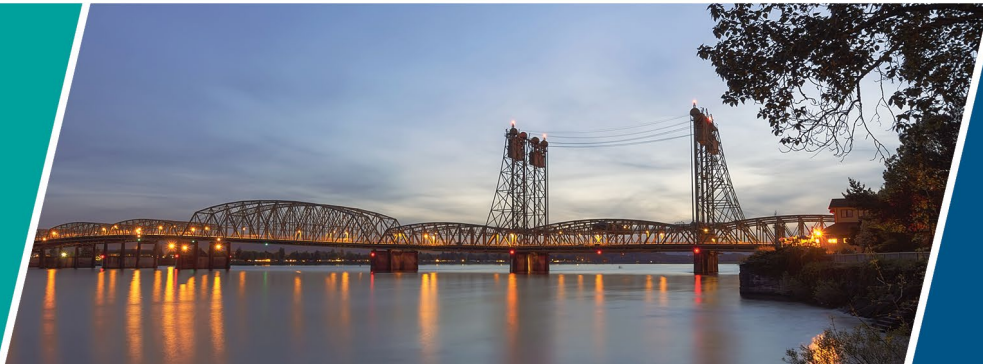


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Acquisitions Technical Report

September 2024

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ACRONYMS AND ABBREVIATIONS

Acronyms/Abbreviations	Definition
BRT	bus rapid transit
CADD	computer-aided design and drafting
CRC	Columbia River Crossing
CTR	Commute Trip Reduction
C-TRAN	Clark County Public Transit Benefit Area Authority
DNR	Washington State Department of Natural Resources
DSL	Oregon Department of State Lands
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FSCR	Flood Safe Columbia River
FTA	Federal Transit Administration
GIS	Geographic Information System
I-5	Interstate 5
IBR	Interstate Bridge Replacement
LPA	locally preferred alternative
LRT	light-rail transit
LRV	light-rail vehicle
MAX	Metropolitan Area Express
NAVD 88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
ODOT	Oregon Department of Transportation
OTC	Oregon Transportation Commission
PMLS	Portland Metro Levee System
PNCD	Preliminary Navigation Clearance Determination
RMLS	Regional Multiple Listing Service
ROD	Record of Decision
RTP	Regional Transportation Plan

Acronyms/Abbreviations	Definition
SEIS	Supplemental Environmental Impact Statement
SOV	single-occupancy vehicle
sq ft	square foot, square feet
SR	State Route
TriMet	Tri-County Metropolitan Transportation District of Oregon
UFSWQD	Urban Flood Safety and Water Quality District
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
VNHR	Vancouver National Historic Reserve
WSDOT	Washington State Department of Transportation
WSTC	Washington State Transportation Commission

1. PROGRAM OVERVIEW

This technical report identifies, describes, and evaluates short-term and long-term effects on property resulting from the Interstate Bridge Replacement (IBR) Program. The construction and operation of the transportation infrastructure requires the permanent and temporary acquisition of property and property rights that include residential, business, and public spaces within the project footprint. The Modified Locally Preferred Alternative (LPA) would be designed to avoid and/or minimize these effects to the greatest extent possible. This report provides mitigation measures for potential impacts when avoidance is not feasible.

The purpose of this report is to satisfy applicable portions of the National Environmental Policy Act (NEPA) 42 United State Code (USC) 4321 “to promote efforts which will prevent or eliminate damage to the environment.” Information and potential environmental consequences to properties, businesses, and residences described in this technical report will be used to support the Draft Supplemental Environmental Impact Statement (SEIS) for the IBR Program pursuant to 42 USC 4332.

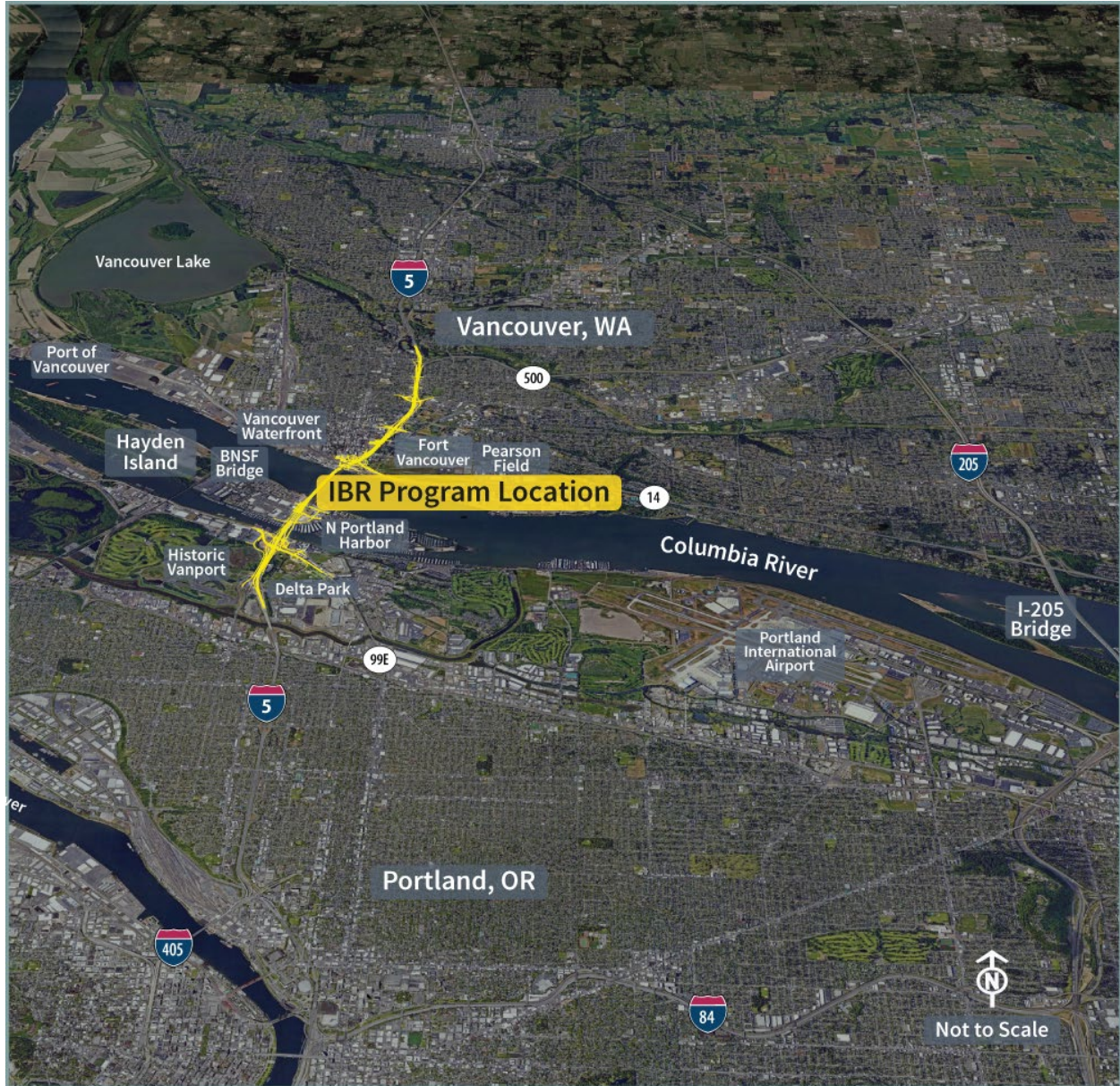
The objectives of this report are to:

- Define the Program study area and the methods of data collection and evaluation used for the analysis (Chapter 2).
- Describe existing land uses and real estate market within the study area (Chapter 3).
- Discuss potential long-term, temporary, and indirect effects resulting from construction and operation of the Modified LPA in comparison to the No-Build Alternative (Chapters 4 through 6).
- Provide proposed avoidance and mitigation measures to help prevent, eliminate, or minimize environmental consequences from the Modified LPA (Chapter 7).

The IBR Program is a continuation of the previously suspended Columbia River Crossing (CRC) project with the same purpose to replace the aging Interstate 5 (I-5) Bridge across the Columbia River with a modern, seismically resilient multimodal structure. The proposed infrastructure improvements are located along a 5-mile stretch of the I-5 corridor that extends from approximately Victory Boulevard in Portland to State Route (SR) 500 in Vancouver as shown in Figure 1-1.

The Modified LPA is a modification of the CRC LPA, which completed the National Environmental Policy Act (NEPA) process with a signed Record of Decision (ROD) in 2011 and two re-evaluations that were completed in 2012 and 2013. The CRC project was discontinued in 2014. This Technical Report is evaluating the effects of changes in project design since the CRC ROD and re-evaluations, as well as changes in regulations, policy, and physical conditions.

Figure 1-1. IBR Program Location Overview



1.1 Components of the Modified LPA

The basic components of the Modified LPA include:

- A new pair of Columbia River bridges—one for northbound and one for southbound travel—built west of the existing bridge. The new bridges would each include three through lanes, safety shoulders, and one auxiliary lane (a ramp-to-ramp connection on the highway that improves interchange safety by providing drivers with more space and time to merge, diverge, and weave) in each direction. When all highway, transit, and active transportation would be moved to the new Columbia River bridges, the existing Interstate Bridge (both spans) would be removed.
 - Three bridge configurations are under consideration: (1) double-deck truss bridges with fixed spans, (2) single-level bridges with fixed spans, and (3) single-level bridges with movable spans over the primary navigation channel. The fixed-span configurations would provide up to 116 feet of vertical navigation clearance, and the movable-span configuration would provide 178 feet of vertical navigation clearance in the open position. The primary navigation channel would be relocated approximately 500 feet south (measured by channel centerline) of its existing location near the Vancouver shoreline.
 - A two auxiliary lane design option (two ramp-to-ramp lanes connecting interchanges) across the Columbia River is also being evaluated. The second auxiliary lane in each direction of I-5 would be added from approximately Interstate Avenue/Victory Boulevard to SR 500/39th Street.
- A 1.9-mile light-rail transit (LRT) extension of the current Metropolitan Area Express (MAX) Yellow Line from the Expo Center MAX Station in North Portland, where it currently ends, to a terminus near Evergreen Boulevard in Vancouver. Improvements would include new stations at Hayden Island, downtown Vancouver (Waterfront Station), and near Evergreen Boulevard (Evergreen Station), as well as revisions to the existing Expo Center MAX Station. Park and rides to serve LRT riders in Vancouver could be included near the Waterfront Station and Evergreen Station. The Tri-County Metropolitan Transportation District of Oregon (TriMet), which operates the MAX system, would also operate the Yellow Line extension.
 - Potential site options for park and rides include three sites near the Waterfront Station and two near the Evergreen Station (up to one park and ride could be built for each station location in Vancouver).
- Associated LRT improvements such as traction power substations, overhead catenary system, signal and communications support facilities, an overnight light-rail vehicle (LRV) facility at the Expo Center, 19 new LRVs, and an expanded maintenance facility at TriMet's Ruby Junction.
- Integration of local bus transit service, including bus rapid transit (BRT) and express bus routes, in addition to the proposed new LRT service.
- Wider shoulders on I-5 from Interstate Avenue/Victory Boulevard to SR 500/39th Street to accommodate express bus-on-shoulder service in each direction.
- Associated bus transit service improvements would include three additional bus bays for eight new electric double-decker buses at the Clark County Public Transit Benefit Area Authority (C-

TRAN) operations and maintenance facility (see Section 1.1.7, Transit Operating Characteristics, for more information about this service).

- Improvements to seven I-5 interchanges and I-5 mainline improvements between Interstate Avenue/ Victory Boulevard in Portland and SR 500/39th Street in Vancouver. Some adjacent local streets would be reconfigured to complement the new interchange designs, and improve local east-west connections.
 - An option that shifts the I-5 mainline up to 40 feet westward in downtown Vancouver between the SR 14 interchange and Mill Plain Boulevard interchange is being evaluated.
 - An option that eliminates the existing C Street ramps in downtown Vancouver is being evaluated.
- Six new adjacent bridges across North Portland Harbor: one on the east side of the existing I-5 North Portland Harbor bridge and five on the west side or overlapping with the existing bridge (which would be removed). The bridges would carry (from west to east) LRT tracks, southbound I-5 off-ramp to Marine Drive, southbound I-5 mainline, northbound I-5 mainline, northbound I-5 on-ramp from Marine Drive, and an arterial bridge for local traffic with a shared-use path for pedestrians and bicyclists.
- A variety of improvements for people who walk, bike, and roll throughout the study area, including a system of shared-use paths, bicycle lanes, sidewalks, enhanced wayfinding, and facility improvements to comply with the Americans with Disabilities Act. These are referred to in this document as *active transportation* improvements.
- Variable-rate tolling for motorists using the river crossing as a demand-management and financing tool.

The transportation improvements proposed for the Modified LPA and the design options are shown in Figure 1-2. The Modified LPA includes all of the components listed above. If there are differences in environmental effects or benefits between the design options, those are identified in the sections below.

Figure 1-2. Modified LPA Components



Section 1.1.1, Interstate 5 Mainline, describes the overall configuration of the I-5 mainline through the study area, and Sections 1.1.2, Portland Mainland and Hayden Island (Subarea A), through Section 1.1.5, Upper Vancouver (Subarea D), provide additional detail on four geographic subareas (A through D), which are shown on Figure 1-3. In each subarea, improvements to I-5, its interchanges, and the local roadways are described first, followed by transit and active transportation improvements. Design options are described under separate headings in the subareas in which they would be located.

Table 1-1 shows the different combinations of design options analyzed in this Technical Report. However, **any combination of design options is compatible**. In other words, any of the bridge configurations could be combined with one or two auxiliary lanes, with or without the C Street ramps, a centered or westward shift of I-5 in downtown Vancouver, and any of the park-and-ride location options. Figures in each section show both the anticipated limit of ground disturbance, which includes disturbance from temporary construction activities, and the location of permanent infrastructure elements.

Figure 1-3. Modified LPA – Geographic Subareas



Table 1-1. Modified LPA and Design Options

Design Options	Modified LPA	Modified LPA with Two Auxiliary Lanes	Modified LPA Without C Street Ramps	Modified LPA with I-5 Shifted West	Modified LPA with a Single-Level Fixed-Span Configuration	Modified LPA with a Single-Level Movable-Span Configuration
Bridge Configuration	Double-deck fixed-span*	Double-deck fixed-span	Double-deck fixed-span	Double-deck fixed-span	Single-level fixed-span*	Single-level movable-span*
Auxiliary Lanes	One*	Two*	One	One	One	One
C Street Ramps	With C Street ramps*	With C Street ramps	Without C Street Ramps*	With C Street ramps	With C Street ramps	With C Street ramps
I-5 Alignment	Centered*	Centered	Centered	Shifted West*	Centered	Centered
Park-and-Ride Options	Waterfront:* 1. Columbia Way (below I-5); 2. Columbia Street/SR 14; 3. Columbia Street/Phil Arnold Way Evergreen:* 1. Library Square; 2. Columbia Credit Union					

Bold text with an asterisk (*) indicates which design option is different in each configuration.

1.1.1 Interstate 5 Mainline

Today, within the 5-mile corridor, I-5 has three 12-foot-wide through lanes in each direction, an approximately 6- to 11-foot-wide inside shoulder, and an approximately 10- to 12-foot-wide outside shoulder with the exception of the Interstate Bridge, which has approximately 2- to 3-foot-wide inside and outside shoulders. There are currently intermittent auxiliary lanes between the Victory Boulevard and Hayden Island interchanges in Oregon and between SR 14 and SR 500 in Washington.

The Modified LPA would include three 12-foot through lanes from Interstate Avenue/Victory Boulevard to SR 500/39th Street and a 12-foot auxiliary lane from the Marine Drive interchange to the Mill Plain Boulevard interchange in each direction. Many of the existing auxiliary lanes on I-5 between the SR 14 and Main Street interchanges in Vancouver would remain, although they would be reconfigured. The existing auxiliary lanes between the Victory Boulevard and Hayden Island interchanges would be replaced with changes to on- and off-ramps and interchange reconfigurations. The Modified LPA would also include wider shoulders (12-foot inside shoulders and 10- to 12-foot outside shoulders) to be consistent with ODOT and WSDOT design standards. The wider inside shoulder would be used by express bus service to bypass mainline congestion, known as “bus on shoulder” (refer to Section 1.1.7, Transit Operating Characteristics). The shoulder would be available for express bus service when general-purpose speeds are below 35 miles per hour (mph).

Figure 1-4 shows a cross section of the collector-distributor (C-D)¹ roadways, Figure 1-5 shows the location of the C-D roadways, and Figure 1-6 shows the proposed auxiliary lane layout. The existing Interstate Bridge over the Columbia River does not have an auxiliary lane; the Modified LPA would add one auxiliary lane in each direction across the new Columbia River bridges.

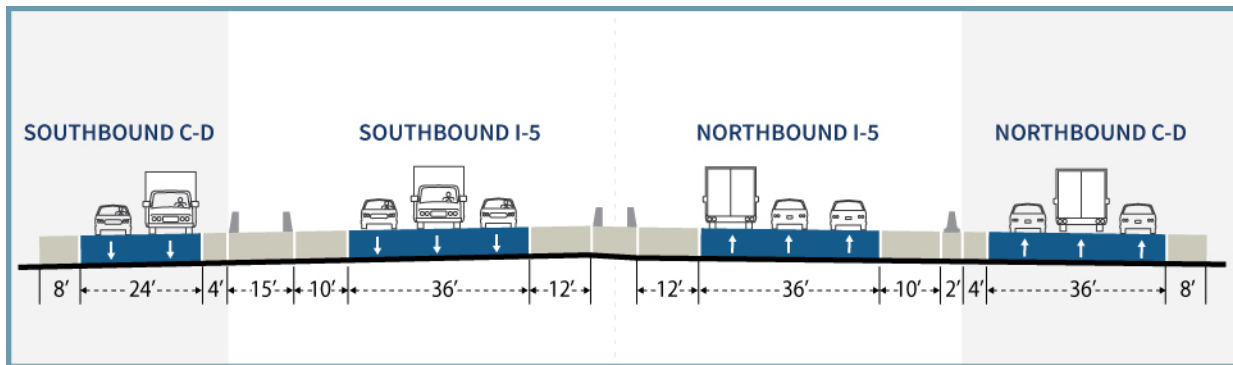
On I-5 northbound, the auxiliary lane that would begin at the on-ramp from Marine Drive would continue across the Columbia River bridge and end at the off-ramp to the C-D roadway, north of SR 14 (see Figure 1-5). The on-ramp from SR 14 westbound would join the off-ramp to the C-D roadway, forming the northbound C-D roadway between SR 14 and Fourth Plain Boulevard. The C-D roadway would provide access from I-5 northbound to the off-ramps at Mill Plain Boulevard and Fourth Plain Boulevard. The C-D roadway would also provide access from SR 14 westbound to the off-ramps at Mill Plain Boulevard and Fourth Plain Boulevard, and to the on-ramp to I-5 northbound.

On I-5 northbound, the Modified LPA would also add one auxiliary lane beginning at the on-ramp from the C-D roadway and ending at the on-ramp from 39th Street, connecting to an existing auxiliary lane from 39th Street to the off-ramp at Main Street. Another existing auxiliary lane would remain between the on-ramp from Mill Plain Boulevard to the off-ramp to SR 500.

On I-5 southbound, the off-ramp to the C-D roadway would join the on-ramp from Mill Plain Boulevard to form a C-D roadway. The C-D roadway would provide access from I-5 southbound to the off-ramp to SR 14 eastbound and from Mill Plain Boulevard to the off-ramp to SR 14 eastbound and the on-ramp to I-5 southbound.

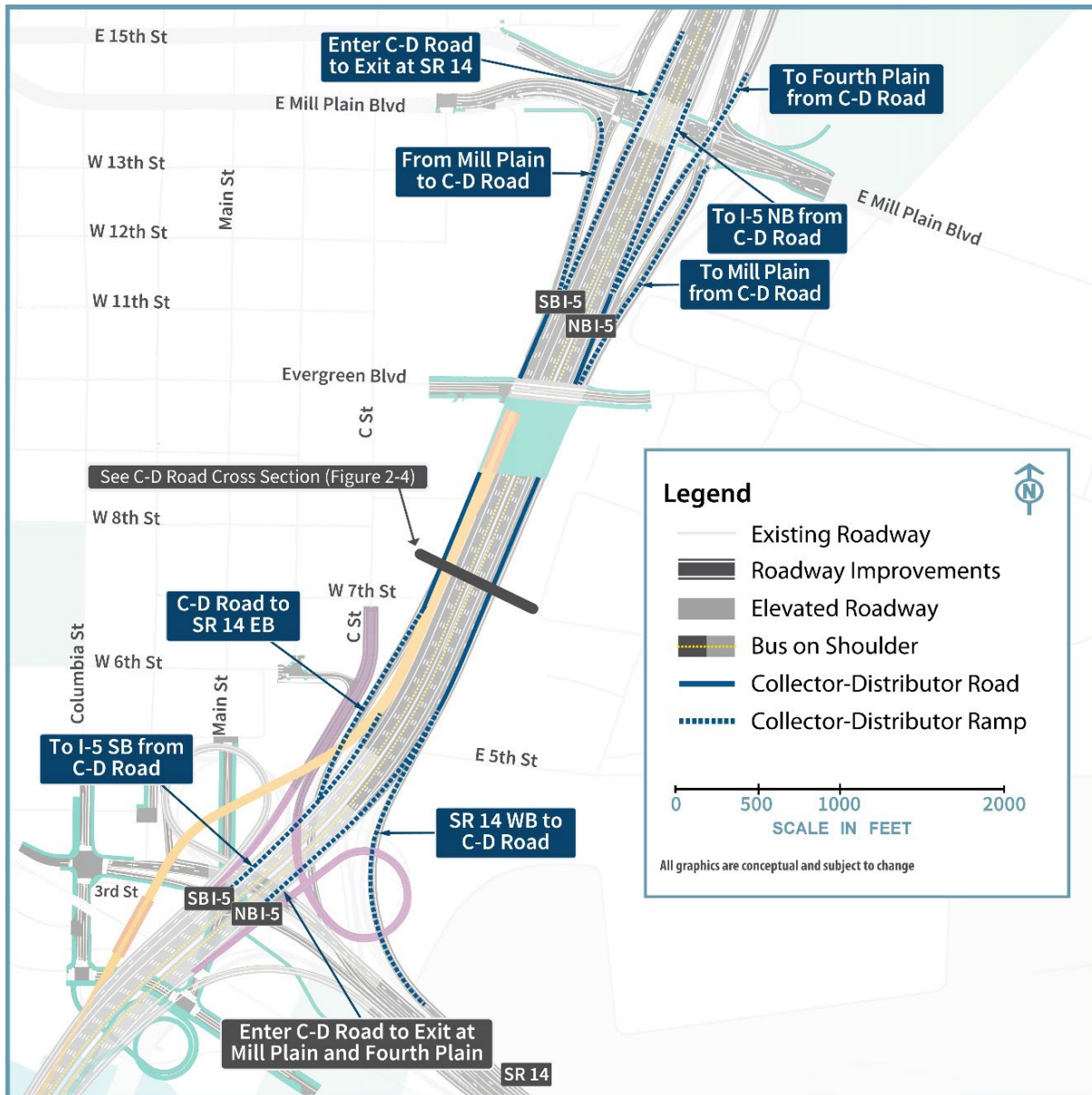
On I-5 southbound, an auxiliary lane would begin at the on-ramp from the C-D roadway and would continue across the southbound Columbia River bridge and end at the off-ramp to Marine Drive. The combined on-ramp from SR 14 westbound and C Street would merge into this auxiliary lane.

Figure 1-4. Cross Section of the Collector-Distributor Roadways



¹ A collector-distributor roadway parallels and connects the main travel lanes of a highway and frontage roads or entrance ramps.

Figure 1-5. Collector-Distributor Roadways



C-D = collector-distributor; EB = eastbound; NB = northbound; SB = southbound; WB = westbound

1.1.1.1 Two Auxiliary Lane Design Option

This design option would add a second 12-foot-wide auxiliary lane in each direction of I-5 with the intent to further optimize travel flow in the corridor. This second auxiliary lane is proposed from the Interstate Avenue/Victory Boulevard interchange to the SR 500/39th Street interchange.

On I-5 northbound, one auxiliary lane would begin at the combined on-ramp from Interstate Avenue and Victory Boulevard, and a second auxiliary lane would begin at the on-ramp from Marine Drive. Both auxiliary lanes would continue across the northbound Columbia River bridge, and the on-ramp

from Hayden Island would merge into the second auxiliary lane on the northbound Columbia River bridge. At the off-ramp to the C-D roadway, the second auxiliary lane would end but the first auxiliary lane would continue. A second auxiliary lane would begin again at the on-ramp from Mill Plain Boulevard. The second auxiliary lane would end at the off-ramp to SR 500, and the first auxiliary lane would connect to an existing auxiliary lane at 39th Street to the off-ramp at Main Street.

On I-5 southbound, two auxiliary lanes would begin at the on-ramp from SR 500. Between the on-ramp from Fourth Plain Boulevard and the off-ramp to Mill Plain Boulevard, one auxiliary lane would be added to the existing two auxiliary lanes. The second auxiliary lane would end at the off-ramp to the C-D roadway, but the first auxiliary lane would continue. A second auxiliary lane would begin again at the southbound I-5 on-ramp from the C-D roadway. Both auxiliary lanes would continue across the southbound Columbia River bridge, and the combined on-ramp from SR 14 westbound and C Street would merge into the second auxiliary lane on the southbound Columbia River bridge. The second auxiliary lane would end at the off-ramp to Marine Drive, and the first auxiliary lane would end at the combined off-ramp to Interstate Avenue and Victory Boulevard.

Figure 1-6 shows a comparison of the one auxiliary lane configuration and the two auxiliary lane configuration design option. Figure 1-7 shows a comparison of the footprints (i.e., the limit of permanent improvements) of the one auxiliary lane and two auxiliary lane configurations on a double-deck fixed-span bridge. For all Modified LPA bridge configurations (described in Section 1.1.3, Columbia River Bridges (Subarea B)), the footprints of the two auxiliary lane configurations differ only over the Columbia River and in downtown Vancouver. The rest of the corridor would have the same footprint. For all bridge configurations analyzed in this document, the two auxiliary lane option would add 16 feet (8 feet in each direction) in total roadway width compared to the one auxiliary lane option due to the increased shoulder widths for the one auxiliary lane option.² The traffic operations analysis incorporating both the one and two auxiliary lane design options applies equally to all bridge configurations in this Technical Report.

² Under the one auxiliary lane option, the width of each shoulder would be approximately 14 feet to accommodate maintenance of traffic during construction. Under the two auxiliary lane option, maintenance of traffic could be accommodated with 12-foot shoulders because the additional 12-foot auxiliary lane provides adequate roadway width. The total difference in roadway width in each direction between the one auxiliary lane option and the two auxiliary lane option would be 8 feet (12-foot auxiliary lane – 2 feet from the inside shoulder – 2 feet from the outside shoulder = 8 feet).

Figure 1-6. Comparison of Auxiliary Lane Configurations

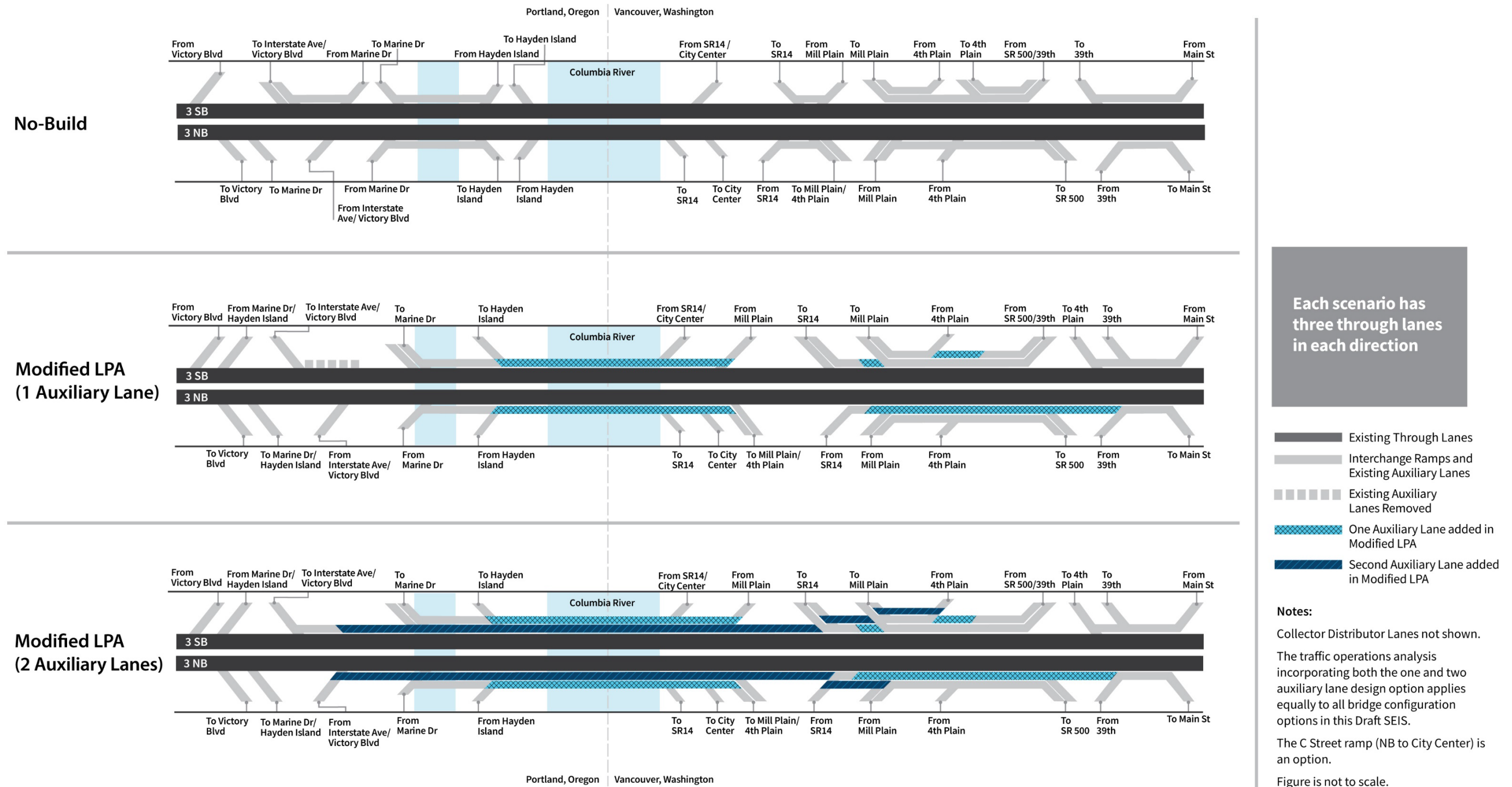
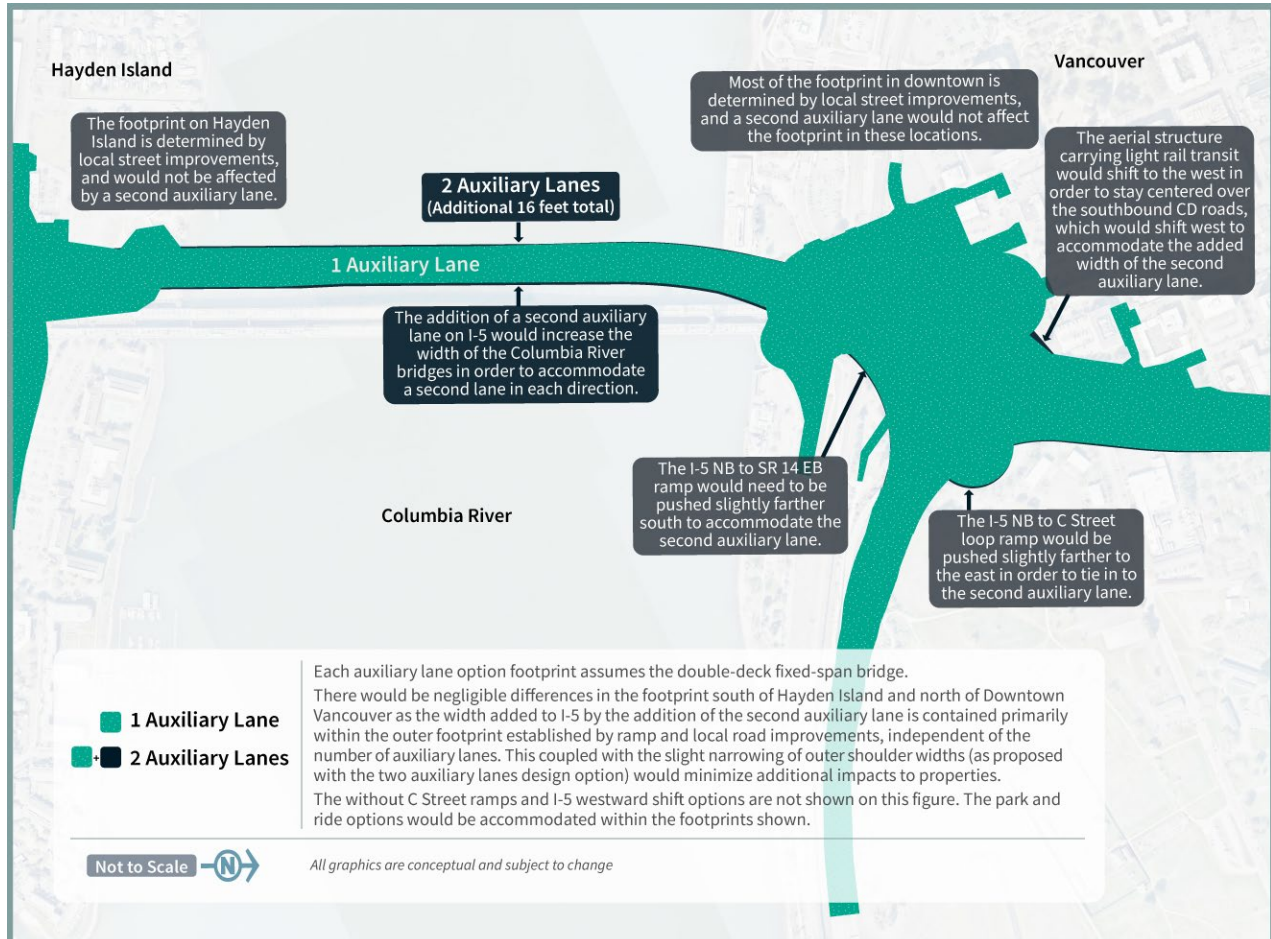


Figure 1-7. Auxiliary Lane Configuration Footprint Differences



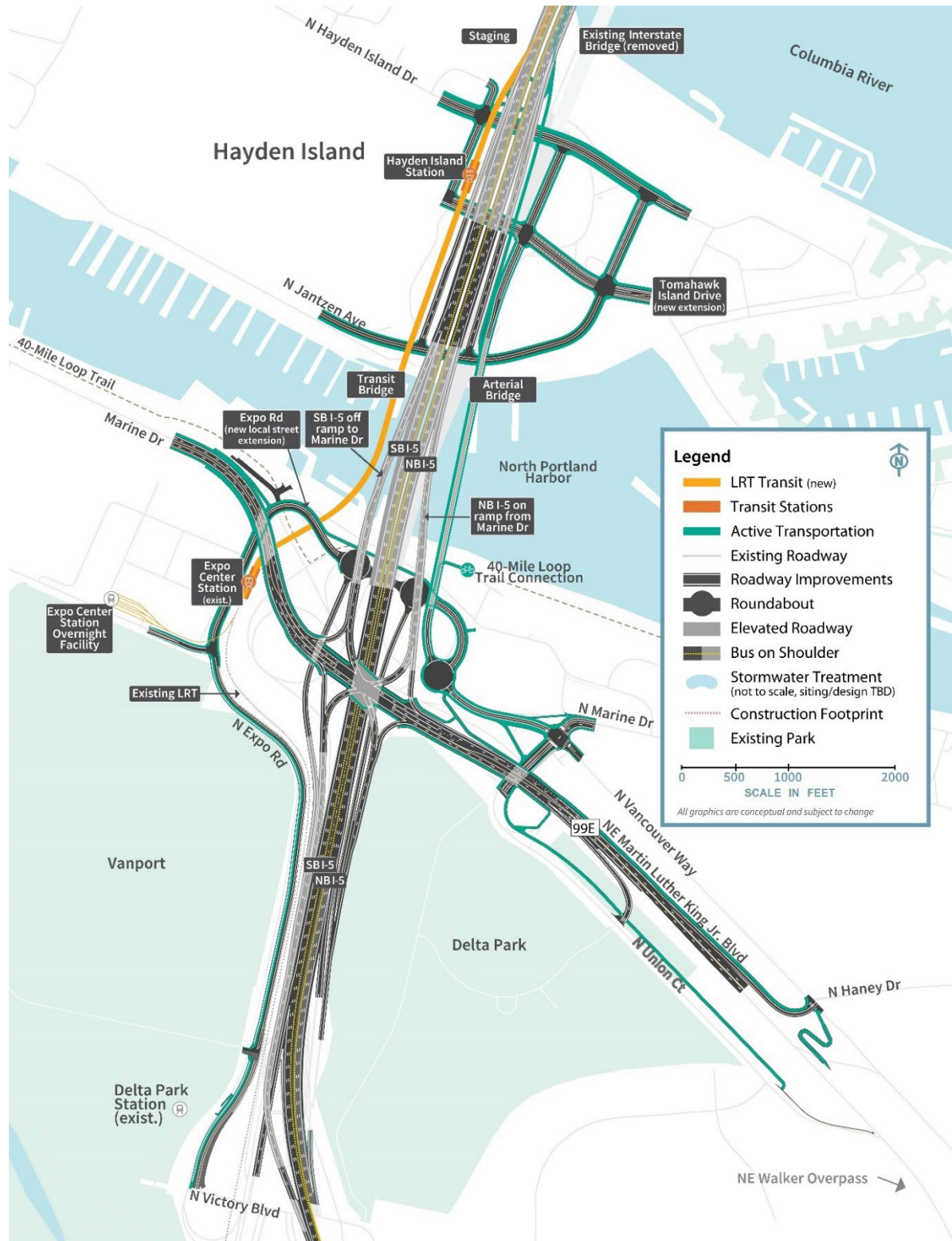
1.1.2 Portland Mainland and Hayden Island (Subarea A)

This section discusses the geographic Subarea A shown in Figure 1-3. See Figure 1-8 for highway and interchange improvements in Subarea A, including the North Portland Harbor bridge. Figure 1-8 illustrates the one auxiliary lane design option; please refer to Figure 1-6 and the accompanying description for how two auxiliary lanes would alter the Modified LPA’s proposed design. Refer to Figure 1-3 for an overview of the geographic subareas.

