

1 3.7 ROADWAY IMPROVEMENTS

2 The proposed project includes improvements to seven interchanges along a 5-mile segment of
3 I-5 between Victory Boulevard in Portland and SR 500 in Vancouver. These improvements
4 include some reconfiguration of adjacent local streets to complement the new interchange
5 designs, as well as new facilities for bicyclists and pedestrians.

6 In addition to interchange improvements, highway safety and mobility will be improved with a
7 series of auxiliary (add/drop) lanes that will be sequentially added and then dropped at strategic
8 locations through the corridor. The add/drop lanes will allow vehicles to travel between given
9 points without merging into mainline interstate traffic, and will allow vehicles exiting or entering
10 to minimize conflicts with through traffic. From the south end of the project area, I-5 northbound
11 will add one auxiliary lane starting where the Victory Boulevard on-ramp enters I-5 (Figure
12 3-16). Another auxiliary lane will be added where the Marine Drive on-ramp enters I-5. An
13 optional third auxiliary lane will be added where Hayden Island traffic enters I-5 over the river.
14 One of these lanes will be dropped at the SR 14 off-ramp, and a second will be dropped at the
15 Mill Plain off-ramp. North of the Mill Plain off-ramp, the number of auxiliary lanes will vary
16 between one and two (or up to three with the Full Build option). Lanes will be added or dropped
17 as the various on-ramps and off-ramps enter or exit I-5 at each subsequent interchange.
18 Southbound I-5 and the associated interchanges and ramps will have a similar series of add/drop
19 lanes (Figure 3-16).

20 Highway and surface roadway construction activities adjacent to each of the seven interchanges
21 that will be rebuilt have been integrated into the construction design for each of these
22 interchanges. Each interchange has a proposed construction description and sequence as
23 described in more detail below; however, the general interchange and roadway construction
24 activities are described here.

25 Typical reconstruction of roadway in the corridor involves a sequence of activities that will be
26 repeated several times at any one particular interchange or roadway section depending on the
27 amount of room a contractor has to work and where traffic must be accommodated.

28 In most cases, an area to detour mainline traffic will be constructed to clear the area for
29 permanent work. Temporary earthwork, drainage, surfacing, and paving activities will take place
30 to build these features. Prior to this, utilities may need to be relocated, drainage appurtenances
31 put in place, and access to and from the freeway rerouted to accommodate the new mainline
32 location. Once traffic is moved and an area is cleared, or in areas where it is already cleared,
33 permanent work will proceed.

34 Earthwork equipment will build embankments or excavate earth to a subgrade elevation (the bottom of
35 the eventual pavement section that traffic will drive on). Because of the tight areas, large earthmoving
36 equipment is not envisioned for use in this work. Wheel loaders, back hoes, and similar equipment will
37 be used. Dump trucks will be used to transport material to and from the project as the subgrades are
38 constructed. Embankments must be built in layers with thorough compaction to ensure its stability.
39 Large rollers will be used for this compaction. Once completed, rock will be placed on the subgrade
40 with several lifts of asphalt or concrete pavement following. Rock will be placed by dump trucks and
41 compacted with rollers. Asphalt will be placed with a paving machine that is fed by dump trucks then
42 compacted by rollers. Final drainage fixtures will be placed either before or after the final surfacing
43 operation. Illumination, Intelligent Transportation Systems (ITSs), and signal conduits will generally be
44 placed prior to surfacing. Foundations and the appurtenances will precede or follow the surfacing work.

1 Concrete barriers, guardrails, and other safety devices will follow the surfacing work, as will
2 landscaping of the exposed earthen slopes. Temporary barriers may be used until roadways are fully
3 completed. If deemed necessary through noise analyses, permanent stand-alone sound walls may be
4 constructed before or after any of this work depending on available room and access to the work sites.

5 As the various stages are completed, the new roadways will be striped to accommodate the
6 shifting of traffic to allow areas to be cleared for future stages of work. Once all traffic can be
7 placed in its permanent position, a final level of asphalt will be placed and permanent striping
8 and signing installed. This may be preceded by illumination and concrete median barrier being
9 installed between adjacent roadways.

