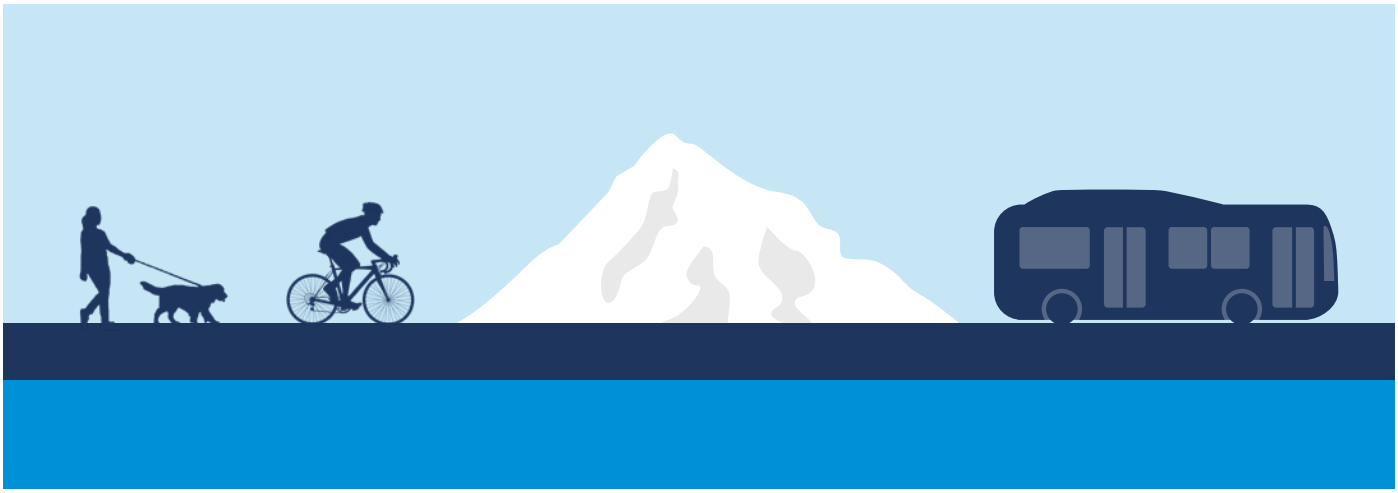


CASCADE AVENUE
DESIGN REFINEMENT PLAN

NOVEMBER 2021

CITY OF HOOD RIVER est. 1895

Oregon Department of Transportation

DKS

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PROJECT BACKGROUND

Cascade Avenue serves as a segment of the US 30 Historic Columbia River Highway (Historic Highway), a scenic and historically significant 73-mile route connecting Troutdale and The Dalles through the Columbia River Gorge. This design refinement effort focused on Cascade Avenue between Interstate 84 (I-84) Exit 62 and 13th Street, which serves as the western gateway to Hood River and the main street for the nearby neighborhoods.

KEY CORRIDOR CHALLENGES:

1. **LIMITED PEDESTRIAN AND BICYCLE AMENITIES**



2. **ADDITIONAL REGULATORY APPROVALS**



This section of Cascade Avenue was previously planned for in the 2011 Hood River Transportation System Plan (TSP),[1] the I-84 Exit 62 Interchange Area Management Plan (IAMP),[2] and the 2017 Westside Area Concept Plan,[3] which identified typical cross-sections that are consistent with the Historic Columbia River Highway Programmatic Agreement for the City of Hood River. The Programmatic Agreement[4] was signed in 2005 and includes dated provisions for pedestrians and bicyclists. Given this corridor's enhanced significance for connecting the planned segments of the Historic Highway State Trail to the west and east of Hood River, in addition to serving as a critical route for local pedestrian and bicycle travel, the City and ODOT worked together to modify the vision for the corridor and subsequently the Programmatic Agreement and TSP. Historically, the typical cross-sections for Cascade Avenue also required a design exception, resulting in additional regulatory approvals from the Oregon Department of Transportation (ODOT) prior to development approval. Both ODOT and the City of Hood River staff support revising the conceptual design for Cascade Avenue to address these key challenges.

1 *Hood River Transportation System Plan. 2011 (Amended 2021).*

2 *Interstate 84 Exit 62 Interchange Area Management Plan. 2011.*

3 *Hood River Westside Area Concept Plan. 2017.*

4 *Historic Columbia River Highway Master Plan Appendix 11, Misc. Contracts & Agreements No. 19942. 2005.*

THE PROJECT TEAM IDENTIFIED THE FOLLOWING OBJECTIVES FOR THE DESIGN REFINEMENT PLAN:



Create a vibrant and active multimodal corridor that serves planned community and tourism growth.



Establish a gateway for western Hood River.



Provide certainty on street design elements to avoid the need for design exceptions with development applications.

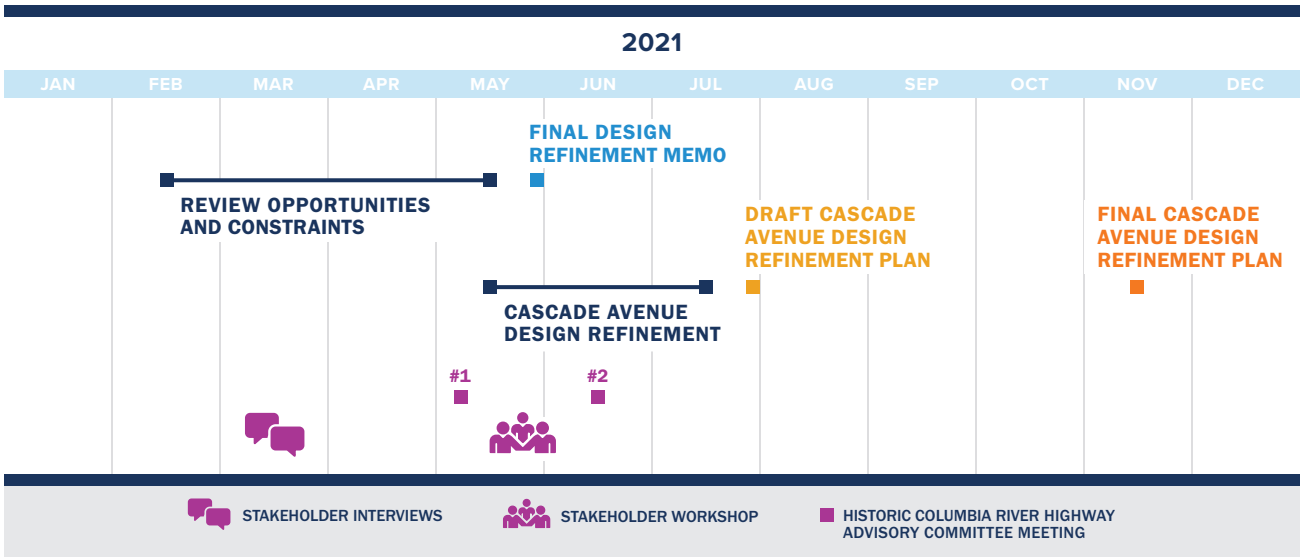


Ensure consistency with the historic nature of the roadway.

PLANNING PROCESS

The design refinement plan process began in February 2021 (see Figure 1), by reviewing background documents and current design guidance from ODOT, engaging with corridor stakeholders, and documenting existing opportunities and constraints on the corridor. The Design Refinement Memo (included in the appendix) sets the basis for the corridor design identified in this plan. Based on these findings, the project team prepared a conceptual design for Cascade Avenue to provide a blueprint for implementing the future vision for Cascade Avenue. This plan provides block-by-block recommendations for Cascade Avenue with specific considerations to address constraints along the corridor and establish a vibrant and active multimodal corridor.

FIGURE 1: PROJECT SCHEDULE



The project team solicited public input throughout the planning process using a series of interviews, a workshop, and two presentations to the Historic Columbia River Highway Advisory Committee. This outreach targeted business and property owners along the corridor, transit users, economic development groups, and other community interest groups. Participants agreed that Cascade Avenue does not currently work well for all travel modes. Existing issues identified include congestion for vehicle traffic (particularly at the Cascade Avenue/ Mt. Adams Avenue and Cascade Avenue/Rand Road intersections) and major deficiencies for pedestrians and bicyclists. These elements create a corridor where auto use dominates, even for short trips between residential areas and shopping. Furthermore, the combination of vehicle speeds and volumes will likely remain a barrier for some residents, even with significant improvements to the existing pedestrian and bicycle infrastructure proposed as part of this plan. Participants also viewed this planning effort as an opportunity to create a gateway into Hood River which should celebrate the historic nature of Cascade Avenue.

STAKEHOLDER GROUPS IDENTIFIED AND SUPPORTED THE FOLLOWING SOLUTIONS:

1. **A THREE-LANE CROSS-SECTION TO FACILITATE LEFT TURNS**
2. **COMPLETE SIDEWALKS**
3. **SAFE BIKE FACILITIES**
4. **INTERSECTION IMPROVEMENTS AT MT. ADAMS AVENUE AND RAND ROAD**
5. **STREETSCAPE AND OTHER PLACEMAKING FEATURES**
6. **ENHANCED PEDESTRIAN CROSSINGS** (ALTHOUGH THE SUPPORT FOR NEW, RAISED MEDIANS VARIED BY GROUP)
7. **IN-LANE TRANSIT STOPS WITH ENHANCED AMENITIES**



EXISTING CONDITIONS

Today, Cascade Avenue is a two- or three-lane road classified as an urban minor arterial and a designated freight corridor.[5] The posted speed is between 20 and 35 mph. US 30, which follows Cascade Avenue and Oak Street, is the only continuous through street connecting the eastern and western edges of Hood River. Vehicle volumes for Cascade Avenue typically ranged between 13,000 and 15,000 vehicles per day in 2019.[6] Currently, transit service operates in a shared vehicle travel lane on Cascade Avenue with two off-street Columbia Area Transit (CAT) stops (the gravel parking lot near the Mt. Adams Avenue/ Cascade Avenue intersection and Safeway) within the study area.

This corridor also ranks in the top 5-10 percent for bicycle and pedestrian prioritization in the ODOT Active Transportation Needs Inventory (ATNI), which factors in bicycle and pedestrian crash frequency and risk factors, level of traffic stress, and surrounding context for biking, walking and transit use. The ATNI also indicates that the area surrounding the corridor scores highly in the Transportation Disadvantaged Populations Index: elderly, youth, non-white and Hispanic, low-income, limited English proficiency, households without access to a vehicle, people with a disability, and crowded households who make up high numbers of transportation disadvantaged residents and environmental justice communities that have been traditionally underserved.

CORRIDOR HIGHLIGHTS:

- **Cascade Avenue is the only road that provides a continuous connection between the eastern and western edges of Hood River**
- **Between 13,000 and 15,000 vehicles per day travelled on Cascade Avenue in 2019**
- **Cascade Avenue is a designated freight corridor**
- **ODOT identified Cascade Avenue as a priority corridor for pedestrian and bicycle improvements**
- **New growth in the westside area will catalyze development of a more urban built environment on Cascade Avenue**
- **In 2020, ODOT transferred a 0.8 mile segment of OR 30 in downtown Hood River to the City.**

5 *Cascade Avenue is currently a Freight Reduction Review Route for ODOT and part of the National Network Truck System.*

6 *ODOT TransGIS. Annual Average Daily Traffic (AADT) – State. https://gis.odot.state.or.us/transgis*

At the same time, Hood River's westside area, including the land surrounding and immediately south of Cascade Avenue, is a major growth area for new residential and commercial development through 2040. The projected growth has the potential to add over 1,700 households while the proposed commercial zoning will support a new pedestrian-oriented district on Cascade Avenue between the Exit 62 interchange and Rand Road.[7] This district could include additional housing or mixed-use development. This growth is anticipated to transform Cascade Avenue into an urban gateway to Hood River.

CONSTRAINTS

Project stakeholders unanimously agreed that Cascade Avenue today does not work well for any travel mode, and their assessment is consistent with previous planning efforts that identified a variety of needs along the corridor. Although traffic volumes on Cascade Avenue were only between 13,000 and 15,000 vehicles per day in 2019,[8] all intersections between Exit 62 and 13th Street are unsignalized which limits opportunities for left turns to and from Cascade Avenue given the existing vehicle volumes. Vehicles turning left from side streets and driveways along Cascade Avenue will experience delays due to the continuous flow of traffic on Cascade Avenue. Left-turning traffic from Cascade Avenue also creates delays for through traffic flow in locations without a center turn lane. The existing congestion for left-turning traffic impacts CAT bus routing, increases transit travel times, and requires turn restrictions for new development on Cascade Avenue to reduce high-risk driver behavior and potential left turn conflicts from adjacent driveways.

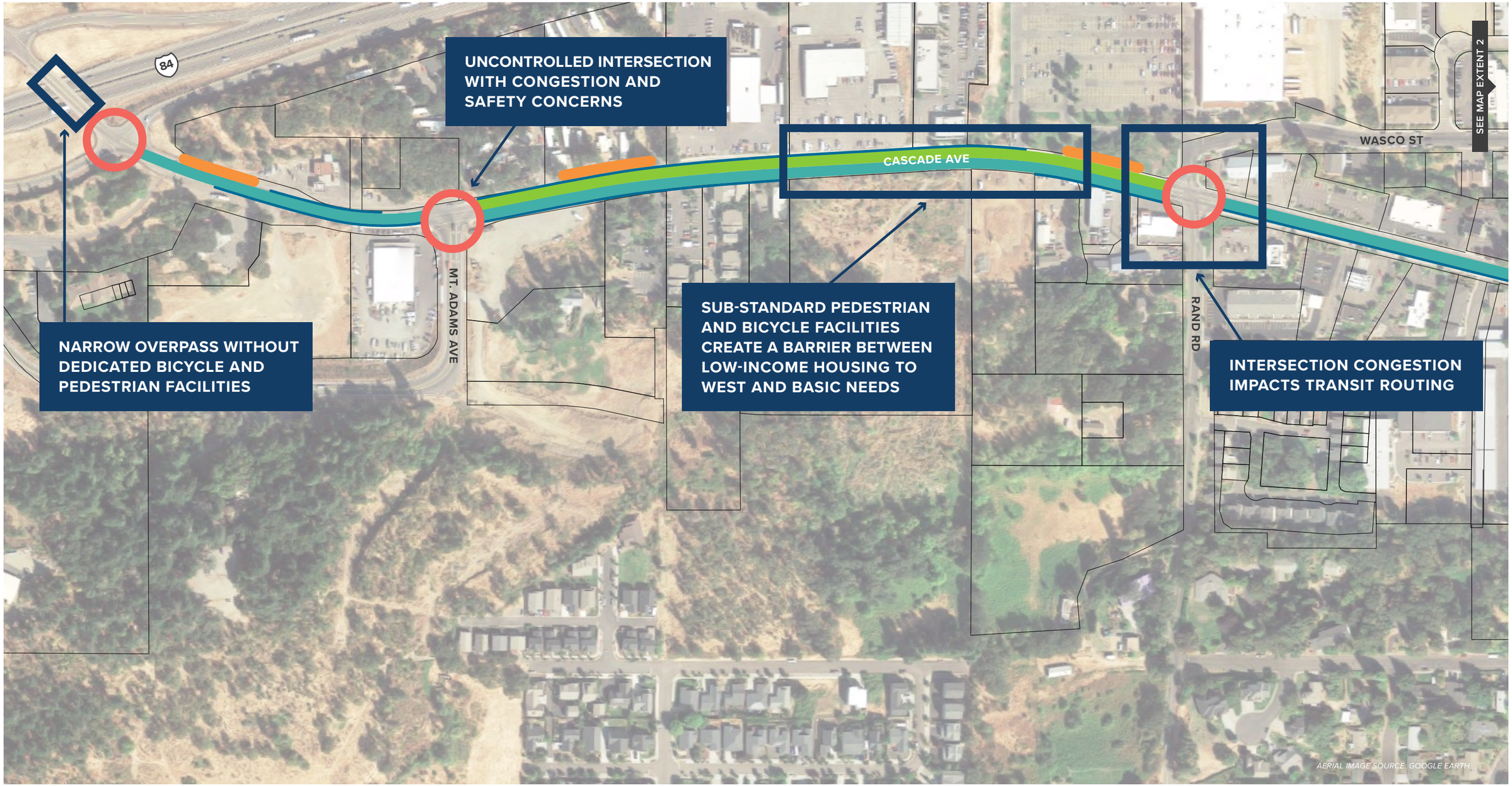
Congestion can also degrade safety along Cascade Avenue as drivers accept shorter gaps to turn or fail to watch for bicyclists or pedestrians when accessing the frequent driveways along the corridor. Managing new accesses to reduce these potential conflicts requires significant coordination between the City of Hood River, developers, and existing accesses. Existing sidewalk gaps, inconsistent bike lanes, and frequent driveways and accesses that create conflict points between modes break down the streetscape from a predictable and organized environment that can promote safety. Limited safe crossing opportunities further compound the safety challenges for bicyclists and pedestrians.

The lack of continuous, low-stress bike lanes or sidewalks in combination with projected vehicle volumes during peak travel periods creates an uninviting environment for most pedestrians and bicyclists even though basic needs, like grocery stores, are within walking distance of residential areas adjacent to Cascade Avenue. Although future redevelopment on Cascade Avenue is expected to provide new pedestrian and bicycle amenities consistent with the recommendations of this plan, in locations with recent development, properties that are unlikely to redevelop, or other topographic constraints, the City must consider other strategies to provide recommended improvements. Figures 2 and 3 summarize the existing transportation constraints identified along Cascade Avenue.

7 *Hood River Westside Area Concept Plan. 2017.*

8 *OT TransGIS. Annual Average Daily Traffic (AADT) – State. https://gis.odot.state.or.us/transgis*

FIGURE 2: CASCADE AVENUE CONSTRAINTS MAP – EXTENT 1

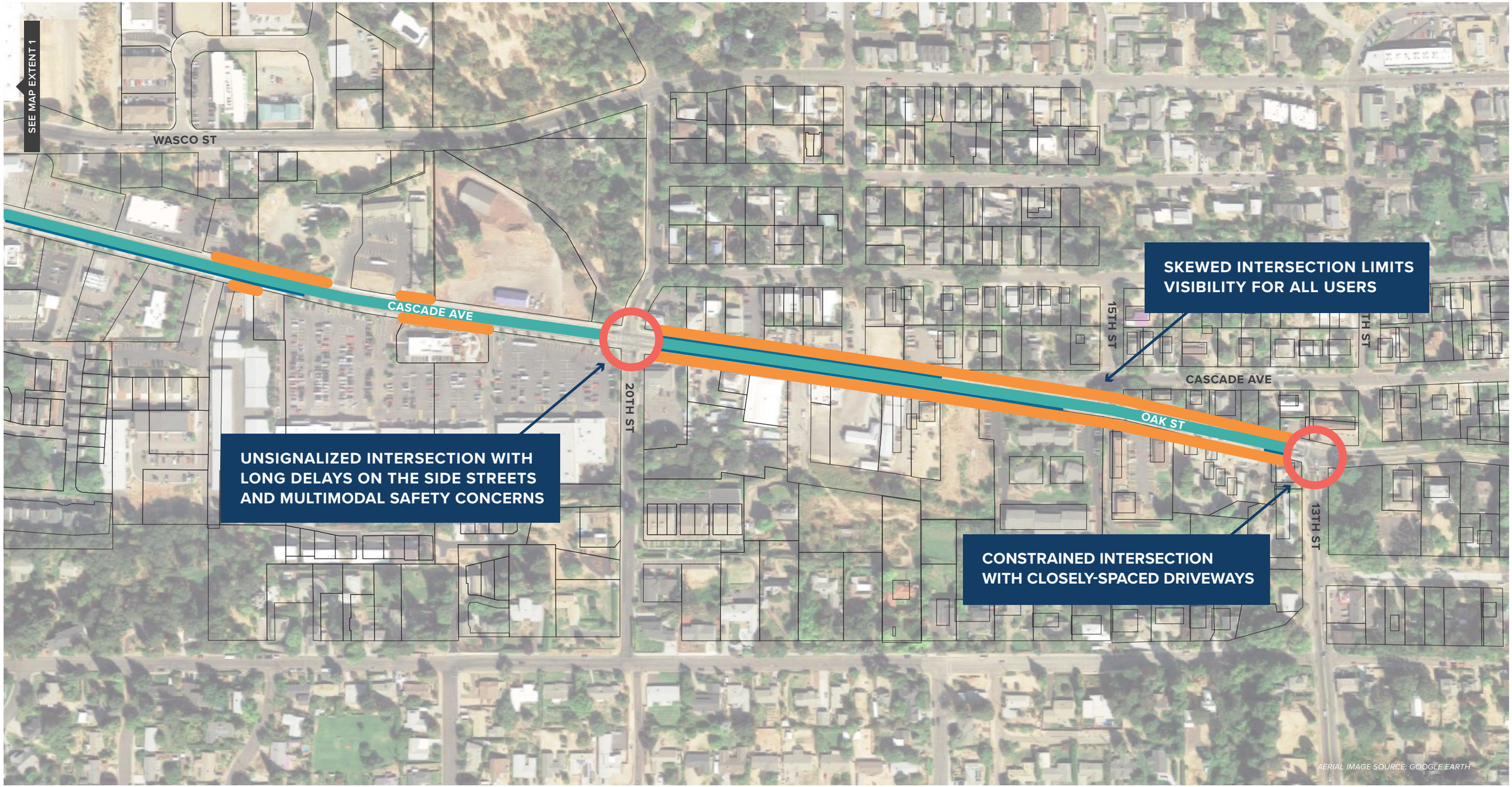


LEGEND:

- TAX LOTS
- CONGESTION
- DIFFICULT LEFT TURNS
- CHALLENGING BICYCLE/ PEDESTRIAN ENVIRONMENT
- FREQUENT DRIVEWAY CURB CUTS
- PINCH POINT DUE TO RIGHT-OF-WAY OR TOPOGRAPHY

N
NOT TO SCALE

FIGURE 3: CASCADE AVENUE CONSTRAINTS MAP – EXTENT 2



LEGEND:

- TAX LOTS
- CONGESTION
- CHALLENGING BICYCLE/ PEDESTRIAN ENVIRONMENT
- FREQUENT DRIVEWAY CURB CUTS
- PINCH POINT DUE TO RIGHT-OF-WAY OR TOPOGRAPHY

N
NOT TO SCALE

OPPORTUNITIES

Although Cascade Avenue has numerous significant challenges, the existing vacant land, potential redevelopment, and large building setbacks provide a unique opportunity to transform this corridor. Most property fronting Cascade Avenue is zoned C-2[9] General Commercial which permits several different uses, including bed and breakfasts, residential care facilities, commercial uses, multi-family housing, offices, and existing residential uses, among other uses. Within C-2 zoned land, commercial or mixed-use buildings may be up to 45 feet high while residential buildings may be up to 35 feet high; building setbacks from the fronting street are not required. This zoning allows for the highest residential densities in Hood River and is the only zone that requires a minimum level of density. While developers determine the specific site design for vacant land or new redevelopment, the City supports projects that could be constructed to the maximum allowable density to foster a mixed-use environment, which could include significant attractions for residents or tourists.

Current planned improvements on or near the corridor provide opportunities to address congestion and safety concerns. Improvements include new traffic signals and roundabouts, pedestrian crossing enhancements, collector and local streets, local trails, and an extension of the Historic Highway State Trail to Cascade Avenue.

Incorporating placemaking elements into the design, like lighting and landscaping, could promote a more attractive environment for bicyclists and pedestrians, is consistent with the Westside Area Concept Plan,[10] and provides an opportunity to highlight the historic nature of Cascade Avenue. Creating a more attractive environment for bicyclists and pedestrians can support economic development and provide improved access to transit. Future transit service expansions, such as new stops or modified routing, should be coordinated with the proposed enhanced crossing locations. These improvements are necessary to support a shift away from the auto dominance which currently exists on Cascade Avenue.

SURVEYS OF BUSINESS PATRONS IN PORTLAND FOUND THAT PEOPLE WHO WALK, BIKE, OR TAKE TRANSIT SPEND A SIMILAR AMOUNT OR MORE COMPARED TO THOSE WHO DRIVE.[11]

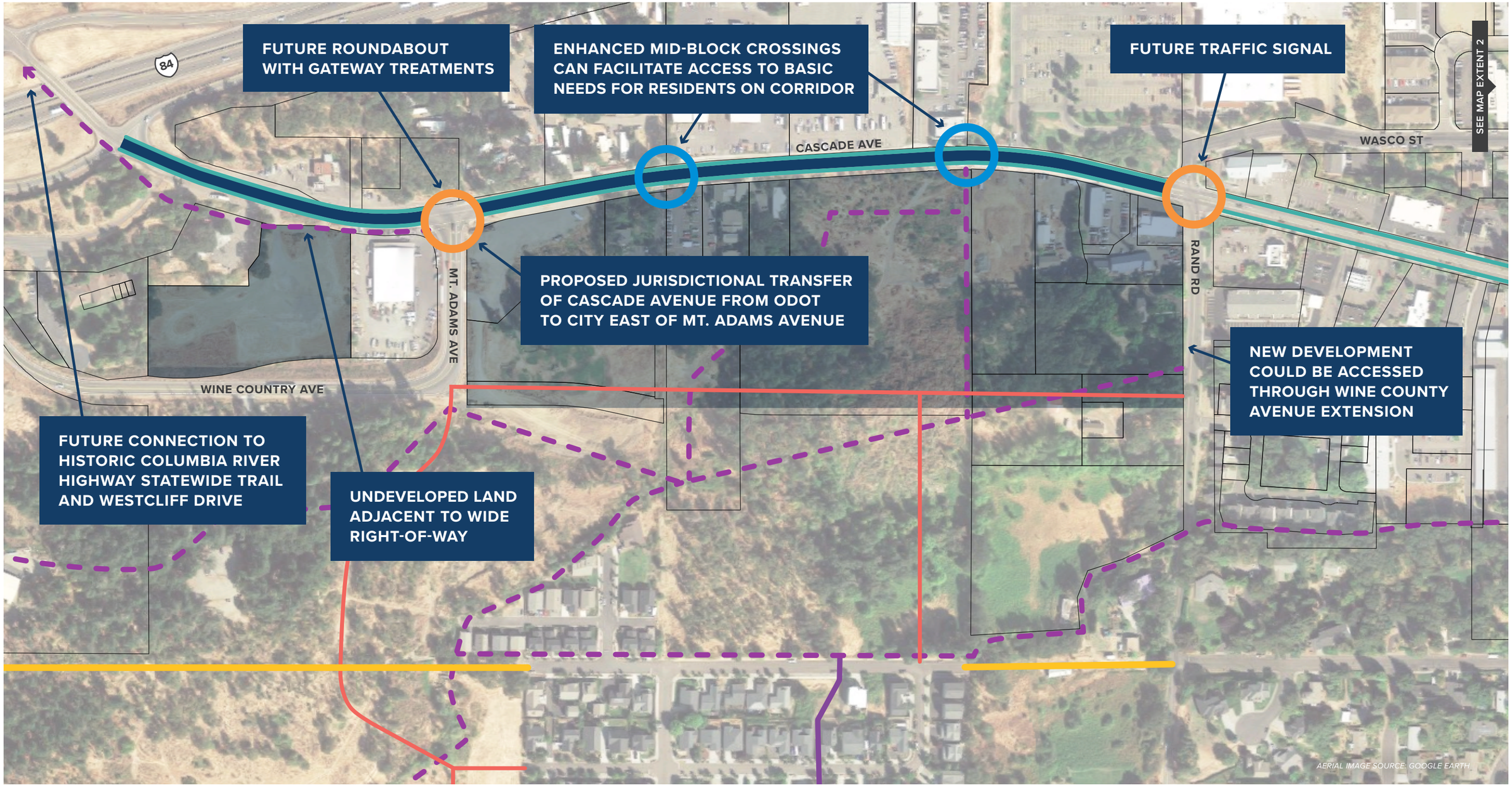
Figures 4 and 5 summarize the existing transportation opportunities identified along Cascade Avenue.

9 *Hood River Municipal Code Section 17.03.050 General Commercial Zone (C-2). https://hoodriver.municipal.codes/HRMC/17.03.050*

10 *Hood River Westside Area Concept Plan. 2017.*

11 *Clifton, Kelly, et al. Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians. 2012. https://nacto.org/docs/usdg/consumer_behavior_and_travel_choices_clifton.pdf*

FIGURE 4: CASCADE AVENUE OPPORTUNITIES MAP – EXTENT 1

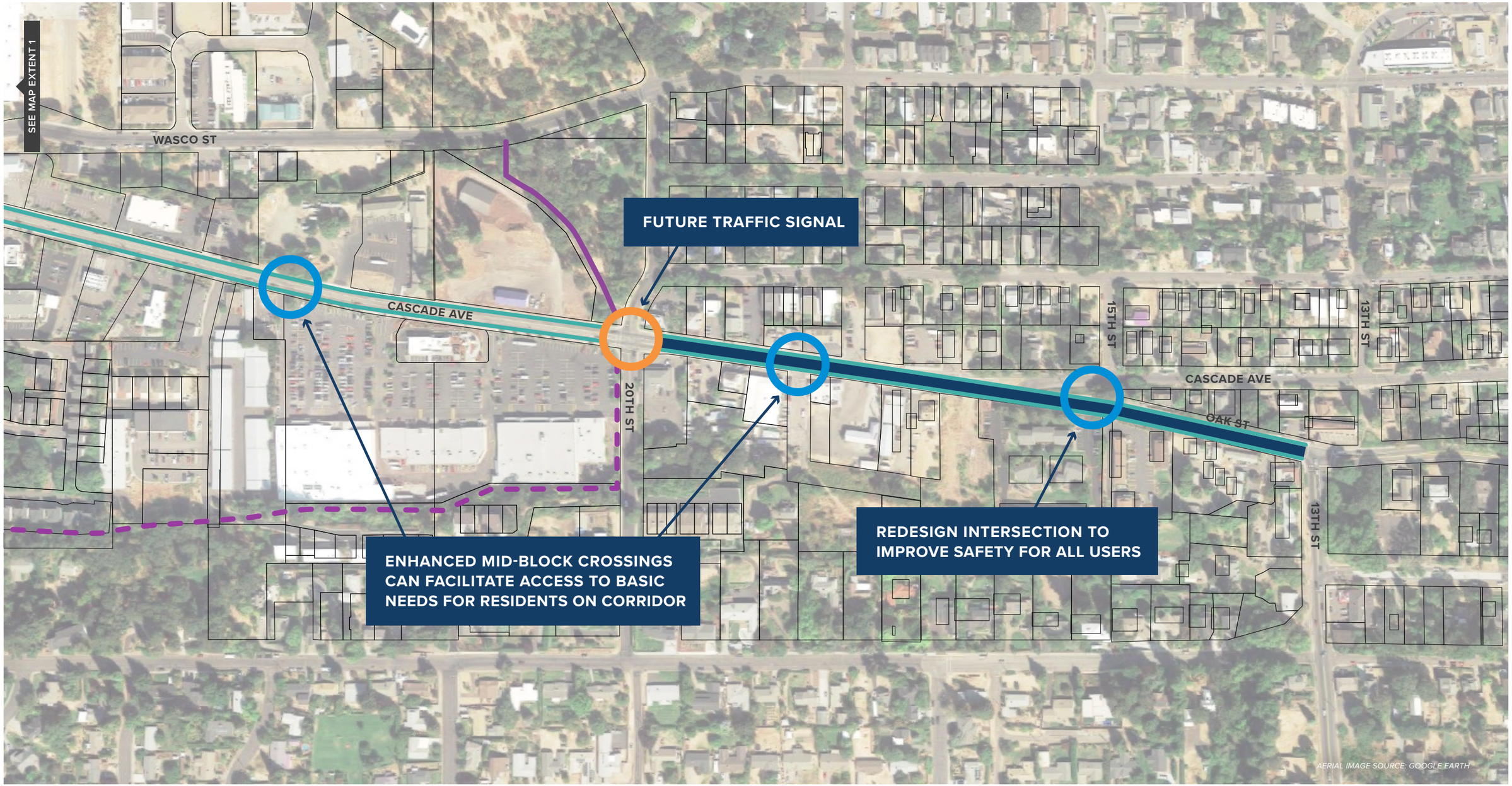


LEGEND:

- TAX LOTS
- POTENTIAL AREA OF DEVELOPMENT
- FUTURE TWO-WAY LEFT TURN LANE TO MAKE LEFT TURNS EASIER
- FUTURE COLLECTOR *(CONCEPTUAL ALIGNMENT)*
- FUTURE NEIGHBORHOOD CONNECTOR *(CONCEPTUAL ALIGNMENT)*
- EXISTING TRAIL
- FUTURE TRAIL EXTENSION *(CONCEPTUAL ALIGNMENT)*
- GENERAL ENHANCED CROSSING LOCATION
- INTERSECTION IMPROVEMENT WILL INCLUDE NEW PEDESTRIAN CROSSING
- SIDEWALK INFILL AND ALL AGES AND ABILITIES BICYCLE TREATMENT

N
NOT TO SCALE

FIGURE 5: CASCADE AVENUE OPPORTUNITIES MAP – EXTENT 2



LEGEND:

- TAX LOTS
- FUTURE TWO-WAY LEFT TURN LANE TO MAKE LEFT TURNS EASIER
- EXISTING TRAIL
- FUTURE TRAIL EXTENSION *(CONCEPTUAL ALIGNMENT)*
- GENERAL ENHANCED CROSSING LOCATION
- INTERSECTION IMPROVEMENT WILL INCLUDE NEW PEDESTRIAN CROSSING
- SIDEWALK INFILL AND ALL AGES AND ABILITIES BICYCLE TREATMENT

N
NOT TO SCALE

CORRIDOR VISION

Throughout the planning process, the community of Hood River and other project stakeholders prioritized design elements that will create a vibrant and active multimodal corridor, which includes placemaking features to create a future gateway to Hood River. The proposed design elements must be consistent with the historic nature of Cascade Avenue while also establishing a bicycle and pedestrian environment that serves users of all ages and abilities to link planned segments of the Historic Columbia River Highway State Trail. The identified cross-sections should also provide clear recommendations for the frontage improvements required with new development that are consistent with ODOT's design guidance.

