Cascadia High Speed Rail Corridor

Between Portland, OR and Seattle, WA

CHSR Portland, OR,
to Seattle, WA_02

The CHSR Miles from Portland, OR, to Seattle Central Station

- CHSR miles between Portland, Oregon Rose Quarter and Longview, WA on the ground is 9.66 miles, on flyovers is 20.69 miles, and in tunnels 12.81 miles, a total of 43.16 miles.

- CHS miles between Longview and Centralia, on the ground, is 11.82 miles, on flyovers are 17.62 miles, and in tunnels, it is 12.62 miles, a total of 42.06 miles.

- CHSR miles between Centralia and Tacoma, on the ground, is 17.36 miles, on flyovers are 7.73 miles, and in tunnels, it is 21.77 miles. A total of 46.86 miles.

- CHSR between Tacoma and Seattle Central station/hub, on the ground, is 4.06 miles; on flyovers, 17.81 miles, and in tunnels, 13.03 miles. A total of 34.90 miles. SEA/TAC link, on the flyover, is 3.74 miles, and in the tunnel is, 4.00 miles. A total of 7.74 miles. The total from Portland to Seattle direct is 161.29 miles; via SEA/TAC, it is 140.63 miles.

- Portland, Amtrak Station to Seattle King Amtrak Station is 187.00 miles long, the CHSR direct is ± 25.71 (22.34) miles shorter, and via SEA/TAC, it is 3.37.

- Des by RN

The CHSR Miles from Portland Rose Quarter Station/Hub, OR, to Seattle Central Station

- CHSR miles between Portland, Oregon Rose Quarter, and Seattle Central station/hub on the ground is 42.90 miles, on flyovers is 58.16 miles, and in tunnels 60.23 miles, a total of 161.29 miles.

- CHSR via SEA/TAC; on the flyover, it is 3.74 miles, and in the tunnel, it is 4.00 or 169.03 miles.
- Portland Rose Quarter to Portland Airport (PDX) on the ground, it is 0.61 miles, on flyovers it is 7.46 miles, and in tunnel, it is 1.43 miles.

- Amtrak to King Station is 187 miles long, the CHSR direct is ± 25.71 miles shorter, and via SEA/TAC, it is 17.97 miles shorter.