10 **Victory Boulevard Interchange**

11 The southern extent of the CRC highway improvements is the Victory Boulevard interchange.
12 Improvements at this interchange will be limited to two of the ramps. The Marine Drive to I-5
13 southbound on-ramp will be braided over the I-5 southbound to Denver Avenue off-ramp. Braiding
14 these two movements will eliminate the existing short (substandard) weave distance, improving traffic
15 safety. Braiding the two movements will also eliminate direct access from the Marine Drive
16 Interchange to the Victory Boulevard Interchange. Motorists will instead use local roads to travel from
17 Marine Drive to Victory Boulevard. Local roads will also connect the Bridgeton Neighborhood to the
18 Kenton Neighborhood.

19 Currently, the existing Denver Avenue on-ramp merges with I-5 mainline northbound traffic; the
20 proposed improvement will bring this ramp on as an add lane, acting as an auxiliary lane within
21 the project limits to provide additional capacity and a safer roadway.













22 **Marine Drive Interchange**

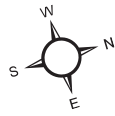
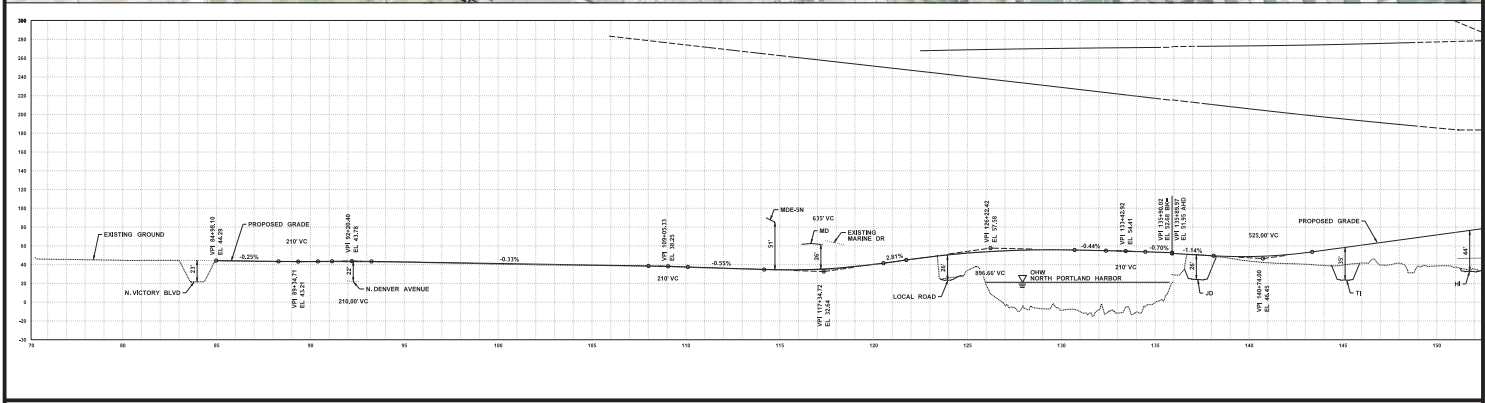