THE PROJECT TEAM USED THESE PRINCIPLES TO INFORM A PERFORMANCE-BASED DESIGN APPROACH THAT FOCUSED ON THE CLEAR GOALS AND DESIRED OUTCOMES FOR THE PROJECT:



The project will create a vibrant and active multimodal corridor and establish a gateway to western Hood River.



The project will serve the existing and future transportation needs of both community members and tourists.



The project will accommodate a high level of mixed-use growth in the surrounding area.



The project will be consistent with the historic nature of the roadway.

KEY CORRIDOR DESIGN ELEMENTS

- **ONE EASTBOUND AND ONE WESTBOUND TRAVEL LANE FOR MOST OF THE CORRIDOR**
- **CONTINUOUS SIDEWALKS**
- **SEPARATED BICYCLE FACILITIES**
- **LANDSCAPING AND OTHER PLACEMAKING FEATURES**
- **A CENTER, TWO-WAY LEFT-TURN LANE WHERE FEASIBLE**
- **RAISED MEDIANS TO PROVIDE PROTECTED CROSSINGS FOR PEDESTRIANS AND BICYCLISTS**
- **ACCESS MANAGEMENT STRATEGIES TO REDUCE POTENTIAL CONFLICTS**

The project team reviewed existing design guidance from ODOT's Blueprint for Urban Design[12] to identify the appropriate design elements that will support the high-density, mixed-use developments that the City is anticipating on Cascade Avenue. The Blueprint for Urban Design employs a context-sensitive design approach that considers the land use context of each state highway in recommending the appropriate treatments for pedestrians, bicyclists, and drivers. Based on this review, included in the appendix, the project team identified various cross-sections for Cascade Avenue with continuous sidewalks and separated bicycle facilities to support the vision identified for Cascade Avenue.

After identifying the preferred cross-section elements and widths for each section of Cascade Avenue, the project team reviewed existing and future corridor constraints, including buildings, retaining walls, railings or other significant topography to recommend an implementable design solution that minimizes impacts to existing residences. In constrained areas where there is not space for the preferred cross-section, the following guidance was used to prioritize cross-section elements and identify the appropriate compromises.

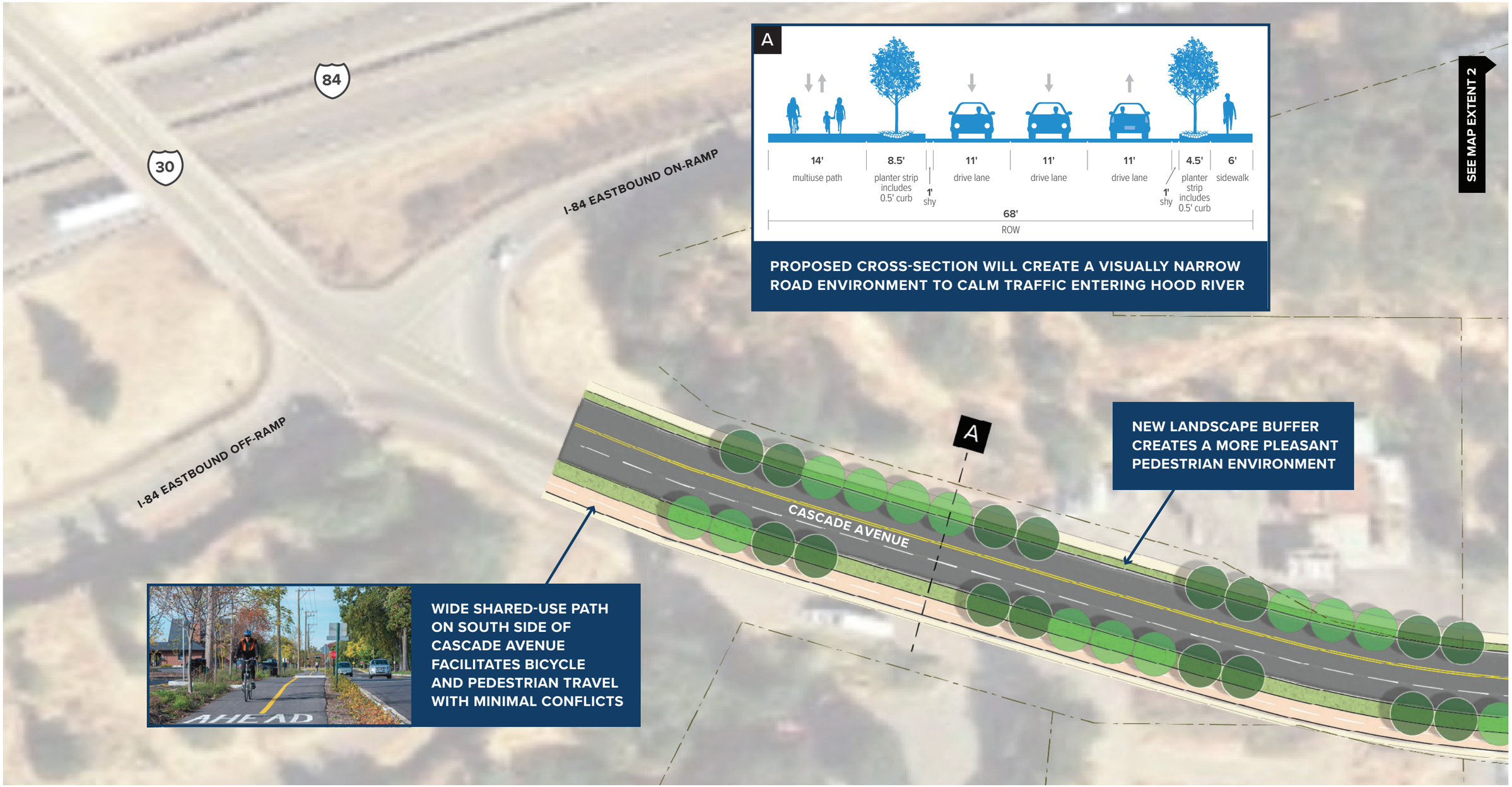
IN ORDER OF PRIORITY, CONSTRAINED SECTIONS SHOULD:

1. **Eliminate the midblock center two-way left-turn lane or reduce any raised medians to a narrow, raised traffic separator**
2. **Eliminate the landscaping buffer area**
3. **Reduce sidewalks to their minimum recommended width of six feet**
4. **Reduce the separated bicycle facility to its minimum recommended width of seven feet**

The following maps highlight the recommended corridor design for Cascade Avenue along with key design features that will be included through this project.

12 *ODOT. Blueprint for Urban Design. 2020.*

FIGURE 6: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 1



CORRIDOR LOCATION:



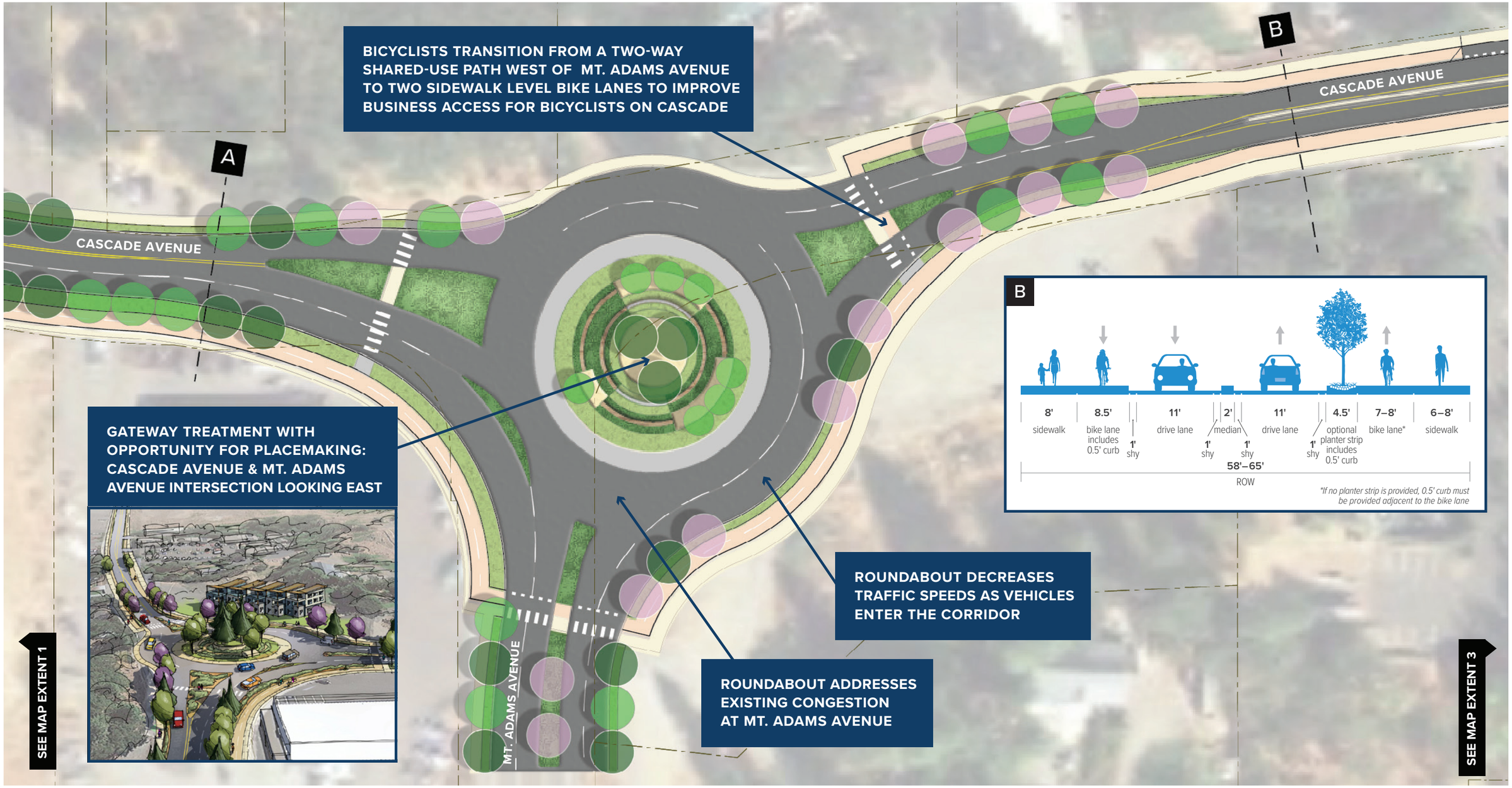
LEGEND:

- BIKE LANE
- SIDEWALK
- SHRUBS/ORNAMENTAL
- STORMWATER / LAWN
- SHADE TREE
- EVERGREEN TREE
- ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 7: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 2



CORRIDOR LOCATION:



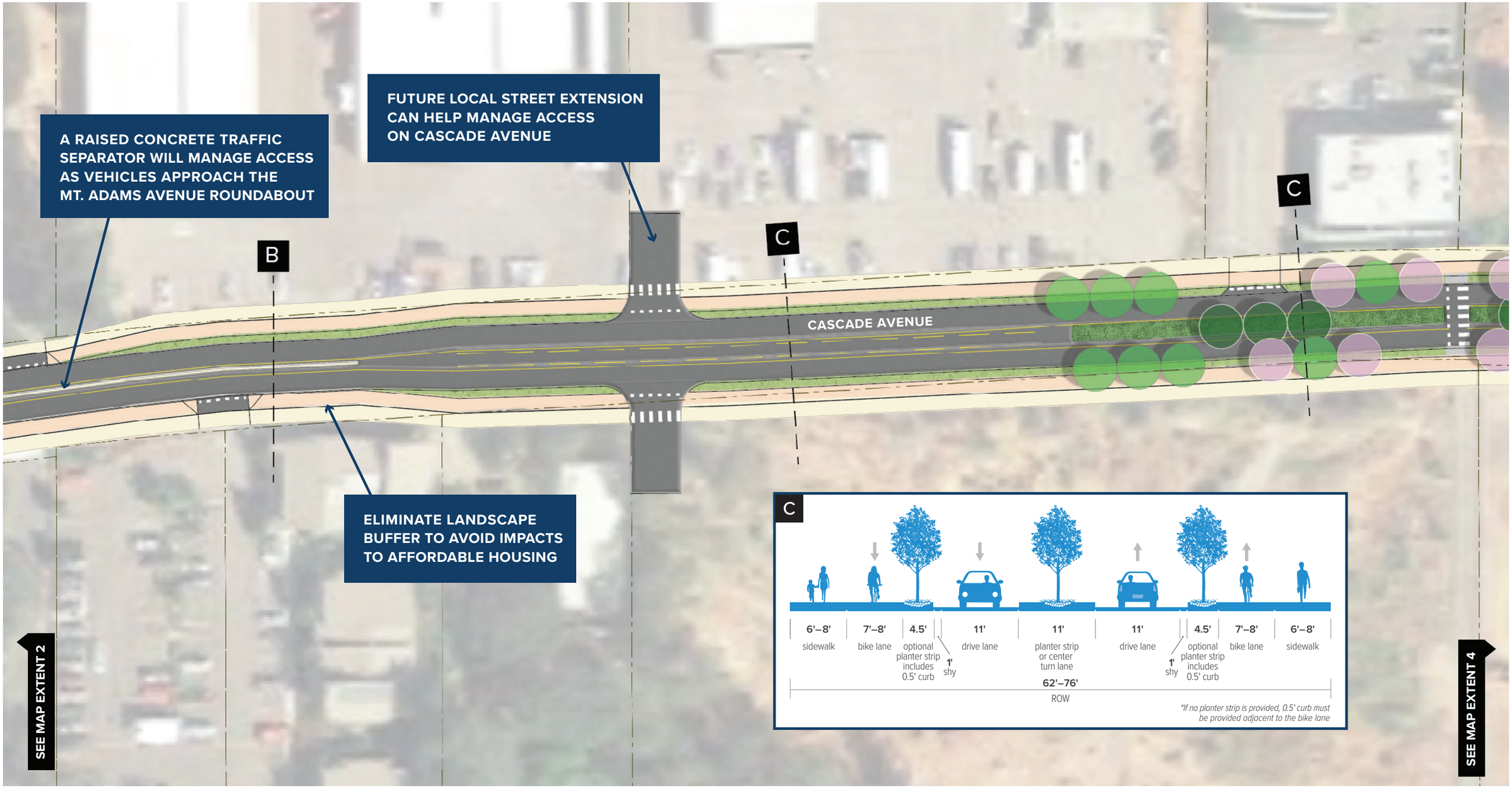
LEGEND:

BIKE LANE
SIDEWALK
SHRUBS/ORNAMENTAL
STORMWATER / LAWN
SHADE TREE
EVERGREEN TREE
ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 8: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 3



CORRIDOR LOCATION:



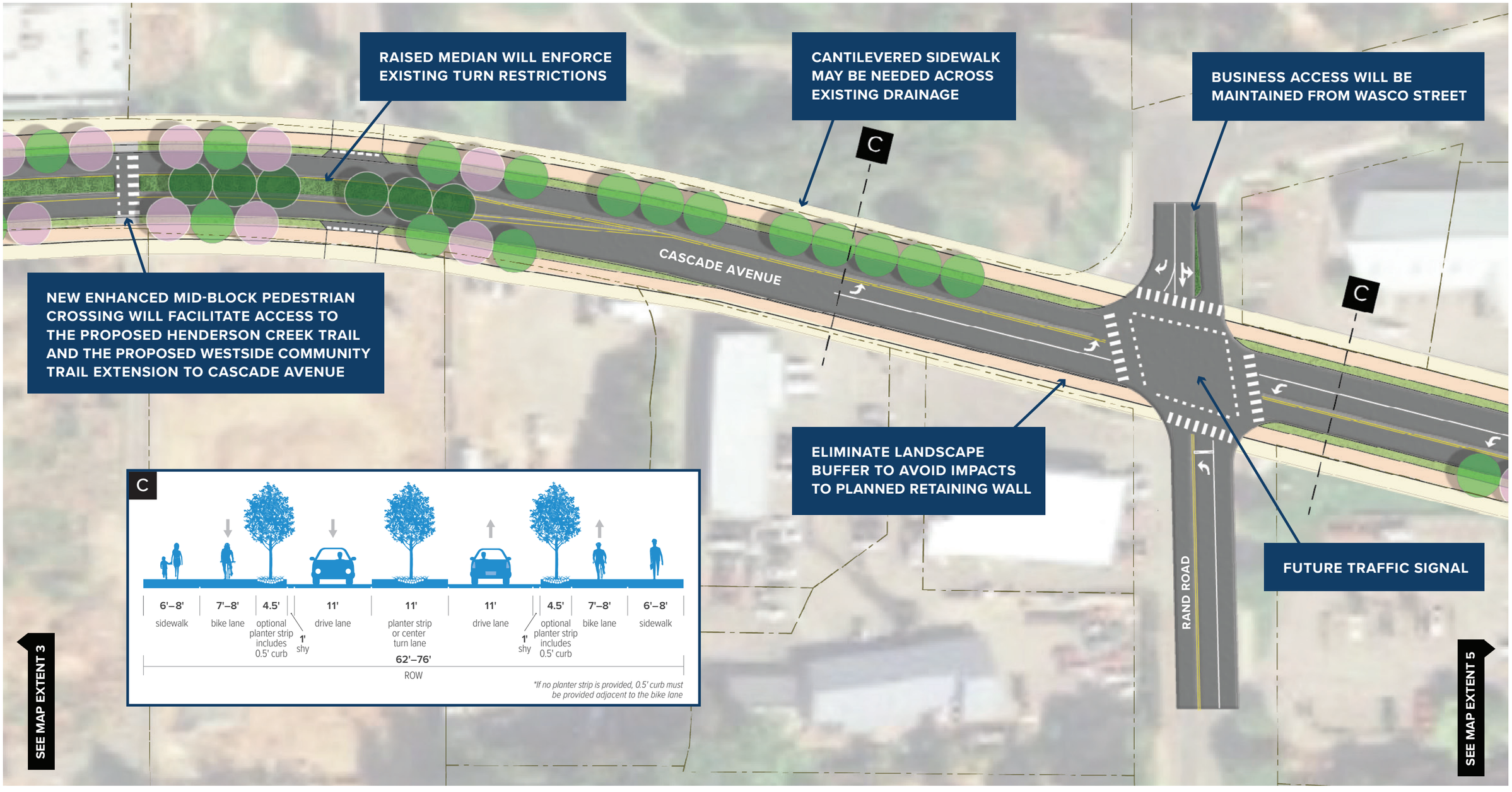
LEGEND:

BIKE LANE
SIDEWALK
SHRUBS/ORNAMENTAL
STORMWATER / LAWN
SHADE TREE
EVERGREEN TREE
ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 9: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 4



CORRIDOR LOCATION:



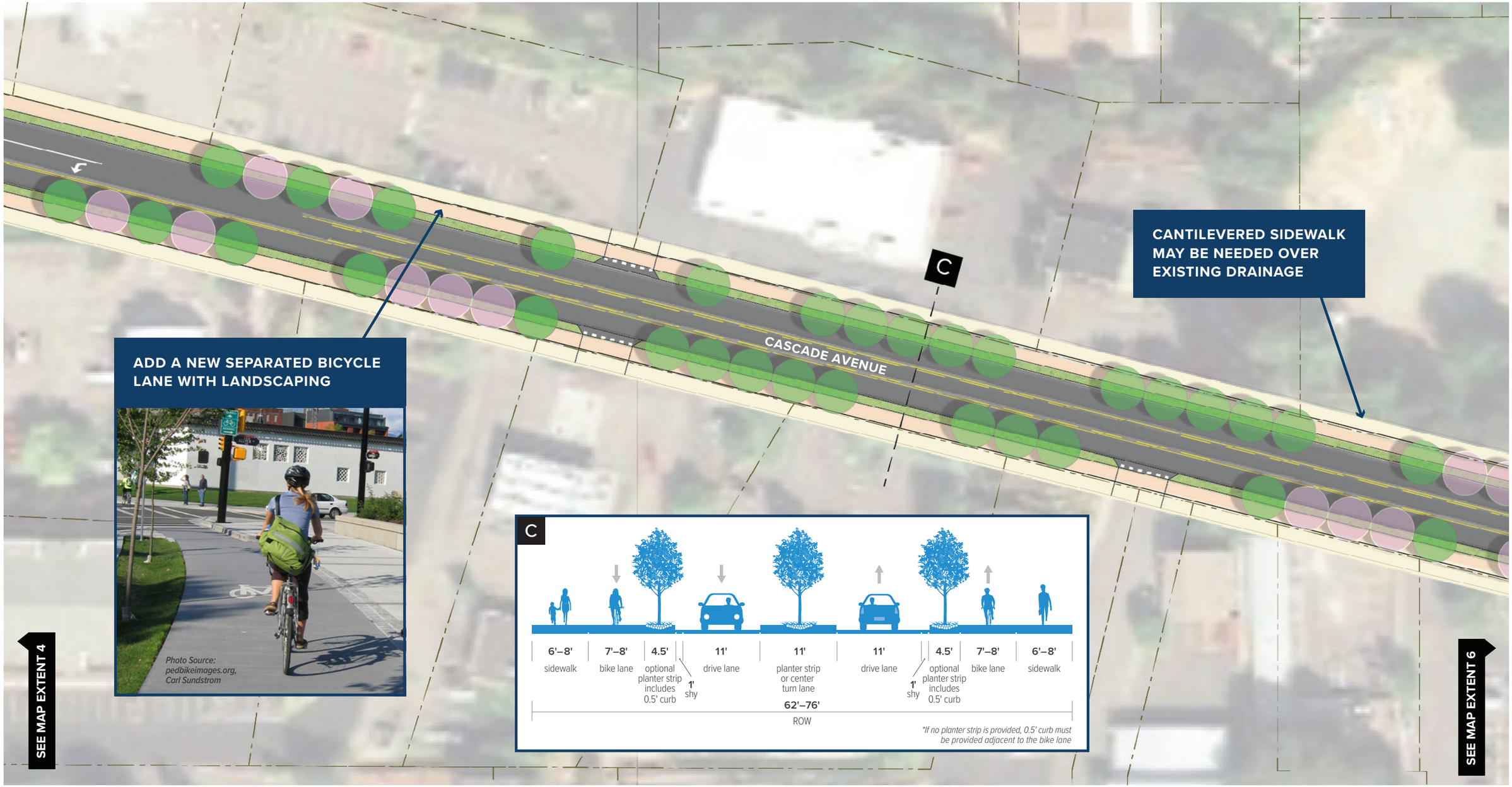
LEGEND:

BIKE LANE
SIDEWALK
SHRUBS/ORNAMENTAL
STORMWATER / LAWN
SHADE TREE
EVERGREEN TREE
ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 10: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 5



CORRIDOR LOCATION:



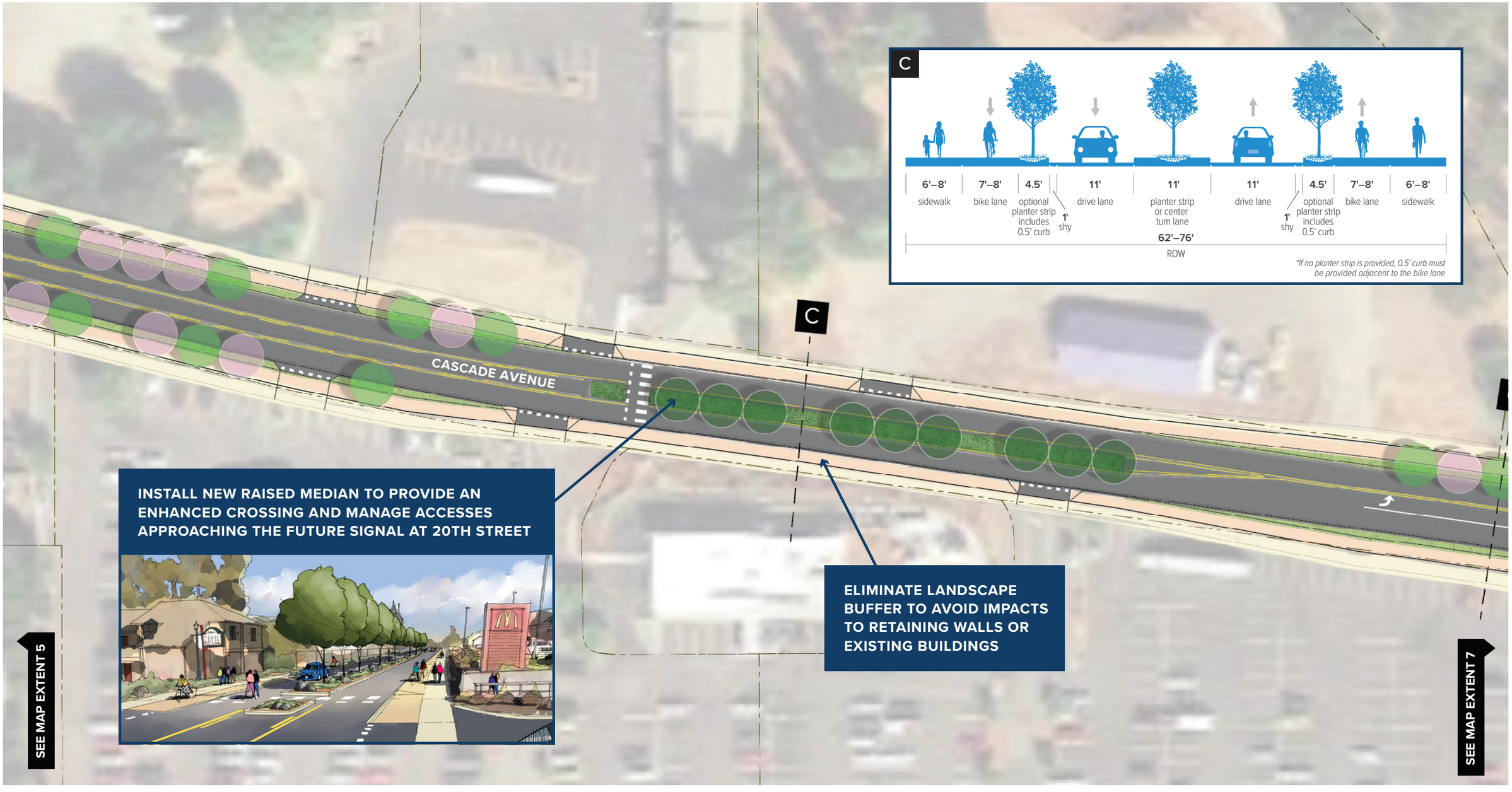
LEGEND:

BIKE LANE
SIDEWALK
SHRUBS/ORNAMENTAL
STORMWATER / LAWN
SHADE TREE
EVERGREEN TREE
ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 11: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 6



CORRIDOR LOCATION:



LEGEND:

- BIKE LANE
- SIDEWALK
- SHRUBS/ORNAMENTAL
- STORMWATER / LAWN
- SHADE TREE
- EVERGREEN TREE
- ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 12: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 7

BIKE LANES RAMP DOWN AT INTERSECTION CROSSINGS

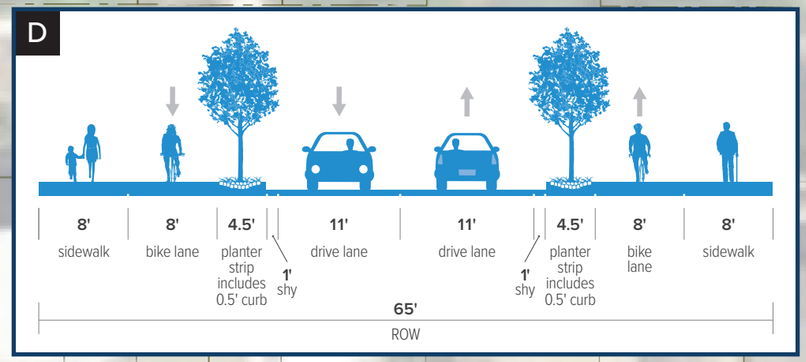


Photo Source: https://landscapearchitecturemagazine.org/2016/06/16/cycle-away/

ELIMINATE LANDSCAPE BUFFER AS NEEDED TO AVOID IMPACTS TO EXISTING BUSINESSES

FUTURE TRAFFIC SIGNAL

TWO TRAFFIC LANES DUE TO CONSTRAINED RIGHT-OF-WAY



C

C

D

20TH STREET

CASCADE AVENUE

SEE MAP EXTENT 6

SEE MAP EXTENT 8

CORRIDOR LOCATION:



LEGEND:

- BIKE LANE
- SIDEWALK
- SHRUBS/ORNAMENTAL
- STORMWATER / LAWN
- SHADE TREE
- EVERGREEN TREE
- ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 13: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 8



CORRIDOR LOCATION:



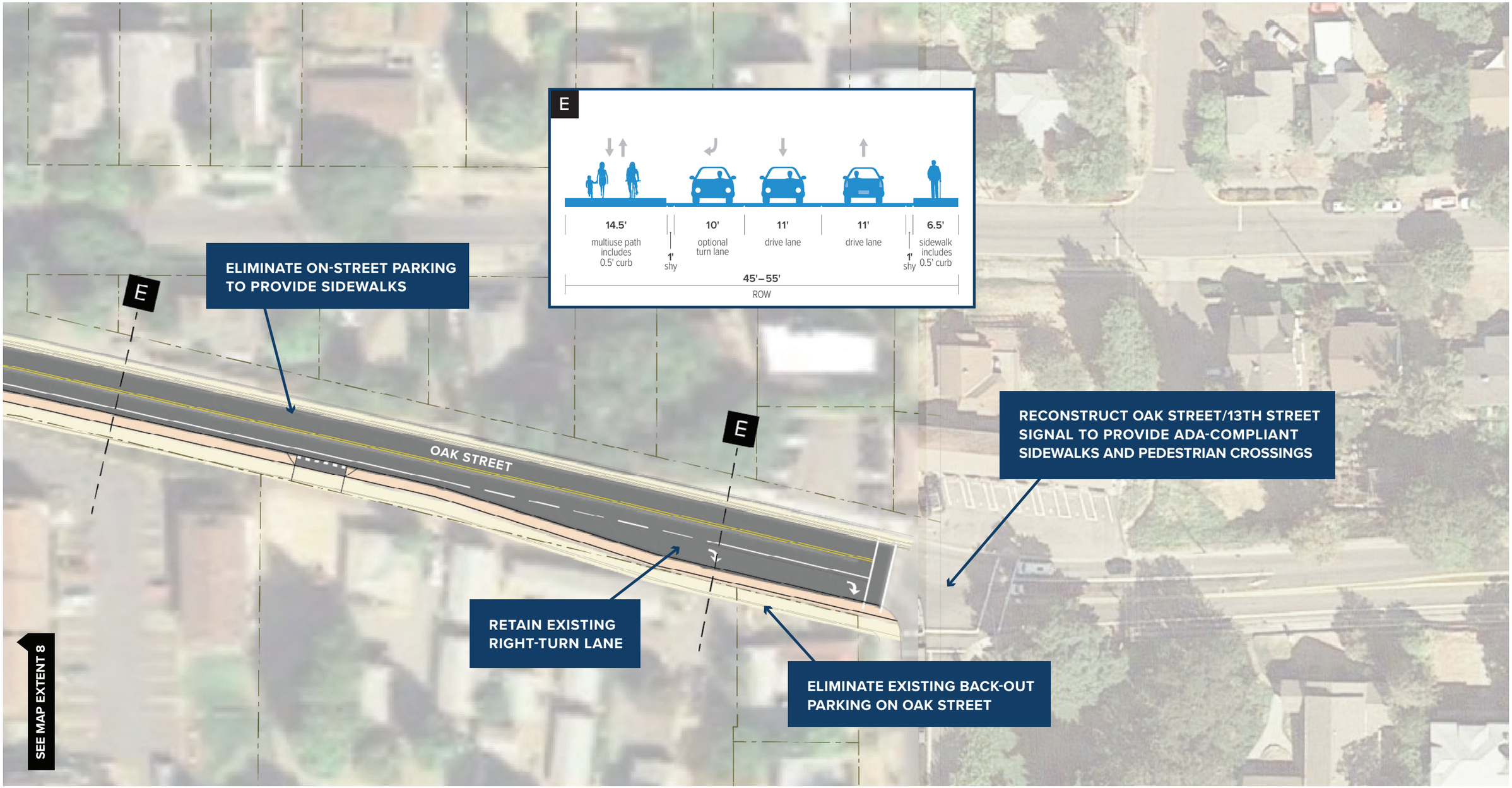
LEGEND:

BIKE LANE
SIDEWALK
SHRUBS/ORNAMENTAL
STORMWATER / LAWN
SHADE TREE
EVERGREEN TREE
ORNAMENTAL TREE

0 25' 50' 100'

N

FIGURE 14: CASCADE AVENUE RECOMMENDED CORRIDOR DESIGN – EXTENT 9



CORRIDOR LOCATION:



LEGEND:

- BIKE LANE
- SIDEWALK
- SHRUBS/ORNAMENTAL
- STORMWATER / LAWN
- SHADE TREE
- EVERGREEN TREE
- ORNAMENTAL TREE

0 25' 50' 100'

N

INTERSECTION AND DRIVEWAY DESIGN TREATMENTS

Constructing a separated bicycle facility that is located away from traffic requires special design consideration at intersections and driveways to ensure safe crossings for bicyclists. Due to limited right-of-way, bicycle facilities on Cascade Avenue should be adjacent to the roadway approaching intersections and driveways to allow clear visibility for drivers. Signage, green paint (shown in Figures 15 and 16), and other markings should be applied to clearly delineate a cyclists' priority. At signalized intersections, the signals should have separate, protected phases for left-turning vehicles and cyclists to eliminate the potential for through traffic to obscure a crossing bicyclist.