- Des by RN

Legend

CHSR Station in Tunnel

CHSR Station on Flyovers

CHSR Station on Ground

On ground

Cuts

Fills

Flyovers

Tunnels

Existing Freight Railroads, other than BNSF and UP RR

Existing Freight Railroads

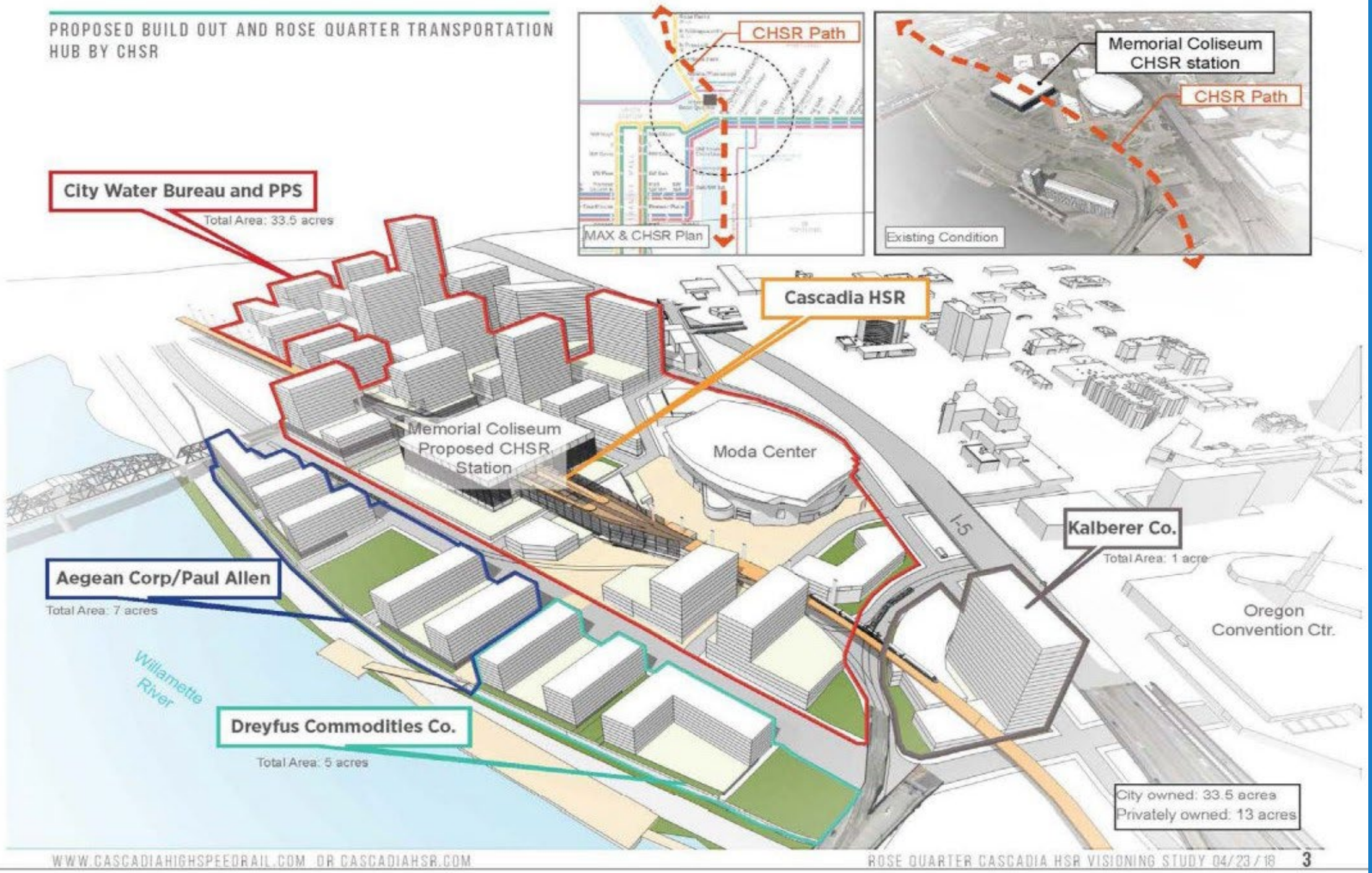
C-ICE: Cascadia Inter-City Express

CCE: Cascadia Commuter Express

HSR Legend 08
Des by RN/BCP

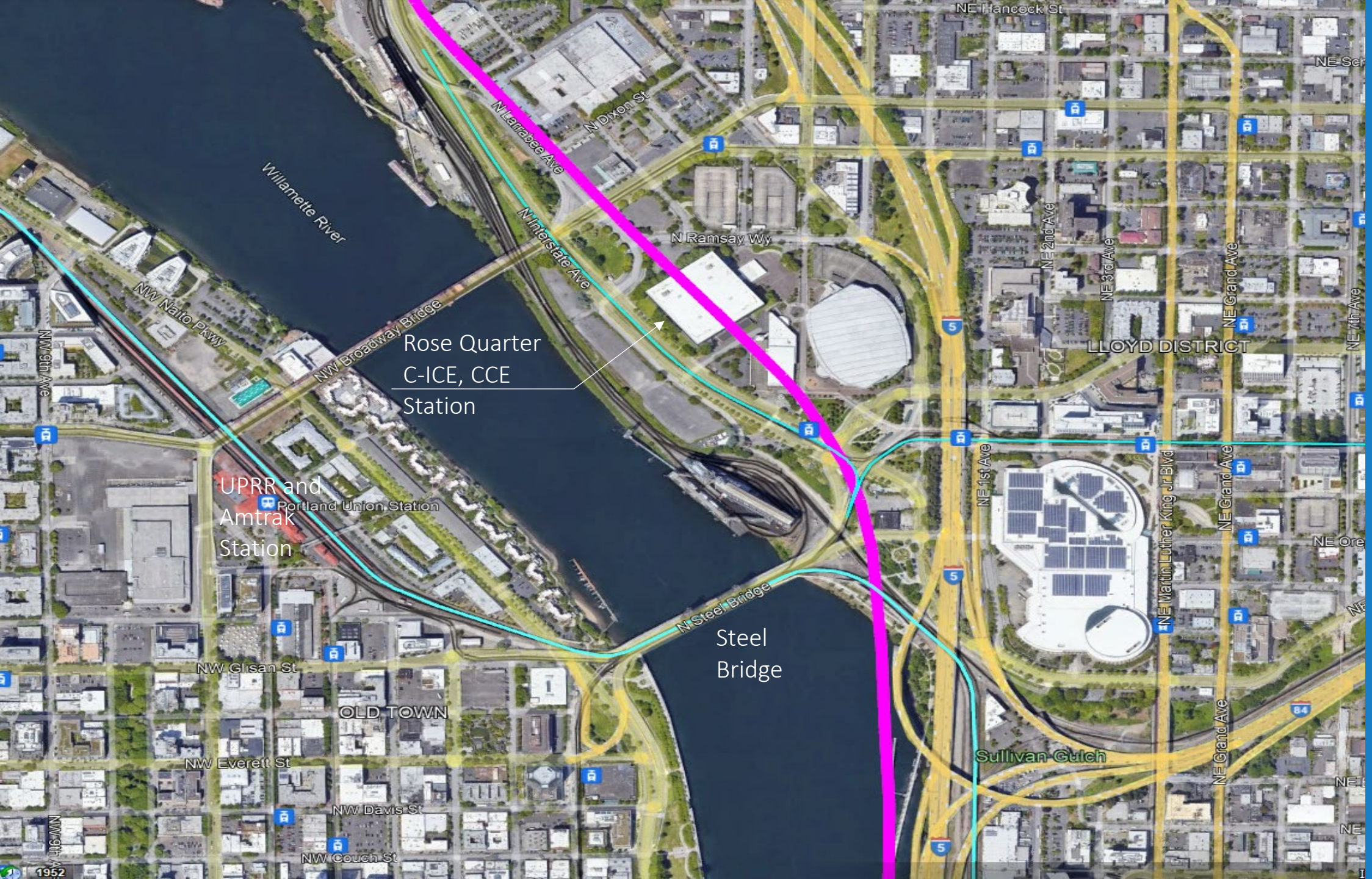
CHSR Corridor between Portland and Seattle