Within Subarea A, the IBR Program has the potential to alter three federally authorized levee systems:

- The Oregon Slough segment of the Peninsula Drainage District Number 1 levee (PEN 1).
- The Oregon Slough segment of the Peninsula Drainage District Number 2 levee (PEN 2).
- The PEN1/PEN2 cross levee segment of the PEN 1 levee (Cross Levee).

Figure 1-8. Portland Mainland and Hayden Island (Subarea A)



LRT = light-rail transit; NB = northbound; SB = southbound; TBD = to be determined

The levee systems are shown on Figure 1-9, and intersections with Modified LPA components are described throughout Section 1.1.2, Portland Mainland and Hayden Island (Subarea A), where appropriate. Within Subarea A, the IBR Program study area intersects with PEN 1 to the west of I-5 and with PEN 2 to the east of I-5. PEN 1 and PEN 2 include a main levee along the south side of North Portland Harbor and are part of a combination of levees and floodwalls. PEN 1 and PEN 2 are separated by the Cross Levee that is intended to isolate the two districts if one of them fails. The Cross Levee is located along the I-5 mainline embankment, except in the Marine Drive interchange area where it is located on the west edge of the existing ramp from Marine Drive to southbound I-5.³

There are two concurrent efforts underway that are planning improvements to PEN1, PEN2, and the Cross Levee to reduce flood risk:

- The U.S. Army Corps of Engineers (USACE) Portland Metro Levee System (PMLS) project.
- The Flood Safe Columbia River (FSCR) program (also known as “Levee Ready Columbia”).

The Urban Flood Safety and Water Quality District (UFSWQD)⁴ is working with the USACE through the PMLS project, which includes improvements at PEN 1 and PEN 2 (e.g., raising these levees to elevation 38 feet North American Vertical Datum of 1988 [NAVD 88]).⁵ Additionally, as part of the FSCR program, UFSWQD is studying raising a low spot in the Cross Levee on the southwest side of the Marine Drive interchange.

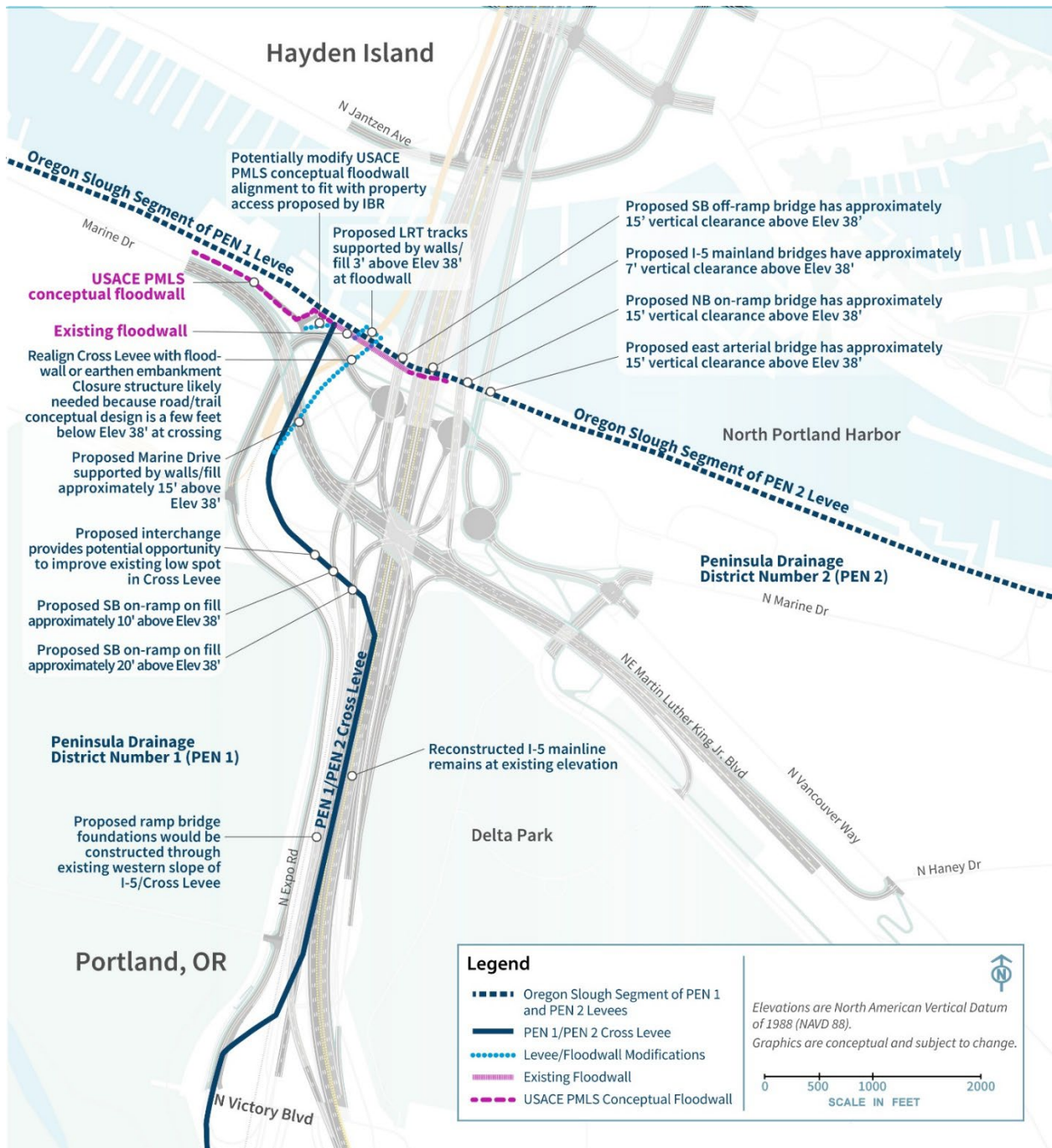
The IBR Program is in close coordination with these concurrent efforts to ensure that the IBR Program’s design efforts consider the timing and scope of the PMLS and the FSCR proposed modifications. The intersection of the IBR Program proposed actions to both the existing levee configuration and the anticipated future condition based on the proposed PMLS and FSCR projects are described below, where appropriate.

³ The portion of the original Denver Avenue levee alignment within the Marine Drive interchange area is no longer considered part of the levee system by UFSWQD.

⁴ UFSWQD includes PEN 1 and PEN 2, Urban Flood Safety and Water Quality District No. 1, and the Sandy Drainage Improvement Company.

⁵ NAVD 88 is a vertical control datum (reference point) used by federal agencies for surveying.

Figure 1-9. Levee Systems in Subarea A



1.1.2.1 Highways, Interchanges, and Local Roadways

VICTORY BOULEVARD/INTERSTATE AVENUE INTERCHANGE AREA

The southern extent of the Modified LPA would improve two ramps at the Victory Boulevard/Interstate Avenue interchange (see Figure 1-8). The first ramp improvement would be the southbound I-5 off-ramp to Victory Boulevard/ Interstate Avenue; this off-ramp would be braided below (i.e., grade separated or pass below) the Marine Drive to the I-5 southbound on-ramp (see the Marine Drive Interchange Area section below). The other ramp improvement would lengthen the merge distance for northbound traffic entering I-5 from Victory Boulevard and from Interstate Avenue.

The existing I-5 mainline between Victory Boulevard/Interstate Avenue and Marine Drive is part of the Cross Levee (see Figure 1-9). The Modified LPA would require some pavement reconstruction of the mainline in this area; however, the improvements would mostly consist of pavement overlay and the profile and footprint would be similar to existing conditions.

MARINE DRIVE INTERCHANGE AREA

The next interchange north of the Victory Boulevard/Interstate Avenue interchange is at Marine Drive. All movements within this interchange would be reconfigured to reduce congestion for motorists entering and exiting I-5. The new configuration would be a single-point urban interchange. The new interchange would be centered over I-5 versus on the west side under existing conditions. See Figure 1-8 for the Marine Drive interchange's layout and construction footprint.

The Marine Drive to I-5 southbound on-ramp would be braided over I-5 southbound to the Victory Boulevard/Interstate Avenue off-ramp. Martin Luther King Jr. Boulevard would have a new more direct connection to I-5 northbound.

The new interchange configuration would change the westbound Marine Drive and westbound Vancouver Way connections to Martin Luther King Jr. Boulevard. An improved connection farther east of the interchange (near Haney Street) would provide access to westbound Martin Luther King Jr. Boulevard for these two streets. For eastbound travelers on Martin Luther King Jr. Boulevard exiting to Union Court, the existing loop connection would be replaced with a new connection farther east (near the access to the East Delta Park Owens Sports Complex).

Expo Road from Victory Boulevard to the Expo Center would be reconstructed with improved active transportation facilities. North of the Expo Center, Expo Road would be extended under Marine Drive and continue under I-5 to the east, connecting with Marine Drive and Vancouver Way through three new connected roundabouts. The westernmost roundabout would connect the new local street extension to I-5 southbound. The middle roundabout would connect the I-5 northbound off-ramp to the local street extension. The easternmost roundabout would connect the new local street extension to an arterial bridge crossing North Portland Harbor to Hayden Island. This roundabout would also connect the local street extension to Marine Drive and Vancouver Way.

To access Hayden Island using the arterial bridge from the east on Martin Luther King Jr. Boulevard, motorists would exit Martin Luther King Jr. Boulevard at the existing off-ramp to Vancouver Way just west of the Walker Street overpass. Then motorists would travel west on Vancouver Way, through the intersection with Marine Drive and straight through the roundabout to the arterial bridge.

From Hayden Island, motorists traveling south to Portland via Martin Luther King Jr. Boulevard would turn onto the arterial bridge southbound and travel straight through the roundabout onto Vancouver Way. At the intersection of Vancouver Way and Marine Drive, motorists would turn right onto Union Court and follow the existing road southeast to the existing on-ramp onto Martin Luther King Jr. Boulevard.

The conceptual floodwall alignment from the proposed USACE PMLS project is located on the north side of Marine Drive, near two industrial properties, with three proposed closure structures⁶ for property access. The Modified LPA would realign Marine Drive to the south and provide access to the two industrial properties via the new local road extension from Expo Road. Therefore, the change in access for the two industrial properties could require small modifications to the floodwall alignment (a potential shift of 5 to 10 feet to the south) and closure structure locations.

Marine Drive and the two southbound on-ramps would travel over the Cross Levee approximately 10 to 20 feet above the proposed elevation of the improved levee, and they would be supported by fill and retaining walls near an existing low spot in the Cross Levee.

The I-5 southbound on-ramp from Marine Drive would continue on a new bridge structure. Although the bridge's foundation locations have not been determined yet, they would be constructed through the western slope of the Cross Levee (between the existing I-5 mainline and the existing light-rail).

NORTH PORTLAND HARBOR BRIDGES

To the north of the Marine Drive interchange is the Hayden Island interchange area, which is shown in Figure 1-8. I-5 crosses over the North Portland Harbor when traveling between these two interchanges. The Modified LPA proposes to replace the existing I-5 bridge spanning North Portland Harbor to improve seismic resiliency.

Six new parallel bridges would be built across the waterway under the Modified LPA: one on the east side of the existing I-5 North Portland Harbor bridge and five on the west side or overlapping the location of the existing bridge (which would be removed). From west to east, these bridges would carry:

- The LRT tracks.
- The southbound I-5 off-ramp to Marine Drive.
- The southbound I-5 mainline.
- The northbound I-5 mainline.
- The northbound I-5 on-ramp from Marine Drive.
- An arterial bridge between the Portland mainland and Hayden Island for local traffic; this bridge would also include a shared-use path for pedestrians and bicyclists.

⁶ Levee closure structures are put in place at openings along the embankment/floodwall to provide flood protection during high water conditions.

Each of the six replacement North Portland Harbor bridges would be supported on foundations constructed of 10-foot-diameter drilled shafts. Concrete columns would rise from the drilled shafts and connect to the superstructures of the bridges. All new structures would have at least as much vertical navigation clearance over North Portland Harbor as the existing North Portland Harbor bridge.

Compared to the existing bridge, the two new I-5 mainline bridges would have a similar vertical clearance of approximately 7 feet above the proposed height of the improved levees (elevation 38 feet NAVD 88). The two ramp bridges and the arterial bridge would have approximately 15 feet of vertical clearance above the proposed height of the levees. The foundation locations for the five roadway bridges have not been determined at this stage of design, but some foundations could be constructed through landward or riverward levee slopes.

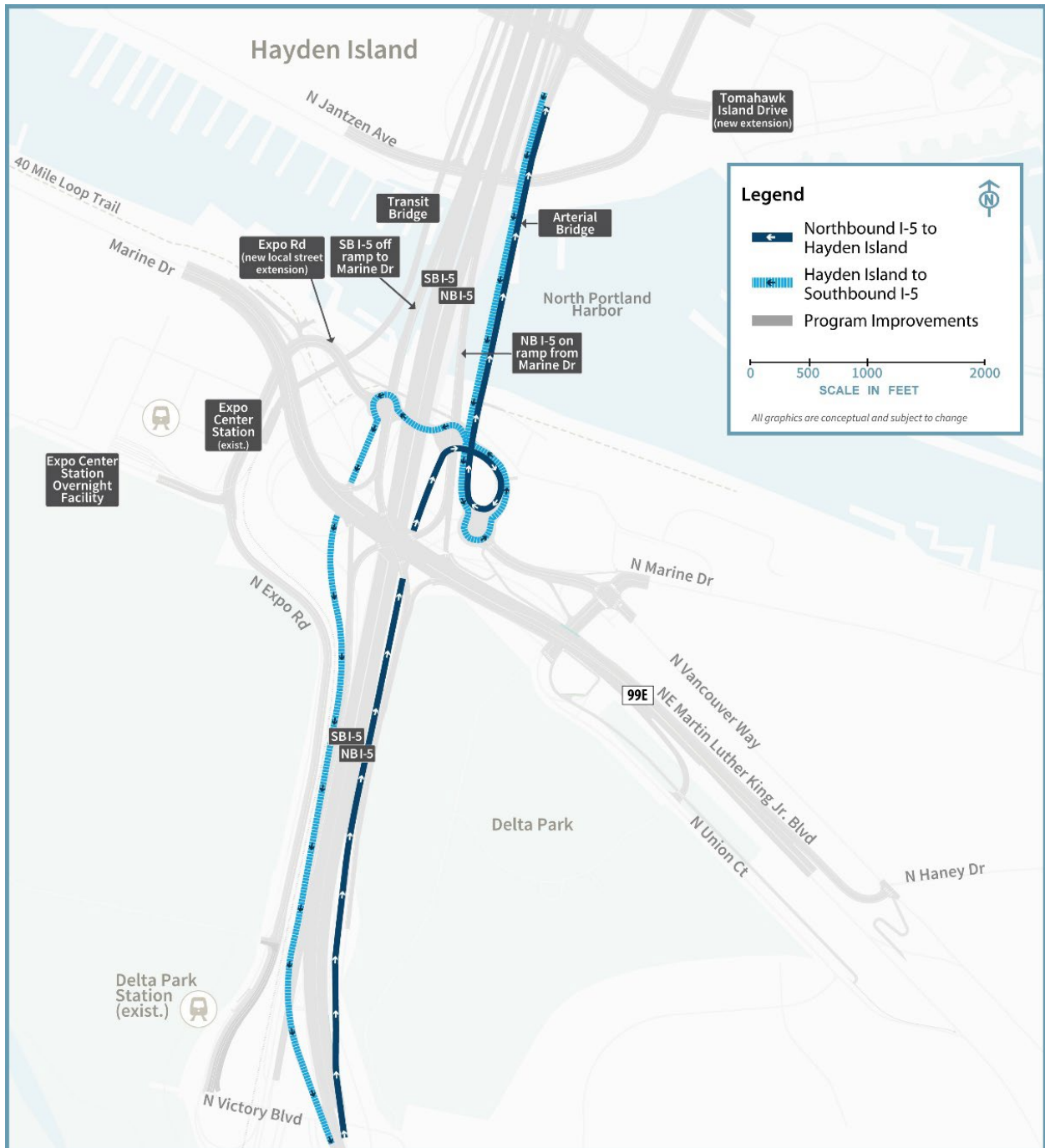
HAYDEN ISLAND INTERCHANGE AREA

All traffic movements for the Hayden Island interchange would be reconfigured. See Figure 1-8 for a layout and construction footprint of the Hayden Island interchange. A half-diamond interchange would be built on Hayden Island with a northbound I-5 on-ramp from Jantzen Drive and a southbound I-5 off-ramp to Jantzen Drive. This would lengthen the ramps and improve merging/diverging speeds compared to the existing substandard ramps that require acceleration and deceleration in a short distance. The I-5 mainline would be partially elevated and partially located on fill across the island.

There would not be a southbound I-5 on-ramp or northbound I-5 off-ramp on Hayden Island. Connections to Hayden Island for those movements would be via the local access (i.e., arterial) bridge connecting North Portland to Hayden Island (Figure 1-10). Vehicles traveling northbound on I-5 wanting to access Hayden Island would exit with traffic going to the Marine Drive interchange, cross under Martin Luther King Jr. Boulevard to the new roundabout at the Expo Road local street extension, travel east through this roundabout to the easternmost roundabout, and use the arterial bridge to cross North Portland Harbor. Vehicles on Hayden Island looking to enter I-5 southbound would use the arterial bridge to cross North Portland Harbor, cross under I-5 using the new Expo Road local street extension to the westernmost roundabout, cross under Marine Drive, merge with the Marine Drive southbound on-ramp, and merge with I-5 southbound south of Victory Boulevard.

Improvements to Jantzen Avenue may include additional left-turn and right-turn lanes at the interchange ramp terminals and active transportation facilities. Improvements to Hayden Island Drive would include new connections to the new arterial bridge over North Portland Harbor. The existing I-5 northbound and southbound access points from Hayden Island Drive would also be removed. A new extension of Tomahawk Island Drive would travel east-west through the middle of Hayden Island and under the I-5 interchange, thus improving connectivity across I-5 on the island.

Figure 1-10. Vehicle Circulation between Hayden Island and the Portland Mainland



NB = northbound; SB = southbound

1.1.2.2 Transit

A new light-rail alignment for northbound and southbound trains would be constructed within Subarea A (see Figure 1-8) to extend from the existing Expo Center MAX Station over North Portland Harbor to a new station at Hayden Island. An overnight LRV facility would be constructed on the southeast corner of the Expo Center property (see Figure 1-8) to provide storage for trains during hours when MAX is not in service. This facility is described in Section 1.1.6, Transit Support Facilities. The existing Expo Center MAX Station would be modified to remove the westernmost track and platform. Other platform modifications, including track realignment and regrading the station, are anticipated to transition to the extension alignment. This may require reconstruction of the operator break facility, signal/communication buildings, and traction power substations. Immediately north of the Expo Center MAX Station, the alignment would curve east toward I-5, pass beneath Marine Drive, cross the proposed Expo Road local street extension and the 40-Mile Loop Trail at grade, then rise over the existing levee onto a light-rail bridge to cross North Portland Harbor. On Hayden Island, proposed transit components include northbound and southbound LRT tracks over Hayden Island; the tracks would be elevated at approximately the height of the new I-5 mainline. An elevated LRT station would also be built on the island immediately west of I-5. The light-rail alignment would extend north on Hayden Island along the western edge of I-5 before transitioning onto the lower level of the new double-deck western bridge over the Columbia River (see Figure 1-8). For the single-level configurations, the light-rail alignment would extend to the outer edge of the western bridge over the Columbia River.

After crossing the new local road extension from Expo Road, the new light-rail track would cross over the main levee (see Figure 1-9). The light-rail profile is anticipated to be approximately 3 feet above the improved levees at the existing floodwall (and improved floodwall), and the tracks would be constructed on fill supported by retaining walls above the floodwall. North of the floodwall, the light-rail tracks would continue onto the new light-rail bridge over North Portland Harbor (as described above).

The Modified LPA's light-rail extension would be close to or would cross the north end of the Cross Levee. The IBR Program would realign the Cross Levee to the east of the light-rail alignment to avoid the need for a closure structure on the light-rail alignment. This realigned Cross Levee would cross the new local road extension. A closure structure may be required because the current proposed roadway is a few feet lower than the proposed elevation of the improved levee.

1.1.2.3 Active Transportation

In the Victory Boulevard interchange area (see Figure 1-8), active transportation facilities would be provided along Expo Road between Victory Boulevard and the Expo Center; this would provide a direct connection between the Victory Boulevard and Marine Drive interchange areas, as well as links to the Delta Park and Expo Center MAX Stations.

New shared-use path connections throughout the Marine Drive interchange area would provide access between the Bridgeton neighborhood (on the east side of I-5), Hayden Island, and the Expo Center MAX Station. There would also be connections to the existing portions of the 40-Mile Loop Trail, which runs north of Marine Drive under I-5 through the interchange area. The path would

continue along the extension of Expo Road under the interchange to the intersection of Marine Drive and Vancouver Way, where it would connect under Martin Luther King Jr. Boulevard to Delta Park.

East of the Marine Drive interchange, new shared-use paths on Martin Luther King Jr. Boulevard and on the parallel street, Union Court, would connect travelers to Marine Drive and across the arterial bridge to Hayden Island. The shared-use facilities on Martin Luther King Jr. Boulevard would provide westbound and eastbound cyclists and pedestrians with off-street crossings of the interchange and would also provide connections to both the Expo Center MAX Station and the 40-Mile Loop Trail to the west.

The new arterial bridge over North Portland Harbor would include a shared-use path for pedestrians and bicyclists (see Figure 1-8). On Hayden Island, pedestrian and bicycle facilities would be provided on Jantzen Avenue, Hayden Island Drive, and Tomahawk Island Drive. The shared-use path on the arterial bridge would continue along the arterial bridge to the south side of Tomahawk Island Drive. A parallel, elevated path from the arterial bridge would continue adjacent to I-5 across Hayden Island and cross above Tomahawk Island Drive and Hayden Island Drive to connect to the lower level of the new double-deck eastern bridge or the outer edge of the new single-level eastern bridge over the Columbia River. A ramp down to the north side of Hayden Island Drive would be provided from the elevated path.

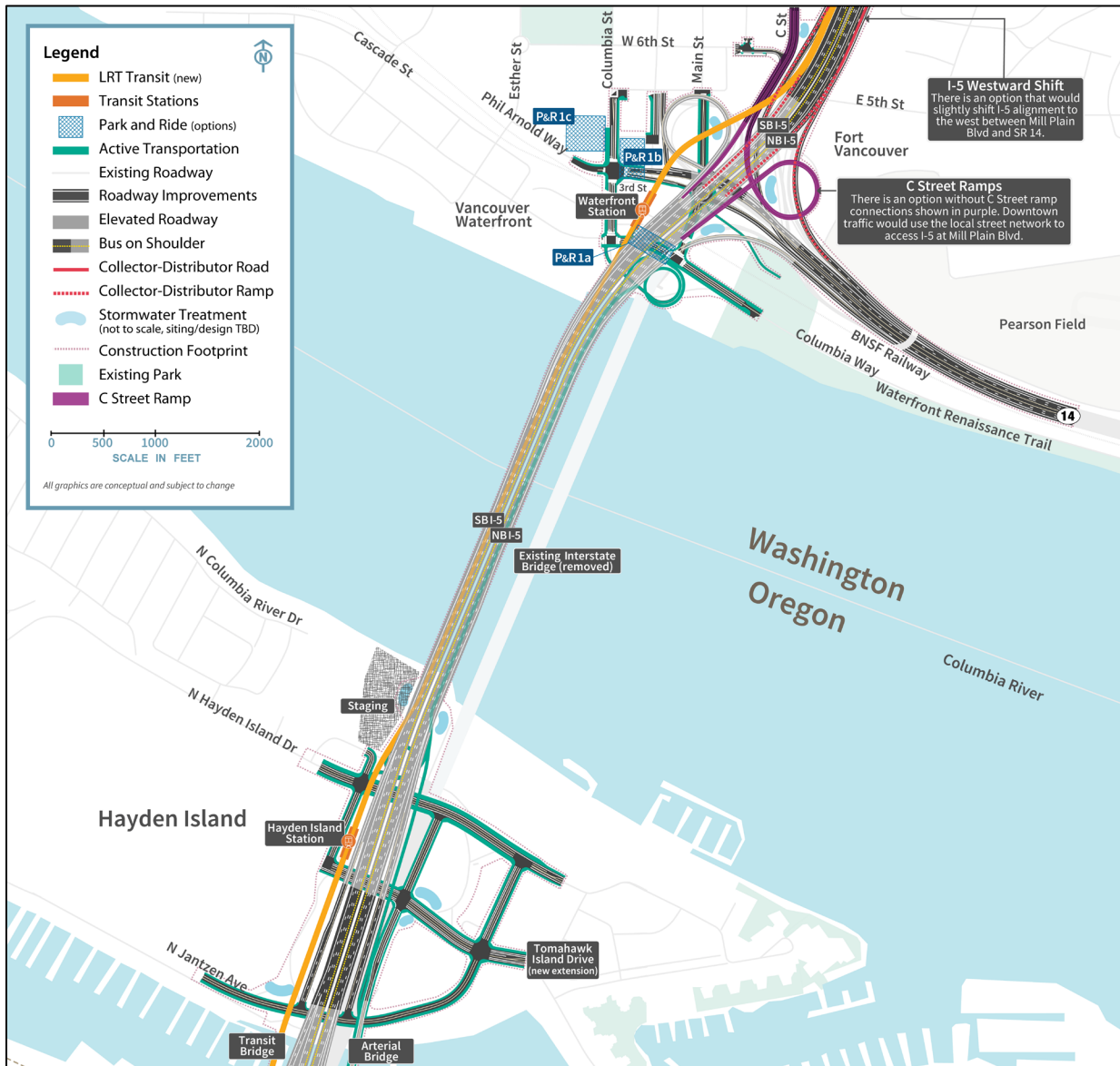
1.1.3 Columbia River Bridges (Subarea B)

This section discusses the geographic Subarea B shown in Figure 1-3. See Figure 1-11 for highway and interchange improvements in Subarea B. Refer to Figure 1-3 for an overview of the geographic subareas.

1.1.3.1 Highways, Interchanges, and Local Roadways

The two existing parallel I-5 bridges that cross the Columbia River would be replaced by two new parallel bridges, located west of the existing bridges (see Figure 1-11). The new eastern bridge would accommodate northbound highway traffic and a shared-use path. The new western bridge would carry southbound traffic and two-way light-rail tracks. Whereas the existing bridges each have three lanes with no shoulders, each of the two new bridges would be wide enough to accommodate three through lanes, one or two auxiliary lanes, and shoulders on both sides of the highway. Lanes and shoulders would be built to full design standards.

Figure 1-11. Columbia River Bridges (Subarea B)



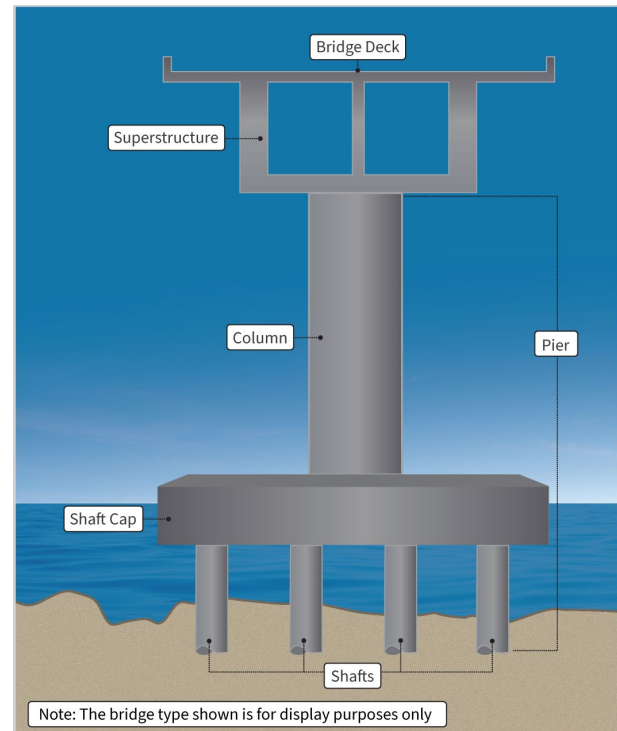
As with the existing bridge (Figure 1-13), the new Columbia River bridges would provide three navigation channels: a primary navigation channel and two barge channels (see Figure 1-14). The current location of the primary navigation channel is near the Vancouver shoreline where the existing lift spans are located. Under the Modified LPA, the primary navigation channel would be shifted south approximately 500 feet (measured by channel centerlines), and the existing center barge channel would shift north and become the north barge channel. The new primary navigation channel would be 400 feet wide (this width includes a 300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side of the authorized channel) and the two barge channels would also each be 400 feet wide.

The existing Interstate Bridge has nine in-water pier sets,⁷ whereas the new Columbia River bridges (any bridge configuration) would be built on six in-water pier sets, plus multiple piers on land (pier locations are shown on Figure 1-14). Each in-water pier set would be supported by a foundation of drilled shafts; each group of shafts would be tied together with a concrete shaft cap. Columns or pier walls would rise from the shaft caps and connect to the superstructures of the bridges (see Figure 1-12).

BRIDGE CONFIGURATIONS

Three bridge configurations are being considered: (1) double-deck fixed-span (with one bridge type), (2) a single-level fixed-span (with three potential bridge types), and (3) a single-level movable-span (with one bridge type). Both the double-deck and single-level fixed-span configurations would provide 116 feet of vertical navigation clearance at their respective highest spans; the same as the CRC LPA. The CRC LPA included a double-deck fixed-span bridge configuration. The single-level fixed-span configuration was developed and is being considered as part of the IBR Program in response to physical and contextual changes (i.e., design and operational considerations) since 2013 that necessitated examination of a refinement in the double-deck bridge configuration (e.g., ingress and egress of transit from the lower level of the double-deck fixed-span configuration on the north end of the southbound bridge).

Figure 1-12. Bridge Foundation Concept



⁷ A pier set consists of the pier supporting the northbound bridge and the pier supporting the southbound bridge at a given location.

Figure 1-13. Existing Navigation Clearances of the Interstate Bridge

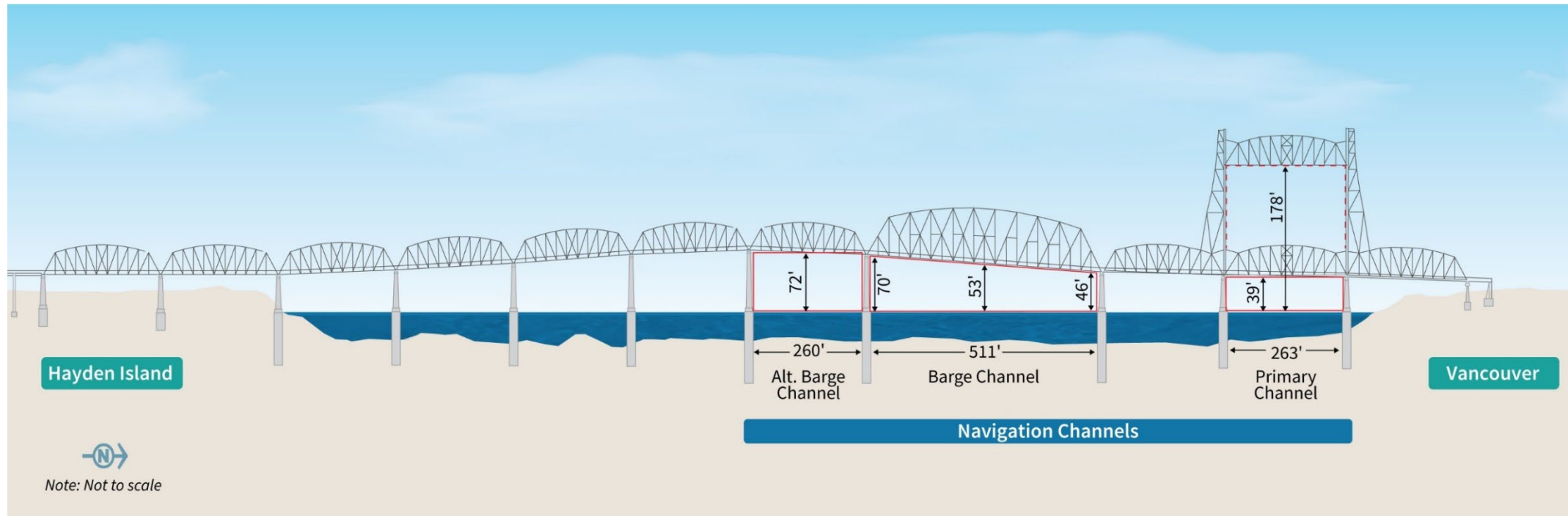
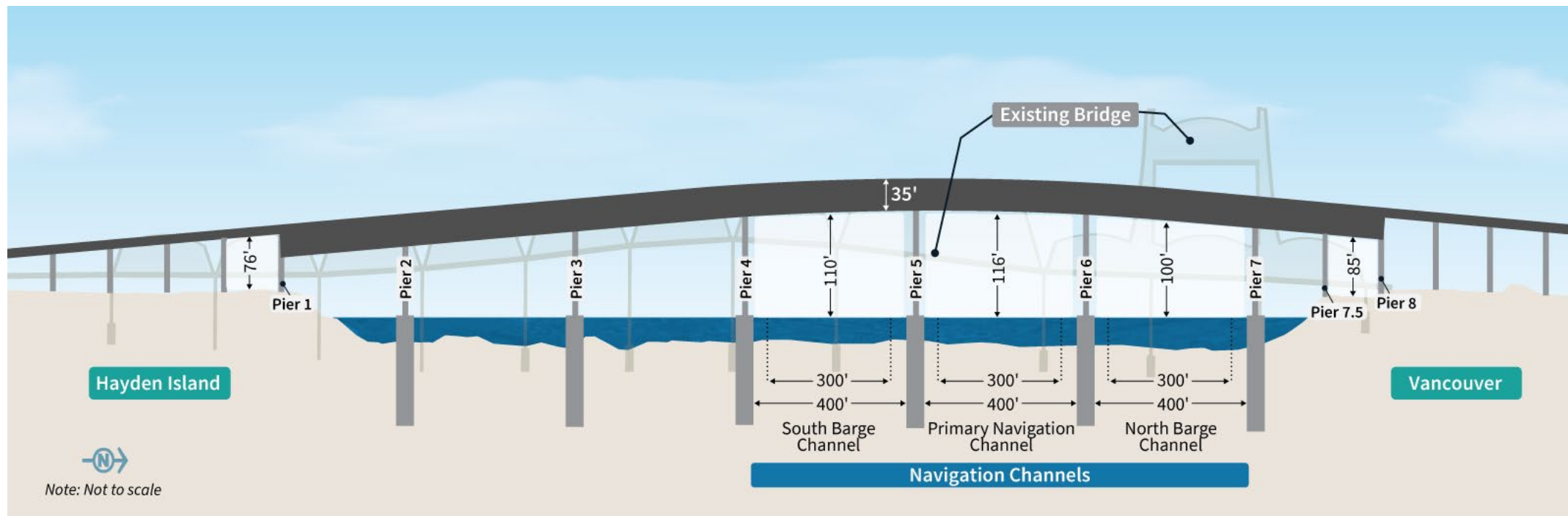


Figure 1-14. Profile and Navigation Clearances of the Proposed Modified LPA Columbia River Bridges with a Double-Deck Fixed-Span Configuration



Note: The location and widths of the proposed navigation channels would be same for all bridge configuration and bridge type options. The three navigation channels would each be 400 feet wide (this width includes a 300-foot congressionally or USACE-authorized channel (shown in dotted lines) plus a 50-foot channel maintenance buffer on each side of the authorized channel). The vertical navigation clearance would vary.