FIGURE 15: SEPARATED BICYCLE FACILITY INTERSECTION TREATMENTS



Source: Caltrans

TRANSIT DESIGN TREATMENTS

Columbia Area Transit (CAT) is currently responsible for transit service in Hood River, including future stop placement, transit routing, and stop amenities. The proposed design supports future transit service on Cascade Avenue by:

- Providing sufficient width, even in constrained areas, to construct future transit shelters and other stop amenities
- Implementing a bicycle facility that does not introduce conflicts with in-lane transit stops
- Installing mid-block pedestrian crossings that can be used near future CAT stop locations

Future transit enhancements for Cascade Avenue should be coordinated between CAT and the City of Hood River. The transit designs recommended in this plan represent best practice for transit stop design, but all final improvements require approval from CAT.

FIGURE 16: SEPARATED BICYCLE FACILITY DRIVEWAY TREATMENTS



Source: Ken Lambert, Seattle Times

Designing Bus Stops in Hood River

The following guidelines recommend key design features for bus stops in Hood River. All bus stops should include critical items to meet ADA standards while most locations should include the recommended items. Highly utilized or commuter-oriented stops should also include the optional items. When provided, transit stops should be well-maintained to establish a positive community image and minimize conflicts with businesses and adjacent land uses. Providing bus stop amenities represents a full commitment by CAT to fixed route service within Hood River.

KEY DESIGN FEATURES FOR HOOD RIVER BUS STOPS



CRITICAL ITEMS:

1 Bus stops must meet ADA standards. These standards require at least four feet of sidewalk clearance, landing pads, and curb heights that allow for passengers in wheelchairs to board and depart the bus. Bus stops located at the back of sidewalk provide maximum sidewalk clearance.

RECOMMENDED ITEMS:

2 Bus shelters protect riders from the wet climate of the Pacific Northwest while benches provide a comfortable place to wait. These recommended stop elements increase passenger comfort.

3 Posting route maps and schedules at stops provides critical service information to passengers who lack access to a smartphone.

OPTIONAL ITEMS:

4 Bicycle parking provides a safe and convenient bicycle storage option for residents who live farther away from stops or bike to transit.

5 Trash receptacles mitigate littering while passengers wait to board.

IMPLEMENTATION

The corridor design refinement represents the future vision for Cascade Avenue with consideration for existing constraints, including topography, limited right-of-way, and buildings. In the event development mitigates an existing constraint, the full cross-section identified in the updated Hood River TSP (future adoption), without compromise, should be applied to implement the long-term vision for Cascade Avenue.

PROJECT PHASING AND COST ESTIMATE

Implementing improvements to Cascade Avenue will be mostly through private development along the corridor frontage with the potential for public capital projects on some segments. With future improvements, the City and ODOT should employ access management strategies to consolidate, relocate, or close driveways where feasible to improve traffic flow and mitigate conflicts for pedestrians and bicyclists. The Cascade Avenue Access Management Plan is included in Appendix 2.

In total, the cost to complete the vision for Cascade Avenue, as described in the previous sections of this plan, is around 36 million dollars. The City and ODOT should explore creative funding strategies from a variety of sources to complete the improvements due to limited available funding. Potential funding sources include local, state, and federal programs as well as public-private partnerships. The City of Hood River should actively pursue available grants to support this vision while private developers will likely help implement the plan's vision as development occurs.

RIGHT-OF-WAY CONSIDERATIONS

The City anticipates significant growth and development on Cascade Avenue to drive implementation of the design refinement plan. However, in locations with recent development, properties that are unlikely to redevelop, or other topographic constraints, the City must consider other strategies to implement the vision of this plan. These strategies include establishing a build-to line for future development, strategic right-of-way acquisitions, or adopting alternative cross-sections in constrained areas. In locations where an alternative cross-section is included, the City should establish build-to lines to provide an opportunity for future capital projects that could implement the preferred vision of the corridor. However, in many locations, the recommended corridor design, identified in this plan, will require additional right-of-way. The City of Hood River will be responsible for any future right-of-way acquisitions outside of redevelopment.

In the event future redevelopment occurs on a section of Cascade Avenue where this plan does not include landscaping or where the sidewalk or bicycle facility is reduced below their preferred width of 8 feet, each, the future development may

be required to dedicate additional right-of-way or provide additional frontage improvements to complete the long-term vision for Cascade Avenue.

MAINTENANCE CONSIDERATIONS

The proposed improvements will require long-term maintenance to ensure their continued functionality. Separated bicycle facilities will require routine sweeping and winter maintenance, like any street, to ensure these facilities remain operational for bicyclists year-round. The City of Hood River and ODOT do not currently have a program to maintain off-street bicycle lanes or any similar maintenance programs. Separated bike lanes will be the maintenance responsibility of the City. As the City of Hood River invests in separated bicycle lanes, the City should consider developing a maintenance program for their bicycle facilities, which should include guidance on the frequency of sweepings, winter maintenance policies, and other criteria that can be applied to determine when maintenance might be necessary. ODOT maintenance activities only include the curb-to-curb width of Cascade Avenue (not including landscape islands or roundabout treatments), per ORS 366.220. A maintenance agreement between ODOT and the City of Hood River or a Jurisdictional Transfer agreement would be needed if the preferred cross section including the separated bike lane is implemented with this plan. Existing maintenance equipment may be used on separated bicycle facilities if a sufficient clear throughway is provided, smaller maintenance equipment may be retrofitted with brooms or plows for narrow areas, or specialized equipment may be purchased.

On-street snow removal can create additional challenges for winter maintenance of separated bicycle lanes. Additional snow removal may be required during large winter storms to ensure sufficient visibility for drivers approaching intersections and driveways.

FIGURE 17: WINTER SNOW REMOVAL



Source: Copenhagenize

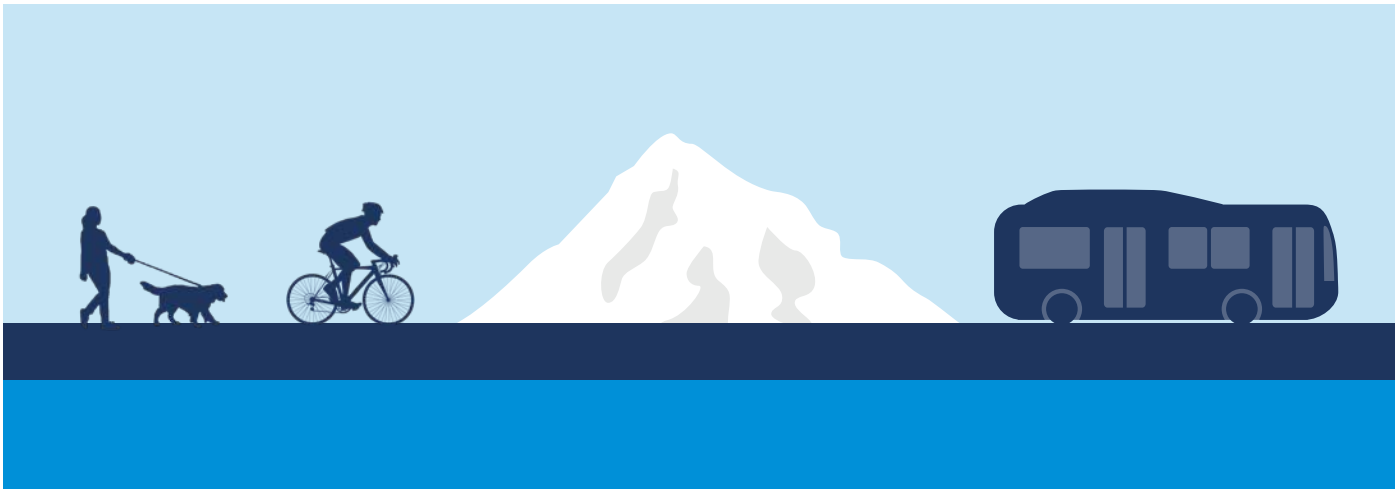
OTHER CONSIDERATIONS

The City will need to update the Transportation System Plan to implement the vision for Cascade Avenue identified in this plan. This update should include revised typical cross-sections for Cascade Avenue between Exit 62 and 13th Street, updated pedestrian crossing projects, and an updated functional classification map to address the proposed closure of Cascade Avenue between Oak Street and 15th Street to eastbound traffic.

Reconstruction of Cascade Avenue through either redevelopment or capital projects also provides an opportunity to implement green stormwater treatment, including rain gardens or bioswales. Although the City of Hood River currently only employs traditional stormwater treatment, the reconstruction of Cascade Avenue and proposed landscaping elements provide an opportunity to implement environmentally-friendly stormwater practices which should be considered through detailed site design efforts.

Cascade Avenue is an ODOT Freight Reduction Review Route which will require further consideration to gain approval of raised corridor cross-section elements.





APPENDIX

SECTION 1. DESIGN REFINEMENT MEMO

SECTION 2. ACCESS MANAGEMENT PLAN

SECTION 3. DESIGN CONCURRENCE MEMO

CITY OF HOOD RIVER est. 1895

Oregon Department of Transportation

DKS

M I G

SECTION 1.
DESIGN REFINEMENT MEMO

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

DESIGN REFINEMENT MEMO

DATE: June 8, 2021

TO: Terra Lingley | ODOT
Dustin Nilsen | City of Hood River

FROM: Rochelle Starrett, Reah Flisakowski | DKS
Alex Dupey, Monique Bassey | MIG

SUBJECT: Cascade Avenue Design Refinement Memo Project #20020-010

Cascade Avenue serves as a segment of the US 30 Historic Columbia River Highway (Historic Highway), a scenic and historically significant 73-mile route connecting Troutdale and The Dalles through the Columbia River Gorge. This design refinement effort focuses on Cascade Avenue between Interstate 84 Exit 62 and 13th Street, which serves as the western gateway to Hood River and the main street for the nearby neighborhoods. The project team identified the following objectives for the design refinement plan:

- Create a vibrant and active multimodal corridor that serves planned community and tourism growth,
- Establish a gateway for western Hood River,
- Provide certainty on street design elements to avoid the need for design exceptions with development applications, and
- Ensure consistency with the historic nature of the roadway.

For background, this memo presents a summary of previous planning efforts for Cascade Avenue, stakeholder input gathered by the project team, and existing constraints and opportunities along the corridor. The project team applied this information to develop a toolbox of street design element options and to identify the preferred design elements which will be carried forward in the corridor design refinement plan.

PREVIOUS PLANNING EFFORTS

The previous planning efforts for the Cascade Avenue corridor were reviewed to document past decisions regarding cross-section standards that were considered during the development of the preferred design refinement. The following sections provide a summary of these considerations.

CASCADE AVENUE CROSS-SECTION

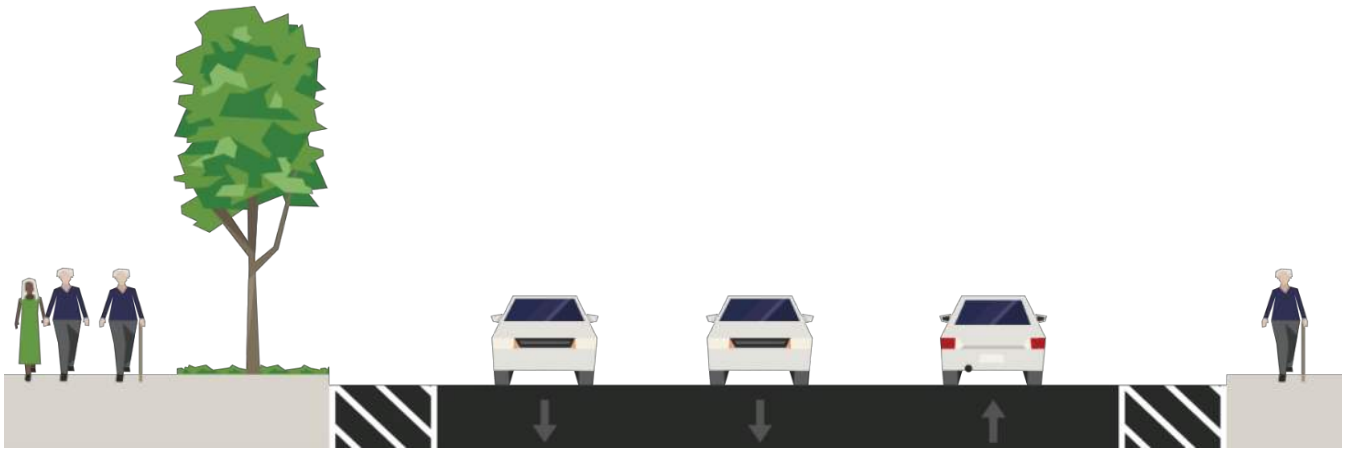
The 2011 Hood River Transportation System Plan (TSP)[1] and the I-84 Exit 62 Interchange Area Management Plan (IAMP)[2] previously identified cross-sections for Cascade Avenue that are consistent with the Historic Columbia River Highway Programmatic Agreement for the City of Hood River. The Programmatic Agreement[3] was signed in 2005 and includes dated provisions for pedestrians and bicyclists given this corridor's new significance as the designated route of the Historic Highway State Trail. The TSP, which incorporated findings from the 2017 Westside Area Concept Plan[4], included the same cross-sections for Cascade Avenue, shown in Figures 1 and 2. The Cascade Avenue section west of Mt. Adams (Figure 1) includes a shared use path on the south side and an outer eastbound vehicle lane that converts to a right-turn only lane at Mt. Adams.

[1] *Hood River Transportation System Plan.* 2011 (Amended 2021).

[2] *Interstate 84 Exit 62 Interchange Area Management Plan.* 2011.

[3] *Historic Columbia River Highway Master Plan Appendix 11, Misc. Contracts & Agreements No. 19942*. 2005.

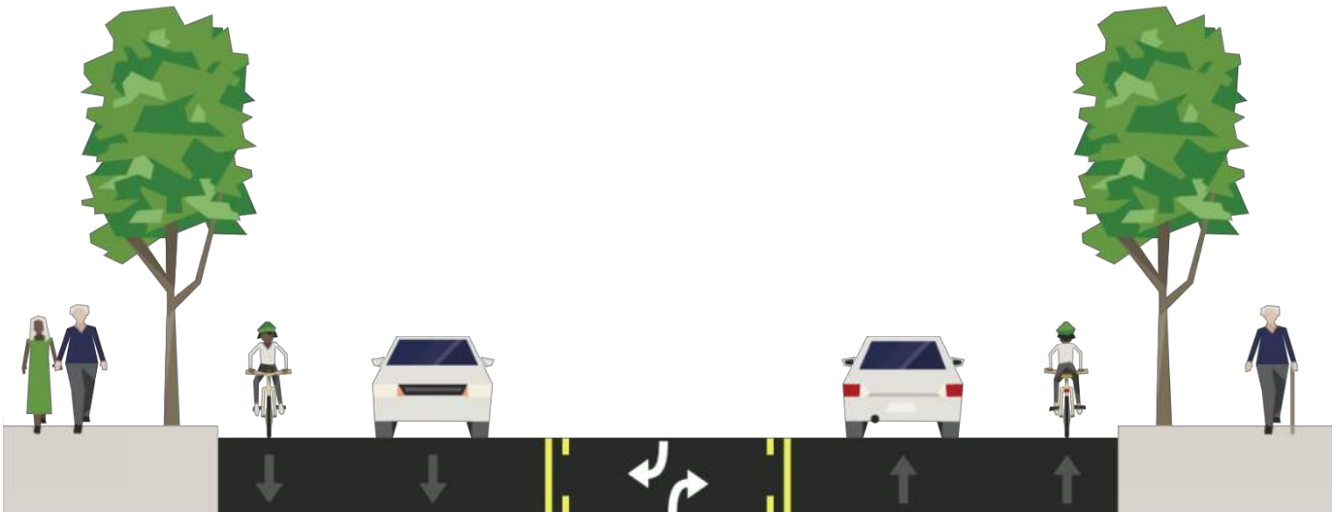
[4] *Hood River Westside Area Concept Plan.* 2017.



10 ft. Shared Use Path	8.5 ft. Planting Strip with 0.5 ft. Curb	6 ft. Shoulder	12 ft. Travel Lane	12 ft. Travel Lane	14 ft. Travel Lane	6 ft Shoulder	6.5 ft. Sidewalk with 0.5 ft. Curb
			50 ft. Paved Width				
			73 ft. Right of Way*				

**Prior to construction of the outer westbound travel lane, the City and ODOT will demonstrate the need for the lane based on updated traffic projections and will present the findings to the Historic Columbia River Highway Advisory Committee, ROW = 87 ft*

FIGURE 1: CASCADE AVENUE (I-84 EASTBOUND TO MT. ADAMS) TYPICAL CROSS-SECTION (SOURCE: STREETMIX)



**Street trees are required every 30 ft. in a 4 ft. by 4 ft. tree well*

FIGURE 2: CASCADE AVENUE (MT. ADAMS TO 13TH STREET) TYPICAL CROSS-SECTION (SOURCE: STREETMIX)

These current standards present several challenges. In the past, the 11-foot travel lanes in the cross-section standard required a design exception, resulting in additional regulatory approvals from ODOT prior to approval of the development. The standard also provides minimal amenities for bicyclists despite Cascade Avenue being the preferred alignment for the planned Historic Highway State Trail in Hood River. Both ODOT and the City of Hood River staff support revising the proposed design treatment for Cascade Avenue to address these key challenges.

As a precursor to this plan, ODOT and the City of Hood River staff worked with Portland State University Master's in Urban and Regional Planning (MURP) students to re-imagine how to integrate the Historic Highway State Trail into existing transportation facilities along Cascade Avenue. The students prepared a conceptual plan[5] for Cascade Avenue between Exit 62 and 13th Street

[5] Portland State University. *Cascade 30.* 2020.

recommending sidewalk infill on both sides, a two-way cycle track on the north side of Cascade Avenue in lieu of an eastbound bicycle lane and marked crosswalks with a rectangular rapid flashing beacon and raised center median at least every 500 feet. This conceptual plan also identified two 11-foot travel lanes for vehicle traffic along with the existing center turn lane on Cascade Avenue. The MURP student report was advisory in nature; neither the City of Hood River nor ODOT adopted the recommendations. The study did not include any traffic analysis to support the recommendations.

Currently, transit service operates in a shared vehicle travel lane on Cascade Avenue with two off-street Columbia Area Transit (CAT) stops (the gravel parking lot near the Mt. Adams Avenue/Cascade Avenue intersection, seen in Figure 16, and Safeway) within the study area. The Transit Master Plan for CAT does not identify new stop locations on Cascade Avenue or a dedicated transit lane for Cascade Avenue[6].

STAKEHOLDER INPUT

The project team conducted multiple stakeholder interviews with business and property owners along the corridor, transit users, economic development groups, and other community interest groups in March and April 2021. Participants agreed that Cascade Avenue does not currently work well for all travel modes. Existing issues identified include congestion for vehicle traffic (particularly at the Cascade Avenue/Mt. Adams Avenue and Cascade Avenue/Rand Road intersections) and major deficiencies for pedestrians and bicyclists. These elements create a corridor where auto use dominates, even for short trips between residential areas and shopping. Furthermore, the combination of vehicle speeds and volumes will likely remain a barrier for some residents, even with significant improvements to the existing pedestrian and bicycle infrastructure.

Multiple stakeholder groups identified and supported the following solutions:

- A three-lane cross-section to facilitate left turns
- Complete sidewalks
- Intersection improvements at Mt. Adams Avenue and Rand Road
- Streetscape or other placemaking features
- Enhanced pedestrian crossings (although the support for new raised medians varied by group)

[6] Nelson Nygaard. *Transit Master Plan Hood River County Transportation District Final Report – Volume 1.* 2017.

Bike facilities were the most divisive street element that was discussed. Two stakeholder groups strongly preferred developing alternate cycling routes to Cascade Avenue over enhancements along the corridor. However, two other groups believed that Cascade Avenue could be a bicycle-friendly corridor with the appropriate infrastructure in place. These other groups also believed that the Historic Highway State Trail should follow the alignment of the highway, as planned, where cyclists can easily access amenities in downtown Hood River.

The project team did not focus on transit service at all stakeholder interviews. When discussed, stakeholders expressed support for in-lane transit stops and enhanced amenities. CAT noted that existing congestion near the Cascade Avenue/Rand Road intersection restricts a bus's ability to turn left, resulting in their unique bus route through Hood River. A future programmed traffic signal at this intersection could improve transit operations.

The appendix contains a full summary of the stakeholder interviews.

CASCADE AVENUE EXISTING CONSTRAINTS AND OPPORTUNITIES

The project team synthesized previous planning efforts, stakeholder input, and existing transportation conditions to identify the constraints and opportunities for the future design of Cascade Avenue, discussed below.

EXISTING CONDITIONS

Today, Cascade Avenue is a two- or three-lane road classified as an urban minor arterial and a designated freight corridor[7]. The posted speed is between 20 and 35 mph. US 30, which follows Cascade Avenue and Oak Street, is the only continuous through street connecting the eastern and western edges of Hood River. Vehicle volumes for Cascade Avenue typically ranged between 13,000 and 15,000 vehicles per day in 2019[8].

This corridor ranks in the top 5%-10% for bicycle and pedestrian prioritization in the ODOT Active Transportation Needs Inventory (ATNI), which factors in bicycle and pedestrian crash frequency and risk factors, level of traffic stress, and surrounding context for biking, walking and transit use. ATNI also indicates that this area surrounding the corridor scores in the high range for the Transportation Disadvantaged Populations Index: elderly, youth, non-white and Hispanic, low-income, Limited English proficiency, households without access to a vehicle, people with a

[7] Cascade Avenue is currently a Freight Reduction Review Route for ODOT and part of the National Network Truck System.

[8] ODOT TransGIS. *Annual Average Daily Traffic (AADT) – State.* https://gis.odot.state.or.us/transgis

disability, and crowded households who make up high numbers of transportation disadvantaged residents and environmental justice communities that have been traditionally underserved.

Cascade Avenue serves a wide variety of adjacent development patterns and land uses, transitioning from vacant land on the west end to buildout development on the east end. Figure 3 highlights the distinct development patterns that will inform the appropriate design refinements for each area. The project team identified these areas based on their similar characteristics, described below:

HIGHWAY TRANSITION AREA

The Highway Transition area is the western arrival point from I-84 to Cascade Avenue. Many commuters and visitors heading into Hood River or along the Historic Highway State Trail will enter at this location if coming from the trail segment to the west. This area is currently a mix of vacant land, residential, and some commercial uses. As development occurs in the future, this segment should become a safer and inviting transition into Hood River by slowing vehicular traffic and improving the experience for both bicyclists and pedestrians with safe crosswalks, buffered bicycle lanes, and sidewalks. A roundabout is preferred, if feasible, to mark the entrance and arrival to the corridor.

LOW COMMERCIAL AREA

The Low Commercial area along the Cascade Avenue corridor is the least developed segment of the corridor. Much of the adjacent land use consists of vacant land and abandoned parking lots, with limited and/or constrained sidewalks. Based on current City plans, future development in this area will create a safe and vibrant mixed-use environment that provides shade, comfort, and safety to the pedestrians and bicyclists.

ACTIVE COMMERCIAL AREA

The Active Commercial area contains the highest amount of retail, commercial and hospitality uses of the four areas. Much of the adjacent land uses consist of grocery stores, motels, dining, small businesses, vacant land, and constrained sidewalks. Future development should create a safe and vibrant mixed-use environment that provides shade, comfort, and safety to the pedestrians and bicyclists.

RESIDENTIAL TRANSITION AREA

The Residential Transition area quickly changes from medium and large commercial uses to the west with a wide right-of-way to a narrower and more confined street environment that leads into a residential neighborhood. Meetings with local community members said this area is dangerous, uncomfortable, and confusing to navigate. Much of the adjacent land use consists of single-family housing, small businesses, and constrained sidewalks. Given the existing single-family land uses and generally smaller parcels, this area is less likely to redevelop than other areas along the corridor. However, future changes to the roadway should create a safe and inviting environment for

residents and visitors by slowing down traffic, improving intersections, providing locations for signage and wayfinding, and provided wider sidewalks and buffered bicycle lanes.

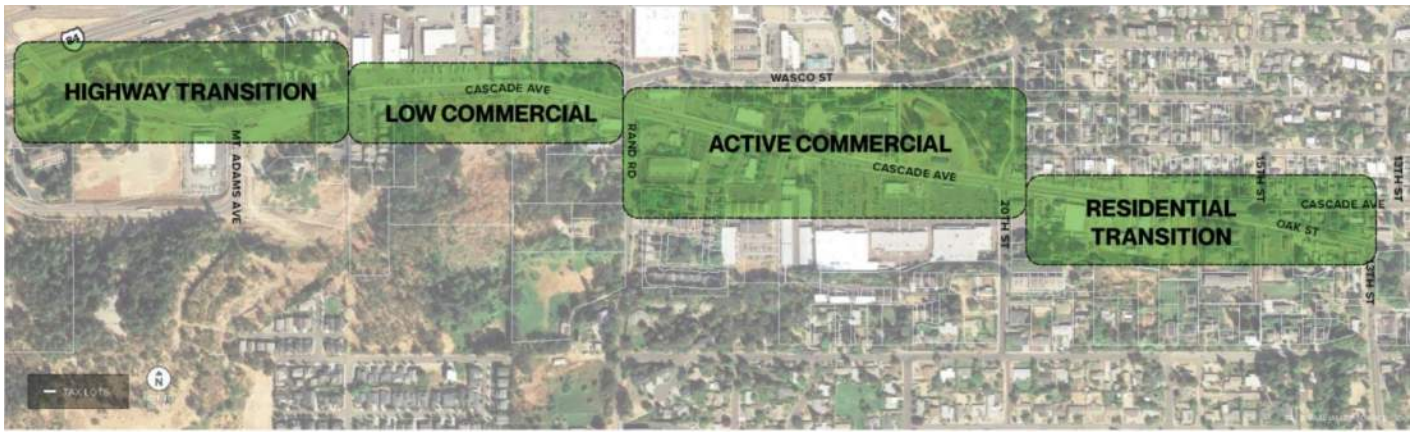


FIGURE 3: EXISTING DEVELOPMENT PATTERNS ON CASCADE AVENUE (SOURCE: MIG)

Hood River's westside area, including the land surrounding and immediately south of Cascade Avenue, is a major growth area for new residential and commercial development through 2040. The projected growth has the potential to add over 1,700 households while the proposed commercial zoning will support a new pedestrian-oriented district on Cascade Avenue between the Exit 62 interchange and Rand Road[9]. This district could include additional housing or mixed-use development. This growth is anticipated to transform Cascade Avenue into an urban gateway to Hood River.

CONSTRAINTS

Project stakeholders unanimously agreed that Cascade Avenue today does not work well for any travel mode, and their assessment is consistent with previous planning efforts that identified a variety of needs along the corridor. Although traffic volumes on Cascade Avenue are only between 13,000 and 15,000 vehicles per day in 2019[10], all intersections between Exit 62 and 13th Street are unsignalized which limits opportunities for left turns to and from Cascade Avenue given the existing vehicle volumes. Traffic analysis conducted for the Hood River TSP[11] and Westside Area Concept Plan[12] projected that future through traffic volumes on Cascade Avenue would create significant delay for minor street approaches at existing, unsignalized public street intersections and recommended improvements at all intersections. While these improvements will minimize delay for

[9] *Hood River Westside Area Concept Plan.* 2017.

[10] ODOT TransGIS. *Annual Average Daily Traffic (AADT) – State.* https://gis.odot.state.or.us/transgis

[11] *Hood River Transportation System Plan.* 2011 (Amended 2021).

[12] *Hood River Westside Area Concept Plan Technical Appendix.* 2017. https://static1.squarespace.com/static/57d6ff43b3db2b05abe4b191/t/5a628d23c830251a707bec34/1516408126769/HRWACP+Report+Appendices+A+and+B_FINAL_web.pdf

left turning vehicles at public street intersections, a center two-way left turn lane was also identified to reduce delay and improve safety for left turns to and from driveways along Cascade Avenue. Vehicles turning left from side streets and driveways along Cascade Avenue will experience delays due to the continuous flow of traffic on Cascade Avenue. Left-turning traffic from Cascade Avenue also creates delays for through traffic flow in locations without a center turn lane. The existing congestion for left-turning traffic impacts CAT bus routing, increases transit travel times, and requires turn restrictions for new development on Cascade Avenue to reduce high-risk driver behavior and potential left turn conflicts from adjacent driveways. Congestion can also degrade safety along Cascade Avenue as drivers accept shorter gaps to turn or fail to watch for bicyclists or pedestrians when accessing the frequent driveways along the corridor. Managing new accesses to reduce these potential conflicts requires significant coordination between the City of Hood River, developers, and existing accesses. Existing sidewalk gaps, inconsistent bike lanes, and frequent driveways and accesses that create conflict points between modes break down the streetscape from a predictable and organized environment that can promote safety. Limited safe crossing opportunities further compound the safety challenges for bicyclists and pedestrians.