BNSF freight corridor is 150 years old and has too many tight curves, grade crossings and small towns to develop HSR technology.



The Rose Quarter Transportation Hub

The proposed phased development is to coincide with CHSR station and mixed-use opportunities



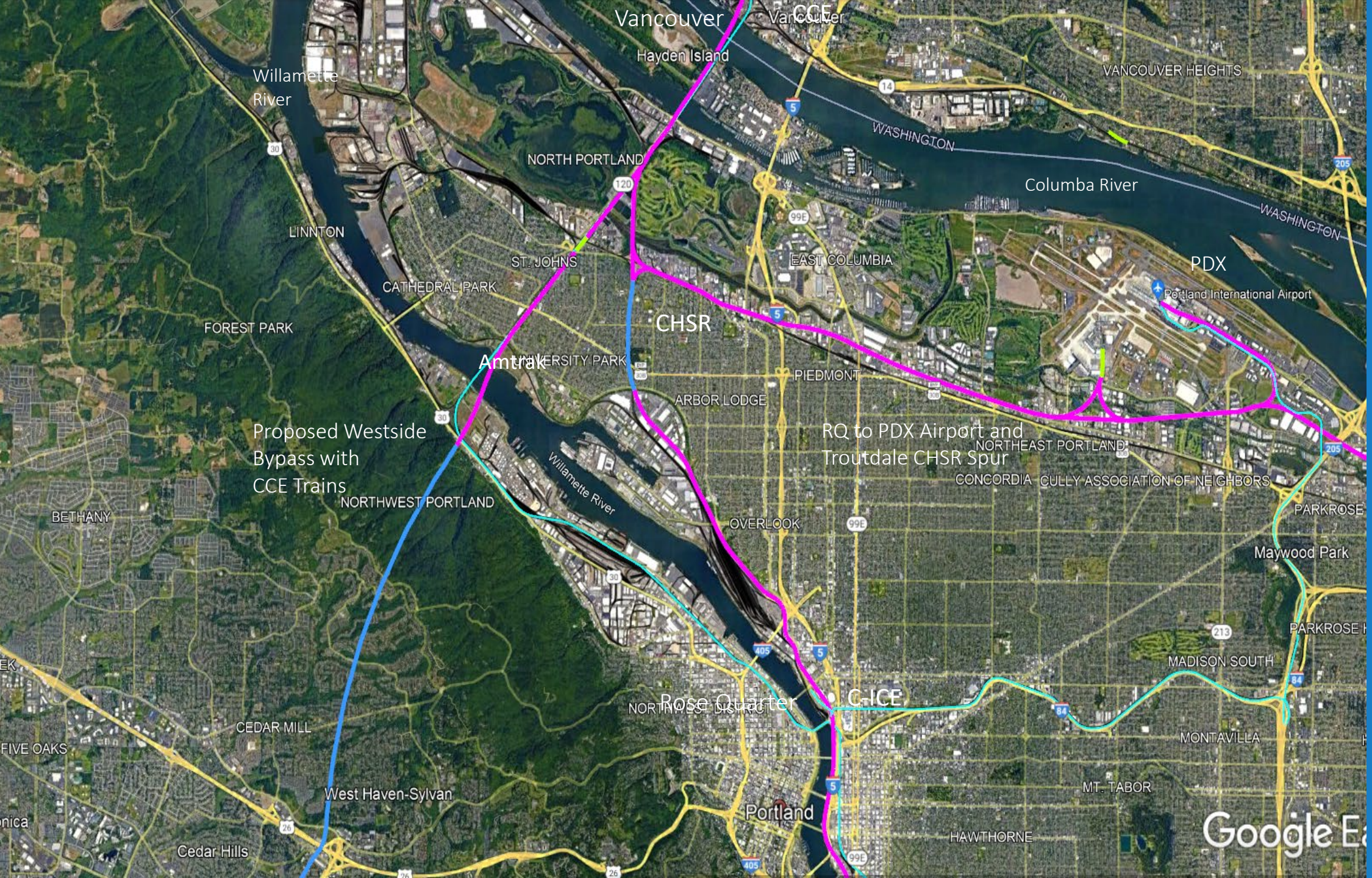
CHSR Corridor at the Portland Rose Quarter Transportation Hub