Consideration of the single-level movable-span configuration as part the IBR Program was necessitated by the U.S. Coast Guard’s (USCG) review of the Program’s navigation impacts on the Columbia River and issuance of a Preliminary Navigation Clearance Determination (PNCD) (USCG 2022). The USCG PNCD set the preliminary vertical navigation clearance recommended for the issuance of a bridge permit at 178 feet; this is the current vertical navigation clearance of the Interstate Bridge.

The IBR Program is carrying forward the three bridge configurations to address changed conditions, including changes in the USCG bridge permitting process, in order to ensure a permissible bridge configuration is within the range of options considered. The IBR Program continues to refine the details supporting navigation impacts and is coordinating closely with the USCG to determine how a fixed-span bridge may be permissible. Although the fixed-span configurations do not comply with the current USCG PNCD, they do meet the Purpose and Need and provide potential improvements to traffic (passenger vehicle and freight), transit, and active transportation operations.

Each of the bridge configurations assumes one auxiliary lane; two auxiliary lanes could be applied to any of the bridge configurations. All typical sections for the one auxiliary lane option would provide 14-foot shoulders to maintain traffic during construction of the Modified LPA and future maintenance.

Double-Deck Fixed-Span Configuration

The double-deck fixed-span configuration would be two side-by-side, double-deck, fixed-span steel truss bridges. Figure 1-15 is an example of this configuration (this image is subject to change and is shown as a representative concept; it does not depict the final design). The double-deck fixed-span configuration would provide 116 feet of vertical navigation clearance for river traffic using the primary navigation channel and 400 feet of horizontal navigation clearance at the primary navigation channel, as well as barge channels. This bridge height would not impede takeoffs and landings by aircraft using Pearson Field or Portland International Airport.

The eastern bridge would accommodate northbound highway traffic on the upper level and the shared-use path and utilities on the lower level. The western bridge would carry southbound traffic on the upper level and two-way light-rail tracks on the lower level. Each bridge deck would be 79 feet wide, with a total out-to-out width of 173 feet.⁸

Figure 1-16 is a cross section of the two parallel double-deck bridges. Like all bridge configurations, the double-deck fixed-span configuration would have six in-water pier sets. Each pier set would require 12 in-water drilled shafts, for a total of 72 in-water drilled shafts. Each individual shaft cap would be approximately 50 feet by 85 feet. This bridge configuration would have a 3.8% maximum grade on the Oregon side of the bridge and a 4% maximum grade on the Washington side.

⁸ “Out-to-out width” is the measurement between the outside edges of the bridge across its width at the widest point.

Figure 1-15. Conceptual Drawing of a Double-Deck Fixed-Span Configuration



Note: Visualization is looking southwest from Vancouver.

Single-Level Fixed-Span Configuration

The single-level fixed-span configuration would have two side-by-side, single-level, fixed-span steel or concrete bridges. This report considers three single-level fixed-span bridge type options: a girder bridge, an extradosed bridge, and a finback bridge. The description in this section applies to all three bridge types (unless otherwise indicated). Conceptual examples of each of these options are shown on Figure 1-17. These images are subject to change and do not represent final design.

This configuration would provide 116 feet of vertical navigation clearance for river traffic using the primary navigation channel and 400 feet of horizontal navigation clearance at the primary navigation channel, as well as barge channels. This bridge height would not impede takeoffs and landings by aircraft using Pearson Field or Portland International Airport.

The eastern bridge would accommodate northbound highway traffic and the shared-use path; the bridge deck would be 104 feet wide. The western bridge would carry southbound traffic and two-way light-rail tracks; the bridge deck would be 113 feet wide. The I-5 highway, light-rail tracks, and the shared-use path would be on the same level across the two bridges, instead of being divided between two levels with the double-deck configuration. The total out-to-out width of the single-level fixed-span configuration (extradosed or finback options) would be 272 feet at its widest point, approximately 99 feet wider than the double-deck configuration. The total out-to-out width of the single-level fixed-span configuration (girder option) would be 232 feet at its widest point. Figure 1-18 shows a typical cross section of the single-level configuration. This cross section is a representative example of an extradosed or finback bridge as shown by the 10-foot-wide superstructure above the bridge deck; the girder bridge would not have the 10-foot-wide bridge columns shown on Figure 1-18.

There would be six in-water pier sets with 16 in-water drilled shafts on each combined shaft cap, for a total of 96 in-water drilled shafts. The combined shaft caps for each pier set would be 50 feet by 230 feet.

This bridge configuration would have a 3% maximum grade on both the Oregon and Washington sides of the bridge.

Figure 1-16. Cross Section of the Double-Deck Fixed-Span Configuration

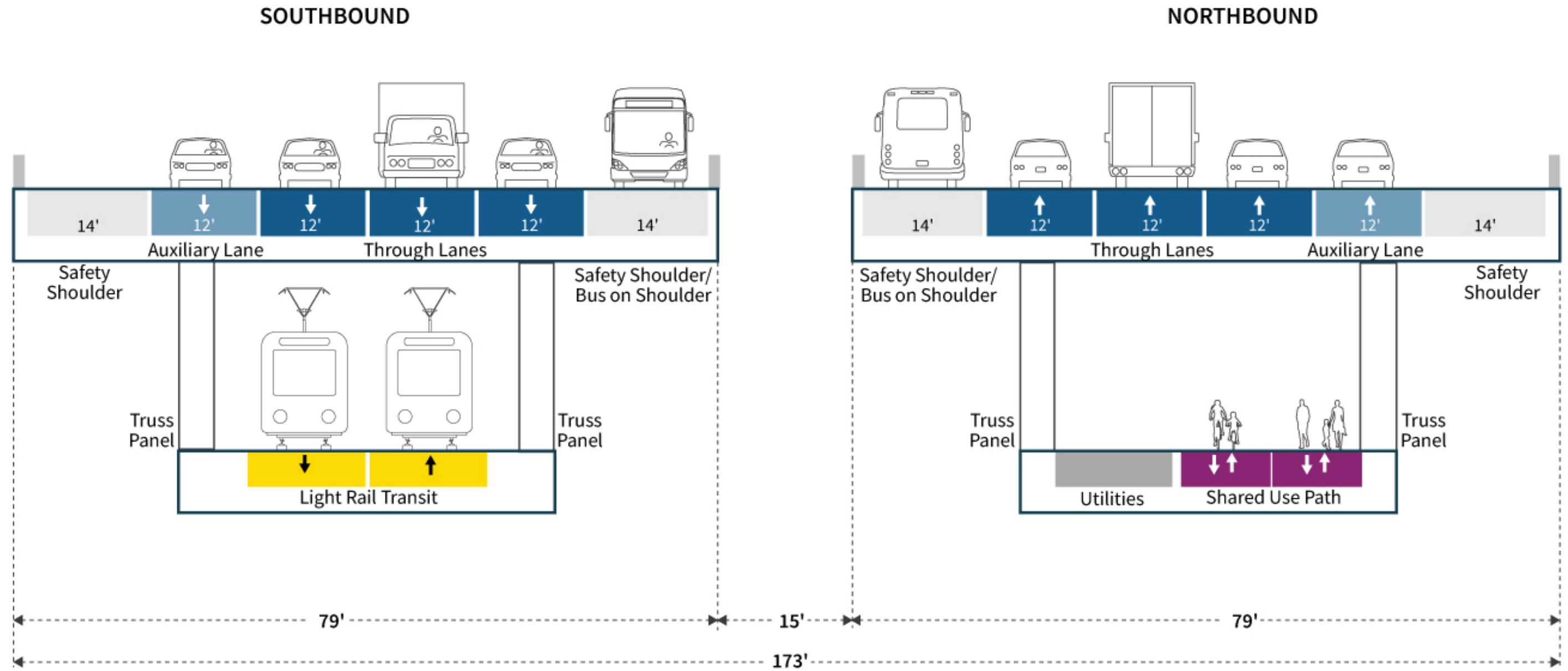
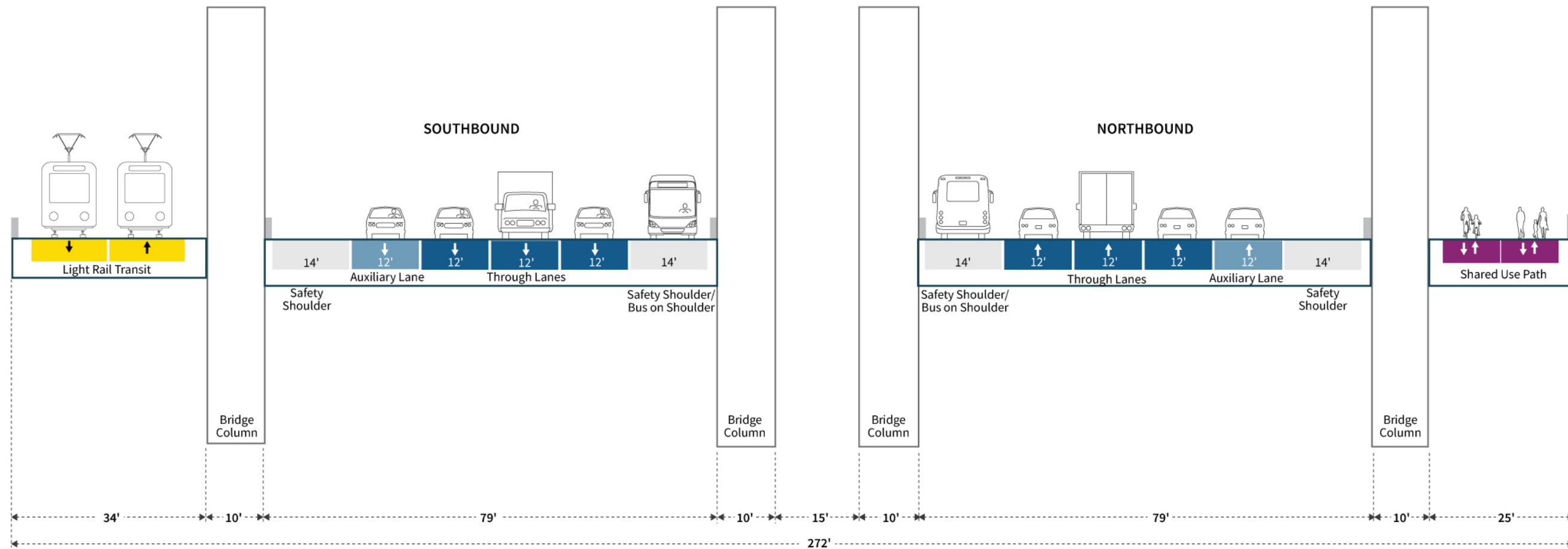


Figure 1-17. Conceptual Drawings of Single-Level Fixed-Span Bridge Types



Note: Visualizations are for illustrative purposes only. They do not reflect property impacts or represent final design. Visualization is looking southwest from Vancouver.

Figure 1-18. Cross Section of the Single-Level Fixed-Span Configuration (Extradosed or Finback Bridge Types)



Note: The cross section for a girder type bridge would be the same except that it would not have the four 10-foot bridge columns making the total out-to-out width 232 feet.

Single-Level Movable-Span Configuration

The single-level movable-span configuration would have two side-by-side, single-level steel girder bridges with movable spans between Piers 5 and 6. For the purpose of this report, the IBR Program assessed a vertical lift span movable-span configuration with counterweights based on the analysis in the *River Crossing Bridge Clearance Assessment Report – Movable-Span Options*, included as part of Attachment C in Appendix D, Design Options Development, Screening, and Evaluation Technical Report. A conceptual example of a vertical lift-span bridge is shown in Figure 1-19. These images are subject to change and do not represent final design.

A movable span must be located on a straight and flat bridge section (i.e., without curvature and with minimal slope). To comply with these requirements, and for the bridge to maintain the highway, transit, and active transportation connections on Hayden Island and in Vancouver while minimizing property acquisitions and displacements, the movable span is proposed to be located 500 feet south of the existing lift span, between Piers 5 and 6. To accommodate this location of the movable span, the IBR Program is coordinating with USACE to obtain authorization to change the location of the primary navigation channel, which currently aligns with the Interstate Bridge lift spans near the Washington shoreline.

The single-level movable-span configuration would provide 92 feet of vertical navigation clearance over the proposed relocated primary navigation channel when the movable spans are in the closed position, with 99 feet of vertical navigation clearance available over the north barge channel. The 92-foot vertical clearance is based on achieving a straight, movable span and maintaining an acceptable grade for transit operations. In addition, it satisfies the requirement of a minimum of 72 feet of vertical navigation clearance (the existing Interstate Bridge's maximum clearance over the alternate (southernmost) barge channel when the existing lift span is in the closed position).

In the open position, the movable span would provide 178 feet of vertical navigation clearance over the proposed relocated primary navigation channel.

Similar to the fixed-span configurations, the movable span would provide 400 feet of horizontal navigation clearance for the primary navigation channel and for each of the two barge channels.

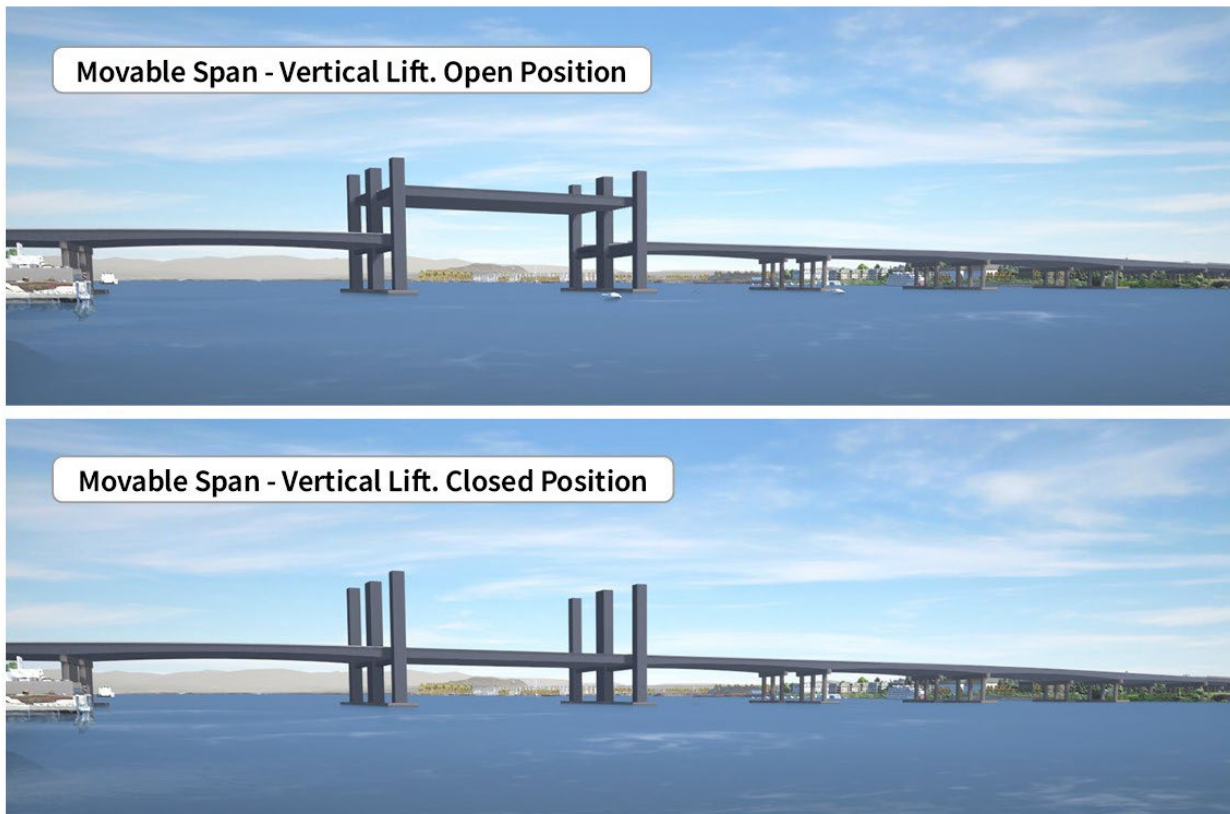
The vertical lift-span towers would be approximately 243 feet high; this is shorter than the existing lift-span towers, which are 247 feet high. This height of the vertical lift-span towers would not impede takeoffs and landings by aircraft using Portland International Airport. At Pearson Field, the Federal Aviation Administration issues obstacle departure procedures to avoid the existing Interstate Bridge lift towers; the single-level movable-span configuration would retain the same procedures.

Similar to the single-level fixed-span configuration, the eastern bridge would accommodate northbound highway traffic and the shared-use path, and the western bridge would carry southbound traffic and two-way light-rail tracks. The I-5 highway, light-rail tracks, and shared-use path would be on the same level across the bridges instead of on two levels as with the double-deck configuration. Cross sections of the single-level movable-span configuration are shown in Figure 1-20; the top cross section depicts the vertical lift spans (Piers 5 and 6), and the bottom cross section depicts the fixed spans (Piers 2, 3, 4, and 7). The movable and fixed cross sections are slightly different because the movable span requires lift towers, which are not required for the other fixed spans of the bridges.

There would be six in-water pier sets and two piers on land per bridge. The vertical lift span would have 22 in-water drilled shafts each for Piers 5 and 6; the shaft caps for these piers would be 50 feet by 312 feet to accommodate the vertical lift spans. Piers 2, 3, 4, and 7 would have 16 in-water drilled shafts each; the shaft caps for these piers would be the same as for the fixed-span options (50 feet by 230 feet). The vertical lift-span configuration would have a total of 108 in-water drilled shafts.

This single-level movable-span configuration would have a 3% maximum grade on the Oregon side of the bridge and a 1.5% maximum grade on the Washington side.

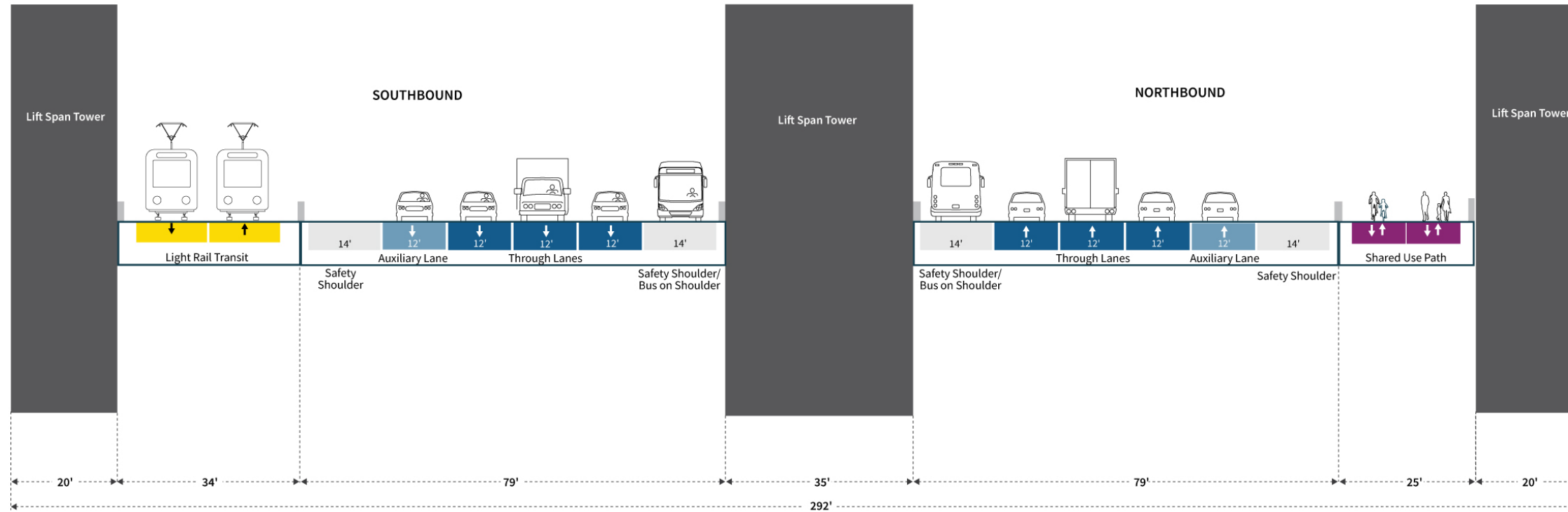
Figure 1-19. Conceptual Drawings of Single-Level Movable-Span Configurations in the Closed and Open Positions



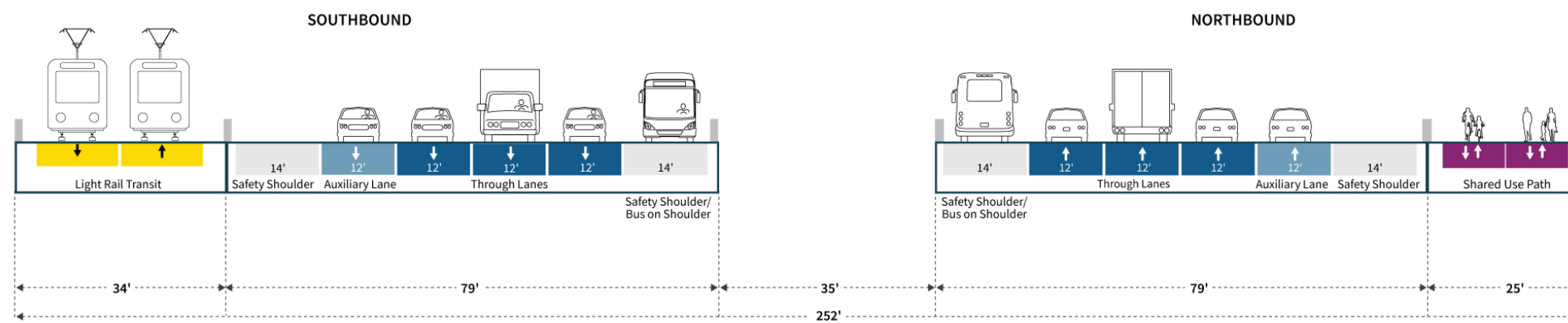
Note: Visualizations are for illustrative purposes only. They do not reflect property impacts or represent final design. Visualization is looking southeast (upstream) from Vancouver.

Figure 1-20. Cross Section of the Single-Level Movable-Span Bridge Type

Single-level Bridge with Movable Span - Vertical Lift Span Cross-section (Piers 5 and 6)



Single-level Bridge with Movable Span - Fixed Spans Cross-section (Piers 2, 3, 4, and 7)



Summary of Bridge Configurations

This section summarizes and compares each of the bridge configurations. Table 1-2 lists the key considerations for each configuration. Figure 1-21 compares each configuration's footprint. The footprints of each configuration would differ in only three locations: over the Columbia River and at the bridge landings on Hayden Island and Vancouver. The rest of the I-5 corridor would have the same footprint. Over the Columbia River, the footprint of the double-deck fixed-span configuration would be 173 feet wide. Comparatively, the finback or extradosed bridge types of the single-level fixed-span configuration would be 272 feet wide (approximately 99 feet wider), and the single-level fixed-span configuration with a girder bridge type would be 232 feet wide (approximately 59 feet wider). The single-level movable-span configuration would be 252 feet wide (approximately 79 feet wider than the double-deck fixed-span configuration), except at Piers 5 and 6, where larger bridge foundations would require an additional 40 feet of width to support the movable span. The single-level configurations would have a wider footprint at the bridge landings on Hayden Island and Vancouver because transit and active transportation would be located adjacent to the highway, rather than below the highway in the double-deck option.

Figure 1-22 compares the basic profile of each configuration. The lower deck of the double-deck fixed-span and the single-level fixed-span configuration would have similar profiles. The single-level movable-span configuration would have a lower profile than the fixed-span configurations when the span is in the closed position.

Figure 1-21. Bridge Configuration Footprint Comparison

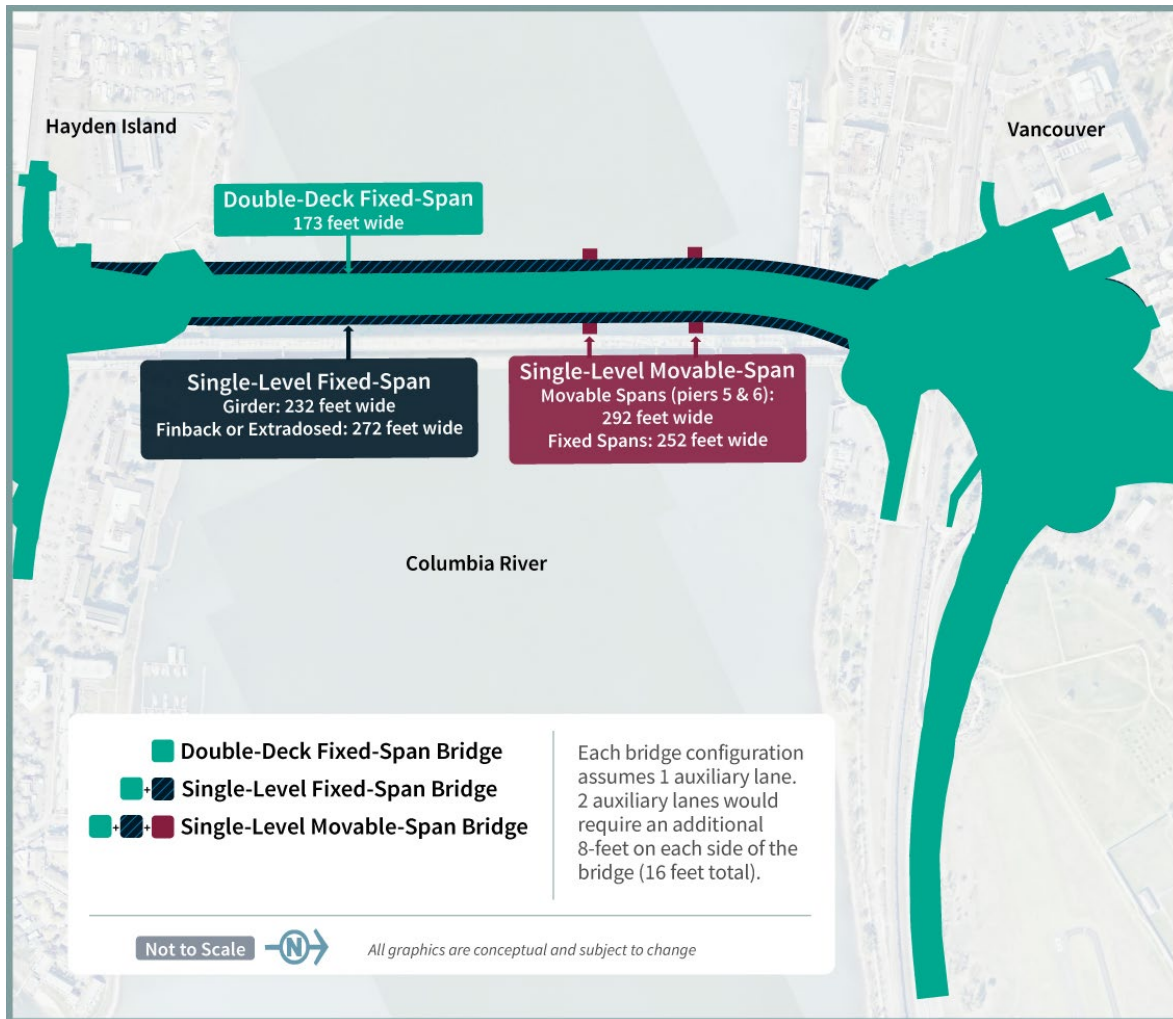
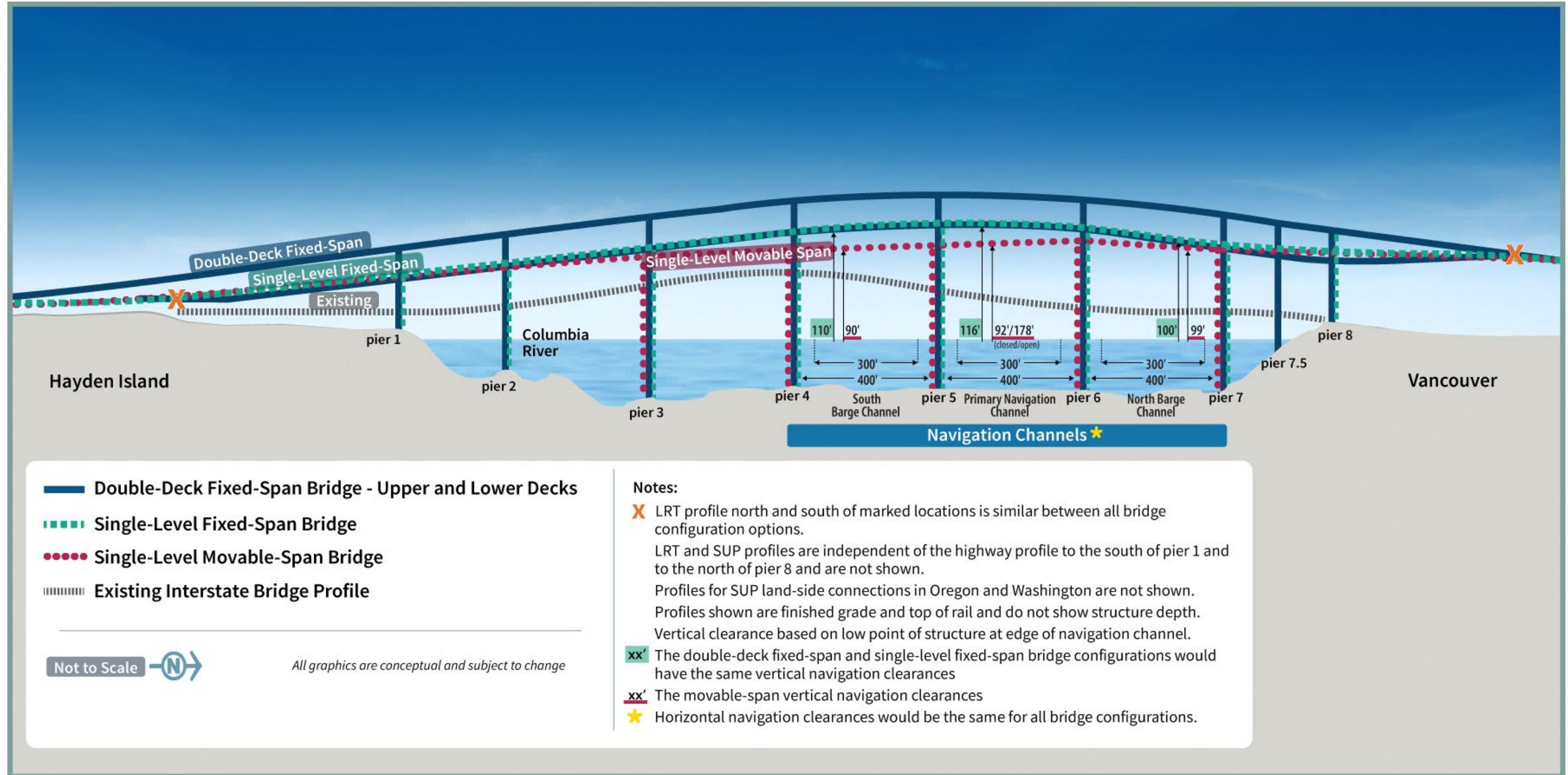


Figure 1-22. Bridge Configuration Profile Comparison



LRT = light-rail transit; SUP = shared-use path

Table 1-2. Summary of Bridge Configurations

	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration ^a	Modified LPA with Single-Level Movable-Span Configuration
Bridge type	Steel through-truss spans.	Double-deck steel truss.	Single-level, concrete or steel girders, extradosed or finback.	Single-level, steel girders with vertical lift span.
Number of bridges	Two	Two	Two	Two
Movable-span type	Vertical lift span with counterweights.	N/A	N/A	Vertical lift span with counterweights.
Movable-span location	Adjacent to Vancouver shoreline.	N/A	N/A	Between Piers 5 and 6 (approximately 500 feet south of the existing lift span).
Lift opening restrictions	Weekday peak AM and PM highway travel periods. ^b	N/A	N/A	Additional restrictions to daytime bridge openings; requires future federal rulemaking process and authorization by USCG (beyond the assumed No-Build Alternative bridge restrictions for peak AM and PM highway travel periods). ^b Typical opening durations are assumed to be 9 to 18 minutes ^c for the purposes of impact analysis but would ultimately depend on various operational considerations related to vessel traffic and river and weather conditions. Additional time would also be required to stop traffic prior to opening and restart traffic after the bridge closes.
Out-to-out width ^d	138 feet total width.	173 feet total width.	Girder: 232 feet total width. Extradosed/Finback: 272 feet total width.	<ul style="list-style-type: none"> • 292 feet at the movable span. • 252 feet at the fixed spans.

	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration ^a	Modified LPA with Single-Level Movable-Span Configuration
Deck widths	52 feet (SB) 52 feet (NB)	79 feet (SB) 79 feet (NB)	Girder: <ul style="list-style-type: none"> • 113 feet (SB) • 104 feet (NB) Extradosed/Finback: <ul style="list-style-type: none"> • 133 feet (SB) • 124 feet (NB) 	113 feet SB fixed span. 104 feet NB fixed span.
Vertical navigation clearance	Primary navigation channel: <ul style="list-style-type: none"> • 39 feet when closed. • 178 feet when open. Barge channel: <ul style="list-style-type: none"> • 46 feet to 70 feet. Alternate barge channel: <ul style="list-style-type: none"> • 72 feet (maximum clearance without opening). 	Primary navigation channel: <ul style="list-style-type: none"> • 116 feet maximum. North barge channel: <ul style="list-style-type: none"> • 100 feet maximum. South barge channel: <ul style="list-style-type: none"> • 110 feet maximum. 	Primary navigation channel: <ul style="list-style-type: none"> • 116 feet maximum. North barge channel: <ul style="list-style-type: none"> • 100 feet maximum. South barge channel: <ul style="list-style-type: none"> • 110 feet maximum. 	Primary navigation channel: <ul style="list-style-type: none"> • Closed position: 92 feet. • Open position: 178 feet. North barge channel: <ul style="list-style-type: none"> • 99 feet maximum. South barge channel: <ul style="list-style-type: none"> • 90 feet maximum.
Horizontal navigation clearance	263 feet for primary navigation channel. 511 feet for barge channel. 260 feet for alternate barge channel.	400 feet for all navigation channels (300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side).	400 feet for all navigation channels (300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side).	400 feet for all navigation channels (300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side).
Maximum elevation of bridge component (NAVD 88) ^e	247 feet at top of lift tower.	166 feet.	Girder: 137 feet. Extradosed/Finback: 179 feet at top of pylons.	243 feet at top of lift tower.

	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration ^a	Modified LPA with Single-Level Movable-Span Configuration
Movable span length (from center of pier to center of pier)	278 feet.	N/A	N/A	450 feet.
Number of in-water pier sets	Nine	Six	Six	Six
Number of in-water drilled shafts	N/A	72	96	108
Shaft cap sizes	N/A	50 feet by 85 feet.	50 feet by 230 feet.	Piers 2, 3, 4, and 7: 50 feet by 230 feet. Piers 5 and 6: 50 feet by 312 feet (one combined footing at each location to house tower/equipment for the lift span).
Maximum grade	5%	4% on the Washington side. 3.8% on the Oregon side.	3% on the Washington side. 3% on the Oregon side.	1.5% on the Washington side. 3% on the Oregon side.
Light-rail transit location	N/A	Below highway on SB bridge.	West of highway on SB bridge.	West of highway on SB bridge.
Express bus	Shared roadway lanes.	Inside shoulder of NB and SB (upper) bridges.	Inside shoulder of NB and SB bridges.	Inside shoulder of NB and SB bridges.

	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration ^a	Modified LPA with Single-Level Movable-Span Configuration
Shared-use path location	Sidewalk adjacent to roadway in both directions.	Below highway on NB bridge.	East of highway on NB bridge.	East of highway on NB bridge.

