Pedestrian/Bicycle Overcrossings: Lessons Learned

Prepared by: Rory Renfro
Portland State University Masters of Urban and Regional Planning
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Introduction: Why are pedestrian/bicycle overcrossings important?

Pedestrian/bicycle overcrossings serve many users, including bicyclists, walkers, joggers, in-line skaters, pedestrians with strollers, wheelchair users, and others. These facilities can represent one of the most important elements of a community’s non-motorized transportation network. Overcrossings provide critical links in the bicycle/pedestrian system by joining areas separated by a variety of “barriers.” Overcrossings can address real or perceived safety issues by providing users a formalized means for traversing “problem areas” such as deep canyons, waterways or major transportation corridors.

In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist. For instance, an overcrossing may be appropriate where moderate to high pedestrian/bicycle demand exists to cross a freeway in a specific location. Pedestrian/bicycle bridges also overcome barriers posed by railroads, and are appropriate in areas where frequent or high-speed trains would create at-grade crossing safety issues, and in areas where trains frequently stop and block a desired pedestrian or bicycle crossing point. They may also be an appropriate response to railroad and other agency policies prohibiting new at-grade railroad crossings, as well as efforts to close existing at-grade crossings for efficiency, safety, and liability reasons.

Pedestrian/bicycle overcrossings also respond to user needs where existing at-grade crossing opportunities exist but are undesirable for any number of reasons. In some cases, high vehicle speeds and heavy traffic volumes might warrant a grade-separated crossing. Hazardous pedestrian/bicycle crossing conditions (e.g., few or no gaps in the traffic stream, conflicts between motorists and bicyclists/pedestrians at intersections, etc.) could also create the need for overcrossings. Overcrossings might also be appropriate in locations where large numbers of school children cross busy streets, or where high volumes of seniors or mobility-impaired users need to cross a major roadway.

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1 ITE, 19.
2 USDOT (Case Study #35), 2.
3 AASHTO (Pedestrian Guide), 95.
4 USDOT (Rails-with-Trails), 70.
5 USDOT (Rails-with-Trails), 70.
6 WSDOT (Design Manual), 1025-11.
7 AASHTO (Pedestrian Guide), 95.
Purpose of this Study
This study examines location, design and other parameters of pedestrian/bicycle overcrossings, and evaluates how well they serve their intended users. The findings are based on detailed field assessments of 29 diverse bridges in terms of age, length, access provisions, what they cross, and several other elements. A review of national and local design guidelines, case studies and other reports also informed the findings of this report. This study aims to inform planners, designers and other parties in developing new pedestrian/bicycle overcrossings, and as they set out to improve existing facilities.

Background Literature
The following sections briefly describe the background literature cited in this report.

Federal Publications
Several publications provide guidance for pedestrian/bicycle facility location and design, and include reference to overcrossings. The American Association of State Highway and Transportation Officials (AASHTO) published the Guide for the Development of Bicycle Facilities in 1999, and the Guide for the Planning, Design, and Operation of Pedestrian Facilities in 2004. These publications do not set forth design standards; rather, they are intended to provide sound guidelines for jurisdictions nationwide. The guidelines prescribed in these publications incorporate requirements set by the 1990 Americans with Disabilities Act (ADA), as well as the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

The U.S. Department of Transportation (USDOT) published Rails-with-Trails: Lessons Learned in 2002. Through a review of background literature and numerous case studies, the document examines planning, design, and liability issues associated with developing shared use paths along active railroad corridors. The report includes a section discussing grade-separated trail-rail crossings.

Among its “BIKESAFE” case studies, the USDOT published a report focusing on pedestrian/bicycle overcrossings. This report discusses overall purposes of grade-separated crossings, with a detailed discussion of existing facilities in the Boulder, Colorado region.

State Publications
The Washington State Department of Transportation’s (WSDOT) Design Manual (2006) and the Pedestrian Facilities Guidebook (1997) each discuss pedestrian/bicycle overcrossings and shared use paths. The design specifications in these publications serve as mandatory standards for pedestrian/bicycle facilities on State highways, but serve as guidelines for local communities.

The Oregon Department of Transportation (ODOT) published the Oregon Bicycle and Pedestrian Plan in 1995 (this Plan is currently being updated). The Plan presents guidelines for the planning and design of non-motorized transportation facilities, including pedestrian/bicycle overcrossings. The specifications are mandatory for facilities on State
highways as well as for local projects receiving State funding. In all other cases, the Plan serves as guidance for local communities.

**Other Publications**

A report entitled, *Improving the Pedestrian Environment through Innovative Transportation Design* was prepared for the Institute of Transportation Engineers (ITE) in 2005. Chapter 3 focuses on pedestrian/bicycle overcrossings and tunnels, and includes several case studies of U.S. and Canadian bridges. The report focuses on design elements contributing to bridges’ roles as community gathering places.

**Overcrossings Evaluated for this Study**

Illustrated on the “Overcrossing Locations Map” (Figure 1), this report’s findings are based on detailed inventories of 29 pedestrian/bicycle overcrossings. Built between 1938 and 2006, the bridges include 25 overcrossings in the Portland, Oregon metropolitan area, three bridges in Eugene, Oregon, and one structure in Washington State’s Puget Sound region. Ranging in length from about 75 feet to nearly 700 feet, the structures cross four major types of “barriers” including freeways, major streets, railroads, and waterways. Bridge ownership typically belongs to state, county or city transportation departments, or regional transit agencies. The overcrossings reviewed for this study were selected because they provide a diverse array of characteristics. Appendix A provides side-by-side comparisons of the 29 overcrossings, while Appendix B provides detailed information for each individual structure.

**Overcrossing Inventory Process**

Site visits were conducted at each of the 29 sites to inventory the overcrossing structure, access provisions, and the surrounding pedestrian/bicycle environment. The site visits included various measurements including bridge and access ramp lengths and widths, vertical and horizontal clearances, fence and railing heights, and other relevant data. The visits also included an inventory and assessment of other parameters, including elements precluding or discouraging at-grade crossings, connections between the bridge area and the surrounding transportation system, and obstructions that could complicate pedestrian or bicycle travel. In some cases, agencies provided “as-built” drawings highlighting detailed structure elements which proved useful in the inventory process.

**Data Collection Challenges**

For various reasons, this report omits some information that could be of further use in studying pedestrian/bicycle overcrossings. Mentioned earlier, as-built drawings provide highly-detailed bridge design information, including grades, clearances, and other data that could be difficult to measure in the field. Citing security reasons, several agencies denied requests for these drawings. This complicated the evaluation of several parameters such as bridge and access ramp grades. This report also omits pedestrian and bicycle volume data, simply because agencies have conducted very few user counts on these structures. This constraint precluded a reliable bridge usage assessment. Finally, agencies also encountered difficulties obtaining cost data either due to a bridge’s relatively old age.
or because the overcrossing was constructed as part of a larger transportation project lacking readily-available itemized cost information.

Location Elements
This section discusses pedestrian/bicycle overcrossings with respect to location elements. These elements include the relationship between overcrossings and major pedestrian/bicycle destinations, and how well these bridges serve current and/or desired non-motorized travel routes. This section also discusses overcrossings within the context of the overall pedestrian/bicycle network, and then focuses in scale on bicyclist/pedestrian transitions between bridges and adjacent facilities.

Pedestrian/Bicycle Destinations and Desired Routes
This section discusses the ability of overcrossings to directly connect users with their desired destinations. This refers to a bridge’s location relative to nearby pedestrian and bicycle trip generators, as well as its location within the context of logical or desired travel routes. Generally, pedestrian/bicycle overcrossings work best when they overcome major barriers hindering direct travel between origins (e.g., residential neighborhoods) and destinations (e.g., schools, commercial areas, and transit stops).  

Pedestrian and Bicycle Destinations
Major pedestrian and bicycle destinations are generally similar to those reached by other modes (e.g., schools and parks). Nearly all bridges evaluated for this study lie within relatively close proximity of major destinations including the following:
- Elementary, middle and high schools; community colleges and universities
- Parks, open spaces and community gardens
- Community centers, libraries, convention centers and hospitals
- Residential neighborhoods
- Bus stops, light rail stations and multi-modal transit centers
- Business districts and employment centers
- Stadiums and arenas

It should be noted that several overcrossings surveyed for this report yield potential to connect with future pedestrian and bicycle destinations. Several bridges along Interstate 205 (I-205) for instance lie adjacent to or near planned light rail transit stations (see Figure 2). Ultimately, bridges within close proximity of nearby destinations yield greater potential for higher use among foot and bicycle traffic.

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8 AASHTO (Pedestrian Guide), 96.
Figure 1 - Overcrossing Locations Map
Portland Metro Area

Overcrossing Reference List

1. I-5 near Main St.
2. Padden Pkwy. at I-205
3. Padden Pkwy. at 142nd Ave.
4. N Columbia Blvd. at Midway Ave.
5. N Lombard St. at I-5
6. N Going St. at Concord Ave.
7. I-5 at N Failing St.
8. I-205 at Parkrose Transit Center
9. NW Cedar Hills Blvd. at George Foege Park
10. U.S. 26 at Sunset Transit Center
11. Eastbank Esplanade - Rose Quarter Connector
12. I-84 at Hollywood Transit Center
13. NE 122nd Ave. at Sacramento St.
14. SW Spring St.
15. Trillium Creek
16. SW Hooker St. at Naito Pkwy.
17. SE Powell Blvd. at 9th Ave.
18. SE Brooklyn St. at Union Pacific Railroad
19. SE Lafayette St. at Union Pacific Railroad
20. I-205 at SE Main St.
21. SE Powell Blvd. at I-205
22. SE Division St. at 136th Ave.
23. I-5 at Barbur Transit Center
25. I-5/OR 217 Interchange

Not shown on map:
26. Autzen Bridge (Eugene, OR)
27. DeFazio Bridge (Eugene, OR)
28. Knickerbocker Bridge (Eugene, OR)
29. Searle St. Bridge (Bremerton, WA)
Some bridges evaluated in this study lie within close proximity of pedestrian/bicycle destinations, but provide no connections to these areas. For instance, the Padden Parkway at I-205 Bridge lies immediately adjacent to Vancouver, Washington’s Sunnyside and Walnut neighborhoods, along with a community center directly below the bridge. However, users must travel at least one-half mile to reach the nearest cross street, and then double-back another one-half mile to reach these areas.

**Walking and Bicycling Routes**

Many overcrossings evaluated for this study are situated on logical walking and bicycling routes, and provide reasonably direct connections between adjacent areas. Some bridges function as part of regional path systems, while others are stand-alone structures primarily intended to link adjacent neighborhoods.

Street connectivity plays a major role in linking overcrossings with surrounding areas. Well-connected streets with short blocks and limited cul-de-sacs (as shown in Figure 3) can provide direct access to an overcrossing from surrounding areas, whereas less-connected streets (see Figure 4) can increase real or perceived out-of-direction travel and diminish a bridge’s attractiveness.

In several locations, informal paths (also known as “demand paths”) suggest that some formalized bridge access routes might not adequately serve their intended users. The presence of informal paths may indicate either that the bridge itself or the approaching paths may not be located along desired or direct pedestrian/bicycle travel routes. For instance, a shared use path links the Knickerbocker Bridge with the nearby North Bank Trail, but several informal paths between the bridge and the trail (created by joggers and bicyclists) highlight “short-cutting” behaviors (see Figure 5).

Several overcrossings exist on logical walking and bicycling routes, but specific access provisions limit or discourage some users. Stairways for instance, provide the only access at several overcrossings, as shown in Figure 6. Although bicyclists are permitted to use these structures, the inconvenient access provisions discourage bicyclist use and are often
equated with out-of-direction travel. A later section in this report discusses specific bridge access provisions and their impacts on various user groups.

Using an Overcrossing versus Crossing At-Grade

An overcrossing’s effectiveness in conveniently serving its intended users typically depends on its location relative to desired pedestrian and bicycle travel routes and nearby destinations. The presence or lack of alternative crossings also plays a role. Generally, the type of barrier being traversed influences the number of alternative crossing opportunities as well as their distance from a particular bridge. Bridges traversing freeways and rivers may serve as the only crossing point in the immediate area, effectively forcing pedestrians and bicyclists to use the bridge regardless of its location on a convenient or inconvenient route. For example, the closest alternative Willamette River crossing to the Knickerbocker Bridge is another pedestrian/bicycle overcrossing about 3,500 feet away.

On the other hand, bridges crossing surface streets typically compete with several alternative crossings. Surface streets may or may not include treatments discouraging at-grade crossings. Observed treatments discouraging at-grade crossings include concrete center dividers, signage, or no measures altogether. In many cases, the street itself (in the form of high vehicle speeds or heavy traffic volumes) discourages at-grade crossings.

Many bridges surveyed for this study lie within close proximity of alternative crossings. For instance, two at-grade crossings exist within about 65 feet of the NE 122nd Avenue at Sacramento Street Bridge. In areas where multiple crossing opportunities exist, pedestrians and bicyclists hold overcrossings to a higher “convenience” standard. They consider not only the bridge’s location with respect to logical walking or bicycling routes; they also consider the distance and travel time associated with accessing the bridge structure itself, and weigh this against the perceived risk of crossing at-grade (if physically possible). In other words, pedestrians and bicyclists consider the degree of real or perceived out-of-direction travel when weighing their options. Overcrossings with “easy” and “convenient” access provisions have greater potential for attracting users. The Lombard Street at
Interstate 5 (I-5) Bridge for instance, provides pedestrians and bicyclists a safe alternative to walking across a freeway on-ramp. However some users choose to cross at-grade given the relatively short distance of traversing one lane of traffic. The WSDOT Design Manual states that “a structure might be underutilized if the additional walking distance for 85 percent of pedestrians exceeds one-quarter mile.” The AASHTO Pedestrian Guide cites conclusions drawn by a 1998 ITE study:

- 70 percent of pedestrians would use an overpass if the travel time equaled the at-grade crossing travel time;
- Very few pedestrians would use an overpass if the travel time were 50 percent longer than the at-grade crossing travel time.

**Overcrossings within the Overall Pedestrian/Bicycle Network**

An overcrossing’s location within the overall surrounding bicycle/pedestrian network can greatly impact its use. Bridges sited in areas with more-comprehensive non-motorized facilities might attract higher use through the relatively easy access offered by the surrounding network. In areas with fragmented facilities (e.g., discontinuous sidewalks), overcrossings may suffer from real or perceived difficult access.

The bridges surveyed for this report each vary in terms of the quantity and quality of facilities offered by the surrounding pedestrian/bicycle network. Common facilities include shared use paths, bicycle lanes, low-volume streets suitable for bicycle travel, and sidewalks. The following sections briefly discuss these facilities in greater detail.

**Shared Use Paths**

Depicted in Figure 7, shared use paths lie within close proximity and directly connect with many overcrossings surveyed for this report. While most pedestrian/bicycle facilities serve utilitarian purposes, shared use paths potentially yield the greatest potential to attract a greater mix of utilitarian and recreational users. In many cases, the bridge itself functions as part of a surrounding shared use path system, providing a key system link over a major barrier. This can translate into greater utilitarian and recreational use of overcrossings.

**Bicycle Lanes**

Bicycle lanes can provide convenient, comfortable and potentially safer bicycle access to bridges from the surrounding street system. Streets with bicycle lanes directly and

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9 WSDOT (Design Manual), 1025-11.
10 AASHTO (Pedestrian Guide), 96.
indirectly connect with several overcrossings surveyed for this study. In some cases, the overcrossing traverses a street with bicycle lanes thereby offering greater bicycle access opportunities (assuming direct connections exist between the bridge and the street). Other bridges lie within relatively close proximity of streets with bicycle lanes.

**Low-Volume Streets**

Low-volume streets represent the most common bicycle facility found near the overcrossings surveyed for this report. Low-volume streets typically serve local vehicle traffic and are residential in character. While some bicyclists prefer dedicated bicycle lanes on higher-order streets, lower-volume corridors can attract recreational riders and families.

**Sidewalks**

Sidewalks, with varying levels of “completeness” and condition, provide access to most of the bridges surveyed for this study. Where sidewalks do not exist, pedestrians accessing a bridge area must either walk on roadway shoulders (if they exist) or share the street with motor vehicles. Figure 8 depicts an example of a local street lacking sidewalks.

**Overcrossings and Adjacent Pedestrian/Bicycle Facilities**

While the previous section discusses overcrossings within the context of the overall bicycle and pedestrian network, this section focuses on non-motorized accommodations immediately adjacent to bridges. Bridges and access ramps may suitably accommodate their intended users, but immediate connections to surrounding transportation facilities hold equal importance. A later section discusses specific bridge access provisions.

**Shared Use Paths**

In many locations shared use paths connect bridge users to the surrounding transportation network, and several bridges surveyed for this report function as part of a shared use path system.

**Neighborhood Accessways**

Accessways are short path segments providing direct pedestrian/bicycle connections in areas with limited street connectivity (e.g., by connecting cul-de-sacs with other nearby paths or streets). For example, an accessway connects the NW

Figure 8 – Many streets near the I-5 at Barbur Transit Center Bridge lack sidewalks

Figure 9 – Neighborhood accessway near the NW Cedar Hills Blvd. at George Foege Park Bridge
Cedar Hills Boulevard at George Foege Park Bridge with an adjacent residential subdivision (see Figure 9). An accessway has also been built to better connect the Springwater Trail at SE McLoughlin Boulevard Bridge with Portland’s Sellwood neighborhood.

**Cycletracks**

Used sparingly in the United States, cycletracks serve bicyclists on sidewalks while minimizing conflicts with pedestrians through a variety of signage and pavement marking treatments. In Portland, a cycletrack passes through the Hollywood Transit Center, providing access to the nearby Interstate 84 (I-84) at Hollywood Transit Center Bridge.

**Sidewalks**

Sidewalks represent the most common facility linking bridges with the surrounding street system. Relatively-complete sidewalk networks exist near most bridges surveyed for this report, however bridge users encounter fragmented sidewalks in some areas. Missing or fragmented sidewalks complicate bridge access for mobility-impaired users, especially wheelchairs. For instance, the N Columbia Boulevard at Midway Avenue Bridge provides ADA-compliant access ramps, but sidewalk gaps create difficult transitions to the surrounding street system (as shown in Figure 10).

**Pedestrian/Bicycle Accommodations at Nearby Intersections**

Most overcrossings referenced in this report (especially those in urbanized areas) exist within close proximity of street intersections. The quantity and quality of pedestrian/bicycle accommodations varies by location. Intersection treatments observed near the study bridges include the following:

- **Curb ramps:** Most intersections include ADA-compliant curb ramps to facilitate convenient crossings for wheelchair users. Curb ramps also benefit other users, including pedestrians experiencing trouble negotiating curbs (e.g., persons with crutches), as well as pedestrians with strollers. Intersections near some bridges however lack curb ramps, complicating travel for the users listed above.

- **Raised crosswalks:** Raised crosswalks serve as traffic calming devices by...
raising the street pavement to the sidewalk level. Similar to a speed hump, raised crosswalks force approaching motorists to reduce their speeds. Figure 11 (previous page) shows a raised crosswalk near the I-205 at Parkrose Transit Center Bridge, where pedestrians leaving a nearby light rail station cross motor vehicle traffic.

- Audible pedestrian signals: Audible pedestrian signals serve visually-impaired pedestrians at signalized intersections. These devices emit a unique sound corresponding with the traditional WALK signal, and differing sounds are used corresponding with specific directional traffic flows.
- Bicycle “scrambler” signals: Bicycle scrambler signals facilitate convenient and safe bicycle crossings at intersections with greater vehicle/bicycle conflict potential. A scrambler signal exists at the intersection of NE Interstate Avenue at Oregon Street, immediately east of the Eastbank Esplanade-Rose Quarter Connector Bridge. Cyclists leaving the bridge activate an in-ground loop detector, triggering an “all-red” signal for all approaching vehicles. With all motorists stopped, bicyclists are permitted to travel freely in any direction through the intersection. This device is particularly useful for the high volumes of bicycle traffic leaving the bridge during afternoon peak travel periods.

