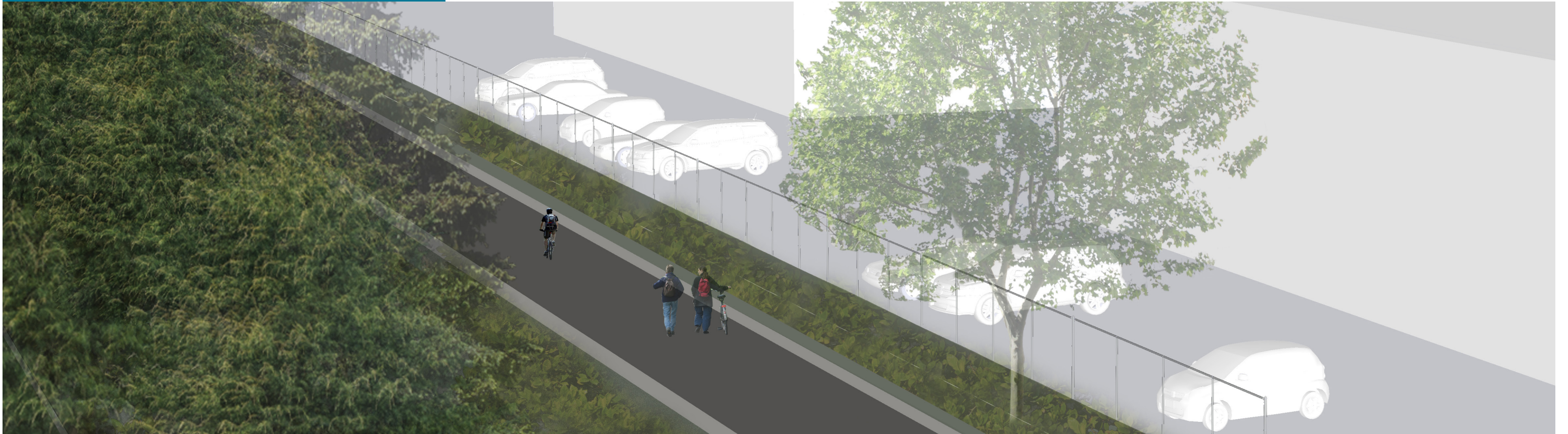


CHAPTER 4



EASTSIDE RAIL CORRIDOR REGIONAL TRAIL MASTER PLAN

What is the best strategy for developing a trail in the ERC, while also allowing potential future use for transit and utilities? Developing a trail on the existing railbed is less expensive and would require less disturbance of the landscape; however, the trail may need to be relocated or modified to accommodate other future uses. A trail developed at the edge of the corridor allows more flexibility for future uses, but would require greater amounts of infrastructure and investment now, while other uses may be years or even decades in the future. This section of the Master Plan describes how the two alternatives for trail development might look in different sections of the corridor.



4.0 TRAIL ALTERNATIVES

The Master Plan describes the anticipated character and general location of alternatives for the ERC trail. The previous chapter of the Master Plan described the typical standards and guidelines that will be used to design the trail. This chapter describes the alternatives for the location of the trail in the ERC, and a general approach to constructing the trail to accommodate the varied terrain in the corridor. The alternatives and major planning considerations are discussed in more detail below by trail segment. The segment descriptions include the general approach to locating the trail either on or off the railbed, where there are opportunities to access the trail (including potential developed gateways), and special features such as the Wilburton Trestle.

This Master Plan is exploring two alternatives for locating a trail in the ERC. These alternatives represent different approaches to the potential future use of the corridor for transit, utilities, or both, in addition to a trail. For the On-Railbed Alternative, the trail is located along the existing railbed. For most of the corridor, this is the easiest location to construct a trail because it uses the grade established for the railroad tracks. However, because the railbed is often located near the center of the ERC right-of-way, the trail may need to be relocated if transit were developed in the future. For the Off-Railbed Alternative, the trail is located as close as possible to one of the edges of the ERC ownership. This alignment would be more challenging to locate the trail because it requires additional clearing and grading; however, it also may reduce the cost of implementing other future uses in the corridor.

While the challenge of accommodating multiple uses in the corridor is one reason for evaluating alternatives, the alignments for the trail also differ in the way that the trail would interact with corridor neighbors and minimize potential effects on sensitive areas such as streams and wetlands. Chapter 6 discusses the potential impacts of these two build alternatives, compared to the outcomes that would likely occur under the “no build” alternative of not developing a regional trail.

This Master Plan identifies a planning envelope for the trail—typically a 30- to 40-foot-wide section of the right-of-way where the trail would be established for the final design. The specific location of the trail within the trail planning envelopes will not be determined until the design phase. Volume 2, Preliminary Plans for Build Alternatives, of this Master Plan provides maps showing the proposed location of the planning envelope for both alternatives along the entire corridor.

The alternative selected for development may be one of the two alternatives described, however, it is likely that the preferred approach will incorporate different alternatives for different sections of the corridor. Trail implementation is discussed in Chapter 5.

The Master Plan includes three alternatives for locating a trail in the ERC. The first build alternative (on-railbed) follows the existing railbed. The second build alternative (off-railbed) is located at the edge of the ERC corridor, preserving as much right-of-way as possible for potential future uses. The third alternative describes what could happen if a regional trail was not developed in the ERC. This No Action Alternative is considered a baseline for comparing environmental benefits and impacts that could occur if a trail is developed.

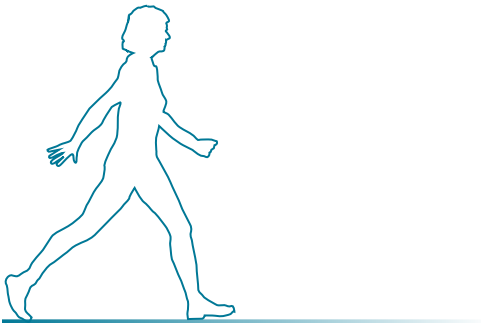
The differences in the on-railbed and off-railbed alignments are summarized below and discussed in more detail in Chapter 6. However, general advantages and disadvantages of the two alternatives are similar throughout the corridor.

ON-RAILBED ALTERNATIVE

Advantages:	Disadvantages:
<ul style="list-style-type: none">• Easier and less costly to construct• Requires less vegetation clearing• Less disruptive of existing surface water and drainage patterns	<ul style="list-style-type: none">• More likely to require relocation of the trail if the corridor is used for future transit or freight rail• In some locations, locating the trail on the railbed would have more potential impacts on adjacent land uses

OFF-RAILBED ALTERNATIVE

Advantages:	Disadvantages:
<ul style="list-style-type: none">• Location allows greatest flexibility for locating future transit, power lines, or freight rail in the corridor• In some areas, the off-railbed location is farther from adjacent residences	<ul style="list-style-type: none">• More difficult and costly to construct, often likely to require major retaining walls and earthwork• More impacts on vegetation and surface water



4.1 DEFINING THE PLANNING ENVELOPE

For a typical rail-to-trail, where a railbanked corridor is being converted to trail, the entire right-of-way is available for locating the trail. In most cases, the existing railbed is the easiest location to construct the trail. For this Master Plan, the desire to provide multiple uses in the corridor, combined with the reality of multiple ownerships and easements, creates a context where the railbed may not be a long-term location for the trail. Establishing the likely planning envelope—a narrower section of the right-of-way where the trail is proposed for development—gives a sense of what the trail may look like within the corridor, accommodates a comparison of impacts among alternatives, and provides clarity for Sound Transit and Puget Sound Energy in planning their potential uses of the corridor. An example of the planning envelope is shown in Figures 4-1 and 4-2.

The proposed planning envelope for the trail in each of the alternatives varies between 30 feet and 40 feet wide. As described in Chapter 3, the preferred design for the trail is 22 to 24 feet wide. The planning envelope is wider than the proposed trail section to allow room for any retaining walls or similar structures and to provide flexibility for future design. A 30-foot width was used for the planning envelope where construction was likely to be more straightforward. A 40-foot planning envelope was used in sections with steep cross-slopes, wetlands, or streams to provide additional design flexibility where construction would be more complex.

For the On-Railbed Alternative, the centerline of the planning envelope typically follows the centerline of the rail line. For the Off-Railbed Alternative, the edge of the planning envelope generally follows the edge of the right-of-way. In some segments of the corridor the Off-Railbed Alternative is located to the west of the railbed, and in some locations it is located to the east. The decision for selecting a specific location was guided by several factors such as constructability, safety at road crossings, existing or planned uses in the corridor, and the character of adjacent land use. In some locations, for example, where the corridor was narrow or the railbed was located towards the edge

of the corridor rather than the center, the locations for both alternatives may have been adjusted to better fit within the right-of-way.

Several sections of the railbanked ERC have only one alternative; these include locations where:

- The right-of-way is not wide enough to include two separate alternative planning envelopes.
- Major structures, including the Wilburton Trestle and I-90 crossing, are the only reasonable options for locating the trail.
- Light rail facilities for Sound Transit’s East Link project, including tracks, the Wilburton Station, and the Operations and Maintenance Satellite Facility (OMSF) in the Bel-Red neighborhood, are planned for part of the right-of-way.
- Railroad tracks are still active (currently, only on a 1-mile portion of the Spur).

The sections below describe the alternatives for each of the major segments of the trail—Lakefront, Wilburton, and Valley—working from south to north along the corridor. Illustrations and text describe the character of the trail alternatives and the planning context that shaped the layout decisions. Detailed maps showing the boundaries of the planning envelope for both build alternatives are included in Volume 2 of this Master Plan.



In parts of the corridor that are relatively flat and unconstrained, the planning envelope is 30 feet wide.



In parts of the corridor with steep slopes or wetlands, the planning envelope is 40 feet wide.

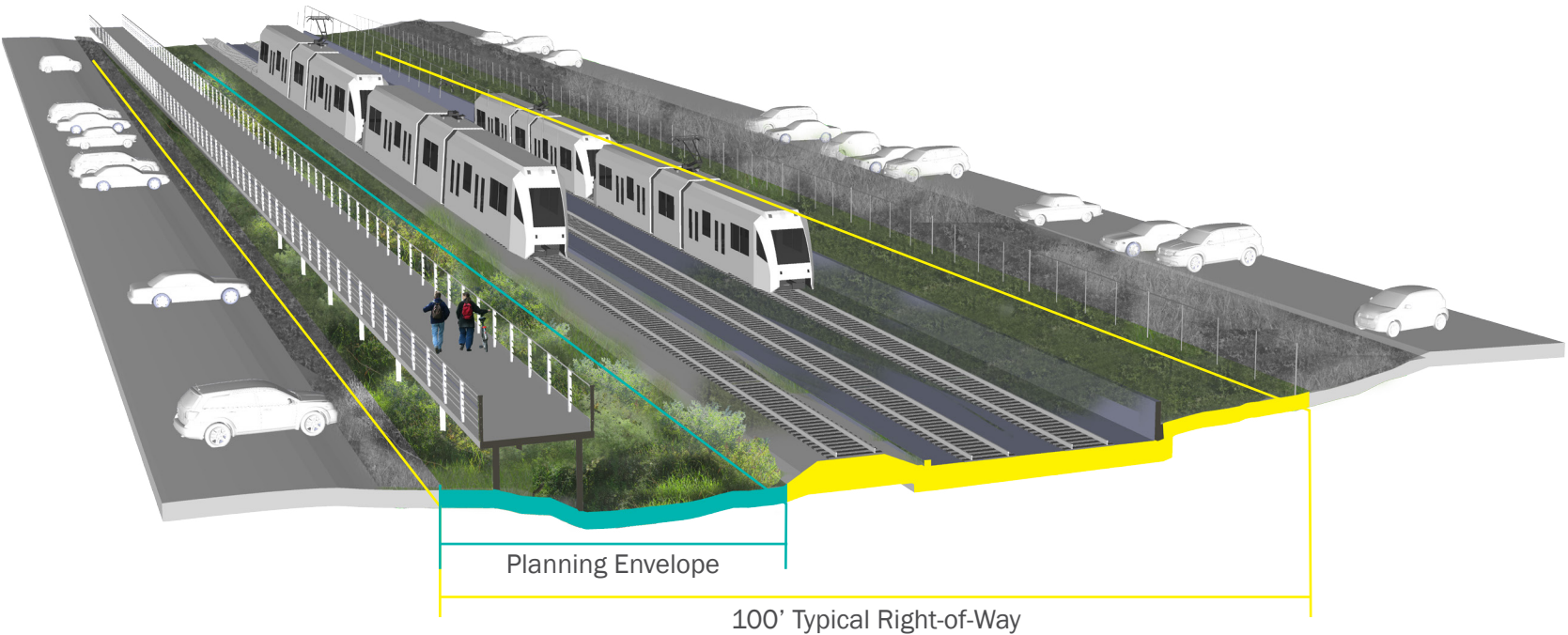


FIGURE 4-1. ILLUSTRATION OF TRAIL PLANNING ENVELOPE

Defining a planning envelope for the trail provides guidance for other owners in the corridor as they consider options for future multiple uses.

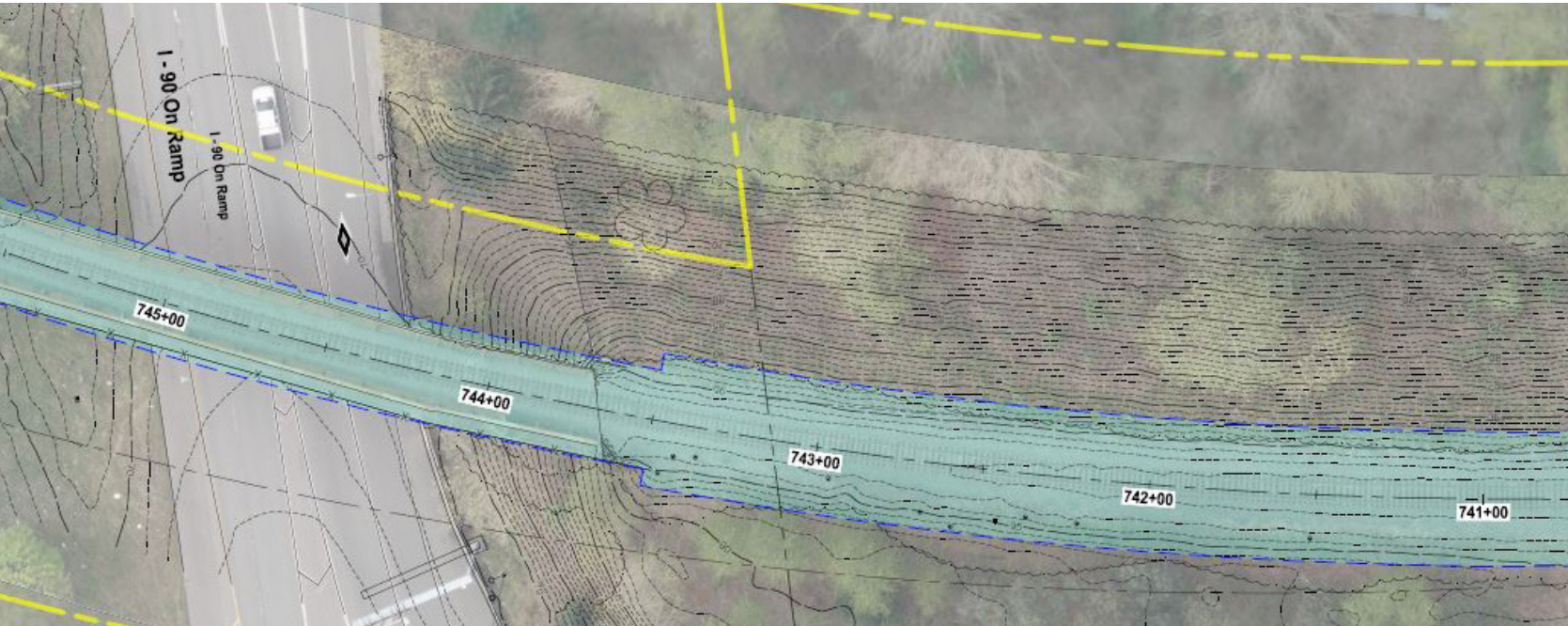
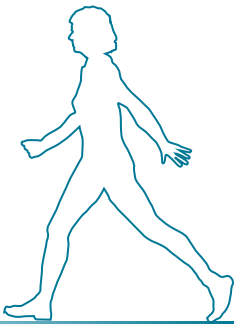


FIGURE 4-2. PLAN SHEET OF TRAIL PLANNING ENVELOPE

Aerial photos showing the planning envelope (in blue) for the entire corridor are included in Volume 2. ERC right-of-way is shown with yellow lines.



4.2 LAKEFRONT SEGMENT

The Lakefront Segment extends from Gene Coulon Park at the south to I-90 at the north. This is the most residential segment of the ERC corridor and includes challenging cross-slopes and limited right-of-way widths.

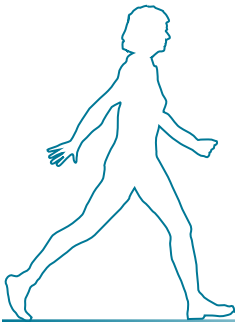
A typical combination of land use and topography found in several locations in this segment includes lakefront homes and narrow access roads between the ERC and Lake Washington. The corridor in these areas typically includes a steep cross-slope, with either Lake Washington Boulevard or I-405 adjacent to the ERC at the top of the slope, and the residential access road at the bottom. The ERC right-of-way is typically less than 100 feet wide, and in some locations is as narrow as 30 feet. Typical examples of this land use and topography are along Mountain View Lane, Ripley Lane, Hazelwood Lane, Pleasure Point Lane, and sections of Lakehurst Lane.

The Port Quendall area includes the Barbee Mill residential neighborhood and the Virginia Mason Athletic Center (VMAC), home of the Seattle Seahawks. The trail corridor is relatively flat and distant from Lake Washington in this section of the corridor.

Newcastle Beach Park is located near the northern border of the segment and is expected to be a popular destination for trail users. Between the park and I-90 the corridor tends eastward, away from the lake, and becomes more forested. However, side slopes continue to be a challenge for construction of the trail.

The segment ends at the crossing of I-90 where the trail will use the existing railroad bridge to cross over several freeway lanes. This will also be the location of a major trail connection between the ERC trail and the I-90/Mountains to Sound Greenway Trail. The I-90 crossing and trail connection is described in detail in the Wilburton Segment.

Overall, the Lakefront Segment is almost 5 miles long, out of the 16.7 total miles covered in this Master Plan. The average cross-slope in the corridor is over 20 percent for almost 3.5 miles of the segment.



LAKEFRONT SEGMENT CONNECTING TO DOWNTOWN RENTON AND SOUTH KING COUNTY

The southern end of the railbanked ERC is located in the vicinity of the railroad’s milepost 5, almost a mile from downtown Renton and between 1 and 2 miles from the most likely connection points with either the Cedar River Trail or the Lake to Sound Trail. This southern terminus marks the end of the railbanked corridor and King County ownership and the beginning of an active freight area owned by BNSF.

Over the long term, there is strong interest from both the City of Renton and King County in connections linking the ERC trail, the Cedar River Trail, and the Lake to Sound Trail. However, those connections will be complicated, requiring extensive planning, engineering studies, and stakeholder outreach. This Master Plan proposes connections to existing on-street bicycle routes and pedestrian trails in Gene Coulon Park to provide access to downtown Renton and the connecting trails.

The southern terminus is located toward the north end of Gene Coulon Park, a popular City of Renton waterfront park. Because bicycles are not allowed in the park, the ERC trail will provide bicycle connections to Lake Washington Boulevard, and a pedestrian-only connection to an existing pedestrian path in Gene Coulon Park. In the near term, this provides a safe route for trail users to continue to destinations to the south.

In the long term, the City of Renton and King County share a vision for improving the connections among the ERC trail, the Cedar River Trail, and the Lake to Sound Trail. As part of preliminary master planning efforts, King County explored several ideas for making those connections (King County Parks 2015). The City of Renton is further exploring the alternatives as part of its update to its nonmotorized transportation plan.



Downtown Renton is a location for employment and services, and is also a future hub for the ERC trail, Green River Trail, and Lake to Sound Trail.



Gene Coulon Memorial Beach Park provides a destination for pedestrians at the south end of the ERC trail. Bicycles are not allowed in the park, and will be routed along Lake Washington Boulevard until a future trail connection can be developed to downtown Renton.



FIGURE 4-3. POTENTIAL BICYCLE AND PEDESTRIAN CONNECTION BETWEEN THE ERC AND DOWNTOWN RENTON

- ERC trail
- At-grade regional trail connection
- Pedestrian connection

LAKEFRONT SEGMENT

THE ON-RAILBED AND OFF-RAILBED ALTERNATIVES

North of milepost 5, the Master Plan includes the On-Railbed and Off-Railbed alternatives for the majority of the segment. This segment includes more trestles than either of the more northerly sections of the trail, and both alternatives use the existing trestles to cross streams and roadways where available. There are also short sections of the segment with very limited right-of-way, and in these locations the alternative alignments come together into one On-Railbed Alternative.

Both alternatives maintain current access for residents, visitors, and emergency vehicles to residences west of the ERC. There are frequent at-grade road and driveway crossings in this segment. Typically, the On-Railbed Alternative would improve a trail crossing at a location near the existing rail crossing of the road or driveway. For the Off-Railbed Alternative, when the trail is often upslope of the railbed and near Lake Washington Boulevard, the crossing would typically be developed at the intersection between Lake Washington Boulevard and the cross street, similar to a fully developed crosswalk. These typical crossing treatments are discussed in more detail in Chapter 3.