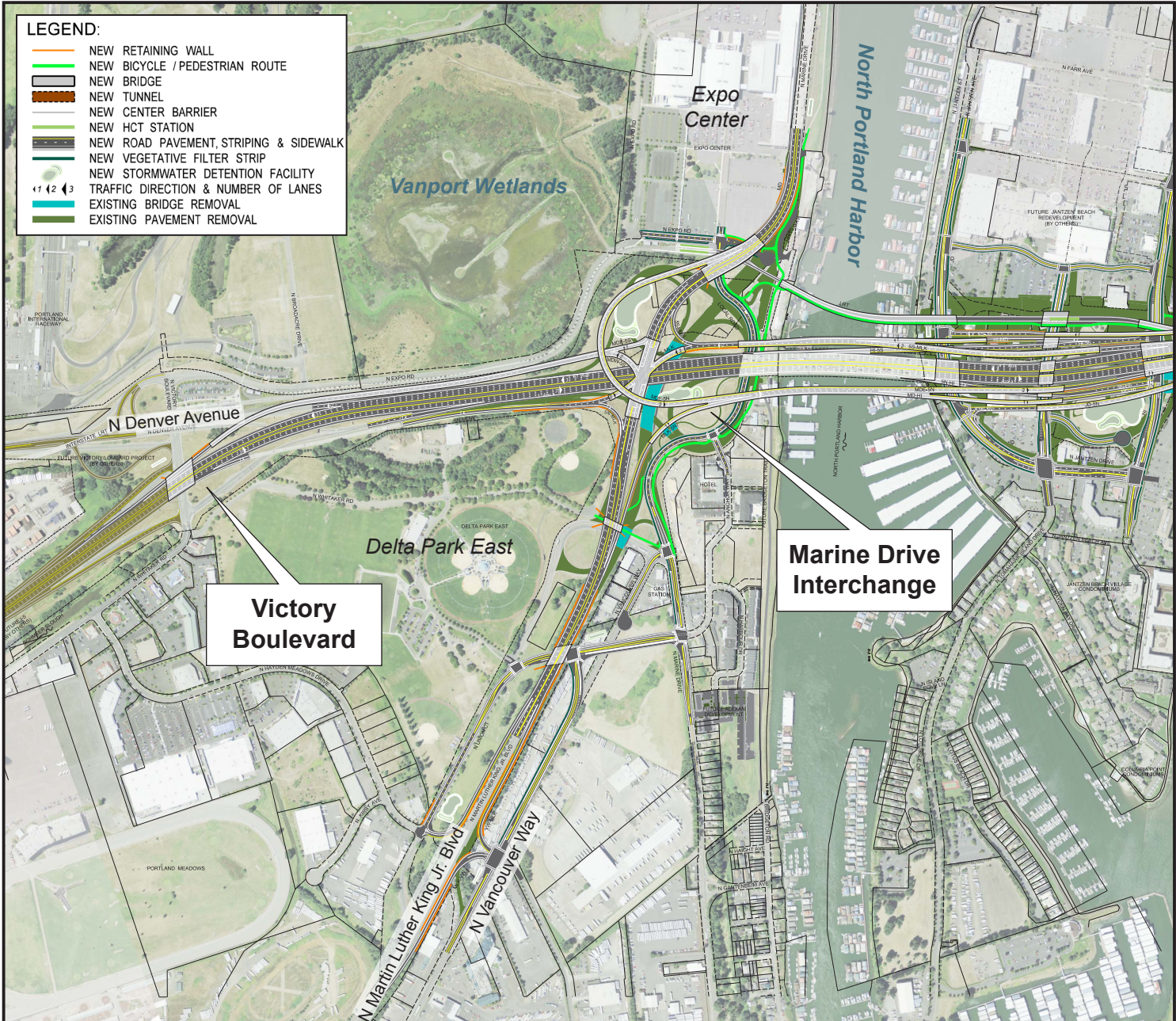
23 All movements within this interchange will be reconfigured to reduce congestion and improve safety
24 for trucks and other motorists entering and exiting I-5. On Marine Drive, trucks account for between 10
25 and 15 percent of the daily vehicle composition, which increases to between 20 and 30 percent during
26 the peak periods (AM and PM). Trucks account for between 8 and 10 percent of the daily vehicle
27 traffic across the I-5 bridges. Due to their size and maneuverability, within the Bridge Influence Area
28 on I-5, large trucks, on average, operate equivalent to 2.5 passenger cars. Therefore, the proposed
29 design for the Marine Drive interchange optimizes truck mobility. The proposed configuration is a
30 single-point urban interchange (SPUI) with a flyover ramp serving the eastbound to northbound
31 movement. With this configuration, three legs of the interchange will converge at a point on Marine
32 Drive over the I-5 mainline. This configuration will allow the highest volume movements to move
33 freely without being impeded by stop signs or traffic signals (Figure 3-16).