The lack of continuous, low-stress bike lanes or sidewalks in combination with projected vehicle volumes during peak travel periods creates an uninviting environment for most pedestrians and bicyclists even though basic needs, like grocery stores, are within walking distance of residential areas adjacent to Cascade Avenue. Figures 4 and 5 summarizes the existing transportation constraints identified along Cascade Avenue.

FIGURE 4: CONSTRAINTS – EXTENT 1

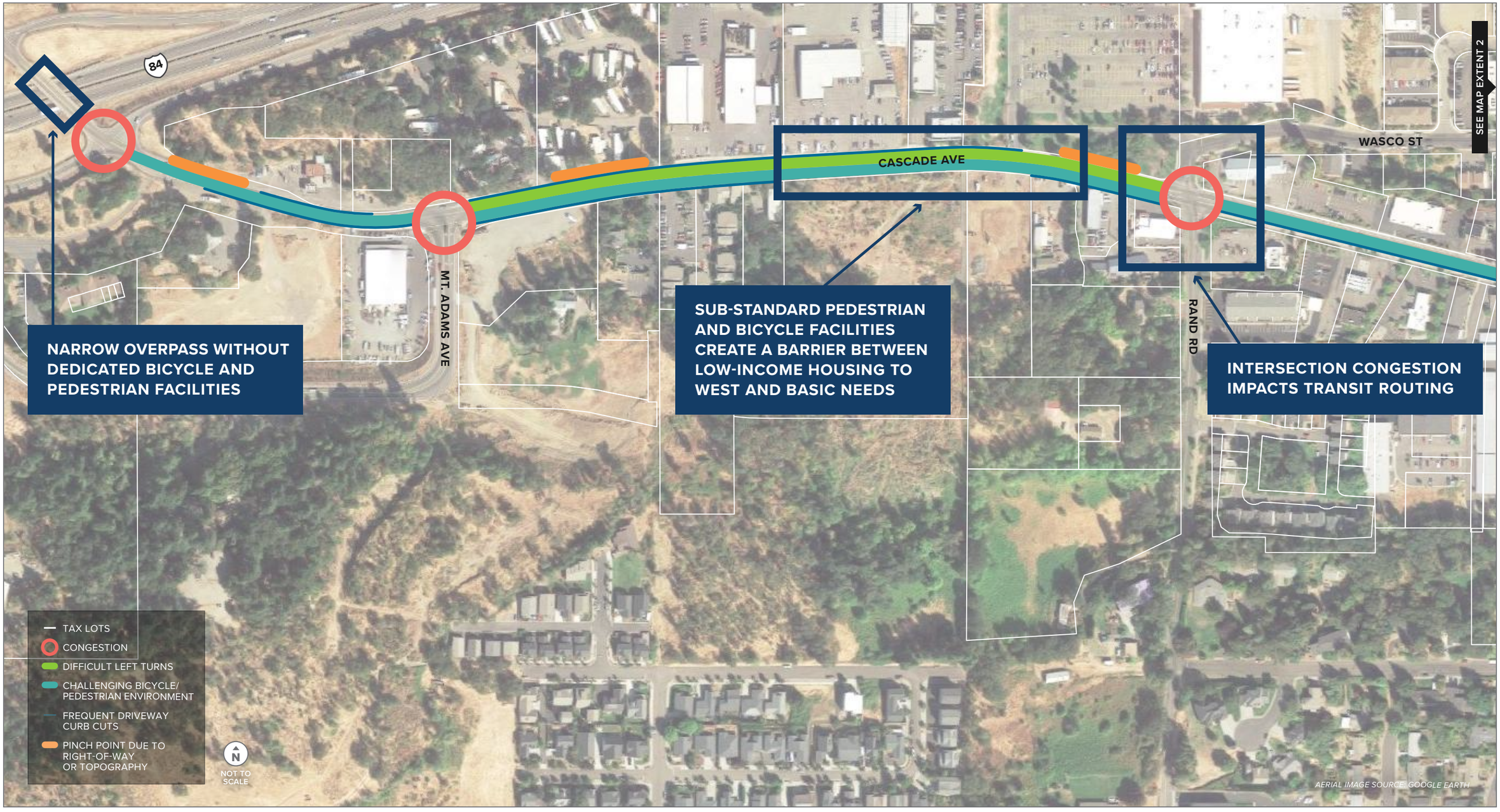
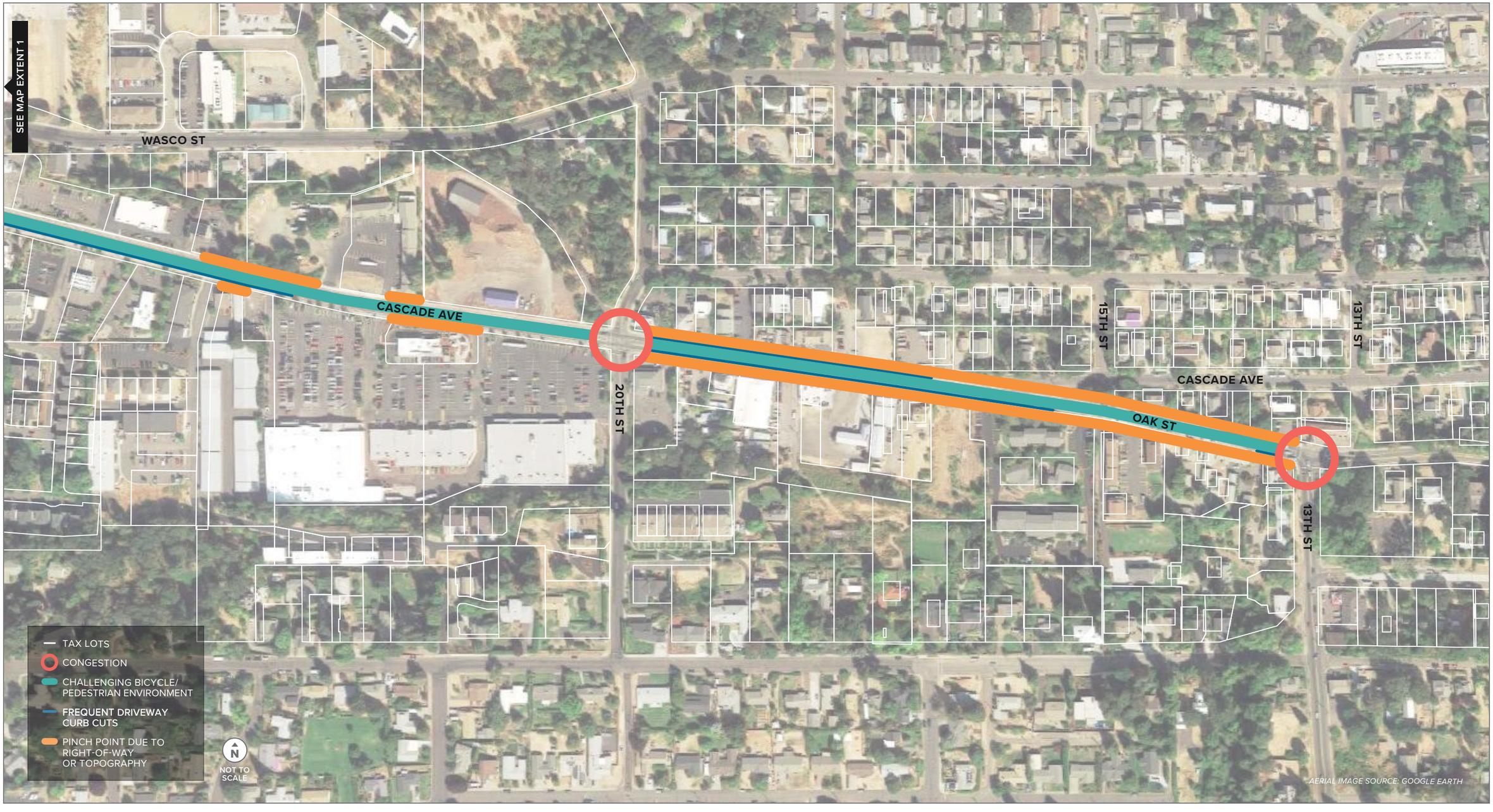


FIGURE 5: CONSTRAINTS – EXTENT 2



OPPORTUNITIES

Although Cascade Avenue has numerous significant challenges, the existing vacant land, potential redevelopment, and large building setbacks provide a unique opportunity to transform this corridor. Most property fronting Cascade Avenue is zoned C-2[13] General Commercial which permits several different uses, including bed and breakfasts, residential care facilities, commercial uses, multi-family housing, offices, and existing residential uses, among other uses. Within C-2 zoned land, commercial or mixed-use buildings may be up to 45 feet high while residential buildings may be up to 35 feet high; building setbacks from the fronting street are not required. This zoning allows for the highest residential densities in Hood River and is the only zone that requires a minimum level of density. While developers determine the specific site design for vacant land or new redevelopment, the City supports projects that could be constructed to the maximum allowable density to foster a mixed-use environment which could include significant attractions for residents or tourists.

Current planned improvements on or near the corridor provide opportunities to address congestion and safety concerns. Improvements include new traffic signals and roundabouts, pedestrian crossing enhancements, collector and local streets, local trails, and an extension of the Historic Highway State Trail to and along Cascade Avenue.

Key intersection improvement projects from the TSP include:

- Cascade Avenue/Westcliff Drive Stop Sign Reorientation
- Cascade Avenue/I-84 Westbound Ramp Terminal Traffic Signal and Turn Lanes
- Cascade Avenue/I-84 Eastbound Ramp Terminal Traffic Signal and Turn Lanes
- Mt. Adams Avenue/Cascade Avenue Roundabout (preferred if feasible) or Traffic Signal
- Rand Road/Cascade Avenue Traffic Signal[14]
- Cascade Avenue/20th Street Traffic Signal

The TSP also recommends new roadway improvements on Cascade Avenue between Exit 62 and 13th Street. Between Exit 62 and Mt. Adams Avenue, the TSP identifies a four-lane section which includes two eastbound lanes and one to two westbound lanes with a shared use path on the south side of Cascade Avenue. The second eastbound travel lane will end as a right turn drop lane at Mt. Adams Avenue while the second westbound travel lane, if provided, will end as a right turn drop lane at the I-84 eastbound on-ramp. Although two westbound lanes are identified as the long-term vision for this section of Cascade Avenue, the provision of two westbound lanes will only be considered if revised volume forecasts demonstrate the need for a second westbound lane and is approved by the Historic Columbia River Highway Advisory Committee. Between Mt. Adams Avenue and 13th Street, the TSP recommends a three-lane section for Cascade Avenue.

[13] *Hood River Municipal Code Section 17.03.050 General Commercial Zone (C-2).* https://hoodriver.municipal.codes/HRMC/17.03.050

[14] A traffic signal is currently being designed for this intersection and will be constructed Fall 2021-Spring 2022

While not included on the financially constrained project list, the TSP does include a project to extend Wine Country Avenue between Mt. Adams Avenue and Rand Road to create a parallel route to Cascade Avenue.

Incorporating placemaking elements into the design refinement, like lighting and landscaping (discussed below), could promote a more attractive environment for bicyclists and pedestrians and is consistent with the Westside Area Concept Plan[15]. Enhancing the pedestrian and bicycle environment on Cascade Avenue would provide improved access to transit. Future transit service expansions, such as new stops or modified routing, should be coordinated with the proposed enhanced crossing locations. These improvements are necessary to support a shift away from the auto dominance which currently exists on Cascade Avenue.

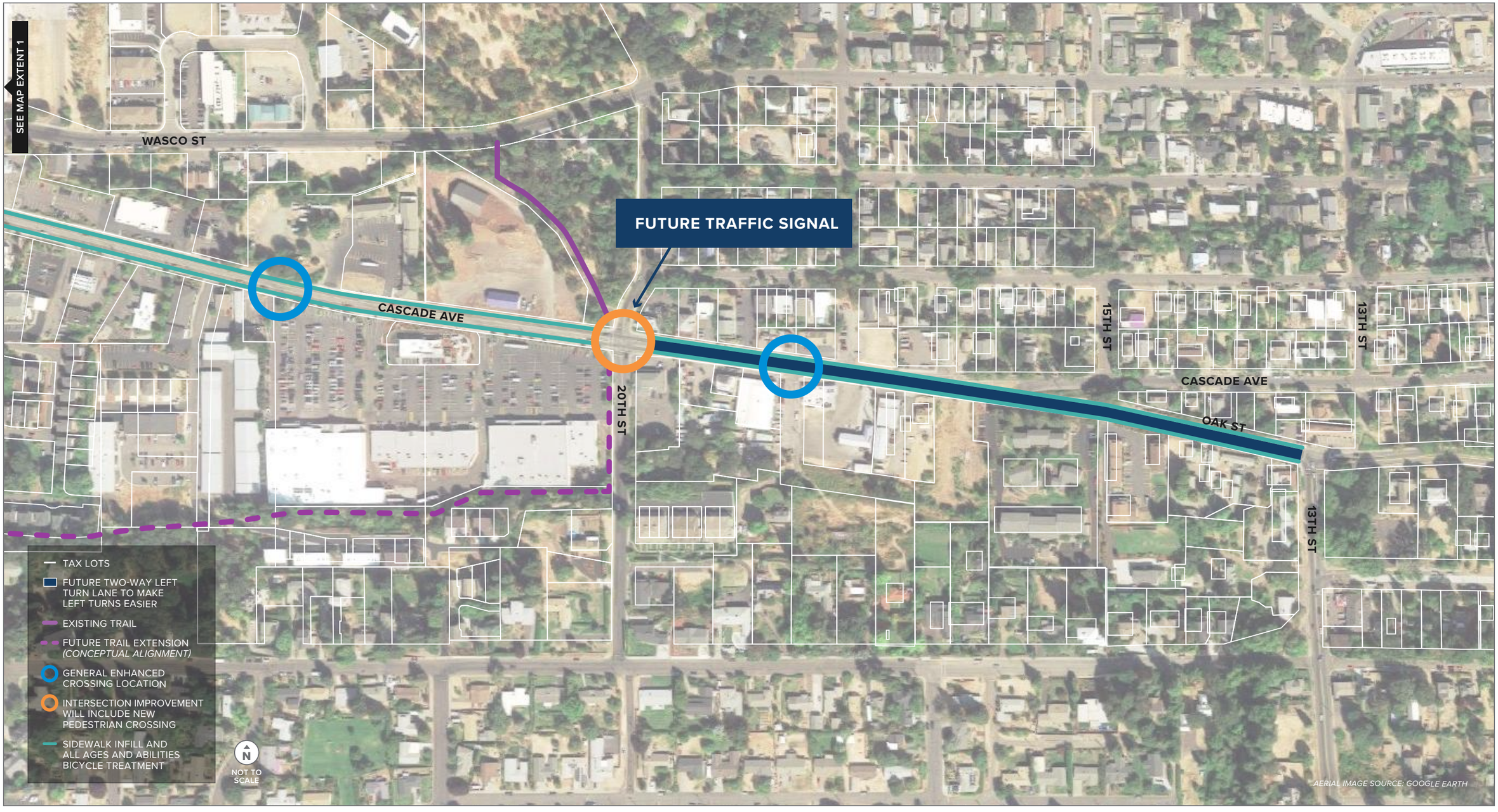
Figures 6 and 7 summarizes the existing transportation opportunities identified along Cascade Avenue.

[15] *Hood River Westside Area Concept Plan.* 2017.

FIGURE 6: OPPORTUNITIES – EXTENT 1



FIGURE 7: OPPORTUNITIES – EXTENT 2



PLACEMAKING DESIGN ELEMENTS

The future design of Cascade Avenue provides an opportunity to incorporate placemaking design elements, which pay homage to the Historic Highway and create a unique, multimodal district for residents and tourists entering Hood River. The project team reviewed existing streetscape elements on the Historic Highway and within the Columbia River Gorge to identify the materials and landscaping commonly used within the area. Figures 8 to 11 illustrate placemaking design elements which could be appropriate for each corridor segment given the unique opportunities and constraints for each section. All placemaking features will be designed to accommodate multiple roadway users, including freight traffic.



FIGURE 8: POTENTIAL PLACEMAKING DESIGN ELEMENTS WITHIN HIGHWAY TRANSITION AREA



FIGURE 9: POTENTIAL PLACEMAKING DESIGN ELEMENTS WITHIN LOW COMMERCIAL AREA



FIGURE 10: POTENTIAL PLACEMAKING DESIGN ELEMENTS WITHIN ACTIVE COMMERCIAL AREA

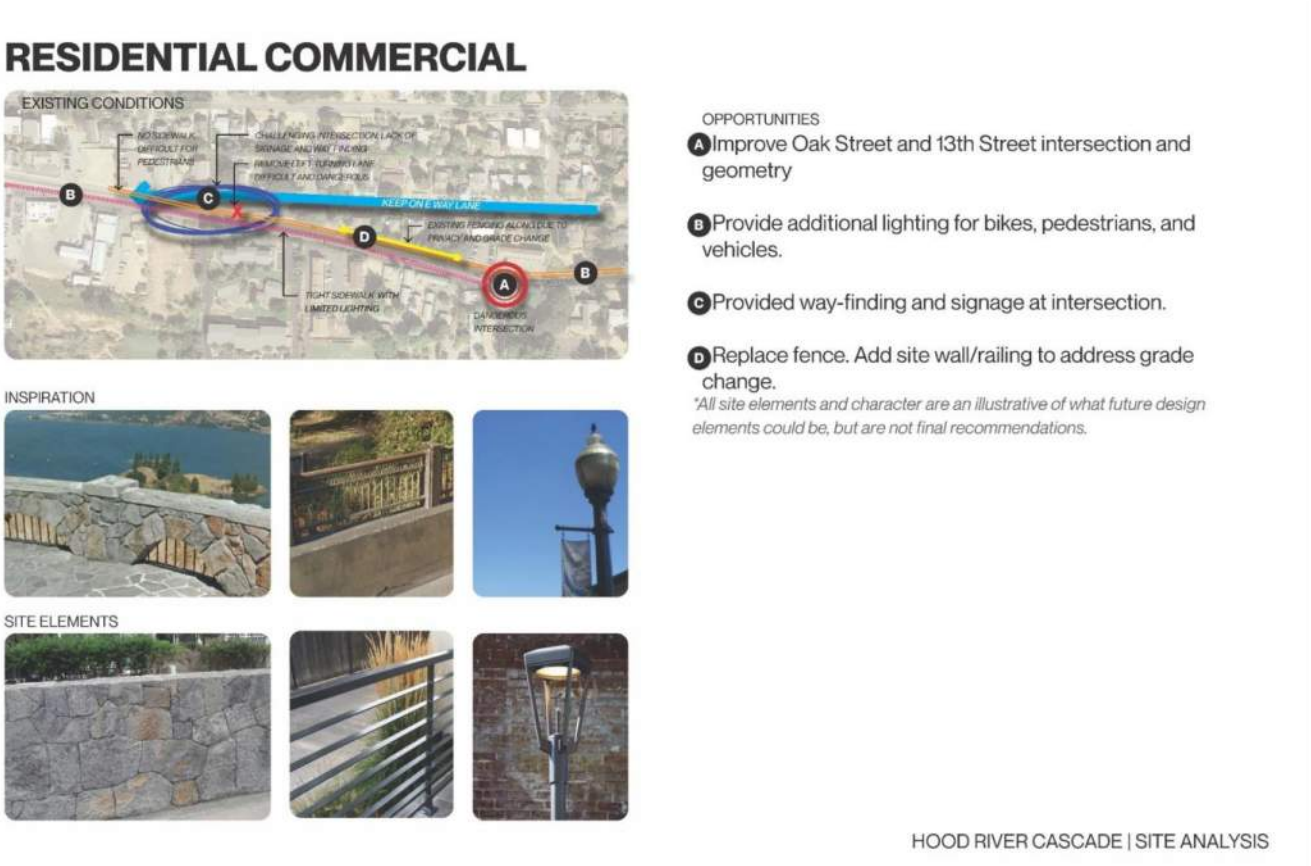


FIGURE 11: POTENTIAL PLACEMAKING DESIGN ELEMENTS WITHIN RESIDENTIAL COMMERCIAL AREA

DESIGN GUIDANCE AND TOOLBOX

The Cascade Avenue Design Refinement Plan applies a performance-based design approach focused on clear goals and desired outcomes for the project, as described below:

- The project will create a vibrant and active multimodal corridor and establish a gateway to western Hood River.
- The project will serve the existing and future transportation needs of both community members and tourists.
- The project will accommodate a high level of mixed-use growth in the surrounding area.
- The project will be consistent with the historic nature of the roadway.

Design refinement recommendations for the cross-section will follow ODOT's Blueprint for Urban Design (BUD) [16] guidance since Cascade Avenue is under state jurisdiction. The BUD outlines six different land use types for design guidelines. Based on the adjacent zoning, development code standards, and vision for the corridor, the project team selected the Urban Mix land use for Cascade Avenue. The general characteristics for the Urban Mix land use are summarized below:

- Setbacks: shallow
- Building Orientation: some front door access to sidewalks
- Land Use: future commercial fronting, residential behind or above
- Building Coverage: medium percent of coverage adjacent to right-of-way
- Parking: mostly off-street, single row in front, in back or on side of property
- Block Size: small to medium blocks

The BUD provides general guidance for cross-section elements under each land use type. Table 1 shows the Urban Mix land use guidelines which will be considered for the Cascade Avenue design refinements. Many of the existing cross-section elements do not meet the design guidance today. The sections following Table 1 evaluate the specific design guidance and their appropriateness as cross-section elements for Cascade Avenue. The project team used this evaluation to identify preferred design treatments for this corridor which are detailed at the end of this memo.

[16] Oregon Department of Transportation. *Blueprint for Urban Design.* 2020.

TABLE 1: CROSS-SECTION DESIGN GUIDANCE FOR URBAN MIX LAND USE CONTEXT (EXCERPTED FROM BUD TABLE 2-6)

CROSS-SECTION ELEMENT	BUD GUIDANCE FOR URBAN MIX LAND USE	EXISTING CORRIDOR CONDITIONS	MEETS GUIDANCE?
TARGET SPEED	25-30 mph	20 mph (13th Street to 20th Street) 25 mph (20th Street to west of Rand Road) 35 mph (west of Rand Road to I-84)	✗
TRAVEL LANES	Start with minimum widths, wider by roadway characteristics Preferred width: 11 ft.	11-12 ft.	✓
TURN LANES	Minimize additional crossing width at intersections Preferred width: 11 ft.	11-14 ft.	✗
SHY DISTANCE	Minimal Preferred width: 1 ft.	Painted buffer or other elements provide horizontal separation between travel lanes and curb	✓
CENTER TURN LANE AND MEDIANS	Preferred width: 11 ft. center turn lane Preferred width: 8 ft. raised median Preferred width: 12 ft. raised median with center turn lane	12-14 ft. center turn lane No existing raised medians	✓ N/A
ON-STREET PARKING	Consider on-street parking if space allows Preferred width: 8 ft.	8-14 ft.	✗ Where provided
BICYCLE FACILITY	Separated bicycle facility Preferred width: 8 ft. (separated) or 6 ft. (on-street)	Short segments of bike lanes	✗
SIDEWALK	Ample space for sidewalk activity (*e.g.,* sidewalk cafes, transit shelters) Preferred width: 8 ft. for pedestrian travel	Existing gaps along corridor, 4-6 ft. wide where provided	✗
PEDESTRIAN CROSSING SPACING RANGE	250-550 ft. (1-2 blocks)	Only two marked crosswalks exist today, and long block lengths provide limited alternative legal crossings	✗

MOTOR VEHICLE DESIGN ELEMENTS

Cross-section design elements to consider for vehicles (passenger and freight) include target speed, through travel lanes, turn lanes, medians, and on-street parking. Another important design element to consider is the number of vehicle lanes along the corridor which will set the framework for the cross-section elements.

TARGET SPEED

The vehicle operating speed can have a significant influence on the characteristics of a roadway and overall safety. A reduction in vehicle speeds on arterials encourages walking and biking and reduces fatal and serious injury crashes. The BUD guidance for an urban mix corridor recommends a target speed of 25 to 30 miles per hour. Design elements to consider for Cascade Avenue that could support the lower target speed include roundabouts, narrow lanes, on-street parking (see on-street parking section, below, for specific considerations that will likely limit the provision of on-street parking), street trees, median islands, and curb extensions. The target speed for Cascade Avenue will be used to inform decisions on the design refinements.

TRAVEL AND TURN LANES

Travel lanes provide space for vehicles, transit, and freight to travel along a corridor. For Cascade Avenue, the preferred width for vehicle lanes is 11 feet (see Table 2). This guidance applies to through, left, and right turn lanes along the corridor. Narrower 10-foot travel lanes have the benefit of reducing vehicle speeds and shortening pedestrian crossing distances with minimal impacts to passenger cars. However, streets that serve transit and freight vehicles need an 11-foot lane at a minimum[17] to operate safely. Cascade Avenue should also include adequate shy distance from the curb or any other vertical elements. If vertical buffers are used to delineate any on-street bicycle facilities or the travel lanes are placed next to the curb, BUD guidance recommends that 1-foot of shy distance is provided outside of the through travel lanes.

TABLE 2: BUD DESIGN GUIDANCE FOR VEHICLE TRAVEL LANE WIDTH

DESIGN ELEMENT	PREFERRED WIDTH	MAXIMUM WIDTH
TRAVEL LANE	11 ft.	12 ft.
RIGHT TURN LANE*	11 ft.	12 ft.
LEFT TURN LANE	11 ft.	12 ft.

*Lane width includes shy distance

[17] Oregon Department of Transportation. *Blueprint for Urban Design.* Table 3-12. 2020.

CENTER TURN LANES AND MEDIANS

Implementing a center two-way left turn lane or providing left turn lanes on major intersection approaches can enhance a roadway's capacity and improve safety along a corridor. Raised medians can also enhance safety by managing access for vehicles, restricting higher risk movements (*e.g.* left turns), channelizing vehicle traffic, and providing opportunities for a pedestrian median refuge. Table 3 summarizes design guidance for the width of center turn lanes and raised medians.

TABLE 3: BUD DESIGN GUIDANCE FOR CENTER TURN LANES AND MEDIANS

DESIGN ELEMENT	PREFERRED WIDTH	MAXIMUM WIDTH
TWO-WAY LEFT TURN LANE	11 ft.	12 ft.
RAISED MEDIAN (WITHOUT TURN LANE)*	8 ft.	11 ft.
RAISED MEDIAN (WITH TURN LANE)*	12 ft.	14 ft.

*Element width includes shy distance

ON-STREET PARKING

On-street parking can create a more urban street environment and provide opportunities for curb extensions at crosswalks or additional buffering width between cyclists and vehicle travel lanes. On-street parking can calm traffic by visually narrowing the roadway width if the parking is well utilized. On-street parking on the roadway may not be needed and should not be provided if adequate parking is available on side streets or within the adjacent development since driver speeds could increase. On-street parking may compete with other cross-section elements if the available right-of-way is limited. If provided, on-street parking should be 8 ft. wide.

The available right-of-way tends to be the widest on the central and western segments of Cascade Avenue (see Table 8 for a summary of the existing, available right-of-way); however, the existing development on this same section of Cascade includes ample and underutilized off-street parking. Providing on-street parking in these sections of Cascade Avenue could result in low utilization and higher vehicle speeds as traffic approaches I-84. Conversely, the eastern segment of Cascade Avenue has several businesses with limited parking, but very limited right-of-way with few opportunities to acquire additional right-of-way. While providing on-street parking in this section of Cascade Avenue would be beneficial for businesses and residences, on-street parking would limit the provision of other cross-section elements like wider bicycle lanes or landscape buffers.

NUMBER OF VEHICLE LANES

The team reviewed future capacity needs for Cascade Avenue to set the vehicle lane framework for the design refinement recommendations. There may be opportunity to reduce the number of planned vehicle lanes to reallocate right-of-way for other users and/or reduce the need to obtain additional right-of-way to accommodate future corridor needs.

Projected future volumes and concerns regarding vehicle queues extending to the I-84 mainline suggest the planned second eastbound travel lane west of Mt. Adams Avenue should be provided in the future. The TSP identified a second westbound travel lane if the need was demonstrated with a future traffic analysis. This design refinement effort does not incorporate the additional westbound lane west of Mt. Adams Avenue as a vehicle travel lane.

Cascade Avenue between Mt. Adams Avenue and Rand Road is currently a two-lane roadway. The projected future volumes suggest three-lanes would be appropriate. Providing three lanes has many benefits such as improving overall safety and minimizing through traffic delays. This section of the corridor is mostly vacant or has existing development that is set back from the right-of-way, providing opportunity for a wider cross-section. However, a wider cross-section should be balanced with other corridor goals, like establishing a vibrant and active multimodal corridor.

Cascade Avenue between 20th Street and 13th Street is currently a two-lane roadway. Limited public street intersections and few existing driveway accesses that are anticipated to be high-volume suggest that a two-lane section could adequately accommodate future traffic volumes. There are several constraints along the corridor due to existing development, available right-of-way and topography that make widening the roadway challenging. If future widening is possible, the priority is to provide pedestrian and bicycle design elements instead of a center turn lane or median.

BICYCLE DESIGN ELEMENTS

There are many bicycle-specific treatments which could improve efficiency and access for bicyclists on Cascade Avenue. Off-street, separated bike facilities, buffered bicycle lanes, or traditional on-street bicycle lanes are the most appropriate candidate bicycle design treatments for Cascade Avenue.

The BUD recommends selecting the appropriate bicycle facility type based on the vehicle volume and travel speed of the road. Based on the existing vehicle volume (13,000 to 15,000 vehicles per day) and typical travel speed (between 20 and 35 mph), a separated bicycle facility is most appropriate for Cascade Avenue. A separated bicycle facility would also support the anticipated bicycle volume demands generated by the planned Historic Highway State Trail segment on Cascade Avenue.

The BUD states that alternative facility designs may be applied if a parallel, low-stress bicycle route is available. Westcliff Drive is an east-west facility north of I-84 that runs parallel to Cascade Avenue. The Westcliff Drive Pedestrian Path is a TSP project that would provide a pedestrian facility on the north side, with bicycles sharing the roadway with vehicles. The TSP project does not trigger the need to consider alternative facility designs. Furthermore, providing a parallel, low-stress bicycle route off Cascade Avenue conflicts with the proposed alignment for the Historic Highway State Trail irrespective of what is allowed within the BUD.

The following sections summarize the bicycle lane treatments considered for Cascade Avenue.

SEPARATED BICYCLE LANES

These facilities provide the greatest separation between vehicles and bicyclists using physical elements or vertical separation (*e.g.,* curb, planters, bollards, or parking) to protect cyclists. Locating separated bike lanes outside of the paved roadway width with a landscape strip provides additional separation from traffic (see Figure 12), like a shared use path. Separated bike lanes are most appropriate along arterials and collectors, especially with high vehicle volumes (over 7,000 vehicles per day) or speeds greater than 35 mph like Cascade Avenue. Available right-of-way, intersection or driveway treatments, and maintenance considerations can constrain the construction of these facilities. Hood River does not currently have any separated bicycle facilities, although the 2021 TSP Amendment introduced a new minor arterial cross-section which includes a separated bike facility on one side[18].



FIGURE 12: EXAMPLE OF SEPARATED BIKE LANE (SOURCE: FHWA)

Design Guidance

Table 4 summarizes the recommended design guidance from the BUD for one-way separated bicycle facilities.

[18] *Hood River Transportation System Plan Figure 6C.* 2011 (Amended 2021).

TABLE 4: BUD DESIGN GUIDANCE FOR SEPARATED BICYCLE FACILITIES

DESIGN ELEMENT	PREFERRED WIDTH	MINIMUM WIDTH
SEPARATED BICYCLE LANE	8 ft.	7 ft.
BUFFER (RAISED)	6 ft. if adjacent to on-street parking or signage is anticipated; 4 ft. otherwise	2 ft.
BUFFER (AT-GRADE)	4 ft.	2 ft.