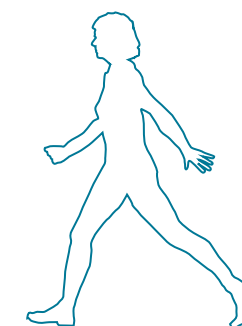
OVERVIEW OF LAKEFRONT SEGMENT ALTERNATIVES

On-Railbed

- The On-Railbed Alternative is located on a relatively flat section of the ERC right-of-way.
- This alternative would generally be closer to residences west of the ERC.
- This alternative may have greater impacts on wetlands and streams.

Off-Railbed

- The Off-Railbed Alternative would be located east of the existing railbed, typically between the railbed and either Lake Washington Boulevard or I-405.
- In areas with steep cross-slopes, the Off-Railbed Alternative would require large retaining walls.
- In forested areas, the Off-Railbed Alternative would require clearing of more existing vegetation than the On-Railbed Alternative.



LAKEFRONT SEGMENT

TYPICAL TRAIL LAYOUTS FOR AREAS WITH LAKEFRONT LANES AND WATERFRONT HOMES

Where the trail is located on the steep and sometimes narrow right-of-way between waterfront neighborhoods and Lake Washington Boulevard or I-405, the On-Railbed Alternative would typically be at a lower elevation than the Off-Railbed Alternative. Therefore, the on-railbed alignment would require less grading, lower retaining walls to minimize impacts on adjacent critical areas, and less vegetation clearing.

Retaining walls for the Off-Railbed Alternative could be a substantial feature in many locations, often more than 10 feet high. Final design of retaining walls will depend on the depth of the Eastside Interceptor sewer line.

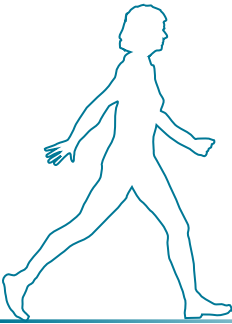
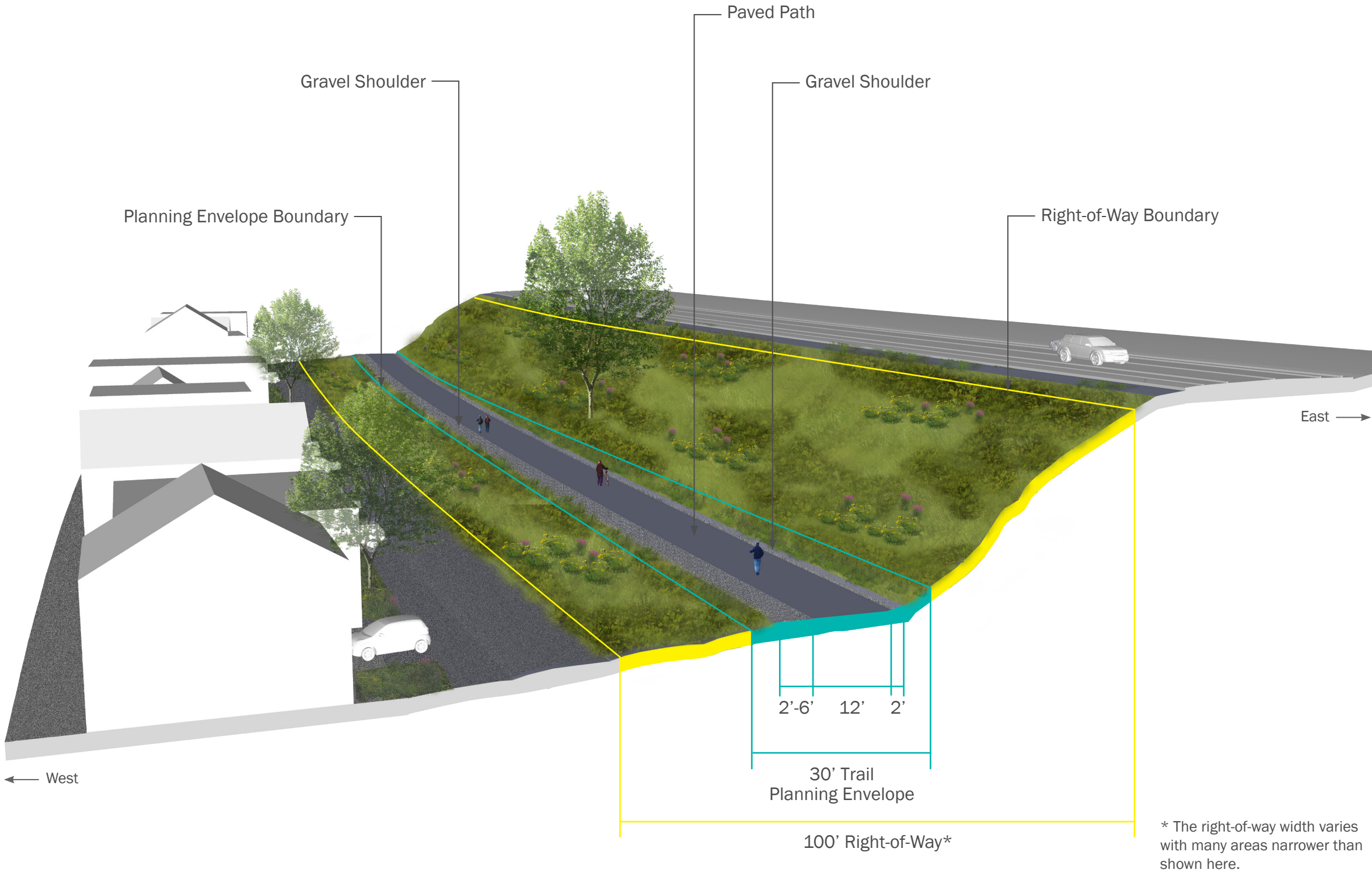
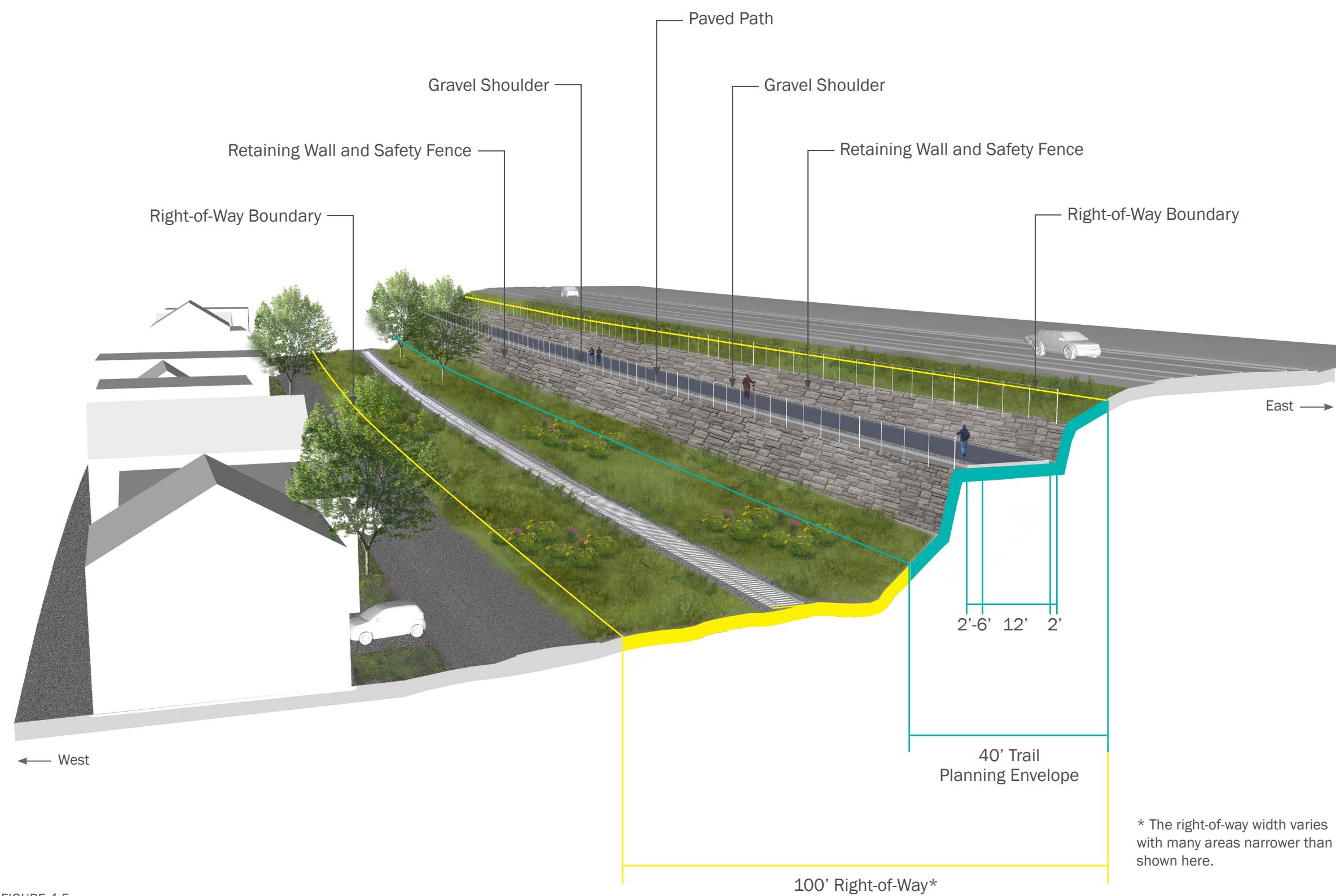


FIGURE 4-4.

LAKEFRONT SEGMENT SECTION 1, ON-RAILBED ALTERNATIVE



* The right-of-way width varies with many areas narrower than shown here.



FIGURE 4-5.
LAKEFRONT SEGMENT SECTION 1, OFF-RAILBED ALTERNATIVE

LAKEFRONT SEGMENT
TYPICAL TRAIL LAYOUTS IN THE
FLAT AREA NEAR PORT QUENDALL

The trail corridor is relatively flat and unconstrained near May Creek, the Barbee Mill neighborhood, and the VMAC. The On-Railbed and Off-Railbed alternatives in this landscape type could be constructed without significant retaining walls or grading.

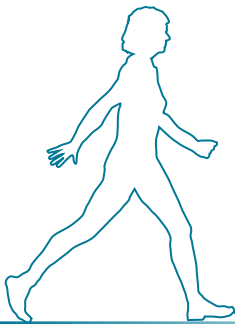
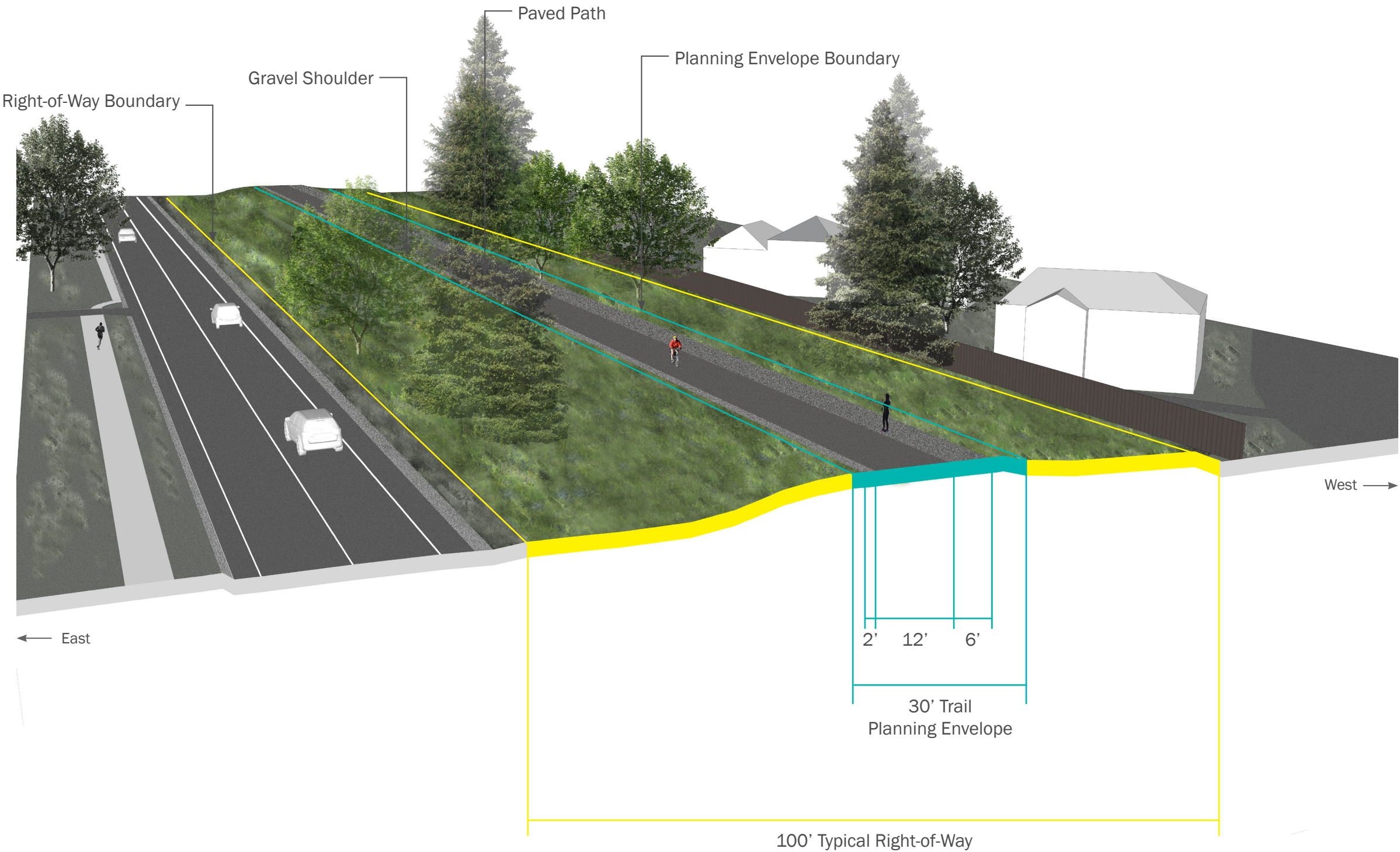


FIGURE 4-6.
LAKEFRONT SEGMENT SECTION 2, ON-RAILBED ALTERNATIVE

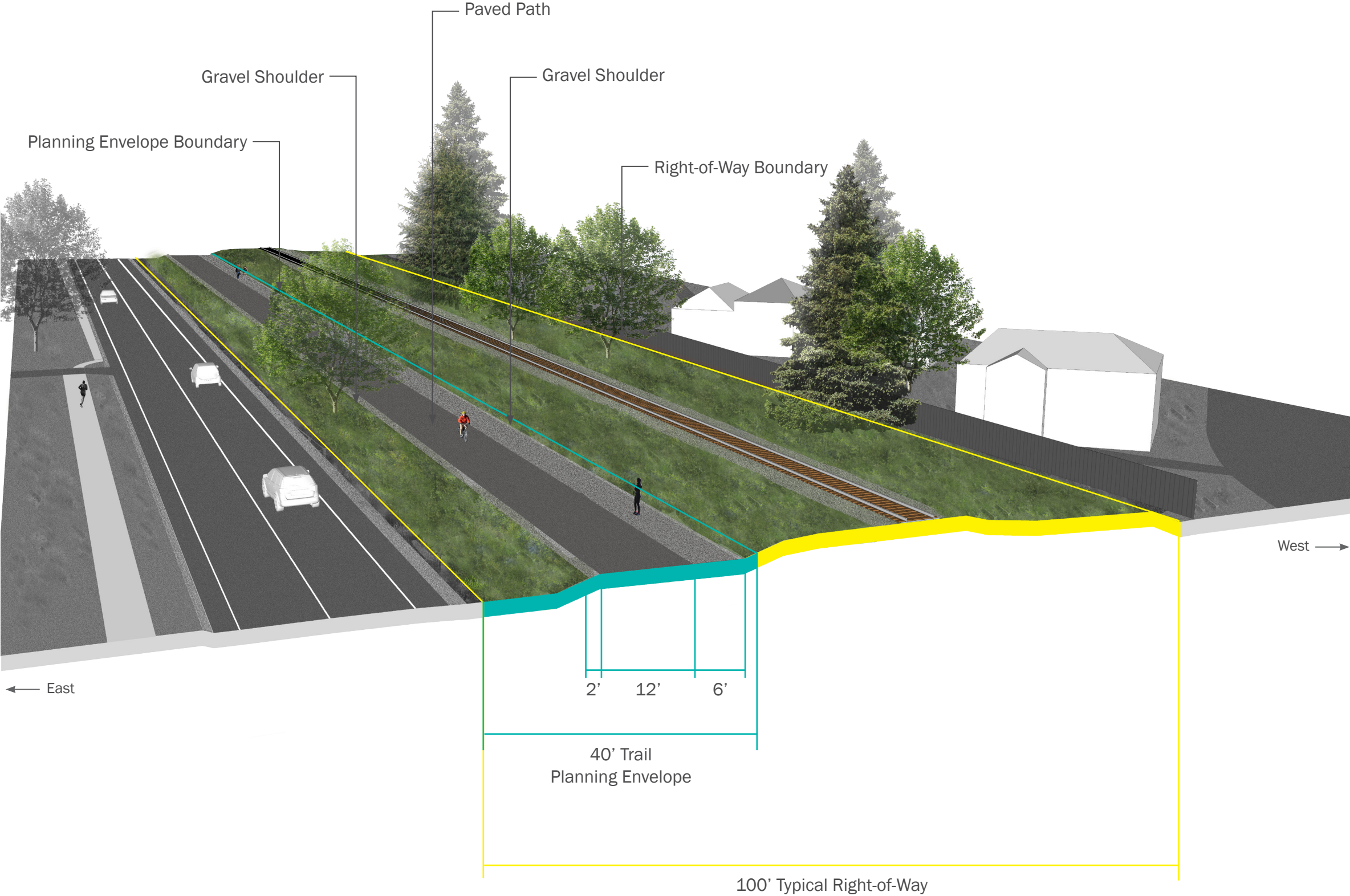


FIGURE 4-7.
LAKEFRONT SEGMENT SECTION 2, OFF-RAILBED ALTERNATIVE

LAKEFRONT SEGMENT

TYPICAL TRAIL LAYOUTS IN FORESTED HILLSIDE AREAS

North of Newcastle Beach Park the ERC curves northeastward toward its crossing of I-90. The corridor is relatively wide in this landscape type and slopes from east to west towards lakefront neighborhoods and Mercer Slough. The On-Railbed Alternative may require some grading and low retaining walls to create a wider, flat area for a trail and to minimize impacts on adjacent critical areas. Typically, the On-Railbed Alternative would provide wide buffers between adjacent residential neighborhoods both east and west of the corridor.

In some locations in this landscape type, the Off-Railbed Alternative would be located near the crest of the slope, which could allow construction without extensive retaining walls. In other locations, the Off-Railbed Alternative would be located on the cross-slope and would require substantial retaining walls. The Off-Railbed Alternative would be relatively close to adjacent homes on the east side of the ERC right-of-way and would require more substantial removal of vegetation and trees.

