
NE Burnside Sidewalk Infill	Complete the sidewalk network between NE 4 <sup>th</sup> St and NE 2 <sup>nd</sup> St
NE Dekalb Ave Sidewalk Infill	Complete the sidewalk network between NE 3 <sup>rd</sup> St and NE 2 <sup>nd</sup> St
NE Emerson Ave Sidewalk Infill	Complete the sidewalk network between NE 4 <sup>th</sup> St and the West End
NE Hawthorne Ave Sidewalk Infill	Complete the sidewalk network between NE 3 <sup>rd</sup> St and NE 2 <sup>nd</sup> St. Provide improvements that are compatible with the construction of the Hawthorne Overcrossing.
NE Irving Ave Modernization	Complete the sidewalk network between NE 3 <sup>rd</sup> St and NE 2 <sup>nd</sup> St and extend Irving Ave between NE 2 <sup>nd</sup> Street and NE 1 <sup>st</sup> Street.
NE Kearney Ave Sidewalk Infill	Complete the sidewalk network between NE 3 <sup>rd</sup> St and the West End
NE Norton Ave Modernization	Complete streets project to install sidewalk between NE 1 <sup>st</sup> St and NE 2 <sup>nd</sup> St and modernize the street.
NE Penn Ave Sidewalk Infill	Complete the sidewalk network between NE 4 <sup>th</sup> St and NE 1 <sup>st</sup> St
NE Quimby Ave Sidewalk Infill	Complete the sidewalk network between NE 2 <sup>nd</sup> St and Lytle St
NE Greeley Ave Modernization	Complete streets project to install sidewalk between NE 2 <sup>nd</sup> Street and NE 1 <sup>st</sup> St and modernize the street
NE 1 <sup>st</sup> Street Sidewalk Infill	Complete the sidewalk network along NE 1 <sup>st</sup> Street



Project	Description
Lafayette Ave Enhanced Crossing	Improved crossing and Lafayette and NE 3 <sup>rd</sup> St
Franklin Ave Enhanced Crossing	Improved Crossing at Franklin and NE 1 <sup>st</sup> St
Burnside Enhanced Crossing	Improved Crossing at Burnside and NE 3 <sup>rd</sup> St
BCD Curb Ramp Upgrades	Improve conditions at all intersections within the BCD so that curbs meet ADA standards
Lafayette Ave Bicycle Improvements	Provide cycling facilities to provide an LTS of 1 or 2
Burnside Ave Bicycle Improvements	Provide cycling facilities to provide an LTS of 1 or 2
NE 3 <sup>rd</sup> St Bicycle Improvements	Provide cycling facilities to provide an LTS of 1 or 2
BCD Lighting Inventory	Create an existing inventory of streetlights within the BCD to inform future projects
BCD Lighting Improvements <sup>1</sup>	Install appropriate lighting at unlit intersections within the BCD.

*1. Streetlights in the City of Bend are operated and maintained by either Pacific Power Corp or Central Electric Cooperative in accordance. All lighting projects must be coordinated with these agencies.*

# Highway Impacts Summary

According to the OAR 660-012-0325(b), a multimodal transportation gap summary must include a highway impacts summary if the designated CFA boundary contains a ramp terminal intersection, state highway, interstate highway, or adopted ODOT Facility Plan. The BCD CFA borders US 97 and contains a portion of US 20; therefore, a Highway Impact Summary will be required at the time the City designates the BCD as a CFA. At the time of the release of this Multimodal Gap Summary, the City has not begun the formal procedure to adopt the BCD as a CFA. Due to not having the official boundaries of the CFA and not yet initiating formal CFA adoption procedures, a Highway Impact Summary will be provided as a separate report at a future date. However, past travel demand modeling work<sup>4</sup> completed by the Bend Metropolitan Planning Organization has identified the following potential impacts associated with a dense land use scenario that is generally consistent with the City's planned CFAs:

- Increased traffic along Greenwood Avenue (US 20) (although not in the area within the BCD)
- Decreased traffic along 3<sup>rd</sup> Street
- No significant impacts to vehicle volumes reported for US 97

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<sup>4</sup> DKS Associates. 2024. "Preliminary MTP Project List Evaluation Memorandum."