- a When different bridge types are not mentioned, data applies to all bridge types under the specified bridge configuration.
- b The No-Build Alternative assumes existing conditions that restrict bridge openings during weekday peak periods (Monday through Friday 6:30 a.m. to 9 a.m.; 2:30 p.m. to 6 p.m., excluding federal holidays). This analysis estimates the potential frequency for bridge openings for vessels requiring more than 99 feet of clearance.
- c For the purposes of the transportation analysis (see the Transportation Technical Report), the movable-span opening time is assumed to be an average of 12 minutes.
- d “Out-to-out width” is the measurement between the outside edges of the bridge across its width at the widest point.
- e NAVD 88 (North American Vertical Datum of 1988) is a vertical control datum (reference point) used by federal agencies for surveying.

NB = northbound; SB = southbound; USCG = U.S. Coast Guard

1.1.4 Downtown Vancouver (Subarea C)

This section discusses the geographic Subarea C shown in Figure 1-3. See Figure 1-23 for all highway and interchange improvements in Subarea C. Refer to Figure 1-3 for an overview of the geographic subareas.

1.1.4.1 Highways, Interchanges, and Local Roadways

North of the Columbia River bridges in downtown Vancouver, improvements are proposed to the SR 14 interchange (Figure 1-23).

SR 14 INTERCHANGE

The new Columbia River bridges would touch down just north of the SR 14 interchange (Figure 1-23). The function of the SR 14 interchange would remain essentially the same as it is now, although the interchange would be elevated. Direct connections between I-5 and SR 14 would be rebuilt. Access to and from downtown Vancouver would be provided as it is today, but the connection points would be relocated. Downtown Vancouver I-5 access to and from the south would be at C Street as it is today, while downtown connections to and from SR 14 would be from Columbia Street at 3rd Street.

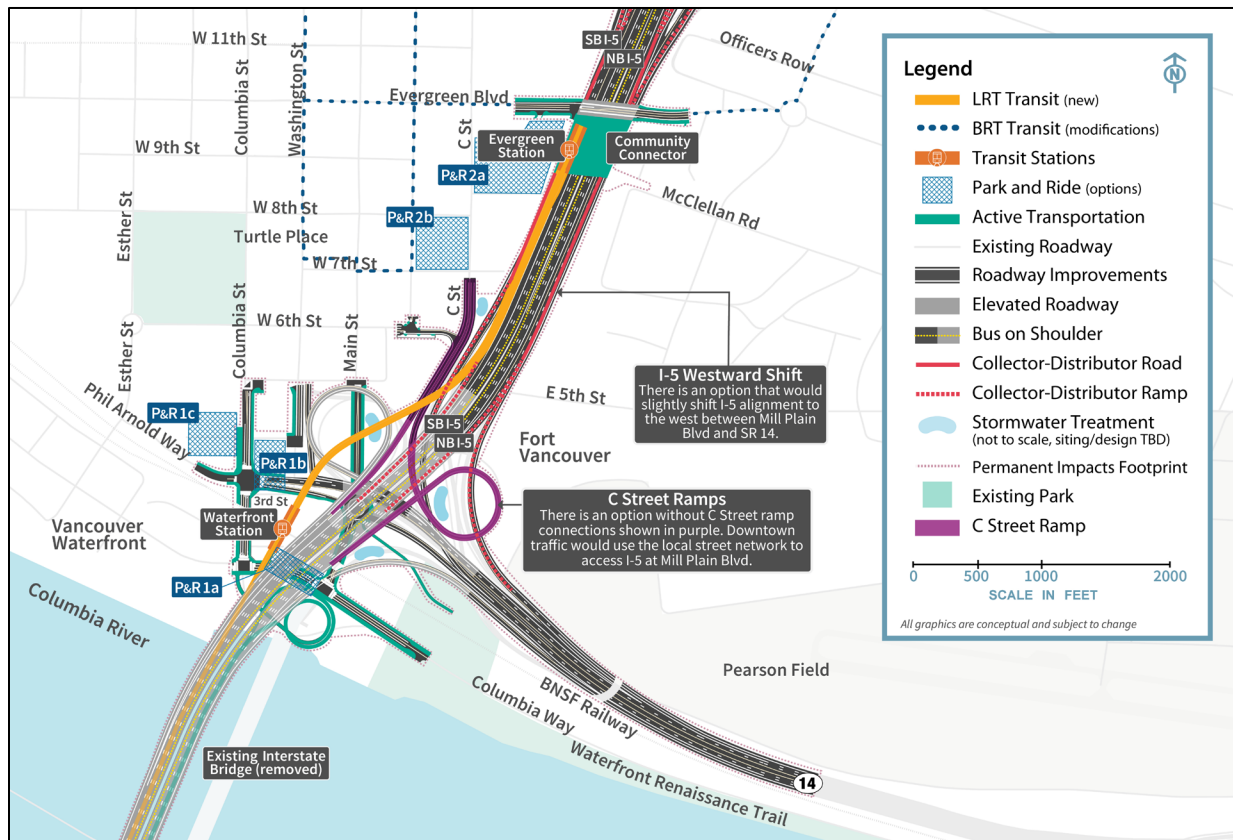
Main Street would be extended between 5th Street and Columbia Way. Vehicles traveling from downtown Vancouver to access SR 14 eastbound would use the new extension of Main Street to the roundabout underneath I-5. If coming from the west or south (waterfront) in downtown Vancouver, vehicles would use the Phil Arnold Way/3rd Street extension to the roundabout, then continue to SR 14 eastbound. The existing Columbia Way roadway under I-5 would be realigned to the north of its existing location and would intersect both the new Main Street extension and Columbia Street with T intersections.

In addition, the existing overcrossing of I-5 at Evergreen Boulevard would be reconstructed.

Design Option Without C Street Ramps

Under this design option, downtown Vancouver I-5 access to and from the south would be through the Mill Plain interchange rather than C Street. There would be no eastside loop ramp from I-5 northbound to C Street and no directional ramp on the west side of I-5 from C Street to I-5 southbound. The existing eastside loop ramp would be removed. This design option has been included because of changes in local planning that necessitate consideration of design options that reduce the footprint and associated direct and temporary environmental impacts in Vancouver.

Figure 1-23. Downtown Vancouver (Subarea C)



BRT = bus rapid transit; LRT = light-rail transit; NB = northbound; P&R = park and ride; SB = southbound

Design Option to Shift I-5 Westward

This design option would shift the I-5 mainline and ramps approximately 40 feet to the west between SR 14 and Mill Plain Boulevard. The westward I-5 alignment shift could also be paired with the design option without C Street ramps. The inclusion of this design option is due to changes in local planning, which necessitate consideration of design options that that shifts the footprint and associated direct and temporary environmental impacts in Vancouver.

1.1.4.2 Transit

LIGHT-RAIL ALIGNMENT AND STATIONS

Under the Modified LPA, the light-rail tracks would exit the highway bridge and be on their own bridge along the west side of the I-5 mainline after crossing the Columbia River (see Figure 1-23). The light-rail bridge would cross approximately 35 feet over the BNSF Railway tracks. An elevated light-rail station near the Vancouver waterfront (Waterfront Station) would be situated near the overcrossing of the BNSF tracks between Columbia Way and 3rd Street. Access to the elevated station would be primarily by elevator as the station is situated approximately 75 feet above existing ground level. A

stairwell(s) would be provided for emergency egress. The number of elevators and stairwells provided would be based on the ultimate platform configuration, station location relative to the BNSF trackway, projected ridership, and fire and life safety requirements. Passenger drop-off facilities would be located at ground level and would be coordinated with the C-TRAN bus service at this location. The elevated light-rail tracks would continue north, cross over the westbound SR 14 on-ramp and the C Street/6th Street on-ramp to southbound I-5, and then straddle the southbound I-5 C-D roadway. Transit components in the downtown Vancouver area are similar between the two SR 14 interchange area design options discussed above.

North of the Waterfront Station, the light-rail tracks would continue to the Evergreen Station, which would be the terminus of the light-rail extension (see Figure 1-23). The light-rail tracks from downtown Vancouver to the terminus would be entirely on an elevated structure supported by single columns, where feasible, or by columns on either side of the roadway where needed. The light-rail tracks would be a minimum of 27 feet above the I-5 roadway surface. The Evergreen Station would be located at the same elevation as Evergreen Boulevard, on the proposed Community Connector, and it would provide connections to C-TRAN's existing BRT system. Passenger drop-off facilities would be near the station and would be coordinated with the C-TRAN bus service at this location.

PARK AND RIDES

Up to two park and rides could be built in Vancouver along the light-rail alignment: one near the Waterfront Station and one near the Evergreen Station. Additional information regarding the park and rides can be found in the Transportation Technical Report.

Park and rides can expand the catchment area of public transit systems, making transit more accessible to people who live farther away from fixed-route transit service, and attracting new riders who might not have considered using public transit otherwise.

Waterfront Station Park-and-Ride Options

There are three site options for the park and ride near the Waterfront Station (see Figure 1-23). Each would accommodate up to 570 parking spaces.

1. Columbia Way (below I-5). This park-and-ride site would be a multilevel aboveground structure located below the new Columbia River bridges, immediately north of a realigned Columbia Way.
2. Columbia Street/SR 14. This park-and-ride site would be a multilevel aboveground structure located along the east side of Columbia Street. It could span across (or over) the SR 14 westbound off-ramp to provide parking on the north and south sides of the off-ramp.
3. Columbia Street/Phil Arnold Way (Waterfront Gateway Site). This park-and-ride site would be located along the west side of Columbia Street immediately north of Phil Arnold Way. This park and ride would be developed in coordination with the City of Vancouver's Waterfront Gateway program and could be a joint-use parking facility not constructed exclusively for park-and-ride users.

Evergreen Station Park-and-Ride Options

There are two site options for the park and ride near the Evergreen Station (see Figure 1-23).

1. Library Square. This park-and-ride site would be located along the east side of C Street and south of Evergreen Boulevard. It would accommodate up to 700 parking spaces in a multilevel belowground structure according to a future agreement on City-owned property associated with Library Square. Current design concepts suggest the park and ride most likely would be a joint-use parking facility for park-and-ride users and patrons of other uses on the ground or upper levels as negotiated as part of future decisions.
2. Columbia Credit Union. This park-and-ride site is an existing multistory garage that is located below the Columbia Credit Union office tower along the west side of C Street between 7th Street and 8th Street. The existing parking structure currently serves the office tower above it and the Regal City Center across the street. This would be a joint-use parking facility, not for the exclusive use of park-and-ride users, that could serve as additional or overflow parking if the 700 required parking spaces cannot be accommodated elsewhere.

1.1.4.3 Active Transportation

Within the downtown Vancouver area, the shared-use path on the northbound (or eastern) bridge would exit the bridge at the SR 14 interchange, loop down on the east side of I-5 via a vertical spiral path, and then cross back below I-5 to the west side of I-5 to connect to the Waterfront Renaissance Trail on Columbia Street and into Columbia Way (see Figure 1-23). Access would be provided across state right of way beneath the new bridges to provide a connection between the recreational areas along the City's Columbia River waterfront east of the bridges and existing and future waterfront uses west of the bridges.

Active transportation components in the downtown Vancouver area would be similar without the C Street ramps and with the I-5 westward shift.

At Evergreen Boulevard, a community connector is proposed to be built over I-5 just south of Evergreen Boulevard and east of the Evergreen Station (see Figure 1-23). The structure is proposed to include off-street pathways for active transportation modes including pedestrians, bicyclists, and other micro-mobility modes, and public space and amenities to support the active transportation facilities. The primary intent of the Community Connector is to improve connections between downtown Vancouver on the west side of I-5 and the Vancouver National Historic Reserve on the east side.

1.1.5 Upper Vancouver (Subarea D)

This section discusses the geographic Subarea D shown in Figure 1-3. See Figure 1-24 for all highway and interchange improvements in Subarea D. Refer to Figure 1-3 for an overview of the geographic subareas.

1.1.5.1 Highways, Interchanges, and Local Roadways

Within the upper Vancouver area, the IBR Program proposes improvements to three interchanges—Mill Plain, Fourth Plain, and SR 500—as described below.

MILL PLAIN BOULEVARD INTERCHANGE

The Mill Plain Boulevard interchange is north of the SR 14 interchange (see Figure 1-24). This interchange would be reconstructed as a tight-diamond configuration but would otherwise remain similar in function to the existing interchange. The ramp terminal intersections would be sized to accommodate high, wide heavy freight vehicles that travel between the Port of Vancouver and I-5. The off-ramp from I-5 northbound to Mill Plain Boulevard would diverge from the C-D road that would continue north, crossing over Mill Plain Boulevard, to provide access to Fourth Plain Boulevard via a C-D roadway. The off-ramp to Fourth Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard east of I-5, similar to the way it functions today.

FOURTH PLAIN BOULEVARD INTERCHANGE

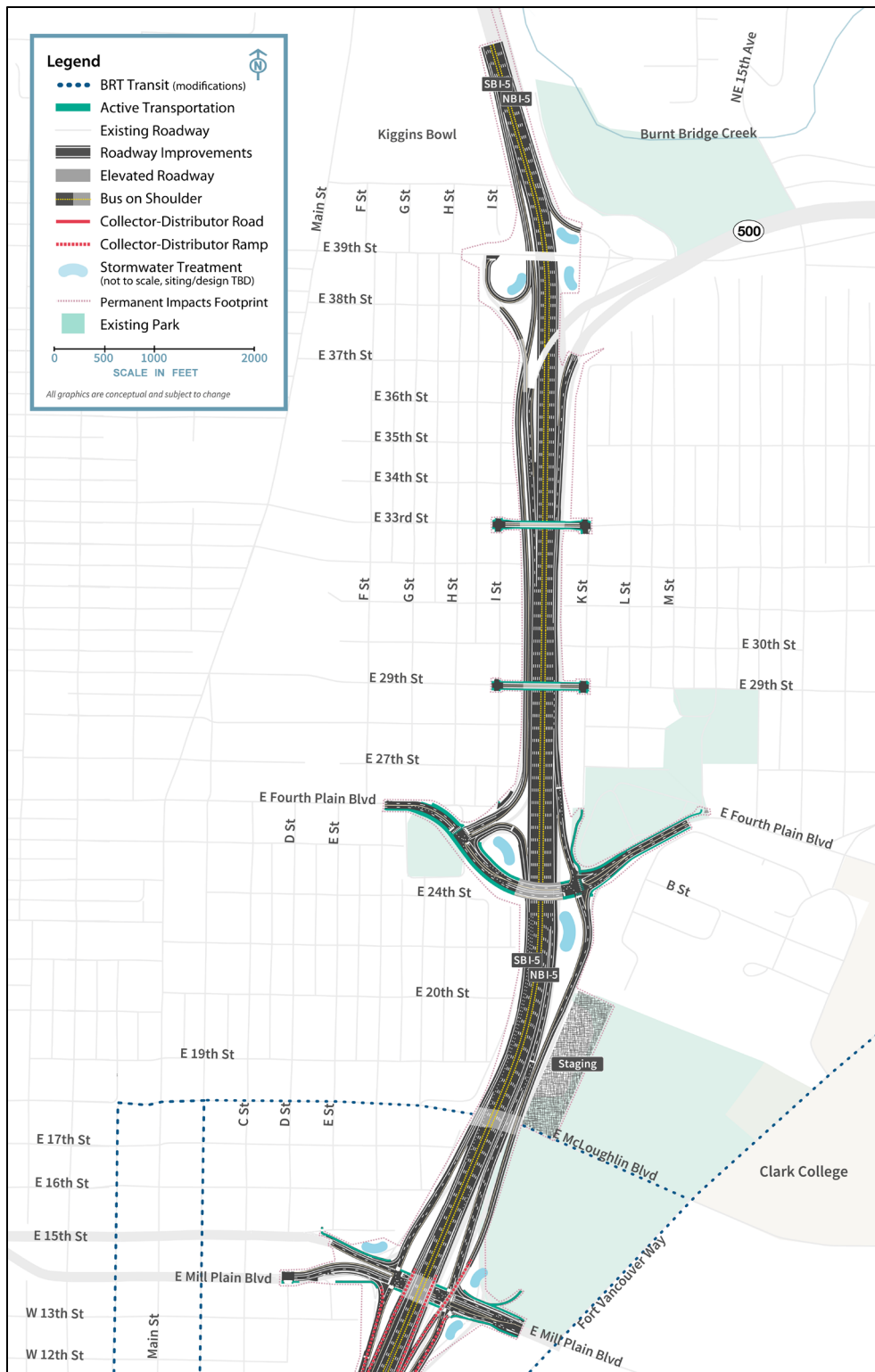
At the Fourth Plain Boulevard interchange (Figure 1-24), improvements would include reconstruction of the overpass of I-5 and the ramp terminal intersections. Northbound I-5 traffic exiting to Fourth Plain Boulevard would first exit to the northbound C-D roadway which provides off-ramp access to Fourth Plain Boulevard and Mill Plain Boulevard. The westbound SR 14 to northbound I-5 on-ramp also joins the northbound C-D roadway before continuing north past the Fourth Plain Boulevard and Mill Plain Boulevard off-ramps as an auxiliary lane. The southbound I-5 off-ramp to Fourth Plain Boulevard would be braided below the 39th Street on-ramp to southbound I-5. This change would eliminate the existing nonstandard weave between the SR 500 interchange and the off-ramp to Fourth Plain Boulevard. It would also eliminate the existing westbound SR 500 to Fourth Plain Boulevard off-ramp connection. The existing overcrossing of I-5 at 29th Street would be reconstructed to accommodate a widened I-5, provide adequate vertical clearance over I-5, and provide pedestrian and bicycle facilities.

SR 500 INTERCHANGE

The northern terminus of the I-5 improvements would be in the SR 500 interchange area (Figure 1-24). The improvements would primarily be to connect the Modified LPA to existing ramps. The off-ramp from I-5 southbound to 39th Street would be reconstructed to establish the beginning of the braided ramp to Fourth Plain Boulevard and restore the loop ramp to 39th Street. Ramps from existing I-5 northbound to SR 500 eastbound and from 39th Street to I-5 northbound would be partially reconstructed. The existing bridges for 39th Street over I-5 and SR 500 westbound to I-5 southbound would be retained. The 39th Street to I-5 southbound on-ramp would be reconstructed and braided over (i.e., grade separated or pass over) the new I-5 southbound off-ramp to Fourth Plain Boulevard.

The existing overcrossing of I-5 at 33rd Street would also be reconstructed to accommodate a widened I-5, provide adequate vertical clearance over I-5, and provide pedestrian and bicycle facilities.

Figure 1-24. Upper Vancouver (Subarea D)



BRT = bus rapid transit; TBD = to be determined

1.1.5.2 Transit

There would be no LRT facilities in upper Vancouver. Proposed operational changes to bus service, including I-5 bus-on-shoulder service, are described in Section 1.1.7, Transit Operating Characteristics.

1.1.5.3 Active Transportation

Several active transportation improvements would be made in Subarea D consistent with City of Vancouver plans and policies. At the Fourth Plain Boulevard interchange, there would be improvements to provide better bicycle and pedestrian mobility and accessibility; these include bicycle lanes, neighborhood connections, and a connection to the City of Vancouver's planned two-way cycle track on Fourth Plain Boulevard. The reconstructed overcrossings of I-5 at 29th Street and 33rd Street would provide pedestrian and bicycle facilities on those cross streets. No new active transportation facilities are proposed in the SR 500 interchange area. Active transportation improvements at the Mill Plain Boulevard interchange include buffered bicycle lanes and sidewalks, pavement markings, lighting, and signing.

1.1.6 Transit Support Facilities

1.1.6.1 Ruby Junction Maintenance Facility Expansion

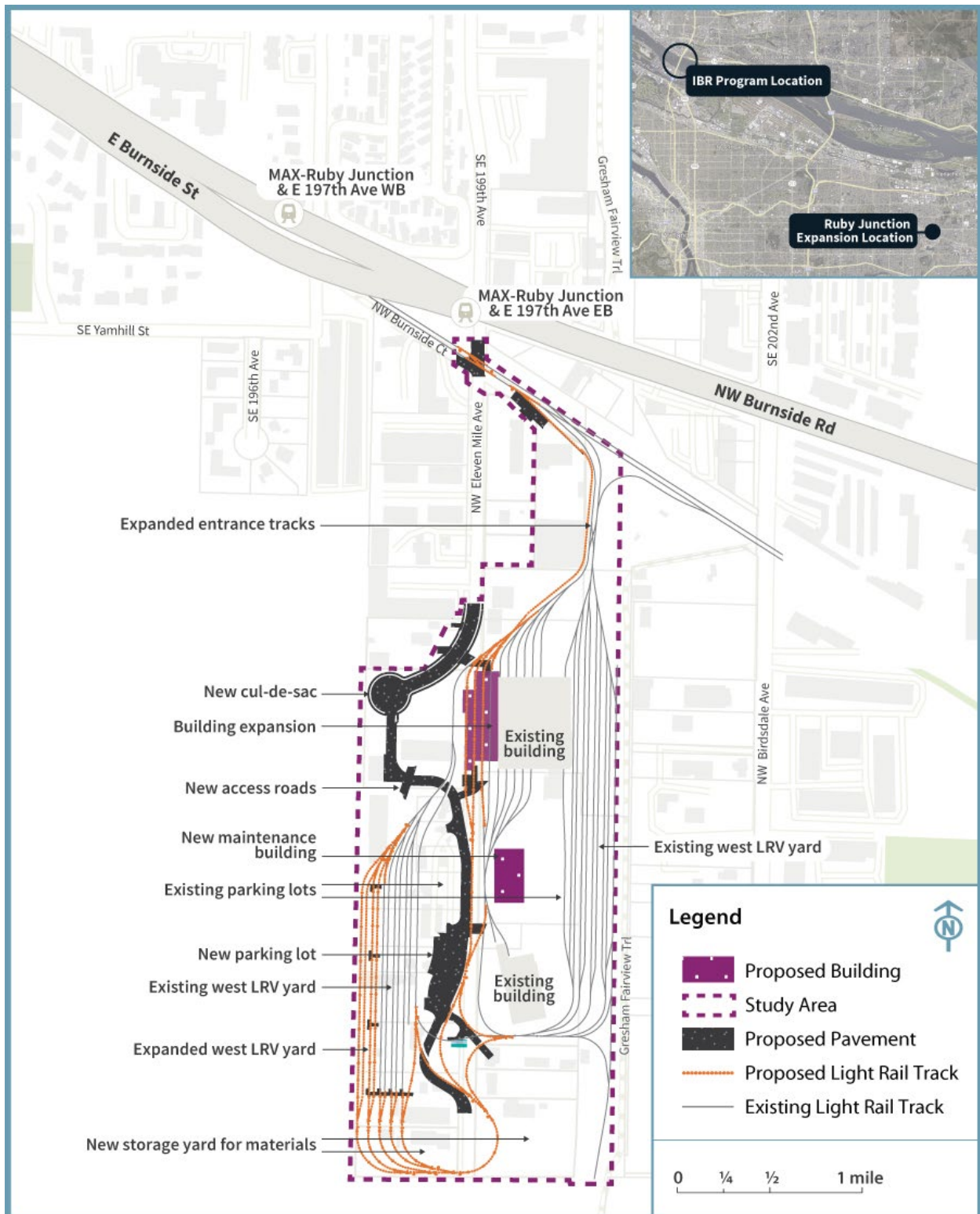
The TriMet Ruby Junction Maintenance Facility in Gresham, Oregon, would be expanded to accommodate the additional LRVs associated with the Modified LPA's LRT service (the Ruby Junction location relative to the study area is shown in Figure 1-25). Improvements would include additional storage for LRVs and maintenance materials and supplies, expanded LRV maintenance bays, expanded parking and employee support areas for additional personnel, and a third track at the northern entrance to Ruby Junction. Figure 1-25 shows the proposed footprint of the expansion.

The existing main building would be expanded west to provide additional maintenance bays. To make space for the building expansion, Eleven Mile Avenue would be vacated and would terminate in a new cul-de-sac west of the main building. New access roads would be constructed to maintain access to TriMet buildings south of the cul-de-sac.

The existing LRV storage yard, west of Eleven Mile Avenue, would be expanded to the west to accommodate additional storage tracks and a runaround track (a track constructed to bypass congestion in the maintenance yard). This expansion would require partial demolition of an existing TriMet building (just north of the LRV storage) and would require relocating the material storage yard to the properties just south of the south building.

All tracks in the west LRV storage yard would also be extended southward to connect to the proposed runaround track. The runaround track would connect to existing tracks near the existing south building. The connections to the runaround track would require partial demolition of an existing TriMet building plus full demolition of one existing building and partial demolition of another existing building on the private property west of the south end of Eleven Mile Avenue. The function of the existing TriMet building would either be transferred to existing modified buildings or to new replacement buildings on site.

Figure 1-25. Ruby Junction Maintenance Facility Study Area



EB = eastbound; LRV = light-rail vehicle; WB = westbound

The existing parking lot west of Eleven Mile Avenue would be expanded toward the south to provide more parking for TriMet personnel.

A third track would be needed at the north entrance to Ruby Junction to accommodate increased train volumes without decreasing service. The additional track would also reduce operational impacts during construction and maintenance outages for the yard. Constructing the third track would require reconstruction of Burnside Court east of Eleven Mile Avenue. An additional crossover would also be needed on the mainline track where it crosses Eleven Mile Avenue; it would require reconstruction of the existing track crossings for vehicles, bicycles, and pedestrians.

1.1.6.2 Expo Center Overnight LRV Facility

An overnight facility for LRVs would be constructed on the southeast corner of the Expo Center property (as shown on Figure 1-8) to reduce deadheading between Ruby Junction and the northern terminus of the MAX Yellow Line extension. Deadheading occurs when LRVs travel without passengers to make the vehicles ready for service. The facility would provide a yard access track, storage tracks for approximately 10 LRVs, one building for light LRV maintenance, an operator break building, a parking lot for operators, and space for security personnel. This facility would necessitate relocation and reconstruction of the Expo Road entrance to the Expo Center (including the parking lot gates and booths). However, it would not affect existing Expo Center buildings.

The overnight facility would connect to the mainline tracks by crossing Expo Road just south of the existing Expo Center MAX Station. The connection tracks would require relocation of one or two existing LRT facilities, including a traction power substation building and potentially the existing communication building, which are both just south of the Expo Center MAX Station. Existing artwork at the station may require relocation.

1.1.6.3 Additional Bus Bays at the C-TRAN Operations and Maintenance Facility

Three bus bays would be added to the C-TRAN operations and maintenance facility. These new bus bays would provide maintenance capacity for the additional express bus service on I-5 (see Section 1.1.7, Transit Operating Characteristics). Modifications to the facility would accommodate new vehicles as well as maintenance equipment.

1.1.7 Transit Operating Characteristics

1.1.7.1 LRT Operations

Nineteen new LRVs would be purchased to operate the extension of the MAX Yellow Line. These vehicles would be similar to those currently used for the TriMet MAX system. With the Modified LPA, LRT service in the new and existing portions of the Yellow Line in 2045 would operate with 6.7-minute average headways (defined as gaps between arriving transit vehicles) during the 2-hour morning peak period. Mid-day and evening headways would be 15 minutes, and late-night headways would be 30 minutes. Service would operate between the hours of approximately 5 a.m. (first southbound train leaving Evergreen Station) and 1 a.m. (last northbound train arriving at the station), which is consistent with current service on the Yellow Line. LRVs would be deadheaded at Evergreen Station

before beginning service each day. A third track at this northern terminus would accommodate layovers.

1.1.7.2 Express Bus Service and Bus on Shoulder

C-TRAN provides bus service that connects to LRT and augments travel between Washington and Oregon with express bus service to key employment centers in Oregon. Beginning in 2022, the main express route providing service in the IBR corridor, Route 105, had two service variations. One pattern provides service between Salmon Creek and downtown Portland with a single intermediate stop at the 99th Street Transit Center, and one provides service between Salmon Creek and downtown Portland with two intermediate stops: 99th Street Transit Center and downtown Vancouver. This route currently provides weekday service with 20-minute peak and 60-minute off-peak headways.

Once the Modified LPA is constructed, C-TRAN Route 105 would be revised to provide direct service from the Salmon Creek Park and Ride and 99th Street Transit Center to downtown Portland, operating at 5-minute peak headways with no service in the off-peak. The C-TRAN Route 105 intermediate stop service through downtown Vancouver would be replaced with C-TRAN Route 101, which would provide direct service from downtown Vancouver to downtown Portland at 10-minute peak and 30-minute off-peak headways.

Two other existing C-TRAN express bus service routes would remain unchanged after completion of the Modified LPA. C-TRAN Route 190 would continue to provide service from the Andresen Park and Ride in Vancouver to Marquam Hill in Portland. This route would continue to operate on SR 500 and I-5 within the study area. Route headways would be 10 minutes in the peak periods with no off-peak service. C-TRAN Route 164 would continue to provide service from the Fisher's Landing Transit Center to downtown Portland. This route would continue to operate within the study area only in the northbound direction during PM service to use the I-5 northbound high-occupancy vehicle lane in Oregon before exiting to eastbound SR 14 in Washington. Route headways would be 10 minutes in the peak and 30 minutes in the off-peak.

C-TRAN express bus Routes 105 and 190 are currently permitted to use the existing southbound inside shoulder of I-5 from 99th Street to the Interstate Bridge in Vancouver. However, the existing shoulders are too narrow for bus-on-shoulder use in the rest of the I-5 corridor in the study area. The Modified LPA would include inside shoulders on I-5 that would be wide enough (14 feet on the Columbia River bridges and 11.5 to 12 feet elsewhere on I-5) to allow northbound and southbound buses to operate on the shoulder, except where I-5 would have to taper to match existing inside shoulder widths at the north and south ends of the corridor. Figure 1-8, Figure 1-16, Figure 1-23, and Figure 1-24 show the potential bus-on-shoulder use over the Columbia River bridges. Bus on shoulder could operate on any of the Modified LPA bridge configurations and bridge types. Additional approvals (including a continuing control agreement), in coordination with ODOT, may be needed for buses to operate on the shoulder on the Oregon portion of I-5.

After completion of the Modified LPA, two C-TRAN express bus routes operating on I-5 through the study area would be able to use bus-on-shoulder operations to bypass congestion in the general-purpose lanes. C-TRAN Route 105 would operate on the shoulder for the full length of the study area. C-TRAN Route 190 would operate on the shoulder for the full length of the corridor except for the distance required to merge into and out of the shoulder as the route exits from and to SR 500. These

two express bus routes (105 and 190) would have a combined frequency of every 3 minutes during the 2045 AM and PM peak periods. To support the increased frequency of express bus service, eight electric double-decker or articulated buses would be purchased.

If the C Street ramps were removed from the SR 14 interchange, C-TRAN Route 101 could also use bus-on-shoulder operations south of Mill Plain Boulevard; however, if the C Street ramps remained in place, Route 101 could still use bus-on-shoulder operations south of the SR 14 interchange but would need to begin merging over to the C Street exit earlier than if the C Street ramps were removed. Route 101 would operate at 10-minute peak and 30-minute off-peak headways. C-TRAN Route 164 would not be anticipated to use bus-on-shoulder operations because of the need to exit to SR 14 from northbound I-5.

1.1.7.3 Local Bus Route Changes

The TriMet Line 6 bus route would be changed to terminate at the Expo Center MAX Station, requiring passengers to transfer to the new LRT connection to access Hayden Island. TriMet Line 6 is anticipated to travel from Martin Luther King Jr. Boulevard through the newly configured area providing local connections to Marine Drive. It would continue west to the Expo Center MAX Station. Table 1-3 shows existing service and anticipated future changes to TriMet Line 6.

As part of the Modified LPA, several local C-TRAN bus routes would be changed to better complement the new light-rail extension. Most of these changes would reroute existing bus lines to provide a transfer opportunity near the new Evergreen Station. Table 1-3 shows existing service and anticipated future changes to C-TRAN bus routes. In addition to the changes noted in Table 1-3, other local bus route modifications would move service from Broadway to C Street. The changes shown may be somewhat different if the C Street ramps are removed.

Table 1-3. Proposed TriMet and C-TRAN Bus Route Changes

Bus Route	Existing Route	Changes with Modified LPA
TriMet Line 6	Connects Goose Hollow, Portland City Center, N/NE Portland, Jantzen Beach and Hayden Island. Within the study area, service currently runs between Delta Park MAX Station and Hayden Island via I-5.	Route would be revised to terminate at the Expo Center MAX Station. Route is anticipated to travel from Martin Luther King Jr. Boulevard through the newly configured Marine Drive area, then continue west to connect via facilities on the west side of I-5 with the Expo Center MAX Station.

Bus Route	Existing Route	Changes with Modified LPA
C-TRAN Fourth Plain and Mill Plain bus rapid transit (The Vine)	Runs between downtown Vancouver and the Vancouver Mall Transit Center via Fourth Plain Boulevard, with a second line along Mill Plain Boulevard. In the study area, service currently runs along Washington and Broadway Streets through downtown Vancouver.	Route would be revised to begin/end near the Evergreen Station in downtown Vancouver and provide service along Evergreen Boulevard to Fort Vancouver Way, where it would travel to or from Mill Plain Boulevard or Fourth Plain Boulevard depending on clockwise/counterclockwise operations. The Fourth Plain Boulevard route would continue to serve existing Vine stations beyond Evergreen Boulevard.
C-TRAN #2 Lincoln	Connects the 99th Street Transit Center to downtown Vancouver via Lincoln and Kaufman Avenues. Within the study area, service currently runs along Washington and Broadway Streets between 7th and 15th Streets in downtown Vancouver.	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #25 St. Johns	Connects the 99th Street Transit Center to downtown Vancouver via St. Johns Boulevard and Fort Vancouver Way. Within the study area, service currently runs along Evergreen Boulevard, Jefferson Street/Kaufman Avenue, 15th Street, and Franklin Street in downtown Vancouver.	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #30 Burton	Connects the Fisher’s Landing Transit Center with downtown Vancouver via 164th/162nd Avenues and 18th, 25th, 28th, and 39th Streets. Within the study area, service currently runs along McLoughlin Boulevard and on Washington and Broadway Streets between 8th and 15th Streets.	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #60 Delta Park Regional	Connects the Delta Park MAX station in Portland with downtown Vancouver via I-5. Within the study area, service currently runs along I-5, Mill Plain Boulevard, and Broadway Street.	Route would be discontinued.

1.1.8 Tolling

Tolling cars and trucks that would use the new Columbia River bridges is proposed as a method to help fund the bridge construction and future maintenance, as well as to encourage alternative mode choices for trips across the Columbia River. Federal and state laws set the authority to toll the I-5 crossing. The IBR Program plans to toll the I-5 river bridge under the federal tolling authorization program codified in 23 U.S. Code Section 129 (Section 129). Section 129 allows public agencies to

impose new tolls on federal-aid interstate highways for the reconstruction or replacement of toll-free bridges or tunnels. In 2023, the Washington State Legislature authorized tolling on the Interstate Bridge, with toll rates and policies to be set by the Washington State Transportation Commission (WSTC). In Oregon, the legislature authorized tolling giving the Oregon Transportation Commission the authority to toll I-5, including the ability to set the toll rates and policies. Subsequently, the Oregon Transportation Commission (OTC) is anticipated to review and approve the I-5 tollway project application that would designate the Interstate Bridge as a “tollway project” in 2024. At the beginning of 2024, the OTC and the WSTC entered into a bi-state tolling agreement to establish a cooperative process for setting toll rates and policies. This included the formation of the I-5 Bi-State Tolling Subcommittee consisting of two commissioners each from the OTC and WSTC and tasked with developing toll rate and policy recommendations for joint consideration and adoption by each state’s commission. Additionally, the two states plan to enter into a separate agreement guiding the sharing and uses of toll revenues, including the order of uses (flow of funds) for bridge construction, debt service, and other required expenditures. WSDOT and ODOT also plan to enter into one or more agreements addressing implementation logistics, toll collection, and operations and maintenance for tolling the bi-state facility.

The Modified LPA includes a proposal to apply variable tolls on vehicles using the Columbia River bridges with the toll collected electronically in both directions. Tolls would vary by time of day with higher rates during peak travel periods and lower rates during off-peak periods. The IBR Program has evaluated multiple toll scenarios generally following two different variable toll schedules for the tolling assessment. For purposes of this NEPA analysis, the lower toll schedule was analyzed with tolls assumed to range between \$1.50 and \$3.15 (in 2026 dollars as representative of when tolling would begin) for passenger vehicles with a registered toll payment account. Medium and heavy trucks would be charged a higher toll than passenger vehicles and light trucks. Passenger vehicles and light trucks without a registered toll payment account would pay an additional \$2.00 per trip to cover the cost of identifying the vehicle owner from the license plate and invoicing the toll by mail.