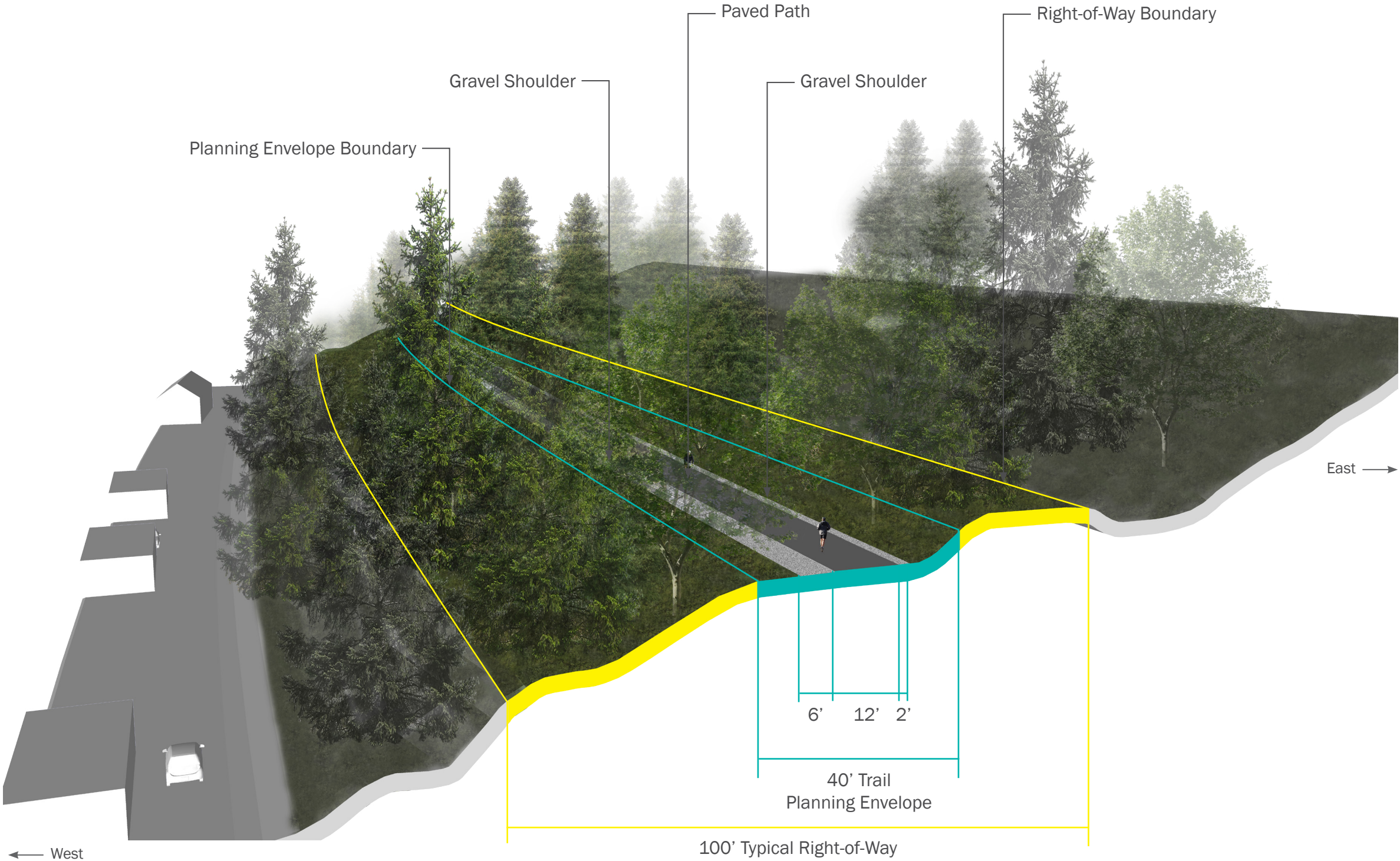
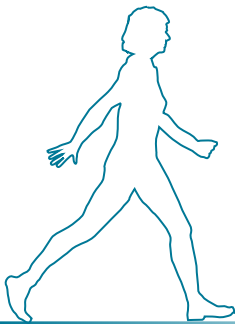


FIGURE 4-8.
LAKEFRONT SEGMENT SECTION 3, ON-RAILBED ALTERNATIVE

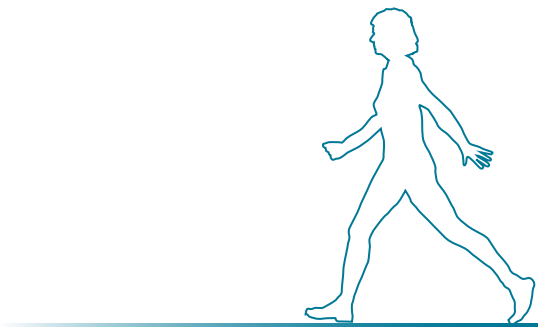
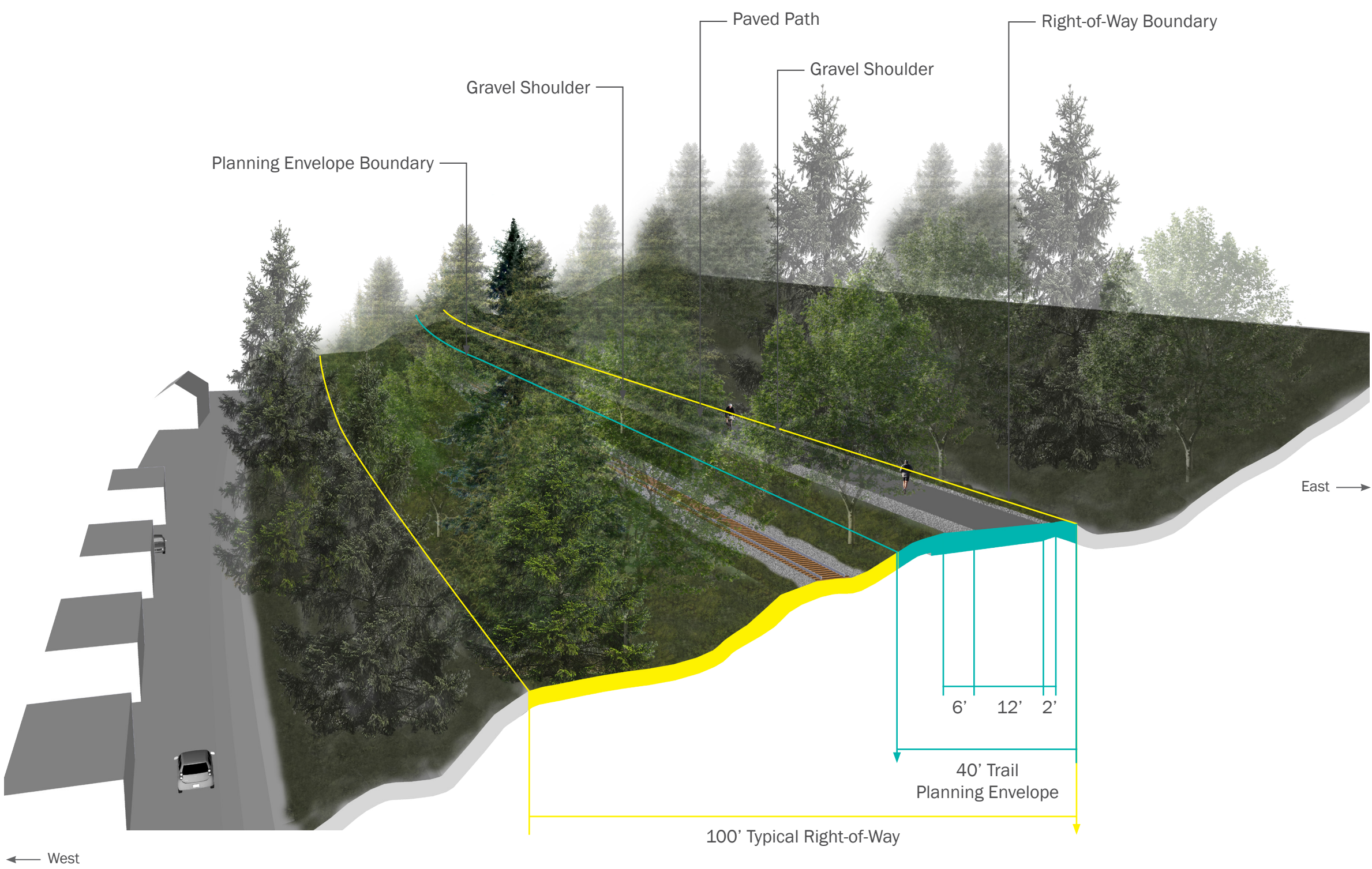
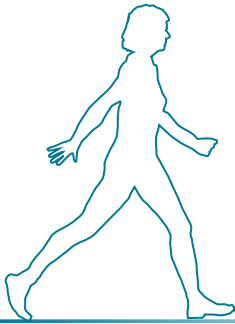


FIGURE 4-9.
LAKEFRONT SEGMENT SECTION 3, OFF-RAILBED ALTERNATIVE

FEBRUARY 2016

LAKEFRONT SEGMENT
TRESTLES

This segment includes several trestles at road and creek crossings. While they are not as dramatic as the Wilburton Trestle to the north, they provide memorable moments for trail users. May Creek and Coal Creek are two of the most significant streams along the ERC, and the trestles crossing over them are opportunities for viewpoints or other design features to enhance the experience of nature in these forested riparian corridors. Smaller trestles provide some diversity to the trail experience and allow opportunities for less dramatic views. The On-Railbed and Off-Railbed alternatives would use the existing trestles for the future trail rather than constructing new bridges or at-grade road crossings.



LAKEFRONT SEGMENT

ACCESS

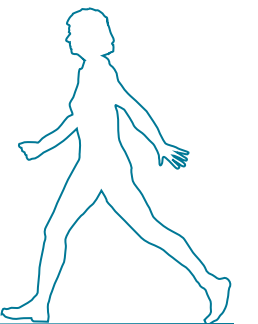
There are frequent access locations for the ERC between Gene Coulon Park and Newcastle Beach Park. Residents of nearby neighborhoods and nonmotorized travelers along Lake Washington Boulevard would be able to enter and leave the trail at any of the many road crossings with short access roads to waterfront neighborhoods.

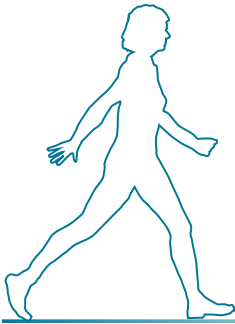
The ERC connects to the May Creek Trail near the Barbee Mill neighborhood. Eventually, the May Creek Trail is planned to continue to the east along the creek, and also connect to the trail corridor through the Barbee Mill neighborhood to Lake Washington. If the On-Railbed Alternative is selected, there may be sufficient space in the ERC right-of-way to develop a gateway here that would provide 10 to 20 dedicated parking spaces for the trail. The gateway would have access from Lake Washington Boulevard.

Newcastle Beach Park is adjacent to the ERC but requires navigating a challenging hill for access. There may be an opportunity to create a direct access route as a new entry to the park; however, this option will require additional study by the City of Bellevue. There is also on-road access to the ERC near Newcastle Beach Park to connect to the Newport Hills Park-and-Ride.

North of Newcastle Beach Park, both alternatives include a connection to Coal Creek Parkway/Lake Washington Boulevard. Between Coal Creek Parkway and the connection to the I-90/ Mountains to Sound Greenway Trail at the north end of the segment, the corridor is relatively isolated.

New neighborhood or private connections could be considered, if requested, subject to review and approval by King County Parks and subsequent issuance of a special use permit. The intent is to ensure adherence to standards for developing and maintaining safe connections. Applications for connections will be considered after the master planning process is complete.





4.3 WILBURTON SEGMENT

The Wilburton Segment begins at I-90 to the south and extends to 108th Avenue NE in Kirkland, where the ERC trail will connect to the Cross Kirkland Corridor. This is a complex segment with multiple highway crossings including a new bridge crossing over I-405, the longest wooden railway trestle in the Pacific Northwest, and Sound Transit’s East Link light rail line located in a portion of the corridor.

Large sections in this segment are limited to a single alternative because of the major structures that constrain the corridor and the need to share the corridor with light rail. The complexity of planned improvements in and around the corridor also changes the planning context for the trail. Decisions made by the City of Bellevue, Sound Transit, and private developers of adjacent properties may have a strong influence on the final location and character of the trail through this segment. However, the final location of the trail within the planning envelope would likely not be determined until the design phase.

The trail plan for this segment is described from its southern terminus at I-90, heading north toward its northern terminus at 108th Avenue NE. The segment description includes an overview of the major elements along with the anticipated treatments for the overall trail corridor.

WILBURTON SEGMENT CROSSING I-90

Today, most Eastside residents experience the ERC bridge over I-90 as something they see from the highway—typically as a surface covered in graffiti. Nearly 100,000 cars per day drive under the ERC bridge. Despite its neglected appearance, the bridge is a remarkable structure supported by massive steel girders and spanning many lanes of the highway. The only practicable alternative for crossing I-90 is to retrofit the bridge as a trail, and the crossing would likely become one of the trail’s landmark locations.

The bridge is a pony truss structure, where the railbed is supported between two large plate girders. The railbed is located at the bottom edge of the girders, which essentially create walls on either side. From the existing grade of the railbed, the girders extend almost 6 feet high creating an interesting space for a crossing that is isolated from the heavy traffic below. The railbed, as it crosses the bridge, is not wide enough to accommodate the preferred design for the trail, although it provides adequate width to safely meet the needs of the trail for the short length of the bridge. Depending on decisions about the preferred width of the trail as it crosses the bridge and the method for connecting the I-90 Trail to the ERC trail, the ERC trail could either be built at a reduced width inside the bridge structure, or at full width using a new platform and railings at the top of the girders. The I-90 bridge is a prominent visual feature as it crosses the highway and is a potential location for public art along the corridor when it is modified for use as a trail.



The sidewalls on the ERC bridge crossing I-90 are structural, and cannot be modified. The trail may be developed at the current level of the tracks, but at substandard width, or built at the top of the sidewalls at the full recommended width. Building the trail level with the top of the sidewalls would simplify the future connection to the I-90 Trail.

WILBURTON SEGMENT

CONNECTING THE ERC TRAIL AND I-90/
MOUNTAINS TO SOUND GREENWAY TRAIL

The I-90/Mountains to Sound Greenway Trail (I-90 Trail) is a high-volume nonmotorized route connecting Bellevue to Mercer Island and Seattle. The I-90 Trail is planned to continue through Factoria and Eastgate, and eventually connect to Issaquah. There is a strong interest in constructing a connection between the I-90 Trail and the ERC trail that does not require a street crossing and meets high standards for trail design, including grade. The grades are challenging with the ERC bridge over I-90 and approaches on either side far above the I-90 Trail. The preferred concept for the connection would construct two elevated trail connections between the corridors (King County Parks 2015). North of I-90, a long bridge would ramp up from the current boardwalk to cross over 118th Avenue SE, then connect to the ERC trail. South of I-90, a bridge would connect the ERC trail to the existing location of the I-90 Trail between the highway mainline and exit ramps (see Figure 4-10).

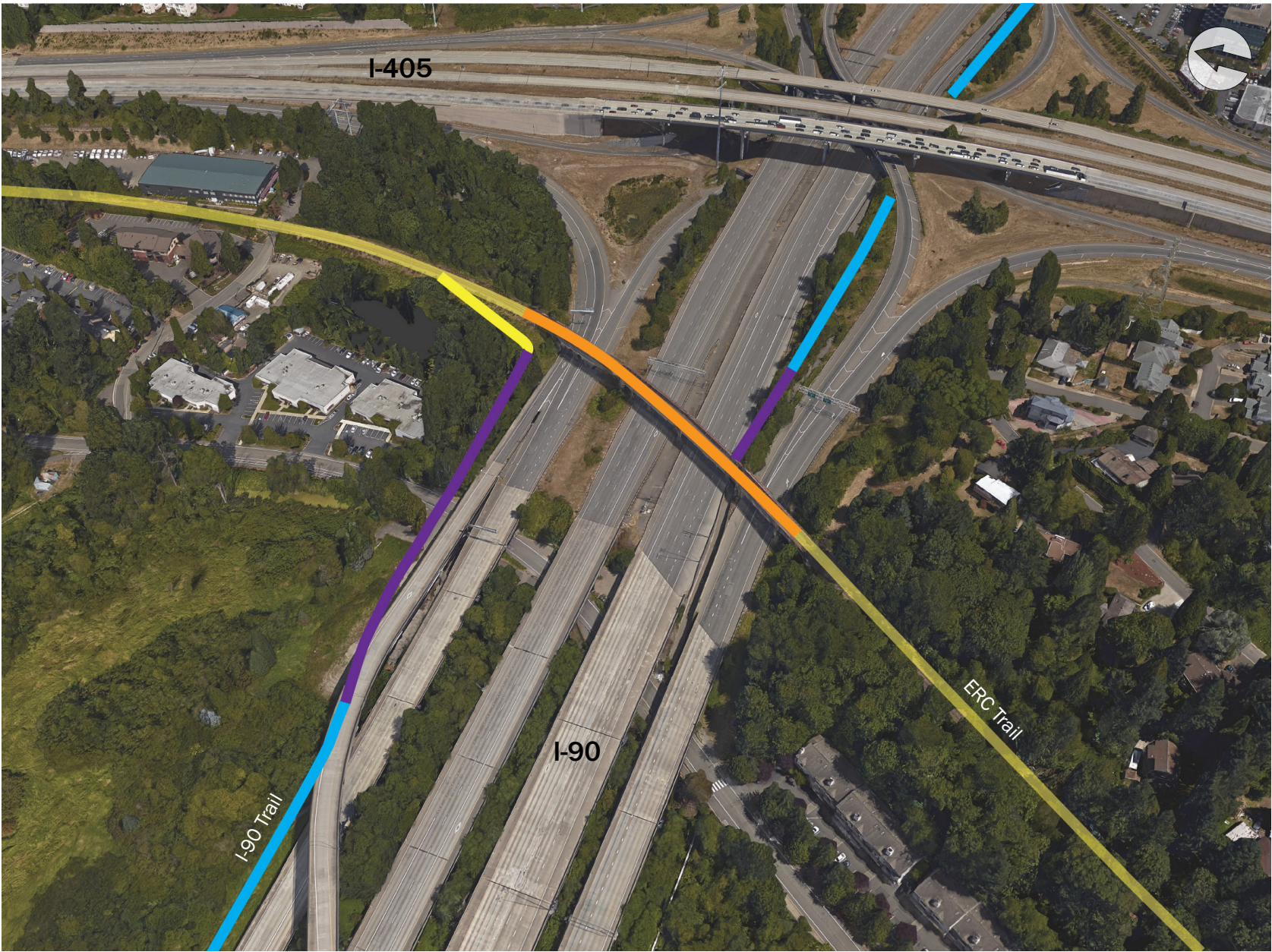
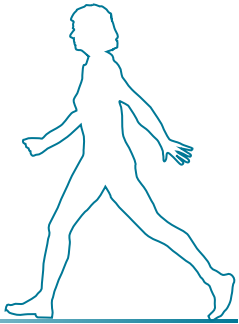


FIGURE 4-10. I-90/MOUNTAINS TO SOUND GREENWAY TRAIL CONNECTION

- ERC trail
- At-grade regional trail connection
- Existing or planned regional trail
- Elevated connecting structures
- Grade separated crossing



WILBURTON SEGMENT

I-90 TO I-405

The ERC is located in the middle of a hillside for this section, with I-405 uphill from the corridor and the lowlands of Mercer Slough at the foot of the hill. This section includes both existing structures and right-of-way constraints that make the development of two alternatives impractical. The planning envelope is generally 30 feet wide and follows the railbed. In addition to the I-90 bridge, a small trestle crossing SE 32nd Street would be renovated for the trail. In some locations, this section of the trail offers dramatic views to Mercer Slough to the west, and there may be opportunities to provide locations for rest spots and viewpoints. The potential for gateways and connections to 118th Avenue SE is described later in this section.

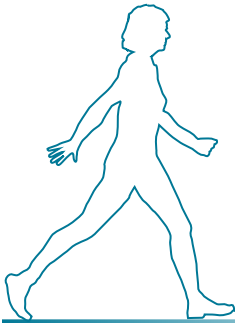
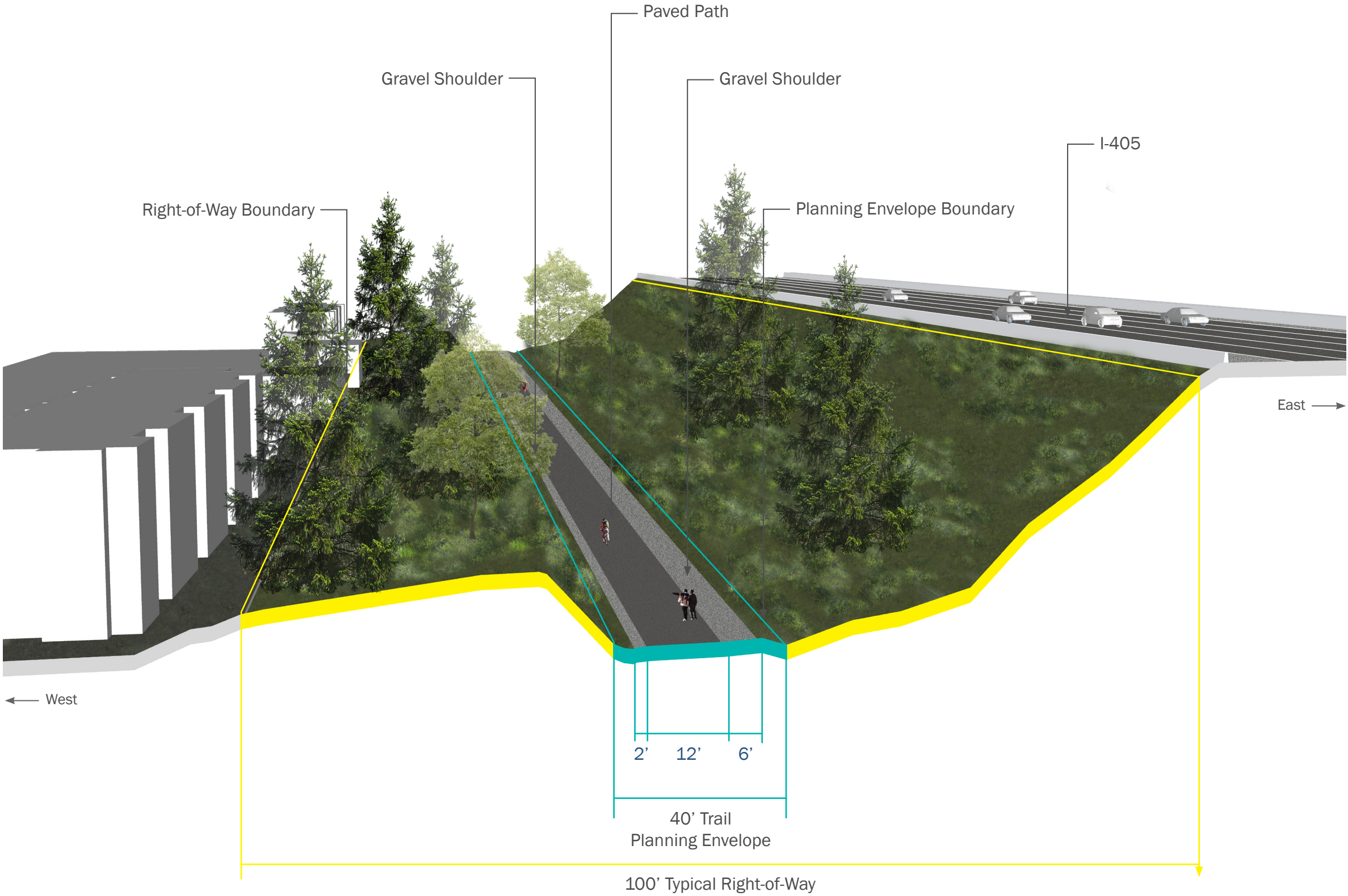


FIGURE 4-11.
WILBURTON SEGMENT SECTION 1

WILBURTON SEGMENT

CROSSING I-405—THE WILBURTON GAP

The “Wilburton Gap” is a section of the corridor where a railroad bridge over I-405’s southbound lanes was removed during the most recent highway widening project. As a condition for removal of the old railroad bridge, the Washington State Department of Transportation (WSDOT) agreed to provide a replacement bridge for the trail. The final location and character of the bridge will be negotiated by King County, WSDOT, and the City of Bellevue. Options for a new bridge range from a simple trail bridge to a wider structure that would include a trail with a landscaped buffer to separate trail users from traffic noise, provide views, and function as a wildlife corridor over the highway.