34 Specific changes to traffic movements at this interchange include:

- 35 • The northbound flyover ramp will allow motorists to travel from Marine Drive eastbound to I-5
36 northbound without stopping. Currently this movement is served by a double left turn at a
37 signalized intersection.
- 38 • The Marine Drive eastbound to I-5 southbound ramp will also provide motorists access to I-5
39 southbound without stopping. This ramp will touch down south of Victory Boulevard.
- 40 • Motorists traveling on Martin Luther King Jr. Boulevard westbound to I-5 northbound will
41 access I-5 without stopping at the intersection. Currently this is served by a loop that goes under
42 the freeway. The new configuration will have less out of direction travel for this movement.
43

LEGEND:

-  NEW RETAINING WALL
-  NEW BICYCLE / PEDESTRIAN ROUTE
-  NEW BRIDGE
-  NEW TUNNEL
-  NEW CENTER BARRIER
-  NEW HCT STATION
-  NEW ROAD PAVEMENT, STRIPING & SIDEWALK
-  NEW VEGETATIVE FILTER STRIP
-  NEW STORMWATER DETENTION FACILITY
-  TRAFFIC DIRECTION & NUMBER OF LANES
-  EXISTING BRIDGE REMOVAL
-  EXISTING PAVEMENT REMOVAL



0 200 400 600 800 1000
SCALE IN FEET

Figure 3-16

CRC Project Alignment
Victory Boulevard/Marine Drive Interchange



1 Travel safety and mobility between the Marine Drive interchange and Hayden Island will be
2 improved by providing direct connections separate from the I-5 mainline. The separate
3 connections via CD will allow traffic entering and/or exiting the freeway at either Marine Drive
4 or Hayden Island to travel on parallel structures over North Portland Harbor. Separating this
5 traffic will prevent potential collisions and reduce congestion that can occur from a high number
6 of conflicting traffic movements.