Best practice generally prefers one-way separated bicycle facilities over two-way separated bicycle facilities since one-way facilities improve predictability for drivers at intersections or driveways. However, in locations where there are few existing driveways or intersections on one side of the street, two-way separated bicycle facilities can improve safety by reducing the total number of conflicts for cyclists. Two-way separated bicycle facilities also reduce the total right-of-way required by eliminating the need for a buffer on one side of the street. Although the BUD does not provide specific design guidance for the width of a two-way separated bicycle facility, NACTO prefers 12 ft. with a minimum 8 ft required for the total travelled way (both directions)[19]. Wider two-way facilities should be considered where a high volume of cyclists is expected.

Portland State University MURP students recommended a two-way cycle track, or separated bicycle facility, on the north side of Cascade Avenue in their study[20]. Given the volume of driveways and public street intersections north of Cascade Avenue, however, a one-way separated bicycle facility is a more appropriate design treatment. Constructing a two-way facility would introduce new conflicts between cyclists and turning traffic, including tourist drivers that might not expect cyclists. Furthermore, the Historic Highway State Trail could attract families, novice, and local cyclists. These user groups might experience a false sense of security while travelling on Cascade Avenue within a two-way separated facility compared to regular commuters or seasoned recreational cyclists. Providing a one-way facility makes it easier for drivers to see and react to cyclists travelling on Cascade Avenue at intersections and driveways which creates a safer environment for all users.

Intersection or Driveway Treatments

Street intersections or driveways require special consideration in locations with parallel, separated bike lanes to increase cyclist visibility and reduce the risk of conflicts between bicyclists and motor vehicles. These considerations are particularly important for separated bike lanes that are located at the sidewalk level which could decrease visibility of cyclists for vehicles. Traditionally, roadway

[19] National Association of City Transportation Officials. *Two-Way Cycle Tracks.* https://nacto.org/publication/urban-bikeway-design-guide/cycle-tracks/two-way-cycle-tracks/

[20] Portland State University. *Cascade 30.* 2020.

engineers manage conflicts between vehicles and bicyclists through four intersection design treatments, summarized below, and depicted in Figure 13:

- The *Bend In* design shifts a separated bicycle lane towards the vehicle travel lanes to enhance visibility of bicyclists prior to an intersection.
- The *Bend Out* design shifts a separated bicycle lane away from the vehicle travel lanes to provide enough lateral clearance to allow a turning vehicle to stop and wait for crossing bicyclists.
- The *Mixing Zone* design places bicyclists in a shared environment with turning traffic in advance of the intersection.
- A *Protected Signal Phase* provides separate phases for bicyclists and turning vehicles at signalized intersections to temporally separate conflicts.

The appropriate treatment for each intersection depends on the intersection context, specific constraints, and traffic volumes. However, utilizing bend-in designs or protected signal phases can typically provide the greatest level of cyclist comfort at intersections with minimal impact to right of way needs.

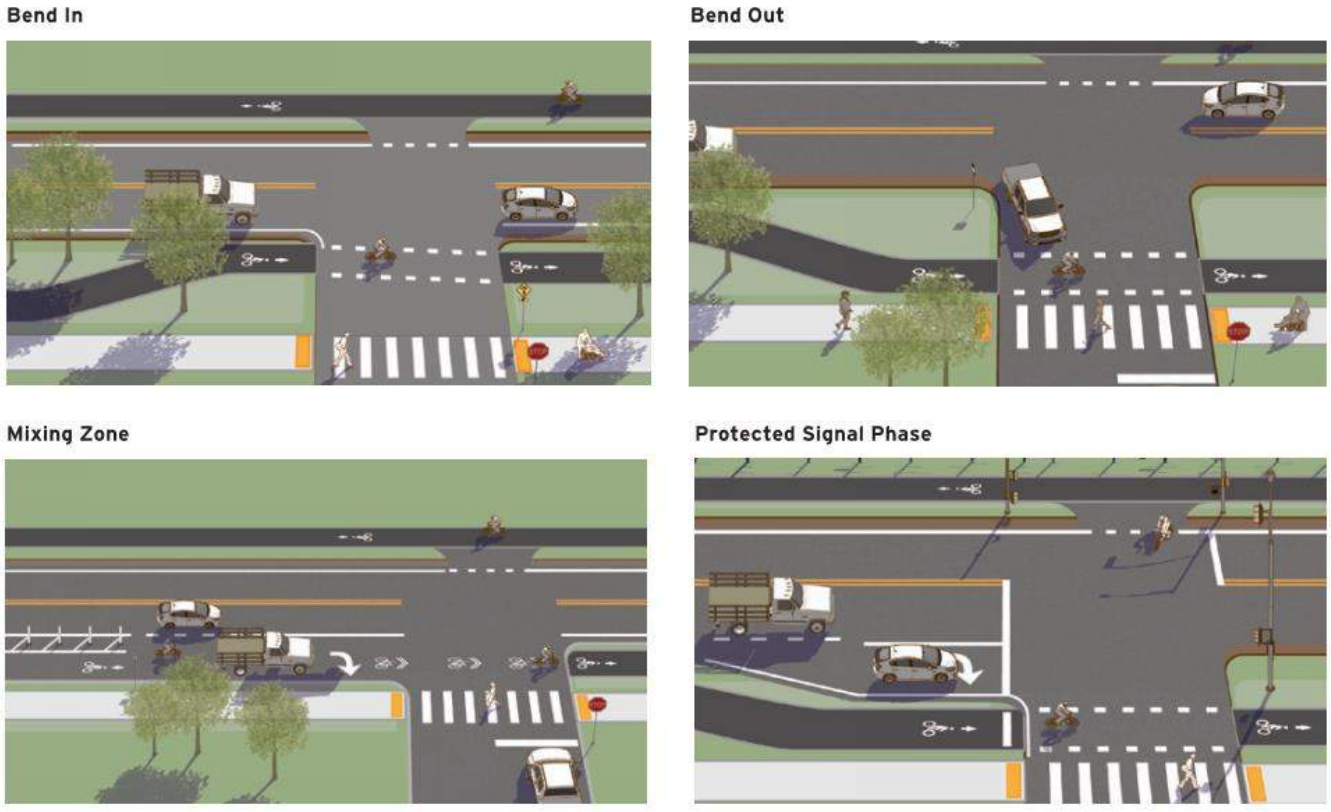


FIGURE 13: SEPARATED BIKE LANE DESIGN TREATMENTS AT INTERSECTIONS (SOURCE: FHWA SMALL TOWN AND RURAL MULTIMODAL NETWORKS GUIDE)

Retrofitting Cascade Avenue with a separated bike facility will include significant design challenges due to the existing high volume of driveways along the corridor and limited right-of-way. Although the design treatments identified above are primarily applied at public street intersections, high-volume driveway approaches could also benefit from these treatments when right-of-way is available. As redevelopment occurs on Cascade Avenue, the application of access management principles can also reduce the number of conflict points between turning vehicles and a separated bike facility.

Maintenance Considerations

Separated bike facilities will require winter maintenance, like any street, to ensure these facilities remain operational for cyclists year-round. The City of Hood River does not currently have a program to maintain off-street bike lanes or any similar maintenance programs. Snow removal can use either a specialized snow removal vehicle or a pickup truck/ATV fitted with a snowplow blade, depending on the width of the off-street facility[21]. A clear throughway of at least 10 feet should provide sufficient access by snowplows[22]. Locations with constrained widths can also use retrofitted equipment on existing city maintenance vehicles if the vehicle width does not exceed the width of the separated bike facility. Pickup trucks with a plow attachment are approximately 8.5 feet wide; skid loaders, miniature tractors, or mower tractors fitted with snow blowers and brooms are approximately 4 feet wide[23]. On-street snow removal can create additional challenges for winter maintenance of separated bike lanes which could restrict use of these facilities during winter months if sufficient snow storage width is not provided in the planter strip. Considering any snow storage requirements that could impact visibility of bicyclists or usability of the separated bike facility at intersections is particularly important, especially if the bend in or bend out design treatments are used.

[21] Alta Planning + Design. *Winter Bike Lane Maintenance: A Review of National and International Best Practices.* 2014.

[22] Federal Highway Administration. *Small Town and Rural Multimodal Networks.* 2016.

[23] Toole Design. *Winter Maintenance.* 2019.

BUFFERED AND TRADITIONAL BICYCLE LANES

Buffered bicycle lanes provide less separation between bicyclists and vehicles. Pavement stencils designate the lane for bicyclists although there is no physical protection for users of these facilities. However, buffered bike lanes, seen at right in Figure 14, include a painted buffer between the lane and adjacent vehicle travel lanes to provide increased separation for users compared to standard on-street bicycle lanes. Standard on-street bicycle lanes place the bicycle lane immediately adjacent to vehicle travel lanes, reducing the horizontal separation from vehicles for cyclists. These facilities are more appropriate on moderate volume (3,000 to 7,000 vehicles per day) and moderate speed (25 to 35 mph) roadways. Table 5 below summarizes recommended design guidance for both buffered and traditional bicycle lanes.



FIGURE 14: EXAMPLE OF BUFFERED BIKE LANE (SOURCE: DKS)

TABLE 5: BUD DESIGN GUIDANCE FOR BUFFERED OR TRADITIONAL BICYCLE LANES

DESIGN ELEMENT	PREFERRED WIDTH	MINIMUM WIDTH
ON-STREET BICYCLE LANE	6 ft.	5 ft.*
ON-STREET BICYCLE LANE WITH BUFFER (AT-GRADE)	4 ft.	2 ft.

*5 ft. on-street bicycle lane only permitted with a buffer

PEDESTRIAN DESIGN ELEMENTS

SIDEWALKS

Sidewalks provide for pedestrian movement and access to businesses. The pedestrian realm encompasses three zones, as illustrated below in Figure 15, including the Frontage Zone, Pedestrian Zone, and Buffer Zone. Table 6 summarizes the recommended and minimum widths for each of these zones.

- The **Frontage Zone** describes the area where a pedestrian interacts with the adjacent buildings or private property. This zone could include entryways or outdoor seating. This zone is typically 1 ft. for roads in identified Mixed Use areas. It may include a concrete or natural surface depending on the adjacent land use.

- The **Pedestrian Zone** is the primary clear path that facilitates pedestrian travel. The minimum required width for pedestrian travel is 6 ft. although either the Frontage Zone or Buffer Zone can provide up to 1 ft. of this width on constrained corridors.

- The **Buffer Zone** is located between the Pedestrian Zone and the curb which could include street furnishings or landscaping (*e.g.,* benches, lighting, bicycle parking, tree wells, or plantings). If adjacent to on-street parking, it should also include a clearance distance between any curbside parking and the street furnishing area or landscape strip so vehicles parking or opening doors do not interfere with street furnishings and/or landscaping. Streets located along a transit route should incorporate furnishings to support transit ridership, such as transit shelters and benches, into the Buffer Zone. The Placemaking Design Treatments section details the design elements which could be applied in the Buffer Zone.

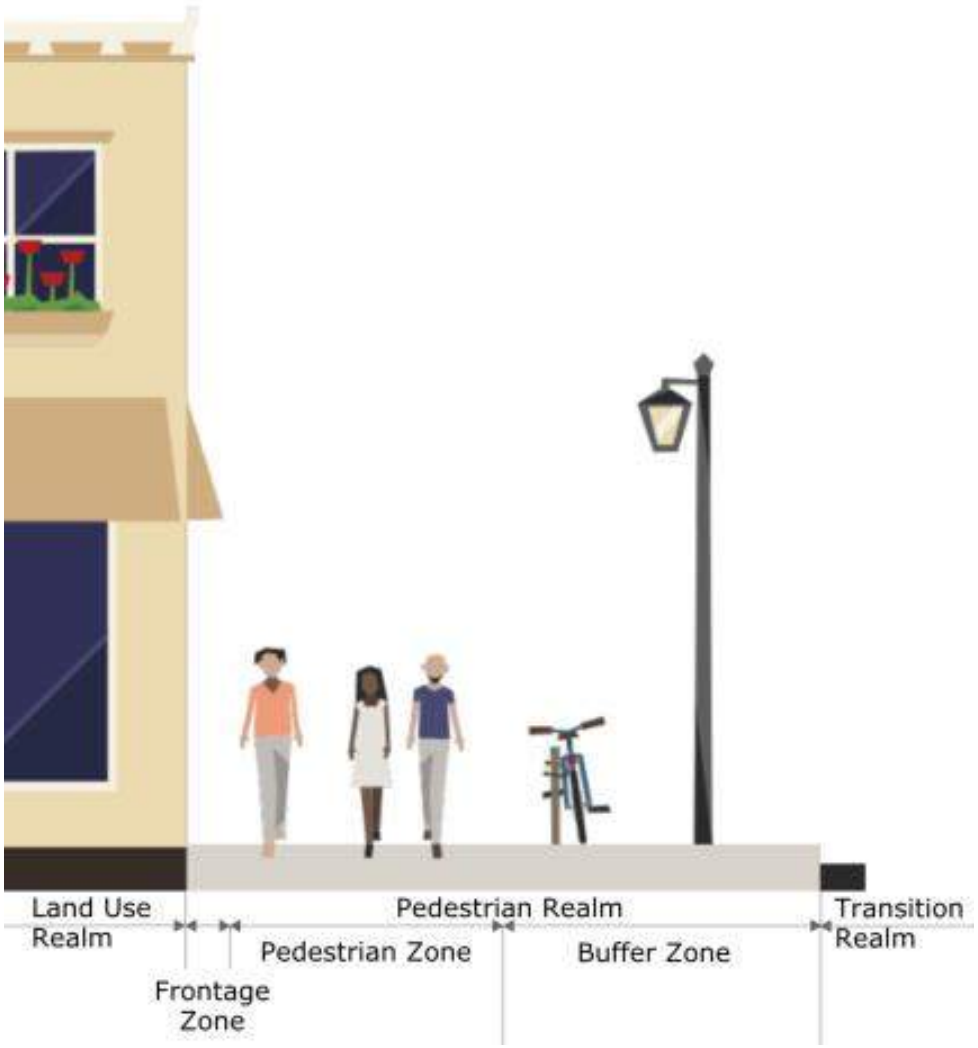


FIGURE 15: PEDESTRIAN REALM ELEMENTS (SOURCE: STREETMIX, DKS)

TABLE 6: BUD DESIGN GUIDANCE FOR PEDESETRIAN FACILITIES

DESIGN ELEMENT	PREFERRED WIDTH	MINIMUM WIDTH
FRONTAGE ZONE	1 ft.	1 ft.
PEDESTRIAN ZONE	8 ft.	5 ft.*
BUFFER ZONE	6 ft.	0 ft.

*5 ft. sidewalks are only permissible with a paved frontage zone and/or paved buffer zone to provide a minimum paved pedestrian realm of 6 ft.

MID-BLOCK CROSSINGS

Streets with moderate- to high-traffic volumes and/or speeds in areas with expected pedestrian crossing demand due to trail crossings, transit stops, residential uses, schools, parks, shopping, or employment destinations generally require enhanced street crossings. Enhanced crossing treatments such as marked crosswalks, high visibility crossings, and curb extensions, improve safety and convenience for pedestrians. Placement of enhanced crossing locations should be coordinated with CAT as potential future bus stop locations. Marked crossings on Cascade Avenue should be provided approximately every 250 to 550 feet, as summarized in Table 1. Exceptions include where the connection is impractical due to topography, inadequate sight distance, high vehicle travel speeds, lack of supporting land use or other factors that may prevent the ability to provide a safe crossing. Pedestrian crossings will require further analysis prior to final design and construction to confirm the appropriate treatments and gain ODOT approval.

TRANSIT DESIGN TREATMENTS

Transit vehicles typically travel in a shared roadway environment with motor vehicles, and the design of travel lanes, discussed previously, should accommodate transit vehicles. However, quality transit service also requires improvements outside of the paved roadway width, like shelters or signage at transit stops, along with accessway improvements for pedestrians and bicyclists, also discussed previously. The transit designs recommended in this memo represent best practice for transit stop design, but all final improvements require approval from CAT.

STOPS

CAT operates a fixed route service within Hood River although passengers can also flag down buses along this route. Currently there are two off-street CAT stops (the gravel parking lot near the Mt. Adams Avenue/Cascade Avenue intersection, seen in Figure 16, and Safeway) within the study area. As redevelopment occurs on Cascade Avenue, the City of Hood River should work with CAT to support development of in-lane transit stops for the corridor. In-lane stops minimize delay to transit riders since a transit vehicle does not need to wait to re-enter the roadway to continue its route. Placing stops adjacent to the road also enhances the visibility of CAT service for new riders or tourists.

Existing Bus Stops in Hood River

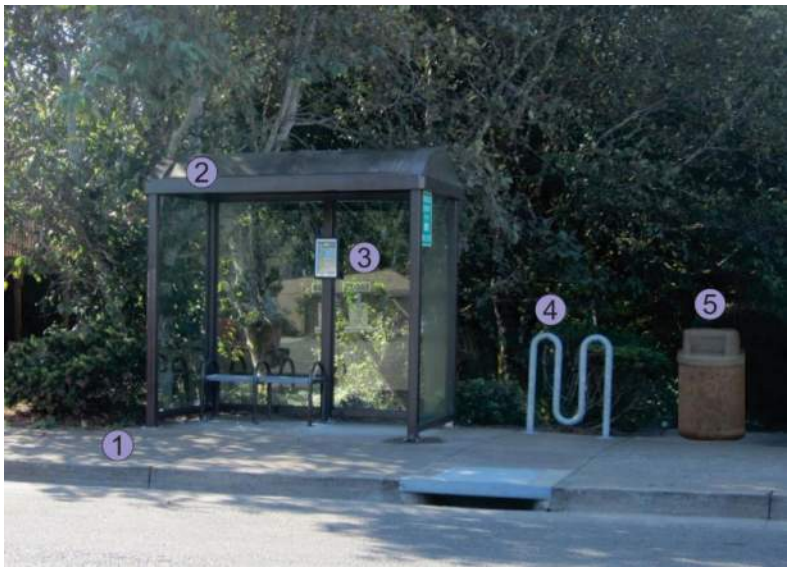
Existing CAT stops within Hood River provide a variety of amenities and design treatments (see Figure 16). Improvements are needed near transit stops to provide short-term bicycle parking, ADA-compliant curb ramps, benches, and shelters. These improvements would make transit more attractive and convenient for Hood River residents.



FIGURE 16: EXISTING TRANSIT STOPS IN HOOD RIVER (SOURCE: GOOGLE)

Designing Bus Stops in Hood River

The following guidelines recommend key design features for bus stops in Hood River. All bus stops should include critical items to meet ADA standards while most locations should include the recommended items. Highly utilized or commuter-oriented stops should also include the optional items. When provided, transit stops should be well-maintained to establish a positive community image and minimize conflicts with businesses and adjacent land uses. Providing bus stop amenities represents a full commitment by CAT to fixed route service within Hood River.



Critical Items

1. Bus stops must meet ADA standards. These standards require at least four feet of sidewalk clearance, landing pads, and curb heights that allow for passengers in wheelchairs to board and depart the bus. Bus stops located at the back of sidewalk provide maximum sidewalk clearance.

Recommended Items

2. Bus shelters protect riders from the wet climate of the Pacific Northwest while benches provide a comfortable place to wait. These recommended stop elements increase passenger comfort.

3. Posting route maps and schedules at stops provides critical service information to passengers who lack access to a smartphone.

Optional Items

4. Bicycle parking provides a safe and convenient bicycle storage option for residents who live farther away from stops or bike to transit.

5. Trash receptacles mitigate littering while passengers wait to board.

Managing Bus-Bike Conflicts

CAT identified potential conflicts between buses and bicyclists as a key concern for any in-lane transit stop, particularly when the Historic Highway State Trail opens. Placing the transit stop within the buffer area for a separated bike lane, as seen below in Figure 17 and 18, could mitigate this concern.



FIGURE 17: RAISED CONCRETE SEPARATED BIKE LANE BEHIND TRANSIT STATION (SOURCE: GOOGLE)



FIGURE 18: REMOVABLE SEPARATED BIKE LANE BEHIND TRANSIT STATION (SOURCE: BIKEPORTLAND)

REGULATORY DESIGN CONSIDERATIONS

Freight considerations are particularly important since Cascade Avenue is a Freight Reduction Review Route. Any design refinements that reduce the horizontal or vertical clearance on Cascade Avenue for vehicles will trigger the freight reduction review process. Typical elements that reduce clearance are traffic signals, roundabouts, raised medians, street trees, roadway lighting and pedestrian crossings. Many of these are design elements that will be incorporated into the Cascade Avenue design refinement plan.

PREFERRED DESIGN REFINEMENT OPTIONS

The project team identified the following preferred design refinement options for Cascade Avenue, as summarized in Table 7. The options include recommendations for cross-section design elements and the number of vehicle lanes. The team will also develop an access management framework for the corridor to determine the use of raised median treatments. The preferred design treatments address the needs identified by project stakeholders. Existing development and limited right-of-way may constrain implementation of the preferred design in certain sections of Cascade Avenue. However, the preferred design options represent the long-term corridor vision and should be pursued with redevelopment or other improvements on Cascade Avenue.

TABLE 7: PREFERRED CORRIDOR DESIGN REFINEMENT FOR CASCADE AVENUE

DESIGN ELEMENT	BUD GUIDANCE FOR URBAN MIX	PREFERRED CORRIDOR DESIGN
TARGET SPEED (MPH)	25-30 mph	25 mph
TRAVEL LANE WIDTH	Preferred width: 11 feet	11 feet for through, left turn and right turn lanes
CENTER TURN LANES	Preferred width: 11 ft.	11 ft. two-way left turn lane between 20th Street and Mt. Adams Avenue
MEDIAN	Preferred width: 8 ft. (without turn lane) 12 ft. (with turn lane)	8 ft. median at locations with pedestrian crossing, limited driveways, or limited right-of-way 12 ft. median with center turn lanes
NUMBER OF VEHICLE LANES	No guidance	3 Lanes (Mt. Adams Avenue to Exit 62) 3 Lanes (20th Street to Mt. Adams Avenue) 2 Lanes (13th Street to 20th Street)

DESIGN ELEMENT	BUD GUIDANCE FOR URBAN MIX	PREFERRED CORRIDOR DESIGN
BICYCLE FACILITY	Start with separated bicycle facility, consider roadway characteristics Preferred width: 8 ft. (separated) or 6 ft. (on-street)	Separated bicycle facility with horizonal and vertical separation preferred
SIDEWALK	Ample space for sidewalk activity (*e.g.,* sidewalk cafes, transit shelters) Preferred width: 8 ft. for pedestrian travel	1 ft. Frontage Zone 5-8 ft. Pedestrian Zone 4-6 ft. Buffer Zone Wider Pedestrian and Buffer Zones are in commercial areas
TOTAL PEDESTRIAN CROSSING SPACING RANGE (FEET)	250-550 ft. (1-2 blocks)	450-1,250 ft. Figures 6 and 7 summarize candidate crossing locations The team identified candidate crossing locations every 550-900 ft. in areas with high commercial development but are less frequent in residential portions of the corridor
ON-STREET PARKING	Consider on-street parking if space allows Preferred width: 8 ft.	On-street parking is likely not feasible at most locations on Cascade Avenue due to limited available right-of-way. Off-street parking will be provided within adjacent developments.
TRANSIT	No guidance	CAT should coordinate future stop placement with identified enhanced crossing locations; station design should utilize treatments to mitigate conflicts between bicyclists and transit

Figures 19 and 21 illustrate the preferred cross-section options for Cascade Avenue with a center median and two travel lanes while Figures 20 and 22 illustrate the preferred cross-section options for Cascade Avenue with three travel lanes. Application of the three-lane cross-section will be limited to intersections, median breaks, and existing segments of Cascade Avenue where a three-lane section is currently provided. The access management framework for the corridor will be applied to identify locations where a median break should be provided. Specific cross-section

elements shown in the figures below are subject to modification in locations with constrained right-of-way.

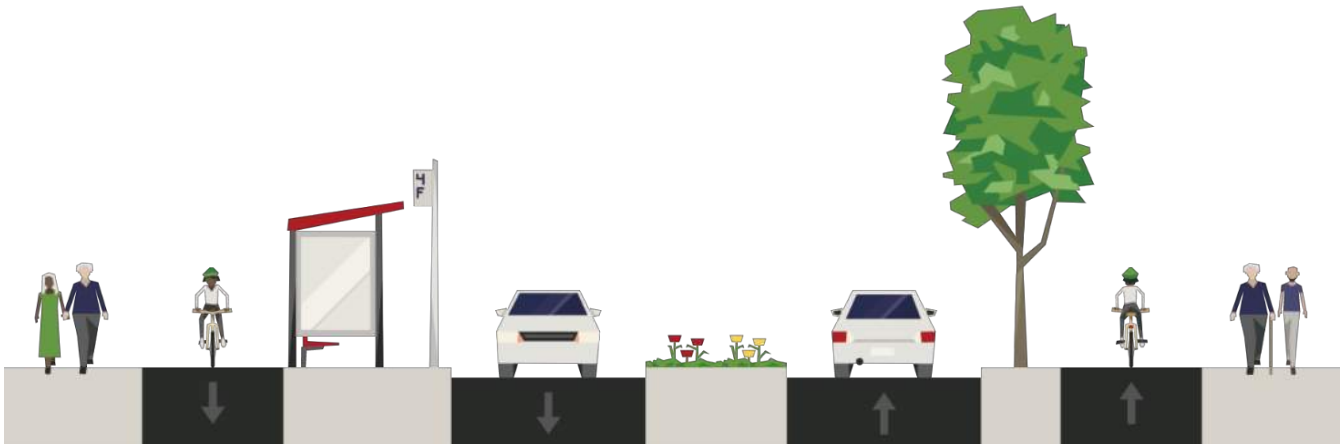


FIGURE 19: CASCADE AVENUE TYPICAL THREE-LANE CROSS-SECTION NEAR TRANSIT STOP WITH OFF-STREET SEPARATED BICYCLE FACILITY (SOURCE: STREETMIX)

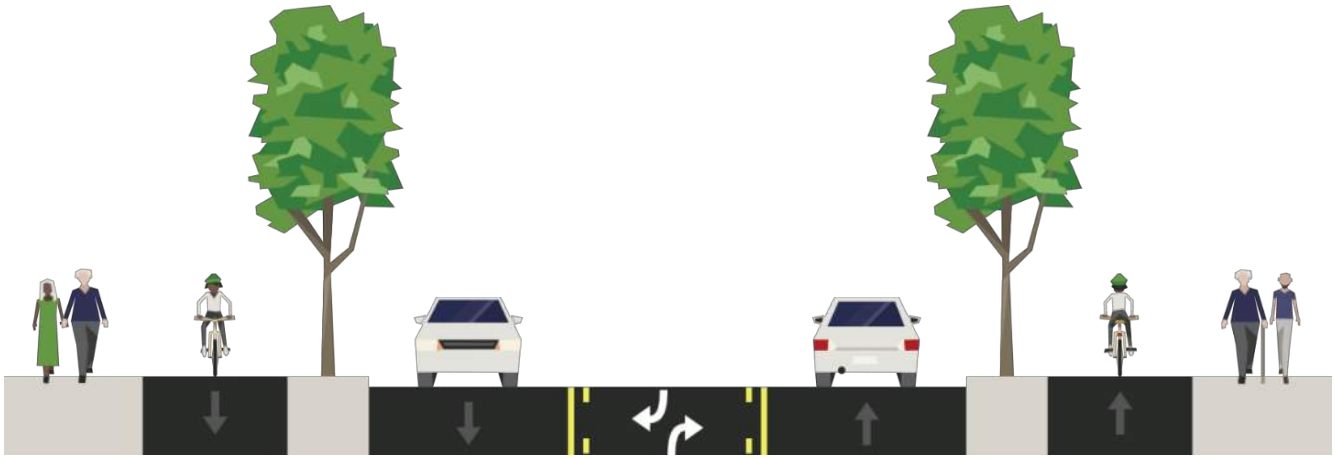


FIGURE 20: CASCADE AVENUE TYPICAL THREE-LANE CROSS-SECTION WITH OFF-STREET SEPARATED BICYCLE FACILITY (SOURCE: STREETMIX)

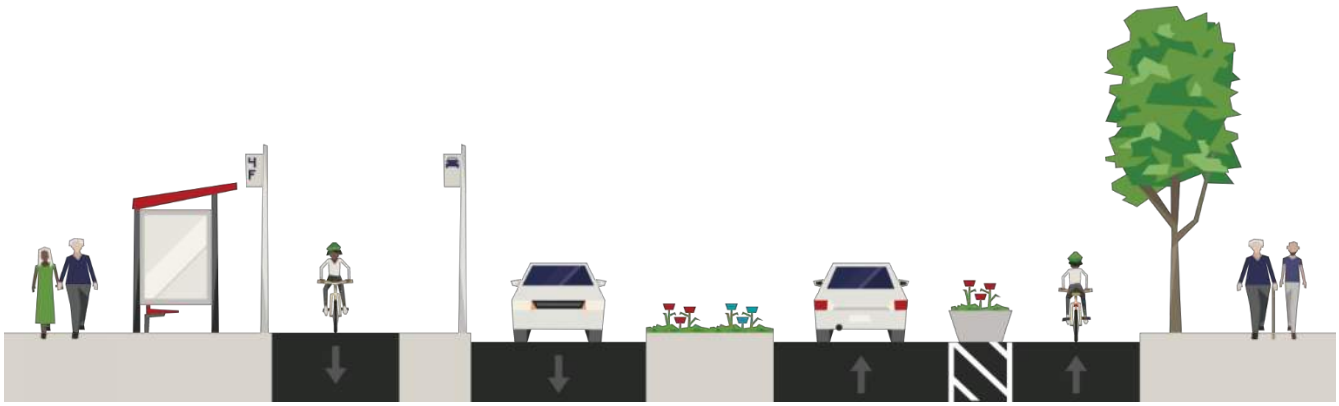


FIGURE 21: CASCADE AVENUE TYPICAL THREE-LANE CROSS-SECTION NEAR TRANSIT STOP WITH ON-STREET SEPARATED BICYCLE FACILITY (SOURCE: STREETMIX)

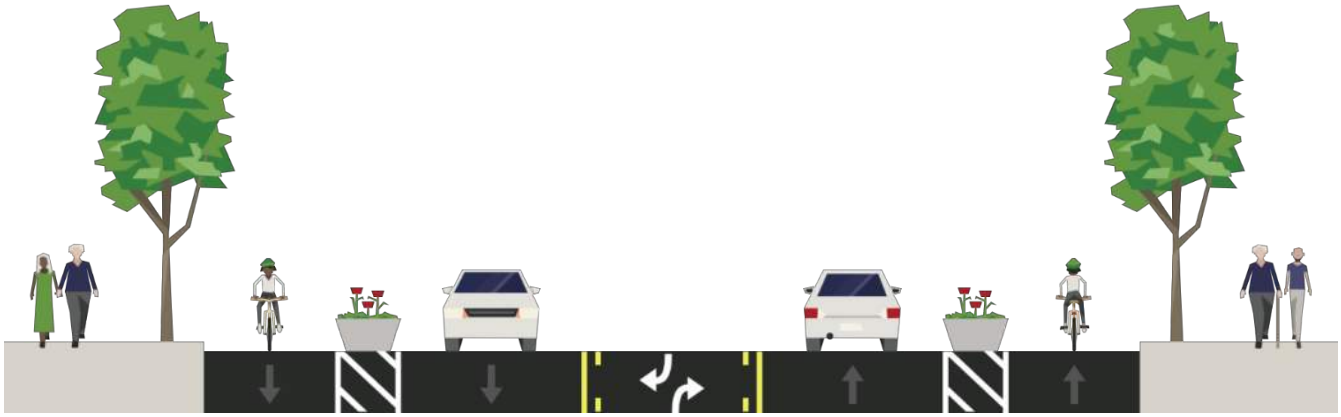


FIGURE 22: CASCADE AVENUE TYPICAL THREE-LANE CROSS-SECTION WITH ON-STREET SEPARATED BICYCLE FACILITY (SOURCE: STREETMIX)

RIGHT-OF-WAY CHALLENGES

The City anticipates significant growth and redevelopment on Cascade Avenue to drive implementation of the design refinement plan. However, in locations with recent development, properties that are unlikely to redevelop (*e.g.,* Walmart, McDonald's), or other topographic constraints, the City must consider other strategies to implement the vision of this plan. These strategies include establishing a build-to line for future development, strategic right-of-way acquisitions, or adopting alternative cross-sections in constrained areas. Table 8, below, summarizes the existing available right-of-way for each segment of Cascade Avenue. A preliminary evaluation suggests the right-of-way required for a three-lane section will be between 75 and 85 ft., so the full project vision will likely require significant right-of-way. The right-of-way estimates provided in Table 8 are intended to represent the right-of-way that will be needed to provide the recommended number of travel lanes and all amenities identified in the preferred corridor design. Changes to the preferred cross-section will reduce the likely required right-of-way.