After crossing over the southbound lanes of I-405, the corridor passes under the highway’s elevated northbound lanes. Less than one-quarter mile after the undercrossing, the corridor arrives at the Wilburton Trestle.



Closing the “Wilburton Gap” over the southbound lanes of I-405 will require a new bridge in this general location.

WILBURTON SEGMENT

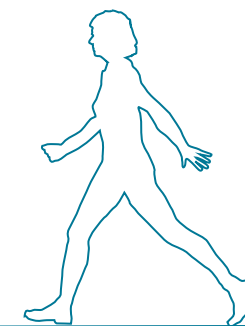
WILBURTON TRESTLE

The Wilburton Trestle is an iconic part of the ERC and will be renovated as a trail bridge. The trestle would likely be one of the most popular destinations along the trail; it would be a place that draws visitors as a destination itself, where trail users would want to linger to enjoy the views and excitement of the elevated structure.

Built in 1904, the trestle is almost 1,000 feet long and over 100 feet high at its highest point. As the largest trestle in the Pacific Northwest, construction of this trestle was a major achievement at the turn of the 20th century. The trestle has been recommended as eligible for listing on the National Register of Historic Places.

Surfacing for the trestle will be smooth and wider than the typical trail paving. Extra space will be added toward the edges of the structure so that users can continue on their way over the bridge in the center, while others wishing to stop and enjoy the views can stand at the edges of the trestle without impeding trail traffic. The paving design will likely include detailing, possibly including changes in material, surfacing, or color, to show a difference between the center travel area and the slow areas at the edges. A wider trail design for the trestle will also benefit trail users who may be worried about the height of the structure and feel safer at the center. Railings will complement the trestle structure and support comfortable viewing at the edge.

Special design features or artistic elements are likely to be included in the final trestle design. Opportunities include special viewing decks that might extend out from the edges of the trestle, railing, or signage design inspired by the trestle’s unique structure; design elements inspired by the Kelsey Creek Corridor; or other special design features to reinforce the significance of the structure as part of the trail.



WILBURTON SEGMENT

WILBURTON NEIGHBORHOOD—LAKE HILLS CONNECTOR TO NE 8TH STREET

The Wilburton neighborhood is one of the most dynamic urban locations along the trail. In the next 20 years the car sales lots and small retail stores that have surrounded the ERC for decades are likely to redevelop into mid-rise mixed-use buildings and larger destination retail outlets. In part, this change is expected to be driven by evolving office, residential, and retail markets in Bellevue. The change will also be supported by significant investments in infrastructure and complementary changes in planning designations for the area. Beginning in the vicinity of NE 6th Street, this is also where the corridor will be developed to accommodate both trail and high-capacity transit.

The City of Bellevue is making substantial capital investments to improve connections between downtown and the Wilburton neighborhood across I-405. The City has recently completed an extension to NE 4th Street that crosses the ERC, connecting across I-405 and extending directly into the Wilburton neighborhood. This extension is expected to reduce traffic on SE 1st Street and provides a new connection up the hill between 116th Avenue NE and the ERC. Additionally, the City plans to connect NE 6th Street to the ERC. This street corridor will include a shared use path between the ERC and downtown Bellevue. A final possible link to the ERC is a project concept called the “Grand Connection,” which would be a dedicated nonmotorized route connecting the ERC, Downtown Park, and Meydenbauer Bay.



The location and character of the trail within the planning envelope, and the treatment for crossing major roads (NE 4th Street, NE 6th Street, and NE 8th Street) will likely remain uncertain until the City of Bellevue’s land use planning process for Wilburton is completed, and the long-term vision for Sound Transit is set with the selection of projects for ST3. For preliminary planning purposes, the discussions below focus on having the trail cross over NE 4th Street, at-grade across NE 6th Street, and over NE 8th Street.

Although this is a complex section of the trail corridor and there is some uncertainty regarding the final design, it is also a section of the trail that will become a signature urban element for this neighborhood.

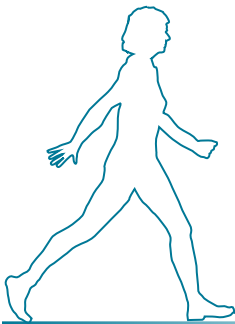
On-Railbed and Off-Railbed Alternatives from the Lake Hills Connector to NE 8th Street

This Master Plan includes both on-railbed and off-railbed alignments between the Lake Hills Connector and NE 6th Street. The off-railbed alignment is located to the west of the railbed to accommodate possible future extension of the Sound Transit light rail line southward. Both alignments include a challenging at-grade crossing at SE 1st Street, which would require reconstruction of a section of the roadway to provide a refuge median for trail users and other traffic-calming elements.

Between SE 1st Street and the NE 6th Street extension, the ERC slopes steeply downhill west of the railbed. In this situation, the Off-Railbed Alternative could be developed at a lower elevation to follow the underlying grade, or built up to more closely match the existing railbed elevation. Several considerations will influence the final design of the Off-Railbed Alternative within the planning envelope:

- If the trail is developed at a lower elevation than the railbed it will extend the length of ramps necessary to cross over NE 4th and 8th Streets.
- If the trail is developed at an elevation nearer the existing railbed, construction will require costly retaining walls on the west side, which will also affect aesthetics.
- Either selection, at higher or lower elevation, will have implications for the urban design connections with adjacent land uses and Bellevue’s proposed Grand Connection route to downtown and Meydenbauer Bay.

For the Master Plan, the Off-Railbed Alternative assumes that the trail elevation will be high, either at or near the current elevation of the railbed.



Crossing NE 4th, NE 6th, and NE 8th Streets

The major streets in the Wilburton neighborhood are the highest volume road crossings in the ERC. The ERC does not cross these roads at existing intersections where there are already crossing signals and markings; therefore, at-grade crossings would require new dedicated pedestrian signals, markings, and signage for safety. In early planning for the ERC trail, King County and the City of Bellevue anticipated new trail bridges would be built over NE 4th and NE 8th Streets, with an at-grade crossing for NE 6th Street. The grade connection at NE 6th Street would allow an important connection between the ERC and the planned shared use path connecting to downtown Bellevue along the NE 6th Street corridor. These crossing configurations are carried through this Master Plan in considering costs and potential impacts. However, there are potential options for crossing NE 4th and 6th Streets that may be explored in the design process. The NE 8th Street crossing is more complex, where the trail needs to be developed in coordination with Sound Transit’s East Link bridge to the Wilburton Station, and the high traffic volumes on the street make an at-grade trail crossing challenging or even infeasible.

NE 4th and NE 6th Streets

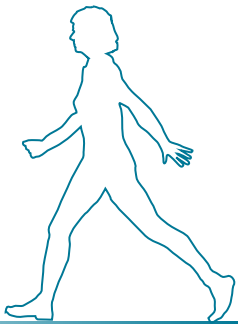
In considering these crossings, cost is an important factor, with grade-separated crossings likely to be more expensive than at-grade crossings. There are also considerations for trail performance and urban design that would likely be more important than cost in the long term. Because of the long approach ramps necessary for a grade-separated crossing over NE 4th Street, the trail would be separated from future neighboring developments for much of its run through the neighborhood. The trail experience would also include a series of uphill and downhill grade transitions. If a grade-separated crossing is developed, it seems likely that complementary at-grade routes would also need to be developed parallel to the main trail to allow local circulation and graceful connections to adjacent businesses. It is conceivable that, as future design advances, crossing options for NE 4th and NE 6th Streets will be revisited with potential outcomes, such as an at-grade crossing of NE 4th Street or a grade-separated crossing of NE 6th Street.

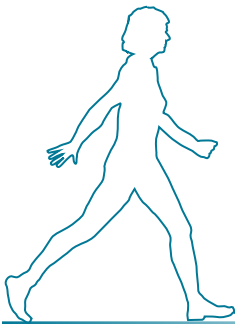


FIGURE 4-12. STREET CROSSINGS AND CONNECTIONS BETWEEN SE 1ST STREET AND NE 8TH STREET

PERFORMANCE REQUIREMENTS FOR THE NE 4TH, NE 6TH, AND NE 8TH STREETS SECTION OF THE CORRIDOR ARE TO:

- Provide safe and convenient crossings for trail users
- Maintain functioning traffic flow on major arterials
- Develop strong multimodal connections among the ERC trail, Wilburton light rail station, and nearby RapidRide bus stop
- Provide access between the trail corridor and sidewalks for each of the streets
- Develop an at-grade trail intersection between the ERC trail and the planned NE 6th Street trail
- Create a strong location for connecting with the “Grand Connection” nonmotorized route to downtown Bellevue and Meydenbauer Bay
- Provide trail facilities to minimize conflicts between longer-distance through users and local pedestrians
- Create a vibrant, attractive corridor that emphasizes connection to existing and future retail, services, and workplaces along the corridor
- Support an exceptional trail experience for users





NE 8th Street

Through the master planning process, treatment of the ERC crossing at NE 8th Street has been the subject of additional analysis. This crossing is one of the most complex locations for planning the trail. When it was still active, the railroad relied on a dedicated traffic signal to cross NE 8th Street. At that time trains were infrequent and there was significantly less car and truck traffic on the roadway. Today, NE 8th Street is the busiest road in central Bellevue, carrying over 40,000 vehicles per day, and is anticipated to grow to over 50,000 vehicles per day by 2024. Because of the traffic volumes on the road, an at-grade trail crossing at the location of the ERC corridor was not considered because of anticipated traffic impacts.

The NE 8th Street crossing is also complex because Sound Transit’s East Link light rail line and Wilburton Station are located in the ERC corridor at the crossing location, and the trail is expected to support very high use through the crossing due in part to the strong transit connection. The light rail line will cross the road on an elevated guideway and the Wilburton Station will be accessed via an elevated platform on the north side of the road. Based on Sound Transit’s current designs, the ERC trail would be located on the west side of the ERC. Given the space constraints and planned Sound Transit structures, the master planning process considered but rejected several options for the crossing, including an undercrossing (tunnel) and a crossing using the existing crosswalk at 116th Avenue NE:

- An undercrossing was rejected due to the impracticality of relocating utilities currently located in the road right-of-way. Various utilities are buried under the road, including some very large water and sewer facilities. It is not feasible to construct a tunnel underneath the utilities; instead, the utilities would need to be relocated underneath the trail tunnel. In addition, the Eastside Interceptor sewer line crosses NE 8th Street running north-south, complicating the options for relocating utilities under the road. The City of Bellevue has determined that relocation is not feasible. Even if it were technically feasible, the cost would be very high, and the construction process would disrupt traffic on NE 8th Street.
- An at-grade crossing alternative that would route trail users to the existing signal at NE 8th Street and 116th Avenue NE was rejected due to lack of directness, potential parking and circulation impacts, and potential impacts on traffic operations at the intersection. From a trail user’s perspective, crossing at the intersection would add approximately 1,000 feet to the distance required to cross the road, or approximately 4 extra minutes of travel time for a typical walker. To get trail users to the intersection, the additional right-of-way needed along NE 8th Street would likely affect parking and circulation at adjacent businesses. Given the volumes of trail users that could be crossing at the intersection, traffic operations at the signal could worsen.

Consistent with the early planning vision, this Master Plan proposes a dedicated trail bridge that would provide a direct connection across NE 8th Street for trail users and Sound Transit commuters. The bridge would connect to a new proposed pedestrian corridor between the Wilburton Station and Bellevue’s emerging hospital district on the north side of NE 8th Street, and include a ramp system on the south side of NE 8th Street to allow access to the sidewalk. The bridge could also include elevators and stairs to provide a direct connection between the elevated bridge, the Wilburton Station pedestrian plaza, and sidewalks along NE 8th Street.

The crossing is complex, requiring a “weave” where the ERC trail would need to cross under the elevated Sound Transit line as it enters the ERC corridor from the west (Figure 4-13). The ERC right-of-way varies near the NE 8th Street crossing, reducing to 25 feet at the narrowest. On the south side of NE 8th Street, the Sound Transit structure and trail bridge would not fit inside the existing ERC right-of-way. Based on planning-level analysis, construction of the bridge would require purchase of additional right-of-way in both the southwest and northwest quadrants of the crossing.

To make the street connection, if stairs and elevators are included in addition to complementary at-grade routes developed parallel to the main trail, the project could require acquisition of part or all of an existing building on the south side of the crossing.

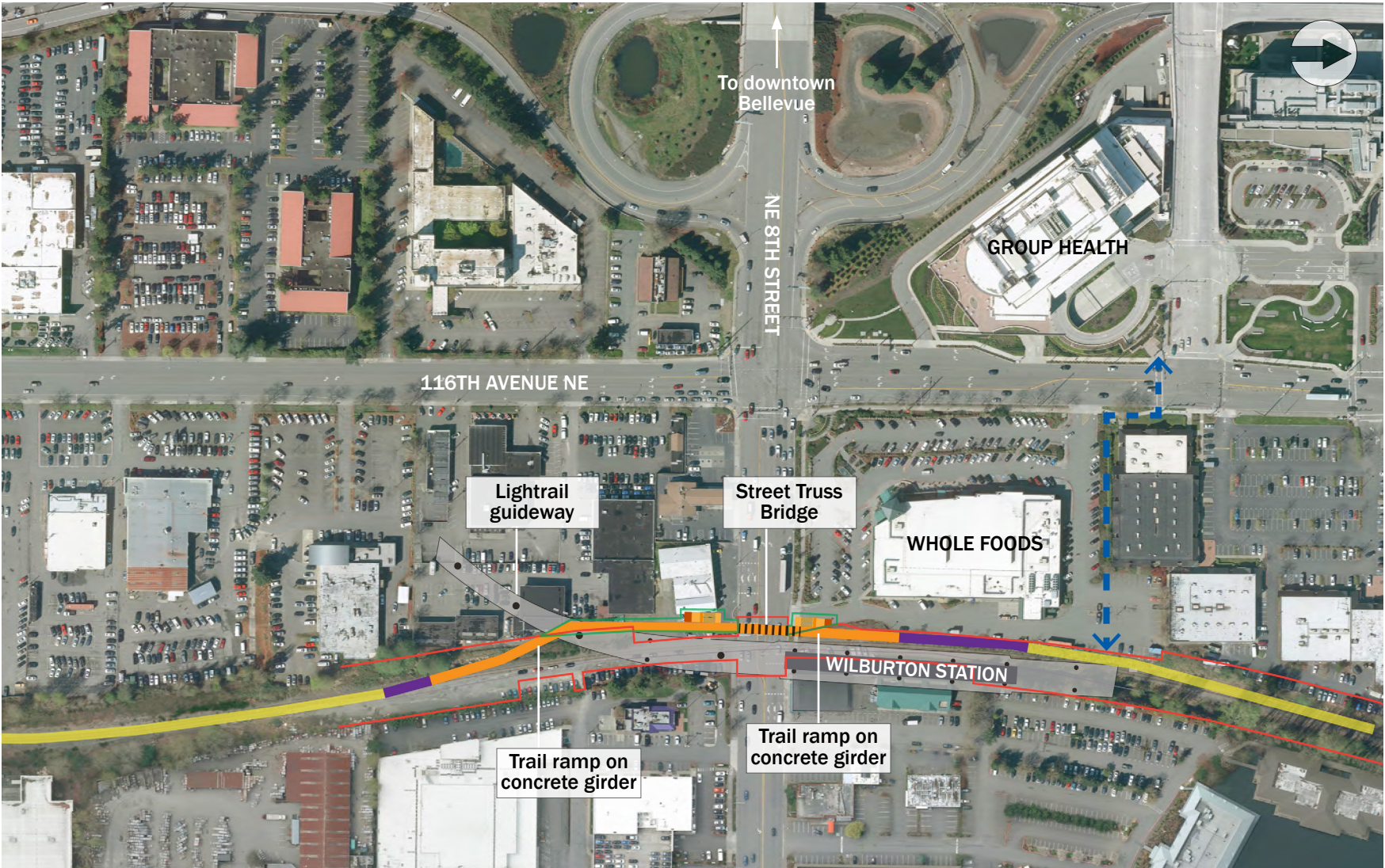
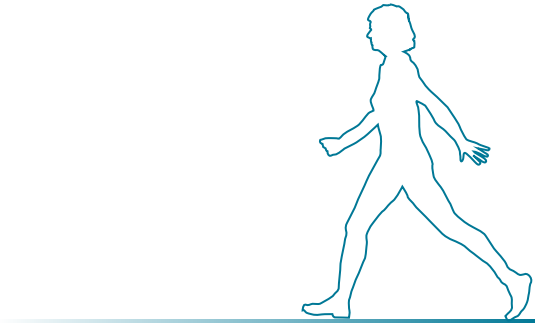


FIGURE 4-13. EASTSIDE RAIL CORRIDOR TRAIL MASTER PLAN - CONCEPTUAL NE 8TH STREET CROSSING STUDY

- ERC trail
- Ramps on retained fill
- Grade separated crossings
- Ramps to bridge
- Right-of-way



WILBURTON SEGMENT

NE 8TH STREET TO
SR 520—BEL-RED
AND THE SPRING DISTRICT

The section of the ERC between NE 8th Street and SR 520 is relatively flat and generally 100 feet wide. Unlike the majority of the corridor considered in this Master Plan, 1.1 miles of the ERC is owned by Sound Transit through the most complex part of the neighborhood. Sound Transit’s East Link and OMSF projects include tracks, a station, and a maintenance facility that will use parts of the ERC and the adjacent properties.

Sound Transit’s East Link project will begin construction in 2016, including the new Wilburton Station, which will be located just north of NE 8th Street. The tracks to serve the station will connect over I-405 and enter the ERC south of NE 8th Street, then continue north past NE 12th Street where the route will curve to the east through the Spring District and eventually to Redmond.