The analysis assumes that tolling would commence on the existing Interstate Bridge—referred to as pre-completion tolling—starting April 1, 2026. The actual date pre-completion tolling begins would depend on when construction would begin. The traffic and tolling operations on the new Columbia River bridges were assumed to commence by July 1, 2033. The actual date that traffic and tolling operations on the new bridges begin would depend on the actual construction completion date. During the construction period, the two commissions may consider toll-free travel overnight on the existing Interstate Bridge, as was analyzed in the Level 2 Toll Traffic and Revenue Study, for the hours between 11 p.m. and 5 a.m. This toll-free period could help avoid situations where users would be charged during lane or partial bridge closures where construction delays may apply. Once the new I-5 Columbia River bridges open, twenty-four-hour tolling would begin.

Tolls would be collected using an all-electronic toll collection system using transponder tag readers and license plate cameras mounted to structures over the roadway. Toll collection booths would not be required. Instead, motorists could obtain a transponder tag and set up a payment account that would automatically bill the account holder associated with the transponder each time the vehicle crossed the bridge. Customers without transponders, including out-of-area vehicles, would be tolled by a license plate recognition system that would bill the address of the owner registered to that vehicle’s license plate. The toll system would be designed to be nationally interoperable.

Transponders for tolling systems elsewhere in the country could be used to collect tolls on I-5, and drivers with an account and transponder tag associated with the Interstate Bridge could use them to pay tolls in other states for which reciprocity agreements had been developed. There would be new signage, including gantries, to inform drivers of the bridge toll. These signs would be on local roads, I-5 on-ramps, and on I-5, including locations north and south of the bridges where drivers make route decisions (e.g., I-5/I-205 junction and I-5/I-84 junction).

1.1.9 Transportation System- and Demand-Management Measures

Many well-coordinated transportation demand-management and system-management programs are already in place in the Portland-Vancouver metropolitan region. In most cases, the impetus for the programs comes from state regulations: Oregon’s Employee Commute Options rule and Washington’s Commute Trip Reduction law (described in the sidebar).

The physical and operational elements of the Modified LPA provide the greatest transportation demand-management opportunities by promoting other modes to fulfill more of the travel needs in the corridor. These include:

- Major new light-rail line in exclusive right of way, as well as express bus routes and bus routes that connect to new light-rail stations.
- I-5 inside shoulders that accommodate express buses.
- Modern bicycle and pedestrian facilities that accommodate more bicyclists and pedestrians and improve connectivity, safety, and travel time.
- Park-and-ride facilities.
- A variable toll on the new Columbia River bridges.

In addition to these fundamental elements of the Modified LPA, facilities and equipment would be implemented that could help existing or expanded transportation system management measures maximize the capacity and efficiency of the system. These include:

- Replacement or expanded variable message signs in the study area. These signs alert drivers to incidents and events, allowing them to seek alternate routes or plan to limit travel during periods of congestion.

State Laws to Reduce Commute Trips

Oregon and Washington have both adopted regulations intended to reduce the number of people commuting in single-occupancy vehicles (SOVs). Oregon’s Employee Commute Options Program, created under Oregon Administrative Rule 340-242-0010, requires employers with over 100 employees in the greater Portland area to provide commute options that encourage employees to reduce auto trips to the work site. Washington’s 1991 Commute Trip Reduction (CTR) Law, updated as the 2006 CTR Efficiency Act (Revised Code of Washington §70.94.521) addresses traffic congestion, air pollution, and petroleum fuel consumption. The law requires counties and cities with the greatest traffic congestion and air pollution to implement plans to reduce SOV demand. An additional provision mandates “major employers” and “employers at major worksites” to implement programs to reduce SOV use.

- Replacement or expanded traveler information systems with additional traffic monitoring equipment and cameras.
- Expanded incident response capabilities, which help traffic congestion to clear more quickly following accidents, spills, or other incidents.
- Queue jumps or bypass lanes for transit vehicles where multilane approaches are provided at ramp signals for on-ramps. Locations for these features will be determined during the detailed design phase.
- Active traffic management including strategies such as ramp metering, dynamic speed limits, and transit signal priority. These strategies are intended to manage congestion by controlling traffic flow or allowing transit vehicles to enter traffic before single-occupant vehicles.

1.2 Modified LPA Construction

The following information on the construction activities and sequence follows the information prepared for the CRC LPA. Construction durations have been updated for the Modified LPA. Because the main elements of the IBR Modified LPA are similar to those in the CRC LPA (i.e., multimodal river crossings and interchange improvements), this information provides a reasonable assumption of the construction activities that would be required.

The construction of bridges over the Columbia River sets the sequencing for other Program components. Accordingly, construction of the Columbia River bridges and immediately adjacent highway connections and improvement elements would be timed early to aid the construction of other components. Demolition of the existing Interstate Bridge would take place after the new Columbia River bridges were opened to traffic.

Electronic tolling infrastructure would be constructed and operational on the existing Interstate Bridge by the start of construction on the new Columbia River bridges. The toll rates and policies for tolling (including pre-completion tolling) would be determined after a more robust analysis and public process by the OTC and WSTC (refer to Section 1.1.8, Tolling).

1.2.1 Construction Components and Duration

Table 1-4 provides the estimated construction durations and additional information of Modified LPA components. The estimated durations are shown as ranges to reflect the potential for Program funding to be phased over time. In addition to funding, contractor schedules, regulatory restrictions on in-water work and river navigation considerations, permits and approvals, weather, materials, and equipment could all influence construction duration and overlap of construction of certain components. Certain work below the ordinary high-water mark of the Columbia River and North Portland Harbor would be restricted to minimize impacts to species listed under the Endangered Species Act and their designated critical habitat.

Throughout construction, active transportation facilities and three lanes in each direction on I-5 (accommodating personal vehicles, freight, and buses) would remain open during peak hours, except for short intermittent restrictions and/or closures. Advanced coordination and public notice would be given for restrictions, intermittent closures, and detours for highway, local roadway, transit, and

active transportation users (refer to the Transportation Technical Report, for additional information). At least one navigation channel would remain open throughout construction. Advanced coordination and notice would be given for restrictions or intermittent closures to navigation channels as required.

Table 1-4. Construction Activities and Estimated Duration

Component	Estimated Duration	Notes
Columbia River bridges	4 to 7 years	<ul style="list-style-type: none"> Construction is likely to begin with the main river bridges. General sequence would include initial preparation and installation of foundation piles, shaft caps, pier columns, superstructure, and deck.
North Portland Harbor bridges	4 to 10 years	<ul style="list-style-type: none"> Construction duration for North Portland Harbor bridges is estimated to be similar to the duration for Hayden Island interchange construction. The existing North Portland Harbor bridge would be demolished in phases to accommodate traffic during construction of the new bridges.
Hayden Island interchange	4 to 10 years	<ul style="list-style-type: none"> Interchange construction duration would not necessarily entail continuous active construction. Hayden Island work could be broken into several contracts, which could spread work over a longer duration.
Marine Drive interchange	4 to 6 years	<ul style="list-style-type: none"> Construction would need to be coordinated with construction of the North Portland Harbor bridges.
SR 14 interchange	4 to 6 years	<ul style="list-style-type: none"> Interchange would be partially constructed before any traffic could be transferred to the new Columbia River bridges.
Demolition of the existing Interstate Bridge	1.5 to 2 years	<ul style="list-style-type: none"> Demolition of the existing Interstate Bridge could begin only after traffic is rerouted to the new Columbia River bridges.
Three interchanges north of SR 14	3 to 4 years for all three	<ul style="list-style-type: none"> Construction of these interchanges could be independent from each other and from construction of the Program components to the south. More aggressive and costly staging could shorten this timeframe.
Light-rail	4 to 6 years	<ul style="list-style-type: none"> The light-rail crossing would be built with the Columbia River bridges. Light-rail construction includes all of the infrastructure associated with light-rail transit (e.g., overhead catenary system, tracks, stations, park and rides).

Component	Estimated Duration	Notes
Total construction timeline	9 to 15 years	<ul style="list-style-type: none"> Funding, as well as contractor schedules, regulatory restrictions on in-water work and river navigation considerations, permits and approvals, weather, materials, and equipment, could all influence construction duration.

1.2.2 Potential Staging Sites and Casting Yards

Equipment and materials would be staged in the study area throughout construction generally within existing or newly purchased right of way, on land vacated by existing transportation facilities (e.g., I-5 on Hayden Island), or on nearby vacant parcels. However, at least one large site would be required for construction offices, to stage the larger equipment such as cranes, and to store materials such as rebar and aggregate. Criteria for suitable sites include large, open areas for heavy machinery and material storage, waterfront access for barges (either a slip or a dock capable of handling heavy equipment and material) to convey material to the construction zone, and roadway or rail access for landside transportation of materials by truck or train.

Two potential major staging sites have been identified (see Figure 1-8 and Figure 1-23). One site is located on Hayden Island on the west side of I-5. A large portion of this parcel would be required for new right of way for the Modified LPA. The second site is in Vancouver between I-5 and Clark College. Other staging sites may be identified during the design process or by the contractor. Following construction of the Modified LPA, the staging sites could be converted for other uses.

In addition to on-land sites, some staging activities for construction of the new Columbia River and North Portland Harbor bridges would take place on the river itself. Temporary work structures, barges, barge-mounted cranes, derricks, and other construction vessels and equipment would be present on the river during most or all of the bridges’ construction period. The IBR Program is working with USACE and USCG to obtain necessary clearances for these activities.

A casting or staging yard could also be required for construction of the overwater bridges if a precast concrete segmental bridge design is used. A casting yard would require access to the river for barges, a slip or a dock capable of handling heavy equipment and material, a large area suitable for a concrete batch plant and associated heavy machinery and equipment, and access to a highway or railway for delivery of materials. As with the staging sites, casting or staging yard sites may be identified as the design progresses or by the contractor and would be evaluated via a NEPA re-evaluation or supplemental NEPA document for potential environmental impacts at that time.

1.3 No-Build Alternative

The No-Build Alternative illustrates how transportation and environmental conditions would likely change by the year 2045 if the Modified LPA is not built. This alternative makes the same assumptions as the Modified LPA regarding population and employment growth through 2045, and it assumes that the same transportation and land use projects in the region would occur as planned.

Regional transportation projects included in the No-Build Alternative are those in the financially constrained 2018 *Regional Transportation Plan* (2018 RTP) adopted in December 2018 by the Metro Council (Metro 2018) and in March 2019 (RTC 2019) by the Southwest Washington Regional Transportation Council (RTC) Board of Directors is referred to as the 2018 RTP in this report. The 2018 RTP has a planning horizon year of 2040 and includes projects from state and local plans necessary to meet transportation needs over this time period; financially constrained means these projects have identified funding sources. The Transportation Technical Report lists the projects included in the financially constrained 2018 RTP.

The implementation of regional and local land use plans is also assumed as part of the No-Build Alternative. For the IBR Program analysis, population and employment assumptions used in the 2018 RTP were updated to 2045 in a manner consistent with regional comprehensive and land use planning. In addition to accounting for added growth, adjustments were made within Portland to reallocate the households and employment based on the most current update to Portland's comprehensive plan, which was not complete in time for inclusion in the 2018 RTP.

Other projects assumed as part of the No-Build Alternative include major development and infrastructure projects that are in the permitting stage or partway through phased development. These projects are discussed as reasonably foreseeable future actions in the IBR Cumulative Effects Technical Report. They include the Vancouver Waterfront project, Terminal 1 development, the Renaissance Boardwalk, the Waterfront Gateway Project, improvements to the levee system, several restoration and habitat projects, and the Portland Expo Center.

In addition to population and employment growth and the implementation of local and regional plans and projects, the No-Build Alternative assumes that the existing Interstate Bridge would continue to operate as it does today. As the bridge ages, needs for repair and maintenance would potentially increase, and the bridge would continue to be at risk of mechanical failure or damage from a seismic event.

2. METHODS

2.1 Introduction

This chapter describes the methods used to support the IBR Program environmental evaluation and outlines the approach to evaluating the beneficial and adverse impacts of a Modified LPA. This technical report evaluates potential land acquisitions and displacements that would result from the construction of the Modified LPA.

This chapter includes a description of the analysis area, relevant laws and regulations, significance thresholds, and methods for collecting data, assessing impacts, and evaluating possible mitigation measures. The analysis is designed to comply with NEPA and relevant federal, state, and local laws. These methods are based on those developed for the CRC project, which completed the NEPA process with a signed ROD in 2011, as well as NEPA reevaluations in 2011 and 2013.⁹ The CRC project was discontinued in 2014; the IBR Program is evaluating what changes in regulations, policy, and physical conditions have occurred since the completion of the ROD. The updated methods were used to evaluate the potential environmental impacts associated with the Modified LPA.

Property acquisition and displacement are defined as follows:

- Acquisition – An acquisition occurs if part or all of a property or a legal right to a property is purchased or otherwise acquired for temporary or permanent use by a project. An acquisition can be fee title, wherein all property rights are acquired, or an easement, in which certain rights, but not ownership, are obtained.
- Displacement – A displacement occurs if a use, such as a building or parking lot, is demolished or required to move as a result of a project, or if people, a business, or personal property are no longer able to occupy the real property as a result of the project. Individuals, businesses, or personal property displaced from the acquired real property would be eligible to receive relocation benefits.

Acquisitions and displacements may be required if a project requires new or additional right of way. The property acquisitions analysis in this technical report identifies properties, including residences, businesses, and public facilities, that would be acquired for the construction of the Modified LPA. Federal, state, and local laws require that acquisition and relocation impacts of projects be assessed and that property acquisitions and relocation for federally funded projects conform to standards established by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) and that relocation resources are available to all residential and business displacements without discrimination. This analysis also evaluated potential mitigation measures, to the extent necessary, for displaced businesses and residences.

⁹ The ROD and supporting environmental documents can be found on the Washington Department of Transportation's website: <https://www.wsdot.wa.gov/accountability/ssb5806/environmental-process-and-permitting.htm>

This report addresses the following questions, based on the preliminary design of the Modified LPA:

- How much land would be acquired, temporarily and permanently, to construct the Modified LPA?
- How many parcels would the IBR Program impact, and to what degree (e.g., entire parcel, portion of parcel)?
- What type of uses would be displaced by the IBR Program?
- Are there comparable business and residential opportunities in the area to accommodate these displaced businesses and households?

The methods used in this report follow those used in the CRC effort. No significant changes to policy or process have been identified. The IBR Program acquisitions and displacements analysis includes updated 2022 property information data and is based on the Modified LPA.

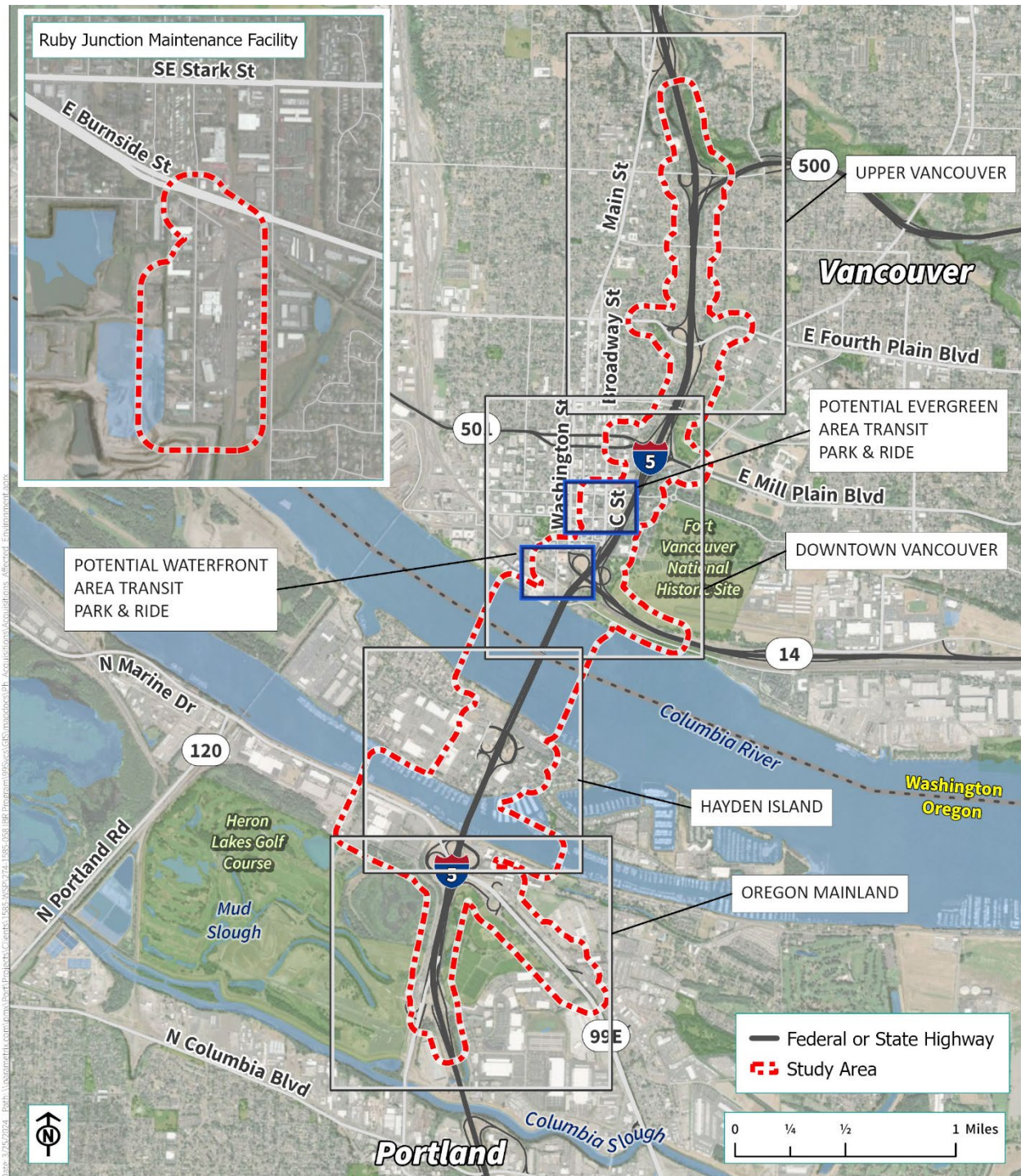
2.2 Study Area

The study area for the property acquisitions analysis includes all areas directly affected by the footprint of the Modified LPA including new or improved highway, transit, and bicycle and pedestrian facilities, fee title and permanent easement acquisitions required to construct the facilities, temporary construction easements, and potential staging areas and casting yards.

The IBR Program study area runs along a 5-mile segment of I-5, approximately between the SR 500 interchange in Washington and the I-5/Columbia Boulevard interchange in Oregon. Most physical changes associated with the Program would occur in this area, though mitigation could still occur outside of it. Temporary construction easements would be established directly adjacent to the proposed construction areas, while larger staging areas and casting yards could be located upstream or downstream of the Columbia River bridges. The CRC LPA and the IBR Modified LPA also include expansion of the TriMet-owned Ruby Junction Maintenance Facility in Gresham, Oregon.

Figure 2-1 shows the IBR Program study area.

Figure 2-1. Study Area



This report determines the potential for relocating displaced residences or businesses by exploring vacancy rates and other measures of availability throughout the study area. This exploration is an initial step in the process of relocation; additional details are provided in Section 2.6.4 and Section 3.2.3. Vacancy rate information is reported by third-party firms, such as the Regional Multiple Listing Service (RMLS), and is usually summarized for specific geographies, e.g., west Vancouver, downtown Vancouver, and northeast Portland. For the purposes of this report, this information is reported for those geographies in the study area.

2.3 Relevant Laws and Regulations

2.3.1 Federal

- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (49 Code of Federal Regulations 24, Public Law 91.646, 42 United States Code [USC] 4601, et seq.).
 - This act is relevant for any acquisitions or relocations that occur due to project activities. The purpose of the Uniform Act is stated as “To provide for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs and to establish uniform and equitable land acquisition policies for federal and federally assisted programs.”
- Title VI of the National Civil Rights Act of 1964 (42 USC § 2000d et seq.).
 - This act prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance, and protects minority persons in the study area.
- Executive Order 12898 of February 11, 1994, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.”
 - This is the federal policy on environmental justice and is implemented through procedures for compliance issued by the U.S. Department of Transportation. This executive order establishes requirements for integrating environmental justice into the NEPA process through analysis of environmental justice impacts and public involvement, as well as definitions of relevant terms (Executive Order 1994).

2.3.2 State

2.3.2.1 Oregon

- Oregon Revised Statutes 35.205–35.625.
 - Together with the Uniform Act, these laws govern mitigation measures for offsetting the potential adverse effects resulting from the acquisition of land or displacement of residences or businesses.
- Oregon Department of Transportation, Right of Way Manual (ODOT 2018).
 - This manual provides interpretations and implementing procedures for discretionary elements of the Uniform Act.

- Oregon’s Statewide Planning Goals and Guidelines, Oregon Administrative Rule 660-15-0000(10), Goal 10, Housing.
 - Statewide Planning Goal 10 is intended to provide for the housing needs of the citizens of the state. Comprehensive plans and zoning codes must encourage the availability of adequate housing units at price ranges and rent levels that are commensurate with the financial capabilities of Oregon households. The City of Portland must incorporate the principles of the Statewide Planning Goals in its comprehensive plan and zoning code. No data collection or analysis will be conducted specifically for this statute, as it is implemented through local code and plans.
 - Oregon Statewide Planning Goals and neighborhood and community plans, and the potential effects of acquisitions and displacements on these goals and plans, are addressed in the Land Use Technical Report and Neighborhoods and Populations Technical Report.

2.3.2.2 Washington

- Revised Code of Washington, Chapter 8.26.
 - This code establishes state law for implementing the Uniform Act.
- Washington Administrative Code 468-100.
 - This code establishes state guidelines for implementing the Uniform Act.
- Washington Department of Transportation, Right of Way Manual (WSDOT 2020).
 - This manual provides interpretations and implementing procedures for discretionary elements of the Uniform Act.

2.3.3 Local

- TriMet Administrative Rules for Relocation Appeals (TriMet 2004)
 - TriMet, the municipal corporation providing public transportation for much of the three counties in the Portland metropolitan area, provides guidelines for conducting informal relocation conferences and formal appeals hearings on relocation-specific transit projects being constructed by TriMet.
- C-TRAN, the agency providing transit mobility options to residents of Clark County, abides by all federal and state displacement and acquisition policies; the agency does not have special rules for their implementation nor requirements for additional actions.

2.4 Effects Guidelines

This analysis addresses two types of direct impacts: the acquisition of additional right of way to construct the Modified LPA and the potential displacement of the following types of uses:

- Residential
 - Single-family
 - Multifamily

- Commercial
 - Retail/Services
 - Office/Professional/Healthcare
 - Lodging
 - Parking
- Public Use
 - Public Service with Employees
 - Park/Historic Site/Museum
 - Religious/Community Center
 - School

The analysis considers permanent acquisition needs, as well as temporary acquisitions or displacements associated with construction easements and larger staging and casting areas. The analysis does not include finalized quantities of subsurface and air leases, as these will be determined during final design.

The secondary impacts of acquisitions and displacements in relation to specific environmental conditions are assessed separately in the Land Use, Environmental Justice, Public Services, Neighborhoods and Populations, and Economics Technical Reports and Chapter 5 of the SEIS, Section 4(f) Evaluation.

2.5 Data Collection Methods

Right-of-way estimates have been developed by the IBR Program engineering team using computer-aided design and drafting (CADD) drawings of the Modified LPA. The engineering data provided the approximate size and shape of permanent right-of-way requirements, permanent airspace and subsurface easements, and temporary construction easements. From this information, the Program team estimated whether the project would require only a portion of the parcel (a partial acquisition), or the entire parcel (a full acquisition), and whether an impact would displace the use of the property. The Washington and Oregon real estate teams reviewed and concurred with the determinations of level of impact for each parcel and the possibility of displacement. The CADD drawings and impact information were translated into a database using geographic information system (GIS) technology. Temporary construction easements and staging areas required to construct the Modified LPA were also estimated to the extent feasible at the current level of project development.

2.5.1 Primary Data Sources

Primary data sources used in the CRC effort were updated to reflect IBR Program design refinements and updated tax lot boundaries, ownership, and existing uses. Updated tax lot boundaries, ownership, and existing uses were provided by the Clark County Tax Assessor and Metro in 2023.

2.6 Analysis Methods

There are four basic steps in the property acquisition analysis. This section outlines the steps of data collection that were completed for the analysis.

2.6.1 Step 1: Determine Right-of-Way Requirements

General requirements for right of way for the highway, transit, and bicycle and pedestrian components of the IBR Program were determined by the Program team. The engineering team determined the general dimensions of the required right of way by parcel to enable the Program team to estimate the extent of the permanent impacts and determine the type of acquisition—full or partial acquisition of the parcel, with or without the displacement of the use—that may be required. The Program team also identified the temporary construction easements that will be needed to construct the Modified LPA, as well as possible staging areas that could also be required depending on construction methods.

Program staff identified additional supporting facilities for the Modified LPA, which were included in the footprint used in the acquisitions analysis. For example, arterial widening at interchanges, local street improvements, and transit maintenance facilities are included in the summary of acquisitions for the IBR Program.

2.6.2 Step 2: Identify Ownership and Land Use of Parcels

Tax assessors' records for Multnomah and Clark Counties—and other information gathered through contacts with local agency staff, property owners, and community meetings—were used to determine the ownership and use of properties required for the IBR Program.

Public facilities potentially affected by the IBR Program were also identified during this step. Public facilities include offices, recreation centers, warehouse or storage buildings, parking lots, and parks, etc. operated and maintained by public agencies. This includes any public agency function housed on property leased from private parties. The location, type, and condition of any such facilities were verified for this analysis.

2.6.3 Step 3: Verify Findings through Research and Field Investigation

To the extent possible, the Program team verified property information and potential impacts through field investigation. The team checked the location and use type of existing buildings and other improvements. Notations were made concerning the operating characteristics of particular properties subject to acquisition. Additionally, properties identified as potentially having residential or business displacements were surveyed to determine use (e.g., multifamily versus single-family, number of businesses operating).

2.6.4 Step 4: Assess Mitigation Potential

Vacancy and rental rates of residential, commercial, and industrial properties are an indication of the potential for finding viable sites for relocating displaced residents and businesses. Higher vacancy

rates generally indicate greater potential for relocating a displaced use to a location that is desirable to the property owner or tenants. The supply of homes for sale, average length of time that single-family homes are on the market prior to sale, and median single-family home sale price also indicate the potential for finding viable sites for relocating residents of single-family homes. Information on real estate stock, vacancy rates, rental rates, and home values have been collected from RMLS for residential properties and the commercial real estate firm SVN Bluestone & Hockley for commercial properties.

2.7 Coordination

Coordination with affected property owners, working groups, and IBR Program partners will follow a process similar to what was completed for the CRC project. The IBR Program team will conduct extensive outreach to neighborhood groups, business groups, and other potentially affected parties. Prior to publication of the Draft SEIS, property owners potentially affected by project alternatives will be notified directly via mail, and meetings specifically focused on the project's potential right-of-way needs will be held. Any property owner concerned about impacts on their property can contact the project team to either talk by phone or set up a meeting at the project office to discuss potential impacts, the property acquisition and relocation process, and the schedule for property acquisitions, among other topics. For publicly owned aquatic lands, coordination meetings will be held with both the Oregon Department of State Lands (DSL) and the Washington Department of Natural Resources (DNR) to identify the process by which the project would obtain permanent and temporary leases over and in the Columbia River and North Portland Harbor.

3. AFFECTED ENVIRONMENT

3.1 Introduction

This chapter provides a brief overview of the affected environment. More detail regarding neighborhoods, land use planning, and regional economics is available in the Neighborhoods and Populations, Land Use, and Economics Technical Reports.

3.2 Regional Conditions

3.2.1 Regional Land Use

Oregon's statewide planning laws and Washington's Growth Management Act agree on general principles of compact urban form, preservation of rural areas, use of urban growth boundaries, and multimodal transportation systems. The proposed project is near the core of a bi-state metropolitan area that functions largely as one economy and one housing market. Land supply is balanced with land needs. This balance is maintained through the growth management legislative processes in both states.

3.2.2 Existing Land Uses in Study Area

This section gives a brief overview of the existing land uses in the study area, specifically those surrounding the proposed improvements. See the Land Use Technical Report for greater detail.

3.2.2.1 Oregon Mainland

The south end of the study area is surrounded by a large wetland mitigation site and large park on either side of I-5. There are a variety of uses surrounding the Marine Drive interchange including marine businesses along North Portland Harbor, the Portland Expo Center west of I-5, and lodging and small businesses on the east side. A small residential neighborhood is located further east of I-5.

3.2.2.2 Hayden Island

Hayden Island has a substantial number of single and multifamily residences including floating home moorage communities on both sides of I-5 in North Portland Harbor. The Jantzen Beach Center is located on the west side of I-5, and includes retail in the mall itself, and big-box retail stores and restaurants in the surrounding area. Additional smaller retail and service businesses occur along I-5 outside of the mall property and include banks, gas stations, and restaurants, among other uses.

Hayden Island completed a master planning process in 2009, which anticipates land use changes on the island in conjunction with the Interstate Bridge replacement and extension of light rail transit to the island. Planning goals for this area have been codified in the City of Portland's Hayden Island Plan District (Section 33.532) dated March 1, 2020. For more information about this plan, see the Land Use Technical Report.

3.2.2.3 Ruby Junction Maintenance Facility

The existing TriMet Ruby Junction Maintenance Facility is located approximately 13 miles east of I-5 in Gresham, Oregon, and is surrounded by a mix of single-family residences and light-industrial businesses. In many cases, these uses are combined on a single parcel.

3.2.2.4 Downtown Vancouver

In downtown Vancouver, south of McLoughlin Boulevard, the study area includes a mix of commercial, retail, and high-to-medium density residential development. The Vancouver National Historic Reserve (VNHR), as well as large parks, public facilities, and civic uses, occur along the east side of I-5. Across I-5 from the VNHR in downtown Vancouver are a 12-screen cinema and the Vancouver Community Library, as well as small retail and commercial businesses. Along the waterfront, the City of Vancouver has approved a 32-acre urban development including office space, 250,000 square feet (sq ft) of restaurant and retail space, 3,300 housing units, and multiple public spaces. A portion of the Vancouver waterfront development has already been completed, and additional portions of the proposed site are currently in planning and construction.

3.2.2.5 Upper Vancouver

McLoughlin Boulevard, west of I-5, is comprised of a mix of residential and office uses with a number of business-to-residential conversions. A City-owned park and Clark College facilities are adjacent to on McLoughlin Boulevard east of I-5. Clark College and the Veteran's Administration facilities are located directly north of McLoughlin Boulevard on the east side of I-5. North of these facilities and along the west side of I-5 north of McLoughlin and up to the SR 500 interchange, the area consists of primarily single-family residences. North of the SR 500 interchange is a Vancouver public middle school and a large City-owned park.

3.2.3 Residential, Commercial, and Industrial Vacancy Rates

This section describes vacancy and rental rates for residential, commercial, and industrial properties in the study area, which are indicators of the potential for finding viable sites for relocating displaced residents and businesses. Higher vacancy rates generally indicate greater potential for relocating a displaced use to a location that is desirable to the property owner or tenants. The supply of homes for sale, average length of time that single-family homes are on the market prior to sale, and median single-family home sale price also indicate the potential for finding viable sites for relocating residents of single-family homes. The supply of homes on the market is calculated by dividing the active listings at the end of the month in question by the number of closed sales for that month.

3.2.3.1 Portland/Vancouver Area

According to the RMLS, in July of 2023 the Portland area (including Oregon suburbs but excluding communities in Washington) had a 2.5-month supply of homes for sale and a year-to-date median home sale price of \$532,000. In the same month, Clark County had a 1.7-month home supply and a year-to-date median home sale price of \$515,000. Year-to-date median home prices, but not the supply of homes, are also available for smaller geographic areas for 2021 up to and including the

month of August 2021. For the seven subareas relevant to the IBR Program, year-to-date median sale prices and approximate locations are summarized in Table 3-1.

Table 3-1. Year-to-Date Median Home Prices

Subarea	Year-to-date Median Sale Price	Northern Boundary	Western Boundary	Southern Boundary	Eastern Boundary
Downtown Vancouver	\$399,000	39th St	Vancouver Lake	Columbia River	I-5
Lincoln – SW Hazel Dell	\$489,250	78th St	Vancouver Lake	39th St	I-5
SW Heights	\$544,750	Mill Plain Blvd	I-5	Columbia River	Andresen Blvd
NW Heights	\$368,750	SR 500	I-5	Mill Plain Blvd	Andresen Blvd
E Hazel Dell/ Minnehaha	\$477,000	78th St	I-5	SR 500	Andresen Blvd
North Portland	\$523,875	Columbia River	Willamette River	Willamette River	Williams Ave
NE Portland ^a	\$552,500	Columbia River	Williams Ave	East Burnside	182nd Ave

Source: RMLS 2022

a The “NE Portland” subarea includes Hayden Island east of I-5 and the Bridgeton neighborhood on the south shore of North Portland Harbor and east of I-5.

Ave = avenue; Blvd = boulevard; St = street

Industry reports for the second quarter of 2023 showed that Vancouver, which includes the Vancouver portion of the study area, had a lower vacancy rate and lower costs per unit for multifamily residential units than both the North Portland and Northeast Portland areas (CoStar 2023). Vacancy and rental rates for all areas are listed in Table 3-2.

Table 3-2. Portland-Vancouver Area Multifamily Vacancy and Rental Rates

Subarea	Vacancy Rate	Monthly Rental Rate (per sq ft)	Monthly Rental Rate (per unit)	Northern Boundary	Western Boundary	Southern Boundary	Eastern Boundary
Vancouver	6.2%	\$1.81	\$1,664	City of Vancouver	City of Vancouver	City of Vancouver	City of Vancouver
North Portland	8.5%	\$2.00	\$1,461	Columbia River	Willamette River	I-84	Williams Avenue
Northeast Portland	6.9%	\$2.41	\$1,609	Columbia River	Willamette River	I-84	I-205

Subarea	Vacancy Rate	Monthly Rental Rate (per sq ft)	Monthly Rental Rate (per unit)	Northern Boundary	Western Boundary	Southern Boundary	Eastern Boundary
Portland – Vancouver Metropolitan Area	6.5%	\$1.95	\$1,642	Clark County	Washington County	Clackamas County	Multnomah County

Source: CoStar 2023

sq ft = square foot

Looking more closely at housing within the study area, RMLS research conducted in November 2022 showed 59 residential properties for sale, including 23 condominiums, 15 floating homes, 3 mobile/manufactured homes, and 18 single-family residences. Table 3-3 describes the composition and pricing for available homes.

Table 3-3. Currently Available Residential Properties within the Study Area

Property Type	One- and Two-Bedroom Units	Three- and Four-Bedroom Units	Average Cost per Bedroom	Median Listing Price
Condominiums	17	6	\$370,000	\$479,000
Floating Homes	9	6	\$201,000	\$389,000
Mobile/ Manufactured Homes	1	2	\$41,000	\$100,000
Detached Single-Family Homes and Townhouses	8	10	\$215,000	\$435,000

Source: RMLS 2022

For the same study area, RMLS data gathered in November 2022 shows 71 rental units available, including 61 apartments, 1 floating home, and 9 detached single-family homes. See Table 3-4.

Table 3-4. Currently Available Residential Rental Properties within the Study Area

Property Type	One- and Two-Bedroom Units	Three- and Four-Bedroom Units	Average Cost per Bedroom / Month	Median Rental Rate/Month
Apartments	57	4	\$1,400	\$2,000
Floating Homes	1	0	\$750	\$1,400
Detached Single-Family Homes	6	3	\$1,500	\$1,900

Source: RMLS 2022

Office space in the greater Portland–Vancouver area was more available (22.2% vacancy rate) than either retail (4.5 percent) or industrial (2.6 percent) space (CBRE 2023). In the second quarter of 2023, the North Portland subarea, which includes Hayden Island, experienced an estimated 9.7 percent retail building vacancy rate, while the Vancouver subarea experienced an estimated vacancy rate of 5.8 percent (CBRE 2023). Portland–Vancouver area vacancy rates were projected to decrease for retail and industrial space through 2025 and to increase for office space (SVN Bluestone & Hockley 2021b). The trend of increasing office space vacancies is likely due to more employees working from home rather than in traditional office settings. Additional office and retail spaces planned and currently under construction along the Vancouver waterfront could shift both vacancy and rental rates for the Vancouver subareas as they are completed.

Industry reports for the second quarter of 2021 (the most recent data available by subarea) were provided by SVN Bluestone & Hockley for office, retail, and industrial space for the five project subareas. Vacancy rates and rental costs are shown in Table 3-5.