TABLE 8: AVAILABLE RIGHT-OF-WAY (ROW) FOR CASCADE AVENUE[24]

SEGMENT	NARROWEST ROW	WIDEST ROW	NOTES	LIKELY ROW NEEDED
EXIT 62 TO MT. ADAMS AVENUE	60 ft.	105 ft.	Right-of-way is widest at interchange area before narrowing to 60 ft.; right-of-way widens on south side of Cascade Avenue near the Mt. Adams Avenue intersection	75 to 85 ft.
MT. ADAMS AVENUE TO RAND ROAD	60 ft.	65 ft.	Right-of-way widens 5 ft. on south side of Cascade Avenue for select tax lots; right-of-way widens slightly on north side around Wasco Street/Rand Road intersection	75 to 85 ft.
RAND ROAD TO 20TH STREET	60 ft.	63 ft.	Right-of-way widens 3 ft. on north side of Cascade Avenue for select tax lots	75 to 85 ft.
20TH STREET TO 18TH STREET	56 ft.	56 ft.	Right-of-way widens slightly on south side of Cascade Avenue around 20th Street intersection	65 to 75 ft.
18TH STREET TO 13TH STREET	56 ft.	60 ft.	Right-of-way gradually widens heading east on Cascade from 18th Street to 13th Street; right-of-way is significantly wider at Cascade Avenue/Oak Street intersection	65 to 75 ft.

Recent construction immediately adjacent to the right-of-way and topography to the north of Cascade Avenue will likely make acquiring the needed right-of-way a significant challenge. Potential pinch points identified for Cascade Avenue include:

- 13th Street to 20th Street – existing development closely abuts the roadway with significant topography to north (see Figure 5)
- Portions of Cascade Avenue between the Lone Pine Motel and the Safeway site easternmost driveway – existing development closely abuts the roadway on both sides with sections of significant topography to north (see Figure 5)
- Rand Road to Walmart western driveway – existing sections of significant topography to north (see Figure 4)
- Mt. Adams Avenue to Hood River Mobile Manor easternmost driveway – existing sections of significant topography to north (see Figure 4)
- 76 Gas Station westernmost driveway to I-84 eastbound ramps – existing sections of significant topography to north (see Figure 4)

[24] Hood River County. *Hood River County WebMap.* https://webmap.hoodrivercounty.gov/

Acquiring additional right-of-way to the south of Cascade Avenue, reducing the buffering width for cyclists and pedestrians, or eliminating the center turn lane (where provided) could address these pinch points.

APPENDIX

CONTENTS

SECTION 1. SUMMARY OF PREVIOUS PLANS

SECTION 2. STAKEHOLDER INTERVIEWS SUMMARY

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SECTION 1. SUMMARY OF PREVIOUS PLANS

Planning Document	Summary of Document	Relevant Outcomes
Historic Columbia River Highway Master Plan (2006)	This plan details projects to maintain and restore the Historic Columbia River highway through the gorge to connect communities along the route and create a new recreational corridor for Oregon. Key needs identified for the portion of the HCRH which includes Hood River is preservation of the existing drivable road and development of a continuous bicycle and pedestrian connection.	Identified improvements include: Westcliff Drive - add curb and landscaping Cascade Avenue - implement design and cross-section as identified in programmatic agreement Explore opportunities to create gateway in vicinity of Exit 62 interchange
Hood River Programmatic Agreement	This document governs stipulations for the urban section of the HCRH in Hood River.	The existing street section along Cascade Avenue shall be consistent with the cross-section adopted in the 2011 TSP and consistent with the appearance of the street section in front of Cascade Commons. This section includes a 43-44' paved width, planter strips, and sidewalks in a 60' ROW. The proposed cross-section includes a continuous TWLT lane and two travel lanes. Where feasible, bike lanes will be striped. Antique style lights will be applied consistent with the HCRH elsewhere in Hood River. ODOT will provide HCRH signage for city street signs. Any proposed improvements that differ from these specifications on the HCRH will require independent review by ODOT, SHPO, and City.
I-84 Exit 62 IAMP (2011)	This document details the long-range plan for the Exit 62 interchange including projects that will be required to maintain its desired functionality in the future. The plan provides a guide to make future transportation investment decisions that are consistent with the direction identified for the interchange area. To date, there have been no major improvements to this interchange since its initial construction, resulting in sub-standard infrastructure and significant future transportation needs as development continues in the west end of Hood River.	Key identified improvements in the Exit 62 interchange area include: new turn lanes and signals at the ramp, realignment of Country Club Road to Mt. Adams Avenue, widening of Cascade Ave to include two-lanes in each direction between Mt. Adams and the interchange (the revised cross-section is at right and has been approved by HCRHAC), widening of Cascade Ave to TSP section east of Mt. Adams Avenue, and new traffic signals at Cascade/Mt. Adams, Cascade/Rand, and Cascade/Westcliff. Detailed improvements for each study intersection are also recommended in the IAMP. The IAMP also includes an access management plan with identified approaches for managing accesses to Cascade Avenue within the interchange area. Identified access management solutions could include turn restrictions, intra-site circulation, or alternative access points, when feasible. No specific access management decisions are documented in the IAMP. The ultimate project identified for Cascade Avenue streetscape could trigger an IAMP update if the recommended cross-section is inconsistent with the sections proposed.
Westside Area Concept Plan (2017)	This document details the planning process undertaken in 2016-2017 for Hood River's Westside Area which included both land use and transportation improvements within a largely undeveloped area. When this plan was completed, the PAC did not reach a consensus on the final land use framework, so this plan has ultimately not been adopted. The City still supports findings from the WACP and has taken steps to prepare for growth within this area including new transportation improvements.	Land use development within the westside area will include both commercial and industrial development along Cascade Avenue and residential neighborhoods (including workforce/affordable housing) to the south, adjacent to existing residential neighborhoods. The land use development will be supported through the streets framework which was refined from the 2011 TSP and will be adopted in the 2021 TSP update. Findings from the WACP validated the need for previous TSP projects with the following modifications: shifted the Mt. Adams Avenue extension west to the new Alignment D option, shifted the proposed signals at Wine Country Avenue and May Street on the Mt. Adams Avenue extension, west to Alignment D, and introduced a new signal/mini-roundabout at the May/Rand intersection. The WACP also introduced a new neighborhood connector designation for streets. No changes were recommended to the cross-sections for Cascade Avenue. The WACP did include significant refinements to the pedestrian/bicycle trail network within the westside area. This plan identified a 10' multi-use path on the south side of Cascade Avenue between I-84 and Mt. Adams Avenue and 5' bike lanes, 10' sidewalks on both sides of Cascade Avenue between Mt. Adams Avenue and 13th Street which is consistent with the 2011 TSP.

Hood River TSP (2011)	This document describes Hood River's long range transportation improvements including pedestrian, bicycle, and motor vehicle improvements. This document is currently being amended to include detailed transportation improvements identified in the WACP which includes updating the financially constrained project list. The TSP includes specific cross-sections for Cascade Avenue which were not updated as part of this amendment.	The TSP identifies specific policies to develop Cascade Avenue within the Exit 62 interchange vicinity as a gateway corridor with safe bicycle and pedestrian connections. The 2011 TSP includes sidewalk infill projects on Cascade Avenue (SW3, SW14, SW18), new crossing improvements (CR1, CR21, CR22), a new trail between Westcliff Drive and Mt. Adams Avenue (P7), and new bike lanes for Cascade Avenue (BL3). The typical sections for Cascade Avenue in the project area can be seen at right. Existing motor vehicle projects on Cascade Avenue and the Exit 62 interchange area have been refined as part of the WACP and subsequent TSP update. The revised project descriptions are available in the 2021 TSP amendment. Key changes include constructing a second westbound lane (subject to the programmatic agreement being updated) between I-84 and Mt. Adams Avenue and providing a roundabout option for the Cascade Ave./Mt. Adams Ave. intersection improvement.
Cascade 30 Final Project Report (2020)	This document details recommendations from a PSU MURP project for integrating the HCRH Statewide Trail into existing transportation facilities along Cascade Avenue. This project developed concepts to inform how Cascade Avenue can be transformed into a multimodal gateway for Hood River.	This progject proposes completing the sidewalk network on both sides of Cascade Avenue from Exit 62 to 13th Street, eliminating the existing eastbound bike lane to construct a two-way cycle track on the north side of Cascade Avenue, installing marked crosswalks with RRFBS and medians at least every 500 feet, completing the sidewalk along the north side of Westcliff Drive to connect Cascade Avenue to the new HCRH Statewide Trail, installing a cycle track or bike lanes on Westcliff Drive to connect to the trail, maintaining 11' travel lanes and any existing center turn lanes on Cascade Avenue, and constructing a roundabout at the intersection of Cascade Avenue/Mt. Adams Avenue. As part of this project, the MURP students also completed stakeholder interviews. Key findings include: desire for separated bike lanes/raised cycle track, more complete sidewalk network, improvements need at Mt. Adams Avenue and Rand Road, need more pedestrian crossings, speeding is a concern on Cascade Avenue, street lighting, driveway conflicts are an issue, interest in gateway treatment
County of Hood River Bike Plan (2010)	This document updates the previous bicycle element of the county's TSP. Through this project, bicycle projects identified in the previous county TSP were reviewed, new projects were identified, and select projects were converted into pedestrian projects.	Identified improvements include: An 8' multi-use path on Westcliff Drive between Cascade Avevue and the Meredith Motel/Ruthton Park Completing the HCRH State Trail
Hood River Zoning map	This map details Hood River's existing zoning map.	Most of the properties fronting Cascade Avenue are zoned for commercial or light-industrial development. There is one designated park area northwest of 20th Street and limited residential fronting uses between 18th Street and 13th Street to the north of Cascade Avenue.
Street Furnishing and Landscaping Requirements	Chapter 16 of Hood River's Municipal Code includes regulations for street landscaping with new development. Section 16.12.050 details acceptable street tree types and Section 16.12.060 details additional design standards.	Street trees should be provided in planting strips with spacing of at most 30'. Current design standards include a 8' planting strip on the south side of Cascade Avenue (between I-84 and Mt. Adams Avenue) and a 10' sidewalk with tree wells on both sides of Cascade Avenue (between Mt. Adams Avenue and 13th Street). The development code does not include additional information on street furnishing requirements.
Stormwater and Complete Street Guidelines	Chapter 16 of Hood River's Municipal Code includes regulations for storm water and streets with new development. Section 16.12.060 details specific design standards.	Development permits will only be issued when there is sufficient stormwater capacity. Sizing of any new drainages must accommodate the anticipated upstream drainage needs for the entire drainage area. The runoff generated by the site must also be accommodated within the downstream drainage capacity.

SECTION 2. STAKEHOLDER INTERVIEWS SUMMARY

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

TECHNICAL MEMORANDUM

DATE: May 21, 2021

TO: Terra Lingley | ODOT
Dustin Nilsen | City of Hood River

FROM: Rochelle Starrett, Reah Flisakowski | DKS

SUBJECT: Hood River Cascade Avenue Design Refinement Plan: Summary of Stakeholder Feedback

Project #20020-010

This memorandum summarizes key issues and opportunities provided from the stakeholder interviews conducted for the Cascade Avenue Design Refinement Plan; the appendix includes complete notes from each interview. The project team will use this community feedback to inform the development of corridor design options.

IDENTIFIED STAKEHOLDERS

The project management team identified project stakeholders who travel or conduct business along Cascade Avenue. Table 1 shows the stakeholders who participated in interviews and include business or land owners along the corridor, transit users, economic development groups, and other community interests. The Project Team contacted Hood River's Latinx community for their input although no interview was scheduled due to scheduling conflicts.

TABLE 1: STAKEHOLDER INTERVIEW GROUPS

GROUP	MEMBERS
1	Andy von Flotow, Land Owner Claudia Munk-von Flotow, Land Owner Laszlo Regos, Hood River Mobile Manor Owner
2	Grant Polson, Hood River Chamber of Commerce Chair and Westcliff Lodge Owner
3	Heather Staten, Thrive Hood River Megan Ramey, Planning Commission, Streets Alive! Advocate, and Region 1 ACT Representative

GROUP	MEMBERS
4	Patty Fink, Columbia Area Transit Executive Director Kathy Fitzpatrick, Mid-Columbia Economic Development District Mobility Manager
5	Rajiv Batra, Transit Rider and Historic Columbia River Highway Advisory Committee Meeting Attendee

INTERVIEW QUESTIONS

Alex Dupey at MIG lead the stakeholder interviews . Although the team prepared a list of questions (provided in the appendix) and distributed them in advance of each meeting, the interviews were conversational in nature to capture the most important corridor issues for each stakeholder. Generally, the stakeholder interviews included questions related to existing opportunities and constraints for Cascade Avenue, connections for bicyclists and pedestrians, and business access issues.

KEY FINDINGS

A summary of key findings and needs identified by each stakeholder interview group is detailed below; full notes from each interview are provided in the appendix. The opportunities and constraints noted during the stakeholder interviews were also used to identify key themes, which will be used to guide the design refinement plan.

GROUP 1

- Focus of study should be I-84 to Rand Road
- Existing congestion on Cascade Avenue makes left turns challenging, particularly from north side
    - Intersections of Rand Road and Mt. Adams Avenue with Cascade Avenue are particularly congested
    - Cascade Avenue needs a turnaround option (*i.e.* roundabout or U-turn lane) or a center turn lane
    - Previous development has included left turn restrictions
- There is no reason to walk on Cascade Avenue today and that is not likely to change

    - Some residents walk home on Cascade Avenue today
- Bikes should be accommodated on parallel routes rather than Cascade Avenue
- Existing residents on corridor largely do not use transit
- Appropriate design treatments for Cascade Avenue include:
    - A center left turn lane
    - Cascade Avenue/Mt. Adams intersection improvements (*i.e.* a moderately preferred future roundabout or traffic signal)
    - Alternative stormwater treatment options
    - Frontage improvements (*e.g.* utilities, stormwater)

GROUP 2

- Existing congestion on Cascade Avenue concentrated between I-84 and Mt. Adams Avenue although Oak Street/13th Street intersection is also a bottleneck
    - Solutions could include two eastbound travel lanes between I-84 and Mt. Adams Avenue or a right-turn slip lane to the original Country Club Road
- Cascade Avenue is not a pedestrian friendly street today due to existing infrastructure and traffic volumes
    - Improvements need to isolate pedestrians from vehicle traffic
- Bikes should be accommodated on parallel routes or trails rather than Cascade Avenue
    - Existing bike lanes have drainage inlets making them challenging to ride
    - Buffered bike lanes would be needed on Cascade Avenue but likely unfeasible given other corridor needs
- Transit should provide access to more destinations including hotels on Westcliff Drive
- Appropriate design treatments for Cascade Avenue include:
    - A narrow street (*i.e.* not a five-lane road) with smoothly flowing traffic
    - A center left turn lane
    - Raised medians (in moderation)

- Attractive streetscape elements (*e.g.* trees)
- Accommodations for short distance pedestrian and bicycle trips only
- Alternative truck route to and from 13th Street

GROUP 3

- Existing congestion on Cascade Avenue is relative although it can be challenging to make left turns at the Mt. Adams Avenue and Rand Road intersections
  - Congestion at these intersections could be particularly challenging in the event of an evacuation
  - Lower travel speeds are more appropriate to manage congestion
- Cascade Avenue is inhospitable for pedestrians
  - Existing sidewalks gaps
  - Limited existing crossing opportunities
  - Improvements needed to connect affordable housing residents to basic needs
  - Appropriate infrastructure solutions could make this corridor more walking friendly
- Bikes should be accommodated on Cascade Avenue
  - Existing bike lane gaps
  - New bike facilities should be appropriate for users of all ages and abilities to ensure people don't just use the sidewalk
  - Alternate routes would not provide convenient access to business for Historic Columbia River Highway Trail users
  - Appropriate infrastructure solutions could make this corridor more biking friendly for both transportation and recreation
- Appropriate design treatments for Cascade Avenue include:
  - Roundabouts or other gateway elements
  - Design elements from elsewhere on Historic Columbia River Highway

- Mid-block crosswalks (including at Safeway, between Mt. Adams Avenue and Rand Road, and transit stops)
- Wayfinding
- Street trees
- Access management or raised medians
- In-lane bus stops
- E-bike charging stations

GROUP 4

- Cascade Avenue is a key corridor to access freeways, serve critical businesses, and residential areas
  - Existing congestion at Rand Road and Mt. Adams Avenue makes it challenging for buses to turn left, resulting in out of direction routing
  - Narrow travel lanes restricts transit into neighborhoods
  - Parallel through streets (*e.g.* the Wine Country Avenue Extension) can better serve neighborhoods with transit
- Pedestrians face several challenges on Cascade Avenue
  - Crossing improvements should be provided at Mt. Adams Avenue and Rand Road transit centers
  - Sidewalk is critical to allow access to transit
  - Vehicle speeds
- Bicyclists should be accommodated on Cascade Avenue
  - Having transit islands and bus stops in lane could enhance visibility of bicyclists for transit operators, a key concern
  - Cascade Avenue will still serve major destinations and should be safe and welcoming for all users
- Transit needs to be emphasized for the City of Hood River

- Driveways need to be better managed to improve predictability between pedestrians, bicyclists, and vehicles
- Appropriate design treatments for Cascade Avenue include:
    - Sidewalks
    - Reduced number of driveways
    - In-lane transit stops directly on Cascade Avenue
    - Speed management
    - Parking buffered bicycle lanes
    - Zoning or development code changes to create a more urban environment

GROUP 5

- Project should include a vision for the entire corridor, not just isolated intersections, to create a cohesive sense of place
- Vehicle travel speed along Cascade Avenue is a concern
    - Existing safety issues at Rand Road intersection where riders can access food during layovers
- Sidewalks should be completed to enable people to walk to transit
- Hood River needs to focus more on transit, including:
    - Improved transit stops and amenities (*e.g.* signage, shelters)
    - Transportation planning guidance (*e.g.* TSP, WACP)
    - Accommodation of different rider types (*i.e.* tourists vs. locals)
    - Historic Columbia River Highway Trail and other trails should be accessible by transit
    - Stop accessibility for bicyclists and pedestrians

KEY THEMES

Although the stakeholders disagreed on the appropriate solutions, the participants did agree that Cascade Avenue does not currently work well for all travel modes. Existing issues identified for the

corridor include congestion for vehicle traffic, particularly at the Cascade Avenue intersections with Mt. Adams Avenue and Rand Road, and major deficiencies for pedestrians and bicyclists. These elements create a corridor where auto use dominates, even for short trips between residential areas and shopping. Furthermore, the combination of vehicle speeds and volumes will likely remain a barrier for some residents, even with significant improvements to the existing pedestrian and bicycle infrastructure.

Many solutions were identified and supported by multiple stakeholder groups, including:

- A three-lane cross section (one travel lane in each direction and a center turn lane)
- Complete sidewalks
- Intersection improvements at Mt. Adams Avenue and Rand Road[1]
- Streetscape or other placemaking features
- Enhanced pedestrian crossings (although the support for new raised medians varied by group)

Bike facilities were the most divisive street element. Two stakeholder groups strongly preferred developing alternate routes to Cascade Avenue over enhancements along the corridor. However, two other groups believed that Cascade Avenue can be a bicycle-friendly corridor with the appropriate infrastructure in place. These groups also believed that the Historic Columbia River Highway Trail should follow the alignment of the highway where cyclists can access amenities in Hood River.

Transit service was not discussed at all stakeholder interviews. When discussed, stakeholders expressed support for in-lane transit stops and enhanced amenities. Columbia Area Transit also noted that existing congestion near the Cascade Avenue/Rand Road intersection restricts a bus's ability to turn left, resulting in their unique route through Hood River. Intersection improvements at this intersection could enhance transit operations.

[1] A future traffic signal is currently under design at Rand Road while a future roundabout is desired for the planned intersection control at Cascade Avenue/Mt. Adams Avenue intersection

APPENDIX

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SECTION 6. INTERVIEW NOTES – GROUP 5

SECTION 1. INTERVIEW QUESTIONS

Cascade Avenue Streetscape Plan: Stakeholder Questionnaire

GENERAL:

1. What do you think are the biggest opportunities and/or challenges with Cascade Avenue today? What do you think is needed to address the challenges you have identified?
2. This corridor will be the part of the Historic Columbia River Highway State Trail, connecting from the Mitchell Point segment to the Twin Tunnels Segment. What do you think would make it more comfortable for cyclists and walkers to use the area? What would it take for you to walk or ride your bike in the corridor (if you don't already)?
3. What attracts (or detracts) you to the area? If the corridor were to change by adding landscaping, lighting, and other features, do you think that would change perceptions of the area? Should the corridor be left alone?
4. If you could pick one thing to change along the corridor, what would it be?

BUSINESS OWNERS/OPERATORS:

5. Why did you choose to locate on Cascade Avenue?
6. Are there particular features that you think could be improved along the corridor to support your business?
7. How important is pass by traffic? Or is your business more of a destination?
8. How important is direct access to Cascade Avenue for your business? Are there alternative locations or could you access via side streets?
9. If you have gone through the City's development process for your business on Cascade Avenue, were there specific challenges that could be improved?

ACTIVE TRANSPORTATION:

10. Do you consider this to be a safe (e.g., accessible, comfortable, easy to navigate) environment for non-auto travel? What are the biggest challenges for bicycles and pedestrians in this corridor?
11. Who are the non-motorized or transit users in the corridor? Do they take transit or other modes of travel to get to jobs/businesses? For transit riders, are there areas with a higher density of riders?
12. If you are on foot or bike, are there particular locations along the corridor that attract people? Are there other connections in the area that people are traveling to?
13. In your opinion, what is the most challenging or dangerous location for crossing the road by foot?
14. What improvements do you think are most needed in the corridor to improve multimodal travel? Are there examples that you think would fit well into this corridor?
15. This corridor will be become part of the Historic Highway State Trail system, what do you think are the most important improvements/actions necessary to support that planning and design process?

SECTION 2. INTERVIEW NOTES – GROUP 1

DKS Notes #1:

Attendees: Claudia vonFlotow, Andy vonFlotow, and Lazlo

Interview notes:

Andy/Claudia vonFlotow – east of Rand no strong opinions, west of Rand to freeway should be focus

Lazlo – owns mobile manor parcels, original location of parcels

Andy – owns a lot of fronting properties along Cascade

Corridor needs: frontage improvements, utilities

Mobile homes located very close to roadway, little room to include future sidewalks

Where sidewalks are provided, mobile homes located substantially below grade

Mobile home residents (48 tenants) – located there because it's affordable, blue collar workers

School bus stop at mobile home park, high school kid traffic

Mt. Adams intersection congestion can impact westernmost driveway, egress impacted by traffic volumes on Cascade

Generally left turns challenging along Cascade, particularly from north side

Need turnaround option (roundabout) or turn lane

Previous development frontage (Juan's restaurant) has included LT restrictions

Want to see a roundabout at Rand (rather than a signal)

Overpass challenges

Compatibility between city, safety, HCRH AC

Rapid evolvement of businesses along Cascade/retail overall – largely destination businesses

Little pedestrian traffic on this segment of Cascade, not likely to change because there's not a reason to walk there

Limited transit use – mobile home park has more parking issues

Transit use is mainly homeless people from camp at mobile manor

Constant traffic growth on Cascade, overall increase in traffic in Hood River

Could review traffic crashes or other incidents at key intersections (Rand, Mt. Adams)

Biggest corridor needs:

- Safety
- Funding gaps – could use a LID or URD
- Mt. Adams signal
- Left turn lane on Cascade

Need to follow up to see if we could allow for Uturns

Need to figure out a solution for LT restrictions

Appropriate treatments for Cascade:

- Limited width (65-70' at most)
- Competition between parallel parking (in front of apartments) and bike lanes
- Share stormwater with private development – could planter strip be used as stormwater treatment area?
- Can Westcliff be used as an alternative for a bike facility?

DKS Notes #2:

Andy

Cascade east of Rand is okay, Focused on Rand to interchange –

65 to 70 feet easement?

Rebuild utilities and storm

School bus stop near Mt Adams, kids live at mobile home park, intersection is a nightmare, conflicts with nearby driveways (west mobile home park access), long delays for cars turning left from driveways,

Roundabout would help to allow vehicles to u-turn, center turn lane would help with two-stage turns onto Cascade,

Westside Concept Plan – opening infrastructure would allow additional growth,

Xtapa restaurant, no lefts from driveway (condition of approval),

60 feet ROW, bike lanes and parallel parking will compete, may need to remove on-street parking, everything we want won't fit

Historic Columbia River Hwy – focused on following original route, don't concerns with signal v RAB, number of lanes,

Passby traffic isn't important on Cascade

20th works better because there's a center left turn lane

Priority – center left turn lane entire length, two-stage turns, slightly prefer RABs over signals

Claudia

Rand new signal, would prefer roundabout to allow u-turns, DKS will check is new signal allows u-turns (maybe prohibit truck u-turns)

Combine public-private share of stormwater, allow bikes and parking, offset detention requirements and increase developable land,

Suggested trail connect to Westcliff north of I-84, connects under freeway to Wasco/20th

May street is an example, bike lanes and parking

homeless ride the bus, new camp near interchange

Recommended reviewing collision data

Planning Commission is recommending a RAB at Mt Adams

safety is the most important – ideas since 2016, gap in funding (public v private), urban renewal, LIDs, RABs allow u-turns

Laslo

2 driveways, fairly new sidewalk on eastern end to Les schwab, doesn't need to be replaced, west of middle driveway needs sidewalk, concerned mobile homes are placed close to the road, new sidewalks may impact homes (sitting for decades), "mobile" homes own home and rent space, near homes – street is higher, low income housing, 48 tenants – cheapest housing in Gorge and work blue collar jobs.

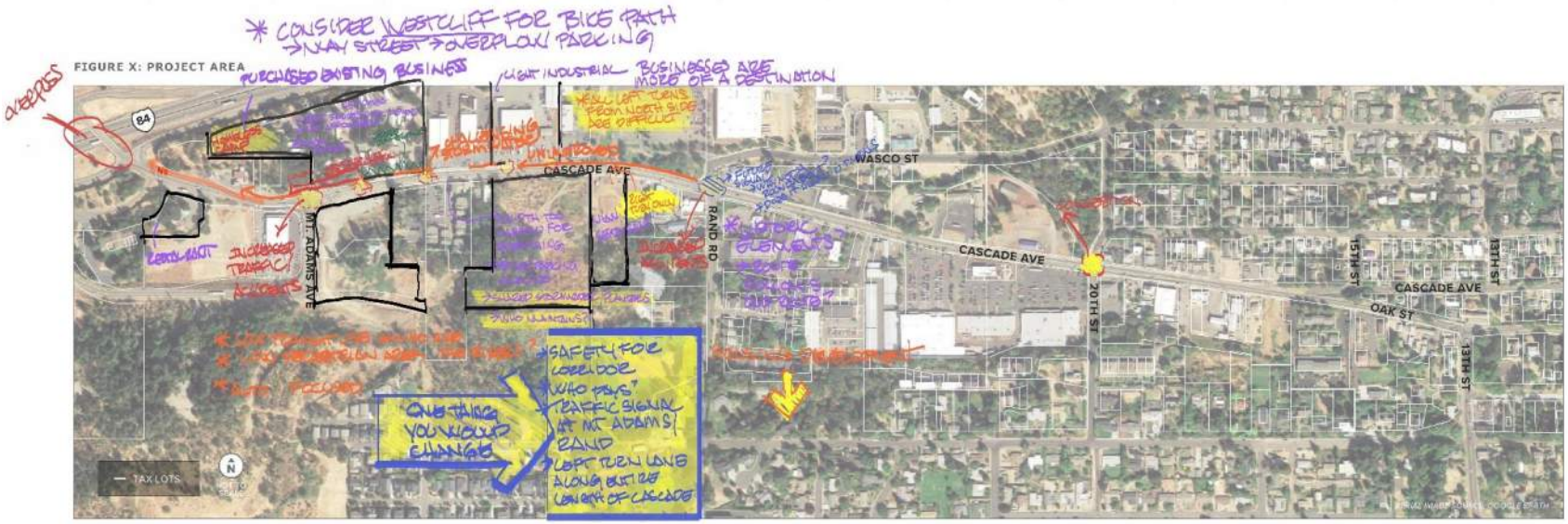
Not a lot of pedestrians today, trips are walking home, not a lot of transit users, mobile home park has too many cars

Mt Adams intersection getting worse, traffic growing, lots of development

RABs don't work efficiently in US, drivers don't know how to use them

Priorities – signals at Mt Adams and Rand, provide gaps for side streets and driveways (minimal plan)

MIG Map:



SECTION 3. INTERVIEW NOTES – GROUP 2

DKS Notes #1:

- Grant – longtime resident and Westcliff Lodge owner, lives around 30th and May Street
- Does not like biking along Cascade, now or in the future – "not a bike or pedestrian friendly street" (infrastructure + traffic volumes)
    - Alternatives include Westside Community Trail or Westcliff Drive
    - Existing bike lanes have sewer drainage areas
    - Future planned trail connections to south of shopping district to connect to 20th and further north to Westcliff
    - Will send hotel guests on Westcliff Drive over Cascade even with trail designation on Cascade
- Westcliff Drive:
    - Two-lane road with minimal traffic apart from three hotels, only residential east of overpass
    - Traffic will largely remain concentrated near the hotels
    - Some grade under the freeway, but it's not super steep, steep near skate park but could use alternative route through the park
- Some congestion on interchange → conflicts between traffic headed to Portland and left turns from EB I-84, occasionally right turns from EB I-84 can also back up
    - Could construct two EB lanes between interchange and Mt. Adams
    - Right turn slip lane to original Country Club Road
    - Most growth anticipated between interchange and Mt. Adams
- Cascade Avenue Improvements
    - Not too wide (e.g. five lane road)
    - No bike treatments // especially not on-street
    - Oak/13th will continue to be bottleneck along corridor
    - Need a way to remove truck traffic from Cascade to 13th, could Country Club be an alternative route?
- Pedestrian traffic
    - Would need to isolate vehicle traffic from pedestrian pathways
    - Access would still be an issue
    - Trails provide a better alternate route around Cascade
- Generally have good existing/future alternative routes for bikes/peds; Cascade will remain primarily a vehicle route
- Most residential growth near Sherman which provides more direct access to future Westside Community Trail
- Cascade should be built to focus on vehicles but not subservient to them
    - Easy business access
    - Smoothly flowing traffic
    - Make it look nice

    - Accommodate few bicyclists and pedestrians
- Would need buffered bike lane to get bicyclists on Cascade, maybe not practical given what else could be done
- Need a center turn lane
- Local vs. long-distance connections: acceptable for short distances
- Heights is likely more upcoming than the westside area for businesses/tourist growth
- Parks and rec has trail comprehensive plan which details trails and parks
- CAT transit is starting to expand local network
- Raised medians could be applied in moderation – plowing challenges

Follow Up:

- Why is Cascade the preferred route over Westcliff?