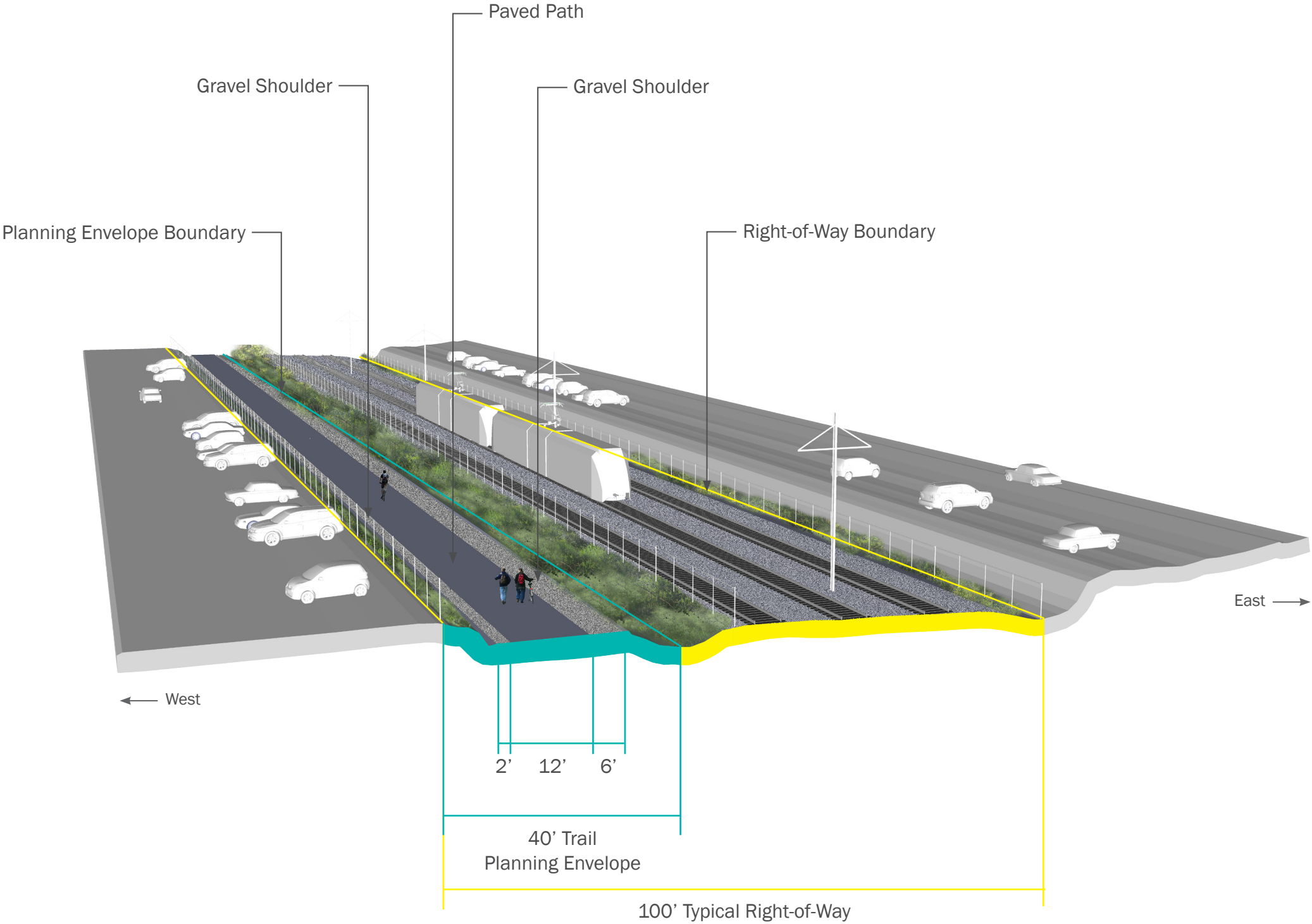
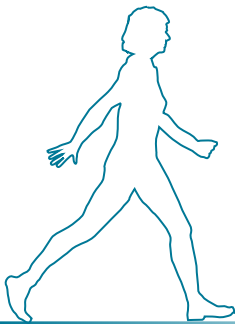


FIGURE 4-14.

WILBURTON SEGMENT SECTION 2

Sound Transit’s Operations and Maintenance Satellite Facility (OMSF) is located on the east side of the corridor north of NE 12th Street. Several storage tracks for light rail vehicles may be located on the east side of the corridor in this area, with the ERC trail on the west edge.

Important connections in the ERC are located north of NE 8th Street in Bellevue. The trail will connect to the new Sound Transit Wilburton Station, the developing Spring District and its Sound Transit Station, and the SR 520 Trail. The Spring District, which will include dense new housing as part of a transit-oriented development concept, will include several potential access points to the ERC. The most important connection will be developed in coordination with a new roadway bridge planned to cross the ERC north of NE 12th Street.

Sound Transit's ownership in the corridor ends just south of SR 520. Between NE 6th Street and the Wilburton Station, Sound Transit's light rail tracks will be elevated. North of the Wilburton Station the tracks slope down to grade and pass under the existing NE 12th Street undercrossing. In general, light rail will be located on the east side of the right-of-way and conflicts with potential development of a trail on the railbed. The only trail alternative in this section is an off-railbed alignment on the west side of the right-of-way. Because of extensive wetlands located on the western side of the ERC, the planning envelope is 40 feet wide to provide flexibility to reduce impacts during the design phase.

CONNECTING TO THE SR 520 TRAIL

The SR 520 Trail, expected to be complete from Bellevue to the Montlake neighborhood in Seattle by the end of 2016, will be the second nonmotorized route across Lake Washington. The trail is already complete between Redmond and the east side of the SR 520/I-405 interchange. However, there is a gap between the segment that continues to Redmond and the segment that connects to Seattle over the new floating bridge. The City of Bellevue is currently making improvements to Northup Way, which will include building bicycle lanes and sidewalks on both sides of Northup Way between NE 33rd Street and NE 24th Street. Other features will include a pedestrian and bicycle bridge over the ERC. These improvements will provide connectivity through the current gap.

The ERC trail can make a relatively straightforward connection to the new Northup Way trail improvements and eventually connect to the SR 520 Trail with a short connecting trail ramp and intersection improvements to allow safe crossing for bicyclists (Figure 4-15). In the long term, WSDOT has conceptual plans to complete the SR 520 Trail as a continuous route. The concept would use a segment of the ERC as a connector.

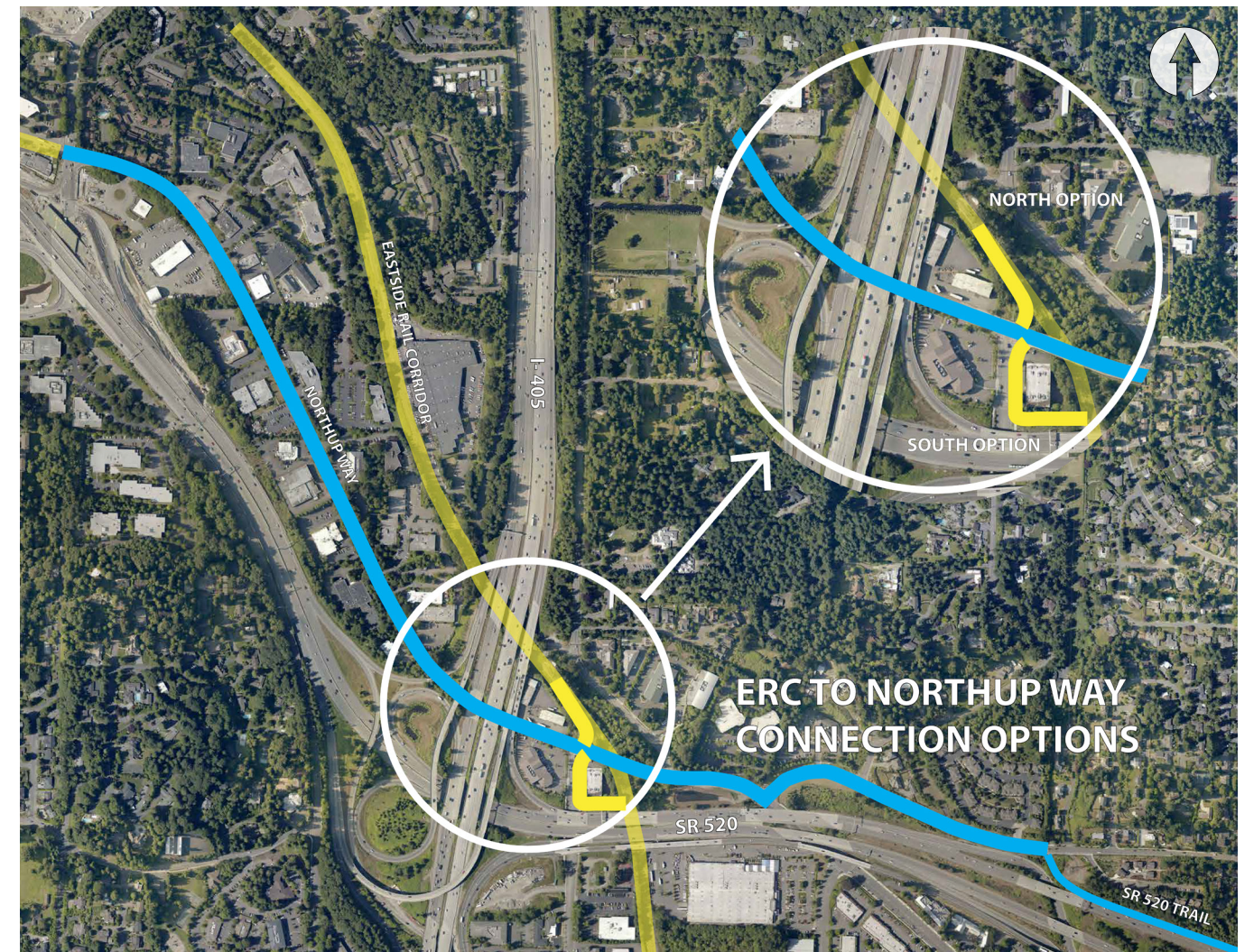


FIGURE 4-15. SR 520 TRAIL CONNECTION

- ERC trail
- At-grade regional trail connection
- Existing or planned regional trail

WILBURTON SEGMENT

SR 520 TO 108TH AVENUE NE—
CONNECTING TO THE CROSS
KIRKLAND CORRIDOR

North of the Sound Transit–owned section of the corridor, the ERC passes under both SR 520 and I-405, then meets the Cross Kirkland Corridor at 108th Avenue NE. This section of the corridor includes both On-Railbed and Off-Railbed alternatives, with the Off-Railbed Alternative located on the west side of the corridor. Underpasses at SR 520, Northup Way, and I-405 constrain the corridor, although there is adequate width to develop a full trail section. There are security concerns for these relatively isolated locations, and the final design could include lighting, emergency telephones, and similar features to support trail user safety.

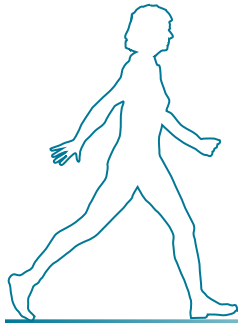
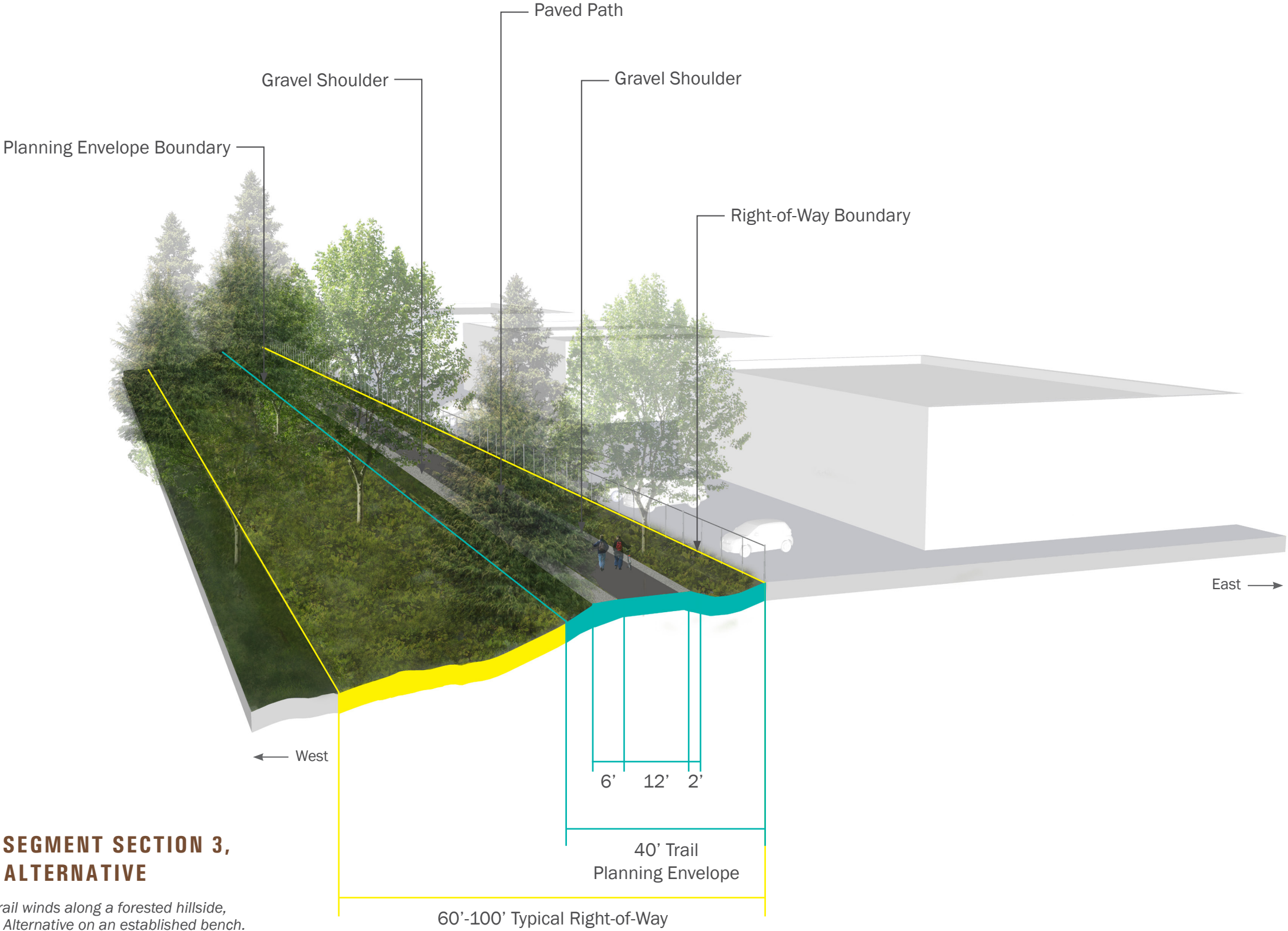


FIGURE 4-16.

WILBURTON SEGMENT SECTION 3,
ON-RAILBED ALTERNATIVE

North of I-405 the trail winds along a forested hillside, with the On-Railbed Alternative on an established bench. The Off-Railbed Alternative would require grading of a new bench on the west side of the right-of-way, with associated clearing and grading, and would likely require retaining walls.



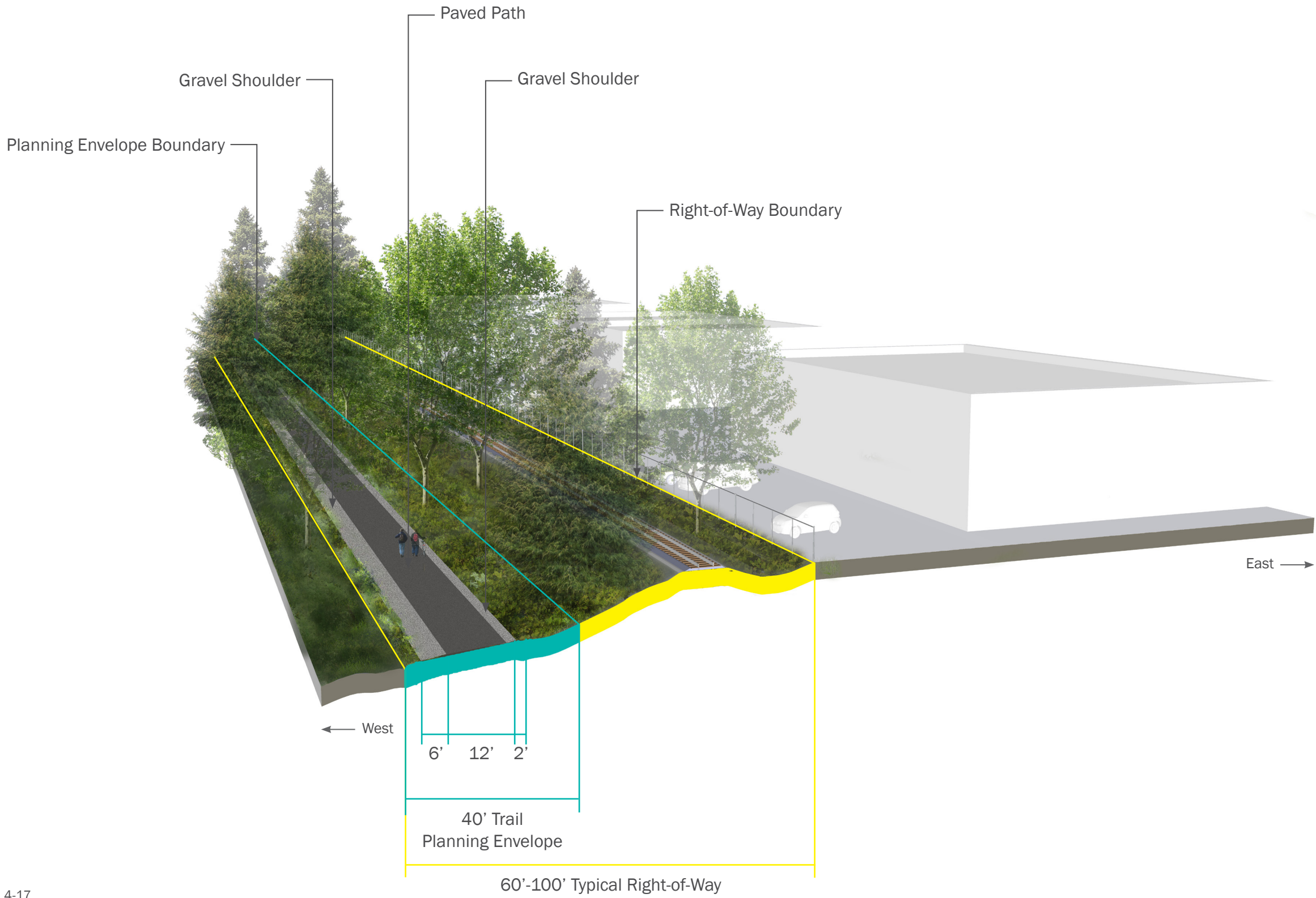
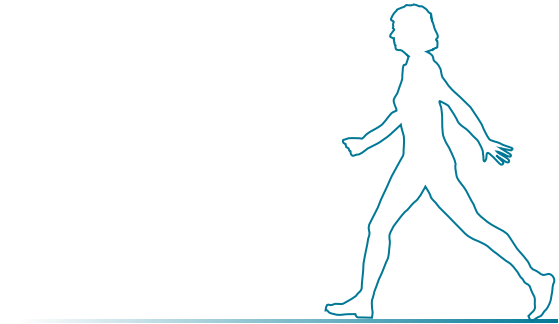
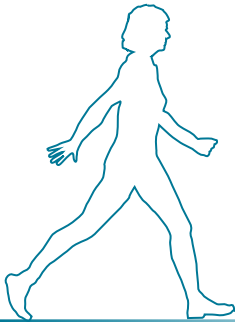


FIGURE 4-17.
WILBURTON SEGMENT SECTION 3, OFF-RAILBED ALTERNATIVE





WILBURTON SEGMENT

ACCESS

South of NE 4th Street and north of SR 520, access to the ERC in the Wilburton Segment is more limited. Unlike the Lakefront Segment there are few local street crossings to provide access to the corridor. This Master Plan includes three potential gateway locations for this segment: one near Mercer Slough and two adjacent to the Wilburton Trestle.

Mercer Slough Gateway

Located on the hillside between SE 118th Street and the ERC, a gateway between I-90 and the I-405 crossing would connect the ERC to several parks associated with Mercer Slough and the Mercer Slough Environmental Education Center. Depending on available property, a gateway located on the hillside could have capacity for 20 or more parking spaces, and could also be a location for restrooms, wayfinding, and other trail amenities. Access from the ERC to SE 118th Street would accommodate connections to the Lake to Lake Trail and to bicycle lanes and sidewalks accessing downtown Bellevue.

Wilburton Trestle Gateways

The Wilburton Trestle is expected to be one of the most popular locations along the corridor. In addition to trail users, it is likely to be a destination that visitors seek out as a destination in itself, as a place to enjoy sunset views, as a showcase for visitors, and for users to simply enjoy being outdoors with nothing but timbers and air beneath. King County is considering two potential locations for gateways directly adjacent to the trestle on the north and south sides.

South Wilburton Trestle Gateway

This potential location is on the southwest side of the trestle with access from 121st Avenue SE. Depending on the availability of property, this gateway could be a large, well-developed site, with restroom facilities and parking for 50 or more vehicles. The road access allows visitors to drive near the top of the trestle in their vehicles, and should allow for a relatively easy connection to the trail from there.



North of the ERC crossing of I-90 there are broad views over Mercer Slough. A trail gateway is proposed in this general area to provide parking for the trail and connect to the Mercer Slough Environmental Education Center.

North Wilburton Trestle Gateway

The North Wilburton Trestle Gateway is relatively small, located along SE 5th Street on publicly owned property north of the trestle. This location could accommodate up to 10 parking spaces, and would likely not include restrooms or other amenities.

Other Access

Other access locations in this segment include:

- A connection to SE 118th Street via an I-90 Trail connection
- Possible access at SE 32nd Street crossing over the roadway on a small trestle, likely requiring a long ramp or bridge due to grade difference
- An on-street crossing of SE 1st Street
- Connections to NE 4th, NE 6th, and NE 8th Streets
- A connection to the overpass at NE 12th Street
- A future connection to Spring Boulevard north of NE 12th Street
- Potential trail connections to the Spring District near the OMSF and at a large wetland associated with the West Tributary to Kelsey Creek
- Connection to the SR 520 Trail at Northup Way
- Connection to the Cross Kirkland Corridor at 108th Avenue NE

4.4 VALLEY SEGMENT

The Valley Segment begins just east of Totem Lake and extends into Woodinville. This segment of the trail includes two separate rail lines—the Main Line and the Spur—that will provide very different trail experiences. The Main Line extends from Slater Avenue NE at the north end of the Cross Kirkland Corridor to the railroad “wye” near NE 175th Street in Woodinville. The Spur extends south from the wye until it connects to the planned Redmond Central Connector at NE 124th Street. The Main Line and Spur differ strongly in their character and function and are therefore discussed separately, beginning with the Main Line route from Kirkland to Woodinville, then the Spur from the wye to its southern connection at Redmond.