Wayfinding Tools

Wayfinding tools represent one of the most cost-effective, visible, and critical elements of a non-motorized system. Wayfinding tools supplement traditional infrastructure by orienting users to and along pedestrian/bicycle routes and important destinations. These tools are especially important in areas where bicyclists and pedestrians must negotiate circuitous transportation networks to reach desired destinations. In a 2006 survey of Portland metropolitan bicyclists for instance, improved wayfinding ranked high among the desired improvements for addressing the circuitous path system near the Interstate Bridge. In addition to directing pedestrians and bicyclists to an overcrossing, wayfinding instruments can also delineate specific bridge access routes for certain users (e.g., directing wheelchair users to access ramps) as shown in Figure 12. Discussed further below, wayfinding tools (in the form of signage and pavement markings) were observed at several bridges surveyed for this report.

Wayfinding signage

Wayfinding signage exists in a variety of forms with varying levels of information. General wayfinding signage denotes nearby destinations such as shared use paths, major streets,
transit centers, and universities. Signage on the Eastbank Esplanade-Rose Quarter Connector provides detailed information for nearby destinations in terms of distances and bicycle “riding time”. Other signs direct users to a bridge from surrounding areas, as in the case of the I-5 at N Failing Street Bridge (see Figure 13). Some overcrossings also include signage denoting their role as part of a surrounding path system. In cases where bridges lack wayfinding signage for pedestrians and bicyclists, users must rely on nearby signs oriented toward motorists.

**Pavement markings**

Pavement markings can effectively orient bicyclists and pedestrians, and denote designated routes and other key information. Portland’s “bicycle boulevards” (low-volume streets retrofitted to prioritize bicycle travel through traffic calming treatments) incorporate the use of small bicycle pavement marking symbols to denote the bicycle boulevard route, and are placed at key intersections and user “decision points.” The “40s Bikeway” (a north-south boulevard) incorporates the I-84 at Hollywood Transit Center Bridge, and several boulevard markings guide bicyclists to and across the bridge structure (see Figure 14). Shared use path mileage markers represent another common pavement marking observed at overcrossings surveyed for this report.

![Figure 13 – Signage orienting pedestrians and bicyclists to the I-5 at N Failing St. Bridge](image)

![Figure 14 – “Bicycle boulevard” pavement markings on the I-84 at Hollywood Transit Center Bridge](image)

**Design Elements**

Earlier sections of this report discuss pedestrian/bicycle overcrossings within the context of the overall surrounding non-motorized network, and also discuss bicycle/pedestrian conditions within immediate vicinity of bridge areas. This section provides an additional level of detail, discussing user access to and from the actual bridge structure. The following text describes various bridge access types, and evaluates them in terms of how well they serve their intended users. The evaluation assesses the various bridge access types with respect to real or perceived out-of-direction travel, and their ability to serve multiple users (e.g., pedestrians, bicyclists, mobility-impaired users, etc.). These factors hold great importance because the effectiveness of grade-separated crossings usually
depends on their perceived ease of accessibility.\textsuperscript{12} A discussion of other important design considerations follows in later sections.

**Overcoming Vertical Rises**

The vertical difference between an overcrossing and the natural ground line often influences the degree of real or perceived out-of-direction travel. Freeways, railroads and major streets depressed below the natural ground line enable pedestrian/bicycle overcrossings to be sited flush with surrounding streets or paths, thereby reducing or eliminating the need for lengthy access ramps. On the other hand, many freeways, railroads, major streets and rivers lie on the natural ground line, requiring bridges to overcome minimum vertical clearance requirements mandated by various agencies. Consequently, access ramps are necessary to connect pedestrians and bicyclists to the bridge. The vertical elevation gain and ADA grade requirements strongly influence access ramp lengths, as shown in Figure 15 on the following page. The *Oregon Bicycle and Pedestrian Plan* illustrates the following scenario for a hypothetical pedestrian/bicycle bridge traversing a major roadway that is not depressed below the natural ground line:

- The bridge must achieve a minimum 17-foot vertical clearance from the roadway below
- Bridge structures typically include a 3-foot depth
- The minimum clearance and structural depth create a combined 20-foot vertical rise for bridge users
- The ADA allows a 5 percent maximum grade for approach ramps
- These parameters result in access ramps approximately 400 feet long at each bridge end\textsuperscript{13}

This example demonstrates that bridges sited above the natural ground line are challenged both with providing suitable access for multiple users while offering a reasonable level of convenience (e.g., minimizing real or perceived out-of-direction travel).

Most overcrossings surveyed for this report lie above the natural ground line, thereby requiring stairways and/or access ramps. Among bridges with available data, the vertical rise between the structure and surrounding streets and paths ranges between approximately 16 and 25 feet. The bridges surveyed for this report include various access provisions, often depending on the vertical rise necessary to reach the bridge structure coupled with the amount of available space to situate the access ramps or stairs. The following section discusses various bridge access types and their affect on real or perceived out-of-direction travel.

\textsuperscript{12} WSDOT *(Pedestrian Facilities Guidebook)*, 152.
\textsuperscript{13} ODOT, 119.
Linear Paths/Access Ramps

In areas with minimal physical constraints, linear paths and ramps can provide easy transitions to and from the overcrossing for all users, and facilitate continuous movement for “wheel” users (e.g., bicyclists and wheelchairs). Linear paths can also minimize real or perceived out-of-direction travel by eliminating the need for circuitous ramps or switchbacks. Although linear ramps and paths facilitate easy transitions between overcrossings and the surrounding transportation system, the length necessary to provide reasonable grades could result in these facilities meeting the street system at lengthy distances from the bridge structure. This could create a perception of out-of-direction travel for users wishing to reach destinations immediately adjacent to the overcrossing. For instance, the linear access ramps on the SW Hooker Street at Naito Parkway Bridge require users to double-back to reach transit stops directly below the overcrossing (shown in Figure 16).
Curvilinear Paths/Access Ramps
Depicted in Figure 17, curvilinear paths and access ramps integrate broad turns to overcome vertical elevation gains in areas somewhat constrained by topography and other physical elements. Curvilinear paths do not include tight turns common on switchback ramps, but they could create the perception of longer travel distances to reach a bridge. At several overcrossings surveyed for this report, bridge users have responded by creating informal paths serving as short-cuts. In extreme cases, bridge users have cut holes in fences to create shorter routes, as shown in Figure 18.

Figure 17 – Curvilinear access path near the I-205 at SE Main St. Bridge

Figure 18 – Users have cut a hole in the fence to create a shorter access route to the I-5 at Main St. Bridge

Spiral Ramps
Spiral ramps can effectively serve bridge users in physically-constrained areas. These facilities transition users to and from the overcrossing via a continuous “loop” (see Figure 19). Depending on the tightness of curve, spiral ramps facilitate slow but continuous movement for “wheel” users, thereby potentially minimizing perceived out-of-direction travel. Caution should be used in spiral ramp design to ensure sufficient sight distances and adequate widths to accommodate bi-directional traffic. Consideration should also be given to perceived out-of-direction travel for pedestrians, especially if spiral ramps are the only access provision.

Switchback Ramps
In physically-constrained areas, switchback ramps provide bridge access for bicyclists, wheelchairs and other users (e.g., pedestrians with strollers, etc.). Although switchback ramps usually meet the needs of mobility-impaired users, bicyclists and other users might
avoid them for several reasons. First, numerous switchbacks create the perception of circuitous travel and long travel times to overcome relatively short distances. For instance, the north ramp at the I-84 at Hollywood Transit Center Bridge includes seven switchbacks, while the north ramp at the Padden Parkway at NE 142nd Avenue Bridge includes nine switchbacks. Second, narrow switchback ramps can be difficult to maneuver on a bicycle or in a wheelchair, especially when users must negotiate 180-degree turns in relatively tight spaces (see Figure 20). Switchback ramps can better accommodate multiple users through wider widths and a minimal number of turns, as in the case of the Eastbank Esplanade-Rose Quarter Connector (see Figure 21). It should be noted however that despite the presence of wide switchback ramps, some bicyclists were observed carrying their bikes on adjacent stairways, suggesting that some users may always equate switchback ramps with out-of-direction travel regardless of their quality. Furthermore, some users might avoid bridges altogether if switchback ramps provide the only access option.

**Stairways**

Stairways provide the most direct bridge access for able-bodied pedestrians, and can be built in space-constrained areas. Stairways provide access to numerous bridges surveyed for this report, and stairways compliment adjacent curvilinear or switchback ramps. In addition to providing bridge access options for able-bodied pedestrians, stairways can be built with “bike gutters” to serve bicyclists wishing to avoid lengthy ramps. Depicted in Figure 22, a bike gutter is a small grooved concrete trough located between the stairway and adjacent
railing, providing a smooth surface to push a bicycle while walking up or down stairs.¹⁴

Stairways serve as the only bridge access provision at several overcrossings surveyed for this report. Stairways serving as only the means of access effectively render a bridge unusable for wheelchairs, and can be unattractive to bicyclists even if bike gutters are provided.

**Elevators**

Elevators serve multiple users by overcoming vertical elevation changes in space-constrained areas. Among the overcrossings surveyed for this study, elevators connect pedestrians and bicyclists to the I-84 at Hollywood Transit Center Bridge, and the U.S. 26 at Sunset Transit Center Bridge.

**Other Bridge Access Observations**

The real or perceived out-of-direction travel to access an overcrossing structure can vary based on a user’s travel path. Some bridges provide direct access ramps or stairs in some locations while limiting access to other locations. For instance, shared use paths and accessways directly connect the NW Cedar Hills Boulevard at George Foege Park Bridge with points immediately south; however direct access is not provided to and from the north. The orientation of stairways at the NE 122nd Avenue at Sacramento Street Bridge also creates perceived out-of-direction travel for users approaching the bridge from certain directions, as illustrated in Figure 23 below.

![Figure 23](image-url)

*Figure 23 – Overcrossings with limited access provisions only offer direct routes for users traveling in certain directions*

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¹⁴ ODOT, 124.
Other Design Considerations

Width/Horizontal Clearance
Bridges and approaches should provide sufficient width/horizontal clearance to accommodate multiple users (e.g., faster-moving bicyclists and slower-moving pedestrians), and to accommodate maintenance and emergency vehicles as necessary. Described below, both AASHTO and other bicycle/pedestrian design guides outline recommended horizontal clearances for shared use paths and pedestrian/bicycle overcrossings.

Shared Use Path Widths
Because shared use paths provide access to roughly half of the overcrossings surveyed for this report, a brief discussion of width guidelines for these facilities is relevant. Table 1 summarizes recommended shared use path widths as prescribed by AASHTO, ODOT, and WSDOT. The guidelines include a minimum 10-foot width to accommodate bi-directional traffic and to provide safe passing opportunities. Wider widths are recommended in “higher-use” areas and to accommodate maintenance and emergency vehicles. Widths less than 10 feet should only be used in physically-constrained areas and where pedestrian/bicycle volumes are expected to be low (although “low” is not defined in these publications). The WSDOT Design Manual also recommends use of warning signage and pavement markings to alert bicyclists of narrow path segments.15 Shoulders are recommended to provide lateral clearance from fences, walls, signs and other potential obstructions.

Table 1: Recommended Shared Use Path Widths

<table>
<thead>
<tr>
<th>Publication</th>
<th>Recommended Shared Use Path Width</th>
</tr>
</thead>
</table>
| AASHTO Bicycle Facilities Guide   | • Minimum: 8’ (only when use is expected to be low, and where safe and frequent passing opportunities exist)  
|                                   | • Recommended: 10’ plus 2-3’ shoulders each side; 12-14’ in high-use areas and/or to accommodate maintenance and emergency vehicles |
| Oregon Bicycle & Pedestrian Plan  | • Minimum: 8’ (in physically-constrained areas only)                                           
|                                   | • Recommended: 10’ plus 2-3’ shoulders on each side; 12’ in high-use areas                     |
| WSDOT Design Manual               | • Minimum: 10’ plus 2’ shoulders each side                                                      
|                                   | • Recommended: 12-14’ in high-use areas and/or if maintenance vehicles will be using the path |


Among the overcrossings surveyed for this report, shared use path and access ramp widths vary by location. Generally, narrower paths and access ramps correspond with older structures while newer bridges provide wider ramps and paths. In several locations, narrow paths and access ramps may complicate user access, especially for bicyclists as well as bi-directional users attempting to pass one-another. Shared use path and access ramp

15 WSDOT (Design Manual), 1025-3.
widths on some bridges exceed AASHTO and State guidelines. Access ramps on Portland’s Eastbank Esplanade-Rose Quarter Connector and on Eugene’s DeFazio Bridge are at least 15 feet wide, reflecting the bridges’ high use and popularity among pedestrians and bicyclists.

**Overcrossing Widths**

Determining appropriate overcrossing widths involves consideration of several factors:

- Anticipated pedestrian and bicycle use (e.g., volumes)
- The need for sufficient maneuvering space to avoid fixed objects (e.g., railings and barriers)
- Potential conflicts between differing users (e.g., users traveling at differing speeds, users traveling in opposite directions, users stopped on the bridge)
- Real or perceived safety issues (e.g., the “tunnel effect” created by some enclosed structures)
- Anticipated use by maintenance and emergency vehicles

Wider overcrossings generally best address the major considerations listed above. Providing additional maneuvering space, wider structures reduce the potential for user conflicts (e.g., faster-moving bicyclists and slower-moving pedestrians), and allow bicyclists to avoid fixed objects such as railings, walls and fences.\(^\text{16}\) Overcrossings traversing freeways and major streets often include fully enclosed fencing to prevent debris from falling or being dropped on the roadway below. To minimize the potential “tunnel effect” created by enclosed fencing, bridges should be wider to provide a greater sense of security and to compensate for the visual perception of narrowness.\(^\text{17}\) Table 2 (on Page 21) summarizes recommended overcrossing widths prescribed by various design guidance documents. The widths roughly reflect recommended shared use path widths, although additional horizontal clearance is recommended in some cases to address the issues described above.

The overcrossing field inventory conducted for this study included horizontal clearance measurements for each individual structure. The width measurement identified the minimum horizontal clearance for each bridge, adjusting for objects narrowing the passable space such as railings or signs. As shown in Table 3 (on Page 22), overcrossing widths vary widely, ranging from under 4 feet to approximately 14 feet. The widths demonstrate that mixed bi-directional pedestrian/bicycle travel could occur with minimal conflicts on some overcrossings, while users could experience difficulties on others.

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\(^{16}\) WSDOT (Design Manual), 1025-8.

\(^{17}\) AASHTO (Pedestrian Guide), 97.
### Table 2: Recommended Overcrossing Widths

<table>
<thead>
<tr>
<th>Publication</th>
<th>Recommended Overcrossing Width</th>
</tr>
</thead>
</table>
| AASHTO Bicycle Facilities Guide          | • At least as wide as the approaching path, plus 2’ of clear area on each side  
                                          • 14’ if bicycle use is anticipated                                                                                                                                                                  |
| AASHTO Pedestrian Facilities Guide       | • 8’ minimum “clear” width, but wider to match approaching sidewalks/paths that exceed 8’ in width  
                                          • 14’ if bridge is fully enclosed  
                                          • Wider widths may be necessary if shared bicycle/pedestrian use is anticipated                                                                                                                                 |
| Rails-with-Trails: Lessons Learned       | • At least as wide as the approaching path, plus 2’ of clear area on each side  
                                          • Wider widths may be necessary if maintenance/emergency vehicles will use the bridge                                                                                                                                 |
| Oregon Bicycle & Pedestrian Plan         | • At least as wide as the approaching path, plus 2’ of clear area on each side                                                                                                                                                      |
| WSDOT Design Manual                      | • At least as wide as the approaching path, plus additional horizontal clearance  
                                          • 14’ if bridge is fully enclosed, or if shared bicycle/pedestrian use is anticipated                                                                                                                                 |
| WSDOT Pedestrian Facilities Guidebook    | • 12’ railing-to-railing width (mandatory if used by maintenance/emergency vehicles)                                                                                                                                               |

### Table 3: Minimum Observed Overcrossing Widths

<table>
<thead>
<tr>
<th>Approx. Width</th>
<th>Overcrossing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3’ 9”</td>
<td>• SW Spring St.</td>
</tr>
<tr>
<td>5’ 2”</td>
<td>• NE 122nd Ave. at Sacramento St.</td>
</tr>
</tbody>
</table>
| 5’ 6”         | • Trillium Cr.  
|               | • SE Powell Blvd. at 9th Ave. |
| 5’ 7”         | • SE Brooklyn St. at Union Pacific Railroad |
| 5’ 9”         | • SE Lafayette St. at Union Pacific Railroad (west end) |
| 5’ 11”        | • SE Division St. at 136th Ave. |
| 6’ 0”         | • N Columbia Blvd. at Midway Ave. |
| 6’ 4”         | • SE Lafayette St. at Union Pacific Railroad (east end) |
| 6’ 10”        | • N Going St. at Concord Ave. |
| 7’ 6”         | • Searle St. Bridge |
| 8’ 0”         | • N Lombard St. at I-5  
|               | • I-5 at N Failing St. |
| 10’ 0”        | • Padden Pkwy. at NE 142nd Ave.  
|               | • NW Cedar Hills Blvd. at George Foege Park  
|               | • I-205 at SE Main St. |
| 11’ 0”        | • I-5 at Barbur Transit Center |
| 11’ 1”        | • U.S. 26 at Sunset Transit Center |
| 11’ 6”        | • I-84 at Hollywood Transit Center |
| 12’ 0”        | • I-5 near Main St.  
|               | • I-205 at Parkrose Transit Center  
|               | • Springwater Trail at SE McLoughlin Blvd.  
|               | • Autzen Bridge |
| 13’ 0”        | • Knickerbocker Bridge |
| 14’ 0”        | • Eastbank Esplanade-Rose Quarter Connector  
|               | • Padden Pkwy. at I-205  
|               | • SE Powell Blvd. at I-205  
|               | • DeFazio Bridge |
| 14’ 6”        | • I-5/Oregon 217 Interchange |

Note: Widths reflect minimum horizontal clearances (e.g., “rail-to-rail”, “fence-to-fence” widths).

### Height/Vertical Clearance

Sufficient clearance between the bridge deck and overhead elements is necessary to ensure safe pedestrian and bicycle travel on overcrossings. Common overhead elements include fencing (either partial or full enclosure), other structures (e.g., ramps), and vegetation (e.g., tree branches). Generous overhead clearances should also be provided to minimize users’ perceptions of isolation. The AASHTO *Bicycle Guide*\(^{18}\), the *Rails-with-Trails* Report\(^{19}\), and the *Oregon Bicycle and Pedestrian Plan*\(^{20}\) prescribe an 8-foot minimum clearance, although 10 feet is desirable. The reports also state that higher clearances may be needed to accommodate maintenance and emergency vehicles.

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\(^{18}\) AASHTO (Bicycle Guide), 36.  
\(^{19}\) USDOT (Rails-with-Trails), 79.  
\(^{20}\) ODOT, 117.
Nearly half of the overcrossings surveyed for this report lack overhead elements, while fences, structures and vegetation lie immediately above the remaining bridges. The range of vertical clearances varies from less than 8 feet on the Searle Street Bridge, to over 10 feet on the Eastbank Esplanade-Rose Quarter Connector. Some bridges with relatively narrow widths and low vertical clearances evoke a sense of isolation from the surrounding area, which can create safety and security concerns for some users (see Figure 24).

**Obstructions**

Obstructions in the pedestrian/bicycle travelway could create horizontal or vertical “pinch points.” Obstructions can pose both convenience and safety issues, and should be addressed if not prevented from occurring in the first place. Horizontal and vertical obstructions were observed at several bridges surveyed for this report, and can be categorized as design-related and maintenance-related issues.