Table 3-5. Office, Retail, and Industrial Vacancy Rates

Type of Space	Subarea	Vacancy Rate (Subarea Ranking)	Monthly Office Space Rental Rate per sq ft (Subarea Ranking)	Northern Boundary	Western Boundary	Southern Boundary	Eastern Boundary
Office	CBD/West Vancouver	7.6% (5)	\$25.03 (3)	NW Hazel Dell Way	NW Lower River Rd	Columbia River	I-5
	St. Johns/ Central Vancouver	1.5% (2)	\$24.60 (2)	NE 88th St	I-5	Columbia River	I-205
	Airport Way	6.8% (4)	\$29.23 (4)	Columbia River	I-5	NE Columbia Way	NE 122nd Ave
	Hayden Island / Swan Island	1.4% (1)	\$29.31 (5)	Columbia River	N Portland Rd	Willamette River	I-5
	Rivergate	4.7% (3)	\$23.37 (1)	Columbia River	Willamette River	Willamette River	N Portland Rd
	<i>Portland – Vancouver Metropolitan Area</i>	<i>11.5%</i>	<i>\$28.61</i>	<i>Clark County</i>	<i>Washington County</i>	<i>Clackamas County</i>	<i>Multnomah County</i>
Retail	CBD/West Vancouver	7.2% (4)	\$19.61 (2)	NW Hazel Dell Way	NW Lower River Rd	Columbia River	I-5
	St. Johns/ Central Vancouver	4.1% (2)	\$21.77 (3)	NE 88th St	I-5	Columbia River	I-205
	Airport Way	2.1% (1)	\$23.08 (5)	Columbia River	I-5	NE Columbia Way	NE 122nd Ave
	Hayden Island/Swan Island	7.7% (5)	\$22.53 (4)	Columbia River	N Portland Rd	Willamette River	I-5

Type of Space	Subarea	Vacancy Rate (Subarea Ranking)	Monthly Office Space Rental Rate per sq ft (Subarea Ranking)	Northern Boundary	Western Boundary	Southern Boundary	Eastern Boundary
	Rivergate	4.8% (3)	\$19.18 (1)	Columbia River	Willamette River	Willamette River	N Portland Rd
	<i>Portland – Vancouver Metropolitan Area</i>	4.3%	\$22.75	<i>Clark County</i>	<i>Washington County</i>	<i>Clackamas County</i>	<i>Multnomah County</i>
Industrial	CBD/West Vancouver	3.2% (1)	\$7.87 (2)	NW Hazel Dell Way	NW Lower River Rd	Columbia River	I-5
	St. Johns/ Central Vancouver	5.6% (2)	\$9.41 (4)	NE 88th St	I-5	Columbia River	I-205
	Airport Way	7.8% (3)	\$9.55 (5)	Columbia River	I-5	NE Columbia Way	NE 122nd Ave
	Hayden Island / Swan Island	9.2% (4)	\$8.68 (3)	Columbia River	N Portland Rd	Willamette River	I-5
	Rivergate	7.8% (3)	\$7.32 (1)	Columbia River	Willamette River	Willamette River	N Portland Rd
	<i>Portland – Vancouver Metropolitan Area</i>	4.1%	\$10.18	<i>Clark County</i>	<i>Washington County</i>	<i>Clackamas County</i>	<i>Multnomah County</i>

Source: SVN Bluestone & Hockley 2021a, 2021b, 2021d

Ave = avenue; CBD = central business district; N = north; NE = northeast; NW = northwest; Rd = road; St = street; sq ft = square foot

Office space vacancy varies across the five market subareas from a low of 1.4 percent in the Hayden Island/Swan Island subarea to a high of 7.6 percent in the Central Business District (CBD)/West Vancouver subarea. All five market subareas within the study area have vacancy rates below the Portland–Vancouver metropolitan area market average of 11.5 percent (SVN Bluestone & Hockley 2021b). Rental rates for office space across the five market subareas vary from a low of \$23.37/sq ft in the Rivergate subarea to a high of \$29.23/sq ft in the Airport Way subarea. The average rental rate for the Portland–Vancouver metropolitan area is \$28.61/sq ft, which is higher than the two market subareas within Vancouver and the Rivergate subarea in Portland but lower than the rental rates for both Hayden Island/Swan Island and Airport Way in Oregon.

The average retail space vacancy rate for the Portland–Vancouver metropolitan area is 4.3 percent, which is higher than two of the project subareas, St. Johns/Central Vancouver (4.1 percent) and Airport Way (2.1 percent), but lower than the remaining three subareas. The Hayden Island subarea has the highest retail space vacancy rate of the project subareas at 7.7 percent, and it also has the second highest rental costs at \$22.53/sq ft, behind only the Airport Way subarea with an average cost of \$23.08/sq ft. The Portland–Vancouver metropolitan area average retail rental cost of \$22.75/sq ft is higher than all the project subareas except for the Airport Way subarea. Additional retail space planned and under construction along the Vancouver waterfront may shift both the vacancy rate and average rent for the CBD/West Vancouver subarea as these spaces become available.

The CBD/West Vancouver subarea has the lowest vacancy for industrial space at 3.2 percent, which is lower than the Portland–Vancouver metropolitan area average of 5.1 percent. All other subareas have vacancy rates higher than the Portland–Vancouver metropolitan area average, with Hayden Island/Swan Island having almost double the metropolitan area vacancy rate at 9.2 percent. Average rents for industrial space within the five subareas are all lower than the Portland–Vancouver metropolitan area average of \$10.18/sq ft. The Rivergate subarea has the lowest average rent for industrial space at \$7.32/sq ft, and the Airport Way subarea has the highest average rent at \$9.55/sq ft.

Industry research data show Portland–Vancouver metropolitan area vacancy rates through 2025 decreasing for retail and industrial space but increasing for office space. The trend in increasing office space vacancies is likely due to more employees working from home rather than in traditional office settings (SVN Bluestone & Hockley 2021b). Additional office and retail spaces planned and currently under construction along the Vancouver waterfront could shift both vacancy and rental rates for the Vancouver subareas as these projects are completed.

3.2.3.2 Floating Homes in North Portland Harbor, Oregon

The Modified LPA would require the displacement of floating homes in North Portland Harbor (see Chapter 4). Information regarding floating home availability in North Portland Harbor is not provided in the reports that informed the above discussion, though some information can be gleaned from the RMLS. A search of the active listings in August 2023 showed that there were approximately 78 housing units listed for sale in the study area. Of that number, there were 34 floating homes, 28 condominiums, 6 mobile homes, and 10 conventional homes. This does not include private listings.

Looking more closely at North Portland Harbor, from November 2021 to November 2022, 16 floating homes were sold in North Portland Harbor with a median sale price of \$283,000 and an average homeowners association/moorage cost of \$540 per month (RMLS 2022). By comparison, 23 traditional

single-family homes were sold along Marine Drive and on Hayden Island for the same 1-year period with a median sale price of \$505,000 (RMLS 2022). A search of active listings in November 2022 showed 15 floating homes for sale in North Portland Harbor, with a median sale price of \$389,000 and an average homeowners association/moorage cost of \$590 per month (RMLS 2022).

3.2.3.3 Gresham, Oregon

The TriMet Ruby Junction Maintenance Facility in Gresham, Oregon, would be expanded to accommodate the additional light rail vehicles required by the Modified LPA. This expansion would result in the displacement of some retail/services and industrial uses. As this area is relatively removed from the study area, an additional analysis of vacancy rates in this area is appropriate.

In the second quarter of 2023, industry reports showed a 6.5 percent multifamily residential vacancy rate for rentals in the Portland–Vancouver metropolitan area, with a rental rate averaging \$1.95/sq ft per month. Multifamily residential vacancy rates and rental rate averages are also available for the Gresham/Troutdale subarea, within which the Ruby Junction Maintenance Facility is located. One additional subarea, East Portland, is within one-half mile of the maintenance facility. The average multifamily vacancy rates and rental rates for each subarea, as well as boundary information for each subarea, are included in Table 3-6. As shown, multifamily units near Ruby Junction tend to have slightly lower rents per square foot than are found in the metropolitan area as a whole.

Table 3-6. Gresham, Oregon Multifamily Vacancy and Rental Rates

Subarea	Average Vacancy Rate	Average Rental Rate (per sq ft)	Monthly Rental Rate (per unit)	Approx. Northern Boundary	Approx. Western Boundary	Approx. Southern Boundary	Approx. Eastern Boundary
Gresham / Troutdale	5.6%	\$1.67	\$1,486	Columbia River	202nd Avenue	Clackamas County	Sandy River
East Portland	3.8%	\$1.49	\$1,239	Columbia River	I-205	Clackamas County	202nd Avenue
Portland – Vancouver Metropolitan Area	6.5%	\$1.95	\$1,642	Clark County	Washington County	Clackamas County	Multnomah County

Approx. = approximate; sq ft = square foot

In the second quarter of 2021, the office vacancy rate in the Gresham subarea was 6.9 percent, with an average rent of \$22.52/sq ft. The Gresham subarea is bounded by SE Stark Street on the north, SE Troutdale Road and SE 282nd Avenue on the east, SE Rugg Road on the south, and SE 182nd Avenue and SE 190th Drive on the south.

The retail vacancy rate in the Portland–Vancouver area was 4 percent in the second quarter of 2021. During this same period, vacancies were greater in the Gresham subarea, where the Ruby Junction Maintenance Facility is located, at 5 percent. The average retail rent for the Portland–Vancouver area

was also higher at \$28.39/sq ft, compared with the Gresham subarea at \$22.52 in the second quarter 2021.

The industrial vacancy rate was 5.1 percent in the Portland–Vancouver area in the second quarter of 2021, with an average rent of \$10.18/sq ft per month. Industrial vacancy rates and estimated asking rents are also available for the Gresham subarea, within which the Ruby Junction Maintenance Facility is located. In the second quarter of 2021, the industrial vacancy rate was 4.1 percent, with an average rent of \$10.97/sq ft.

4. LONG-TERM EFFECTS

4.1 Introduction

The following sections describe the permanent property acquisitions and displacements that would be required for the Modified LPA. New facilities include the adjusted and widened highway alignment, new or widened local streets, a new light rail alignment across Hayden Island and into downtown Vancouver, transit stations and park and rides, and new bicycle and pedestrian accesses and pathways. Property impacts are summarized by geography: Oregon Mainland, Hayden Island, Ruby Junction Maintenance Facility Expansion Area, Downtown Vancouver, and Upper Vancouver. The total area of property impacts shown for each geography does not differentiate between impacts caused by the various components of the project. A description of how the highway, transit, and bicycle and pedestrian components impact property can be found in the narrative below each table.

In addition to the land required to accommodate proposed new or improved transportation facilities, acquisition of land, or space underground (subsurface),¹⁰ or in the air (airspace),¹¹ could be required for the long-term maintenance of these facilities. These impacts could be a fee acquisition, where the agency obtains complete ownership of the property, or a permanent easement, where the agency would obtain some rights to the land, air, or subsurface, but would not assume full ownership. Both full and partial acquisitions could result in the displacement of residences, businesses, or public facilities from the parcel. Acquisition of property would typically occur through negotiated purchase or eminent domain.¹²

Construction and long-term operation and maintenance of the Modified LPA, including all design options, would permanently acquire approximately 47 acres of property including approximately 4.3 acres in permanent easements, which are required for the potential installation of tie-back anchors associated with retaining walls. Under the Modified LPA with all design options, except the I-5 westward shift, a total of 178 parcels would be permanently impacted with 46 full acquisitions and 132 partial acquisitions. The I-5 westward shift would result in one fewer total acquisition. A list of all anticipated property acquisitions, including the parcel identification number, address, and primary use of each property, can be found in Appendix A of this report. Mitigation for permanent impacts is discussed in Section 7.27.3.

4.2 No-Build Alternative

Under the No-Build Alternative, the existing interstate, local roads, and associated infrastructure would remain as they are today. With no new infrastructure, there would be no temporary or permanent impacts to properties.

¹⁰ Subsurface easement requirements are draft and will be updated prior to construction.

¹¹ Airspace easements have not been determined but will be updated prior to construction.

¹² In Washington, eminent domain is defined as the right of a government to acquire private property for public purpose following payment of just compensation to the property owner. In Oregon, "an authority may acquire, by the exercise of the power of eminent domain, any real property which it deems necessary for its purposes after adoption by it of a resolution declaring that the acquisition of the real property described therein is necessary for such purposes." Just compensation is required in both states.

4.3 Permanent Property Acquisitions and Easements

4.3.1 Oregon Mainland

Impacts summarized in this section include those between the southern terminus of the project at Victory Boulevard and the south shore of North Portland Harbor. Permanent acquisition of property would be required in this area to accommodate the reconstruction of the Marine Drive interchange and the extension of light rail from its current terminus at the Portland Expo Center over North Portland Harbor. Approximately 12.3 acres of property would need to be permanently acquired in this area; this would impact a total of 22 different parcels. These permanent property impacts are summarized in Table 4-1 and are displayed in Figure B-1 in Appendix B of this report.

Table 4-1. Summary of Permanent Property Acquisitions and Displacements on the Oregon Mainland

Impact Type	Impact	Modified LPA Totals ^{a,b}
Parcel Impacts (count)	Full parcel acquisitions	2
	Partial parcel acquisitions	20
	Total parcels impacted	22
Displacement of Use (count)	Residential dwelling units: Single-family	4
	Residential dwelling units: Multifamily	0
	Commercial businesses: Retail/services	5
	Commercial businesses: Office/professional/healthcare	1
	Commercial businesses: Lodging	0
	Commercial businesses: Other ^c	1
	Public use sites: Public service with employees	0
	Public use sites: Religious/community center	0
	Public use sites: Park/historic site/museum	0
	Public use sites: School	0
Permanent Acquisition (acres)	Area acquired in fee	12.2 acres
Permanent Easements (acres)	Subsurface easements ^d	0.1 acres
	Property easements ^e	0 acres
Area required (acres)	Total Area Acquired	12.3 acres

a Does not double- or triple-count parcel impacts, displacements, or total acreage, when more than one mode (highway, transit, or bicycle and pedestrian) would result in the same or overlapping acquisition.

b Does not include ODOT-owned property or right of way or City-owned right of way.

c Includes a billboard at the Marine Drive interchange.

d Subsurface easement requirements are draft and will be updated prior to construction.

e Airspace easements have not been determined but will be updated prior to construction.

Most of the permanent property impacts in this portion of the study area would be due to local road improvements—specifically, the realignment of Marine Drive and the addition of local street connections near the Marine Drive interchange. These roadway improvements would impact parcels on both sides of the interchange. The realignment of I-5 at the Marine Drive interchange and over North Portland Harbor would result in the displacement of six businesses along the harbor. This includes four marine businesses, two east of I-5 and two west of I-5. Two additional businesses east of I-5—one office and one retail—would be displaced to accommodate the northbound I-5 on-ramp and arterial bridge. In addition, a billboard at the Marine Drive interchange would be displaced. Farther south, the revised northbound off-ramp to NE Martin Luther King Jr. Boulevard would extend into the west edge of Delta Park but would not impact any of the existing ball fields or parking lots.

Road improvements, including new pedestrian and bike facilities, along NE Martin Luther King Jr. Boulevard, would require partial acquisition of seven light-industrial properties; these acquisitions would not impact buildings or displace businesses. Similar road improvements to Marine Drive west of the freeway would require partial acquisition of six properties including a hotel, two condo properties, a gas station, and two light-industrial uses, but the improvements would not displace the existing uses. South of Marine Drive and west of I-5, road and sidewalk improvements along N Expo Road would require the partial acquisition of a public parcel currently used for auto racing. Impacts to this parcel would not affect buildings, parking, or the current use of the property.

The transit alignment over North Portland Harbor would displace three floating homes associated with a parcel adjacent to and west of I-5. The remaining portion of this parcel, not impacted by transit, would be permanently acquired for the highway alignment, which would displace a single-family home on land. A total of four households would be displaced in this portion of the study area. Figure B-2 in Appendix B shows the parcels where these displacements would occur.

Most of the bicycle and pedestrian facilities in this area would be associated with the transit alignment and the local roadway improvements, both of which would require permanent property impacts. The project would allow for a connection to the Bridgeton Trail east of the Marine Drive interchange.

An ODOT-owned parcel along North Portland Harbor currently leased by a marine business would need to be used for local street connections and the transit alignment. The marine business would no longer have access to the parcel for the storage and staging that the parcel is currently used for.

Permanent easements would need to be obtained from DSL for any permanent structures in North Portland Harbor.

4.3.2 Hayden Island

Impacts summarized in this section include those on Hayden Island and associated portions of North Portland Harbor. The permanent acquisition of property would be required in this area to accommodate the reconstruction of the Hayden Island interchange and the extension of light rail over Hayden Island. Approximately 19.88 acres of property would need to be permanently acquired in this area, impacting a total of 39 different parcels. There would be no subsurface impacts within the Hayden Island portion of the project.

These permanent property impacts are summarized in Table 4-2 and are displayed on Figure B-2 in Appendix B of this report.

Table 4-2. Summary of Permanent Property Acquisitions and Displacements on Hayden Island

Impact Type	Impact	Modified LPA Totals ^{a,b}
Parcel Impacts (count)	Full Parcel Acquisitions	19
	Partial Parcel Acquisitions	20
	Total Parcels Impacted	39
Displacement of Use (count)	Residential dwelling units: Single-family	32
	Residential dwelling units: Multifamily	0
	Commercial businesses: Retail/Services	15
	Commercial businesses: Office/Professional/Healthcare	0
	Commercial businesses: Lodging	0
	Commercial businesses: Other ^c	1
	Public use sites: Public Service with Employees	0
	Public use sites: Religious/Community Center	0
	Public use sites: Park/Historic Site/Museum	0
	Public use sites: School	0
Permanent Acquisition (acres)	Area Acquired in Fee	19.88 acres
Permanent Easements(acres)	Subsurface Easements ^d	0 acres
	Property Easements ^e	0 acres
Area required (acres)	Total Area Acquired	19.88 acres

- a Does not double- or triple-count parcel impacts, displacements, or total acreage, when more than one mode (highway, transit, or bicycle and pedestrian) result in the same or overlapping acquisition.
- b Does not include ODOT-owned property or right of way or City-owned right of way.
- c Includes one cellular phone tower.
- d Subsurface easement requirements are draft and will be updated prior to construction.
- e Airspace easements have not been determined but will be updated prior to construction.

Property impacts on Hayden Island would be due in large part to the realignment of I-5 over the island, as well as the reconstruction of N Jantzen and N Hayden Island Avenues and extension of N Tomahawk Island Drive.

Local roadway improvements on N Jantzen Drive and N Tomahawk Island Drive east of the existing I-5 roadway would result in the displacement of the one restaurant along N Jantzen Drive and the acquisition of several privately owned rights-of-way.

West of the existing I-5 roadway, the light rail alignment and station, in combination with the highway realignment and local road improvements, would displace 14 retail/service-related businesses south of Tomahawk Drive. The affected businesses include several restaurants, a mattress store, a cell phone retail outlet, and a marijuana dispensary. One business within the Jantzen Beach Center would be impacted.

Several public uses, including the ODOT storage facility beneath the existing Interstate Bridge north landing, and the City of Portland Water Bureau facility on N Jantzen Drive, would also be impacted. The ODOT facility would be impacted by the realignment of I-5, while the City of Portland Water Bureau facility would be displaced by the realignment of N Jantzen Drive.

Nineteen of the 32 residential displacements on Hayden Island would be floating homes located in one row of the moorage in North Portland Harbor east of I-5. The westernmost ramp access to the moorage would also be eliminated, though no floating homes would remain in this moorage following construction. The remaining 13 residential displacements on Hayden Island would also be floating homes, which are located on the two easternmost rows in the moorage located in North Portland Harbor west of I-5. A cell phone tower located west of I-5 off N Jantzen Way would also be displaced.

Figure B-2 in Appendix B shows those parcels where the displacements discussed above would occur.

Permanent easements would need to be obtained from DSL for any permanent structures in North Portland Harbor or the Columbia River.

4.3.3 Ruby Junction Maintenance Facility Expansion Area

This section summarizes the impacts of the Modified LPA to the TriMet Ruby Junction Maintenance Facility in Gresham, Oregon. Permanent acquisition of property would be required to expand the existing maintenance facility to accommodate the additional light rail vehicles needed for the Modified LPA. Approximately 5 acres of property would need to be permanently acquired in this area; this would impact a total of seven different parcels.

These permanent property impacts are summarized in Table 4-3 and are displayed on Figure B-3 in Appendix B of this report.

Table 4-3. Summary of Permanent Property Acquisitions and Displacements at the Ruby Junction Maintenance Facility Expansion Area in Gresham, Oregon

Impact Type	Impact	Modified LPA Totals ^{a,b}
Parcel Impacts (count)	Full Parcel Acquisitions	4
	Partial Parcel Acquisitions	3
	Total Parcels Impacted	7
Displacement of Use (count)	Residential dwelling units: Single-family ^c	0
	Residential dwelling units: Multifamily	0
	Commercial businesses: Retail/Services	3
	Commercial businesses: Office/Professional/Healthcare	0
	Commercial businesses: Lodging	0
	Commercial businesses: Other	0
	Public use sites: Public Service with Employees	0
	Public use sites: Religious/Community Center	0
	Public use sites: Park/Historic Site/Museum	0
	Public use sites: School	0
Permanent Acquisition (acres)	Area Acquired in Fee	5 acres
Permanent Easements (acres)	Subsurface Easements ^c	0 acres
	Property Easements ^d	0 acres
Area required (acres)	Total Area Acquired	5 acres

- a Does not double- or triple-count parcel impacts, displacements, or total acreage, when more than one mode (highway, transit, or bicycle and pedestrian) result in the same or overlapping acquisition.
- b Does not include ODOT-owned property or right of way or City-owned right of way.
- c Subsurface easement requirements are draft and will be updated prior to construction.
- d Airspace easements have not been determined but will be updated prior to construction.

Surveys conducted of the impact area indicated that three light-industrial businesses would be displaced as a result of the expansion. An additional three commercial parcels would be partially acquired but would not result in any building impacts or business displacements.

Figure B-3 in Appendix B shows the parcels where the displacements discussed above would occur.

4.3.4 Downtown Vancouver

Impacts summarized in this section include those from the Columbia River north to 17th Street excluding impacts on 17th Street. Permanent acquisition of property would be required in this area to accommodate the reconstruction of the SR 14 and Mill Plain interchanges, the realignment of I-5 between those two interchanges, the construction of the Waterfront and Evergreen Park-and-Ride facilities, and the extension of light rail to Evergreen Station. Impacts in this subarea would differ between the Modified LPA and the design options, as described below.

4.3.4.1 Modified LPA

For the Modified LPA, 45 different parcels would be impacted in the Downtown Vancouver Subarea, requiring the permanent acquisition of approximately 6.7 acres of property including 4.5 acres acquired in fee, 1.2 acres of subsurface easements, and less than an acre of airspace easements. These permanent property impacts are summarized in Table 4-4, Table 4-5, and Table 4-6 and are displayed on Figures B-4, B-5, and B-6 in Appendix B of this report.

4.3.4.2 Design Options

Impacts for the SR 14 interchange without C Street ramps design option would be the same as for the Modified LPA. Impacts for the other design options under consideration for the Downtown Vancouver Subarea are discussed below. See Table 4-4 for additional information on potential acquisitions.

TWO AUXILIARY LANES

The Modified LPA with two auxiliary lanes would require an additional 0.1 acres of permanent acquisition from the Fort Vancouver property on the east side of I-5 beyond what would be needed for the options with one auxiliary lane. The total permanent acquisition and easement area would be 10.7 acres. If coupled with the I-5 westward shift and a single-level fixed-span or movable-span configuration (regardless of bridge type), the two auxiliary lane configuration could require up to 11.1 acres of permanent acquisitions and easements, which would be the highest-impact combination of design options. The inclusion of the park-and-ride options would result in up to 1.5 additional acres of permanent acquisitions and easements for the Waterfront Park-and-Ride facility (Site 3) and up to 3.16 additional acres of permanent acquisitions and easements for the Evergreen Park-and-Ride facility (Site 1).

I-5 MAINLINE WESTWARD SHIFT

This design option would shift the alignment of I-5 through downtown Vancouver west by approximately 40 feet. The option would impact the same 45 properties the Modified LPA and the SR 14 Interchange without C Street Ramps design option but would require additional displacements and result in more property being permanently acquired. Shifting the interstate west would result in the full displacement of a multifamily property with 33 residential units on the northeast corner of E 7th Street and C Street. The property directly north of the apartment complex, which includes three commercial businesses, would also be fully acquired and the three businesses would be displaced. Total permanent acquisitions and easements would be 10.9 acres.

SINGLE-LEVEL BRIDGE CONFIGURATION WITH FIXED OR MOVABLE SPANS

The Modified LPA with a single-level fixed-span or a single-level movable-span configuration, regardless of bridge type, would require partial acquisition of 0.2 acres from properties at the bridge approaches that would not be acquired with a double-deck bridge configuration. Total permanent acquisitions and easements for this option would be 10.9 acres.

PARK AND RIDES

Three site options have been identified for a new park-and-ride facility near the proposed Waterfront Station. Two sites are located west of I-5, and a third site is located directly beneath the freeway. Site 1 would occupy the blocks between Columbia Street and Washington Street from W 4th Street to south of W 3rd Street and would result in no additional property impacts beyond those previously described. Site 1 would not require any acquisitions or displacements. Site 2 would be built underneath I-5, east of Washington Street, and would require full acquisition of one parcel currently used for public parking and owned by the State of Washington. Site 3 is west of Columbia Street at the intersection with W 4th Street and would result in four full acquisitions and the displacement of one business. Property impacts associated with the Waterfront Park-and-Ride facility are shown in Table 4-5 and are independent of any impacts listed in Table 4-4 or described in Section 4.3.4.1.

Two alternative park-and-ride locations are proposed for the Evergreen Station. Site 1 is located west of I-5 between the Vancouver Community Library and a cinema complex; developing the park and ride at this site would require full acquisition of five properties adjacent to the Vancouver Community Library, but no displacements. Three of these parcels are used for library parking, and two others are currently vacant. No impacts to the library and no business or residential displacements are anticipated. Site 2 is bounded by Broadway Street, C Street, E 8th Street, and E 7th Street. This location would use an existing parking structure on the site through a lease; the site would not be acquired by the IBR Program. Specifics of the design and agreements regarding the proposed park-and-ride facilities have not been determined. Depending on the design and agreements, the Program would be required to compensate current property owners, and potentially neighboring property owners, for impacts to their current parking or property use. Several types of properties or businesses may be difficult to relocate based on location and/or property types. These include small restaurants and taverns on Hayden Island, which rely on local patronage and may be difficult to reestablish elsewhere, as well as marine-oriented businesses adjacent to North Portland Harbor that require a waterfront location. Floating homes may also be difficult to relocate due to limited nearby moorage opportunities. Property impacts associated with the Evergreen park-and-ride facility are shown in Table 4-6 and are independent of any impacts listed in Table 4-4 or described in Section 4.3.4.1.

Acquisitions Technical Report

Table 4-4. Summary of Permanent Property Acquisitions and Displacements in Vancouver (including Upper Vancouver and Downtown Vancouver)

Property Acquisitions and Displacements	Type	Modified LPA with Double-Deck Fixed-Span Configuration, One Auxiliary Lane, C Street Ramps, and Centered I-5 ^{a,b}	Modified LPA with Double-Deck Fixed-Span Configuration, One Auxiliary Lane, Centered I-5, without C Street Ramps	Modified LPA with Double-Deck Fixed-Span Configuration, One Auxiliary Lane, C Street Ramps, I-5 Mainline Westward Shift ^{a,b}	Modified LPA with Double-Deck Fixed-Span Configuration, Two Auxiliary Lanes, C Street Ramps, Centered I-5 ^c	Modified LPA with Single-Level ^d Fixed-Span or Movable-Span Configurations, One Auxiliary Lane, C Street Ramps, Centered I-5 ^e
Parcels (count)	Full Acquisitions	21	21	23	21	21
	Partial Acquisitions ^f	89	89	86	89	89
	Total	110	110	109	110	110
Displacement: Residential (number of dwelling units)	Single-family	7	7	7	7	7
	Multifamily	0	0	33	0	0
Displacement: Commercial (number of businesses)	Retail/Services	0	0	3	0	0
	Office/Professional/Healthcare	10	10	10	10	10
	Lodging	0	0	0	0	0
	Other	0	0	0	0	0
Displacement: Public Use (number of sites)	Public Service with Employees	1	1	1	1	1
	Religious/Community Center	0	0	0	0	0
	Park/Historic Site/Museum	0	0	0	0	0

Acquisitions Technical Report

Property Acquisitions and Displacements	Type	Modified LPA with Double-Deck Fixed-Span Configuration, One Auxiliary Lane, C Street Ramps, and Centered I-5 ^{a,b}	Modified LPA with Double-Deck Fixed-Span Configuration, One Auxiliary Lane, Centered I-5, without C Street Ramps	Modified LPA with Double-Deck Fixed-Span Configuration, One Auxiliary Lane, C Street Ramps, I-5 Mainline Westward Shift ^{a,b}	Modified LPA with Double-Deck Fixed-Span Configuration, Two Auxiliary Lanes, C Street Ramps, Centered I-5 ^c	Modified LPA with Single-Level ^d Fixed-Span or Movable-Span Configurations, One Auxiliary Lane, C Street Ramps, Centered I-5 ^e
	School	0	0	0	0	0
Permanent Acquisitions	Area Acquired	5.4 acres	5.4 acres	6.3 acres	5.5 acres	5.7 acres
Permanent Easements	Airspace Easements ^g	Less than 1 acre	Less than 1 acre	Less than 1 acre	Less than 1 acre	Less than 1 acre
	Subsurface Easements ^h	4.2 acres	4.2 acres	3.6 acres	4.2 acres	4.2 acres
	Property Easements	0 acres	0 acres	0 acres	0 acres	0 acres
Total of Permanent Acquisitions and Easements ⁱ	Total Area Acquired	10.6 acres	10.6 acres	10.9 acres	10.7 acres	10.9 acres

- a Parcel impacts, displacements, or total acreage, are only counted once when more than one mode (highway, transit, or bicycle and pedestrian) result in the same or overlapping acquisition.
- b Does not include WSDOT-owned property or right of way or City-owned right of way.
- c If coupled with the I-5 westward shift and a single-level fixed-span or movable-span configuration, the two auxiliary lane option could require up to 11.1 acres of permanent acquisitions and easements.
- d A single-level fixed-span or movable-span configuration would require partial acquisition of 0.2 acres from properties at the bridge approaches that would not be acquired with a double-deck bridge configuration.
- e Reflects impacts for both the single-level fixed-span and movable-span configurations, regardless of bridge type.
- f Properties requiring subsurface easements are included in the count of partial acquisitions.
- g Airspace easements have been rounded up to 1 acre.
- h Subsurface easement requirements are preliminary and will be updated prior to construction.
- i The inclusion of the park-and-ride options would result in up to 1.5 additional acres of permanent acquisitions and easements for the Waterfront Park and Ride facility (Site 3) and up to 3.16 additional acres of permanent acquisitions and easements for the Evergreen Park and Ride facility (Site 1).LPA = locally preferred alternative

Table 4-5. Summary of Permanent Property Acquisitions and Displacements for Waterfront Park and Ride Facility in Downtown Vancouver

Impact Type	Impact	Site 1 ^{a,b,c}	Site 2 ^{a,b}	Site 3 ^{a,b}
Parcel Impacts (count)	Full Parcel Acquisitions	0	1	4
	Partial Parcel Acquisitions	0	0	0
	Total Parcels Impacted	0	1	4
Displacement of Use (count)	Residential dwelling units: Single-family	0	0	0
	Residential dwelling units: Multifamily	0	0	0
	Commercial businesses: Retail/Services	0	0	0
	Commercial businesses: Office/Professional/Healthcare	0	0	1
	Commercial businesses: Lodging	0	0	0
	Commercial businesses: Other	0	0	0
	Public use sites: Public Service with Employees	0	0	0
	Public use sites: Religious/Community Center	0	0	0
	Public use sites: Park/Historic Site/Museum	0	0	0
	Public use sites: School	0	0	0
Permanent Acquisition (acres)	Area Acquired in Fee	0 acres	0.1 acres	1.5 acres
Permanent Easements (acres)	Airspace Easements ^d	0	0	0
	Subsurface Easements ^e	0 acres	0 acres	0 acres
	Property Easements	0 acres	0 acres	0 acres
Area required (acres)	Total Area Acquired	0 acres	0.1 acres	1.5 acres

- a Does not double- or triple-count parcel impacts, displacements, or total acreage, when more than one mode (highway, transit, or bicycle and pedestrian) result in the same or overlapping acquisition.
- b Does not include WSDOT-owned property or right of way or City-owned right of way.
- c Properties associated with Site 1 would be impacted by roadway and pedestrian improvements regardless of whether the site is developed.
- d Airspace easements have not been determined but will be updated prior to construction.
- e Subsurface easement requirements are draft and will be updated prior to construction.

Table 4-6. Summary of Permanent Property Acquisitions and Displacements for the Evergreen Park-and-Ride Facility in Downtown Vancouver

Impact Type	Impact	Site 1 ^{a,b,c}	Site 2 ^{a,b,d}
Parcel Impacts (count)	Full Parcel Acquisitions	5	0
	Partial Parcel Acquisitions	0	0
	Total Parcels Impacted	5	0
Displacement of Use (count)	Residential dwelling units: Single-family	0	0
	Residential dwelling units: Multifamily	0	0
	Commercial businesses: Retail/Services	0	0
	Commercial businesses: Office/Professional/Healthcare	0	0
	Commercial businesses: Lodging	0	0
	Commercial businesses: Other	0	0
	Public use sites: Public Service with Employees	0	0
	Public use sites: Religious/Community Center	0	0
	Public use sites: Park/Historic Site/Museum	0	0
	Public use sites: School	0	0
Permanent Acquisition (acres)	Area Acquired in Fee	3.16 acres	0 acres
Permanent Easements (acres)	Airspace Easements ^e	0	0
	Subsurface Easements ^f	0 acres	0 acres
	Property Easements	0 acres	0 acres
Area required (acres)	Total Area Acquired	3.16 acres	0 acres

- a Does not double- or triple-count parcel impacts, displacements, or total acreage, when more than one mode (highway, transit, or bicycle and pedestrian) result in the same or overlapping acquisition.
- b Does not include WSDOT-owned property or right of way or City-owned right of way.
- c Properties associated with Site 1 would be developed as joint venture.
- d The existing parking structure would be utilized via lease with the existing owner.
- e Airspace easements have not been determined but will be updated prior to construction.
- f Subsurface easement requirements are draft and will be updated prior to construction.

4.3.4.3 Impacts from Roadway, Transit, and Bicycle/Pedestrian Improvements Common To All Alternatives

Property impacts in downtown Vancouver, as described in Table 4-4, would be due in large part to realignments and improvements to local roads and the addition of transit infrastructure through the eastern portion of downtown. These impacts would be the same for the Modified LPA and the design options.

West of the existing I-5 alignment, the realignment of W 3rd Street would result in the full acquisition of five parcels along Columbia Street between W 3rd Street and W 4th Street. Acquisition of these properties would displace one business on the northeast corner of Columbia Street and W 3rd Street, as well as the six businesses in the office building on the southeast corner of Columbia Street and W 4th Street. Another two properties currently under construction along Columbia Street between W 4th Street and W 5th Street would be partially impacted to construct new sidewalks and realign Washington Street. East of the existing I-5 alignment, improvements to SE Columbia Way would partially impact two BNSF right-of-way parcels south of the existing rail line. A right-of-way parcel owned by the City of Vancouver would be impacted as well.

The bicycle and pedestrian facility located in the northbound (east) bridge would exit the structure at this location and spiral down to SE Columbia Way, thus displacing the Clark Public Utilities Energy Conservation Office located in the southeast quadrant of the I-5/SR 14 interchange. New stormwater facilities adjacent to the bike and pedestrian facilities would partially impact four parcels between SE Columbia Way and the river, but would not result in any displacements.

As light rail moves out from beneath the replacement bridge to the new Waterfront Station on Washington Street at W 3rd Street, it would require the acquisition of permanent airspace rights over the BNSF railway berm that parallels the river and permanent acquisition of an office building. Acquisition of the office building on the southeast corner of Columbia Street and W 3rd Street would displace an office business which leases three floors of the office building. The remaining two floors of this building are for lease.