DKS Notes #2:

Grant Polson
Hood River Chamber of Commerce Chair and West Cliff Lodge Owner/Operator
March 19, 2021

Chamber President last year, owns hotel west of the study area, plans to expand hotel to 2nd largest in town

Familiar with TSP and future plans for historic trail on Cascade, trails will go in front of hotel

rides his bike a bunch, does not ride on Cascade

lives near 30th/May Street, bikes to work on Westside Trail, Mt Adams and across overpass or Westcliff Dr, low volume and nice ride,

Bike lanes on Cascade has drainage and sewer ditches, challenging to ride

Wasco/20th trail connects to skatepark, new trail from 20th behind shopping center, connecting to Westside Trail, parallel route south of Cascade

Will not direct hotel customers to use Cascade as the bike route, will promote West Cliff and nearby trails, West Cliff is mostly hotel users, two lanes, low volumes, gradual to no grade, 20th near skatepark is a little steep

I-84 interchange is sometimes congested, future roundabout at Mt Adams, could add left turn lanes for better flow, maybe slip right lane to County Club

Don't make Cascade too wide and impact businesses, keep it pleasant for walking, add trees, don't put bike lanes on street

3 lanes would be fine, complicated where Cascade splits on east end, 13th/Oak is the bottleneck, it's busy on Cascade between overpass and Mt Adams

Reroute truck traffic to Country Club that are headed to the valley, easier to drive, keep off Cascade and out of downtown, too much congestion and pedestrians

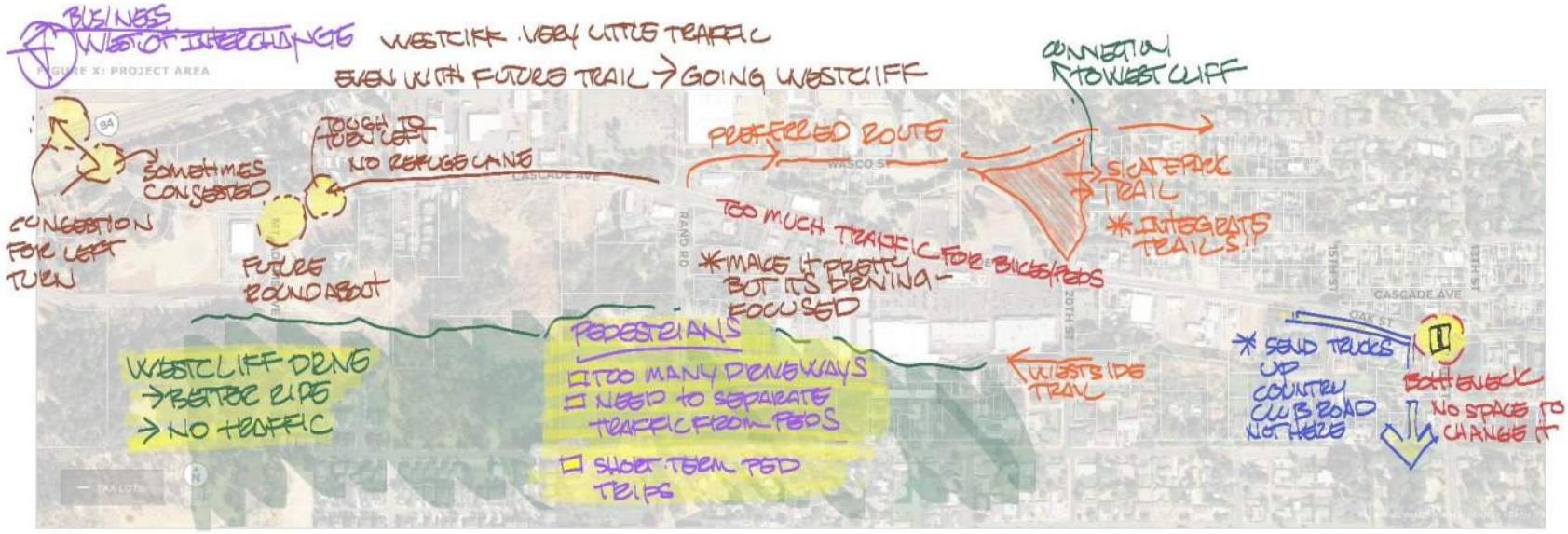
To be pedestrian friendly, need to separate them from traffic, not sure there is enough room, locals will prefer to use parallel routes for walking trips,

The center turn lane is more important than a buffer bike lane, Grant will still take alternative route for through trips

Parks and Rec has a new trail plan,

Reach out to CAT, might want bus stop pullouts, would like bus routes to go to his hotel

MIG Map:


BUSINESS WEST OF INTERCHANGE
WESTCLIFF - VERY LITTLE TRAFFIC
EVEN WITH FUTURE TRAIL → GOING WESTCLIFF
CONNECTION TO WEST CLIFF
PREFERRED ROUTE
WASCO ST
SCATTER TRAIL
* INTEGRATE TRAILS!!
SOMETIMES CONGESTED
TOUGH TO TURN LEFT
NO REFUGE LANE
CONGESTION FOR LEFT TURN
FUTURE ROUNDABOUT
CASCADE AVE
RAND RD
20TH ST
TOO MUCH TRAFFIC FOR BIKES/PEDS
* MAKE IT PRETTY BUT ITS DENIAL-FOCUSED
PEDESTRIANS
☐ TOO MANY DRIVEWAYS
☐ NEED TO SEPARATE TRAFFIC FROM PEDS
☐ SHORT TERM PED TRIPS
WESTCLIFF DRIVE → BETTER BIKE → NO TRAFFIC
WESTSIDE TRAIL
* SEND TRUCKS UP COUNTRY CLUB ROAD NOT HERE
OAK ST
15TH ST
13TH ST
CASCADE AVE
BOTTLENECK
NO SPACE TO CHANGE IT

SECTION 4. INTERVIEW NOTES – GROUP 3

DKS Notes #1:

Attendees: Megan Ramey, Heather Stayton

Interview notes:

- Heather Stayton – Thrive Hood River (LU advocacy)
- Megan Ramey – planning commission; Columbia Area Transit board
- Biggest corridor challenges:
    - Heather – "typical traffic sewer" strip malls, underused real estate (potential for higher density or mixed use developments), inhospitable for peds/bikes
    - Megan – lack of sense of place/identity, lack of connections between affordable housing and basic needs, limited crossing opportunities/desire line travel
        - Most vulnerable population not being served
    - Megan – evacuation concern; Mt. Adams and Rand intersections are key choke points
    - Megan – missing sidewalk over I-84; Cascade bike lanes not suitable for AAA
        - Trail through town needs to include AAA facilities
- Mixed use development not economically feasible today, potentially some other zoning challenges
- Missing significant ped/bike infrastructure along corridor to connect housing to Walmart and safeway even though they are relatively close
- Westcliff Drive
    - Megan – Westcliff is not suitable as an alternative to Cascade (no business activities, safety – particularly speed on hill under freeway, steep grades on hill); future trail will turn Cascade into a bicycling destination (future bike hostel plans)
    - Heather – if trail intends to revitalize route then the route should be followed; existing infrastructure deficiencies should be improved to make it better
- Repeat design motifs from elsewhere on Cascade Avenue (stonework, white guard rail)
- Megan – supports two-way cycle track on north side of Cascade Ave – without adequate protections people will just bike on the sidewalk
- Corridor users:
    - Heather – could have additional users in the future, still car-heavy use, alienating to peds, future residential development could change how people use Cascade
    - Megan – vehicle trips will continue (major corridor) but mix could change with appropriate infrastructure, great biking/walking corridor, trail could bring a larger shift in social norms

- Future trail connections are for transportation not just recreation
- New apartments to SW of Safeway off Clearwater Lane
- Destinations/Amenities for multimodal users:
    - Groceries, other retail
    - Skate Park
    - Power station gym/potential future bike shop site
- Redevelopment opportunities
    - Underutilized parking near Safeway development could be a future opportunity
    - ODOT yard (likely cost prohibitive to relocate)
- Design features:
    - Roundabout or other gateway treatments, more mid-block crosswalks, wayfinding signage, trees
- Mid-block crossings:
    - Safeway
    - Between Rand and Mt. Adams (up to two crossing locations)
        - Including future trail connection to Sherman Ave via Maxs Place
    - Transit stops
- Future connection between Westcliff and the Hook
- Congestion:
    - Heather – what is congestion? It's all relative
    - Megan – similar opinion
    - Likely small town vs. city opinions
    - Cascade/Mt. Adams; Cascade/Rand intersections are very congested and left-turns can be challenging
    - Megan – adding lanes will not solve problem would just push elsewhere, lower speeds is a better solution
- Access management:
    - Megan – as many as possible; corridor should be safe for most vulnerable
- Ebike charging station

Things to research:

- Allegheny passage trail design treatments
- TSP amendment survey results (over 50 written comments asking for better biking/walking infrastructure)
- Need targeted outreach to mobile home park, affordable housing development/Columbia Housing Authority

DKS Notes #2:

Heather Staten – resident, Thrive
Megan Ramey - active transportation rep for ODOT Region 1 ACT, Planning Commission
March 19, 2021

Heather

Cascade is a sprawling suburban street, lots of underused real estate, lots of vacant parking, could have higher density/mixed use, Westside area plan evaluated development potential

Cascade has a cursory look in the Westside area plan, City has discussed development potential, waiting for market to catch up, needs different zoning

Close destinations for walking trips from affordable housing but conditions are terrible

Should follow the historic route – improve the infrastructure to promote a gateway, shopping district, make it pleasing to visitors

PSU study - promoted elements to support historic design elements in streetscape

Needs to serve existing users, it's car-centric and exposed when walking, not part of our cute town

Future residential development will change how corridor is used, County is interested in affordable housing development on south side of Cascade

Future trail planned parallel to Cascade, south of the commercial center, new apartments on Clearwater (behind Safeway)

Would like to see infill in the Safeway commercial center, create a less suburban feel

ODOT owns property across from Safeway, potential for affordable housing, cost prohibitive to relocate yard use

Placemaking – roundabout at Mt Adams

Doesn't see the congestion or parking issues,

Recommended including mid-columbia housing at workshop

Megan

PC thinks there is a lack of sense of place, gateway to west Hood river, dumped into generic suburban area, incredible opportunity to support affordable housing with multimodal connections, mid-block crossings are safety issues, not serving the most vulnerable population,

Mt Adams and Rand intersections would fail in the event of an emergency event, supports Mt Adams roundabout, better for safety and traffic flow

Citizen – Google doesn't provide walking over freeway, routes to Westcliff, does not agree

Bike lanes are not for all ages or abilities, major barrier to biking, bikeabout.com (travel guide for cyclists), potential with new historic trail to bring users through town

Supports biking on Cascade, not Westcliff

- route needs services, important to bring tourist customers for economic development
- Westcliff is not safer, grade is not family friendly, sharp turn at bottom of the hill, hill after tunnel
- Historic trail brings opportunity for bike businesses, wants to open a bike hostile on Cascade for new cycle tourists

PSU study – liked their ideas, supports a cycle track and reducing friction between modes, need a protected bikeway, people may bike on sidewalk

Existing vehicle use will remain, connects freeway to neighborhoods and wineries,

Future corridor user mix is changing, should be easy to walk and bike, straight and flat, in 5-7 years when historic trail opens – tourism will fundamentally change the needs and promote more walking and biking, activity will be perceived as safe for walking and biking

Safeway is a destination for biking, skatepark attracts pedestrians, powerstation gym attracts walking and biking

Placemaking – dutch-style roundabout at Mt Adams, more mid-block crossings (at Safeway and 2 between Rand and Mt Adams, align with trail connection near Ixtapa), wayfinding for the historic trail, trees,

Recent TSP amendment city survey, Megan was surprised that responses asked for better walking and biking facilities, traffic isn't the only need

Plans to connect The Hook with a floating bridge to Westcliff for walking and biking

Doesn't see the congestion as a problem, Mt Adams and Rand are terrible intersections and scary to make a left turn, solvable for better street design, don't want more lanes, slower flow over bottlenecks

Supports raised medians and landscaping, safety benefits for walking and biking, incorporate bus stops into raised sections, align bus stops with enhanced crossings

Wants e-bike charging stations (solar) for tourists coming into town

MIG Map:



SECTION 5. INTERVIEW NOTES – GROUP 4

DKS Notes #1:

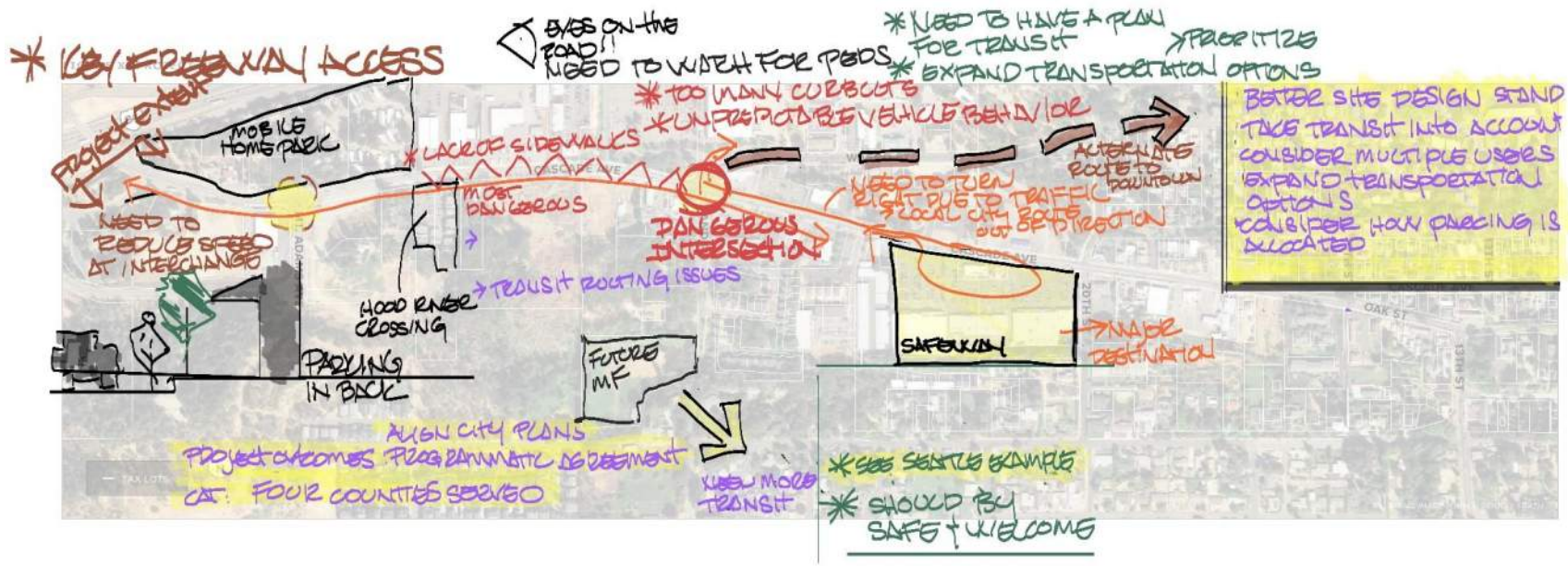
Attendees: Patty Fink (CAT Executive Director) and Kathy (Mobility Manager MCEDD; Transportation Options Grantee for Hood River County)

Interview notes:

- Patty (CAT) – CAT headquarters close to Cascade/Rand intersection
    - Key corridor to access freeway
    - Cascade serves critical businesses (safeway)
    - Future development (multifamily)
    - More through streets to better serve neighborhoods
    - Transit plazas (transfers, community hub) at Mt. Adams, Rand Road
- Mt. Adams/Rand intersections – need improvements to help people cross; transit access is difficult on Rand so bus has funky routing to turn around (Wasco to Mt. Adams for a turn around)
- CAT prefers Wine Country Ext to better serve neighborhoods
- Westside plan is a great resource for transit routes
- Patty: Bike-transit conflicts need to be dealt with; Hood River maybe doesn't focus on transit needs as much
    - Need to be able to see bikes
- Can't over-narrow lanes – turning movements allow for transit//transit access in neighborhoods (by my guess this would mean 12' lanes? Maybe 11' would be okay? No hard number from CAT)
- Good bike-transit-ped corridor examples:
    - Kathy: Seattle example – bus islands, bus stops in lane
- Street environment:
    - Sidewalks critical
    - Manage driveways (unpredictable vehicle movements)
    - Transit stops on Cascade Avenue (in addition to other stops)
    - Speed – slow people down as they get off the freeway
        - Traffic circle
        - Speed humps
    - Parking buffered bike lanes are a possibility on south side
    - Zoning changes/frontage changes/setback changes (Mexican restaurant built at back of lot)
- Rand Road intersection is a safety problem – largely speed related

- Buses and freight – predictability is important to
- Key corridor challenges
    - Patty: Hood River Crossing to Rand Road – speeding is issue and there is no safe walking path on Cascade
    - Kathy: Navigating curb cuts (especially on bike); crossing challenges/nobody looking for people
- Kathy: Cascade should be safe and welcome for all users
- Patty: would currently suggest people access downtown through Wasco rather than Cascade; some grade on Wasco, but less traffic
- Even if alternate routes are provided, Cascade still needs attention to serve major destinations on Cascade
- City needs to decide on future vision if car is king or people use transportation options
    - Hood River already has great ped/transit mode share, so we should make sure those voices are heard
    - Conflicts between resident voices and business communities
- Really need to focus on mitigating conflict points

MIG Map:



SECTION 6. INTERVIEW NOTES – GROUP 5

DKS Notes #1:

Attendees: Rajiv (citizen)

Interview notes:

- Rajiv has previously provided comments to ODOT/City – do we have these?
- Transit experiences
    - Lives in Parkdale
    - Uses transit for everything: getting to Hood River, Portland
    - Ran into Terra at a transit layover stop where they learned about the project; disappointed by lack of connections to trails with transit
    - Transit dumps into parking lot, no bus stops/shelters,
    - Run over crossing at Rand to access food during layovers
    - No acknowledgement of transit in TSP
    - Involved in WACP process as a CAT representative
    - Needs connection between Ruthton Park and City – existing solutions are more of a bandaid approach
    - Who are project stakeholders?
        - Crossing issues
        - Business access issues
    - Need diagram of entire corridor to represent vision, not intersection-specific approach
    - Traffic speed
    - How is speed tied to balancing needs of different users
    - City success was initially tied to transit and historic downtown/hotels → incongruent with existing Cascade Avenue
    - Project should be transformative to reconnect city between historic ends
    - Are there lessons learned from other ODOT projects? Could those experiences be leveraged for this corridor?
        - OR 43 in West Linn
    - Challenge ODOT to be innovative for corridor design treatments
    - City needs to be clear on what they want and state this publicly → specifically how transit can be accommodated
    - Corridor as a whole needs to be reimagined to create a cohesive place
    - Different types of transit riders (locals, tourists, etc.)

DKS Notes #2:

Raj

Raj has submitted comments before on the corridor

He is a transit user, lives in Parkdale, takes transit for daily trips, Cascade corridor has 140 daily transit trips, need to be accommodated

No connectivity for walking trips to transit, need sidewalks and signs for trail connections

Need bus stops and amenities, make it visible

CAT express bus to PDX

Rand/Cascade intersection is difficult, can't turn lane today, dangerous crossing for pedestrians

Determine who the stakeholders are, who are other people that use the corridor

Need a vision for the corridor

Speeds are an issue

City economic success is tied to transit

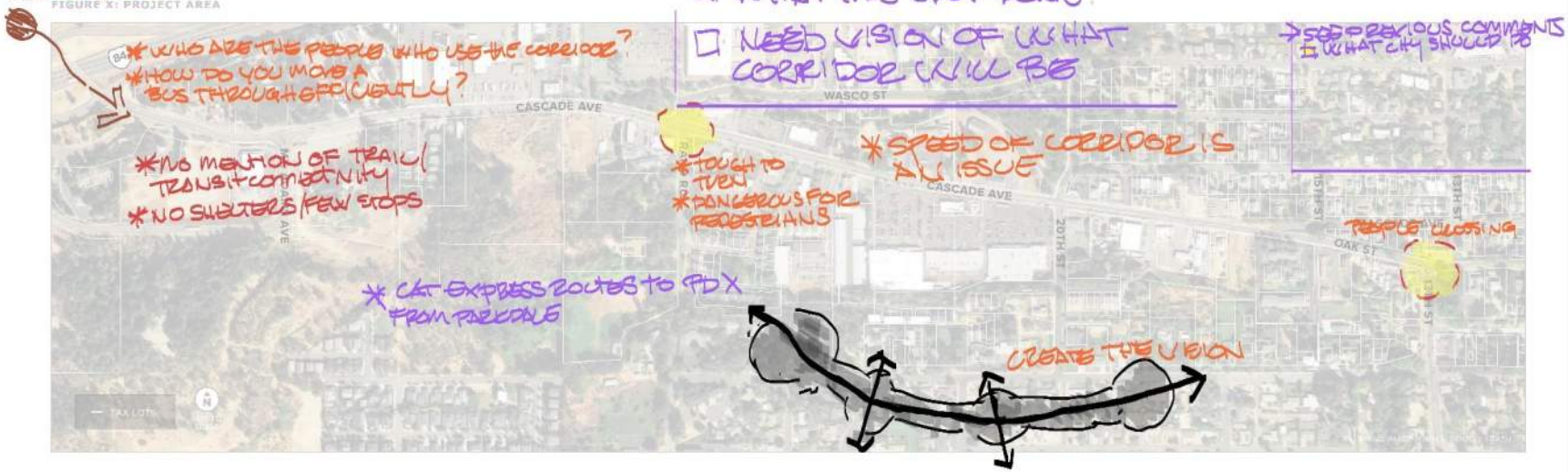
Cascade is a connector between 2 historic ends

Are there existing examples of highways that could be used for Cascade?

MIG Map:

COUNTY PARK → LOOK AT THIS (RUPSON PARK) AREA

GORGE TRAIL



SECTION 2.
ACCESS MANAGEMENT PLAN

ACCESS MANAGEMENT CONCEPT

DATE: November 10, 2021

TO: Terra Lingley | ODOT

Dustin Nilsen | City of Hood River

FROM: Rochelle Starrett, Reah Flisakowski, Sarah Keenan | DKS

SUBJECT: Cascade Avenue Access Management Concept Project #20020-010

Access management is the practice of managing the location and design of vehicular connections to a roadway. It is an effective tool for improving the safety and efficiency of travel along a corridor by reducing the number of potential conflict points and making the environment less stressful for all users. Access management will be one component associated with implementing the solutions considered for Cascade Avenue; however, specific recommendations for individual property access points will not be included as part of the Design Refinement Plan. The Access Management Concept will provide direction and decision-making criteria, referred to as the Key Principles and Methodology, but decisions about changes to individual property access points will occur through future land use applications and/or the engineering design phase once funding for implementation becomes available. The Key Principles and Methodology were developed and refined based on input from the project team. This memorandum presents the access management Key Principles and Methodology for the Cascade Ave Design Refinement Plan and describes how and when they will be used to make decisions regarding changes in access to Cascade Avenue. **This is not a finalized determination of exact access locations or treatments, and further coordination between property owners, ODOT and the City will be required before modifications are implemented. This document should be used as guidance when access management decisions are considered on Cascade Avenue.**

ACCESS MANAGEMENT PROCESS IN OREGON

Senate Bill 408, enacted in 2013, changed Oregon law concerning the management of access onto state highways. One of the most significant changes included procedures to increase the level of involvement of property owners, local government, and other stakeholders in decisions that would affect property access during the planning, development, and design of state highway projects. This includes guidelines for developing Key Principles and Methodology during the highway facility planning process, now a part of Oregon Administrative Rule 734-051-7010. The Key Principles and Methodology are used to assess each state highway access point and make recommendations as part of a highway facility plan.

Senate Bill 408 also outlines a process for property owner and local government engagement once a project transitions to project delivery (*i.e.,* engineering design and construction). The process that applies to project delivery is documented in Oregon Administrative Rule 734-051-5120. It is similar to the process for facility plans in that ODOT must notice affected property owners in writing in advance of finalizing the Methodology. Property owners again have the option to request a review of the Methodology through a Collaborative Discussion or Dispute Review Board.

Once the Methodology has been finalized by the City and ODOT, following the property owner review period during project delivery, the project team must review all decisions affecting property access to the highway within the project limits for consistency with the Key Principles and Methodology. Property owners will be notified of any decisions affecting their properties and will have the ability to appeal the decisions according to the access rights associated with each access and property.

EXISTING CONDITIONS

Today, Cascade Avenue has a significant number of driveway access points between Interstate 84 (I-84) and 13th Street. These accesses primarily serve commercial properties with limited residential accesses; existing spacing standards for Cascade Avenue are summarized in Table 1. The frequent curb cuts for access result in conflict points for bicycles, pedestrians, and vehicles. Cascade Avenue experiences moderate traffic volumes and congested conditions during peak hours. Drivers turning left from side streets and driveways along Cascade Avenue experience long delays due to the continuous flow of traffic on Cascade Avenue. Left-turning traffic from Cascade Avenue also creates long delays for through traffic flow in locations without a center turn lane. The existing congestion for left-turning traffic impacts CAT bus routing, increases transit travel times, and reduces property access for new developments[1]. Congestion can also degrade safety along Cascade Avenue as drivers accept shorter gaps to turn or fail to watch for bicyclists or pedestrians when accessing the frequent driveways along the corridor. Existing sidewalk gaps, inconsistent bike lanes, and limited safe crossing opportunities compound the safety challenges for bicyclists and pedestrians.

[1] The City of Hood River and ODOT have previously required turn restrictions for new development on Cascade Avenue.

TABLE 1: EXISTING ACCESS SPACING STANDARDS FOR CASCADE AVENUE[2]

CASCADE AVENUE SEGMENT	ACCESS SPACING STANDARD
EXIT 62 INTERCHANGE AREA[1]	First Right-In/Right-Out Access on Cascade Avenue (Eastbound): 750 feet Last Right-In/Right-Out Access on Cascade Avenue (Westbound): 750 feet First Full Access Intersection: 1320 feet
EXIT 62 (OUTSIDE OF INTERCHANGE AREA) TO 800 FEET WEST OF RAND ROAD[2]	350 feet
800 FEET WEST OF RAND ROAD TO 13TH STREET[3]	250 feet

1. Access spacing standards based on Table 17: Minimum Spacing Standards Applicable to Freeway Interchanges with Two-Lane Crossroads and Table 18: Minimum Spacing Standards Applicable to Freeway Interchanges with Multi-Lane Crossroads for a fully developed urban area
2. Access spacing standards based on Table 16: Access Management Spacing Standards for District Highways with Annual Average Daily Traffic (AADT) of More Than 5,000 Vehicles for an urban roadway with a posted speed of 35 mph
3. Access spacing standards based on Table 16: Access Management Spacing Standards for District Highways with Annual Average Daily Traffic (AADT) of More Than 5,000 Vehicles for an urban roadway with a posted speed less than 30 mph

Although the access spacing standards in Table 1 represent the existing, minimum distance between accesses, providing less frequent accesses can better protect bicyclists and pedestrians travelling on Cascade Avenue by reducing the total number of conflict points. Stricter access spacing standards may be needed to ensure developer compliance with the strategies identified in this memo and to improve safety for bicyclists and pedestrians.

KEY PRINCIPLES AND METHODOLOGY

Improved access management would mean fewer approaches (commonly referred to as driveways) on the state highway which would consolidate left turns and reduce conflict points for bicycle, pedestrian, and vehicle traffic. More managed access would improve safety and mobility for all traffic. However, it is important to consider the impacts to businesses.

The Key Principles and Methodology for access management provide a framework to assess which properties abutting a state highway will retain or obtain access during and after plan implementation. They must support the overall objectives of the Design Refinement Plan while also recognizing the importance of highway access for economic development. Table 2 summarizes the Key Principles and Methodology for access management on Cascade Ave.

[2] Oregon Highway Plan Appendix C. *Access Management Standards.* https://www.oregon.gov/ODOT/Planning/Documents/OHP.pdf

TABLE 2: KEY PRINCIPLES AND METHODOLOGY FOR ACCESS MANAGEMENT

KEY PRINCIPLE	METHODOLOGY ELEMENTS
Safety Increase or maintain the safety of all road users	• Define the width of undefined access within open frontage using guidance from the Oregon Highway Design Manual to a width that will serve the existing and planned uses of the property • Reduce the number of potential conflict points within the functional area of public streets • Mitigate access configurations that require backing across the sidewalk onto the State Highway • Evaluate sight distance for access points based on State, National, and local standards
Mobility Ensure people and goods travel efficiently and reliably through the corridor	• Evaluate compliance with ODOT's access spacing standards for Cascade Avenue (see Table 1) • Aim to meet the spacing standards by consolidating access points and driveways or moving access to side streets
Multimodal Options Support a multimodal environment that connects people to destinations	• Modify or relocate accesses as needed to allow for the construction of ADA compliant pedestrian facilities • Reconstruct or modify access points as needed to provide continuous sidewalk and/or bicycle facilities along property frontages per the Design Refinement Plan • Support travel for bicyclists and pedestrians on an urban connection between planned segments of the Historic Columbia River Highway State Trail
Economic Development Support the viability of existing and future businesses along Cascade Ave	• Consider the level of direct access to Cascade Avenue that is appropriate for the existing or planned development according to the Comprehensive Plan • Locate and design access to adequately serve the volume and type of traffic reasonably anticipated to enter and exit the property based on existing and planned uses • Maintain the ability for businesses to have freight access and receive deliveries • Consider site circulation and parking affected by proposed access modifications and closures
Feasibility- Develop a concept with a clear and achievable approach to implementation that is consistent with the Cascade Ave Design Refinement Plan	• Ensure that existing access is consistent with the property's access rights • Locate and design access to minimize topographical or environmental constraints • Locate and design access to provide effective vehicle circulation

CASCADE AVENUE ACCESS MANAGEMENT STRATEGIES

The project team applied the Key Principles and Methodology for access management on Cascade Avenue to develop a set of access management strategies that could be applied to specific groups of tax lots that face similar access constraints, seen in Figure 1. Specific access constraints and recommended access management strategies for each group of tax lots shown in Figure 1 is also summarized in Table 3, below. These strategies will help the residents and business owners understand how individual access decisions may be made on Cascade Avenue at the time of project implementation or as a property redevelops. However, no specific access decisions will be made until funding has been secured to advance the recommended solution to the engineering design phase or a development application is submitted.