**Design-Related Obstructions**

Design-related obstructions refer to permanent physical objects that may or may not have been integrated with an overcrossing’s original design. Regardless, these elements create or have the potential to create issues for bridge users. For instance, in an apparent effort to prevent bicycling on the bridge structure, the Trillium Creek Bridge includes two sets of railings in the travelway at each end, providing only 34 inches of horizontal clearance (as shown in Figure 25 above). Although this treatment succeeds in blocking bicycle traffic, this measure also prevents wheelchairs and other mobility devices from using the bridge. “Wheel” users might also experience difficulty using the SW Spring Street Bridge. Depicted in Figure 26, the bridge’s west access ramp leads directly to a raised sidewalk with no ramp (the presence of parked cars immediately adjacent to the sidewalk also complicates bicycle access). Finally, the overcrossings at NE 122nd Avenue at Sacramento Street, and at SE Division Street at 136th Avenue present safety issues where less than 7 feet of vertical clearance separates the uncovered bridge decks with low-hanging electrical wires above (see Figure 27).
Maintenance-Related Obstructions
The most common observed maintenance-related obstructions include minor to moderate vegetation encroachment on overcrossing structures and access ramps. Minor encroachments include weeds or other small plants growing between pavement cracks and joints. Major encroachments include tree branches and large plants narrowing the passable width of a bridge or access ramps. Other common obstructions include glass, gravel, litter and debris. Overhead structures can also obstruct the travelway, as in the case of the “sinking” overhead fence on the SE Brooklyn Street at Union Pacific Railroad Bridge.

Grades
Keeping the grade (also known as the “running slope”) of a bridge and access ramp to a minimum benefits all users, and is especially important for bicyclists, wheelchairs and mobility-impaired users. Although steeper grades can reduce real or perceived out-of-direction travel in the form of shorter access ramps, they could complicate travel for all users especially in wet or icy conditions. The bicycle and pedestrian design guides published by Federal and state agencies include relevant ADA provisions. Generally, bridges and approach ramps should include a maximum 5 percent grade, although grades as high as 8.33 percent may be allowed on short segments if level landings are provided.21 Where landings are necessary (e.g., when grades exceed 5 percent), they should be provided for every 2.5 feet of rise in elevation; they must be at least 5 feet long and span the entire width of the bridge or ramp (see Figure 28 on Page 25).22 Additional options for mitigating steep grades including providing additional bridge/ramp width to permit slower speed movements and to provide bicyclists a dismount/walking zone. Other options include providing signage to alert users of steep downgrades, and providing adequate stopping sight distance.23

21 ODOT, 118.
22 WSDOT (Design Manual), 1025-11.
23 WSDOT (Design Manual), 1025-8.
Limitations on available data partially constrained the evaluation of grades for the overcrossings surveyed in this report. Visual observations indicate that in most cases, bridge and access ramp grades appear to meet ADA requirements. However some overcrossings include fairly steep access ramps that could pose difficulties for all users. The access ramps on several surveyed bridges also lack level landings where they appear to be needed. It should be noted that most bridges evaluated for this study were constructed before the 1990 Americans with Disabilities Act.

**Surface Conditions**
Overcrossing users (especially bicyclists, wheelchairs and other “wheel” users) value bridges and access ramps with good surface conditions. Smooth pavement facilitates convenient bicycle and wheelchair travel and also minimizes tripping hazards. Most bridges surveyed for this report include pavement or other surfacing in relatively good condition. Pavement “lips” and expansion joint gaps represent the most common observed surface issue. Shown in Figure 29, pavement “lips” typically form as concrete or asphalt settles, creating abrupt uneven surfaces. They may also form during the bridge construction process when adjacent pavement slabs are not poured evenly. Expansion joint gaps can inconvenience bicyclists and pose hazards to wheelchairs and other users. These gaps are typically found where the bridge deck meets approaching paths or access ramps. Other observed pavement condition issues include water ponding (which could be hazardous in icy conditions), pavement cracking and heaving, and wooden surfaces that become slippery when wet.
Drainage grates and manhole covers could also impact surface conditions on bridges and access ramps. Most pedestrian/bicycle design guidance documents recommend placing drainage grates and manhole covers off paths or as far away from the bicycle/pedestrian travelway as possible (see Figure 30 on Page 25). If located on the bridge or path, drainage grates should include openings narrow and short enough to prevent bicycle tires from dropping into the grates. Where drainage grates and manhole covers must be located within the pedestrian/bicycle travelway, they should be constructed flush with the surrounding pavement.

**Fences and Railings**

All pedestrian/bicycle overcrossings include varying types of fences, walls, and/or railings. In some cases, fences are constructed at relatively large heights or they fully enclose a bridge to prevent debris from falling or being thrown below. The AASHTO *Bicycle Guide* recommends a minimum 42-inch fence, wall, and railing height to prevent bicyclists from toppling over the bridge structure.\(^{24}\) The WSDOT *Design Manual* prescribes a minimum 42-inch height for fences and barriers,\(^{25}\) while the WSDOT *Pedestrian Facilities Guidebook* prescribes a 54-inch height for railings.\(^{26}\) The *Oregon Bicycle and Pedestrian Plan* recommends a minimum 54-inch height for fences, walls and railings.\(^{27}\)

Among the bridges surveyed for this study, most fence heights far exceed the recommended height guidelines, as shown in Figure 31. Heights range from approximately 6 feet, 7 inches to about 10 feet, 6 inches. Some bridges include railings on one side only or lack railings altogether. Railings exist on both sides of most other bridges with heights ranging from about 32 inches to about 55 inches.

The *Oregon Bicycle and Pedestrian Plan* recommends a maximum 6-inch width

\(^{24}\) AASHTO (Bicycle Guide), 55.
\(^{25}\) WSDOT (Design Manual), 1025-6.
\(^{26}\) WSDOT (Pedestrian Facilities Guidebook), 154.
\(^{27}\) ODOT, 121.
between openings in the railing. With the exception of some overcrossings, most bridges surveyed for this report include railing openings 6 inches wide or smaller. This is especially true for bridges with cyclone fencing or mesh siding. It should be noted that railings on the relatively-new SE Powell Boulevard at I-205 Bridge include a smooth, wide “rub rail” to prevent bicycle handlebars from catching the vertical bars should a bicyclist come into contact with the railing (see Figure 32 on Page 26).

**Lighting**
Among AASHTO’s “attributes of well-designed grade-separated crossings” is the provision of a well-lit facility to offer an increased user sense of security. Lighting can enhance an overcrossing’s real or perceived sense of security, and should be provided if night usage is expected. Among the overcrossings studied for this report, the amount of lighting varies widely by location. Lighting is provided on both the bridge structure and adjacent access ramps/stairways at several locations (see Figure 33), while some overcrossings provide lighting on either the bridge or access ramps only. In many cases, bridge users must rely on ambient freeway or street lighting, potentially posing visibility and user comfort issues. Lighting maintenance issues also exist at several bridges, as missing or broken lights were observed at some locations (see Figure 34). At the Trillium Creek Bridge, debris collecting on the overhead fence partially blocks overhead lighting above, which partially contributes to the bridge’s sense of isolation from surrounding elements.

**Overcrossings Serving Multiple Functions**
Pedestrian/bicycle overcrossings can be designed to serve functions beyond simply transitioning users from one point to another. In fact, overcrossings can be designed to transform walking or bicycling across a bridge into a pleasurable experience. While overcrossings can be the most expensive part of a non-motorized system, they can also be the most visible element. Bridges could incorporate local architectural themes to add aesthetic

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28 ODOT, 123.
29 AASHTO (Pedestrian Guide), 95.
30 AASHTO (Bicycle Guide), 56.
value, and other elements could be added to make the bridge serve as a destination. In Austin, Texas, the James Pfluger Pedestrian and Bicycle Bridge (shown in Figure 35) incorporates various elements enabling the bridge to function not only as a means for crossing the city’s Town Lake, but also as a visual icon and gathering place. Curvilinear in form, the overcrossing provides a wide cross-section for through traffic in addition to benches and planters serving as congregating areas. Architectural elements include pavement texturing and coloring treatments, ornamental lighting, and diverse vegetation.

Several bridges surveyed for this study include elements that add aesthetic value. Architectural details have created aesthetically pleasing overcrossings, including Padden Parkway at NE 142nd Avenue, NW Cedar Hills Boulevard at George Foege Park, Springwater Trail at SE McLoughlin Boulevard, and the DeFazio Bridge. Designers have taken additional steps by creating viewpoints and congregating areas on bridges and approach ramps, as exhibited at the Eastbank Esplanade-Rose Quarter Connector, and at the Autzen, DeFazio, and Knickerbocker Bridges (see Figure 36).

Lessons Learned
This section presents conclusions drawn from the topics covered in previous sections, and presents overall “lessons learned.” These lessons should be considered as agencies set out to improve existing pedestrian/bicycle overcrossings; they should also inform planners and designers in developing new facilities.

Purpose and Function
Pedestrian/bicycle overcrossings can represent one of the most important elements of a community’s non-motorized transportation network, and can overcome major barriers hindering direct travel. Overcrossings can address real or perceived safety and convenience issues by providing a formalized means for traversing these “problem areas.”

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31 ITE, 19.
Relationship with the Surrounding Pedestrian/Bicycle Network
Overcrossings should be sited on logical walking and bicycling routes, and should be easy to access from the surrounding network. This includes identifying existing and desired pedestrian/bicycle travel patterns, which could be achieved through discussions with the local walking and bicycling community. This also requires providing the infrastructure and other components (e.g., sidewalks, bicycle lanes, intersection treatments, wayfinding tools, etc.) necessary to conveniently access the bridge area.

Relationship with Alternative Crossings
Pedestrians and bicyclists will hold overcrossings to a higher standard when other crossing opportunities exist. When users choose whether to cross at-grade or use an overcrossing, the bridge’s location relative to their desired travel routes, the distance and travel time required to access the bridge structure, and the perceived risk of crossing at-grade all inform the decision-making process.

Relationship with the Barrier Being Crossed
Pedestrian/bicycle overcrossings work best when the “barrier” being traversed is depressed below the natural ground line. Bridges situated flush with surrounding streets and paths minimize the need for access ramps to overcome a vertical elevation gain. On the other hand, bridges sited above the natural ground line are challenged with providing suitable access for multiple users while offering a reasonable level of convenience (e.g., minimizing real or perceived out-of-direction travel). The planning and design of future highways, roads and rail corridors should include this consideration whenever possible.

Bridge Access
In many cases, overcrossings need to rise above the natural ground line to cross major barriers, thus requiring stairways, access ramps or other provisions. From the perspective of various user groups, the major bridge access types each offer benefits and drawbacks from a functional and convenience standpoint. For this reason, it is critically important to provide access choices. In most cases, bridge users will seek the most direct bridge access route. Bicyclists for instance, may choose to carry their bikes up stairways even if a ramp is provided. The solution to this specific case would include both an access ramp and a “bike gutter” on the stairway. Overcrossings should also include necessary provisions for mobility-impaired users (e.g., elevators, or ramps with level landings). Wider stairways and access ramps with broader turns (e.g., avoiding switchbacks) facilitate easier maneuverability for all users, and can minimize potential conflicts between users traveling at varying speeds.

Other Design Elements
Overcrossings should include the components necessary to enhance user comfort, safety and security. Wider structures not only facilitate easier travel by minimizing user conflicts, they could also minimize the perception of isolation (especially for bridges with fully-enclosed fencing). Overcrossings should also provide sufficient vertical clearances to accommodate various users including maintenance and emergency vehicles as needed.
Bridges and access ramps should be designed with appropriate grades, landings, railings, fences and lighting to promote user safety and comfort.

**Aesthetics**
Through the use of various architectural elements, overcrossings can be designed to serve as visual icons and community gathering places. Bridges with aesthetically-pleasing elements not only have the potential to attract bicyclists and pedestrians traveling between adjacent areas, but could also attract residents and visitors using the bridge as a destination in and of itself.

**Maintenance**
Overcrossings require on-going maintenance. Agencies should perform routine bridge inspection and maintenance to address surface conditions (e.g. pavement cracking), remove obstructions (e.g., glass and debris), replace lighting, and address any other relevant issues as needed.

**Learning from Past Experiences**
Although most overcrossings surveyed for this report could benefit from improvements, it should be noted that they continue to play an important role in their respective non-motorized transportation networks. Pedestrians and bicyclists often depend on these structures despite their flaws. With additional improvements, these structures yield potential to better serve their intended users. Agencies should identify opportunities for improving the function, quality and convenience of existing overcrossings. This involves considering the recommendations discussed above.

Although pedestrians and bicyclists may continue to use existing overcrossings with various deficiencies, planners and designers should not use this to justify building inadequate bridges in the future. Lessons learned from previous experiences should guide the design of high-quality overcrossings meeting the functional and convenience needs of pedestrians and bicyclists.
## Appendix A: Overcrossing Inventory Summary Matrix

<table>
<thead>
<tr>
<th>Overcrossing</th>
<th>Map reference #</th>
<th>General location</th>
<th>Ownership</th>
<th>Year built</th>
<th>Crossing type</th>
<th>Linear paths/ ramps</th>
<th>Switchback ramps</th>
<th>Stairways</th>
<th>Elevator</th>
<th>Min. vertical clearance</th>
<th>Min. horizontal clearance</th>
<th>Horiz./vertical obstruction issues</th>
<th>Fences, walls, railings on bridge</th>
<th>Surface conditions issues</th>
<th>Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 16th Ave. at NE 15th St.</td>
<td>1</td>
<td>Vancouver, WA</td>
<td>WSDOT</td>
<td>2001</td>
<td>Freeway</td>
<td>~525</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>12'-0&quot;</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Padden Pkwy. at NE 142nd Ave.</td>
<td>2</td>
<td>Clark County, WA</td>
<td>WSDOT</td>
<td>2003</td>
<td>Freeeway</td>
<td>~560</td>
<td>~2,700</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N Columbia Blvd. at Midway Ave.</td>
<td>3</td>
<td>Clark County, WA</td>
<td>Clark County</td>
<td>2001</td>
<td>Freeway</td>
<td>~110</td>
<td>~850</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>N Lombard St. at I-5</td>
<td>4</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1969, 2006</td>
<td>Major street</td>
<td>~82</td>
<td>~100</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>N Gong St. at Concord Ave.</td>
<td>5</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1975</td>
<td>Major street</td>
<td>~75</td>
<td>~675</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>S-5 at N Falling St.</td>
<td>6</td>
<td>Portland, OR</td>
<td>ODOT</td>
<td>1965</td>
<td>Freeway ramp</td>
<td>~240</td>
<td>~625</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S-205 at Parkrose Transit Center</td>
<td>7</td>
<td>Portland, OR</td>
<td>TriMet</td>
<td>2001</td>
<td>Freeeway</td>
<td>~157</td>
<td>~800</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Unavailable</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Nw Cedar Hills Blvd. at George Foege Park</td>
<td>8</td>
<td>Beaverton, OR</td>
<td>Washington County</td>
<td>1999</td>
<td>Major street</td>
<td>~148</td>
<td>~400</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Available</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>U.S. 26 at Sunset Transit Center</td>
<td>9</td>
<td>Beaverton, OR</td>
<td>TriMet</td>
<td>1998</td>
<td>Freeway, railroad</td>
<td>~290</td>
<td>~1,130</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>~11'-0&quot;</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Eastbank Esplanade-Rose Quarter Connector</td>
<td>10</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>2001</td>
<td>Railroad</td>
<td>~187</td>
<td>~250</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S-7 at Hollywood Transit Center</td>
<td>11</td>
<td>Portland, OR</td>
<td>ODOT</td>
<td>1985</td>
<td>Freeway, railroad</td>
<td>~268</td>
<td>~700</td>
<td>Fencing</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>NE 122nd Ave. at Sacramento St.</td>
<td>12</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1993</td>
<td>Major street</td>
<td>~50</td>
<td>~65</td>
<td>None</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~5'-2&quot;</td>
</tr>
<tr>
<td>SW Spring St.</td>
<td>13</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1938, 1961</td>
<td>Gully</td>
<td>~195</td>
<td>~270</td>
<td>Topography</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~3'-9&quot;</td>
</tr>
<tr>
<td>Trillium Cr.</td>
<td>14</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1953, 1990</td>
<td>Waterway</td>
<td>~264</td>
<td>~1,200</td>
<td>Topography</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SW Hooker St. at Naito Pkwy.</td>
<td>15</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1957, 1981</td>
<td>Major street</td>
<td>~140</td>
<td>~530</td>
<td>None</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>SE Powell Blvd. at 5th Ave.</td>
<td>16</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1985</td>
<td>Major street</td>
<td>~94</td>
<td>~20</td>
<td>None</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~5'-0&quot;</td>
</tr>
</tbody>
</table>

Notes: ODOT = Oregon Department of Transportation; WSDOT = Washington State Department of Transportation; UPRR = Union Pacific Railroad.
<table>
<thead>
<tr>
<th>Overcrossing</th>
<th>Map reference #</th>
<th>General location</th>
<th>Ownership</th>
<th>Year built</th>
<th>Crossing type</th>
<th>Length</th>
<th>Distance to nearest alternate crossing</th>
<th>Elements discouraging/ precluding at-grade crossings</th>
<th>Vertical rise necessary to reach bridge</th>
<th>Linear ramps</th>
<th>Curvilinear ramps</th>
<th>Spiral ramps</th>
<th>Switchback ramps</th>
<th>Stairways</th>
<th>Elevator</th>
<th>Min. vertical clearance</th>
<th>Min. horizontal clearance</th>
<th>Horiz./vertical obstruction issues</th>
<th>Fences, walls, railings on bridge</th>
<th>Surface conditions issues</th>
<th>Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE Brooklyn St. at UPRR</td>
<td>18</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1976</td>
<td>Railroad</td>
<td>~75</td>
<td>~620'</td>
<td>Fencing</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>~8' 6&quot;</td>
<td>~5' 2&quot;</td>
<td>Yes</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SE Lafayette St. at UPRR</td>
<td>19</td>
<td>Portland, OR</td>
<td>UPRR</td>
<td>1943</td>
<td>Railroad</td>
<td>~128</td>
<td>~1,270'</td>
<td>Fencing, signage</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Uncovered</td>
<td>~5' 9&quot;</td>
<td>Yes</td>
<td>Fences</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>I-205 at SE Main St.</td>
<td>20</td>
<td>Portland, OR</td>
<td>ODOT</td>
<td>1976</td>
<td>Freeway</td>
<td>~575</td>
<td>~1,500'</td>
<td>Fencing</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~10' 0&quot;</td>
<td>No</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>SE Powell Blvd. at I-205</td>
<td>21</td>
<td>Portland, OR</td>
<td>ODOT</td>
<td>2003</td>
<td>Major street</td>
<td>~216'</td>
<td>~500'</td>
<td>Signage</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~14' 0&quot;</td>
<td>No</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SE Division St. at 139th Ave.</td>
<td>22</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>1986</td>
<td>Major street</td>
<td>~83</td>
<td>~110'</td>
<td>None</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Uncovered</td>
<td>~5' 11&quot;</td>
<td>Yes</td>
<td>Railings</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>I-5 at Barbur Transit Center</td>
<td>23</td>
<td>Portland, OR</td>
<td>ODOT</td>
<td>1976</td>
<td>Freeway</td>
<td>~155'</td>
<td>~1,120'</td>
<td>Fencing</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Uncovered</td>
<td>~11' 0&quot;</td>
<td>Yes</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Springwater Trail at SE McLoughlin Bvd.</td>
<td>24</td>
<td>Portland, OR</td>
<td>City of Portland</td>
<td>2005</td>
<td>Major street</td>
<td>~300'</td>
<td>~330'</td>
<td>Barrier</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Unavailable</td>
<td>~12' 0&quot;</td>
<td>No</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>I-25/Oregon 217 Interchange</td>
<td>25</td>
<td>Tigard, OR</td>
<td>ODOT</td>
<td>2001</td>
<td>Freeway</td>
<td>~251'</td>
<td>~2,000'</td>
<td>Fencing, barriers</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>~10' 6&quot;</td>
<td>~14' 6&quot;</td>
<td>Yes</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Autzen Bridge</td>
<td>26</td>
<td>Eugene, OR</td>
<td>City of Eugene</td>
<td>1970</td>
<td>Waterway</td>
<td>~670</td>
<td>~3,500'</td>
<td>Waterway</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~12' 0&quot;</td>
<td>No</td>
<td>Walls, railings</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>DeFazio Bridge</td>
<td>27</td>
<td>Eugene, OR</td>
<td>City of Eugene</td>
<td>1999</td>
<td>Waterway</td>
<td>~613</td>
<td>~300'</td>
<td>Waterway</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Unavailable</td>
<td>~14' 0&quot;</td>
<td>No</td>
<td>Railings</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Knickerbocker Bridge</td>
<td>28</td>
<td>Eugene, OR</td>
<td>City of Eugene</td>
<td>1979</td>
<td>Waterway</td>
<td>~525'</td>
<td>~3,500'</td>
<td>Waterway</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Uncovered</td>
<td>~13' 0&quot;</td>
<td>No</td>
<td>Railings</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Searle St. Bridge</td>
<td>29</td>
<td>Bremerton, WA</td>
<td>WSDOT</td>
<td>1974</td>
<td>Freeway</td>
<td>~233'</td>
<td>~1,500'</td>
<td>Fencing</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>~7' 6&quot;</td>
<td>~7' 6&quot;</td>
<td>Yes</td>
<td>Fences, railings</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes: ODOT = Oregon Department of Transportation; WSDOT = Washington State Department of Transportation; UPRR = Union Pacific Railroad.
Appendix B: Overcrossing Inventory Sheets
### Interstate 5 near Main Street