Between NE 124th Street and the wye, the two routes are nearly parallel and are located very near each other on opposite sides of the Woodinville-Redmond Road NE. Not far to the east, the Sammamish River Trail is also parallel to the Main Line and Spur, located on the other side of the Sammamish River. Planning for the long-term roles of these three trail corridors—one existing and the other two considered in the Master Plan—is one of the major challenges and opportunities of the planning process. The Master Plan evaluates options for development of both the Main Line and Spur as paved, regional trails. The Master Plan also includes several options for connections among the Main Line, Spur, and Sammamish River Trail. Chapter 5 discusses in more detail considerations for using one or both of the trails on the Main Line or Spur as a temporary, less-developed trail corridor, which allows for phasing options for the ERC trail.

VALLEY SEGMENT

MAIN LINE

The Main Line begins in a relatively flat area with adjacent commercial buildings, but unlike most of the ERC, the initial orientation is west-east rather than south-north. At the west end of the section the right-of-way is flat, and still contains remnants of the large marsh that used to surround Totem Lake. As the



corridor approaches the hillside that drops into the Sammamish River Valley it curves towards the north, and begins a long gentle descent that ends near the Sammamish River. While the slope of the tracks towards the wye is gentle, in places the cross-slope in the corridor is extremely steep. Development in this section of the corridor is sparse, with a few commercial buildings close to the corridor. At the northern end of the corridor, the Main Line passes by the Chateau Ste. Michelle Winery, and then borders several smaller businesses tucked between the ERC right-of-way and Woodinville-Redmond Road NE.

There are on-railbed and off-railbed alignments for the majority of this segment; however, in a few locations the corridor width is too limited for these two alternatives. The hillside above the ERC corridor is steep and hydrologically active. Hillside seep wetlands are scattered along the ERC corridor, causing concerns for sensitive area impacts and slope stability. The existing railroad grade includes effective drainage to allow water movement from the hillside under the railbed. In this segment, both alternatives would likely be designed to maintain this existing drainage, rather than cut into the hillside above the railbed. The Off-Railbed Alternative is located east of the railbed in this segment to avoid concerns about wetlands and slope instability.

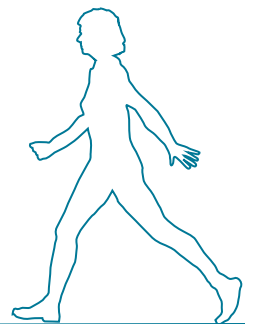


ON-RAILBED ALTERNATIVE

The On-Railbed Alternative includes a 40-foot planning area for almost all of the segment to allow design flexibility for areas with wetlands and steep slopes. Because of the steep side slopes in the section of trail located on the hillside, even the On-Railbed Alternative would likely require substantial retaining walls to create a wide enough area for the trail.

OFF-RAILBED ALTERNATIVE

The Off-Railbed Alternative is located along the east edge of the right-of-way for most of the segment. In a few locations existing development in the ERC corridor or narrow ownership does not allow for development of an off-railbed alignment. For the majority of the segment the off-railbed alignment is located on very steep hillside. Constructing this alternative would require substantial retaining walls, and the potential slope instability associated with the wetlands and other drainage on the hillside would require additional geotechnical analysis to verify the feasibility of the Off-Railbed Alternative, along with an applicable wall system.



VALLEY SEGMENT
MAIN LINE

FLAT RIGHT-OF-WAY
TYPICAL SECTION

The corridor near the connection with the Cross Kirkland Corridor includes wetlands and planned power transmission lines on the north side. The Off-Railbed Alternative is located to the east, providing the most separation between the power lines and the trail.

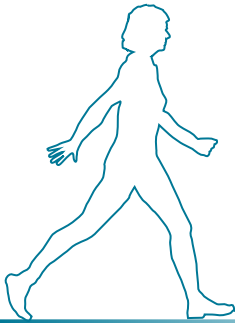


FIGURE 4-18.
VALLEY SEGMENT – MAIN LINE SECTION 1, ON-RAILBED ALTERNATIVE

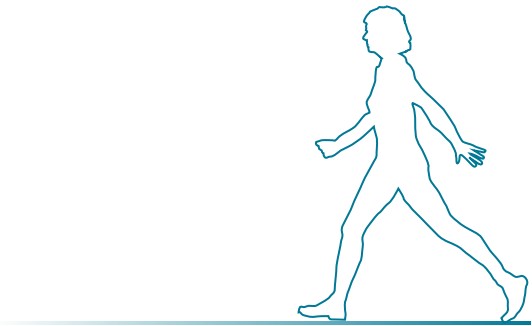
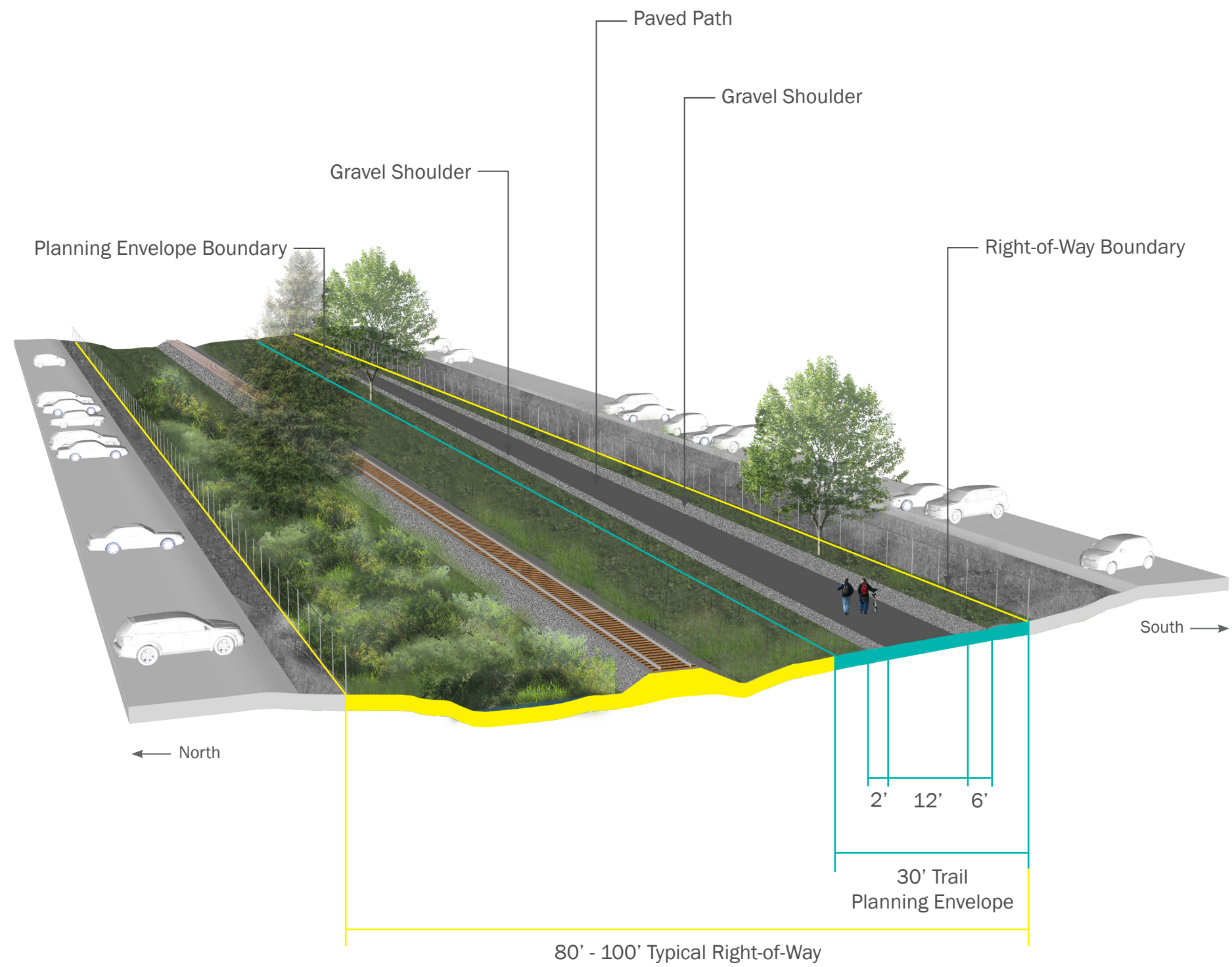


FIGURE 4-19.
VALLEY SEGMENT – MAIN LINE SECTION 1, OFF-RAILBED ALTERNATIVE

VALLEY SEGMENT
MAIN LINE

FORESTED HILLSIDE
TYPICAL SECTION

The On-Railbed and Off-Railbed alternatives in this landscape would typically require retaining walls to create a wide enough flat platform for the trail. Walls for the On-Railbed Alternative would be relatively minor. Walls for the Off-Railbed Alternative would be substantial.

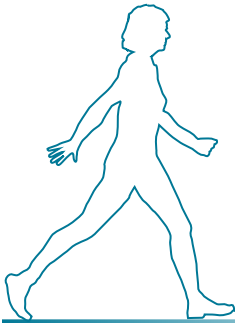
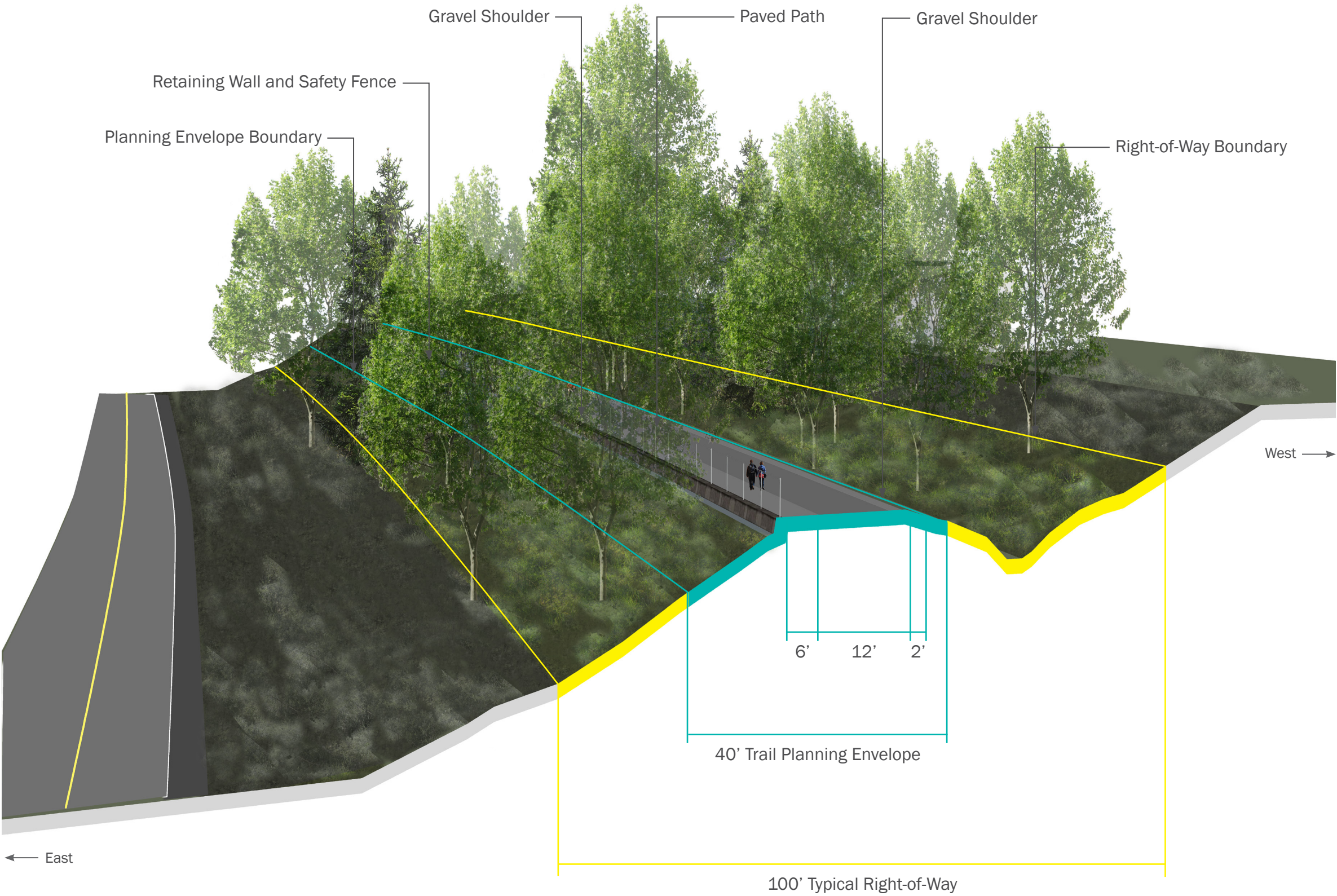


FIGURE 4-20.
VALLEY SEGMENT – MAIN LINE SECTION 2, ON-RAILBED ALTERNATIVE

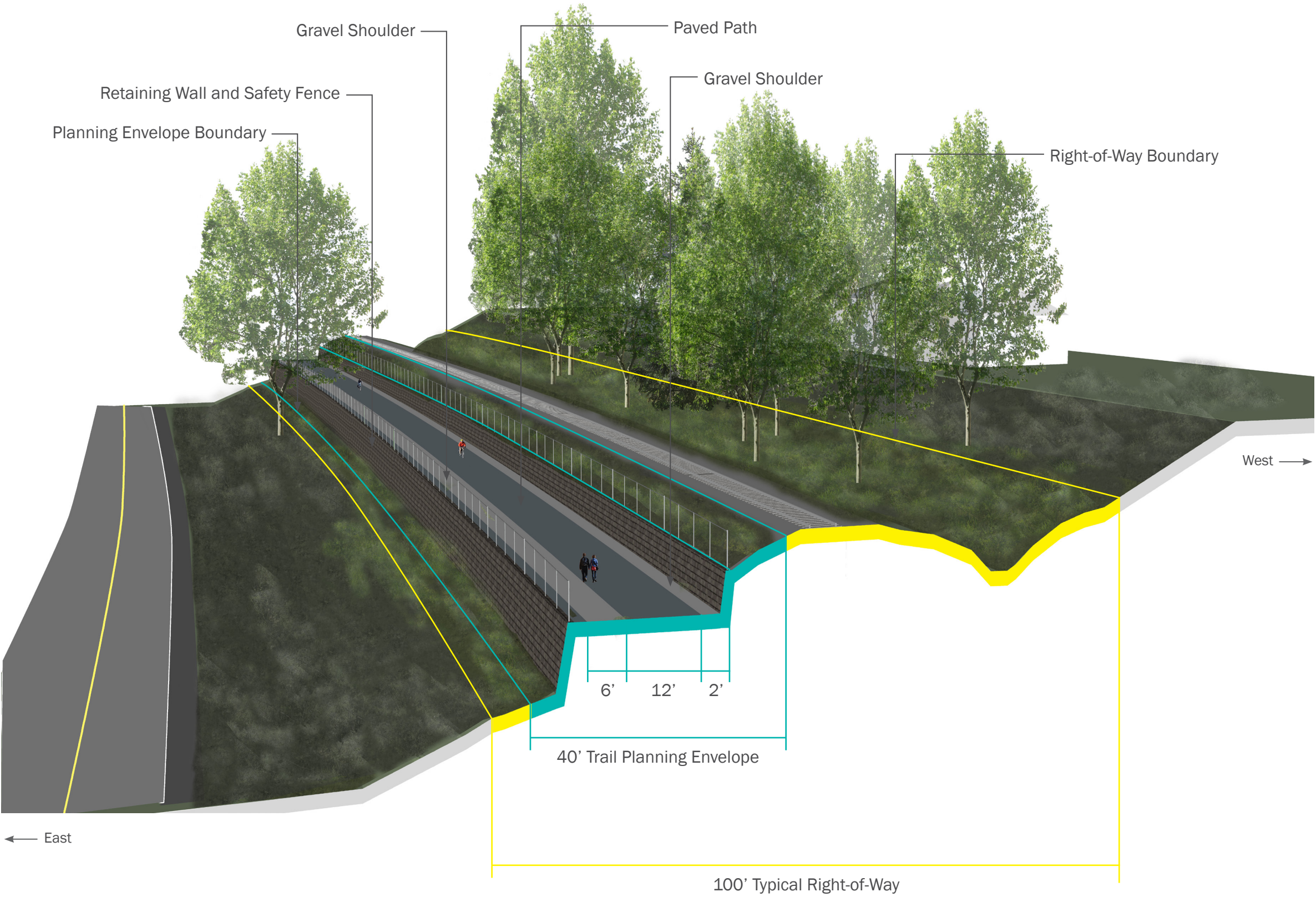
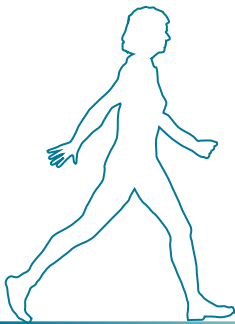


FIGURE 4-21.
VALLEY SEGMENT – MAIN LINE SECTION 2, OFF-RAILBED ALTERNATIVE

What is a “wye”?

Wye is a railroading term for a three-legged track connection, shaped like the letter Y. Although the connection between the ERC Main Line and Spur is actually four-legged, more like the letter X, this location has been commonly referred to as the wye.



VALLEY SEGMENT
MAIN LINE

ROADWAY CROSSINGS

There are three arterial crossings on the Main Line, not including potential crossings of the Woodinville-Redmond Road NE. Crossings at Slater Avenue NE, Willows Road NE, and NE 145th Street would require new, mid-block crossings. Each crossing would generally follow the design approach described in Chapter 3; however, they are challenging locations and would require careful design. Each crossing would include the development or improvement of a median refuge for trail users, traffic-calming changes to the roadway, and rapid flashing beacons that would be activated by trail users as they approach the intersection. The uniqueness of each roadway crossing is further described below.

- Slater Avenue NE is a busy route connecting residential neighborhoods to the north with NE 124th Street—a major route providing access to I-405, Redmond, and downtown Kirkland. The arterial has two lanes in each direction.
- Willows Road NE is one of the major roads connecting the plateau west of the Sammamish River Valley with the valley floor. The road currently intersects with the ERC at a sharp hairpin turn that slows traffic and complicates sight distance. The design phase would evaluate the best location for the crossing, with potential grading and clearing within the ERC right-of-way to provide good visibility between the road and trail.
- NE 145th Street is another busy street connecting from the plateau west of the valley to the valley floor. The ERC crosses NE 145th Street near the intersection of NE 145th Street and Woodinville-Redmond Road. The geometry of this roadway crossing is less extreme than at Willows Road NE; however, traffic volumes are relatively high, and typical travel speeds are also high, especially for downhill traffic.

VALLEY SEGMENT
MAIN LINE

OPPORTUNITIES TO CONNECT
THE MAIN LINE AND SPUR

The Main Line and Spur run parallel to each other on opposite sides of Woodinville-Redmond Road NE. When the railroad was still active in the ERC, the Main Line and Spur connected at the wye, just south of NE 175th Street. The Main Line tracks cross the Woodinville-Redmond Road (SR 202), with traffic being stopped with a combination of signal lights and crossing gates.

Connecting the Main Line to the Spur is necessary for the ERC to reach Woodinville and Redmond. However, the current location where the rail corridor crosses Woodinville-Redmond Road would not function as a trail crossing—it is located too close to the existing Woodinville-Redmond Road/NE 175th Street intersection. Instead of using only the historic rail crossing, the Master Plan includes several opportunities for connecting the two sections of the corridor. Ultimately, more than one of these connections may be developed because of the value that connections in different locations may have for improving options for trail users. For example, travelers interested in bicycling from Kirkland to Redmond would have a more direct route if a connection was made near NE 124th Street rather than near NE 175th Street.

The wye is a complex location in the corridor. The Master Plan trail alternatives end at the wye. North of the wye a segment of the Spur to milepost 0 is railbanked, and may be used as a temporary or permanent connecting route to NE 175th Street. The Main Line northeast of the wye (milepost 23.8) is not railbanked, and is owned by the City of Woodinville. Although it is railbanked, 1 mile of the Spur (beginning at milepost 0) is still in active, although infrequent, use.

The Master Plan includes six potential locations to connect the Main Line and the Spur:

- An on-road (bicycle lane) connection along NE 124th Street is the most direct option, but would not allow development of a shared use path as a connector. NE 124th Street also includes a steep hill.
- A new shared use path connection from the hairpin bend in Willows Road NE connecting down to the NE 124th Street intersection is less direct than the connection along NE 124th Street, but would allow the connection with a shared use path at less than 5 percent grade.
- A new shared use path connecting south of the Chateau Ste. Michelle Winery. The Main Line and Spur are very close to each other on the east and west sides of the winery property. A shared use path would traverse the hillside from the west and connect to the Spur near NE 145th Street.
- A connection along the south side of NE 145th Street in front of Chateau St. Michelle.
- A new connection across Woodinville-Redmond Road, approximately ½ mile south of NE 175th Street. The Main Line and Spur are located very near each other here, with the Main Line right-of-way connecting to the SR 202 right-of-way. There may be an opportunity to develop either a new signalized trail crossing or a trail overpass here to connect the Main Line and Spur.
- NE 175th Street intersection with Woodinville-Redmond Road. It may be possible to extend the Main Line to the existing intersection, and then connect to the Spur. However, adding trail traffic to the already crowded intersection could have substantial traffic impacts, and this option would require additional traffic studies if it were pursued during the design phase.