Rose Quarter Transportation Hub with CHSR Station

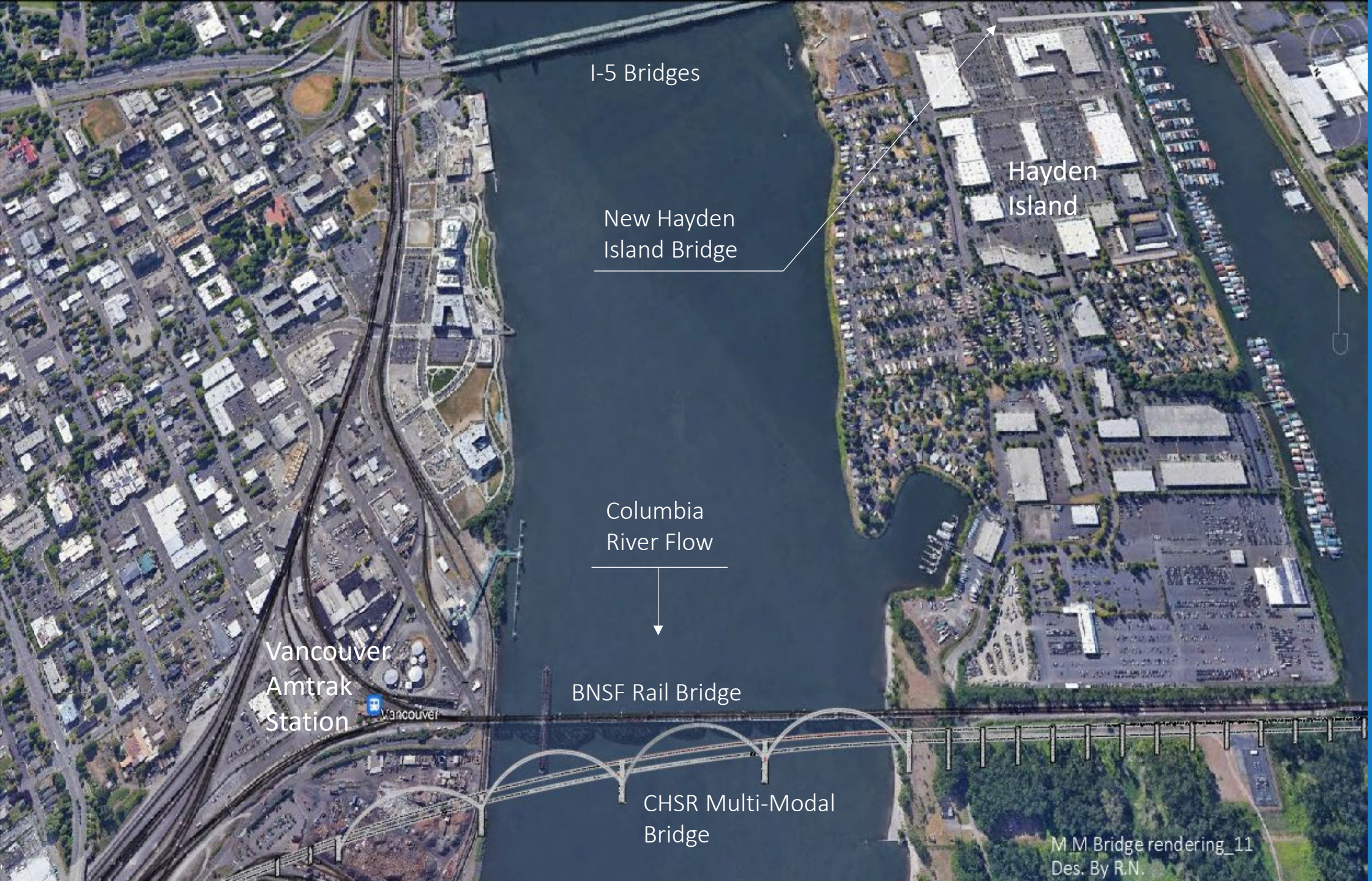
The CHSR Station has five rail tracks for Cascadia Inter-City Express (C-ICE) trains and Cascadia Commuter Express (CCE) trains.

The station platform is 1300 feet long and 146 feet wide.