<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
</table>
| Nearest alternative formalized crossing(s):  
- I-5 at Main St. (no sidewalks), ~500' north of bridge  
- I-5 at E. 39th St., ~2,200' south of bridge  | Bridge access provisions: Bridge is part of a surrounding shared use path network |
| Degree of out-of-direction travel to reach bridge area (real or perceived):  
- Bicycle: Depends on user (bridge is part of a recreational path system, therefore circuitous approach paths may not be an issue for bicyclists  
- Pedestrian: Bridge is located at least 1/4 mile from nearby destinations, resulting in longer walking travel times  | Bridge structure length (excluding access ramps): ~245' |
| Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:  
- Vertical rise between bridge and base of access ramps: Data unavailable  
- Bicycle: Circuitous path on east end creates a perceived sense of out-of-direction travel, especially for users traveling to/from the south  
- Pedestrian: Stairways not provided on east end to address perceived out-of-direction travel; users have created informal paths to reduce travel distances  | Bridge structure vertical clearance: N/A (uncovered) |
| Elements precluding/discouraging at-grade crossings in bridge area:  
Fencing on both sides of I-5  | Minimum bridge structure width: ~12' |
| Bike/ped accommodations immediately adjacent to bridge:  
- Shared use paths  
- Curb ramps provided where shared use paths meet the street system  | Surrounding shared use paths provide direct access to the bridge |
| Surrounding bike/ped network:  
- Discovery Trail  
- Ellen Davis Trail  
- Bicycle lanes on Main St.  
- Low-volume streets with sidewalks in Rosemere neighborhood  | Access ramp length/width:  
- No specific lengths (bridge is part of a continuous shared use path  
- Shared use path width: ~12' |
| Bike/ped accommodations immediately adjacent to bridge:  
- Shared use paths  
- Curb ramps provided where shared use paths meet the street system  | Fence/wall/railing heights:  
- Shared use paths: No immediate fences, walls or railings  
- Bridge: ~10' 5" fence, no walls or railings |
| Wayfinding or other signage/pavement markings: Wayfinding signage to nearby trails and streets  | Wayfinding signage directing bridge users to nearby trails and streets |
| Bridge access provisions: Bridge is part of a surrounding shared use path network  | The only source of lighting is provided by surrounding light poles on I-5 |
| Bridge structure length (excluding access ramps): ~245'  | Surface conditions:  
- Bridge: Pavement in good condition; large expansion joint gaps at bridge ends (creates issues for "wheel" users)  
- Shared use paths: Pavement in good condition  
- No drainage grates on bridge or paths |
| Bridge structure vertical clearance: N/A (uncovered)  | Expansion joint gap at west end of bridge structure |
| Minimum bridge structure width: ~12'  | Horizontal/vertical obstructions: Minor vegetation encroachment on surrounding shared use paths |

### Nearby destinations:
- Lincoln neighborhood  
- Rosemere neighborhood  
- Discovery Middle School  
- Leverich Park  
- Hazel Dell Ave. commercial businesses  
- Manhattan Beach neighborhood  
- Discovery Trail  
- Ellen Davis Trail  
- Bicycle lanes on Main St.  
- Low-volume streets in Rosemere neighborhood  
- Kiggins Bowl  
- Hazel Dell Ave. commercial businesses  

### Wayfinding or other signage/pavement markings:
- Wayfinding signage to nearby trails and streets

### Miscellaneous observations:
- Litter and graffiti present on bridge and surrounding paths; graffiti present on wayfinding signs  
- Vegetation encroachment on surrounding shared use paths  
- Minor horizontal/vertical obstructions

---

**Location:** Vancouver, WA  
**Year built:** 2001  
**Owned by:** Washington State Dept. of Transportation  
**Source:** Google Earth
# Padden Parkway at Interstate 205

**Location Elements**

- **Nearest alternative formalized crossing(s):**
  - Padden Pkwy, at NE Andresen Rd., signalized at-grade crossing, -2,700' west of bridge
  - Padden Pkwy, at NE 94th Ave., signalized at-grade crossing, -4,200' east of bridge

- **Elements precluding/discouraging at-grade crossings in bridge area:**
  - Fencing on both sides of I-205

- **Bike/ped accommodations immediately adjacent to bridge:**
  - Sidewalks and curb ramps lacking at some nearby intersections
  - Shared use path on south side of Padden Pkwy.

- **Surrounding bike/ped network:**
  - Shared use path along Padden Pkwy.

- **Wayfinding or other signage/pavement markings:**
  - Pavement markings on shared use path serving as mileage markers

- **Surface conditions:**
  - Bridge: Pavement in good condition; large expansion joint gaps at bridge ends (creates issues for “wheel” users); drainage grates on far edges of pavement
  - Shared use paths: Pavement in generally good condition (some cracking on path east of bridge)

**Design Elements**

- **Bridge access provisions:**
  - Bridge is part of a surrounding shared use path network

- **Bridge structure length (excluding access ramps):**
  - 560'

- **Bridge structure vertical clearance:**
  - N/A (uncovered)

- **Minimum bridge structure width:**
  - 14'

- **Wayfinding or other signage/pavement markings:**
  - Pavement markings on shared use path serving as mileage markers

**Misc. observations:**

- No connections provided to immediate surrounding areas

---

**Location: Clark County, WA**

- **Location Map Reference #:** 2
- **Crosses over: Interstate 205**
- **Year built:** 2003
- ** Owned by:** Washington State Dept. of Transportation

- **Nearby destinations:**
  - Sunnyside neighborhood
  - Walnut neighborhood
  - Crossroads Community Center

- **Surrounding bike/ped network:**
  - Shared use path along Padden Pkwy.

- **Bike/ped accommodations immediately adjacent to bridge:**
  - Sidewalks and curb ramps lacking at some nearby intersections
  - Shared use path path on south side of Padden Pkwy.

- **Lighting:**
  - Ambient freeway lighting only

- **Horizontal/vertical obstructions:**
  - None
### Location Elements

| Nearest alternative formalized crossing(s): | Degree of out-of-direction travel to reach bridge area (real or perceived): |
| - Padden Pkwy, at NE 137th Ave., signalized at-grade crossing, -850' west of bridge | - Vertical rise between bridge and base of access ramps: Data not available |
| - Padden Pkwy at NE 152nd Ave., signalized at-grade crossing, -2,650' east of bridge | - Bicycle: Excessive out-of-direction travel on north access ramp (9 switchbacks); “bike gutter” not provided on adjacent stairways to provide alternative routing |
| Elements precluding/discouraging at-grade crossings in bridge area: Sound walls | - South end: Depends on direction of travel (switchback ramp creates some out-of-direction travel for bicyclists traveling to/from the north, south, and west); “bike gutter” not provided on adjacent stairway to provide alternative routing |
| Bike/ped accommodations immediately adjacent to bridge: | - Pedestrian: Depends on user (stairways provided as an alternative to switchback ramp; switchback ramp creates long travel distances for wheelchair users) |
| - Curb ramps provided where access ramps meet the street system | - South end: Depends on user (stairways provided as an alternative to switchback ramp; switchback ramp creates long travel distances for wheelchair users) |
| - Fragmented sidewalks on NE 142nd Av. | - Vertical rise between bridge and base of access ramps: Data not available |
| - Shared use path on south side of Padden Pkwy. | - Bicycle: Excessive out-of-direction travel on north access ramp (9 switchbacks); “bike gutter” not provided on adjacent stairways to provide alternative routing |
| A smooth transition is provided at the base of the bridge’s south access ramp with NE 142nd Ave. | - South end: Depends on direction of travel (switchback ramp creates some out-of-direction travel for bicyclists traveling to/from the north, south, and west); “bike gutter” not provided on adjacent stairway to provide alternative routing |

### Design Elements

| Bridge access provisions: | Bridge structure length (excluding access ramps): | - Switchback ramp with level landings on north end (9 switchbacks) |
| - Switchback ramp with level landings on north end (9 switchbacks) | - 110’ |
| - Stairways with landings on north end | Bridge structure vertical clearance: N/A (uncovered) |
| - Linear ramp with landing on south end | Minimum bridge structure width: -10’ |
| - Switchback ramp with landing on south end | Bridge cross-section includes a 10’ curb-to-curb width |
| - Stairway with landings on south end | Surface conditions: |
| - “Bike gutter” not provided on stairways | - Bridge: Pavement in good condition |
| - Center bollard present where south access ramp meets NE 142nd Ave. | - Access ramps: Pavement in good condition |
| (6’ 2’ horiz. clearance on each side of bollard) | Fence/wall/railing heights: |
| | - Ramps/stairways: -35’ lower railings, -42’ upper railings |
| | - Bridge: No railings, -122’ fence |
| | | 
| Wayfinding or other signage/pavement markings: “No skateboarding” signs | | 
| Lighting: Provided on bridge structure and access ramps | Horizontal/vertical obstructions: None | 

### Miscellaneous

- **Source:** Google Earth
- **Year built:** 2001
- **Owned by:** Clark County

### Nearby destinations:
- Sifton neighborhood
- Orchards neighborhood
- Heritage High School
- Tiger Tree Park

### Surrounding bike/ped network:
- Shared use path along Padden Pkwy.
- Sidewalks along most streets
- Low-volume residential streets

### Architectural elements:
- Architectural elements add aesthetic value to the bridge

### Misc. observations:
- Lighting: Provided on bridge structure and access ramps

### Surface conditions:
- The bridge and access ramps benefit from relatively good pavement conditions

### Bridge structure:
- Bridge cross-section includes a 10’ curb-to-curb width

### Minimum bridge structure width:
- 10’
### N. Columbia Boulevard at Midway Avenue

<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearest alternative formalized crossings:</td>
<td>Bridge access provisions:</td>
</tr>
<tr>
<td>- N. Columbia Blvd. at Midway Ave., unsignalized at-grade crossing, ~100' east of bridge</td>
<td>- Switchback ramps with level landings</td>
</tr>
<tr>
<td>- N. Columbia Blvd. at Bank St., unsignalized at-grade crossing, ~350' west of bridge</td>
<td>- 2 switchbacks on south access ramp</td>
</tr>
<tr>
<td>Elements precluding/discouraging at-grade crossings in bridge area:</td>
<td>- 2-3 switchbacks on north access ramp</td>
</tr>
<tr>
<td>Fencing on south side of Columbia Blvd.</td>
<td>(depending on direction of travel)</td>
</tr>
<tr>
<td>Degree of out-of-direction travel to</td>
<td>Degree of out-of-direction travel to</td>
</tr>
<tr>
<td>reach bridge area (real or perceived):</td>
<td>overcome any vertical rise to reach</td>
</tr>
<tr>
<td>- Bicycle: Although the bridge is located within a well-connected street grid, it is not located on a designated bicycle route; the bridge's access provisions (switchback ramps) may also discourage bicycle use</td>
<td>the bridge:</td>
</tr>
<tr>
<td>- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between George Middle School and surrounding neighborhoods)</td>
<td>- Vertical rise between bridge and base of access ramps: ~16'</td>
</tr>
<tr>
<td>Bike/ped accommodations immediately adjacent to bridge:</td>
<td>- Bicycle: Numerous switchbacks on access ramps discourage bicycle use</td>
</tr>
<tr>
<td>- Fragmented sidewalks where bridge access ramps meet the street system</td>
<td>- Pedestrian: Numerous switchbacks on access ramps increase travel distances; pedestrians may opt to use nearby at-grade crossings</td>
</tr>
<tr>
<td>- Curb ramps lacking at adjacent intersections</td>
<td>Wayfinding or other signage/pavement markings: None</td>
</tr>
<tr>
<td>Surrounding bike/ped network:</td>
<td>Bridge users must negotiate through several switchbacks on both ends of the structure</td>
</tr>
<tr>
<td>- Low-volume streets north and south of N. Columbia Blvd.</td>
<td>Lighting: Provided on north and south ends of bridge; lights missing or broken in some locations</td>
</tr>
<tr>
<td>- Residential streets with limited sidewalk network</td>
<td>Access ramp with level landings</td>
</tr>
<tr>
<td>Gap between bridge access ramp and sidewalk on N. Columbia Blvd.</td>
<td>Access ramp length/width:</td>
</tr>
<tr>
<td>- South ramp: ~145'/~6'</td>
<td>- South ramp: ~145'/~6'</td>
</tr>
<tr>
<td>- North ramp: ~175'/~6'</td>
<td>- North ramp: ~175'/~6'</td>
</tr>
<tr>
<td>Railing style on access ramps and bridge</td>
<td>Fence/wall/railing heights:</td>
</tr>
<tr>
<td>- Access ramps: ~42&quot; railings</td>
<td>- Access ramps: ~42&quot; railings</td>
</tr>
<tr>
<td>- Bridge: ~42&quot; railings</td>
<td>Bridge: ~42&quot; railings</td>
</tr>
<tr>
<td>Encroaching vegetation on north sidewalk near bridge access ramp</td>
<td>Bridge length (excluding access ramps): ~82'</td>
</tr>
<tr>
<td>Encroaching vegetation on sidewalk near bridge</td>
<td>Bridge structure vertical clearance: ~9' 3&quot;</td>
</tr>
<tr>
<td>Missing light on south side of bridge</td>
<td>Minimum bridge structure width: ~6'</td>
</tr>
</tbody>
</table>

**Source:** Google Earth

- Location: Portland, OR
- Owned by: City of Portland
- Nearby destinations: - St. Johns neighborhood - George Middle School - George Park - TriMet bus stops
- Misc. observations: Glass present on bridge; high truck volumes on Columbia Blvd.

**Location Map Reference #: 4**

**Crosses over:** N. Columbia Blvd.

Fencing on south side of Columbia Blvd. discourages at-grade crossings near George Middle School, and encourages students to use the bridge.

Bike/ped accommodations immediately adjacent to bridge:

- Fragmented sidewalks where bridge access ramps meet the street system
- Curb ramps lacking at adjacent intersections

**Bridge cross-section includes a 6" rail-to-rail width**

Surface conditions:

- Bridge: Pavement in good condition
- Access ramps: Pavement in good condition
- No drainage grates on bridge or ramps
### Location Elements

**Nearest alternative formalized crossings:**
- N. Lombard St. at Interstate Ave.,
  signalized at-grade crossing, 625' west of bridge
- N. Lombard St. at Mississippi Ave.,
  unsigned at-grade crossing, 850' east of bridge

**Elements precluding/discouraging at-grade crossings in bridge area:** None

**Degree of out-of-direction travel to reach bridge area (real or perceived):**
- Bicycle: Although the bridge eliminates conflicts between through bicycle traffic and vehicles entering I-5, the lack of smooth transitions between Lombard St. and the bridge (e.g., curb ramps) discourages bicyclists' use of the bridge
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route, representing a continuation of the N. Lombard St. sidewalk)

**Bike/ped accommodations immediately adjacent to bridge:**
- Sidewalk on N. Lombard St.
- No curb ramp between N. Lombard St. and bridge (bicyclists must ride on sidewalk to access bridge)

**Transition between sidewalk and bridge access ramp:**
- No physical or other elements to discourage at-grade crossings of the I-5 entrance ramp

**Surrounding bike/ped network:**
- Sidewalks on N. Lombard St.
- Bicycle lanes on N. Interstate Ave.

**Wayfinding or other signage/pavement markings:** None

**Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
- Vertical rise between bridge and base of access ramps: Data unavailable
- Bicycle: Bridge's "spiral" route could encourage some bicycle use, however bicyclists may choose to remain in the vehicle travel lane (which would reduce travel time)
- Pedestrian: Bridge's circuitous path perceived as inconvenient for some pedestrians, as exhibited in several observed at-grade crossing behaviors; stairways not provided to address perceived out-of-direction travel

**Observed at-grade crossing behaviors:**
- Pedestrians view the bridge as requiring excessive out-of-direction travel

**Elements precluding/discouraging at-grade crossings in bridge area:** None

**No physical or other elements exist to discourage at-grade crossings of the I-5 entrance ramp

**Surface conditions:**
- Bridge: Pavement in good condition
- Access ramps: Pavement in good condition
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:** None

### Design Elements

**Bridge structure length:**
- Excluding access ramps: ~240'

**Bridge structure vertical clearance:**
- 11' 7" (where ramps cross under bridge structure)

**Minimum bridge structure width:**
- 8'

**Access ramp length/width:**
- East ramp: ~43' / ~8'
- West ramp: ~40' / ~8'

**Fence/wall/railing heights:**
- Access ramps: ~40" railings
- Bridge: ~40" railings

**Lighting:**
- Ambient street and freeway lighting only

**Bridge access provisions:**
- Linear and "spiral" ramps
- No level landings

**Bridge cross-section includes an 8" curb-to-curb width

**Light poles on N. Lombard St. are the bridge's primary illumination source

**Surface conditions:**
- Bridge: Pavement in good condition
- Access ramps: Pavement in good condition
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:** None

---

**Location:** Portland, OR

**Year built:** 1965

**Owned by:** Oregon Dept. of Transportation

**Nearby destinations:**
- Arbor Lodge neighborhood
- Kenton neighborhood
- Piedmont neighborhood
- Kenton Elem. School
- N. Lombard Transit Center MAX station
- Commercial businesses on N. Lombard St. and N. Interstate Ave.
### N. Going Street at Concord Avenue

#### Location Elements

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearest alternative formalized crossing(s):</td>
<td>N. Interstate Ave. at Going St., signalized at-grade crossing, ~675 east of bridge</td>
</tr>
<tr>
<td>Elements precluding/discouraging at-grade crossings in bridge area:</td>
<td>Sound walls on north and south sides of Going St.</td>
</tr>
<tr>
<td>Bike/ped accommodations immediately adjacent to bridge:</td>
<td>Curb ramps provided at adjacent intersections; large “lip” on driveway apron providing access to bridge’s north entrance (could complicate travel for wheelchair users)</td>
</tr>
<tr>
<td>Surrounding bike/ped network:</td>
<td>Sidewalks on most nearby streets; bicycle lanes on N. Interstate Ave.</td>
</tr>
<tr>
<td>Wayfinding or other signage/ pavement markings:</td>
<td>Wayfinding signage to Prescott St. MAX station</td>
</tr>
</tbody>
</table>