The last two potential locations also help connect from the wye to downtown Woodinville.

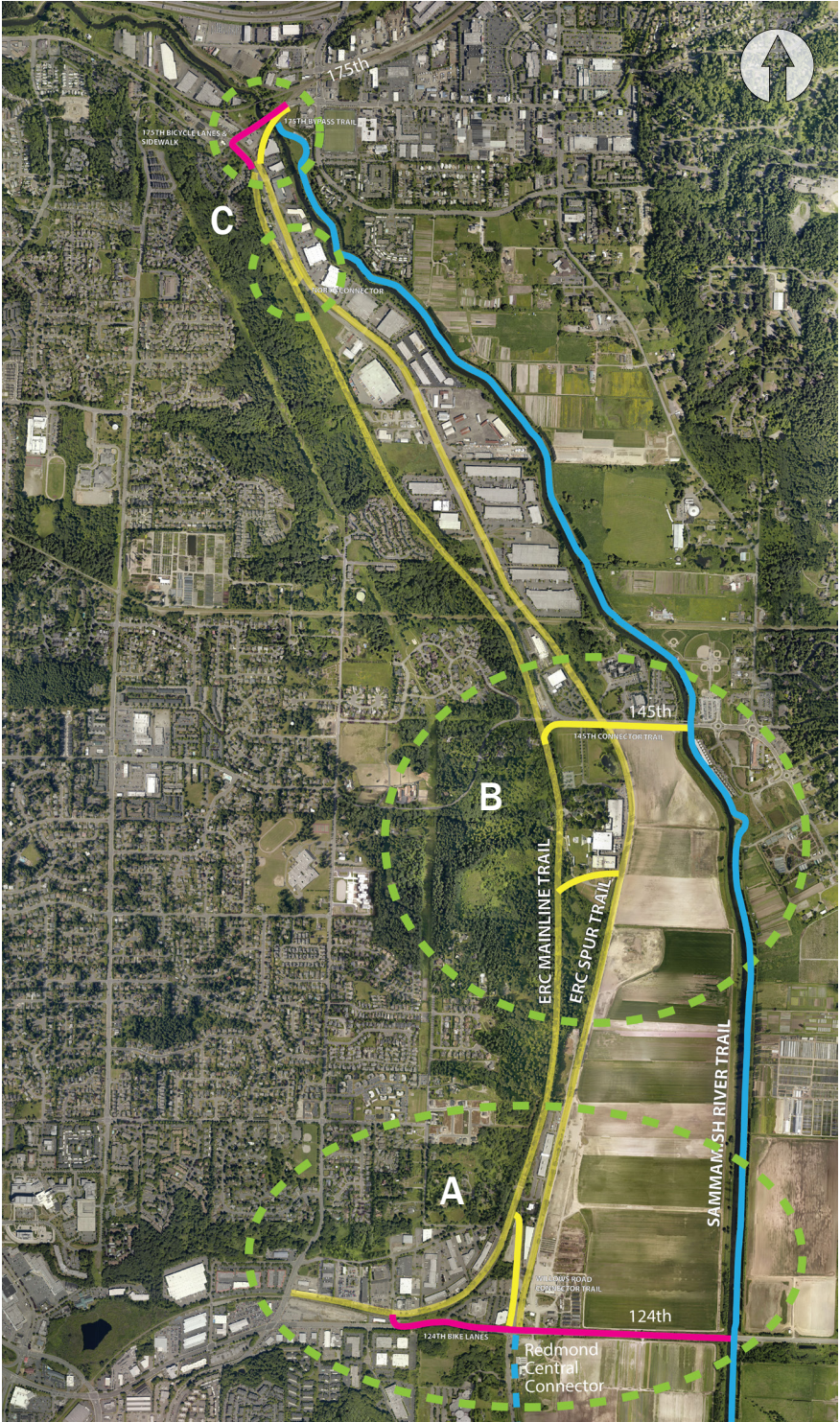
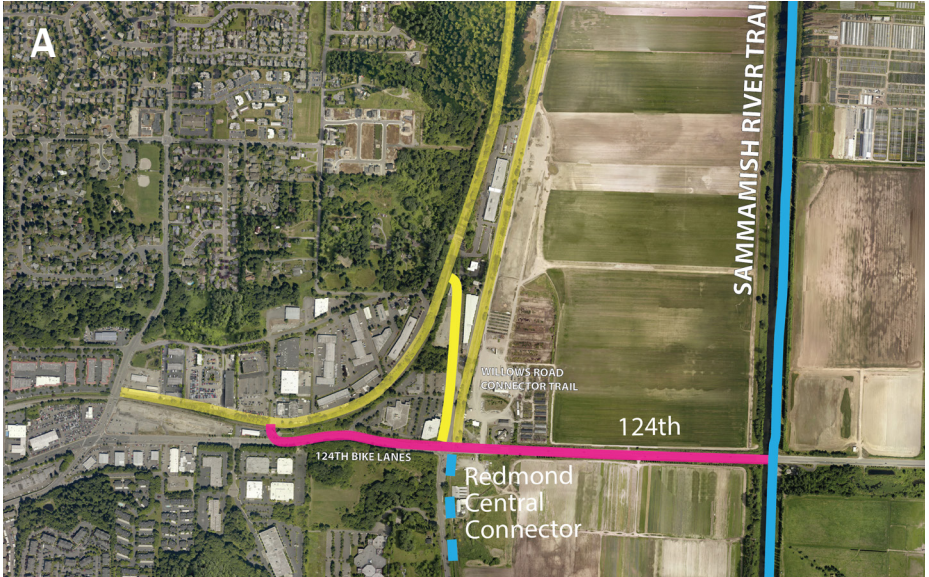


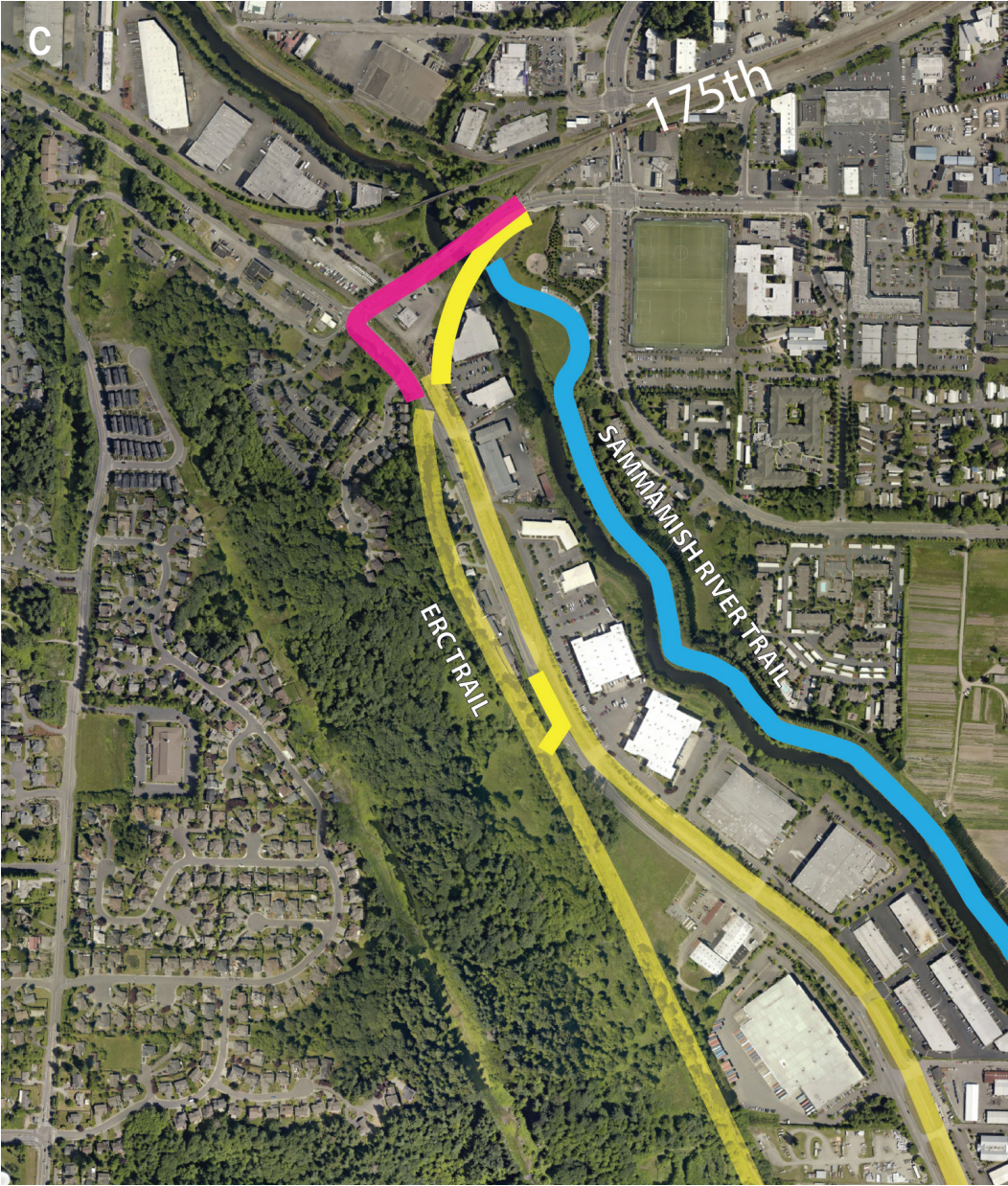
FIGURE 4-22. OPTIONS FOR CONNECTING THE ERC MAIN LINE TO THE SPUR



Several options are possible for connecting the Main Line and Spur in the NE 124th Street corridor. A combination of bicycle lanes and sidewalk could connect directly between the Main Line and the Spur on NE 124th Street, but would include a steep hillside. A shared use path could also be developed along Willows Road NE that would provide a separated route and a gentler grade.



A route along NE 145th Street could connect the Main Line and Spur and potentially continue to the Sammamish River Trail. A shared use path would traverse the hillside above the Chateau Ste. Michelle Winery, then connect to the Spur. There are potential locations for a connection both to the north of the winery within the NE 145th Street right-of-way, and at the south end of the winery.



At the north end of the corridor there are two options for connecting the Main Line and Spur. One strategy would extend a sidewalk along the west side of Woodinville-Redmond Road, then cross at the existing intersection with NE 175th Street. A second option would develop either a signalized crossing or a new trail bridge to cross Woodinville-Redmond Road and connect to the Spur where the Main Line and Spur are quite close to each other approximately 1/2 mile south of the wye.

- ERC trail
- At-grade regional trail connection
- Existing or planned regional trail
- On-street connection

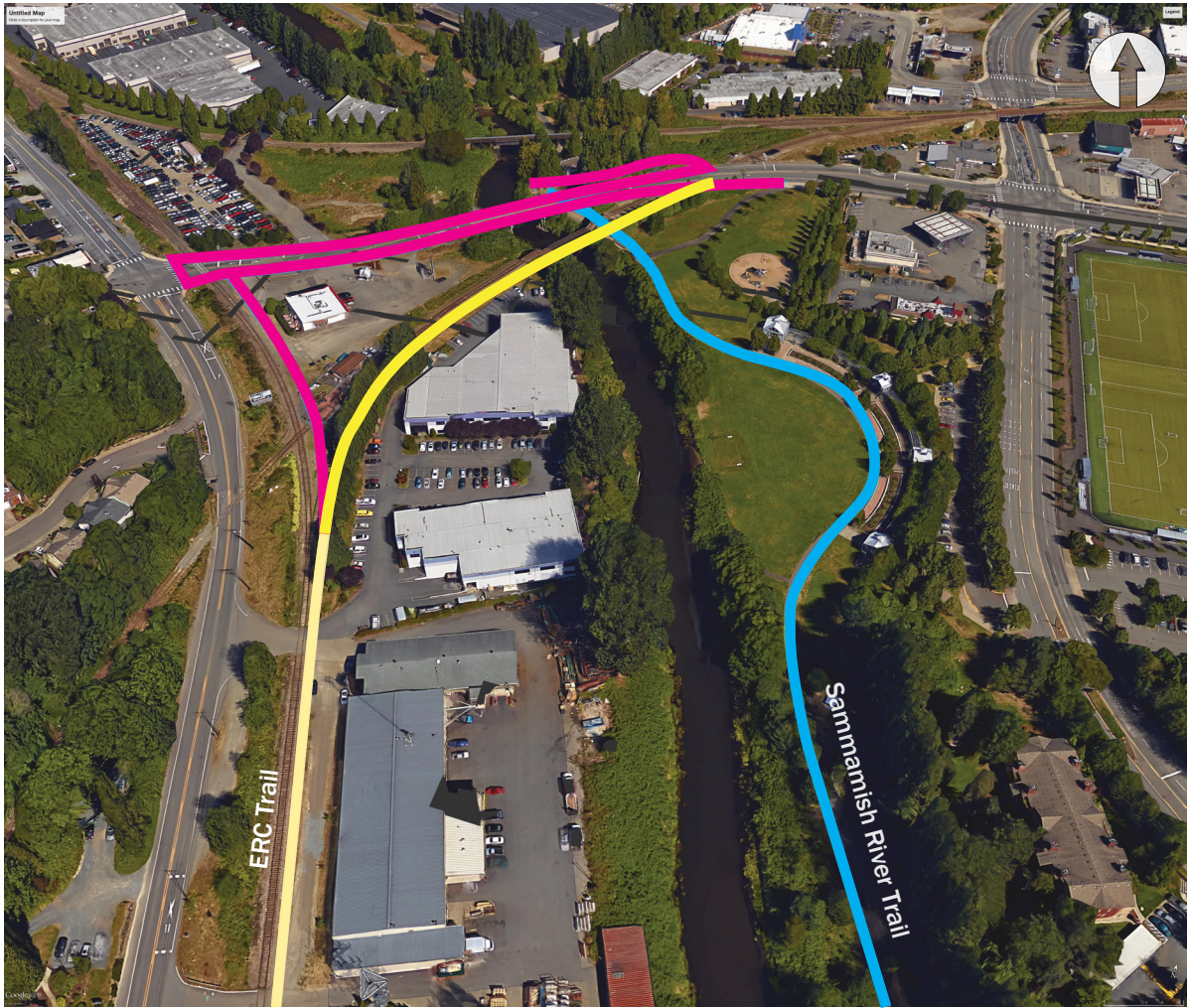
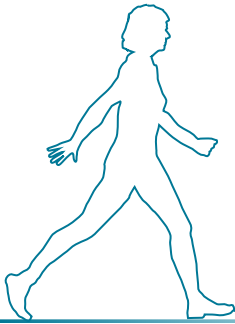


FIGURE 4-23. OPTIONS FOR CONNECTING BETWEEN THE WYE AND DOWNTOWN WOODINVILLE
There are two options for connecting the ERC to the Sammamish River Trail north of the wye. One option would develop a new trail bridge (orange line in the figure) over the Sammamish River, making a connection with the Sammamish River Trail in Wilmot Gateway Park. A second option would extend the trail in the Spur to NE 175th Street, then use either a shared use path or the bicycle lanes and sidewalk on the planned new roadway bridge to connect to Wilmot Gateway Park.



- ERC trail
- At-grade regional trail connection
- Existing or planned regional trail
- On-street connection

VALLEY SEGMENT MAIN LINE

CONNECTING FROM THE WYE TO DOWNTOWN WOODINVILLE

The northern terminus of the railbanked corridor at the wye does not connect trail users to other facilities or destinations within Woodinville. King County’s railbanked corridors end at the wye, which is on the west side of the Sammamish River. Although the railbanked corridor along the Main Line ends at the wye, King County owns a trail easement continuing north through Woodinville to the Brightwater treatment plant in Snohomish County.

From the wye, there are a few possible options for crossing the Sammamish River, but each has challenges that will need to be resolved in future planning and environmental review (King County Parks 2015). One option would be to connect to a new shared use path on the south side of NE 175th Street or bike lanes and sidewalks along both sides of the street. This would take advantage of the planned improvements to the existing NE 175th Street bridge over the Sammamish River. After crossing the bridge, trail users would use improved connector trails on the north and/or south sides of NE 175th Street to reach the Sammamish River Trail and Wilmot Gateway Park. A second option that would allow a direct trail connection between the ERC trail and Sammamish River Trail would construct a new trail bridge to the south of the existing railroad bridge, ending in Wilmot Gateway Park. Any options adjacent to active rail would require design features and possible acquisition to protect rail operations.



VALLEY SEGMENT
SPUR

The Spur connects the wye near the Sammamish River with the planned connection to the Redmond Central Connector Trail at NE 124th Street. Between the wye and the Columbia Winery just north of NE 145th Street, the Spur is located between Woodinville-Redmond Road NE and the light industrial/warehouse neighborhood that fronts the river through this section. The first mile of track south of the wye is still actively used for “head and tail” operations of the railroad hauling freight on the section of track north of the wye that connects to Snohomish. Head and tail operations include storage of cars, making and unmaking trains, and switching, but do not include freight service for the adjacent commercial area. The ERC crosses many low-volume entry roads or driveways in this section of the corridor. Traffic on these entrances is low but consistent, and includes a high proportion of freight trucks and commercial vehicles.

The Spur crosses Woodinville-Redmond Road after the highway has turned toward the east along NE 145th Street. At several locations north of NE 145th Street the corridor has limited right-of-way; south of NE 145th Street the corridor enters an agricultural section of the Sammamish Valley, and most of the right-of-way is narrow. In places, the ERC corridor is as narrow as 25 feet, which does not allow the full width of the preferred minimum planning area for the trail.

ON-RAILBED AND OFF-RAILBED ALTERNATIVES

For most of the Spur, the Master Plan only includes a single alternative. For the first mile south of the wye the railroad is still active, and the only potential alternative is off the railbed. The alignment for the trail through this section is located east of the railbed, where crossings of the commercial driveways would be safer. Completing a continuous trail that meets the preferred trail width through this section with active rail may require property acquisition. The trail planning envelope extends beyond the right-of-way for approximately 1,100 linear feet. Through this area, the adjacent land uses are landscaping and sidewalks fronting business parks.

Farther south in the corridor, limited right-of-way in much of the corridor only provides space for a single, on-railbed alignment. Volume 2, Preliminary Plans for Build Alternatives, provides a detailed look at the location of the alternatives in the corridor.

The Off-Railbed Alternative is located to the east of the railbed where the railroad is still active. The ERC is typically sloping gently from the Woodinville-Redmond Road toward the river in this segment, although for most of this section constructing the trail would not require any retaining walls or only short walls.

South of an existing lumber yard the railroad track is not active, and the railbed is available for use as a trail. The ERC corridor crosses the undeveloped Tolt Pipeline Trail as it approaches the Januik/Novelty Hill Winery and Redhook Brewery. At this location the corridor separates from the Woodinville-Redmond Road and is located between private properties. The terrain becomes more rolling for this short section, and there are wetlands in the corridor.

A new trail crossing will be necessary where the Spur crosses NE 145th Street. Without significant traffic-calming improvements for the street, the crossing would either require a stop light for traffic on the roadway or a new trail bridge. South of NE 145th Street, the corridor is bordered to the east by agricultural fields, and to the west by the back side of the Chateau Ste. Michelle Winery and a commercial building. The corridor is narrow for the majority of the section between NE 145th Street and NE 124th Street, and the only trail alternative is on the railbed.



VALLEY SEGMENT
SPUR

TYPICAL TRAIL LAYOUTS IN
THE INDUSTRIAL/WAREHOUSE
LANDSCAPE TYPE

The off-railbed alignment is located east of the railbed to improve safety at driveway crossings. Completing a continuous trail in the section where there is still active rail operations on the railbed may require property acquisition for use as trail. Volume 2, Preliminary Plans for Build Alternatives, provides a detailed look at the location of the alternatives in the corridor.