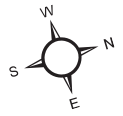
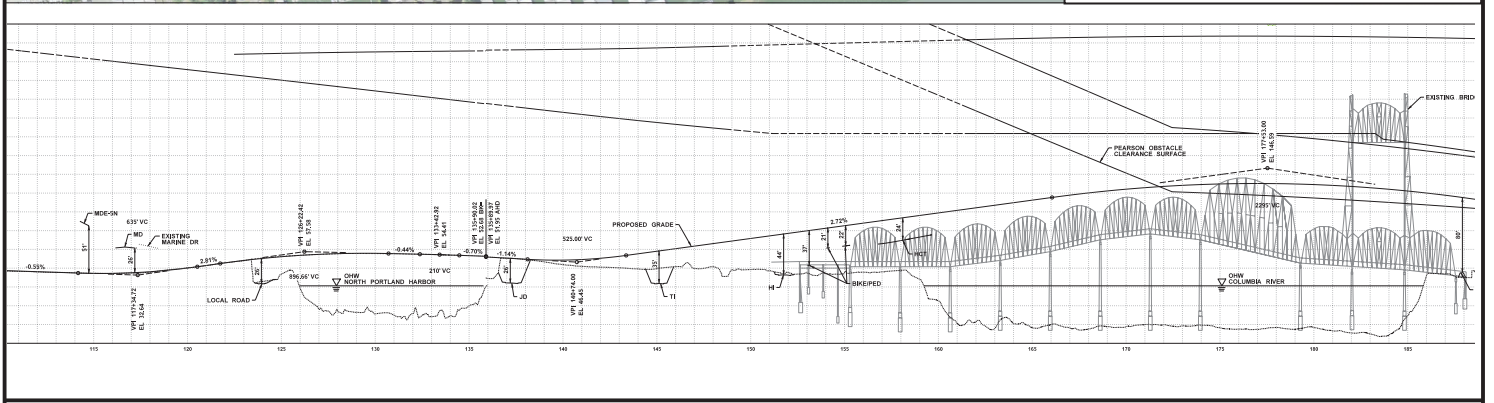
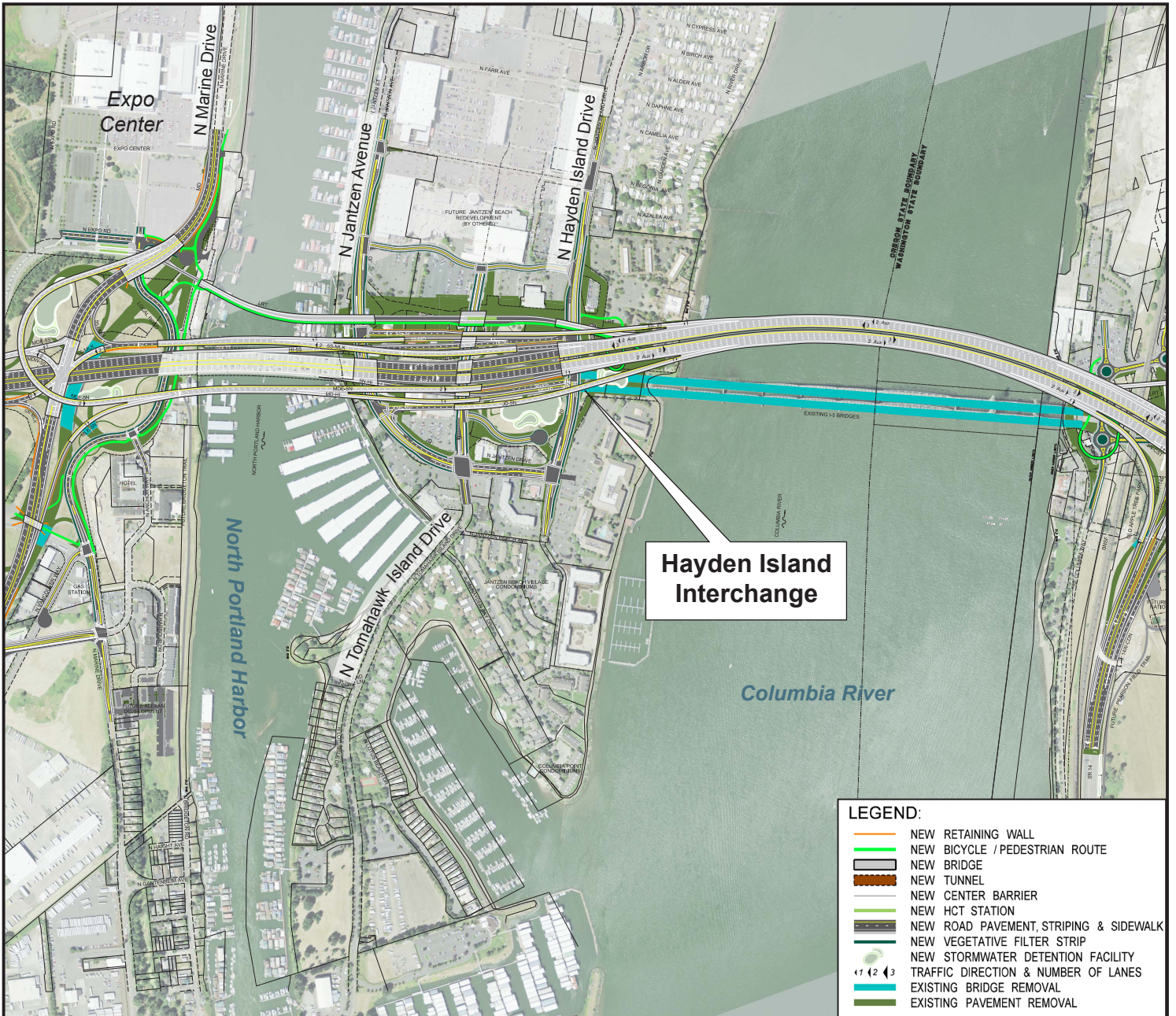
- 7 • The new interchange configuration changes the westbound Marine Drive and westbound
8 Vancouver Way connections to Martin Luther King Jr. Boulevard and to northbound I-5.
9 Rather than merging onto Martin Luther King Jr. Boulevard, which then loops to the west
10 side and back to the east side of I-5 before entering northbound I-5, these two streets will
11 instead access westbound Martin Luther King Jr. Boulevard farther east. Martin Luther
12 King Jr. Boulevard will have a new direct connection to I-5 northbound.
- 13 • In the new configuration, the connections from Vancouver Way and Marine Drive will be
14 served, improving the existing connection to Martin Luther King Jr. Boulevard east of the
15 interchange. The improvements to this ramp will allow traffic to turn right from
16 Vancouver Way, and the acceleration distance will be extended to allow for a safer merge.
17 On the south side of Martin Luther King Jr. Boulevard, the existing loop connection will
18 be replaced with a new connection farther east, touching down to Union Court near the
19 entrance to Delta Park. A new undercrossing of Martin Luther King Jr. Boulevard will
20 replace the existing one at Marine Way.

21 **Hayden Island Interchange**

22 The Hayden Island interchange will be reconfigured to lengthen the ramps and improve merging
23 speeds by building longer ramps parallel to the highway rather than looped ramps (Figure 3-17).
24 The current Hayden Island interchange off of I-5 contains substandard features, including short
25 on- and off- ramps. The existing short ramps do not provide ample distance for some vehicles,
26 especially trucks, to reach mainline speed before merging onto the mainline lanes, which results
27 in a safety hazard. The combination of short ramps and lack of add/drop lanes requires traffic
28 entering and exiting the highway to accelerate quickly when entering and decelerate quickly
29 when exiting, or to back up along the ramps and mainline. These conditions result in congestion
30 and higher crash rates on the highway and local streets (CRC 2008).