#### Design Elements

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of out-of-direction travel to reach bridge area (real or perceived):</td>
<td>Bicycle: Minimal out-of-direction travel (bridge is located on a logical north-south bicycle route)</td>
</tr>
<tr>
<td>Bridge access provisions:</td>
<td>“Spiral” ramps; no level landings; no bollards where access ramps meet streets</td>
</tr>
<tr>
<td>Bridge structure length (excluding access ramps):</td>
<td>~75'</td>
</tr>
<tr>
<td>Bridge structure vertical clearance:</td>
<td>~8'6&quot;</td>
</tr>
<tr>
<td>Minimum bridge structure width:</td>
<td>~6'10&quot;</td>
</tr>
<tr>
<td>Access ramp length/width:</td>
<td>South ramp: ~175’/~8’, North ramp: ~160’/~8’</td>
</tr>
<tr>
<td>Fence/wall/ railing heights:</td>
<td>Access ramps: ~30’ walls, ~42’ railings; Bridge: ~30’ walls, no railings</td>
</tr>
<tr>
<td>Lighting:</td>
<td>Provided on south access ramp; otherwise ambient street lighting only</td>
</tr>
</tbody>
</table>

#### Miscellaneous Observations

- Heavy recreational and commuting use; graffiti present on bridge structure
- Sound wall discourages at-grade crossings and encourages use of the bridge
- Encroaching vegetation on north access ramp
- Extruded curbs reduce the bridge’s usable width
## Interstate 5 at N. Failing Street

### Location Elements

**Year built:** 1963 (access ramps re-built: 2000)  
**Owned by:** Oregon Dept. of Transportation  
**Nearby destinations:**  
- Boise neighborhood  
- Overlook neighborhood  
- Overlook Park  
- Overlook Park MAX Station  
- Commercial businesses on N. Interstate Ave. and N. Mississippi Ave.  
**Misc. observations:** Heavy commuting use; graffiti present on bridge and access ramps  

### Design Elements

**Bridge access provisions:**  
- Switchback ramps with level landings  
- 1 switchback on east and west access ramps  
- Stairways with level landings  

**Degree of out-of-direction travel to reach bridge area (real or perceived):**  
- Bicycle: Minimal out-of-direction travel (bridge is located on a logical east-west bicycle route)  
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between two commercial districts)  

**Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**  
- Vertical rise between bridge and base of access ramps: Data not available  
- Bicycle: Switchback ramps create perceived out-of-direction travel; “bike gutter” not provided on adjacent stairways to provide alternative routing  
- Pedestrian: Stairways provided on both bridge ends, reducing travel time  

**Bridge structure length (excluding access ramps):** ~142’  
**Bridge structure vertical clearance:** ~9’ 6”  
**Minimum bridge structure width:** ~8’  

### Surface conditions:  
- Bridge: Pavement in good condition; drainage grates placed outside the bridge’s curb-to-curb width  
- Access ramp: Pavement in good condition; minor water ponding at base of east access ramp  

### Fence/wall/railing heights:  
- Access ramps: ~35” railings, ~42” walls  
- Stairways: ~35” railings  
- Bridge: ~37” railings  

### Lighting:  
- Ambient freeway lighting only

### Horizontal/vertical obstructions: None
### Interstate 205 at Parkrose Transit Center

#### Location Elements

- **Location:** Portland, OR
- **Year built:** 2001
- **Owned by:** TriMet
- **Surrounding bike/ped network:**
  - I-205 path
  - Sidewalks on NE Sandy Blvd.

**Nearby destinations:**
- Cully/Sumner neighborhood
- Parkrose neighborhood
- Parkrose/Sumner Transit Center and MAX Station

**Misc. observations:** Heavy traffic volumes on I-205 cause bridge to vibrate and bounce

#### Design Elements

- **Bridge access provisions:**
  - Access ramp on west side
  - Access ramp not necessary on east side (bridge and transit center are at the same elevation)

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - Bicycle: Minimal out-of-direction travel (bridge lies on the most direct path between the transit center and MAX station)
  - Pedestrian: Minimal out-of-direction travel (bridge lies on the most direct path between the transit center and MAX station)

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - Vertical rise between bridge and base of access ramps: Data not available
  - Bicycle: No out-of-direction travel (bridge is at roughly the same elevation as the transit center and MAX station, therefore requiring no circuitous ramps)
  - Pedestrian: No out-of-direction travel (bridge is at roughly the same elevation as the transit center and MAX station, therefore requiring no stairs or circuitous access ramps)

- **Bridge structure length (excluding access ramps):** ~157'
- **Bridge structure vertical clearance:** varies
- **Minimum bridge structure width:** ~12'

- **Surrounding bike/ped network:**
  - I-205 path
  - Sidewalks on NE Sandy Blvd.

- **Wayfinding or other signage/pavement markings:** Signage advising bridge users of cross-traffic on the I-205 path

#### Design Elements

- **Bridge structure length (excluding access ramps):** ~157'
- **Bridge structure vertical clearance:** varies
- **Minimum bridge structure width:** ~12'

- **Surface conditions:**
  - Bridge: Pavement in good condition; small drainage grate at west end; minor expansion joint "lip" at west end
  - Access ramps: Pavement in good condition; drainage grate flush with pavement

- **Overhead lighting on bridge:** Provided on bridge, bridge approaches, at MAX station and transit center

- **Drainage grate at bridge's west end:** None

- **Expansion joint "lip" at bridge's west end:** None

### Location Map Reference #: 8

Crosses over: I-205 (northbound lanes)

**Location Map Reference #: 8**

- **Source:** Google Earth
**Location Elements**

- **Nearest alternative formalized crossings:**
  - NW Cedar Hills Blvd. at NW Leahy Rd., unsignalized at-grade crossing, -400' north of bridge

- **Elements precluding/discouraging at-grade crossings in bridge area:** None

- **Bike/ped accommodations immediately adjacent to bridge:**
  - Accessway leading to NW 112th Ave. (curb ramps provided where accessway meets street)
  - Shared use path leading to George Foege Park

- **Surrounding bike/ped network:**
  - Shared use paths in George Foege Park
  - Accessway connecting with residential area east of bridge
  - Bicycle lanes and sidewalks on Cedar Hills Blvd.
  - Limited sidewalk network on nearby residential streets
  - Surrounding low-volume streets with limited connectivity

- **Wayfinding or other signage/pavement markings:**
  - Signage on NW Cedar Hills Blvd. directing pedestrians/bicyclists to bridge

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - Bicycle: More out-of-direction travel for users traveling to/from the north (no direct access provisions); minimal out-of-direction travel to/from south, east, west
  - Pedestrian: More out-of-direction travel for users traveling to/from the north (no direct access provisions); minimal out-of-direction travel to/from the south, east, west

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - Vertical rise between bridge and base of access ramps: Data not available
  - Bicycle: Minimal out-of-direction travel (bridge is at roughly the same elevation as George Foege Park and nearby neighborhood, therefore requiring no circular access ramps)
  - Pedestrian: Minimal out-of-direction travel (bridge is at roughly the same elevation as George Foege Park and nearby neighborhood, therefore requiring no stairs or circular access ramps)

- **Surface conditions:**
  - Bridge: Wood surface in good condition; minor expansion joint "lips" at both ends of bridge
  - Access ramps: Pavement in good condition
  - No drainage grates on bridge or paths

- **Elements precluding/discouraging at-grade crossings in bridge area:** None

- **Horizontal/vertical obstructions:**
  - Low-hanging vegetation on east accessway

- **Degree of out-of-direction travel to reach area:**
  - Vertical rise between bridge and base of access ramps: Data not available

- **Lighting:** Ambient street lighting only

**Design Elements**

- **Bridge access provisions:**
  - Shared use path on west side
  - Neighborhood accessway on east side
  - Bollards provided at bridge ends and on neighborhood accessway at NW 112th Ave.
  - Center bollard at bridge ends (5' horizontal clearance on each side of bollards)
  - Twin bollards on accessway (2' 10" horiz. clearance on outer ends, 4' 6" horiz. clearance between bollards)

- **Bridge structure length (excluding access ramps):** ~148'

- **Bridge structure vertical clearance:**
  - Minimum bridge structure width: ~10'

- **Bridge structure length:**
  - ~148'

- **Bridge structure vertical clearance:**
  - ~10'

- **Surface conditions:**
  - Bridge: Wood surface in good condition; minor expansion joint "lips" at both ends of bridge
  - Access ramps: Pavement in good condition
  - No drainage grates on bridge or paths

- **Fence/wall/railing heights:**
  - Shared use path/accessway: No immediate fences, walls or railings
  - Bridge: 38.5" middle railing, 54" upper railing

**Misc. observations:**
- High vehicle speeds on NW Cedar Hills Blvd.
**U.S. 26 at Sunset Transit Center**

### Location Elements

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| Nearest alternative formalized crossings(s): | - U.S. 26 at SW Baltic Ave., grade-separated crossing, ~1,130' east of bridge  
- U.S. 26 at SW Cedar Hills Blvd., grade-separated crossing, ~3,450' west of bridge |
| Elements precluding/discouraging at-grade crossings in bridge area: | Barriers and fencing |
| Bike/ped accommodations immediately adjacent to bridge: | - Sidewalk gaps being filled on SW Butner Rd. near south access ramp  
- Mid-block pedestrian crossing being installed on SW Butner Road near south access ramp |
| Surrounding bike/ped network: | - Sidewalks on most nearby streets  
- Bicycle lanes on SW Marlow Ave.  
- Sidewalk under construction on SW Butner Rd. |
| Degree of out-of-direction travel to reach bridge area (real or perceived): | - Vertical rise between bridge and base of access ramps: ~23'  
- Bicycle: Lack of access ramp on north side (stairs/elevator only) may be equated with perception of out-of-direction travel  
- Pedestrian: Minimal out-of-direction travel |
| Wayfinding or other signage/pavement markings: | Wayfinding signage on south side directing pedestrians/bicyclists to the bridge and transit center |

### Design Elements

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| Bridge access provisions: | - Linear access ramp on south side; stairways provided for alternative routing  
- Stairway with landings and "bike gutters" on north side  
- Elevator on north side |
| Bridge structure length (excluding access ramps): | ~290' |
| Bridge structure vertical clearance: | ~8' (at north end); ~11' (at south end) |
| Minimum bridge structure width: | ~11' 1" |
| Surface conditions: | - Bridge: Pavement in good condition; small drainage grates at north end  
- Access ramps: Pavement in good condition |
| Drainage grate at bridge's north end | |
| Lighting on north stairway | |
| Bridge cross-section includes an 11' 1" rail-to-rail width | |
Eastbank Esplanade - Rose Quarter Connector

**Location Elements**

- Nearest alternative formalized crossings:
  - Steel Bridge, grade-separated crossing over railroad, -250' north of bridge
  - E. Burnside St., grade-separated crossing over railroad, -2000' south of bridge

- Elements precluding/discouraging at-grade crossings in bridge area: Fencing

- Bike/ped accommodations immediately adjacent to bridge:
  - Bicycle "scrambler signal" at NE Interstate Ave. at Oregon St.
  - Curb ramps present at nearby intersections
  - Sidewalks on NE Lloyd Blvd.
  - Eastbank Esplanade

- Degree of out-of-direction travel to reach bridge area (real or perceived):
  - Bicycle: Minimal out-of-direction travel (bridge is located on a logical bicycle route between Esplanade and surrounding NE Portland destinations)
  - Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between Esplanade and surrounding NE Portland destinations)

- Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
  - Vertical rise between bridge and base of access ramps: -25' - Bicycle:
    - East end: Minimal out-of-direction travel (bridge is at roughly the same elevation as nearby street, therefore requiring no circuitous access ramps)
    - West end: Some out-of-direction travel created by switchback ramp (some bicyclists were observed using adjacent stairways; "bike gutter" not provided on stairways to provide alternative routing); however, wide ramps allow faster travel speeds
  - Pedestrians:
    - East end: Minimal out-of-direction travel (bridge is at roughly the same elevation as nearby street, therefore requiring no circuitous access ramps; stairway provided to reduce travel distance)
    - West end: Multiple stairways provided to facilitate direct travel between bridge and Esplanade

**Design Elements**

- Access ramp length/width:
  - East ramp: ~109'/ ~15'
  - West ramp: ~595'/ ~14'

- Bridge access provisions:
  - Switchback ramp with level landings on west end (number of switchbacks depends on direction of travel)
  - Multiple stairways with landings on west end
  - Circular access ramp on east end
  - Stairway on east end

- Bridge structure length (excluding access ramps): ~187'
- Bridge structure vertical clearance: ~12'
- Minimum bridge structure width: ~14'

- Stairway with landing on bridge's west end

**Lighting**:

- Provided on bridge structure and access ramps

**Nearest alternative formalized crossing(s):**

- Steel Bridge, grade-separated crossing over railroad, -250' north of bridge
- E. Burnside St., grade-separated crossing over railroad, -2000' south of bridge

**Surrounding bike/ped network:**

- Eastbank Esplanade
- Steel Bridge Bikeway/Walkway
- Sidewalks and bicycle lanes on NE Lloyd Blvd. and NE Interstate Ave.

- Misc. observations: Heavy commuting and recreational use; bridge also serves as a destination with its various viewing areas

**Wayfinding or other signage/pavement markings:**

- Wayfinding signage; regulatory signage directing bicyclists to yield to pedestrians

**Surface conditions:**

- Bridge: Pavement in good condition
- Access ramps: Pavement in good condition; drainage grates and manhole covers on west ramp are flush with pavement

- Drainage grates and manhole covers are flush with the pavement

**Horizontal/vertical obstructions:**

- Minor vegetation encroachment on west access ramp

Location: Portland, OR

Year built: 2001

Owned by: City of Portland

Nearby destinations:
- Lloyd District
- Rose Quarter
- Rose Quarter Transit Center and MAX Station
- Convention Center
- Eastbank Esplanade
- Steel Bridge

Source: Google Earth
### Interstate 84 at Hollywood Transit Center

#### Location Elements

- **Nearest alternative formalized crossings:**  
  - I-84 at NE 39th Ave., -700' west of bridge  
  - I-84 at NE 47th Ave., -1,600' east of bridge
- **Elements precluding/discouraging at-grade crossings in bridge area:**  
  - Fencing and sound walls
- **Bike/ped accommodations immediately adjacent to bridge:**  
  - Curb ramps lacking at some nearby intersections  
  - Audible pedestrian signal on NE 42nd Ave. at Halsey St.
  - Difficult bicycle movements at NE 42nd/Halsey intersection (conflicts with buses leaving transit center)
- **No transition ramp to bicycle lane immediately north of bridge**  
  - "Cycletrack" north of bridge (bikes use sidewalk)
- **Surrounding bike/ped network:**  
  - Bicycle lanes on NE 42nd Ave.
  - "40s Bikeway"
  - Sidewalks on most nearby streets
  - Low-volume residential streets
  - Well-connected street grid

#### Design Elements

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**  
  - Bicycle: Minimal out-of-direction travel (bridge is located on a logical bicycle route)
  - Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between major walking destinations)

#### Other Observations

- **Year built:** 1985
- **Owned by:** Oregon Dept. of Transportation
- **Nearby destinations:**  
  - Laurelhurst neighborhood
  - Hollywood neighborhood
  - Laurelhurst Elem. School
  - Hollywood Library
  - Hollywood Transit Center and MAX Station
  - Commercial businesses on NE Sandy Blvd.
- **Misc. observations:** Heavy commuting use

---

### Table

<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearest alternative formalized crossings:</td>
<td>Bridge access provisions:</td>
</tr>
<tr>
<td>- I-84 at NE 39th Ave., -700' west of bridge</td>
<td>- Switchback ramp with level landings on north end (7 switchbacks)</td>
</tr>
<tr>
<td>- I-84 at NE 47th Ave., -1,600' east of bridge</td>
<td>- Stairways with landings and 'bike gutter' on north end</td>
</tr>
<tr>
<td>Elements precluding/discouraging at-grade crossings in bridge area:</td>
<td>- Stairway with landings to MAX station</td>
</tr>
<tr>
<td>- Fencing and sound walls</td>
<td>- Elevator to MAX station</td>
</tr>
<tr>
<td>Bike/ped accommodations immediately adjacent to bridge:</td>
<td>- Linear ramp with landings on south end</td>
</tr>
<tr>
<td>- Curb ramps lacking at some nearby intersections</td>
<td>- Stairway with landings and &quot;bike gutter&quot; on south end</td>
</tr>
<tr>
<td>- Audible pedestrian signal on NE 42nd Ave. at Halsey St.</td>
<td></td>
</tr>
<tr>
<td>- Difficult bicycle movements at NE 42nd/Halsey intersection (conflicts with buses leaving transit center)</td>
<td></td>
</tr>
<tr>
<td>- No transition ramp to bicycle lane immediately north of bridge</td>
<td></td>
</tr>
<tr>
<td>- &quot;Cycletrack&quot; north of bridge (bikes use sidewalk)</td>
<td></td>
</tr>
<tr>
<td>Surrounding bike/ped network:</td>
<td>Bridge structure length (excluding access ramps): - 268'</td>
</tr>
<tr>
<td>- Bicycle lanes on NE 42nd Ave.</td>
<td>Bridge structure vertical clearance: N/A (uncovered)</td>
</tr>
<tr>
<td>- &quot;40s Bikeway&quot;</td>
<td></td>
</tr>
<tr>
<td>- Sidewalks on most nearby streets</td>
<td>Minimum bridge structure width: - 11' 6&quot;</td>
</tr>
<tr>
<td>- Low-volume residential streets</td>
<td></td>
</tr>
<tr>
<td>- Well-connected street grid</td>
<td></td>
</tr>
</tbody>
</table>

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### Diagrams

- [Bridge cross-section](image)
- [Stairway with "bike gutter" on bridge’s south end](image)
- [Elevator providing access between bridge and MAX station below](image)
- [Fence/wall/railing heights: - North ramp/stairway: 32' railings - South ramp/stairways: 32' railings, 48' wall - Bridge: 32' railings, 108' fence](image)
- [Lighting: Provided on bridge structure and access ramps](image)

---

### Observations

- **Surface conditions:**  
  - Bridge: Pavement in good condition
  - Access ramps: Pavement in good condition
- **Horizontal/vertical obstructions:** None
- **Nearest alternative formalized crossing(s):**  
  - I-84 at NE 39th Ave., ~700' west of bridge  
  - I-84 at NE 47th Ave., ~1,600' east of bridge
- **Location:** Portland, OR
- **Year built:** 1985
- **Owned by:** Oregon Dept. of Transportation
- **Nearby destinations:**  
  - Laurelhurst neighborhood
  - Hollywood neighborhood
  - Laurelhurst Elem. School
  - Hollywood Library
  - Hollywood Transit Center and MAX Station
  - Commercial businesses on NE Sandy Blvd.
- **Misc. observations:** Heavy commuting use
NE 122nd Avenue at Sacramento Street

Location Elements

Nearest alternative formalized crossings:
- NE 122nd Ave. at Sacramento St., unsignalized at-grade crossing, -65' south of bridge
- NE 122nd Ave. at Brazee St., unsignalized at-grade crossing, -65' north of bridge

Elements precluding/discouraging at-grade crossings in bridge area: None

Bike/ped accommodations immediately adjacent to bridge:
- Curb ramps provided at adjacent intersections
- Sidewalks on surrounding streets

Surrounding bike/ped network:
- Bicycle lanes and sidewalks on NE 122nd Ave.
- Low-volume residential streets
- Sidewalks on most streets
- Limited street system connectivity