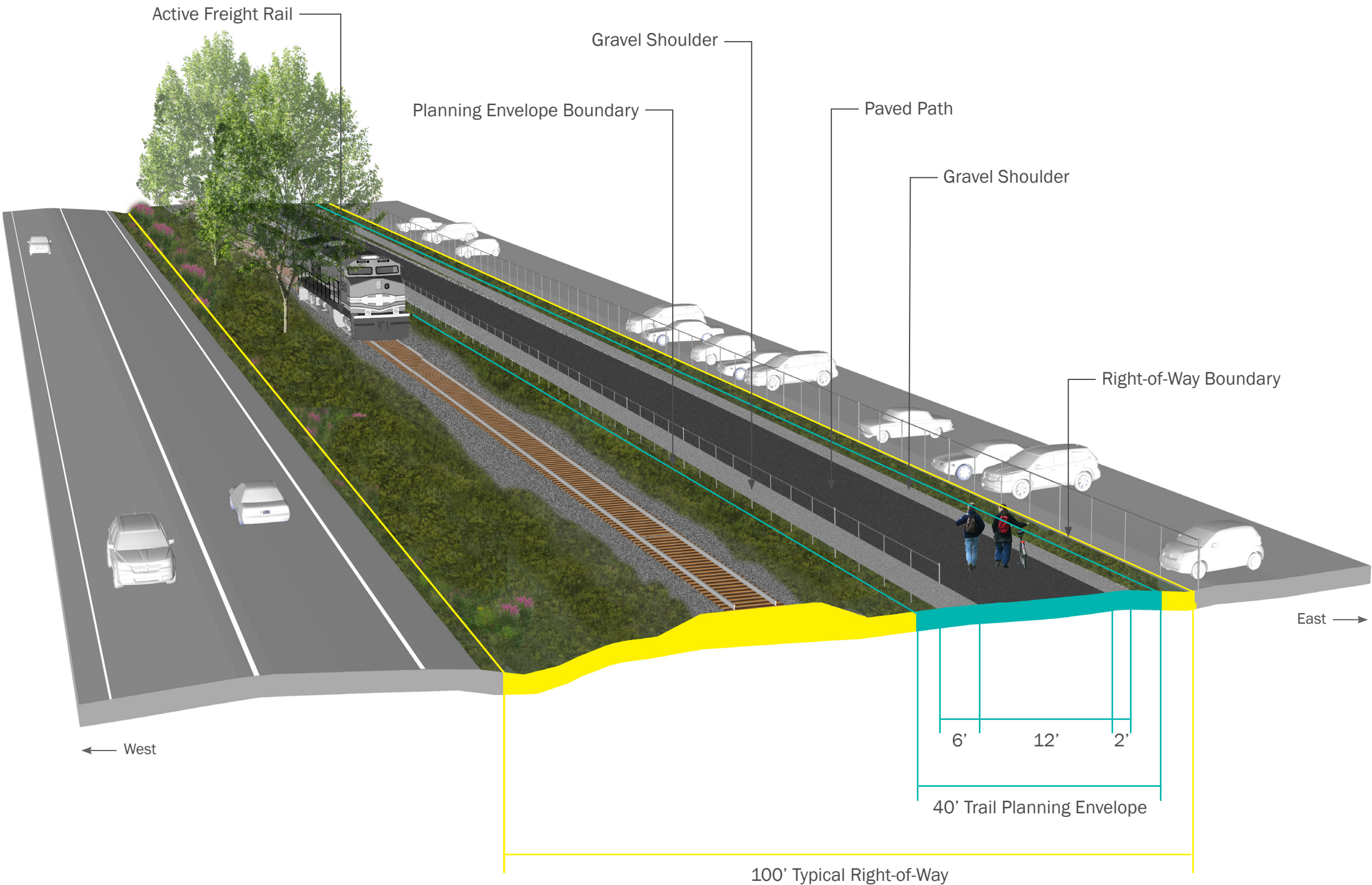
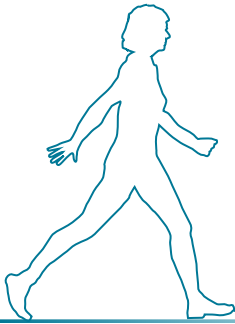


FIGURE 4-24.
VALLEY SEGMENT – SPUR SECTION 1



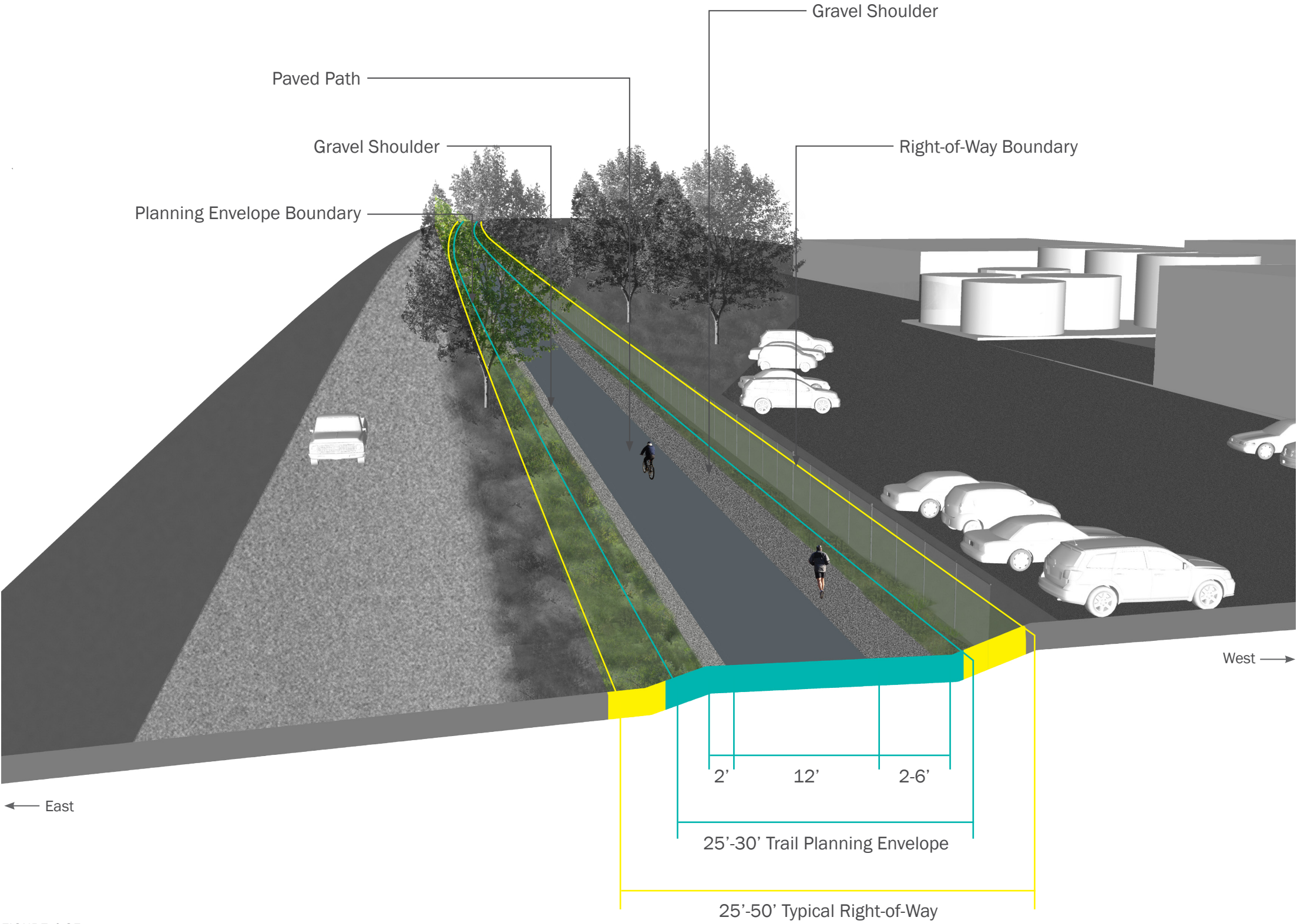


FIGURE 4-25.
VALLEY SEGMENT – SPUR SECTION 2
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VALLEY SEGMENT
SPUR

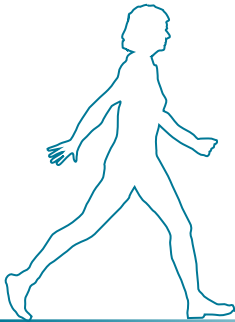
DRIVEWAY AND ROADWAY CROSSINGS

The Spur includes several crossings of private driveways, as well as a roadway crossing at NE 145th Street east of the Chateau Ste. Michelle Winery. The crossings at private driveways would be designed consistent with applicable engineering and traffic control standards and the design guidelines discussed in Chapter 3. The trail would be tucked against the railroad track crossing. Vehicles would likely have a stop control in both directions, similar to the way in which more active rail crossings are designed. The location of the trail on the east side of the tracks provides enough space for trucks entering the commercial and industrial businesses to stop without interfering with traffic on Woodinville-Redmond Road, and also allows vehicles leaving these businesses to stop at the intersection with Woodinville-Redmond Road without blocking the trail.

The crossing location at NE 145th Street/Woodinville-Redmond Road is currently a high-speed, high-volume stretch of highway. This area is developing as a major culinary tourism district in Woodinville, with destinations including the Barking Frog

restaurant, Red Hook Brewery, Chateau Ste. Michelle Winery, Columbia Winery, and Woodinville Whiskey Company, located between the Sammamish River bridge and the bend in the road where the Woodinville-Redmond Road turns to the north. Pedestrian traffic is increasing in this neighborhood, but there are no developed pedestrian crossings. In the long term, there is a possibility that this section of SR 202 would be redeveloped with traffic-calming features—possibly similar to the roundabouts incorporated into the roadway on the east side of the Sammamish River.

Redesign of the roadway would provide an opportunity to integrate a trail crossing along with other pedestrian enhancements. If roadway improvements are not considered or developed prior to the need for a trail crossing, then this location would either require a new pedestrian-activated traffic signal to stop traffic during crossings, or a grade-separated crossing. Both of these options have concerns. A stop light may not be effective in stopping traffic here, where drivers may not have an expectation of needing to stop at a signal. A grade-separated crossing would require acquisition of additional right-of-way to the south of Woodinville-Redmond Road, and would not serve pedestrians circulating among the local business destinations.



Crossing at NE 124th Street



Crossing at NE 145th Street



Driveway crossing

4.5 PLANNING-LEVEL COST

Planning-level opinions of cost are provided for both the On-Railbed and Off-Railbed alternatives. These costs are preliminary only, and are likely to change substantially as trail design progresses. For the purposes of the Master Plan, the opinions of cost are intended to provide a basis of comparison between the alternatives. Cost differences are useful for making an informed decision between the alternatives when combined with factors such as environmental impacts, trail experience, and public input.

The planning level opinions of cost are expressed as total project cost and include not only the costs for construction but other costs such as design, permitting, construction engineering, and King County administration

Some of the major limitations of the cost estimating methodology include:

- **Topography:** The planning-level trail alignment and grade were based on aerial information rather than an on-site survey. Retaining walls are a key component of cost; therefore, differences in topography could dramatically change the cost.
- **Critical areas:** Wetlands, streams, regulated steep slopes, and their associated buffers were identified at an inventory level only rather than using formal delineations. The extent and character of these features will be more completely evaluated in the design phase, and may result in changes to the trail, such as a revised alignment within the planning envelope, use of a boardwalk instead of fill, or a bridge rather than a culvert. The mitigation cost would change accordingly.
- **Planning-level design:** The initial study of the alternatives has been completed at a preliminary planning level. Thus, the opinions of cost apply conservative unit pricing for typical trails, plus distinctive features such as bridges and retaining walls that are different for the On-Railbed and Off-Railbed alternatives. Estimates for work items such as utility adjustments and relocations, temporary and permanent stormwater facilities, traffic control during construction, and contractor mobilization are calculated as

a percentage of construction cost. The costs also include contingencies to cover the uncertainties that will arise during final design.

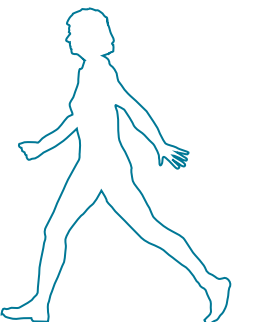
- **Planning objectives:** To best preserve the balance of the corridor for other potential uses, both alternatives limit the use of large cut and fill slopes and use retaining walls to limit the width of grading.
- **Out-of-corridor improvements:** The opinions of cost do not include cost to develop gateways, regional trail connections, or local access and connections, unless specifically identified. Right-of-way acquisition costs are not included in the opinion of cost. At this preliminary phase, only two areas have been identified in which a right-of-way may be necessary. The first is in the vicinity of NE 8th Street in Bellevue, where the trail must navigate the East Link light rail and the Wilburton Station. The second is along a portion of the Spur in Woodinville where freight rail is still active and the right-of-way is narrow.



The opinion of cost is limited to the alternatives for initial development of the trail on or off the railbed, as presented in this Master Plan. These cost estimates do not address potential future costs to modify or relocate the trail if other future uses in the corridor such as transit, freight, or utilities required trail relocation. Such costs cannot be predicted at this time with any degree of accuracy.

During the design process, changes will occur that affect cost. There will be opportunities to reduce cost by using different techniques such as adjusting the elevation of the trail and reducing the use of retaining walls. There will be increases in cost in response to specific site conditions, such as minimizing impacts on high-quality wetlands by using a boardwalk.

The comparison of potential costs for each alternative is presented by segment: Lakefront, Wilburton, and Valley (Main Line and Spur). In all segments except the Lakefront Segment, major bridge work is required. For planning purposes, the major bridge costs are described as a range because there are options that can only be decided through the future design phase.



LAKEFRONT SEGMENT

The Lakefront Segment is approximately 5 miles in length. In this segment, the topography has great influence over cost. The greater amount of earthwork and tall walls retaining the Off-Railbed Alternative substantially increase its cost compared to the On-Railbed Alternative. It is important to note that during design and depending on the specific location and depth of the Eastside Interceptor sewer line, the profile of the Off-Railbed Alternative could be lowered with some potential for reduction in cost.

There are a number of existing railroad bridges in the Lakefront Segment. Both alternatives use the existing bridges with minor improvements such as painting, surfacing, and hand rails. These minor improvements are shown as a separate line item in Table 4-1.

As shown in Table 4-1, the mitigation cost for the On-Railbed Alternative is expected to be higher than the Off-Railbed Alternative. This difference is primarily due to the proximity of a stream channel parallel to the railbed that could be affected by the widening necessary to accommodate a trail.

TABLE 4-1. Planning Level Estimated Costs for the Lakefront Segment

	On-Railbed Alternative	Off-Railbed Alternative
Trail	\$4,000,000	\$7,000,000
Retaining Walls	\$11,000,000	\$38,000,000
Bridge Decking and Painting	\$1,500,000	\$1,500,000
Mitigation	\$3,000,000	\$2,000,000
Total Construction Cost	\$19,500,000	\$48,500,000
Non-Construction Costs*	\$12,500,000	\$31,500,000
Total Project Cost	\$32,000,000	\$80,000,000
Total Project Cost/Mile	\$7,000,000/mile	\$16,000,000/mile

* Non-construction costs are provided as a typical factor of 65 percent of construction costs and include design, permitting, construction engineering, and project administration.

The opinion of cost includes the pedestrian connection into Gene Coulon Park and the shared use path connecting to Lake Washington Boulevard. Otherwise, gateways and access are not included. The opinion of cost also covers crossing treatments for the numerous at-grade crossings through this segment.

WILBURTON SEGMENT

The Wilburton Segment is approximately 4.8 miles in length. In this segment, the topography and need for more extensive earthwork and retaining walls has the greatest influence over the difference in cost between the two alternatives. The walls retaining the Off-Railbed Alternative increase its cost compared to the On-Railbed Alternative, as shown in Table 4-2.

The Wilburton Segment includes a couple of existing railroad bridges with minor decking and painting required. These bridges will be used by both alternatives.

The Wilburton Segment includes five major bridge projects—two existing that require retrofitting, and three new bridges. The bridges will be used by both alternatives for the trail alignment. The potential costs are expressed as a range to cover a range of options during future design.

The opinion of cost includes at-grade crossings of several two-lane arterials and a new signalized crossing of NE 6th Street. Access and gateways are not included.

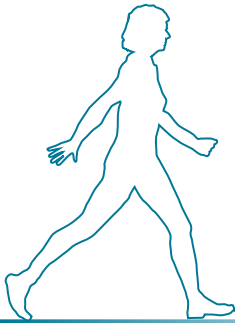
VALLEY SEGMENT—MAIN LINE

Main Line portion of the Valley Segment is approximately 3.5 miles in length. In this segment, the topography (and need for associated earthwork and retaining walls) is the primary factor in differentiating the two alternatives. As shown in Table 4-3, the tall walls retaining the Off-Railbed Alternative substantially increase the cost compared to the On-Railbed Alternative.

TABLE 4-2. Planning Level Estimated Costs for the Wilburton Segment

	On-Railbed Alternative		Off-Railbed Alternative	
	Low	High	Low	High
Trail	\$3,000,000	\$3,000,000	\$4,000,000	\$4,000,000
Retaining Walls	\$6,000,000	\$6,000,000	\$11,000,000	\$11,000,000
Bridge Decking and Painting	\$250,000	\$250,000	\$250,000	\$250,000
Existing I-90 Bridge	\$750,000	\$6,000,000	\$750,000	\$6,000,000
New I-405 Bridge at Wilburton Gap	\$20,000,000	\$30,000,000	\$20,000,000	\$30,000,000
Existing Wilburton Trestle	\$4,000,000	\$8,000,000	\$4,000,000	\$8,000,000
New NE 4th Street Bridge	\$2,500,000	\$3,750,000	\$2,500,000	\$3,750,000
New NE 8th Street Bridge	\$7,500,000	\$9,000,000	\$7,500,000	\$9,000,000
Mitigation	\$500,000	\$500,000	\$1,000,000	\$1,000,000
Total Construction Cost	\$44,500,000	\$66,500,000	\$51,000,000	\$73,000,000
Non-Construction Costs*	\$27,500,000	\$42,000,000	\$33,500,000	\$47,500,000
Total Project Cost	\$73,500,000	\$110,000,000	\$84,500,000	\$120,500,000
Total Project Cost per Mile	\$15,500,000/mile	\$23,000,000/mile	\$18,000,000/mile	\$25,000,000/mile

*Non-construction costs are provided as a typical factor of 65 percent of construction costs and include design, permitting, construction engineering, and project administration.



As shown in Table 4-3, the mitigation cost for the On-Railbed Alternative is higher than the Off-Railbed Alternative. This difference is primarily due to the proximity of wetlands and streams immediately adjacent to the railbed.

Both alternatives include a crossing of Woodinville-Redmond Road (SR 202) south of NE 175th Street. A signalized at-grade crossing is included in the low estimate, while a grade-separated crossing is included in the high estimate for both alternatives. The trail cost also covers crossing treatments for several other at-grade crossings through this segment.

The opinion of cost includes a sidewalk connection on the west side of Woodinville-Redmond Road, from the point of intersection with the Main Line north to NE 175th Street. Otherwise, gateways and access are not included.

VALLEY SEGMENT—SPUR

The Spur portion of the Valley Segment is approximately 3.4 miles in length. In this segment, the cost for the two alternatives are very similar because the topography is relatively flat compared to the rest of the ERC. As shown in Table 4-4, the difference in retaining wall cost between the two alternatives is relatively low compared to other segments.

Both alternatives could include a crossing of NE 145th Street (SR 202) near the Chateau Ste. Michelle Winery. A signalized at-grade crossing is included in the low estimate. The cost of a grade-separated crossing is included in the high estimate. The trail cost covers crossing treatments for the numerous at-grade driveways through this segment.

SUMMARY OF TOTAL PROJECT COST

The estimated range of project costs for each segment is summarized in Table 4-5.

TABLE 4-3. Planning Level Estimated Costs for the Valley Segment—Main Line

	On-Railbed Alternative		Off-Railbed Alternative	
	Low	High	Low	High
Trail	\$2,500,000	\$2,500,000	\$4,500,000	\$4,500,000
Retaining Walls	\$4,500,000	\$4,500,000	\$22,000,000	\$22,000,000
Woodinville-Redmond Signal	\$750,000	\$0	\$750,000	\$0
Woodinville-Redmond Bridge	\$0	\$4,750,000	\$0	\$4,750,000
Mitigation	\$2,750,000	\$2,750,000	\$1,250,000	\$1,250,000
Total Construction Cost	\$10,500,000	\$14,500,000	\$28,500,000	\$32,500,000
Non-Construction Costs*	\$6,500,000	\$9,500,000	\$18,500,000	\$21,000,000
Total Project Cost	\$17,000,000	\$24,000,000	\$47,000,000	\$53,500,000
Total Project Cost/Mile	\$5,000,000/mile	\$7,000,000/mile	\$14,000,000/mile	\$15,500,000/mile

*Non-construction costs are provided as a typical factor of 65 percent of construction costs and include design, permitting, construction engineering, and project administration.

TABLE 4-4. Planning Level Estimated Costs for the Valley Segment—Spur

	On-Railbed Alternative		Off-Railbed Alternative	
	Low	High	Low	High
Trail	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Retaining Wall	\$2,500,000	\$2,500,000	\$3,000,000	\$3,000,000
NE 145th Street Signal	\$650,000	\$0	\$650,000	\$0
NE 145th Street Bridge	\$0	\$5,000,000	\$0	\$5,000,000
Mitigation	\$750,000	\$750,000	\$500,000	\$500,000
Total Construction Cost	\$5,900,000	\$10,250,000	\$6,150,000	\$10,500,000
Non-Construction Costs*	\$4,100,000	\$6,750,000	\$3,850,000	\$7,000,000
Total Project Cost	\$10,000,000	\$17,000,000	\$10,000,000	\$17,500,000
Total Project Cost/Mile	\$3,000,000/mile	\$5,500,000/mile	\$3,000,000/mile	\$5,500,000/mile

*Non-construction costs are provided as a typical factor of 65 percent of construction costs and include design, permitting, construction engineering, and project administration.

TABLE 4-5. Summary of Total Project Costs by Segment

	On-Railbed Alternative		Off-Railbed Alternative	
	Low	High	Low	High
Lakefront Segment	\$32,000,000	\$32,000,000	\$80,000,000	\$80,000,000
Wilburton Segment	\$73,500,000	\$110,000,000	\$84,500,000	\$120,500,000
Valley Segment – Main Line	\$17,000,000	\$24,000,000	\$47,000,000	\$53,500,000
Valley Segment – Spur	\$10,000,000	\$17,000,000	\$10,000,000	\$17,500,000