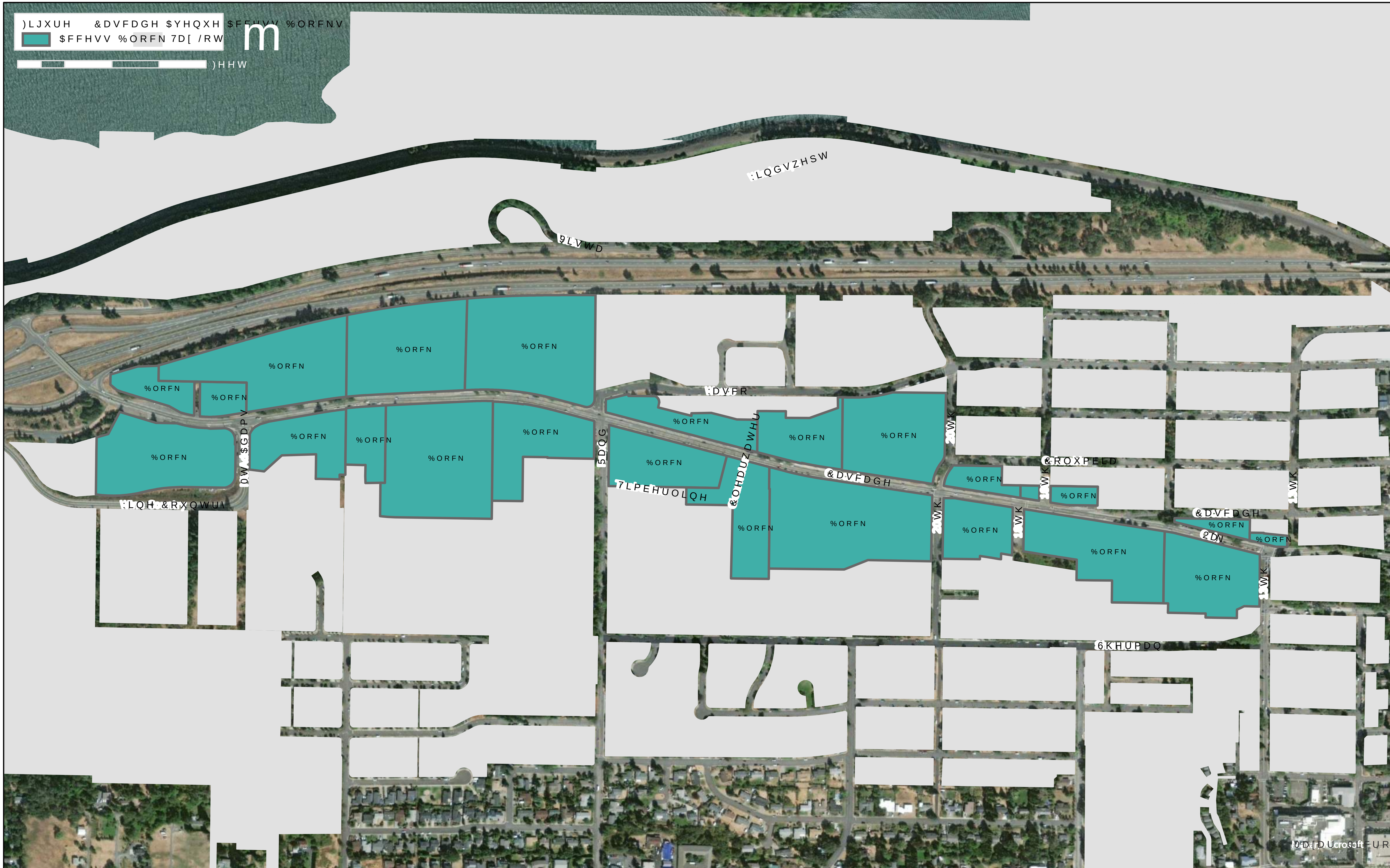

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TABLE 3: ACCESS MANAGEMENT STRATEGIES FOR CASCADE AVENUE

BLOCK 1	
Existing Constraints:	*Future Recommendations:*
Block 1 is currently only accessible from Cascade Avenue, with I-84 and steep topography limiting other opportunities. Block 1 is also bounded by the I-84 eastbound ramp terminal intersection to the west and the intersection of Cascade Avenue/Mt. Adams Avenue to the east, which creates areas of potential conflicts that will further limit access options.	Because Cascade Avenue is the crossroad through the I-84 interchange and Block 1 is within the interchange influence area (1,320 feet from the ramp terminals), direct access to Cascade Avenue should be minimized and turn restrictions on Cascade Avenue may be required. However, site plan review will be required pursuant HRMC 17.20 Street and interchange improvements (defined as parking modifications, access removal, new lanes, new streets). The site plan review shall include findings and solutions addressing safety, mobility, and how the grid system, pedestrian system, bike system, parking and economic enterprise will be protected and/or enhanced by the proposed. Site plan review will consider requests to include a deviation to allow for continued left turn movements into the site.
BLOCK 2	
Existing Constraints:	*Future Recommendations:*
Block 2 is currently only accessible from Cascade Avenue and Mt. Adams Avenue. As part of the IAMP, ODOT and the City converted the vehicular connection between Cascade Avenue and Wine Country Avenue to a bicycle and pedestrian only path.	Because Cascade Avenue is the crossroad through the I-84 interchange and Block 2 is within the interchange influence area (1,320 feet from the ramp terminals), direct access to Cascade Avenue should be minimized and turn restrictions on Cascade Avenue may be required. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways. In addition, access points should not create conflicts with the planned intersection improvements at Cascade Avenue/Mt. Adams Avenue. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Options to establish access to Mt. Adams Avenue for all parcels in Block 2 should be explored to reduce the reliance on Cascade Avenue. Access points to Mt. Adams Avenue should be limited to avoid turning conflicts between the two intersections with Cascade Avenue and Wine Country Avenue. Access could also be provided to Block 2 through the existing stub of Country Club Road although access control rights (provided in the appendix) may need to be modified.

BLOCK 3	
Existing Constraints:	*Future Recommendations:*
Access to Block 3 is currently only available from Cascade Avenue and is constrained by I-84 to the north and steep topography to the west.	Because Cascade Avenue is the crossroad through the I-84 interchange and Block 3 is partially within the interchange influence area (1,320 feet from the ramp terminals), direct access to Cascade Avenue should be minimized. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. In addition, access points should be restricted to avoid conflicts with the planned improvements at the Cascade Avenue/Mt. Adams Avenue intersection.
BLOCK 4	
Existing Constraints:	*Future Recommendations:*
Block 4 is currently only accessible from Cascade Avenue and Mt. Adams Avenue but could also be accessible from the future Wine County Avenue extension to the east. No opportunities for access exist to the east due to the existing affordable housing on block 6 to the east.	Access should be from Mt. Adams Avenue or the future Wine Country Avenue extension to the east as much as feasible to reduce reliance on Cascade Avenue. However, options for additional access to Mt. Adams Avenue may be limited due to potential turning conflicts between the two intersections with Cascade Avenue and Wine Country Avenue. Easements through tax lots immediately south of Block 4 should be considered to provide access to the future extension of Wine Country Avenue to the south. Because Cascade Avenue is the crossroad through the I-84 interchange and Block 4 is partially within the interchange influence area (1,320 feet from the ramp terminals), direct access to Cascade Avenue should be minimized and located as far east as feasible where allowed. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/Mt. Adams Avenue intersection.

BLOCK 5	
Existing Constraints:	*Future Recommendations:*
Block 5 is currently only accessible from Cascade Avenue and is constrained by I-84 to the north.	Access should be consolidated to a future private street connection as much as feasible to reduce reliance on Cascade Avenue. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways. Any future private street connection should be developed to align with a future local street connection through Block 7 to the south.
BLOCK 6	
Existing Constraints:	*Future Recommendations:*
Block 6 is currently only accessible from Cascade Avenue. Existing affordable housing within Block 6 may limit options to extend accesses to the east or south.	Without future redevelopment, these properties will retain access to Cascade Avenue. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/Mt. Adams Avenue intersection. If redevelopment occurs, access should be consolidated as much as feasible to the future Wine Country Avenue extension to the south or through a connection west to Mt. Adams Avenue. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 7	
Existing Constraints:	*Future Recommendations:*
Block 7 is currently only accessible from Cascade Avenue.	Access should be consolidated as much as feasible to the future Wine Country Avenue extension to the south or a future north-south local street connection between Cascade Avenue and Wine Country Avenue. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.

BLOCK 8	
Existing Constraints:	*Future Recommendations:*
Block 8 currently has access to Cascade Avenue and Rand Road/Wasco Street, but I-84 to the north and existing buildings to the west and east of this block may constrain future access opportunities.	Properties located within Block 8 currently meet the access spacing standards for Cascade Avenue, although the westernmost driveway is located too close to the easternmost driveway in Block 5. Although accesses will not require consolidation in the future to meet the spacing standard, no additional accesses to Cascade Avenue may be provided within this block with future redevelopment. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/Rand Road intersection. Future shared access points within this block or to Block 5 should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 9	
Existing Constraints:	*Future Recommendations:*
Block 9 currently has access to Cascade Avenue and Rand Road. Topography to the south may constrain future access opportunities.	Access should be consolidated as much as feasible to the future Wine Country Avenue extension to the south. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Future access points should be restricted as necessary to support planned improvements at the Cascade Avenue/Rand Road intersection. As part of the improvement project, access to the parcel on the southwest corner will be restricted. To minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways. These agreements could support access to the proposed local street extension between the future Wine Country Avenue extension and Cascade Avenue in Block 7 to the west.

BLOCK 10	
Existing Constraints:	*Future Recommendations:*
Block 10 currently has access to Cascade Avenue and Wasco Street at the western edge of the block. Topography to the north may limit further access to Wasco Street.	Access points on Cascade Avenue should be consolidated as much as feasible. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid impacts to the planned improvements at the Cascade Avenue/Rand Road intersection. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 11	
Existing Constraints:	*Future Recommendations:*
Block 11 currently has access to Cascade Avenue, Rand Road, and Timberline Drive, a private street connection. Existing residential developments limit the opportunity to provide access to Clearwater Lane to the east.	Access points on Cascade Avenue should be consolidated as much as feasible. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid impacts to the planned improvements at the Cascade Avenue/Rand Road intersection. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 12	
Existing Constraints:	*Future Recommendations:*
Block 12 currently has limited access to Cascade Avenue. Most properties in this group access Cascade Avenue through the existing private street connection, Clearwater Lane.	Access should continue to be taken on Clearwater Lane for these properties. As redevelopment occurs, vehicle traffic should be directed to Clearwater Lane over Cascade Avenue through cross-over easements and parking lot designs that include inter-parcel roadways.

BLOCK 13	
Existing Constraints:	*Future Recommendations:*
Block 13 currently has access to Cascade Avenue, and topography may limit future connection to the north.	Access points should be consolidated as much as feasible. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 14	
Existing Constraints:	*Future Recommendations:*
Block 14 currently has access to both Cascade Avenue and 20th Street. However, the existing site development and existing businesses in Block 12 to the east limit future connectivity options.	Properties within Block 14 currently meet the access spacing standard for Cascade Avenue although the westernmost driveway in Block 14 is located too close to the easternmost driveway in Block 12. Although accesses will not require consolidation in the future to meet the spacing standard, no additional accesses to Cascade Avenue may be provided within this block with future redevelopment. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/20th Street intersection.
BLOCK 15	
Existing Constraints:	*Future Recommendations:*
Block 15 currently only has access to Cascade Avenue, and topography may limit future connections to the north.	Access points should be consolidated as much as feasible with future redevelopment. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/20th Street intersection. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.

BLOCK 16	
Existing Constraints:	*Future Recommendations:*
Block 16 currently has access to both Cascade Avenue and Columbia Street, immediately to the north. However, the arrangement of the existing developments limits opportunities for shared access points.	Access points should be consolidated as much as feasible with future redevelopment. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/20th Street intersection. Future access should be provided on Columbia Street to the north. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 17	
Existing Constraints:	*Future Recommendations:*
Block 17 currently has access to Cascade Avenue, 18th Street, and 20th Street. Topography to the south may limit future access opportunities.	Access points on Cascade Avenue should be consolidated as much as feasible with future redevelopment. Where access points to Cascade Avenue remain, driveways on opposite sides should be aligned across from each other or restricted to right-in/right-out to avoid potential turning conflicts. Access points should also be restricted as necessary to avoid conflicts with the planned improvements at the Cascade Avenue/20th Street intersection. Future access should be provided through either 18th Street or 20th Street, and future development should explore a new local street connection between the existing east-west public right-of-way for 18th Street and 20th Street to provide additional access opportunities. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 18	
Existing Constraints:	*Future Recommendations:*
Block 18 currently has access to Cascade Avenue and 18th Street. Topography and existing housing to the north may limit future access opportunities.	Access points on Cascade Avenue should be consolidated as much as feasible with future redevelopment. Turning conflicts with 18th Street to the south, the existing pedestrian crossing, and the beginning of the westbound separated bicycle facility at the Cascade Avenue/Oak Street intersection should be avoided, and access restrictions may be needed in these locations. Future access should be provided through the existing 18th Street. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.

BLOCK 19	
Existing Constraints:	*Future Recommendations:*
Block 19 currently only has access to Cascade Avenue and 18th Street. Existing residential homes to the south block access to Sherman Avenue, and existing affordable housing to the east in Block 21 may limit connections further east to 13th Street.	Access points on Cascade Avenue should be minimized with future redevelopment. Future access should be provided through an extension of 18th Street through the existing public right-of-way to the west and south of Block 19. While not all parcels in Block 19 are immediately adjacent to the public right-of-way, shared access points for 18th Street should be supported through cross-over easements and parking lot designs that include inter-parcel roadways.
BLOCK 20	
Existing Constraints:	*Future Recommendations:*
Block 20 includes existing single family homes bounded by Cascade Avenue to the north and Oak Street to the South. These residences currently have accesses on Cascade Avenue although on-street parking is available behind these homes on Oak Street.	Access will be maintained on Cascade Avenue for all homes. Public, on-street parking on Oak Street will be eliminated as part of the proposed new sidewalks.
BLOCK 21	
Existing Constraints:	*Future Recommendations:*
Block 21 is currently only accessible from Oak Street and 13th Street. Existing homes to the south limit connectivity to Sherman Avenue, while existing affordable housing developments may limit connections to Block 19 to the west.	Without future redevelopment, these properties will retain access to Oak Street and 13th Street. Access points should be consolidated as much as feasible with future redevelopment. To help minimize direct access to Cascade Avenue, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways. Existing accesses adjacent to the Oak Street signal may be subject to turn restrictions or circulation changes as part of this project to further mitigate the potential for conflicts on an interim basis.

BLOCK 22	
Existing Constraints:	*Future Recommendations:*
Block 22 is currently only accessible from Oak Street, and existing topography and homes to the north limit alternative access options.	Without future redevelopment, these properties will retain access to Oak Street. If redevelopment occurs, access to these properties should be provided by extending 13th Street to the north to connect Oak Street and the existing stub of 13th Street. The existing topography may limit the 13th Street connection as a pedestrian and bicycle pathway only. If this alignment of 13th Street is not feasible for vehicles, access should be provided to the existing stub of 13th Street, north of Oak Street, which would direct vehicles to Cascade Avenue to mitigate the potential for turning vehicle conflicts at the existing signal. To help minimize direct access to Oak Street, shared access points should be supported through cross-over easements and parking lot designs that include inter-parcel roadways. If cross-over easements are not feasible due to the parcel size, any future access on Oak Street, outside of the existing signal, will be subject to turn restrictions to further mitigate the potential for conflicts.

The access management strategies presented in Table 3 and existing access spacing guidelines were applied as part of the design refinement effort to establish a vision for future accesses on the corridor. This review considered the feasibility of establishing cross-over easements within access blocks or new local street connections to establish preferred locations for full access or right-in/right-out driveways to Cascade Avenue to guide the City during the development review process.

APPENDIX

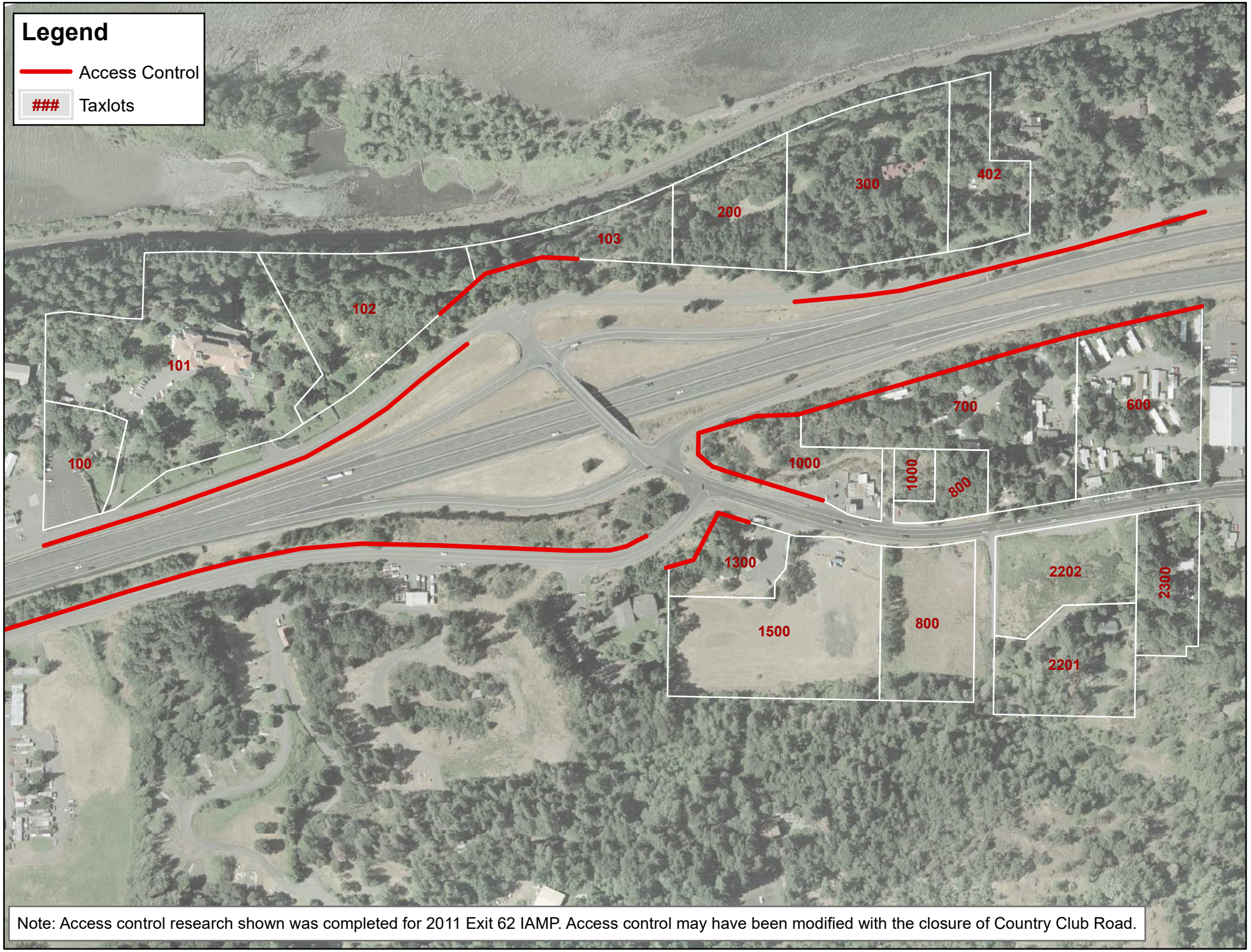
CONTENTS

SECTION 1. EXIT 62 IAMP ACCESS CONTROL MAP

DKS

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SECTION 1. EXIT 62 IAMP ACCESS CONTROL MAP



Note: Access control research shown was completed for 2011 Exit 62 IAMP. Access control may have been modified with the closure of Country Club Road.

SECTION 3.
DESIGN CONCURRENCE

OREGON DEPARTMENT OF TRANSPORTATION
Urban Design Concurrence
CONTEXT AND MODAL INTEGRATION

Date: November 10, 2021

Project/Corridor Title: Hood River Cascade Avenue Design Refinement Plan

Key Number: NA

EA: NA

Planning Document Summary
List any applicable planning or environmental reports, plans or studies Hood River Cascade Avenue Design Refinement Plan (ongoing) Westside Area Concept Plan, 2017 Hood River Transportation System Plan, 2011 (amended 2021) I-84 Exit 62 Interchange Area Management Plan, 2011

General Project Information

	Rt. No.	Hwy No.	NHS	Functional Classification	State Classification	Reduction Review Rt	Truck %	Posted Speed	Current ADT
Route Information	US 30	100	**Yes** ☐ **No** ☒	Urban Minor Arterial	District High-way	**Yes** ☒ **No** ☐	3.2%	20-35	13,000-15,000

	Funding Category	City and County	Begin MP	End MP	Speed	Future ADT
Project Information	STIP, Devel-opment, Other TBD	Hood River, Hood River	48.9	50.1	**Design** 20-35 **Target** 20-25	14,100 – 16,400

	Building Setback	Adjacent Land Use	Existing	Future	Pedestrian Crossings	On-Street Parking		Parking Type
Defining Character	**None** ☐ **Shallow** ☐ **Medium** ☒ **Large** ☐	**Comm/Industrial** **Retail** **Residential** **Mixed** **Park/Rec** **Other:** _____	☒ ☒ ☒ ☐ ☒ ☐	☐ ☒ ☒ ☒ ☒ ☐	**Spacing:** Varies (500-4000') **Type:** Varies (Signal; Unsignalized)	**No** ☒	**Yes** ☐	**Parallel** ☐ **Diagonal** ☐ **Back-in** ☐

Bicycle Facility	# Accesses Per Block	Block Size
None ☐ **Shared Lane** ☐ **Std. Lane** ☒ **Width** ___5' **Other:** ☒ _Intermittent__	Varies	Varies

Project Goals and Outcomes	
Brief Project Description	Cascade Avenue serves as a segment of the US 30 Historic Columbia River Highway (Historic Highway), a scenic and historically significant 73-mile route connecting Troutdale and The Dalles through the Columbia River Gorge. This design refinement effort focuses on Cascade Avenue between Interstate 84 Exit 62 and 13th Street, which serves as the western gateway to Hood River and the main street for the nearby neighborhoods. The project team identified the following objectives for the design refinement plan: • Create a vibrant and active multimodal corridor that serves planned community and tourism growth, • Establish a gateway for western Hood River, • Provide certainty on street design elements to avoid the need for design exceptions with development applications, and • Ensure consistency with the historic nature of the roadway.

Community Engagement	
Describe Community Outreach Summarize Commitments, Expectations	The project team solicited public input throughout the planning process using a series of interviews, a workshop, and two presentations to the Historic Columbia River Highway Advisory Committee. This outreach targeted business and property owners along the corridor, transit users, economic development groups, and other community interest groups. Stakeholder groups identified and supported the following solutions: • A three-lane cross-section • Complete sidewalks • Intersection improvements at Mt. Adams Avenue and Rand Road • Streetscape or other placemaking features • Enhanced pedestrian crossings (although the support for new raised medians varied by group) Bike facilities were the most divisive street element that was discussed. Two stakeholder groups strongly preferred developing alternate cycling routes to Cascade Avenue over enhancements along the corridor. However, two other groups believed that Cascade Avenue could be a bicycle-friendly corridor with the appropriate infrastructure in place. These other groups also believed that the Historic Highway State Trail should follow the alignment of the highway, as planned, where cyclists can easily access amenities in downtown Hood River.

OREGON DEPARTMENT OF TRANSPORTATION
Urban Design Concurrence
CONTEXT AND MODAL INTEGRATION

Modal Integration		
Determine Modal Integration	**Existing Modal Integration** **Pedestrians** ☐ High ☐ Medium ☒ Low **Bicycles** ☐ High ☐ Medium ☒ Low **Transit** ☐ High ☐ Medium ☒ Low **Freight/Motor Vehicles** ☒ High ☐ Medium ☐ Low	**Future Modal Integration** **Pedestrians** ☒ High ☐ Medium ☐ Low **Bicycles** ☒ High ☐ Medium ☐ Low **Transit** ☒ High ☐ Medium ☐ Low **Freight/Motor Vehicles** ☐ High ☒ Medium ☐ Low

Context
Traditional Downtown/CBD ☐ **Urban Mix** ☒ **Commercial Corridor** ☐ **Residential Corridor** ☐ **Suburban Fringe** ☐ **Rural Community** ☐
Context Discussion
Additional information for determination of appropriate context: See attached memo documenting recommended context

OREGON DEPARTMENT OF TRANSPORTATION
Urban Design Concurrence
DESIGN DECISION DOCUMENTATION

Section Name:	Cascade Avenue: Exit 62 to 13th Street					**Route No.:**	US 30
Highway Name:	Historic Columbia River Highway					**Highway No.:**	100
County Name:	Hood River	**Region:**	1	**Key No.:**	NA	**EA No.:**	NA
Begin MP:	48.9	**RDWY ID:**	**1** ☒ **2** ☐		**Mileage Type:**		**0** ☒ **Z** ☐
End MP:	50.1	**Mileage Overlap Code:**			**0** ☒ **1** ☐ **2** ☐		

PROJECT DATA

Functional Classification:		Urban Minor Arterial		State Classification:		District Highway	
Current ADT (Year):		13,000 – 15,000 (2019)		**Design ADT (Year):**		14,100 to 16,400 (2040)	
% Trucks:	3.2%	**Vertical Clearance / Reduction Review Route:**		☒ **Yes** ☐ **No**			
Posted Speed:	20-35 mph	**Design Speed:**		20-35 mph	**Target Speed:**	20-25 mph	
Funding:		STIP, Development, Other TBD					
Current Estimate:		$36,000,000		**Context**		Urban Mix	
Federal Highway Approval (PODI) Required:	**Yes** ☐ **No** ☒	**Design Category**	**3R** ☐ **1R** ☐ **4R** ☒ **SF** ☐	**NHS:** ☐ **Non NHS:** ☒		**Top 10% SPIS Site:**	**Yes** ☐ **No** ☒

Design Element Summary Table MP 48.9 – 49.1 (I-84 Exit 62 Interchange to Mt Adams Ave)		**Width (ft.) ****
Pedestrian Realm	**Frontage Zone**	NA
	Pedestrian Zone	6' (north) 14' multiuse path (south)
	Buffer Zone	4' (north) 8' (south)
	Curb/Gutter	Curb: 0.5' Gutter: 1.5' (included in shy, travel lane width)
Transition Realm	**Separated Bicycle Lane (Curb Constrained Facility, Includes Curb)**	14' multiuse path (south)
	On-Street Bicycle Lane (Not Including Buffer)	NA
	Bicycle/Street Buffer	8' (south)
	Right Side Shoulder (If Travel Lane Directly Adjacent to Curb	1'
	On-street Parking	NA
Travelway Realm	**Travel Lane**	11'
	Right Turn Lane (Including Shy)	NA
	Left Turn Lane	NA
	Left Side/Right Side Shy Distance	1'
	Two-Way Left Turn Lane	NA
	Raised Median – No Turn Lane (Including Shy Distances)	NA

	Left-Turn Lane with Raised Curbed Median/Separator (Includes 16" Separator and Shy Distance	NA

****For dimensions less than range defined in the Blueprint for Urban Design, a design exception is required**

Design Element Summary Table MP 49.1 to 49.8 (Mt Adams Ave to 20th Street)		**Width (ft.) ****
Pedestrian Realm	**Frontage Zone**	NA
	Pedestrian Zone	6-8' (north) 6-8' (south)
	Buffer Zone	0-4' (north) 0-4' (south)
	Curb/Gutter	Curb: 0.5' Gutter: 1.5' (included in shy, travel lane width)
Transition Realm	**Separated Bicycle Lane (Curb Constrained Facility, Include Curb)**	7-8' (north) 7-8' (south)
	On-Street Bicycle Lane (Not Including Buffer)	NA
	Bicycle/Street Buffer	0-4' (north) 0-4' (south)
	Right Side Shoulder (If Travel Lane Directly Adjacent to Curb	1'
	On-street Parking	NA
Travelway Realm	**Travel Lane**	11'
	Right Turn Lane (Including Shy)	NA
	Left Turn Lane	NA
	Left Side/Right Side Shy Distance	1'
	Two-Way Left Turn Lane	11'
	Raised Median – No Turn Lane (Including Shy Distances)	11'
	Left-Turn Lane with Raised Curbed Median/Separator (Includes 16" Separator and Shy Distance	NA

****For dimensions less than range defined in the Blueprint for Urban Design, a design exception is required**

Design Element Summary Table MP 49.8 to 50.1 (20th Street to 13th Street)		**Width (ft.) ****
Pedestrian Realm	**Frontage Zone**	NA
	Pedestrian Zone	6-8' (north) 8' (south) or 14' multiuse path (south)
	Buffer Zone	0-4' (north) 0-4' (south)
	Curb/Gutter	Curb: 0.5' Gutter: 1.5' (included in shy, travel lane width)
Transition Realm	**Separated Bicycle Lane (Curb Constrained Facility, Include Curb)**	8' (north) 8' (south) or 14' multiuse path (south)

	On-Street Bicycle Lane (Not Including Buffer)	NA
	Bicycle/Street Buffer	0-4' (north) 0-4' (south)
	Right Side Shoulder (If Travel Lane Directly Adjacent to Curb	1'
	On-street Parking	NA
Travelway Realm	**Travel Lane**	11'
	Right Turn Lane (Including Shy)	11'
	Left Turn Lane	NA
	Left Side/Right Side Shy Distance	1'
	Two-Way Left Turn Lane	NA
	Raised Median – No Turn Lane (Including Shy Distances)	NA
	Left-Turn Lane with Raised Curbed Median/Separator (Includes 16" Separator and Shy Distance	NA

****For dimensions less than range defined in the Blueprint for Urban Design, a design exception is required**

Modal Integration	
Appropriate Modal Integration	**Pedestrians** ☒ **High** ☐ **Medium** ☐ **Low** **Bicycles** ☒ **High** ☐ **Medium** ☐ **Low** **Transit** ☒ **High** ☐ **Medium** ☐ **Low** **Freight/Motor Vehicles** ☐ **High** ☒ **Medium** ☐ **Low**
Briefly Discuss Final Modal Integration Decisions	Throughout the planning process, the community of Hood River and other project stakeholders prioritized design elements that will create a vibrant and active multimodal corridor, which includes placemaking features to create a future gateway to Hood River. The proposed design elements must be consistent with the historic nature of Cascade Avenue while also establishing a bicycle and pedestrian environment that serves users of all ages and abilities to link planned segments of the Historic Columbia River Highway State Trail. **The draft design refinement plan provides additional documentation for how the recommended corridor design was developed.**

Pedestrian Realm	
Discuss final Dimensions of Pedestrian Realm Elements	**Include enough information to establish reasons and justification for the widths chosen for Frontage Zone, Pedestrian Zone, Buffer Zone and Curb/Gutter. May need to correlate with Transition Zone elements. Identify and substantiate tradeoffs between elements and realms.** The project team recommends sidewalks that vary between 6 and 8 ft. wide, consistent with the recommended element widths in the BUD. Where feasible, the corridor design prefers 8 ft. sidewalks, but this can be reduced to 6 ft. in highly constrained locations. Where provided, a 4 ft. landscape buffer separates pedestrians and the adjacent travel lanes. The separated, curb-level bicycle facility also buffers pedestrians from vehicle traffic. A wider landscape buffer (8 ft.) is also provided on the south side of Cascade Avenue between Mt. Ad-

	ams Avenue and Exit 62, consistent with the previous TSP cross-section. Note that the frontage zone is assumed to be provided outside of the right-of-way. For sections of Cascade Avenue where the design recommends a multiuse path, a total of 14 ft. is provided to accommodate both pedestrians and bicyclists. The recommended width is consistent with the total recommended widths for pedestrian and bicycle facilities in the BUD.

Transition Realm	
Discuss final Dimensions of Transition Realm Elements	**Include enough information to establish reasons and justification for the widths chosen for Separated Bicycle Lane, On-Street Bicycle Lane, Bicycle/Street Buffer, Right Side Shoulder and On-Street Parking. May need to correlate with Pedestrian Zone elements. Identify and substantiate tradeoffs between elements and realms.** The project team selected a raised, separated bicycle lane that varies between 7 and 8 ft., consistent with the recommended element widths in the BUD. Where feasible, the corridor design prefers an 8 ft. bicycle lane, but this can be reduced to 7 ft. in highly constrained locations. Where provided, a 4 ft. landscape buffer provides separation between cyclists and the adjacent travel lanes. A wider landscape buffer (8 ft.) is also provided on the south side of Cascade Avenue between Mt. Adams Avenue and Exit 62, consistent with the previous TSP cross-section. On-street parking is not provided. For sections of Cascade Avenue where the design recommends a multiuse path, a total of 14 ft. is provided to accommodate both pedestrians and bicyclists. The recommended width is consistent with the total recommended widths for pedestrian and bicycle facilities in the BUD.

Travelway Realm	
Discuss final Dimensions of Travelway Realm Elements	**Include enough information to establish reasons and justification for the widths chosen for Travel Lanes, Right and/or Left Turn Lanes, Shy Distances and Median Treatments. May need to correlate with Transition Zone elements. Identify and substantiate tradeoffs between elements and realms.** The project team selected the preferred widths for all applicable travelway elements except for raised medians. A wider raised median (11 ft. compared to the preferred 8 ft.) is preferred to provide a consistent cross-section since the raised median will be placed in locations where there are no accesses that would benefit from the proposed two-way left turn lane (11 ft.). For the Urban Mix land use context, narrower elements are preferred for the travelway realm to support wider pedestrian and bicycle facilities within limited right-of-way and constrained conditions.

Design Element Less Than Approved Range	
Final Design Elements Less Than Approved Range Dimen-	**Are Any Final Design Elements Less Than the Approved Dimension Range?** **No ☒** **Yes ☐ If yes, list the elements below and attach an approved design exception for**

sion	**each** Note: frontage zone is assumed to be provided outside of the right-of-way

Signatures

Prepared By: _____ **Date:** _____
Prepare By

Company Name:	

Concurred By: _____ **Date:** _____
(ODOT Region Maintenance Manager or Region Maintenance Operations Manager

_____
(Print Name)

Approved By: _____ **Date:** _____
(Region Technical Center Manager)

_____
(Print Name)