Wayfinding or other signage/pavement markings:
- Nearby wayfinding signage oriented toward motorists

Nearest alternative formalized crossings:
- NE 122nd Ave. at Sacramento St., unsignalized at-grade crossing, -65' south of bridge
- NE 122nd Ave. at Brazee St., unsignalized at-grade crossing, -65' north of bridge

Elements precluding/discouraging at-grade crossings in bridge area: None

Bike/ped accommodations immediately adjacent to bridge:
- Curb ramps provided at adjacent intersections
- Sidewalks on surrounding streets

Surrounding bike/ped network:
- Bicycle lanes and sidewalks on NE 122nd Ave.
- Low-volume residential streets
- Sidewalks on most streets
- Limited street system connectivity

Wayfinding or other signage/pavement markings:
- Nearby wayfinding signage oriented toward motorists

Degree of out-of-direction travel to reach bridge area (real or perceived): Bicycle: Bridge is not located on a logical east-west bicycle route (streets to the south provide better connectivity)
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between several schools)

Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
- Vertical rise between bridge and base of access ramps: -18'
- Bicycle: Out-of-direction travel required for bicyclists traveling on NE 122nd Ave. (stairs are oriented in opposite direction of adjacent bicycle lanes), however less out-of-direction travel required for east-west bicyclists; "bike gutters" provided on stairways
- Pedestrian: Stairway orientation creates out-of-direction travel for southbound pedestrians on west side of NE 122nd Ave., and for northbound pedestrians on east side of NE 122nd Ave.; less out-of-direction travel required for east-west pedestrians

Stairway total length/width:
- West stairway: -31'/-5'
- East stairway: -31'/-5'

Stairway with landings and "bike gutter"

Fence/wall/standing heights:
- Stairways: ~42" railings
- Bridge: ~42" railings

At each bridge end, stairways are oriented in one direction of travel only, which may not be useful to pedestrians wishing to travel in the opposite direction

Railing style on stairways and bridge

Lighting:
- Ambient street lighting on west side of NE 122nd Ave. only

Surface conditions:
- Bridge: Pavement in good condition
- Stairways: Pavement in good condition
- No drainage grates on bridge or stairs
### SW Spring Street

<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td><strong>Bike/ped accommodations immediately adjacent to bridge:</strong></td>
</tr>
<tr>
<td><strong>Location Map Reference #: 14</strong></td>
<td>- Presence of parked vehicles and lack of curb ramps complicate travel at bridge's west end for all users</td>
</tr>
<tr>
<td><strong>Crosses over:</strong></td>
<td>- Sidewalks on SW Spring St.</td>
</tr>
<tr>
<td><strong>Location:</strong> Portland, OR</td>
<td><strong>Bike and surrounding streets are at roughly the same elevation, therefore requiring no stairways or circuitous access ramps</strong></td>
</tr>
<tr>
<td><strong>Year built:</strong> 1938 (replaced: 1961)</td>
<td><strong>Wayfinding or other signage/pavement markings:</strong></td>
</tr>
<tr>
<td><strong>Owned by:</strong> City of Portland</td>
<td>- None</td>
</tr>
<tr>
<td><strong>Nearby destinations:</strong></td>
<td><strong>Lighting:</strong></td>
</tr>
<tr>
<td>- Southwest Hills neighborhood</td>
<td>- Provided on bridge and west access ramp</td>
</tr>
<tr>
<td>- Ainsworth Elem. School</td>
<td><strong>Encroaching tree branches at bridge's west end</strong></td>
</tr>
<tr>
<td>- Ainsworth Greenspace</td>
<td><strong>Encroaching vegetation on sidewalk near bridge's west end</strong></td>
</tr>
</tbody>
</table>

**Nearest alternative formalized crossings:**
- SW Elm St. (~270' north of bridge) provides the closest alternate route around the gully

**Elements precluding/discouraging at-grade crossings in bridge area:**
- Steep topography of gully
- Private properties

**Bike/ped accommodations immediately adjacent to bridge:**
- Presence of parked vehicles and lack of curb ramps complicate travel at bridge's west end for all users
- Sidewalks on SW Spring St.

**Degree of out-of-direction travel to reach bridge area (real or perceived):**
- Bicycle: Bridge is located on a logical bicycle route for Ainsworth students traveling to nearby neighborhoods, but long distance bicyclists may not be attracted to the bridge's location (not located on logical longer-distance routes)
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between Ainsworth Elem. School and surrounding neighborhoods)

**Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
- Vertical rise between bridge and base of access ramps: None
- Bicycle: No out-of-direction travel (bridge is at same elevation as surrounding streets, therefore requiring no circuitous access ramps)
- Pedestrian: No out-of-direction travel (bridge is at same elevation as surrounding streets, therefore requiring no stairs or circuitous ramps)

**Surface conditions:**
- Bridge: Pavement in good condition
- West access ramp: Pavement in good condition
- SW Spring St. cul de sac: Rough pavement conditions; water ponding near bridge entrance
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:**
- Extruded curbs reduce the bridge's usable width

**Fence/wall/railing heights:**
- Access ramp: No fences, walls, railings
- Bridge: ~36" railings

**Bridge access provisions:**
- Linear access ramp (west end)
- SW Spring St. cul de sac (east end)

**Bridge structure length (excluding access ramps):** ~195'

**Bridge structure vertical clearance:** N/A (uncovered)

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure length:** ~195'

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure vertical clearance:** N/A (uncovered)

**Surface conditions:**
- Bridge: Pavement in good condition
- West access ramp: Pavement in good condition
- SW Spring St. cul de sac: Rough pavement conditions; water ponding near bridge entrance
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:**
- Extruded curbs reduce the bridge's usable width

**Fence/wall/railing heights:**
- Access ramp: No fences, walls, railings
- Bridge: ~36" railings

**Bridge access provisions:**
- Linear access ramp (west end)
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- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

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**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure vertical clearance:** N/A (uncovered)

**Surface conditions:**
- Bridge: Pavement in good condition
- West access ramp: Pavement in good condition
- SW Spring St. cul de sac: Rough pavement conditions; water ponding near bridge entrance
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:**
- Extruded curbs reduce the bridge's usable width

**Fence/wall/railing heights:**
- Access ramp: No fences, walls, railings
- Bridge: ~36" railings

**Bridge access provisions:**
- Linear access ramp (west end)
- SW Spring St. cul de sac (east end)

**Bridge structure length (excluding access ramps):** ~195'

**Bridge structure vertical clearance:** N/A (uncovered)

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure length:** ~195'

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure vertical clearance:** N/A (uncovered)

**Surface conditions:**
- Bridge: Pavement in good condition
- West access ramp: Pavement in good condition
- SW Spring St. cul de sac: Rough pavement conditions; water ponding near bridge entrance
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:**
- Extruded curbs reduce the bridge's usable width

**Fence/wall/railing heights:**
- Access ramp: No fences, walls, railings
- Bridge: ~36" railings

**Bridge access provisions:**
- Linear access ramp (west end)
- SW Spring St. cul de sac (east end)

**Bridge structure length (excluding access ramps):** ~195'

**Bridge structure vertical clearance:** N/A (uncovered)

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure length:** ~195'

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure vertical clearance:** N/A (uncovered)

**Surface conditions:**
- Bridge: Pavement in good condition
- West access ramp: Pavement in good condition
- SW Spring St. cul de sac: Rough pavement conditions; water ponding near bridge entrance
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:**
- Extruded curbs reduce the bridge's usable width

**Fence/wall/railing heights:**
- Access ramp: No fences, walls, railings
- Bridge: ~36" railings

**Bridge access provisions:**
- Linear access ramp (west end)
- SW Spring St. cul de sac (east end)

**Bridge structure length (excluding access ramps):** ~195'

**Bridge structure vertical clearance:** N/A (uncovered)

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure length:** ~195'

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure vertical clearance:** N/A (uncovered)

**Surface conditions:**
- Bridge: Pavement in good condition
- West access ramp: Pavement in good condition
- SW Spring St. cul de sac: Rough pavement conditions; water ponding near bridge entrance
- No drainage grates on bridge or ramps

**Horizontal/vertical obstructions:**
- Extruded curbs reduce the bridge's usable width

**Fence/wall/railing heights:**
- Access ramp: No fences, walls, railings
- Bridge: ~36" railings

**Bridge access provisions:**
- Linear access ramp (west end)
- SW Spring St. cul de sac (east end)

**Bridge structure length (excluding access ramps):** ~195'

**Bridge structure vertical clearance:** N/A (uncovered)

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure length:** ~195'

**Minimum bridge structure width:**
- 3' 9" (curb-to-curb)
- 4' 6" (rail-to-rail)

**Bridge structure vertical clearance:** N/A (uncovered)
### Trillium Creek

#### Location Elements

- **Location:** Portland, OR
- **Location Map Reference #:** 15
- **Crosses over:** Trillium Creek
- **Year built:** 1953 (portions replaced: 1990)
- **Owned by:** City of Portland

#### Design Elements

- **Bridge access provisions:** Pedestrian paths on both approaches
- **Bridge structure length (excluding access ramps):** ~204’
- **Bridge structure vertical clearance:** ~8’ 4”
- **Minimum bridge structure width:** ~5’ 6”

### Nearby destinations:
- Hillsdale neighborhood
- Robert Gray Middle School
- Hillsdale Park

### Access ramp length/width:
- **Length:** N/A (bridge is part of a continuous pedestrian path)
- **Width:** ~5’

### Degree of out-of-direction travel to reach bridge area (real or perceived):
- **Bicycle:** Although the bridge provides a key connection across Trillium Cr., its isolation and location away from higher-use bicycle corridors may not attract bicyclists.
- **Pedestrian:** Minimal out-of-direction travel (bridge is located on a logical walking route between Robert Gray Middle School and neighborhoods to the north); several informal walking paths approach the bridge from the south, indicating a lack of formalized pedestrian facilities on popular walking routes.

### Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
- **Vertical rise between bridge and base of access ramps:** Data not available.
- **Bicycle:** No out-of-direction travel (bridge and surrounding paths/streets are at roughly the same elevation, therefore requiring no circuitous access ramps).
- **Pedestrian:** Minimal out-of-direction travel (bridge and surrounding paths are at roughly the same elevation, therefore requiring no stairs or circuitous access ramps).

### Surrounding bike/ped network:
- Bridge is part of “SW Trail #6”
- Bicycle lanes on SW Beaverton-Hillsdale Hwy.
- Low-volume residential streets
- Sidewalks on some streets
- Limited street system connectivity

### Wayfinding or other signage/pavement markings:
- Sign at north end of bridge indicating its status as part of the SW Trails system.

### Horizontal/vertical obstructions:
- Railings at bridge ends (designed to discourage bicycling on the bridge) create major “pinch points” for all users.

### Surface conditions:
- Bridge: Water ponding on bridge deck.
- Access ramps: Pavement in poor condition (cracking, heaving, weeds growing between pavement cracks, manhole covers and drainage grates not flush with pavement).

### Footnotes:
- Poor pavement conditions on north path.

### Miscellaneous observations:
- Bridge is fairly isolated; graffiti present on bridge; vegetation (e.g., leaves) collecting on overhead fence; moss growing on inner walls of bridge.

### Additional notes:
- **Elements precluding/discouraging at-grade crossings in bridge area:**
  - Topography of gully
  - Private properties
- **Bike/ped accommodations immediately adjacent to bridge:**
  - Fragmented pedestrian paths leading to Robert Gray Middle School, Hillsdale Park and SW Boundary St.

### Bridge structure:

- **Pedestrian path on the bridge’s north end**
- **Fence/wall/ railing heights:**
  - Paths: No fences, walls, railings
  - Bridge: 33” railings
- **Lighting:** Provided on bridge structure

### Bridge structure:

- **Railing style on bridge**
- **Lighting on bridge structure**
- **Bridge structure:**
  - The bridge includes a relatively narrow height and width.
- **Nearest alternative formalized crossing(s):**
  - SW Sunset Blvd. (~1,200’ east of bridge) provides the closest alternate route around Trillium Cr.

- **Elements precluding/discouraging at-grade crossings in bridge area:**
  - Topography of gully
  - Private properties

- **Bike/ped accommodations immediately adjacent to bridge:**
  - Fragmented pedestrian paths leading to Robert Gray Middle School, Hillsdale Park and SW Boundary St.

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - **Bicycle:** Although the bridge provides a key connection across Trillium Cr., its isolation and location away from higher-use bicycle corridors may not attract bicyclists.
  - **Pedestrian:** Minimal out-of-direction travel (bridge is located on a logical walking route between Robert Gray Middle School and neighborhoods to the north); several informal walking paths approach the bridge from the south, indicating a lack of formalized pedestrian facilities on popular walking routes.

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - **Vertical rise between bridge and base of access ramps:** Data not available.
  - **Bicycle:** No out-of-direction travel (bridge and surrounding paths/streets are at roughly the same elevation, therefore requiring no circuitous access ramps).
  - **Pedestrian:** Minimal out-of-direction travel (bridge and surrounding paths are at roughly the same elevation, therefore requiring no stairs or circuitous access ramps).

- **Wayfinding or other signage/pavement markings:** Sign at north end of bridge indicating its status as part of the SW Trails system.

- **Fence/wall/ railing heights:**
  - Paths: No fences, walls, railings
  - Bridge: 33” railings
- **Lighting:** Provided on bridge structure
### Location: Portland, OR

<table>
<thead>
<tr>
<th>Location Map Reference #: 16</th>
<th>Crosses over: SW Naito Pkwy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: Google Earth</td>
<td></td>
</tr>
</tbody>
</table>

#### Year built: 1957  (replaced: 1981)  Owned by: City of Portland

#### Nearby destinations:
- Corbett/Terwilliger/Lair Hill neighborhood
- Lair Hill Park
- Lair Hill Art Center
- National College of Natural Medicine
- TriMet bus stops

#### Misc. observations:
- Heavy commuting use; heavy traffic volumes on SW Naito Pkwy. cause bridge to vibrate and bounce

---

### Location Elements

#### Nearest alternative formalized crossings(s): SW Naito Pkwy, at Arthur St., grade-separated crossing, ~530' north of bridge (conflicts between motorized and non-motorized traffic)

#### Elements precluding/discouraging at-grade crossings in bridge area: None

#### Bike/ped accommodations immediately adjacent to bridge:
- Sidewalks on SW Hooker St.
- Curb ramps at nearby intersections
- Curb ramps lacking where access ramps meet the street

---

### Design Elements

#### Bridge access provisions:
- Linear ramps
  - Ramps are somewhat steep and may pose difficulties for wheelchairs or other mobility-impaired users
  - No level landings

#### Bridge structure length (excluding access ramps): ~140'

#### Bridge structure vertical clearance: ~8'

#### Minimum bridge structure width: ~10'

#### The east access ramp is fairly steep and lacks level landings

#### Access ramp length/width:
- West ramp: ~81' / ~10'
- East ramp: ~158' / ~10'

#### Fence/wall/railing heights:
- Access ramps: ~5' railings
- Bridge: No railings

#### Railings are absent from the bridge structure

#### Lighting: Ambient street lighting only

#### Horizontal/vertical obstructions: None

---

### Elements precluding/discouraging at-grade crossings in bridge area: None

### Degree of out-of-direction travel to reach bridge area (real or perceived):
- Bicycle: Minimal out-of-direction travel (bridge is on a logical east-west bicycle travel route)
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route connecting destinations within close proximity of each other)

### Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
- Vertical rise between bridge and base of access ramps:
  - Data not available
- Bicycle: Linear ramps reduce out-of-direction travel; some out-of-direction travel for users accessing TriMet bus stops directly below the bridge
- Pedestrian: Pedestrians wishing to access TriMet bus stops directly below the bridge may view the access ramps as requiring out-of-direction travel; stairways not provided to reduce travel distance

#### The linear ramps provide direct access between the bridge and points farther east and west, but require additional travel for users accessing TriMet bus stops directly under the bridge

#### Wayfinding or other signage/pavement markings: None

---

### Surrounding bike/ped network:
- Sidewalks on most nearby streets
- Well-connected street system

### The absence of a curb ramp creates difficult transitions between SW Hooker St. and the bridge's west access ramp

### Sidewalks on SW Corbett Ave.

### The linear ramps provide direct access between the bridge and points farther east and west, but require additional travel for users accessing TriMet bus stops directly under the bridge

### The east access ramp is fairly steep and lacks level landings

### Vertical rise between bridge and base of access ramps:
- Data not available

### Although the bridge provides a 10' 6" curb-to-curb width, the extruded steel beams reduce the usable width to about 10'

### Light/vertical obstructions: None
**SE Powell Boulevard at 9th Avenue**

### Location Elements

- **Nearest alternative formalized crossing(s):**
  - SE Powell Blvd., at 9th Ave., unsignalized at-grade crossing (no crosswalks), located immediately east of bridge
  - SE Powell Blvd. at SE Milwaukee Ave., signalized at-grade crossing, -730' east of bridge

- **Elements precluding/discouraging at-grade crossings in bridge area:** None

- **Bike/ped accommodations immediately adjacent to bridge:**
  - Curb ramps provided at adjacent intersections
  - Sidewalks on SE Powell Blvd. and on SE 9th Ave.

- **Surrounding bike/ped network:**
  - Sidewalks on most nearby streets
  - Low-volume residential streets
  - Well-connected street grid

- **Misc. observations:** Litter, gravel and other debris on bridge and access ramps; heavy traffic volumes and high vehicle speeds on SE Powell Blvd.

### Design Elements

- **Bridge access provisions:**
  - "Spiral" ramps
  - No level landings
  - No bollards where access ramps meet streets
  - Ramp slope becomes especially steep where ramps meet the bridge

- **Bridge structure length (excluding access ramps):** ~94'

- **Bridge structure vertical clearance:** N/A (uncovered)

- **Minimum bridge structure width:** ~5' 6"

- **Surface conditions:**
  - Bridge: Pavement in good condition
  - Access ramps: Pavement in relatively good condition; large "lip" on north and south access ramps; drainage grates placed adjacent to access ramps

- **Wayfinding or other signage/pavement markings:** None

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - Bicycle: Minimal out-of-direction travel (bridge is located on a logical north-south bicycle route); northbound bicyclists on 9th Ave. must briefly ride on the sidewalk (against traffic) to access the bridge
  - Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route connecting nearby destinations)

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - Vertical rise between bridge and base of access ramps: ~16'
  - Bicycle: "Spiral" ramps minimize travel distance to overcome vertical rise, and permit slow but continuous bicycle movement
  - Pedestrian: "Spiral" ramps minimize travel distance to overcome vertical rise; pedestrians wishing to access TriMet bus stops directly below the bridge may view the ramps as requiring out-of-direction travel (some at-grade crossing behaviors observed); stairways not provided to reduce travel distance

- **Access ramp length/width:**
  - South ramp: ~175'/~6' 4"
  - North ramp: ~175'/~6' 4"

- **Fence/wall/railing heights:**
  - Access ramps: ~37" railings (railings on one side only), 48" walls
  - Bridge: ~33" railings (railings on one side only), 44" walls

- **Lighting:** Ambient street lighting only

- **Horizontal/vertical obstructions:** None
### SE Brooklyn Street at Union Pacific Railroad

**Location: Portland, OR**

**Crosses over:** Union Pacific Railroad

**Location Map Reference #:** 18

**Year built:** 1976

**Owned by:** City of Portland

**Nearby destinations:**
- Hosford-Abernethy neighborhood
- Clinton Community Garden
- Industrial area to the south
- Commercial businesses on SE Powell Blvd.