Property impacts related to the new bridge landing and adjustments to I-5 would result in 18 partial acquisitions but no residential or business displacements. The reconstruction of the SR 14 interchange would require small permanent property acquisitions at the Old Apple Tree Park and VNHR near the Land Bridge crossing. The former hotel site at the junction of W Columbia Way and Columbia Street, now demolished, along with two surface parking lots would be partially acquired to accommodate the realigned bridge abutment. Between E 6th Street and E Evergreen Boulevard, 10 properties would be partially acquired to accommodate I-5 and sidewalk improvements to E Evergreen Boulevard. These include small portions of VNHR along Anderson Street and the Vancouver Police Department property east of the freeway, as well as an apartment building, a cinema complex, and several parking and vacant lots near the Vancouver Community Library west of the freeway. No business or residential displacements would occur as a result. North of E Evergreen Boulevard and west of the freeway, a small portion of the parking lot associated with an office complex and two additional properties would be impacted. Two parcels that comprise Marshall Park would also be partially impacted to accommodate the northbound flyover ramp connecting E Mill

Plain Boulevard and E Fourth Plain Boulevard, but the ramp would not affect the existing community center or the parking lot.

In addition to the property impacts described below, waterway leases would need to be obtained from DNR for permanent structures in the Columbia River.

4.3.5 Upper Vancouver

Impacts summarized in this section include those occurring from 17th Street and McLoughlin Boulevard to the northern terminus of the project. This area is defined for the purposes of this report as Upper Vancouver. The permanent acquisition of property would be required in this area to accommodate the reconstruction of the Fourth Plain and SR 500 interchanges and the realignment of I-5 between these two interchanges. Approximately 0.9 acres of property would need to be acquired in fee in this area, and an additional 3 acres of permanent subsurface easements would be required. A total of 65 different parcels would be impacted.

These permanent property impacts are summarized in Table 4-4 and are displayed on Figure B-7 in Appendix B of this report.

Permanent property impacts in Upper Vancouver would be due in large part to additional retaining walls adjacent to I-5, improvements to the SR 500 and Fourth Plain Boulevard interchanges, and improvements to the E 29th Street and E 33rd Street overpasses.

Freeway interchange improvements, including retaining walls, would require partial acquisition of 17 residential properties along the east and west sides of the freeway between the Fourth Plain Boulevard interchange and E 29th Street. No buildings would be acquired, and no displacement would occur to these properties. Four additional residential properties would be partially acquired, but not displaced, along the north sides of E 29th Street both east and west of the freeway to accommodate additional bike and pedestrian improvements.

Between E 29th Street and E 33rd Street, 23 residential parcels along both sides of the freeway would be partially acquired to accommodate retaining walls. These impacts would not impact any buildings or displace any residents.

Continuing north from E 33rd Street to E 39th Street, eight residential properties west of the freeway would be partially acquired, but not displaced, to accommodate the ramp connecting Fourth Plain Boulevard with SR 500. The same ramp configuration would require full acquisition and displacement of seven single-family properties between E 35th Street and E 37th Street west of the freeway.

Four additional residential properties, two single-family and two multifamily, would be partially acquired between E 39th Street and E 40th Street due to retaining walls on the west side of the freeway, but no buildings would be acquired. The northernmost impact of the project would be a partial acquisition from the southwest corner of the Discovery Middle School property. This impact would not affect the building but could impact the corner of the school's parking lot.

5. TEMPORARY EFFECTS

5.1 Introduction

The following sections describe the temporary acquisitions required to construct the highway, transit, and bicycle and pedestrian features of the Modified LPA. These temporary acquisitions could be obtained via easement or lease where the IBR Program would obtain certain rights, such as the right to access or store materials on the property, but not ownership of the property. There are three types of temporary acquisitions that would likely be required: construction easements, staging areas, and, potentially, casting yards. Mitigation for these temporary impacts is discussed in Section 7.3.

Construction easements include areas directly along the highway, transit, and bicycle and pedestrian improvements that could be temporarily acquired from adjacent properties for construction access and limited storage. These construction easements could be on land, underground (subsurface), or in the air (airspace), depending on construction needs, and are typically determined by establishing a standard buffer of 5 to 15 feet along all improvements.

Staging areas include areas outside of the state or city right of way that could be temporarily acquired to store materials or equipment, stockpile soil, or provide employee parking or temporary construction offices, among other things. The project would likely require at least one staging area greater than 15 acres in size which could require property adjacent to or separate from the improvements. It is likely that there would also be smaller staging areas within the interstate right of way, specifically at the SR 14 and Mill Plain interchanges, that are not currently included in the acquisition requirements and could be handled by the contractor. Two sites have been identified as possible major staging areas, including a former I-5 WSDOT rest area (5 acres) and the vacant Thunderbird Hotel site on Hayden Island (3.5 acres).

Casting yards, if used, would be areas outside the state or city right of way that could be temporarily acquired for pre-casting of concrete segments for construction of the bridge and ramp structures. These areas would require barge access, in addition to road and/or rail access, and could also be used for storage of materials or equipment. The need for casting yards has not yet been determined, would depend on the bridge type and construction methods selected during later phases of project design or by a contractor, and the necessary environmental evaluation and permitting would be completed at that time.

Construction easements are included in Appendix A, Comprehensive List of all Property Acquisitions and Easements. For the purposes of this analysis, large staging areas and casting areas are not included in Appendix A. As described in Chapter 1, several potential large staging areas and casting yards were identified for analysis in the CRC Final EIS; however, at the current stage of project development, these types of sites have not yet been identified for the IBR Program. These sites may be identified during later phases of project design or by a contractor. If a site were identified by a contractor, the contractor would be responsible for the necessary environmental evaluation and permitting.

5.2 Temporary Construction Easements

Table 5-1 below summarizes temporary construction impacts by project subarea and use for the Modified LPA, including all design options.

Table 5-1. Temporary Construction Easement Impact Summary

Project Subarea ^a	Residential Properties	Commercial Properties ^b	Public Properties	Vacant/Parking Properties	Total Properties
Oregon Mainland	1	7	1	3	12
Hayden Island	0	1	2	0	3
Downtown Vancouver (Options 1 and 2)	23	14	6	8	51
Upper Vancouver	12	2	5	1	20

a Ruby Junction would require no temporary construction easements.

b Industrial uses are included in the count of commercial properties.

5.2.1 Oregon Mainland

To accommodate the construction of the southern end of the project, a temporary construction easement would need to be acquired from 12 parcels, totaling 45 acres. The impacted properties include three vacant properties adjacent to the river, six industrial uses adjacent to NE Martin Luther King Jr. Boulevard, an office use bordering N Union Court, and a multifamily residential property adjacent to Marine Drive. A small parcel owned by the City of Portland within Delta Park would also be impacted during construction.

Please see Figure B-1 in Appendix B for a map showing these temporary property impacts by parcel.

5.2.2 Hayden Island

To accommodate the construction of the Hayden Island interchange, associated local roadway improvements, and the extension of light rail over Hayden Island, temporary construction easements would need to be acquired from three parcels: one state-owned property on the river, the City of Portland Fire Department property east of I-5, and a vacated restaurant site in the Jantzen Beach Center. In addition to the three parcels requiring temporary construction easements, six floating homes west of the proposed transit bridge would need to be temporarily relocated during construction. These floating homes would be returned to their existing slips following construction. Approximately 13.2 acres would be required.

Please see Figure B-2 in Appendix B for a map showing these temporary property impacts by parcel.

5.2.3 Ruby Junction Maintenance Facility Expansion Area in Gresham, Oregon

No additional land, outside of the permanent property impacts, is anticipated to be required for the expansion of the Ruby Junction Maintenance Facility.

5.2.4 Downtown Vancouver

5.2.4.1 Modified LPA

Under the Modified LPA (including all design options), approximately 6.7 acres from 51 parcels would need to be temporarily acquired to accommodate the construction of the bridge landing in downtown Vancouver, local roads, retaining walls along I-5, and reconstruction of sidewalks. No temporary construction easements have been identified for park and rides at this time. Future design refinements may require temporary construction easements from adjacent properties.

Please see Figure B-4 in Appendix B for a map showing these temporary property impacts by parcel.

5.2.5 Upper Vancouver

Approximately 4.8 acres from 20 parcels would need to be temporarily acquired to accommodate the reconstruction of sidewalks, the construction of retaining walls along I-5, and ramps associated with the SR 500 interchange.

Please see Figure B-7 in Appendix B for a map showing these temporary property impacts by parcel.

6. INDIRECT EFFECTS

Regardless of the design options selected, land uses and properties not directly impacted by the project could experience indirect effects from the Modified LPA. Project elements such as realigned streets, active transportation improvements, and the addition of light rail could change the viability of and demand for uses within and around the project footprint. Examples of these indirect effects could include denser, multi-use development around transit stations on Hayden Island and downtown Vancouver and additional commercial uses along newly developed roads near the Marine Drive interchange, on Hayden Island, and in downtown Vancouver. Additional indirect impacts to property could also occur during project construction. Properties directly adjacent to acquired properties and to areas of active construction would be most likely to experience these types of impacts.

For additional Program-related indirect effects, see the Land Use, Economics, Visual Quality, Parks and Recreation, and Noise and Vibration Technical Reports.

7. POTENTIAL AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

7.1 Introduction

Mitigation for property acquisitions, easements, and displacements includes compensation for the property acquired and relocation assistance for displaced residents or businesses. This analysis does not report how each individual property owner or tenant would be compensated for the impacts to their property or how or where residences and businesses would be relocated. Compensation and relocation assistance is determined individually and depends in large part on the property valuation process. As this information is currently unknown, vacancy rates, housing supply, and median prices are used in the following sections to assess the potential for relocating displaced residences and businesses. Specific compensation and benefit packages are also unknown, but the Program would work with people who have been displaced to ensure mitigation occurs within the community of impact wherever possible. The process by which compensation for property acquired and relocation assistance would be provided is outlined below.

After the issuance of the ROD for the SEIS, the IBR Program team must, by law, produce a Relocation Acquisition Management Plan that contains a detailed analysis of available replacement properties and means for providing replacement housing for residential occupants displaced by the Modified LPA. This plan must be reviewed and approved by the Federal Transit Administration (FTA) before the IBR Program team is authorized to acquire property. Similar review and approval is not required of the Federal Highway Administration (FHWA), per U.S. Department of Transportation (USDOT) written guidance. Once authorized, the IBR Program team would notify affected property owners that the Program is planning to acquire their property and the process discussed below will begin.

After property acquisition funding is achieved, the acquiring agency would begin the valuation process for the property needed for construction of the Modified LPA. If the property is appraised, the appraiser would contact the property owners directly and give them an opportunity to accompany them during the appraisal inspection. During this time, relocation agents would contact and interview any occupants or business owners who would be displaced by the required property acquisition to determine their individual needs. Once the valuation process and the relocation study are complete, the agent would provide the property owner with a written offer for purchase of the property. If the owner or a tenant were to be displaced from the property, they would also receive a summary of relocation benefits available. The displaced occupants would not have to move from the property for at least 90 days from the date of the Notice of Eligibility for relocation benefits. During this time the relocation agent would be working with the displaced occupant or business and providing relocation assistance (i.e., helping to find a replacement home or business).

7.2 Long-Term Effects

7.2.1 Regulatory Requirements

During the planning and Modified LPA refinement process, project engineers attempted to avoid and minimize potential acquisition impacts by selecting less impactful design options, modifying highway and transit alignments, and shifting highway and transit alignments. These changes were made to minimize acquisition needs and to avoid undesirable property and access impacts.

Where property acquisition and residential or business displacements are unavoidable, those affected would receive compensation and relocation assistance from ODOT or WSDOT, depending on location. Property would be purchased at fair market value, and residential occupants displaced by the Modified LPA would be provided decent, safe, and sanitary replacement housing. Displaced households and businesses would be relocated per the Uniform Relocation and Real Property Acquisitions Policies Act of 1970, as amended (see sidebar).

Relocation assistance usually includes replacement housing for owners and renters, moving costs, and advisory services, which include assistance in locating replacement housing. Similarly, relocation assistance for businesses includes advisory services, moving costs, site search expenses, and business reestablishment expenses. In general, attempts are made to minimize relocation impacts to residences, businesses, and public facilities. Additionally, because the Program spans two states and multiple city and county jurisdictions, the IBR Program team would work to reduce or eliminate possible discrepancies between the state and local practices on acquisition and relocation activities. During this process, the IBR Program team would strive to ensure uniformity and equity to all affected owners and occupants.

The U.S. General Services Administration will be involved in any property acquisition related to the acquisition of federally owned property. Additionally, the acquisition of property owned by the U.S. Army, such as that near the SR 14 interchange, would require consultation with the Defense Base Closure and Realignment Commission. For additional project mitigation measures, see the Land Use, Economics, Environmental Justice, Visual Quality, Parks and Recreation, and Noise and Vibration Technical Reports.

7.2.1.1 Relocation of Residential Properties

As illustrated in Chapter 3, single-family and rental housing is available throughout the Portland–Vancouver area. As described in Section 3.2.3, a search of the active listings in September 2022

Providing Relocation Assistance

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) provides important protections and assistance for people affected by federally funded projects. It was enacted by Congress to ensure that people whose real property is acquired, or who have to move as a result of projects receiving federal funds, are treated fairly and equitably and receive assistance in moving from the property they occupy. The CRC project and all project partners will follow the requirements of this Act.

showed there were approximately 109 housing units listed in the study area, including 40 floating homes, 38 condos, and 31 single-family homes. This does not include private listings. As described in Chapter 3, vacancy rates in the Portland–Vancouver area are low, while rental and purchase prices are increasing. Even though some of the displaced occupants would choose to leave the study area, it may still be difficult to find sufficient, affordable housing for residents who would be affected by the Program. A commitment to last resort housing would be considered if sufficient comparable replacement housing is not available.

Based on the current design of the Modified LPA, up to 35 floating homes in North Portland Harbor would be displaced. Floating homes would be treated as personal property and would be relocated to moorages within the area if available. If the relocation study determines that sufficient replacement sites are not available, the floating homes would be purchased at fair market value and the occupants would be provided relocation assistance, which may include payments, if necessary, to acquire decent, safe, and sanitary replacement housing.

7.2.1.2 Relocation of Commercial Properties

Up to 40 businesses would be displaced by the Modified LPA. Over one-quarter of these displacements would occur on Hayden Island. Though there are multiple vacant buildings on the island, including those in and around the Jantzen Beach SuperCenter, the island is limited in its capacity to accommodate the 14 businesses that would be displaced by the Modified LPA. As a result, some of these businesses may have to find replacement locations outside the study area.

Considering the unique and desirable interchange location on Hayden Island, it is likely that some of the displaced businesses would be able to reestablish on Hayden Island or nearby. However, many of the small restaurants and taverns would not be able to find replacement sites on or near Hayden Island. The marine businesses that would be displaced from the south shore of North Portland Harbor could also be difficult to relocate, given the limited waterfront space available and the in-water infrastructure needed to support these businesses. These businesses could have to relocate to available sites farther upstream or downstream on the Columbia or on the Willamette River.

A billboard and one cellular array, considered individual businesses, would be displaced by the Modified LPA. Cell towers and outdoor advertising signs would be relocated under the Uniform Act as personal property. The cellular array likely would need to be replaced in the immediate area to maintain cell service for the area. Cellular arrays are usually relatively easy to relocate. Because of visual restrictions, a replacement array might need to be camouflaged or disguised. It could be possible to relocate the outdoor advertising sign to the remainder parcel. If not, locating a replacement site may be problematic. Restrictive zoning could make it difficult to find a replacement site with comparable traffic exposure. However, the sign company should be able to relocate the permit to another location in the metropolitan area.

Given the current vacancy rates in the Vancouver area as described in Chapter 3, it is reasonable to assume that replacement properties could be found for the 13 professional offices that would be displaced by the Modified LPA in Vancouver.

Six light-industrial businesses would be displaced by the Ruby Junction Maintenance Facility expansion. Though there is available replacement industrial property in the Gresham area, as

indicated in Chapter 3, some of the displaced properties may have to relocate outside the Gresham area.

7.2.1.3 Relocation of Public Use Properties

It is assumed that the Clark Public Utilities Energy Conservation Office in downtown Vancouver and the Portland Water Bureau water tower and office on Hayden Island would be provided relocation assistance in a similar fashion as displaced businesses.

7.2.1.4 Mitigation for Access Impacts

Property owners would be compensated for the permanent closure of one or multiple access points to their property if the resulting damages could not be cured by modifying the property or access to it. The value of this compensation would be determined during the appraisal process by comparing the value of the property with and without these access point(s). Restrictions on the development of future additional access points, as would occur under access control, would not be compensable if the existing access and use are determined by appraisal to be the highest and best use for the property.

7.3 Temporary Effects

7.3.1 Regulatory Requirements

There are no specific regulatory requirements for mitigation of temporary property impacts.

7.3.2 Program-Specific Requirements

As project design progresses, the IBR Program would develop approaches to managing temporary construction easements as part of the overall project right of way plan. The plan would identify measures that would be taken by contractors to avoid, minimize, and/or mitigate for impacts to property temporarily used for construction. Program-specific measures that may be included in the plan to minimize and mitigate for temporary effects related to property acquisition and displacements include:

- Mitigation for construction easements could include payment to property owners in exchange for the use of their property during construction. For example, one method for compensation would be to pay the equivalent of a rental based on the property valuation. Site impacts from temporary construction uses would be restored or compensated according to fair market or contributory value.
- Mitigation may be needed in areas where construction of the Modified LPA could block or impede access to residences or businesses. Continued access to properties during construction would be maintained to the extent possible. Specific provisions may include signage to let the public know that businesses are open and conducting construction during non-peak business hours.

8. PERMITS AND APPROVALS

8.1 Federal Permits

FTA would have to review and approve a Relocation Acquisition Management Plan prepared for the IBR Program before the acquiring agencies are authorized to begin acquiring right of way. Similar review and approval would not be required of FHWA per USDOT written guidance.

8.2 State Permits

The authority to grant easement rights to the Columbia River in Washington is held by DNR. An easement for portions of the Columbia River would be required for placement of the new Columbia River bridge structures. The Columbia River has been designated a Harbor Area by the Washington State Harbor Lines Commission. Any uses other than those related to navigation and commerce, such as a highway facility, must obtain approval from the Harbor Lines Commission. Project staff would work with DNR to conduct a “Public Place” process, for which public hearings are required, to gain this approval.

Potential DSL or other Oregon state agency permits/approvals would be needed to locate highway piers in North Portland Harbor or Columbia River.

8.3 Local Permits

Temporary street vacations or easements may be needed from local jurisdictions to accommodate the construction of the Modified LPA.

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APPENDIX A LIST OF PROPERTY ACQUISITIONS AND EASEMENTS

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Appendix Table A1 - Portland Mainland

IBR ID#	Address	Zoning	Land Use	Acquisition Status	Total Property Size (sqft)	Permanent Impact (sqft)	Temporary Construction Impact (sqft)
1N1E03 00201	10725 N VANCOUVER WAY	IG2	Industrial	Partial	144,719	850	2,887
1N1E03 00202	10615 N VANCOUVER WAY	IG2	Industrial	Partial	145,213	58,214	86,999
1N1E03 00300	10850 N DENVER AVE	OS	Public - Park	Partial	3,739,051	3,122	8,460
1N1E03 00400	N DENVER AVE	OS	Public - Vacant	Partial	63,017	63,017	0
1N1E03B 00100	N MARINE DR	CE	Vacant	TCE	199,047	0	27,199
1N1E03B 00500	11021 N VANCOUVER WAY	IG2	Industrial	TCE	16,109	0	471
1N1E03B 00600	N VANCOUVER WAY	IG2	Vacant	TCE	900	0	21
1N1E03B 00700	10931 WI/ N VANCOUVER WAY	IG2	Industrial	TCE	14,103	0	335
1N1E03B 00800	10931 N VANCOUVER WAY	IG2	Industrial	TCE	28,828	0	932
1N1E03B 00900	10510 WI/ N VANCOUVER WAY	IG2	Industrial	Partial	218,034	0	699
1N1E03BB 0010C	1415 WI/ N MARINE DR	CE	Vacant	TCE	46,896	0	46,774
1N1E03BB 00501	1000 N ANCHOR WAY	CM2	Multi Family Residential	Partial	47,435	695	0
1N1E03BB 0060C	1200 N ANCHOR WAY	CM2	Hotel	Partial	82,682	662	1,174
1N1E03BB 0120C	1014 N MARINE DR	IG2	Commercial - Retail	Partial	53,979	2,614	3,483
1N1E03BB 0130C	11051 N VANCOUVER WAY	IG2	Commercial - Retail	Partial	21,232	650	3,418
1N1E03BB 01801	1250 N ANCHOR WAY	CM2	Hotel	Partial	81,546	1,042	6,364
1N1E03BB 0230C	1101 N MARINE DR	CM2	Multi Family Residential	TCE	22,049	0	47
1N1E03CA 00100	125-233 N HAYDEN MEADOWS DR	IG2	Vacant	Partial	53,920	4,581	49,339
1N1E03CA 00200	720 N HAYDEN MEADOWS DR	IG2	Industrial	TCE	311,021	0	0
1N1E03CA 00300	731 N HAYDEN MEADOWS DR	EG2	Commercial - Office	TCE	62,050	0	0
1N1E03D 00100	10400 N VANCOUVER WAY	IG2	Industrial	Partial	535,158	0	9,602
1N1E03DB 00900	10360 N VANCOUVER WAY	IG2	Industrial	Partial	223,706	0	7,094
1N1E03DB 01700	10205 N VANCOUVER WAY	IG2	Industrial	TCE	78,125	0	1,197
1N1E03DB 02500	10205 N/ N VANCOUVER WAY	IG2	Industrial	TCE	14,947	0	14,935
1N1E04 00100	2060 WI/ N MARINE DR	IG2	Public - Expc	Partial	470,939	0	242,979
1N1E04 00400	1940 N VICTORY BLVD	OS	Public - PIR	Partial	15,528,777	5,556	10,442
1N1E04A 00600	10890 N DENVER AVE	OS	Public - Utilities	TCE	9,102	0	288
2N1E33 00200	2060 N MARINE DR	IG2	Public - Expc	Partial	1,656,266	244,768	1,408,683
2N1E33 00202	10799 WI/ N EXPO RD	OS	Public - Vacant	Partial	31,747	21,146	10,591
2N1E33D 01400	LEVY CODE 710	IG2	Public - Park	Partial	158,333	4,954	5,719
2N1E33DD 00100	1610 N PIER 99 ST	IG2	Industrial / SFR (Floating Homes)	Full	44,344	44,344	0
2N1E33DD 00300	1801-1809 N PIER 99 ST	IG2	Industrial	Partial	34,134	13	3,339
2N1E33DD 00400	1835 WI/ N MARINE DR	IG2	Marina	Partial	70,739	6,494	5,111
2N1E34C 02000	1415 N PIER 99 ST	CE	Commercial - Retail / Marina	Full	69,379	69,379	0

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

Appendix Table A2 - Hayden Island

IBR ID#	Address	Zoning	Land Use	Acquisition Status	Total Property Size (sqft)	Permanent Impact (sqft)	Temporary Construction Impact (sqft)
2N1E33 00100	1555 N TOMAHAWK IS DR	CE	Commercial - Retail	Partial	2,447,829	6,075	157,010
2N1E33D 00100	N JANTZEN AVE	CE	ROW	Partial	81,217	17,372	216
2N1E33D 00101	N CENTER AVE	CE	ROW	Full	56,801	56,801	0
2N1E33D 00200	11950 N CENTER AVE	CE	Commercial - Retail	Full	42,169	42,169	0
2N1E33D 00300	N CENTER AVE	CE	Public - Utilities	Full	2,788	2,788	0
2N1E33D 00400	N CENTER AVE	CE	Public - Utilities	Full	5,061	5,061	0
2N1E33D 00501	11850 N CENTER AVE	CE	Commercial - Retail	Full	18,364	18,364	0
2N1E33D 00502	1525-2055 N JANTZEN AVE	CE	Single Family Residential - Marina Parking	Partial	230,606	18,210	19,063
2N1E33D 00600	12045 N PARKER AVE	CE	Commercial - Retail	Partial	339,061	7,511	63,918
2N1E33D 01200	1501 N JANTZEN AVE	CE	Public - River	TCE	779,963	0	361
2N1E34 00300	1401 N HAYDEN IS DR	CE	Hotel	Partial	591,106	159,992	164,161
2N1E34C 00100	909 N HAYDEN IS DR	CE	Hotel	Partial	601,873	20,187	48,188
2N1E34C 00200	1401 W/ N HAYDEN IS DR	CE	Vacant	Full	4,906	4,906	0
2N1E34C 00300	1321-1337 N HAYDEN IS DR	CE	Commercial - Retail	Partial	28,303	1,273	1,643
2N1E34C 00400	12300 N PARKER AVE	CE	Commercial - Retail	Full	22,433	22,433	0
2N1E34C 00601	N CENTER AVE	CE	Vacant	Full	884	884	0
2N1E34C 00602	12229 N CENTER AVE	CE	Commercial - Retail	Full	19,871	19,871	0
2N1E34C 00603	12235 N CENTER AVE	CE	Commercial - Retail	Full	34,091	34,091	0
2N1E34C 00604	12105 N CENTER AVE	CE	Commercial - retail	Full	47,907	47,907	0
2N1E34C 00605	12005 N CENTER AVE	CE	Commercial - Retail	Full	40,702	40,702	0
2N1E34C 00606	12055 N CENTER AVE	CE	Commercial - Retail	Full	24,089	24,089	0
2N1E34C 00607	11915 N CENTER AVE	CE	Commercial - Retail	Full	52,255	52,255	0
2N1E34C 01300	11901-11919 N JANTZEN DR	CE	Commercial - Retail	Partial	203,392	28,410	12,723
2N1E34C 01400	11875 N JANTZEN DR	CE	Commercial - Retail	Full	50,352	50,352	0
2N1E34C 01500	N JANTZEN AVE	CE	Vacant	Full	712	712	0
2N1E34C 01600	N JANTZEN DR	CE	ROW	Full	50,763	50,763	0
2N1E34C 01700	12050 N JANTZEN DR	CE	Commercial - Retail	Partial	166,623	13,584	10,295
2N1E34C 01800	LEVY CODE 201	CE	Single Family Residential - Floating Homes	Partial	1,101,653	39,377	59,129
2N1E34CA 00500	12226 N JANTZEN DR	CM1	Hotel	Partial	129,159	3,679	8,630
2N1E34CA 00600	909 N TOMAHAWK IS DR	CM1	Commercial - Office	Partial	34,281	1,977	7,193
2N1E34CA 00700	12118 N JANTZEN DR	CM1	Commercial - Retail	Partial	27,467	7,889	3,110
2N1E34CA 00800	N JANTZEN AVE	CM1	Vacant	Full	92	92	0
2N1E34CA 00900	12240 N JANTZEN DR	CM1	Commercial - Retail	Partial	25,476	2,746	5,808
2N1E34CA 01000	N JANTZEN AVE	CM1	Vacant	Partial	46	46	0
2N1E34CA 01100	N JANTZEN AVE	CM1	ROW	Partial	25,678	25,678	0
2N1E34CA 01200	909 W/ N HAYDEN IS DR	CM1	Vacant	Full	11,820	11,820	0
2N1E34CA 01300	12237 N JANTZEN DR	CM1	Commercial - Retail	Partial	27,402	8,381	2,830
2N1E34CA 01400	12225 N JANTZEN DR	CM1	Commercial - Retail	Partial	27,639	5,580	2,103
2N1E34CA 01500	12105 W/ N JANTZEN DR	CM1	Commercial - Retail	Partial	30,375	7,846	3,165
2N1E34CA 01600	900 N TOMAHAWK IS DR	CE	Public - Fire Dept.	Partial	54,411	2,234	1,983
2N1E34CA 01700	848 N TOMAHAWK IS DR	CE	Public - Fire Dept.	TCE	21,593	0	2,040

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

Appendix Table A3 - Ruby Junction

IBR ID#	Address	Zoning	Land Use	Acquisition Status	Total Property Size (sqft)	Permanent Impact (sqft)	Temporary Construction Impact (sqft)
1S3E05AD . 02400	2450 NW ELEVEN MILE AVE	SC-RJ	Commercial - Retail	Partial	42,349	13,375	0
1S3E05AD . 02500	2410 NW BURNSIDE CT	HI	Industrial	Full	58,685	58,685	0
1S3E05AD . 03100	2303-2363 NW ELEVEN MILE AVE	HI	Commercial - Retail	Partial	42,751	97	0
1S3E05AD . 03200	2227 NW ELEVEN MILE AVE	HI	Industrial	Partial	43,508	11,201	0
1S3E05DA . 01300	1702 NW ELEVEN MILE AVE	HI	Industrial	Full	67,968	67,968	0
1S3E05DA . 01500	1806 NW ELEVEN MILE AVE	HI	Industrial	Full	21,609	21,609	0
1S3E05DA . 03500	1709 NW ELEVEN MILE AVE	HI	Industrial	Full	43,704	43,704	0

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

Appendix Table A4 - Downtown Vancouver Options 1 and 2 - Modified Locally Preferred Alternative and SR-14 Interchange without C Street Ramps

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
38279908	111 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Parking	TCE	34,308	0	0	164
38279914	1105 E 5TH ST, VANCOUVER, 98661	CPX	Public - Park	Partial	8,382,860	10,129	0	35,949
38279916	605 E EVERGREEN BLVD, VANCOUVER, 98661	CPX	Public - Police	Partial	89,581	794	0	583
38279920	1009 E MCLOUGHLIN BLVD, VANCOUVER, 98663	CPX	Public - Park	Partial	393,631	15,835	0	866
38279927	N/A	CPX	Public - Park	Partial	88,754	7,655	0	0
38279930	N/A	CX	Rail	Partial	747	747	0	0
38279931	N/A	CPX	Utilities	TCE	10,939	0	0	2,040
38279934	N/A	CPX	Public - Park	Partial	22,164	5,063	0	3,302
38279935	112 SE COLUMBIA WAY, VANCOUVER, 98661	CPX	Public - Vacant	Partial	53,867	10,655	0	38,430
38279940	701 OFFICERS ROW, VANCOUVER, 98661	CPX	Commercial - Office	TCE	647,417	0	0	4,141
38279962	605 BARNES ST, VANCOUVER, 98661	CPX	Public - Park	Partial	474,838	8,803	0	638
38430000	101 E 6TH ST, VANCOUVER, 98660	CX	Commercial - Office	TCE	20,865	0	0	262
38470006	500 BROADWAY ST UNIT 501, VANCOUVER, 98660	CX	Multi Family Residential - Condos / Commercial	TCE	61,834	0	0	1,297
38470012	N/A	CX	Public - Vacant	TCE	5,076	0	0	1
38470012	N/A	CX	Public - Vacant	TCE	2,208	0	0	46
38470012	601 BROADWAY ST, VANCOUVER, 98660	CX	Hotel	TCE	20,328	0	0	950
38470012	606 BROADWAY ST, VANCOUVER, 98660	CX	Commercial - Retail	TCE	10,300	0	0	244
38470012	114 E 6TH ST, VANCOUVER, 98660	CX	Parking	TCE	4,554	0	0	134
38470012	318 E 7TH ST, VANCOUVER, 98660	CX	Multi Family Residential	Partial	29,719	705	6,851	0
38470012	901 C ST, VANCOUVER, 98660	CX	Public - Library	Partial	28,236	170	0	1,566
38470012	N/A	CX	Parking	Partial	40,150	0	4,370	36,056
38470012	N/A	CX	Vacant	Partial	63,649	1,146	36	58,517
38470012	801 C ST, VANCOUVER, 98660	CX	Commercial - Retail	Partial	70,147	4,242	11,627	0
38470012	N/A	CX	Vacant	Partial	17,104	0	0	17,104
38470012	N/A	CX	Parking	Partial	10,011	961	0	9,056
38470012	411 E EVERGREEN BLVD, VANCOUVER, 98660	CX	Parking	Partial	7,028	933	0	4,189
38470012	400 E EVERGREEN BLVD UNIT 1, VANCOUVER, 98660	CX	Commercial - Office	Partial	136,134	2,602	9,324	4,651

Appendix Table A4 - Downtown Vancouver Options 1 and 2 - Modified Locally Preferred Alternative and SR-14 Interchange without C Street Ramps

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
38470012	400 E EVERGREEN BLVD, VANCOUVER, 98660	CX	Parking	Subsurface Easement	70,541	0	8,875	2,549
38470012	415 E 13TH ST, VANCOUVER, 98660	CX	Commercial - Retail	Subsurface Easement	40,001	0	2,541	263
38470012	305 E MILL PLAIN BLVD, VANCOUVER, 98660	CX	Multi Family Residential	TCE	40,005	0	0	130
38470012	409 E MILL PLAIN BLVD, VANCOUVER, 98660	CX	Multi Family Residential	TCE	14,998	0	0	395
38470012	400 E MILL PLAIN BLVD, VANCOUVER, 98660	CX	Commercial - Office	TCE	30,619	0	0	1,060
38470012	N/A	CX	Commercial - Parking	TCE	16,002	0	0	779
38470012	404 E 15TH ST, VANCOUVER, 98663	CX	Commercial - Office	TCE	25,150	0	0	1,531
38470012	1601 G ST, VANCOUVER, 98663	CX	Commercial - Office	TCE	9,448	0	0	0
38470012	102 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Utilities	Full	2,310	2,310	0	0
38470012	100 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Utilities	Full	6,000	6,000	0	0
38470012	101 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Parking	Partial	25,415	27	0	225
38470012	N/A	CX	Utilities	Partial	2,741	0	0	2,741
38470012	N/A	CX	Rail	Partial	6,131	3,299	0	1,922
38470012	N/A	CX	Public - Vacant	Full	3,390	3,390	0	0
38470012	500 MAIN ST, VANCOUVER, 98660	CX	Commercial - Retail	TCE	9,998	0	0	434
38470012	507 COLUMBIA ST, VANCOUVER, 98660	CX	Commercial - Retail	TCE	10,004	0	0	390
38470012	412 WASHINGTON ST, VANCOUVER, 98660	CX	Under Construction	Partial	31,556	1,076	0	3,585
38470012	210 W 4TH ST, VANCOUVER, 98660	CX	Commercial - Retail	Partial	8,901	917	0	1,170
38470012	N/A	CX	Parking	Full	5,036	5,036	0	0
38470012	N/A	CX	Parking	Full	4,937	4,937	0	0
38470012	215 W 4TH ST, VANCOUVER, 98660	CX	Commercial - Office	Full	10,022	10,022	0	0
38470012	N/A	CX	Parking	Full	4,989	4,989	0	0
38470012	210 W 3RD ST, VANCOUVER, 98660	CX	Commercial - Office	Full	10,020	10,020	0	0
38470012	201 COLUMBIA ST, VANCOUVER, 98661	CX	Rail	Full	5,054	5,054	0	0
38470012	N/A	CX	Public - Parking	TCE	14,058	0	0	13,909
38470012	400 COLUMBIA ST, VANCOUVER, 98660	CX	Commercial - Office	TCE	10,058	0	0	10,058

Appendix Table A4 - Downtown Vancouver Options 1 and 2 - Modified Locally Preferred Alternative and SR-14 Interchange without C Street Ramps

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
38470012	390 COLUMBIA ST, VANCOUVER, 98660	CX	Public - Parking	TCE	20,281	0	0	19,250
38470012	318 W 4TH ST, VANCOUVER, 98660	CX	Parking	TCE	22,194	0	0	21,086
38470012	N/A	CX	Rail	Partial	4,249	0	0	176
38470012	304 COLUMBIA ST, VANCOUVER, 98660	CX	Utilities	Partial	4,019	0	0	646
38470012	N/A	CX	Vacant	TCE	37,468	0	0	252
38470012	501 W COLUMBIA WAY, VANCOUVER, 98660	Water	Vacant	TCE	56,045	0	0	0
38470012	N/A	CX	Vacant	TCE	34,127	0	0	3
38470012	N/A	CX	Vacant	TCE	45,949	0	0	880
38470012	100 COLUMBIA ST, VANCOUVER, 98660	Water	Vacant	Partial	35,381	13,613	0	1,886
38470012	N/A	CX	Utilities	Partial	9,721	330	0	9,398
38470012	N/A	CX	Commercial - Retail	TCE	40,005	0	0	130
38470012	N/A	CX	Parking	Partial	21,000	345	0	512
38470012	N/A	CX	Parking	TCE	45,275	0	0	562
38470012	N/A	CX	Parking	Partial	3,216	1,609	0	356
38470012	275 W 3RD ST UNIT 200, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470012	275 W 3RD ST UNIT 300, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470012	275 W 3RD ST UNIT 400, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470012	275 W 3RD ST UNIT 500, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470012	275 W 3RD ST UNIT 600, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
986053203	NA	Park	Commercial - Office	Partial	440,058	3,651	0	22,445

a - Properties identified as Subsurface Easement are included as Partial Acquisitions in Table 4-4

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

Subsurface Easement = A subsurface easement will be purchased over a portion of the property to support the Project.

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

* Indicates condominium ownership in a multi-use, commercial-residential tower.