31 All movements for this interchange will be reconfigured. The new configuration will be a “Tight
32 Diamond.” Traffic exiting from the north (southbound traffic from Washington) and northbound
33 traffic entering the highway would do so from the south end of the island. Likewise, traffic
34 exiting from the south (northbound traffic from Oregon) and southbound traffic entering the
35 highway would do so on the north end of the island.

36 Improvements to N Jantzen Drive and N Hayden Island Drive would include additional through,
37 left-turn, and right-turn lanes. A new local road, N Tomahawk Drive, would travel east-west
38 through the middle of Hayden Island and under the I-5 interchange, improving connectivity
39 across I-5 on the island.
40



0 200 400 600 800 1000
SCALE IN FEET

Figure 3-17
 CRC Project Alignment
 Hayden Island/Jantzen Beach Interchange
 Columbia River
CROSSING

1 **SR 14 Interchange**

2 The basic functions of this interchange will remain largely the same as the existing interchange,
3 but safety will be improved and congestion will be reduced. Direct connections between I-5 and
4 SR 14 will be rebuilt. Access to and from downtown will be provided as it is today, but the
5 connection points will be relocated (Figure 3-18).

6 Specific changes to traffic movements at this interchange include:

- 7 • Access to I-5 southbound from downtown Vancouver will be made on C Street rather than
8 on Washington Street.
- 9 • Downtown connections to and from SR 14 will be made by way of Columbia Street at 4th
10 Street.
- 11 • The distance between the northbound I-5 exit to SR 14 and the exit to City Center will be
12 increased to improve safety.
- 13 • With the reconfiguration of the SR 14 westbound movement, the merge that occurs
14 between I-5 northbound and SR 14 to C Street will be eliminated.
- 15 • The southbound I-5 connection to SR 14 will be made with a structure under I-5 and
16 SR 14.
- 17 • The northbound I-5 connection to SR 14 will be a flatter curve, allowing traffic to travel at
18 a higher speed than on the existing ramp.
- 19 • Both north and southbound movements between the Mill Plain interchange and the SR 14
20 interchange will occur separate from the highway on CD roads, eliminating the
21 substandard weave distances on the I-5 mainline.
- 22 • For all connections, acceleration and deceleration distances will adhere to highway design
23 standards to improve safety.
- 24 • Raising I-5 at this interchange.
- 25 • Extending Main Street from 5th Street south to Columbia Way.
26