**Misc. observations:** Graffiti and glass present on bridge; electrical wires resting on overhead fence

### Location Elements

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| Nearest alternative formalized crossings(s): | - SE Powell Blvd. at UPRR, grade-separated crossing, ~620’ east of bridge  
- SE 12th Ave. at UPRR, at-grade crossing, ~1,170’ west of bridge |
| Elements precluding/discouraging at-grade crossings in bridge area: | Fencing on both sides of railroad |
| Bike/ped accommodations immediately adjacent to bridge: | - Curb ramps lacking where bridge stairways meet the street system  
- Sidewalks on surrounding streets |
| Wayfinding or other signage/pavement markings: | None |

### Design Elements

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| Bridge access provisions: | - Stairways with level landings and "bike gutters"  
- No access ramps for bicyclists or mobility-impaired users |
| Degree of out-of-direction travel to overcome any vertical rise to reach the bridge: | - Vertical rise between bridge and base of access ramps: ~25’  
- Bicycle: Bicyclists may equate the lack of access ramps (stairs only) with out-of-direction travel; "bike gutters" provided on stairways for bicyclists who chose to use the bridge  
- Pedestrian: Minimal out-of-direction travel (stairs are oriented along the desired travel route); lack of access ramps renders bridge unusable for wheelchair users |
| Bridge structure length (excluding access ramps): | ~75’ |
| Bridge structure vertical clearance: | 8’ 6’ |

### Bridge Structure

- **Stairway total length/width:**
  - West stairway: ~59’/~6’  
  - East stairway: ~59’/~6’

- **Fence/wall/railing heights:**
  - Stairways: ~34” railings  
  - Bridge: ~34” railings

- **Surface conditions:**
  - Bridge: Pavement in good condition; expansion joint gaps at east and west ends  
  - Stairways: Pavement in good condition

- **Horizontal/vertical obstructions:**
  - Sinking overhead fence on bridge structure

- **Lighting:**
  - Ambient street lighting only
**SE Lafayette Street at Union Pacific Railroad**

<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearest alternative formalized crossing(s):</td>
<td>Bridge access provisions:</td>
</tr>
<tr>
<td>- SE Powell Blvd. at UPRR, grade-separated crossing, -1.27° north of bridge</td>
<td>- Wooden stairways with landings</td>
</tr>
<tr>
<td>- SE Holgate Blvd. at UPRR, grade-separated crossing, -2.23° south of bridge</td>
<td>- No access ramps for bicyclists or mobility-impaired users</td>
</tr>
<tr>
<td>Elements precluding/discouraging at-grade crossings in bridge area:</td>
<td>Bridge structure length</td>
</tr>
<tr>
<td>- Fencing on east side of railroad (pedestrians observed crossing at-grade through hole cut in fence)</td>
<td>(excluding access ramps): -128'</td>
</tr>
<tr>
<td>Bike/ped accommodations immediately adjacent to bridge:</td>
<td>Bridge structure vertical clearance: N/A (uncovered)</td>
</tr>
<tr>
<td>- Curb in poor condition where west stairway meets the street</td>
<td>Minimum bridge structure width:</td>
</tr>
<tr>
<td>- Curb ramps in good condition where east stairway meets the street</td>
<td>- 5'9&quot; - 6'4&quot; (depending on location)</td>
</tr>
<tr>
<td>- Sidewalks on surrounding streets</td>
<td>Lighting: Ambient street and railroad lighting only</td>
</tr>
<tr>
<td>Degree of out-of-direction travel to reach bridge area (real or perceived):</td>
<td>Horizontal/vertical obstructions:</td>
</tr>
<tr>
<td>- Bicycle: Bridge is located on a logical east-west bicycle route (nearest alternative crossings are difficult for bicyclists)</td>
<td>Portions of cyclone fence on bridge extend into the pedestrian travelway</td>
</tr>
<tr>
<td>- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical east-west walking route between nearby residential areas and schools)</td>
<td></td>
</tr>
<tr>
<td>Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:</td>
<td></td>
</tr>
<tr>
<td>- Vertical rise between bridge and base of access ramps: -25'</td>
<td></td>
</tr>
<tr>
<td>- Bicycle: Bicyclists may equate the lack of access ramps (stairs only) with out-of-direction travel; “bike gutter” not provided on stairways</td>
<td></td>
</tr>
<tr>
<td>- Pedestrian: Minimal out-of-direction travel (stairs are oriented along the desired travel route); lack of access ramps renders bridge unusable for wheelchair users</td>
<td></td>
</tr>
<tr>
<td>Wayfinding or other signage/pavement markings:</td>
<td></td>
</tr>
<tr>
<td>- &quot;No Trespassing&quot; signs at bridge's west end (to discourage at-grade crossings)</td>
<td></td>
</tr>
<tr>
<td>Surrounding bike/ped network:</td>
<td></td>
</tr>
<tr>
<td>- Low-volume residential streets</td>
<td></td>
</tr>
<tr>
<td>- Sidewalks on most streets</td>
<td></td>
</tr>
<tr>
<td>Curb ramp in poor condition at bottom of west stairway</td>
<td></td>
</tr>
<tr>
<td>Sidewalk and curb ramp in good condition near east stairway</td>
<td></td>
</tr>
<tr>
<td>&quot;No Trespassing&quot; sign at bridge’s west end</td>
<td></td>
</tr>
<tr>
<td>Fence/wall/railing heights:</td>
<td></td>
</tr>
<tr>
<td>- Stairways: ~42&quot; railings</td>
<td></td>
</tr>
<tr>
<td>- Bridge: ~69.79&quot; fence (depending on location); no railings</td>
<td></td>
</tr>
<tr>
<td>Stairway total length/width:</td>
<td></td>
</tr>
<tr>
<td>- West stairway: 6' wide, length data not available</td>
<td></td>
</tr>
<tr>
<td>- East stairway: 6' wide, length data not available</td>
<td></td>
</tr>
<tr>
<td>Railings not provided on bridge structure</td>
<td></td>
</tr>
<tr>
<td>An alignment shift midway across the bridge creates two segments with differing widths</td>
<td></td>
</tr>
<tr>
<td>The bridge’s eastern end has a 5’9” width</td>
<td></td>
</tr>
<tr>
<td>Surface conditions:</td>
<td></td>
</tr>
<tr>
<td>- Bridge: Wooden surface generally in good condition (slippery when wet; some water ponding)</td>
<td></td>
</tr>
<tr>
<td>- Stairways: Wooden surface generally in good condition (slippery when wet; some water ponding)</td>
<td></td>
</tr>
<tr>
<td>Horizontal/vertical obstructions:</td>
<td></td>
</tr>
<tr>
<td>Portions of cyclone fence on bridge extend into the pedestrian travelway</td>
<td></td>
</tr>
<tr>
<td>Year built: 1943</td>
<td>Owned by: Union Pacific Railroad</td>
</tr>
</tbody>
</table>

Location: Portland, OR

Nearby destinations:
- Brooklyn neighborhood
- Brooklyn Elem. School
- Winterhaven Middle School
- Cleveland High School
- Powell Park
- Brooklyn Railyard
- Industrial areas to the east and west

Misc. observations: Graffiti present on bridge; slippery wood surface on bridge and stairs; weight of pedestrians causes wood surface to bounce
### Interstate 205 at SE Main Street

<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong> Portland, OR</td>
<td><strong>Bridge structure length (excluding access ramps):</strong> ~575'</td>
</tr>
<tr>
<td><strong>Location Map Reference #: 20</strong></td>
<td><strong>Bridge structure vertical clearance:</strong> N/A (uncovered)</td>
</tr>
<tr>
<td>Crosses over: I-205, future MAX light rail, SE 96th Ave.</td>
<td><strong>Minimum bridge structure width:</strong> ~10'</td>
</tr>
</tbody>
</table>

**Year built:** 1978 **Owned by:** Oregon Dept. of Transportation

**Nearby destinations:**
- Montavilla neighborhood
- Hazelwood neighborhood
- Clark Elem. School
- Portland Adventist Academy
- Portland Adventist Medical Center
- Berrydale Park
- Berrydale Community Garden

**Misc. observations:** Potential direct connection with future MAX station below bridge

**Surrounding bike/ped network:**
- I-205 Path
- Sidewalks on most nearby streets
- Bicycle lanes on SE 96th Ave.
- Low-volume residential streets

#### Location Map Reference #: 20

**Crosses over:** I-205, future MAX light rail, SE 96th Ave.

**Elements precluding/discouraging at-grade crossings in bridge area:**
- Fencing on both sides of I-205

**Degree of out-of-direction travel to reach bridge area (real or perceived):**
- Bicycle: Minimal out-of-direction travel (bridge is located on a logical east-west bicycle route)
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical walking route between nearby educational facilities and residential areas)

**Wayfinding or other signage/pavement markings:**
- Wayfinding signage directing I-205 Path users to bridge and SE 96th Ave.
- Faded pavement markings separating bi-directional traffic on access ramps

**Lighting:** Provided on bridge and access ramps

**Access ramp length/width:**
- West ramp: ~224'/~10'
- East ramp: ~357'/~10'

**Fence/wall/railing heights:**
- West ramp: No fences, walls, railings
- East ramp: ~49' railings
- Bridge: ~9' 4" fence, ~49' railings

**Surface conditions:**
- Bridge: Pavement in good condition; expansion joint gaps at bridge ends (creates issues for "wheel" users)
- Shared use paths: Pavement in generally good condition (minor cracking)
- No drainage grates on bridge or access ramps

**Bridge structure length:** ~575'

**Bridge structure vertical clearance:** N/A (uncovered)

**Avoiding out-of-direction travel to overcome any vertical rise to reach the bridge:**
- Vertical rise between bridge and base of access ramps: Data unavailable
- Bicycle: Some out-of-direction travel required at both bridge ends; long circuitous access ramp on east end (informal paths present to reduce travel distance); informal paths on west end have been paved
- Pedestrian: Some out-of-direction travel required at both bridge ends; long circuitous access ramp on east end (informal paths present to reduce travel distance); informal paths on west end have been paved

**Fence and railing on bridge structure**

**Horizontal/vertical obstructions:** None

**Bridge cross-section includes a 10' width (curbs and railings are flush with one another)**
## SE Powell Boulevard at Interstate 205

### Location Elements

- **Location Map Reference #: 21**
- **Crosses over: SE Powell Blvd.**
- **Location: Portland, OR**
- **Year built: 2003**
- **Owned by: Oregon Dept. of Transportation**

### Design Elements

- **Bridge access provisions:**
  - Circuitous access ramps (landings provided on north ramp)
  - No stairways
- **Bridge structure length (excluding access ramps):** ~216’
- **Bridge structure vertical clearance:** N/A (uncovered)
- **Minimum bridge structure width:** ~14’
- **Access ramp length/width:**
  - North ramp: ~385’/~14’
  - South ramp: ~570’/~10’
- **Fence/wall/railing heights:**
  - North ramp: No fences, walls, railings
  - South ramp: No fences, walls, railings
  - Bridge: ~95” fence, ~42” railings (railing is ~12” long and serves as a bicycle “handlebar guard”)
- **Surface conditions:**
  - Bridge: Pavement in good condition; minor expansion joint gaps at bridge ends (creates issues for “wheel” users)
  - Access ramps: Pavement in good condition
  - No drainage grates on bridge or access ramps
- **Wayfinding or other signage/ pavement markings:**
  - Wayfinding signage directing users to/from I-205 path, SE Powell Blvd., and other destinations
  - “Bicyclists Yield to Pedestrians” signs on access ramps
  - Pavement markings separating bi-directional traffic on bridge and access ramps
  - “SLOW” pavement markings on north access ramp
- **Lighting:** Provided on bridge and access ramps
- **Horizontal/vertical obstructions:** None

### Bridges and Crossings

- **Nearest alternative formalized crossing(s):**
  - SE Powell Blvd. at I-205 NB ramps, signalized at-grade crossing, ~500’ east of bridge
  - SE Powell Blvd at 92nd Ave., signalized at-grade crossing, ~500’ west of bridge

- **Elements precluding/discouraging at-grade crossings in bridge area:**
  - Signage prohibiting at-grade pedestrian crossings below bridge

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - Bicycle: Minimal out-of-direction travel (bridge is located on a logical north-south bicycle route)
  - Pedestrian: Minimal out-of-direction travel (bridge is located on a logical north-south walking route)

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - Vertical rise between bridge and base of access ramps: Data unavailable for bike crossing
  - Bicycle: Some out-of-direction travel required at both bridge ends; excessive out-of-direction travel for users traveling between the bridge and south side of SE Powell Blvd.
  - Pedestrian: Some out-of-direction travel required at both bridge ends; excessive out-of-direction travel for users traveling between the bridge and south side of SE Powell Blvd.; stairways not provided for alternative routing

### Bike/ped accommodations immediately adjacent to bridge:

- **Bike/ped accommodations immediately adjacent to bridge:**
  - I-205 Path
  - Sidewalks present where access ramps meet SE Powell Blvd.
- **Surrounding bike/ped network:**
  - I-205 Path
  - Sidewalks present where access ramps meet SE Powell Blvd.
  - Bicycle lanes on SE Powell Blvd. (east of I-205)
  - Bicycle lanes on SE 92nd Ave.
  - Low-volume residential streets
- **Wayfinding signage near bridge:**
  - Wayfinding directional signage at bridge
  - “SLOW” pavement markings on north access ramp
  - Wayfinding signage on I-205 Path near bridge

- **Misc. observations:**
  - Potential connection with future nearby MAX station

- **Access ramp length/width:**
  - North ramp: ~385’/~14’
  - South ramp: ~570’/~10’

- **Wayfinding or other signage/ pavement markings:**
  - Wayfinding signage directing users to/from I-205 path, SE Powell Blvd., and other destinations
  - “Bicyclists Yield to Pedestrians” signs on access ramps
  - Pavement markings separating bi-directional traffic on bridge and access ramps
  - “SLOW” pavement markings on north access ramp
<table>
<thead>
<tr>
<th>Location Elements</th>
<th>Design Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nearest alternative formalized crossing(s):</strong></td>
<td><strong>Bridge access provisions:</strong></td>
</tr>
<tr>
<td>- SE Division St. at 136th Ave., signalized at-grade crossing, -120' west of bridge</td>
<td>- Stairways with level landings and &quot;bike gutters&quot;</td>
</tr>
<tr>
<td>- SE Division St. at 137th Ave., unsignalized at-grade crossing, -110' east of bridge</td>
<td>- No access ramps for bicyclists or mobility-impaired users</td>
</tr>
<tr>
<td><strong>Elements precluding/discouraging at-grade crossings in bridge area:</strong> None</td>
<td><strong>Bridge structure length</strong> (excluding access ramps): -83'</td>
</tr>
<tr>
<td><strong>Bike/ped accommodations immediately adjacent to bridge:</strong></td>
<td><strong>Bridge structure vertical clearance:</strong> N/A (uncovered)</td>
</tr>
<tr>
<td>- Curb ramps provided at adjacent intersections</td>
<td><strong>Minimum bridge structure width:</strong> -5' 11&quot;</td>
</tr>
<tr>
<td>- Fragmented sidewalks on SE Division St.</td>
<td><strong>Bridge cross-section includes a 5' 11&quot; rail-to-rail width</strong></td>
</tr>
<tr>
<td><strong>Surrounding bike/ped network:</strong></td>
<td><strong>Surface conditions:</strong></td>
</tr>
<tr>
<td>- Bicycle lanes and fragmented sidewalks on SE Division St.</td>
<td>- Bridge: Pavement in good condition</td>
</tr>
<tr>
<td>- Low-volume residential streets</td>
<td>- Stairways: Pavement in good condition</td>
</tr>
<tr>
<td>- Sidewalks on most streets</td>
<td>- No drainage grates on bridge or stairs</td>
</tr>
<tr>
<td>- Limited street system connectivity</td>
<td><strong>Wayfinding or other signage/pavement markings:</strong> None</td>
</tr>
<tr>
<td><strong>Wayfinding or other signage/pavement markings:</strong> None</td>
<td><strong>Lighting:</strong> Ambient street lighting on north side of SE Division St. only</td>
</tr>
<tr>
<td><strong>Stairway total length/width:</strong></td>
<td><strong>Horizontal/vertical obstructions:</strong></td>
</tr>
<tr>
<td>- North stairway: ~35'/~5' 11&quot;</td>
<td>- Low-hanging electrical wires over north and south bridge ends (~6' 8&quot; above bridge deck)</td>
</tr>
<tr>
<td>- South stairway: ~35'/~5' 11&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Interstate 5 at Barbur Transit Center

Location Elements

- Nearest alternative formalized crossings:
  - I-5 at Capitol Hwy., grade-separated crossing, ~1,120' west of bridge
- Elements precluding/discouraging at-grade crossings in bridge area:
  - Fencing on both sides of I-5

- Bike/ped accommodations immediately adjacent to bridge:
  - Sidewalk leading to Barbur Transit Center
  - No sidewalks where south access ramp meets the street system

- Degree of out-of-direction travel to reach bridge area (real or perceived):
  - Bicycle: Minimal out-of-direction travel (bridge lies on a logical north-south bicycle route)
  - Pedestrian: Minimal out-of-direction travel (bridge lies on a logical north-south walking route between the transit center and residential areas to the south)

- Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
  - Vertical rise between bridge and base of access ramps: Data not available
  - Bicycle: Some out-of-direction travel required to overcome elevation difference, however the linear access ramps facilitate continuous bicycle travel
  - Pedestrian: Some out-of-direction travel required to overcome elevation difference; stairway provided on north access ramp to provide alternative routing

- Surrounding bike/ped network:
  - Bridge is part of "SW Trail #5"
  - Sidewalks and bicycle lanes on SW Barbur Blvd.
  - Sidewalks missing on streets south of bridge
  - Low-volume residential streets

- Wayfinding or other signage/pavement markings:
  - Wayfinding signage identifying bridge as part of "SW Trail #5"

- Bridge access provisions:
  - Linear access ramps on north and south sides
  - Stairway with landings on north side ("bike gutter" not provided)

- Minimum bridge structure width: ~11'

- Bridge structure length (excluding access ramps): ~155'

- Bridge structure vertical clearance: N/A (uncovered)

- Surface conditions:
  - Bridge: Pavement in good condition; drainage grates at south end; expansion joint gaps at north and south ends
  - Access ramps: Pavement in generally good condition; vegetation growing between pavement joints in some locations

- Horizontal/vertical obstructions:
  - Vegetation encroaching on bridge structure
  - Vegetation encroaching on south access ramp

Location: Portland, OR

Year built: 1976

 Owned by: Oregon Dept. of Transportation

Nearby destinations:
- Crestwood neighborhood
- Multnomah neighborhood
- West Portland Park neighborhood
- Jackson Middle School
- Woods Memorial Park
- Barbur Transit Center

Misc. observations: Heavy traffic volumes on I-5 cause bridge to vibrate and bounce; artwork on north access ramp adds aesthetic value

Location Map Reference #: 23

Crosses over: Interstate 5

North access ramp

Wayfinding signage identifying the bridge as part of "SW Trail #5"

Lighting on south access ramp

Vegetation encroaching on bridge structure

Wayfinding or other signage/pavement markings:

North access ramp

Stairway at bridge's north end

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure

Access ramp length/width:
- North ramp: ~255'/~10'
- South ramp: ~390'/~10'

Fence/wall/railing heights:
- Access ramps: 40" railings
- Stairway: 44" railings
- Bridge: ~40" railings

Lighting provided on bridge and access ramps

Lighting on south access ramp

Vegetation encroaching on bridge structure
### Location: Portland, OR

#### Crosses over: SE McLoughlin Blvd.

- **Location Map Reference #: 24**

#### Nearby destinations:
- Ardenwald neighborhood
- Sellwood-Moreland neighborhood
- Johnson Creek Park
- Tideman Johnson Park
- Roswell Pond Open Space
- McLoughlin Industrial Area
- TriMet bus stop

#### Year built: 2006

#### Owned by: City of Portland

#### Elements precluding/discouraging at-grade crossings in bridge area:
Concrete center divider on SE McLoughlin Blvd.

#### Access ramp length/width:
- **East ramp:** ~465'/~7'

#### Horizontal/vertical obstructions:
None

#### Lighting:
Ambient street lighting only

#### Bridge structure length (excluding access ramps): ~300'

#### Bridge structure vertical clearance:
Varies

#### Minimum bridge structure width: ~12'

#### Nearest alternative formalized crossing(s):
- SE McLoughlin Blvd. at Ochoco St., signalized at-grade crossing, ~530' south of bridge
- SE McLoughlin Blvd. at Tacoma St., grade-separated crossing, ~1,550' north of bridge

#### Degree of out-of-direction travel to reach bridge area (real or perceived):
- **Bicycle:** Minimal out-of-direction travel (bridge is located on a logical east-west bicycle route)
- **Pedestrian:** Minimal out-of-direction travel (bridge is located on a logical east-west walking route)

#### Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
- **Bicycle:** Vertical rise between bridge and base of access ramps; Data unavailable
- **Pedestrian:** Vertical rise between bridge and Springwater Trail at roughly the same elevation, thereby requiring no circuitous access ramps; some out-of-direction travel between bridge and east side of SE McLoughlin Blvd.; Pedestrians: Minimal out-of-direction travel for east-west users (bridge and Springwater Trail are at roughly the same elevation, thereby requiring no circuitous access ramps); some out-of-direction travel between bridge and east side of SE McLoughlin Blvd. (via access ramp); Pedestrian: Minimal out-of-direction travel for east-west users (bridge and Springwater Trail are at roughly the same elevation, thereby requiring no circuitous access ramps); some out-of-direction travel between bridge and east side of SE McLoughlin Blvd. (via access ramp); bridge not accessible from west side of SE McLoughlin Blvd.