Here is an interchange with track # 2. Here, we can trans-load express freight between tracks # 1 and # 2. Number 1 will go to PDX and Troutdale.



CHSR Corridor between Rose Quarter and Vancouver, WA and other Possible Corridors



Proposed CHSR Multi-Modal Bridge, New Hayden Island Bridge and Existing I-5 and BNSF RR Bridge

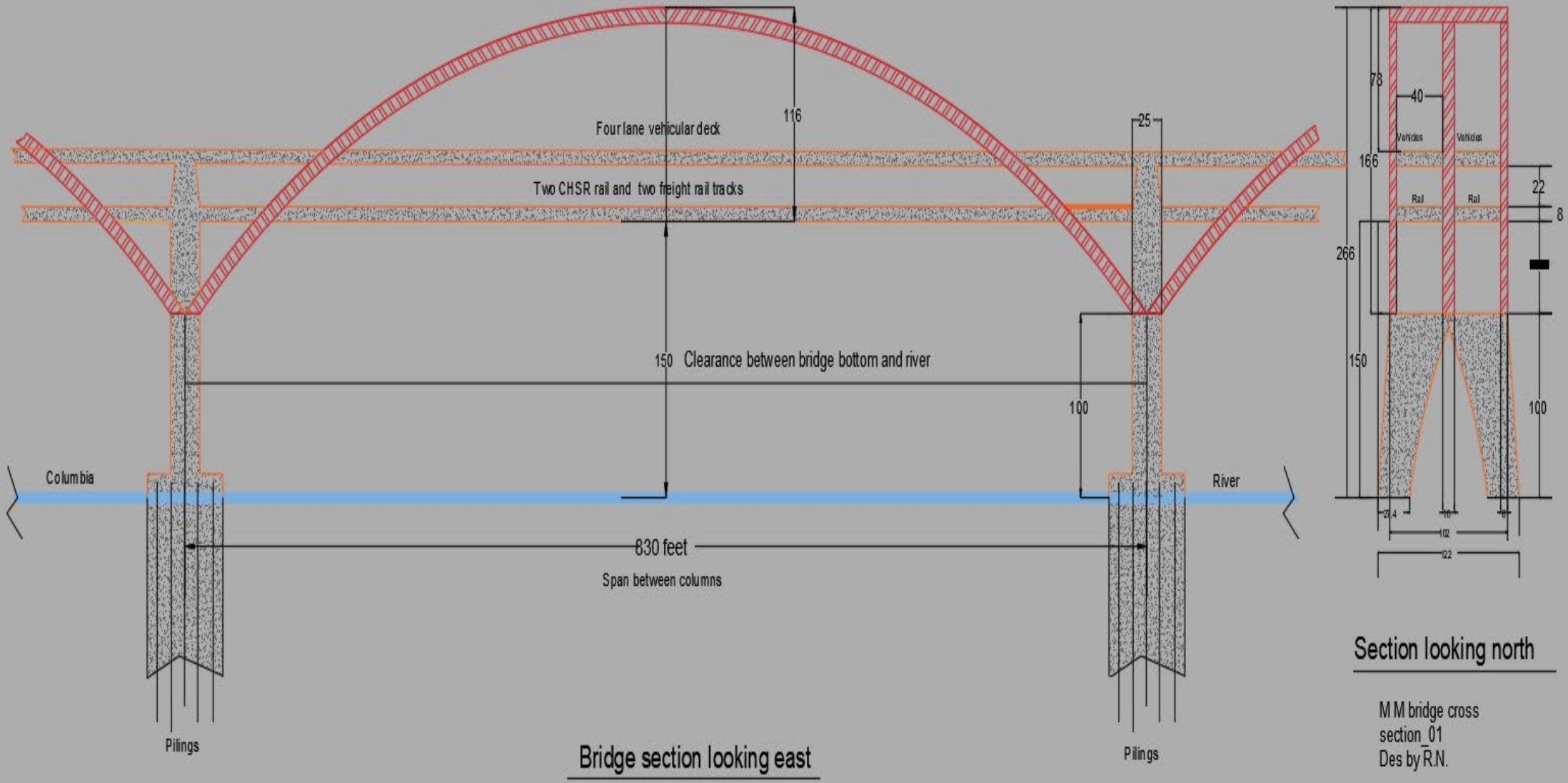
Proposed Hayden Island Auxiliary Bridge

The MAX corridor will be between the north and south traffic lanes on the new bridge over the Columbia River Slough at the same elevation as I-5.

CHSR bridge rendering_13

Proposed Four Arched Bridge with Two Decks for CHSR and Freight Rail on the Lower Deck and Future Vehicles on the Upper Deck

Existing BNSF Bridge is in the foreground and 150 ft east of Cascadia Multi-Modal Bridge.