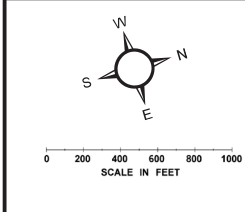
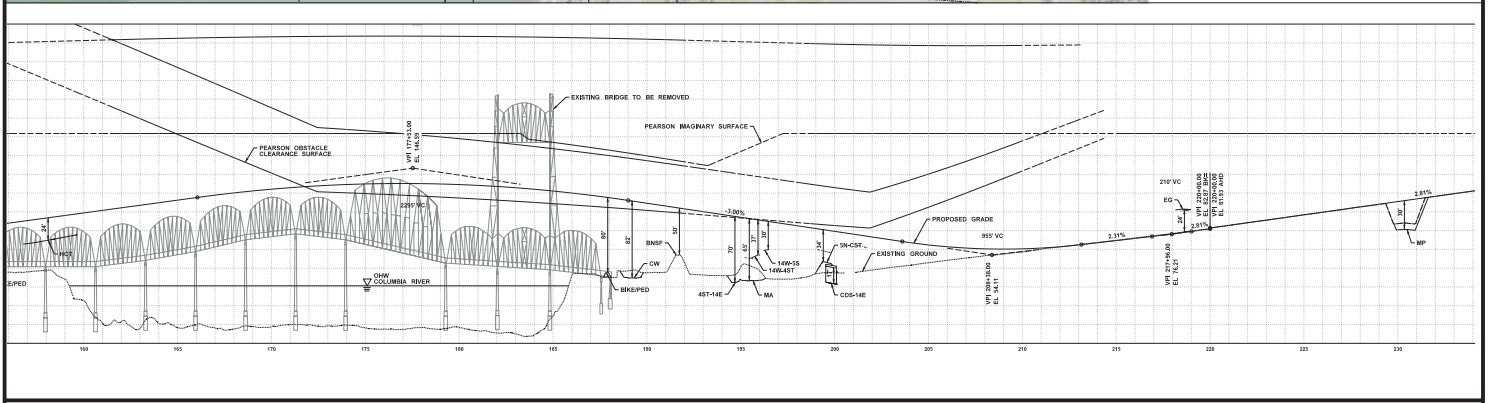
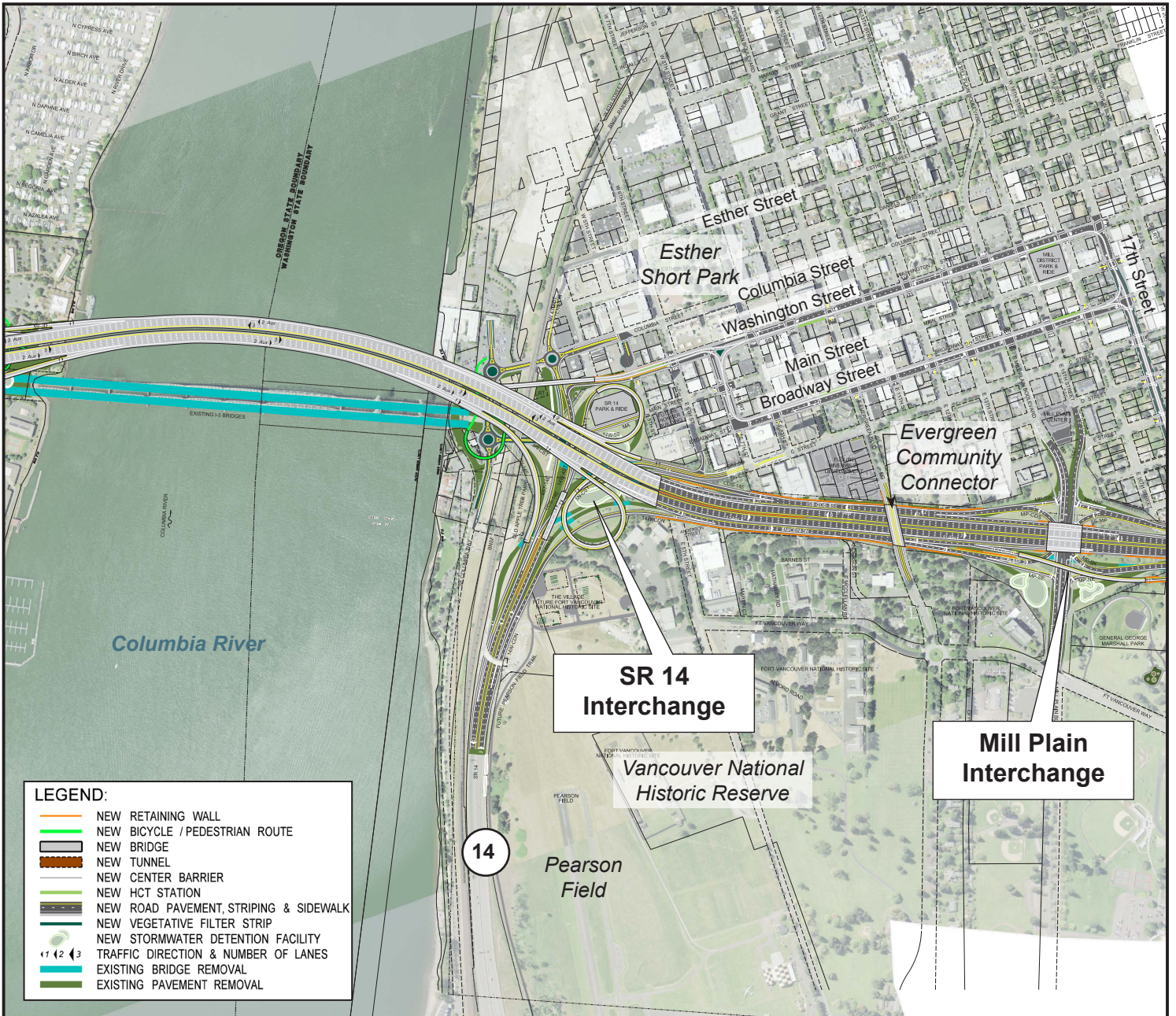


Figure 3-18
 CRC Project Alignment
 SR 14/City Center Interchange