#### Surface conditions:
- Bridge: Pavement in good condition; minor expansion joint gaps at bridge ends (creates issues for "wheel" users); drainage grates placed outside the bridge's curb-to-curb width
- Access ramps: Pavement in good condition

#### Wayfinding or other signage/pavement markings:
- Wayfinding signage directing users to/from Springwater Trail and other destinations
- "Bicycle boulevard" markings on accessway leading to/from SE 19th Ave.

#### Access ramp provisions:
- **Bridge access provisions:**
  - Circuitous access ramp with switchback on bridge's east end (landings not provided)
  - No stairways
  - Bridge is part of a continuous shared use path

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'

#### Switchback on east access ramp

#### Bridge cross-section includes a 12' width (curbs and railings are flush with one another)

#### Drainage grates placed outside the bicycle/pedestrian travelway

#### Fence/wall/railing heights:
- **East ramp:** No fences, walls, railings
- **Bridge:** ~42" railings

#### Railing style on bridge structure

#### Bridge access ramp with switchback on bridge’s east end (landings not provided)

#### Minimum bridge structure width: ~12'
# Interstate 5/Oregon 217 Interchange

## Location Elements

- **Nearby destinations:**
  - Centerpointe Open Space
  - Kimberly Woods Open Space
  - Kruse Oaks Open Space
  - Business parks and commercial areas along SW Kruse Way and Bangy Rd.

- **Misc. observations:** Excessive noise generated by two adjacent freeways; high vehicle speeds and volumes on nearby streets

## Design Elements

- **Bridge access provisions:** Bridge is part of a continuous shared use path network
  - Access ramp length/width:
    - No specific lengths (bridge is part of a continuous shared use path)
    - Shared use path width: ~10'
    - Bridge: ~44" railings
  - Center bollard present where shared use path meets intersection west of bridge
  - Bridge and path are at roughly the same elevation, eliminating the need for stairways or circuitous access ramps

## Bridge Structure

- **Bridge structure length** (excluding access ramps): ~251'
- **Bridge structure vertical clearance:** ~10' 6" minimum
- **Minimum bridge structure width:** ~14' 6"

- **Surface conditions:**
  - Bridge: Pavement in good condition; large pavement "lip" at bridge's east end (creates issues for "wheel" users)
  - Access ramps: Pavement in good condition
  - No drainage grates on bridge or access ramps

- **Horizontal/vertical obstructions:**
  - Minor vegetation encroachment on bridge's east end

- **Wayfinding or other signage/pavement markings:** None

## Miscellaneous

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - Bicycle: Minimal out-of-direction travel (bridge is located on a logical east-west bicycle route)
  - Pedestrian: Minimal out-of-direction travel (bridge is located on a logical east-west walking route)

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - Vertical rise between bridge and adjacent paths: Data unavailable
  - Bicycle: No out-of-direction travel
  - Pedestrian: No out-of-direction travel

- **Surrounding bike/ped network:**
  - Shared use paths along SW Kruse Way and I-5
  - Sidewalks on most nearby streets
  - Bicycle lanes on SW Bangy Rd.

- **Bike/ped accommodations immediately adjacent to bridge:**
  - Shared use path along Kruse Way and I-5
  - Sidewalks and curb ramps provided at adjacent intersections

- **Elements precluding/discouraging at-grade crossings in bridge area:**
  - Fencing and barriers on both sides of I-5

- **Elements preventing/discouraging at-grade crossings in bridge area:**
  - Fencing and barriers on both sides of I-5

- **Horizontal/vertical obstructions:**
  - Minor vegetation encroachment on bridge's east end

- **Surrounding bike/ped network:**
  - Shared use paths along SW Kruse Way and I-5
  - Sidewalks on most nearby streets
  - Bicycle lanes on SW Bangy Rd.

- **Access ramp length/width:**
  - No specific lengths (bridge is part of a continuous shared use path)
  - Shared use path width: ~10'
  - Bridge: ~44" railings

- **Fence/wall/railing heights:**
  - Shared use paths: No fences, walls, railings
  - Bridge: ~44" railings

- **Surface conditions:**
  - Bridge: Pavement in good condition; large pavement "lip" at bridge's east end (creates issues for "wheel" users)
  - Access ramps: Pavement in good condition
  - No drainage grates on bridge or access ramps

- **Horizontal/vertical obstructions:**
  - Minor vegetation encroachment on bridge's east end

- **Lighting:** Ambient freeway lighting only

## References

- **Source:** Google Earth

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**Location:** Tigard, OR

**Crosses over:** Interstate 5

**Location Map Reference #:** 25

**Year built:** 2001

**Owned by:** Oregon Dept. of Transportation
### Autzen Bridge

**Location Map Reference #: 26**

- **Crosses over:** Willamette River
- **Location:** Eugene, OR
- **Year built:** 1970
- **Owned by:** City of Eugene

**Surrounding bike/ped network:**
- North Bank Trail
- South Bank Trail
- Trail to Autzen Stadium
- Sidewalks on most nearby streets

**Nearby destinations:**
- University of Oregon
- University of Oregon Riverfront Field
- Autzen Stadium
- Alton Baker Park
- Whilamut Natural Area
- Franklin Park
- North Bank Trail
- South Bank Trail

**Elements precluding/discouraging at-grade crossings in bridge area:** Willamette River

**Degree of out-of-direction travel to reach bridge area (real or perceived):**
- Bicycle: Minimal out-of-direction travel (bridge is located on a logical north-south bicycle route)
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical north-south walking route)

**Bike/ped accommodations immediately adjacent to bridge:**
- Shared use paths at both bridge ends
- Raised crosswalk with pavement texturing immediately south of bridge

**Fence/wall/railing heights:**
- Shared use paths: No fences, walls, railings
- Bridge: ~20" walls, ~44" railings

**Lighting:**
- Provided on bridge and shared use paths
- Several damaged/broken lights on bridge walls

**Wayfinding or other signage/pavement markings:**
- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Bridge access provisions:** Bridge is part of a continuous shared use path network

**Bridge structure length (excluding access ramps):** ~670'

**Bridge structure vertical clearance:** N/A (uncovered)

**Minimum bridge structure width:** ~12'

**Surface conditions:**
- Bridge: Pavement in generally good condition; expansion joint gaps at both bridge ends; manhole covers on bridge deck might be difficult for some "wheel" users
- Shared use paths: Pavement in generally good condition

### Location Elements

**Nearest alternative formalized crossing(s):**
- Knickerbocker Bridge, ~3,500' east of bridge
- DeFazio Bridge, ~5,500' west of bridge

**Elements precluding/discouraging at-grade crossings in bridge area:** Willamette River

**Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
- Vertical rise between bridge and adjacent paths: Data unavailable
- Bicycle: Minimal out-of-direction travel (bridge and surrounding paths are at roughly the same elevation, thereby requiring no circuitous access ramps); however some informal paths exist near both bridge ends
- Pedestrian: Minimal out-of-direction travel (bridge and surrounding paths are at roughly the same elevation, thereby requiring no stairways or circuitous access ramps); however some informal paths exist near both bridge ends

**Bike/ped accommodations immediately adjacent to bridge:**
- Shared use paths at both bridge ends
- Raised crosswalk with pavement texturing immediately south of bridge

**Wayfinding or other signage/pavement markings:**
- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Surrounding bike/ped network:**
- North Bank Trail
- South Bank Trail
- Trail to Autzen Stadium
- Sidewalks on most nearby streets

**Misc. observations:** Viewing areas with benches make the bridge a destination

**Degree of out-of-direction travel to reach bridge area (real or perceived):**
- Bicycle: Minimal out-of-direction travel (bridge is located on a logical north-south bicycle route)
- Pedestrian: Minimal out-of-direction travel (bridge is located on a logical north-south walking route)

**Railing style on bridge structure:**
- Raised crosswalk with pavement texturing on Millrace Dr. immediately south of the bridge

**Fence/wall/railing heights:**
- Shared use paths: No fences, walls, railings
- Bridge: ~20" walls, ~44" railings

**Lighting:**
- Provided on bridge and shared use paths
- Several damaged/broken lights on bridge walls

**Surface conditions:**
- Bridge: Pavement in generally good condition; expansion joint gaps at both bridge ends; manhole covers on bridge deck might be difficult for some "wheel" users
- Shared use paths: Pavement in generally good condition

**Horizontal/vertical obstructions:** None
### DeFazio Bridge

#### Location Elements

- **Location**: Eugene, OR
- **Year built**: 1999
- **Owned by**: City of Eugene

**Nearby destinations:**
- University of Oregon
- Alton Baker Park
- Skinner Butte Park
- Hult Center for the Performing Arts
- North Bank Trail
- South Bank Trail
- Plazas north and south of the bridge

**Elements precluding/discouraging at-grade crossings in bridge area:**
- Willamette River

**Nearest alternative formalized crossings:**
- Ferry Street Bridge, -300’ west of bridge
- Autzen Bridge, -5,500’ east of bridge

**Elements precluding/discouraging at-grade crossings in bridge area:**
- Willamette River

#### Design Elements

- **Bridge access provisions:**
  - Linear and curvilinear access ramps
  - Stairway on bridge's north end (no landings or "bike gutter")

- **Bridge structure length (excluding access ramps):** 613’
- **Bridge structure vertical clearance:** varies
- **Minimum bridge structure width:** 14’

- **Surrounding bike/ped network:**
  - North Bank Trail
  - South Bank Trail
  - Trails in Alton Baker Park
  - Sidewalks on Ferry St.
  - Plazas serving as a path confluence areas

- **Viewing areas make the bridge a destination**

- **Degree of out-of-direction travel to reach bridge area (real or perceived):**
  - **Bicycle:** Minimal out-of-direction travel (bridge is located on a logical north-south bicycle route)
  - **Pedestrian:** Minimal out-of-direction travel (bridge is located on a logical north-south walking route)

- **Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:**
  - **Vertical rise between bridge and base of access ramps:** Data unavailable
  - **Bicycle:** Depends on direction of travel; minimal out-of-direction travel for users on Ferry St. corridor (bridge and street are at roughly the same elevation, thereby requiring no circuitous access ramps); some out-of-direction travel between bridge and North/South Bank trails (via access ramps)
  - **Pedestrian:** Depends on direction of travel; minimal out-of-direction travel for users on Ferry St. corridor (bridge and street are at roughly the same elevation, thereby requiring no circuitous access ramps); some out-of-direction travel between bridge and North/South Bank trails (via access ramps); stairways provided at bridge's north end to provide alternative routing; stairways not provided at bridge's south end

- **Wayfinding or other signage/pavement markings:**
  - Wayfinding signage at north and south bridge ends
  - Pavement markings on North and South Bank trails serving as mileage markers

- **Wayfinding signage near bridge's south end**

- **Surface conditions:**
  - **Bridge:** Pavement in good condition; minor expansion joint gaps at bridge ends (creates issues for ‘wheel’ users); small drainage grates placed at bridge edges
  - **Access ramps:** Pavement in good condition
  - **Horizontal/vertical obstructions:** None

- **Lighting:** Provided on bridge, access ramps and surrounding paths

- **Fence/wall/railing heights:**
  - North access ramp: ~43” lower railings, ~55” upper railings
  - North stairway: ~43” railings

<table>
<thead>
<tr>
<th>Location Map Reference #: 27</th>
<th>Crosses over: Willamette River</th>
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<tbody>
<tr>
<td>Source: Google Earth</td>
<td>Source: Google Maps</td>
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- **Expansion joint gap at bridge's south end**

**Bike/ped accommodations immediately adjacent to bridge:**
- Shared use paths at both bridge ends
- Sidewalks on Ferry St.
- Plazas serving as a path confluence areas

- **Alton Baker Park**
  - Surrounding bike/ped network:
    - North Bank Trail
    - South Bank Trail
    - Trails in Alton Baker Park
    - Sidewalks on Ferry St.
Knickerbocker Bridge

**Location Elements**

- **Nearest alternative formalized crossing(s):** Autzen Bridge, ~3,500’ west of bridge
- **Elements precluding/discouraging at-grade crossings in bridge area:** Willamette River
- **Bike/ped accommodations immediately adjacent to bridge:** Shared use paths at both bridge ends
- **Surrounding bike/ped network:**
  - North Bank Trail
  - South Bank Trail
  - Jogging trails in Alton Baker Park
- **Wayfinding or other signage/pavement markings:**
  - Wayfinding signage at north and south bridge ends
  - Pavement markings on North and South Bank trails serving as mileage markers
- **Lighting:** One light provided on bridge’s south end
- **Wayfinding or other signage/pavement markings:**
  - Wayfinding signage at north and south bridge ends
  - Pavement markings on North and South Bank trails serving as mileage markers

**Design Elements**

- **Bridge access provisions:** Bridge is part of a continuous shared use path network (north access path is somewhat steep, which could complicate travel for wheelchair users)
- **Bridge structure length (excluding access ramps):** ~525’
- **Bridge structure vertical clearance:** N/A (uncovered)
- **Minimum bridge structure width:** ~13’
- **Surface conditions:**
  - Bridge: Pavement in generally good condition; large pavement ‘lips’ at both bridge ends; manhole covers on bridge deck might be difficult for some ‘wheel’ users
  - Shared use paths: Rough pavement conditions on north access path
- **Fence/wall/railing heights:**
  - Shared use paths: No fences, walls, railings
  - Bridge: ~43” railings

**Misc. observations:**

- Viewing areas with benches make the bridge a destination
- Elements precluding/discouraging at-grade crossings in bridge area: Willamette River
- Horizontal/vertical obstructions: None
- Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
  - Vertical rise between bridge and adjacent paths: Data unavailable
  - Bicycle: Minimal out-of-direction travel (bridge and surrounding paths are at roughly the same elevation, thereby requiring no circuitous access ramps); however some informal paths exist near the bridge’s north end
  - Pedestrian: Minimal out-of-direction travel (bridge and surrounding paths are at roughly the same elevation, thereby requiring no stairways or circuitous access ramps); however some informal paths exist near the bridge’s north end

**Year built:** 1979

**Owned by:** City of Eugene

**Location:** Eugene, OR

**Location Map Reference #:** 28

**Crosses over:** Willamette River

**Source:** Google Earth

**Source:** Google Maps

**Nearby destinations:**

- University of Oregon
- Alton Baker Park
- Whilamut Natural Area
- Franklin Park
- North Bank Trail
- South Bank Trail

**Informal path at bridge’s north end**

**Wayfinding or other signage/pavement markings:**

- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Nearest alternative formalized crossing(s):** Autzen Bridge, ~3,500’ west of bridge

**Elements precluding/discouraging at-grade crossings in bridge area:** Willamette River

**Bike/ped accommodations immediately adjacent to bridge:** Shared use paths at both bridge ends

**Surrounding bike/ped network:**

- North Bank Trail
- South Bank Trail
- Jogging trails in Alton Baker Park

**Wayfinding or other signage/pavement markings:**

- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Lighting:** One light provided on bridge’s south end

**Wayfinding or other signage/pavement markings:**

- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Lighting:** One light provided on bridge’s south end

**Wayfinding or other signage/pavement markings:**

- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Lighting:** One light provided on bridge’s south end

**Wayfinding or other signage/pavement markings:**

- Wayfinding signage at north and south bridge ends
- Pavement markings on North and South Bank trails serving as mileage markers

**Lighting:** One light provided on bridge’s south end
### Searle Street Bridge

**Location Elements**

- **Location:** Bremerton, WA
- **Location Map Reference #:** 29
- **Crosses over:** SR 3
- **Year built:** 1974
- **Owned by:** Washington State Dept. of Transportation
- **Nearby destinations:**
  - Westpark neighborhood
  - Commercial businesses on Auto Center Way
- **Surrounding bike/ped network:**
  - Sidewalks on most nearby streets
  - Low-volume residential streets
- **Misc. observations:** Graffiti and glass present on bridge structure

#### Elements precluding/discouraging at-grade crossings in bridge area:
- Fencing on both sides of SR 3

#### Bike/ped accommodations immediately adjacent to bridge:
- Curb ramps lacking where access paths meet the street system
- Sidewalks present on Searle St. and Baer Blvd.

#### Degree of out-of-direction travel to reach bridge area (real or perceived):
- **Bicycle:** Minimal out-of-direction travel (bridge is located on a logical east-west bicycle route)
- **Pedestrian:** Minimal out-of-direction travel (bridge is located on a logical east-west walking route)

#### Elements precluding/discouraging at-grade crossings in bridge area:
- Fencing on both sides of SR 3

#### Elements precluding/discouraging at-grade crossings in bridge area:
- Fencing on both sides of SR 3

### Design Elements

#### Bridge access provisions:
- **Access path on bridge's east end**

#### Bridge structure length (excluding access ramps):
- 233'

#### Bridge structure vertical clearance:
- 7' 6"

#### Minimum bridge structure width:
- 7' 6"

#### Horizontal/vertical obstructions:
- Guard rail and encroaching vegetation on west approach create a “pinch point”

#### Surface conditions:
- Bridge: Pavement in good condition; large pavement “lips” at bridge ends
- Access ramps: Major cracking on Searle St. sidewalk; major cracking/heaving on east access path
- No drainage grates on bridge or access ramps

#### Wayfinding or other signage/pavement markings:
- **Wayfinding signage directing users to bridge from adjacent neighborhoods**

#### Lighting:
- Provided on bridge and surrounding streets

#### Fence/wall/railing heights:
- **East path:** No fences, walls, railings
- **Bridge:** 44” railings

#### Pavement cracking/heaving:
- On east access path

#### Degree of out-of-direction travel to overcome any vertical rise to reach the bridge:
- Vertical rise between bridge and base of access ramps: Data unavailable
- Bicycle: Minimal out-of-direction travel (bridge and surrounding streets/paths are at roughly the same elevation); lack of curb ramps complicates bicycle transitions to/from access paths
- Pedestrian: Minimal out-of-direction travel (bridge and surrounding streets/paths are at roughly the same elevation); out-of-direction travel required for mobility-impaired users to access curb ramps

#### Access path length/width:
- **East path:** No specific length (part of a continuous path); ~4' 6" width

#### Bridge cross-section includes:
- A 7' 6" rail-to-rail width and a 7' 6" vertical clearance

#### Bridge access provisions:
- **Access path on bridge's east end**
References