CHSR Multi-Modal Arched Bridge

The CHSR bridge has a total of four arches. This design will reduce overall heights to prevent air traffic conflicts.

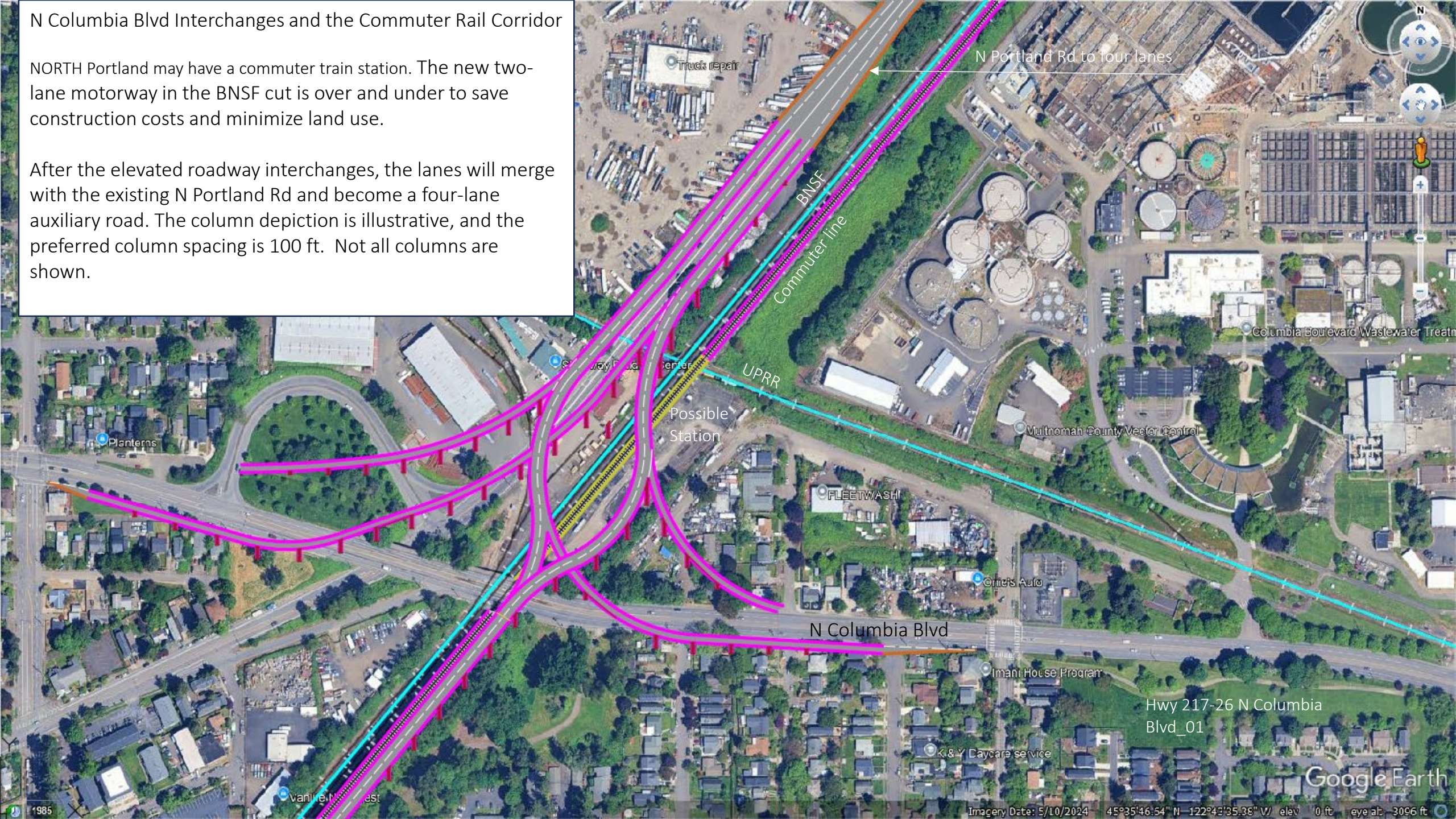
The CHSR Multi-Modal Bridge has two tracks for CHSR, two tracks for freight rail transport. The upper deck is for future four lanes of vehicle traffic.