Appendix Table A5 - Downtown Vancouver Option 3 - I-5 Mainline Westward Shift

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
38279908	111 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Parking	TCE	34,308	0	0	164
38279914	1105 E 5TH ST, VANCOUVER, 98661	CPX	Public - Park	Partial	8,382,860	10,129	0	35,949
38279916	605 E EVERGREEN BLVD, VANCOUVER, 98661	CPX	Public - Police	Partial	89,581	790	0	583
38279920	1009 E MCLOUGHLIN BLVD, VANCOUVER, 98663	CPX	Public - Park	Partial	393,631	4,725	0	866
38279927	N/A	CPX	Public - Park	Partial	88,754	0	0	0
38279930	N/A	CX	Rail	Partial	747	747	0	0
38279931	N/A	CPX	Utilities	TCE	10,939	0	0	2,040
38279934	N/A	CPX	Public - Park	Partial	22,164	5,056	0	3,302
38279935	112 SE COLUMBIA WAY, VANCOUVER, 98661	CPX	Public - Vacant	Partial	53,867	10,651	0	38,430
38279940	701 OFFICERS ROW, VANCOUVER, 98661	CPX	Commercial - Office	TCE	647,417	0	0	4,141
38279962	605 BARNES ST, VANCOUVER, 98661	CPX	Public - Park	Partial	474,838	123	0	638
38430000	101 E 6TH ST, VANCOUVER, 98660	CX	Commercial - Office	TCE	20,865	0	0	262
38470004*	500 BROADWAY ST UNIT 501, VANCOUVER, 98660	CX	Multi Family Residential - Condos / Commercial	TCE	61,834	0	0	1,297
38470004	N/A	CX	Public - Vacant	TCE	5,076	0	0	1
38470004	N/A	CX	Public - Vacant	TCE	2,208	0	0	46
38470004	601 BROADWAY ST, VANCOUVER, 98660	CX	Hotel	TCE	20,328	0	0	950
38470004	606 BROADWAY ST, VANCOUVER, 98660	CX	Commercial - Retail	TCE	10,300	0	0	244
38470004	114 E 6TH ST, VANCOUVER, 98660	CX	Parking	TCE	4,554	0	0	134
38470004	318 E 7TH ST, VANCOUVER, 98660	CX	Multi Family Residential	Full	29,719	29,719	0	0
38470004	901 C ST, VANCOUVER, 98660	CX	Public - Library	Partial	28,236	170	0	1,566
38470004	N/A	CX	Parking	Partial	40,150	4,094	0	36,056
38470004	N/A	CX	Vacant	Partial	63,649	5,132	0	58,517
38470004	801 C ST, VANCOUVER, 98660	CX	Commercial - Retail	Full	70,147	70,147	0	0
38470004	N/A	CX	Vacant	Partial	17,104	0	0	17,104
38470004	N/A	CX	Parking	Partial	10,011	954	0	9,056
38470004	411 E EVERGREEN BLVD, VANCOUVER, 98660	CX	Parking	Partial	7,028	2,838	0	4,189
38470004	400 E EVERGREEN BLVD UNIT 1, VANCOUVER, 98660	CX	Commercial - Office	Partial	136,134	9,396	12,844	4,651

Appendix Table A5 - Downtown Vancouver Option 3 - I-5 Mainline Westward Shift

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
38470004	400 E EVERGREEN BLVD, VANCOUVER, 98660	CX	Parking	Subsurface Easement	70,541	0	11,583	2,549
38470004	415 E 13TH ST, VANCOUVER, 98660	CX	Commercial - Retail	Subsurface Easement	40,001	0	3,658	263
38470004	305 E MILL PLAIN BLVD, VANCOUVER, 98660	CX	Multi Family Residential	TCE	40,005	0	0	130
38470004	409 E MILL PLAIN BLVD, VANCOUVER, 98660	CX	Multi Family Residential	TCE	14,998	0	0	395
38470004	400 E MILL PLAIN BLVD, VANCOUVER, 98660	CX	Commercial - Office	TCE	30,619	0	0	1,060
38470004	N/A	CX	Commercial - Parking	TCE	16,002	0	0	779
38470004	404 E 15TH ST, VANCOUVER, 98663	CX	Commercial - Office	TCE	25,150	0	0	1,531
38470004	102 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Utilities	Full	2,310	2,310	0	0
38470004	100 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Utilities	Full	6,000	6,000	0	0
38470004	101 SE COLUMBIA WAY, VANCOUVER, 98661	CX	Parking	Partial	25,415	26	0	225
38470004	N/A	CX	Utilities	Partial	2,741	0	0	2,741
38470004	N/A	CX	Rail	Partial	6,131	3,302	0	1,922
38470004	N/A	CX	Public - Vacant	Full	3,390	3,390	0	0
38470004	500 MAIN ST, VANCOUVER, 98660	CX	Commercial - Retail	TCE	9,998	0	0	434
38470004	507 COLUMBIA ST, VANCOUVER, 98660	CX	Commercial - Retail	TCE	10,004	0	0	390
38470004	412 WASHINGTON ST, VANCOUVER, 98660	CX	Under Construction	Partial	31,556	1,083	0	3,585
38470004	210 W 4TH ST, VANCOUVER, 98660	CX	Commercial - Retail	Partial	8,901	921	0	1,170
38470004	N/A	CX	Parking	Full	5,036	5,036	0	0
38470004	N/A	CX	Parking	Full	4,937	4,937	0	0
38470004	215 W 4TH ST, VANCOUVER, 98660	CX	Commercial - Office	Full	10,022	10,022	0	0
38470004	N/A	CX	Parking	Full	4,989	4,989	0	0
38470004	210 W 3RD ST, VANCOUVER, 98660	CX	Commercial - Office	Full	10,020	10,020	0	0
38470004	201 COLUMBIA ST, VANCOUVER, 98661	CX	Rail	Full	5,054	5,054	0	0
38470004	N/A	CX	Public - Parking	TCE	14,058	0	0	13,909
38470004	400 COLUMBIA ST, VANCOUVER, 98660	CX	Commercial - Office	TCE	10,058	0	0	10,058

Appendix Table A5 - Downtown Vancouver Option 3 - I-5 Mainline Westward Shift

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
38470004	390 COLUMBIA ST, VANCOUVER, 98660	CX	Public - Parking	TCE	20,281	0	0	19,250
38470004	318 W 4TH ST, VANCOUVER, 98660	CX	Parking	TCE	22,194	0	0	21,086
38470004	N/A	CX	Rail	Partial	4,249	0	0	176
38470004	304 COLUMBIA ST, VANCOUVER, 98660	CX	Utilities	Partial	4,019	0	0	646
38470004	N/A	CX	Vacant	TCE	37,468	0	0	252
38470004	501 W COLUMBIA WAY, VANCOUVER, 98660	Water	Vacant	TCE	56,045	0	0	0
38470004	N/A	CX	Vacant	TCE	34,127	0	0	3
38470004	N/A	CX	Vacant	TCE	45,949	0	0	880
38470004	100 COLUMBIA ST, VANCOUVER, 98660	Water	Vacant	Partial	35,381	13,623	0	1,886
38470004	N/A	CX	Utilities	Partial	9,721	323	0	9,398
38470004	N/A	CX	Commercial - Retail	TCE	40,005	0	0	130
38470004	N/A	CX	Parking	Partial	21,000	347	0	512
38470004	N/A	CX	Parking	TCE	45,275	0	0	562
38470004	N/A	CX	Parking	Partial	3,216	1,612	0	356
38470004	275 W 3RD ST UNIT 200, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470004	275 W 3RD ST UNIT 300, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470004	275 W 3RD ST UNIT 400, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470004	275 W 3RD ST UNIT 500, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0
38470004	275 W 3RD ST UNIT 600, VANCOUVER, 98660	CX	Commercial - Office	Full	10,294	10,294	0	0

a - Properties identified as Subsurface Easement are included as Partial Acquisitions in Table 4-4

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

Subsurface Easement = A subsurface easement will be purchased over a portion of the property to support the Project.

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

* Indicates condominium ownership in a multi-use, commercial-residential tower.

Appendix Table A6 - Waterfront Park Ride

IBR ID#	Zoning	Land Use	Total Property Size (sqft)	Waterfront Site 1 (4th & Washington) Acquisition Status ^a	Waterfront Site 2 (Under Bridge) Acquisition Status	Waterfront Alt Site 3 (4th & Columbia) Acquisition Status
48470000	CX	Parking	5,026	No Impact	Full	No Impact
48790000	CX	Parking	22,194	No Impact	No Impact	Full
48760000	CX	Public - Parking	20,281	No Impact	No Impact	Full
48750000	CX	Commercial - Office	10,058	No Impact	No Impact	Full
48740000	CX	Public - Parking	14,058	No Impact	No Impact	Full

a - No additional acquisitions required for Waterfront Site 1.

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

Subsurface Easement = A subsurface easement will be purchased over a portion of the property to support the Project.

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

Appendix Table A7 - Evergreen Park Ride

IBR ID#	Zoning	Land Use	Total Property Size (sqft)	Evergreen Site 1 (Vancouver Library) Acquisition Status	Evergreen Site 2 (Broadway & E 8th St) Acquisition Status ^a
39214000	CX	Parking	7,028	Full	No Impact
38826000	CX	Parking	40,150	Full	No Impact
39212000	CX	Parking	10,011	Full	No Impact
39198000	CX	Vacant	17,104	Full	No Impact
38828000	CX	Vacant	63,649	Full	No Impact

a - No additional acquisitions required for Evergreen Site 2 pending agreement with current owner.

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

Subsurface Easement = A subsurface easement will be purchased over a portion of the property to support the Project.

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

Appendix Table A8 - Upper Vancouver

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
12454005	800 E 40TH ST, VANCOUVER, 98663	R-22	Public - School	Partial	977,608	80	12,314	21
12882000	3921 I ST, VANCOUVER, 98663	R-22	Multi Family Residential	Subsurface Easement	7,689	0	2,484	0
12884000	3919 I ST, VANCOUVER, 98663	R-22	Multi Family Residential	Subsurface Easement	5,285	0	1,593	0
12885000	3917 I ST, VANCOUVER, 98663	R-22	Single Family Residential	Subsurface Easement	5,265	0	1,611	0
12887000	3915 I ST, VANCOUVER, 98663	R-22	Single Family Residential	Subsurface Easement	5,071	0	1,537	0
13455000	3114 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,264	0	1,748	0
13460000	3110 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,567	0	1,802	0
13470000	3106 K ST, VANCOUVER, 98663	R-9	Multi Family Residential	Subsurface Easement	4,857	0	1,646	0
13471000	3100 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,914	0	1,640	0
13668000	902 E 30TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	8,250	0	1,770	0
13670000	903 E 31ST ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	13,750	0	3,391	0
13700000	3014 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,723	0	1,994	0
13710000	3012 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,080	0	1,741	0
13720000	3004 K ST, VANCOUVER, 98663	R-9	Multi Family Residential	Subsurface Easement	5,639	0	1,940	0
13725000	3000 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,845	0	1,737	0
13950000	3809 H ST, VANCOUVER, 98663	R-9	Single Family Residential	TCE	5,376	0	0	278
13960000	3811 H ST, VANCOUVER, 98663	R-22	Commercial - Office	TCE	10,673	0	0	593
14686000	3701 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	8,129	0	4,590	0
14690000	3709 I ST, VANCOUVER, 98663	R-9	Platted Residential	TCE	2,463	0	0	213
14691000	3711 I ST, VANCOUVER, 98663	R-9	Platted Residential	TCE	1,392	0	0	192
14763000	3601 I ST, VANCOUVER, 98663	R-9	Multi Family Residential	Full	5,000	5,000	0	0
14765000	3605 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Full	5,000	5,000	0	0
14766000	3609 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Full	5,000	5,000	0	0
14768000	3615 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Full	5,000	5,000	0	0
15080000	904 E 35TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Full	5,000	5,000	0	0
15090000	900 E 35TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	7,500	0	4,036	0
15095000	N/A	R-9	Single Family Residential (Accessory Parcel)	Full	2,500	2,500	0	0
15105000	3515 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Full	5,000	5,000	0	0

Appendix Table A8 - Upper Vancouver

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
15230000	900 E 34TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,000	466	2,303	0
15240000	3405 I ST, VANCOUVER, 98663	R-9	Multi Family Residential	Partial	5,000	651	2,303	0
15241000	3409 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,000	829	2,311	0
15250000	3415 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,000	1,014	2,313	0
15600000	814 E 33RD ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,000	15	0	159
15670000	900 E 33RD ST, VANCOUVER, 98663	R-9	Single Family Residential	TCE	4,465	0	0	333
15675000	904 E 33RD ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	4,339	0	3,615	49
15680000	905 E 34TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,035	58	4,604	0
15840000	3214 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,669	0	2,407	562
15850000	3208 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,030	0	1,909	0
15860000	3204 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	7,415	1,381	2,700	0
15870000	3200 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,318	0	1,725	0
15970000	3201 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,998	0	1,574	0
15975000	3205 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,000	0	1,663	0
15980000	3211 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,000	0	1,751	0
15985000	3215 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,077	0	1,358	68
16000000	815 E 33RD ST, VANCOUVER, 98663	R-9	Single Family Residential	TCE	5,000	0	0	128
16225000	904 E 31ST ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,000	0	3,372	0
16234000	905 E 32ND ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	6,000	0	3,824	0
16360000	904 E 26TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,919	0	2,908	0
16370000	2611 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,500	0	1,264	0
16380000	2613 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,000	0	857	0
16750000	2914 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	12,760	409	4,237	0
16770000	N/A	R-9	Public - Vacant	Partial	1,094	231	452	410
16775000	2900 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	4,521	329	1,110	424
16776000	2904 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,081	356	1,588	0
16810000	900 E 29TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,500	122	0	663

Appendix Table A8 - Upper Vancouver

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
16815000	904 E 29TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	5,500	119	1,659	464
16820000	903 E 30TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,500	0	1,891	0
16851000	814 E 29TH ST, VANCOUVER, 98663	R-9	Multi Family Residential	TCE	5,560	0	0	43
17200000	815 E 29TH ST, VANCOUVER, 98663	R-9	Single Family Residential	TCE	5,000	0	0	5
17275000	904 E 28TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	6,000	0	1,594	0
17280000	905 E 29TH ST, VANCOUVER, 98663	R-9	Multi Family Residential	Subsurface Easement	6,000	0	1,625	29
17285000	901 E 29TH ST, VANCOUVER, 98663	R-9	Single Family Residential	TCE	5,000	0	0	48
17290000	2816 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	9,249	0	2,316	497
17300000	2800 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	9,905	0	3,152	0
17390000	2811 K ST, VANCOUVER, 98663	R-9	Multi Family Residential	TCE	6,385	0	0	363
17570000	2714 K ST, VANCOUVER, 98663	R-9	Multi Family Residential	Subsurface Easement	9,583	0	3,306	0
17580000	2708 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,097	0	1,886	0
17586000	2700 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	4,654	0	1,952	0
17630000	900 E 27TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,500	0	788	0
17632000	2707 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,500	0	790	0
17634000	2709 I ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,500	0	791	0
17636000	901 E 28TH ST, VANCOUVER, 98663	R-9	Single Family Residential	Subsurface Easement	5,547	0	800	0
17860000	2600 F ST, VANCOUVER, 98663	R-22	Commercial - Office	TCE	6,000	0	0	230
17875000	600 E FOURTH PLAIN BLVD, VANCOUVER, 98663	R-9	Multi Family Residential	TCE	5,200	0	0	396
17890000	608 E FOURTH PLAIN BLVD, VANCOUVER, 98663	R-9	Single Family Residential	TCE	5,800	0	0	423
17925000	2614 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	4,886	178	2,226	0
17935000	2610 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	4,633	328	2,112	0
17950000	2600 K ST, VANCOUVER, 98663	R-9	Single Family Residential	Partial	6,788	209	3,865	0
19885000	2901 K ST, VANCOUVER, 98663	R-9	Multi Family Residential	TCE	10,177	0	0	266
19970000	1106 E 37TH ST, VANCOUVER, 98663	R-9	Vacant	TCE	3,417	0	0	10
38279909	N/A	CPX	Public - Park	TCE	195,280	0	0	191,996

Appendix Table A8 - Upper Vancouver

IBR ID#	Address	Zoning	Land Use	Acquisition Status ^a	Total Property Size (sqft)	Permanent Impact (sqft)	Subsurface Easement (sqft)	Temporary Construction Impact (sqft)
44060000	N/A	Park	Public - Park	TCE	2,874	0	0	344
44070000	N/A	Park	Public - Park	TCE	4,100	0	0	500
44080000	N/A	Park	Public - Park	TCE	4,313	0	0	570
986052057	1601 E FOURTH PLAIN BLVD, VANCOUVER, 98661	CPX	Public - Hospital	TCE	2,314,789	0	0	8,838

a - Properties identified as Subsurface Easement are included as Partial Acquisitions in Table 4-7

Acquisition Status Key

Full = Property will be purchased by Project

Partial = A portion of the property will be purchased by the Project

Subsurface Easement = A subsurface easement will be purchased over a portion of the property to support the Project.

TCE = A temporary construction easement will be purchased over a portion of the property to be used during construction.

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APPENDIX B PERMANENT AND TEMPORARY PROPERTY IMPACT FIGURES

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Figure B-1. Property Impacts – Oregon Mainland



Figure B-2. Property Impacts – Hayden Island

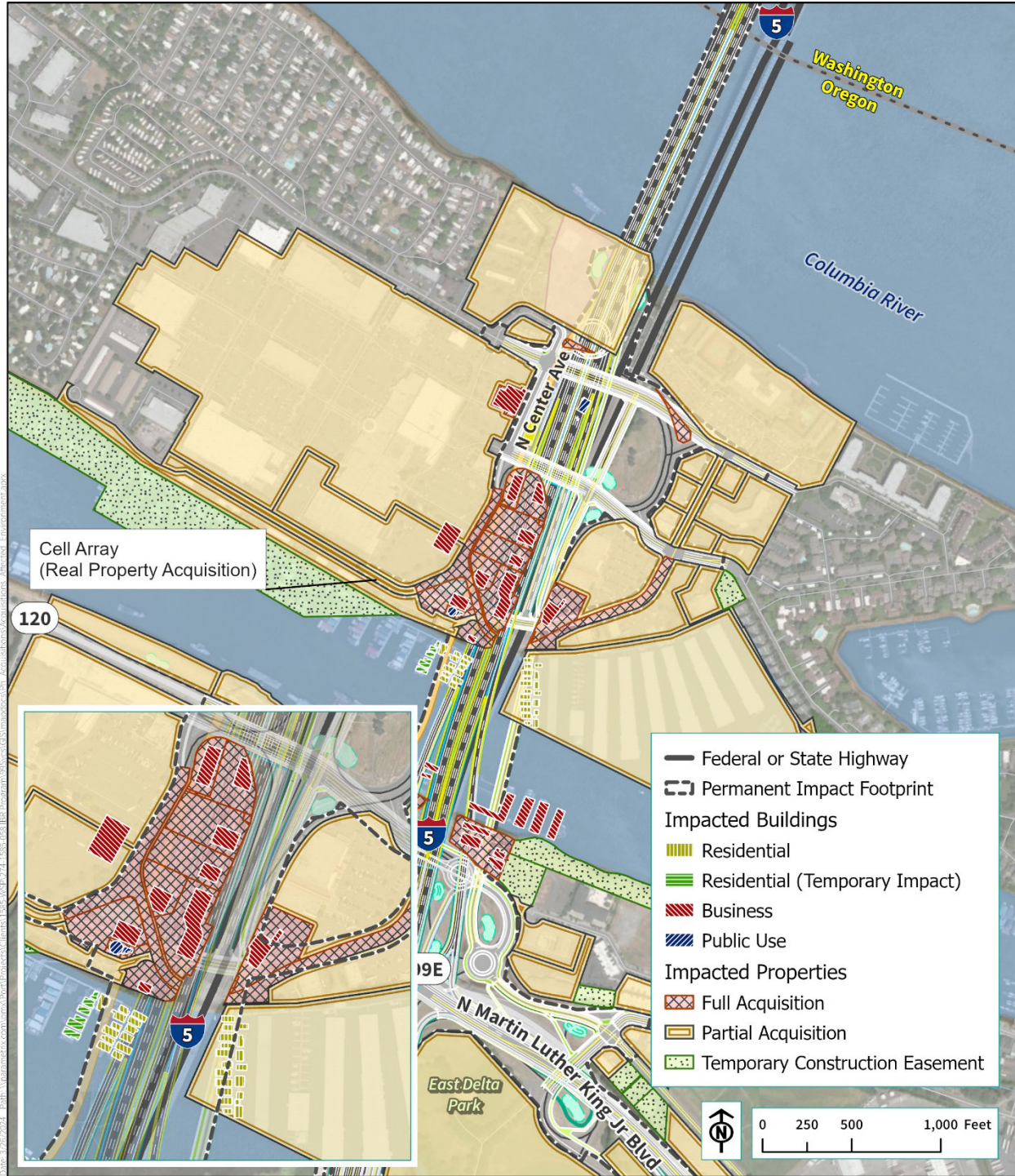
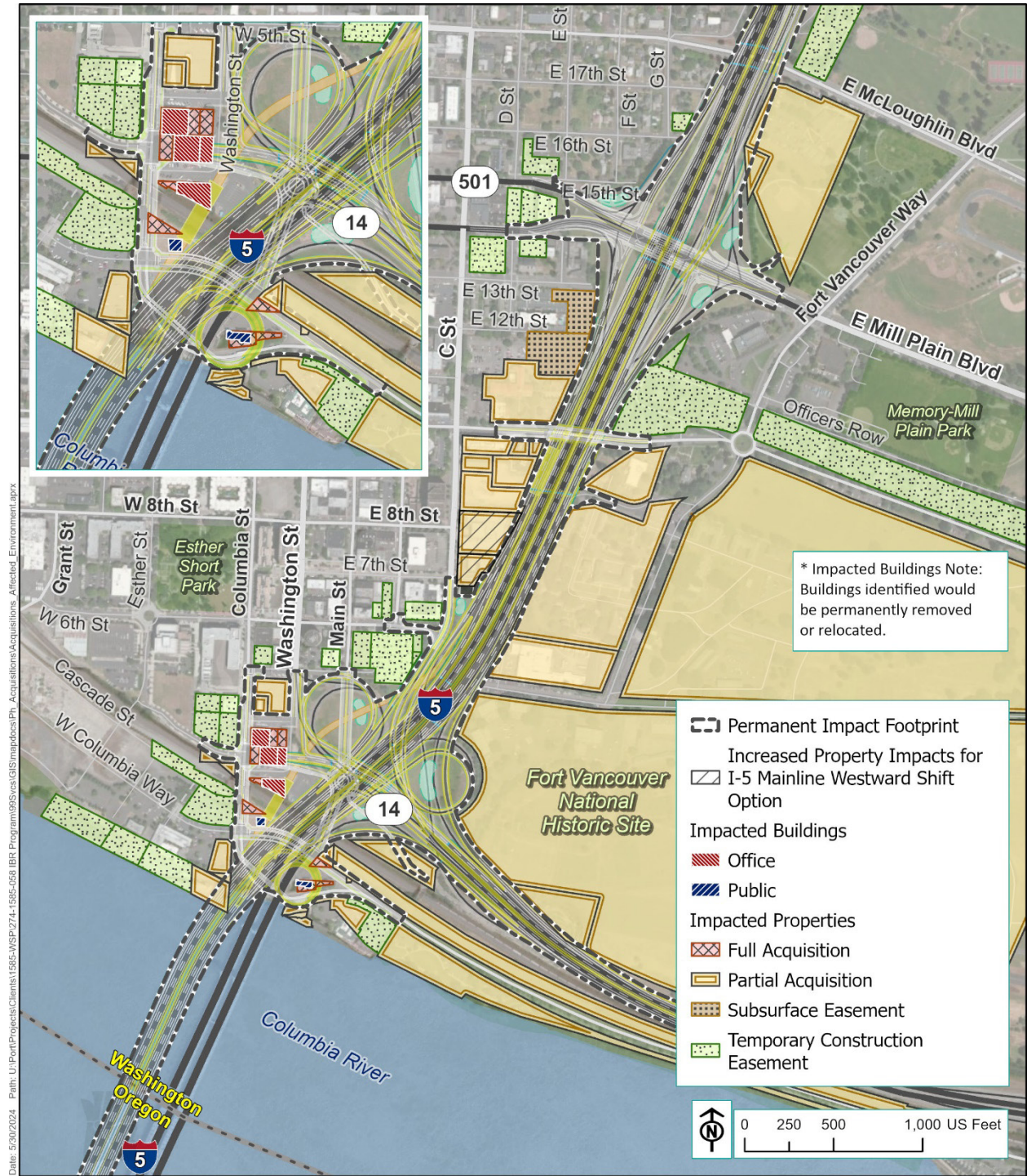


Figure B-3. Property Impacts – Ruby Junction



Source: ODOT, WSDOT, Mapbox, OpenStreetMap

Figure B-4. Property Impacts – Downtown Vancouver



Date: 5/30/2024 Path: U:\Port\Projects\Clients\1565-VSP\274-1565-058 IBR Program\9595\cas\GIS\mapdocs\PH_Acquisitions\Acquisitions_Affected_Environment.aprx

Source: ODOT, WSDOT, Mapbox, OpenStreetMap

Figure B-5. Property Impacts – Downtown Vancouver Park and Ride

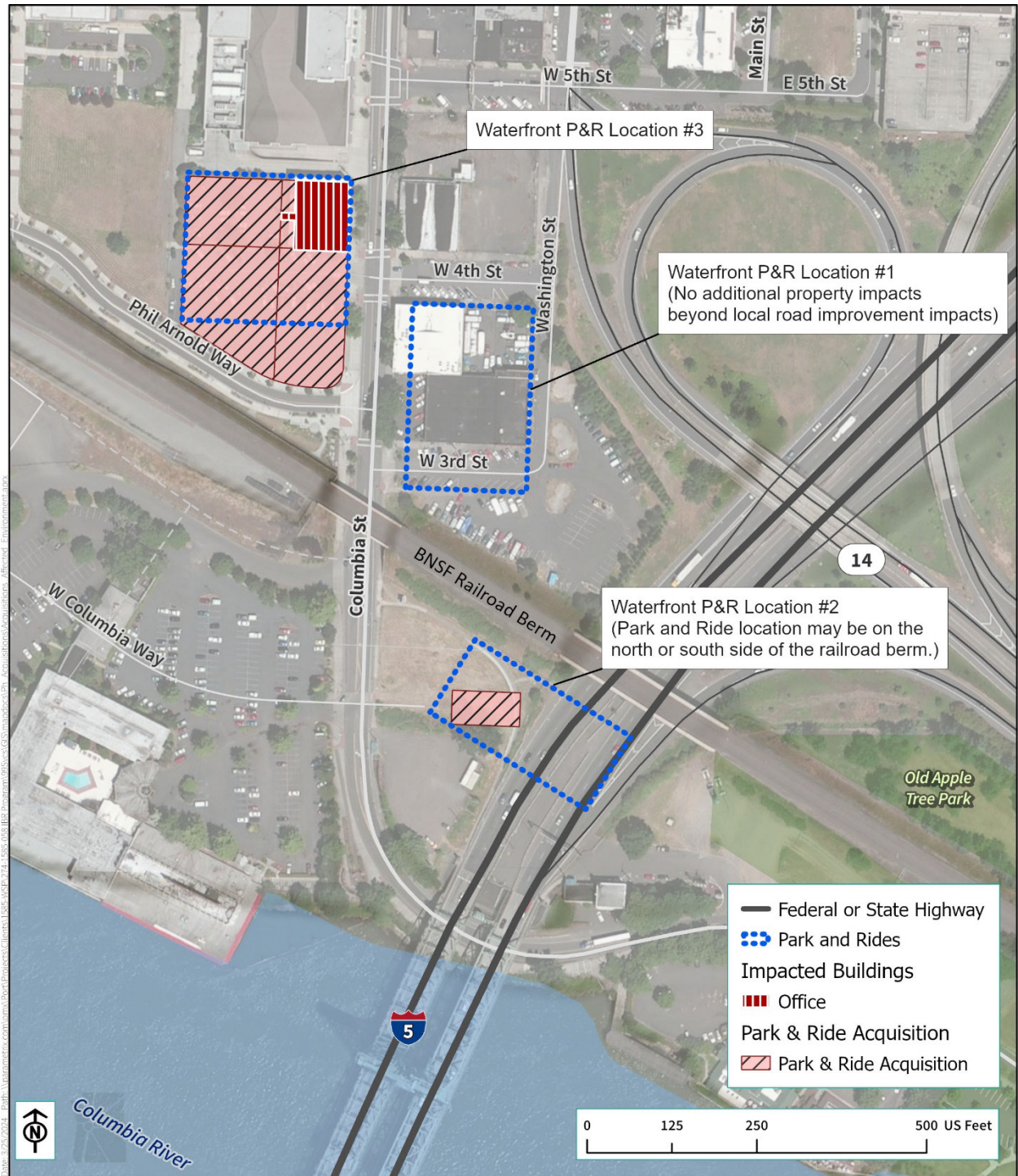


Figure B-6. Property Impacts – Evergreen Park and Ride

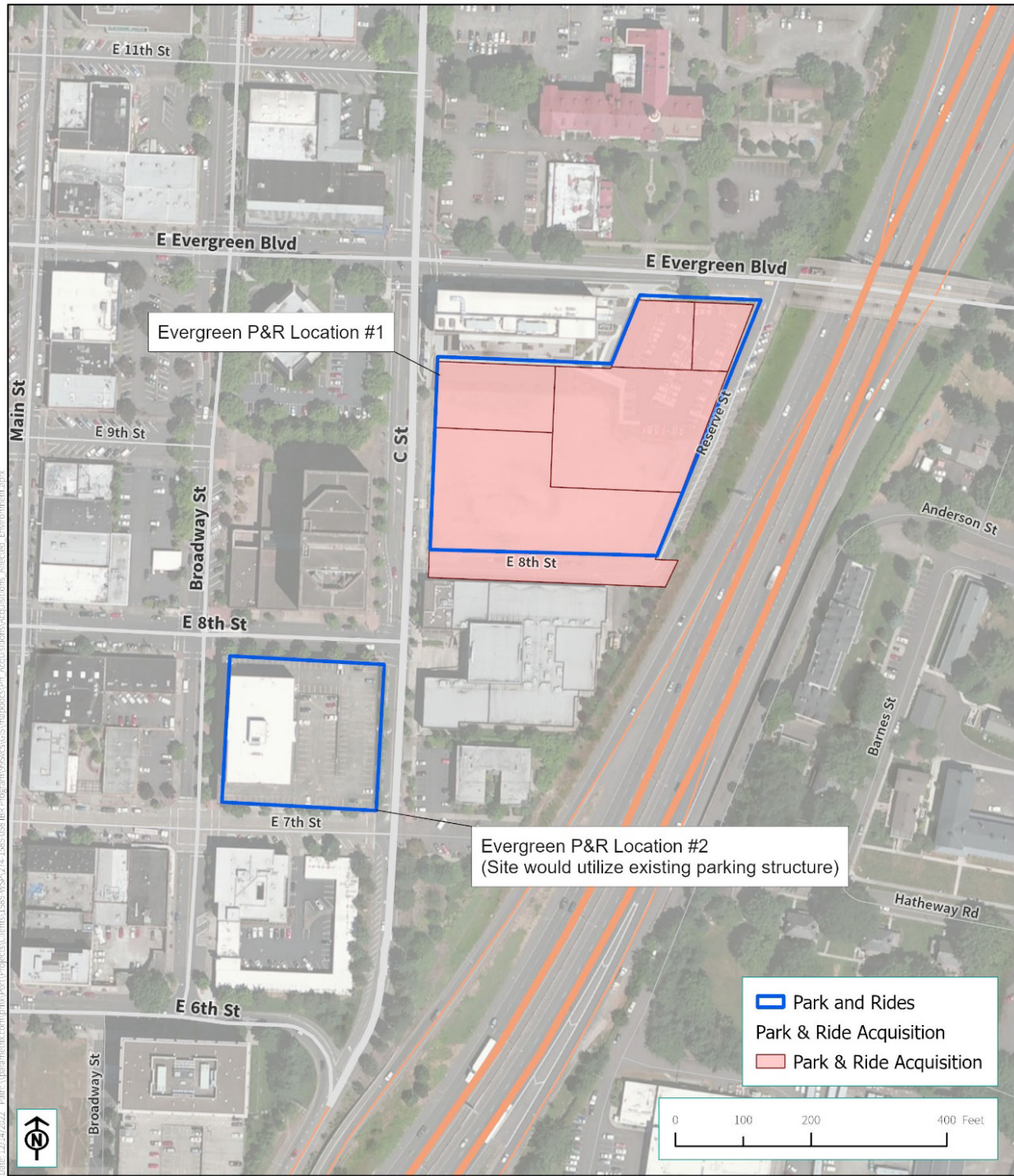
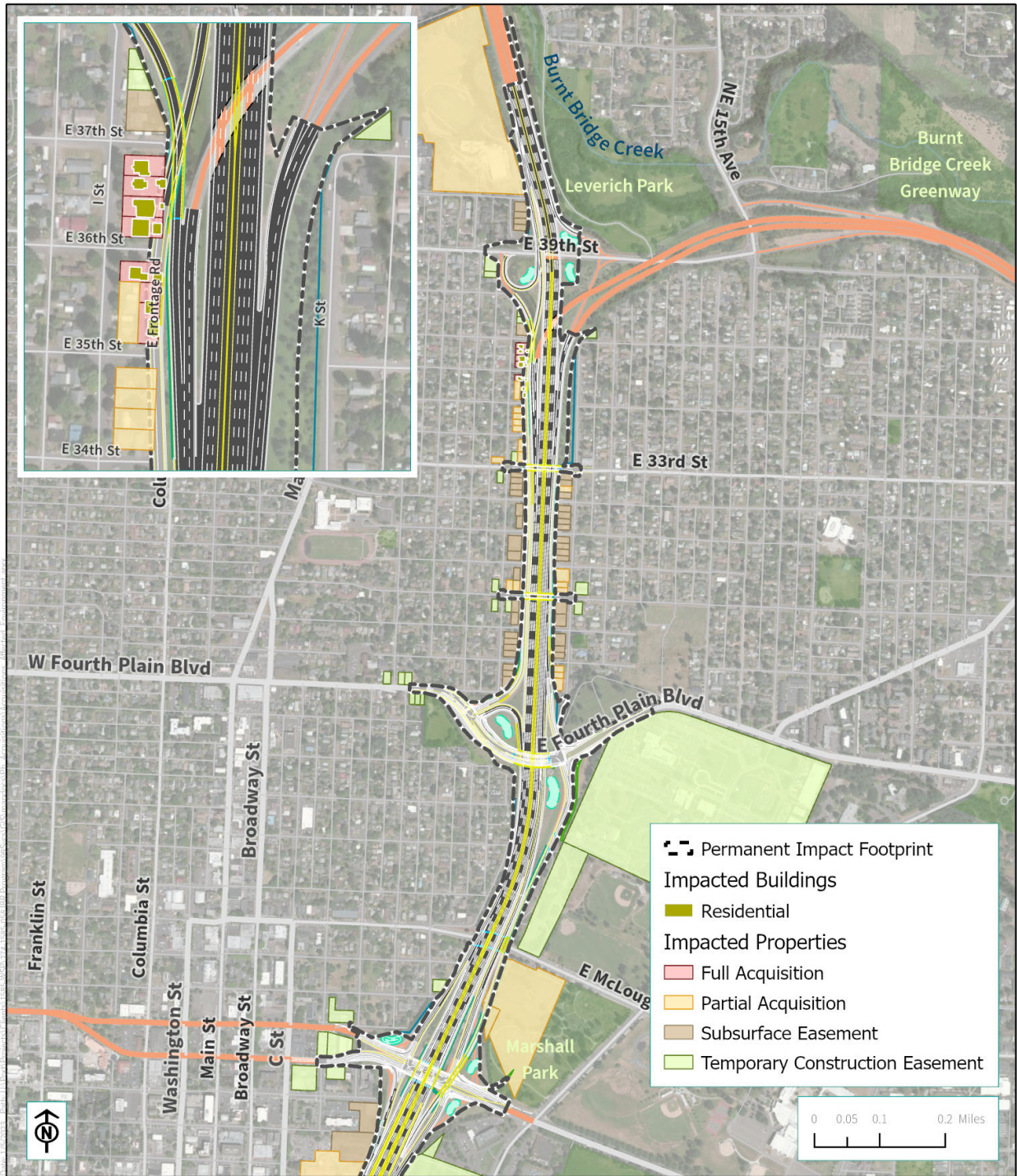


Figure B-7. Property Impacts – Upper Vancouver



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