This is the original CAD file, created in 2016. Revised by now
New CHSR & BNSF/UP RR on upper deck
Marine Dr.
To Marine Dr. Interchange
N. Portland Road
Existing BNSF/UP RR
New four lane motorway lower deck
From N Force Ave. and Marine Dr. Interchange
Hayden Is_07 Drawing
Eye 930
© 2013 Google
Google earth
120
N Marine Dr

N Columbia Blvd Interchanges and the Commuter Rail Corridor

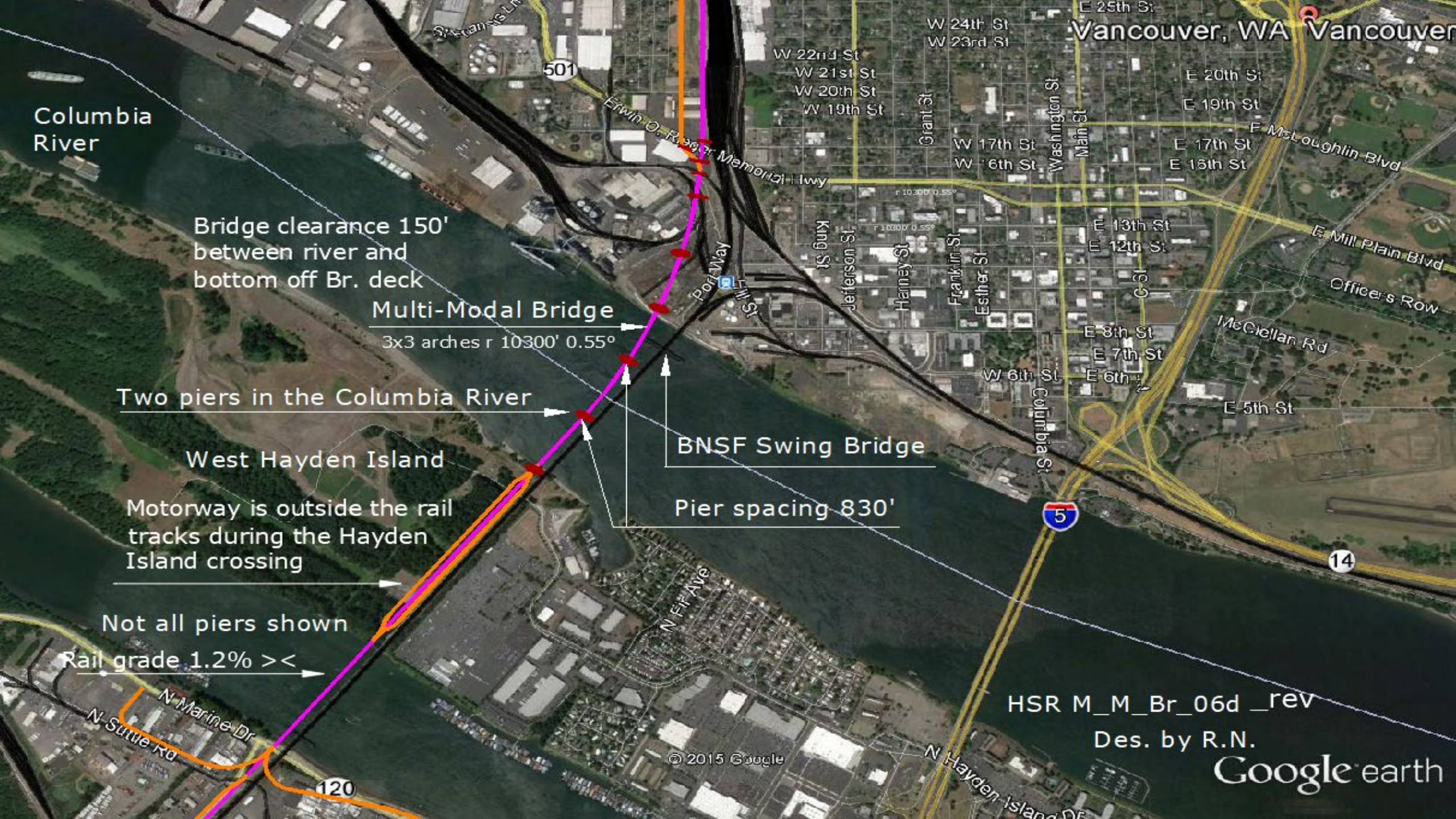
NORTH Portland may have a commuter train station. The new two-lane motorway in the BNSF cut is over and under to save construction costs and minimize land use.

After the elevated roadway interchanges, the lanes will merge with the existing N Portland Rd and become a four-lane auxiliary road. The column depiction is illustrative, and the preferred column spacing is 100 ft. Not all columns are shown.



CHSR Multi-Modal Bridge, Revised version

The CHSR is above the BNSF/UPRR tracks.
The roadways go below the CHSR tracks to Hayden Island, where they will go above.
The N Portland Rd has single lanes on and off ramps.
N Marine Dr from the I-5 interchange has a single on-ramp to Vancouver.
The Vancouver to N Marine Dr has a single off-ramp.
This layout will reduce the I-5 bridge traffic by 30%.


Columbia River
Bridge clearance 150' between river and bottom off Br. deck
Multi-Modal Bridge
3x3 arches r 10300' 0.55°
Two piers in the Columbia River
West Hayden Island
Motorway is outside the rail tracks during the Hayden Island crossing
Not all piers shown
Rail grade 1.2% ><
BNSF Swing Bridge
Pier spacing 830'
HSR M_M_Br_06d _rev
Des. by R.N.
Vancouver, WA
Vancouver
Erwin O. Rogers Memorial Hwy
Port Way
N Fir Ave
N Marine Dr
N Suttle Rd
N Hayden Island Dr
Columbia St
Washington St
Main St
Grant St
Jefferson St
Harney St
Franklin St
Esther St
King St
McClellan Rd
Officers Row
E Mill Plain Blvd
E McLoughlin Blvd
W 24th St
W 23rd St
W 22nd St
W 21st St
W 20th St
W 19th St
W 17th St
E 25th St
E 20th St
E 19th St
E 17th St
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E 7th St
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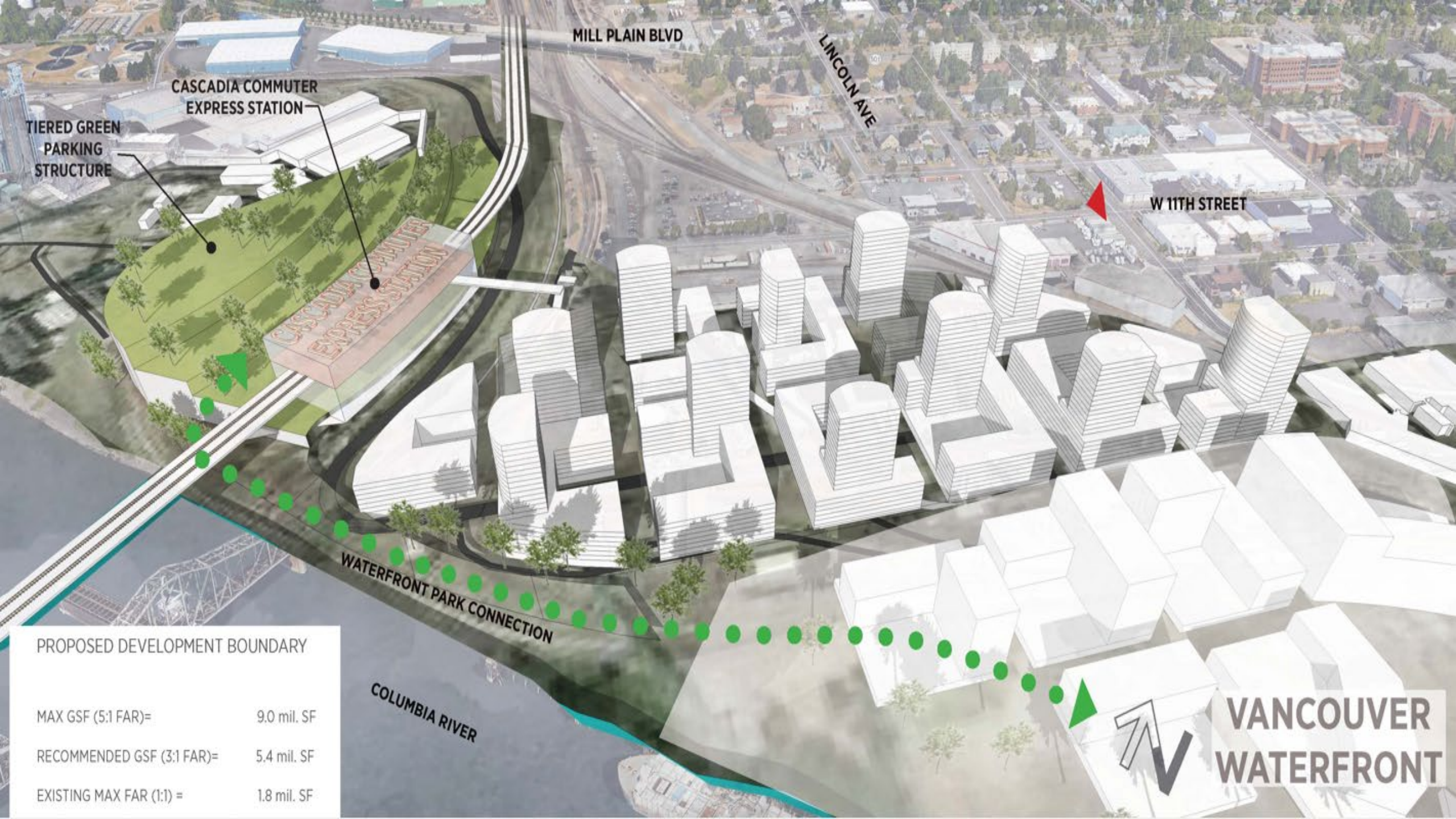
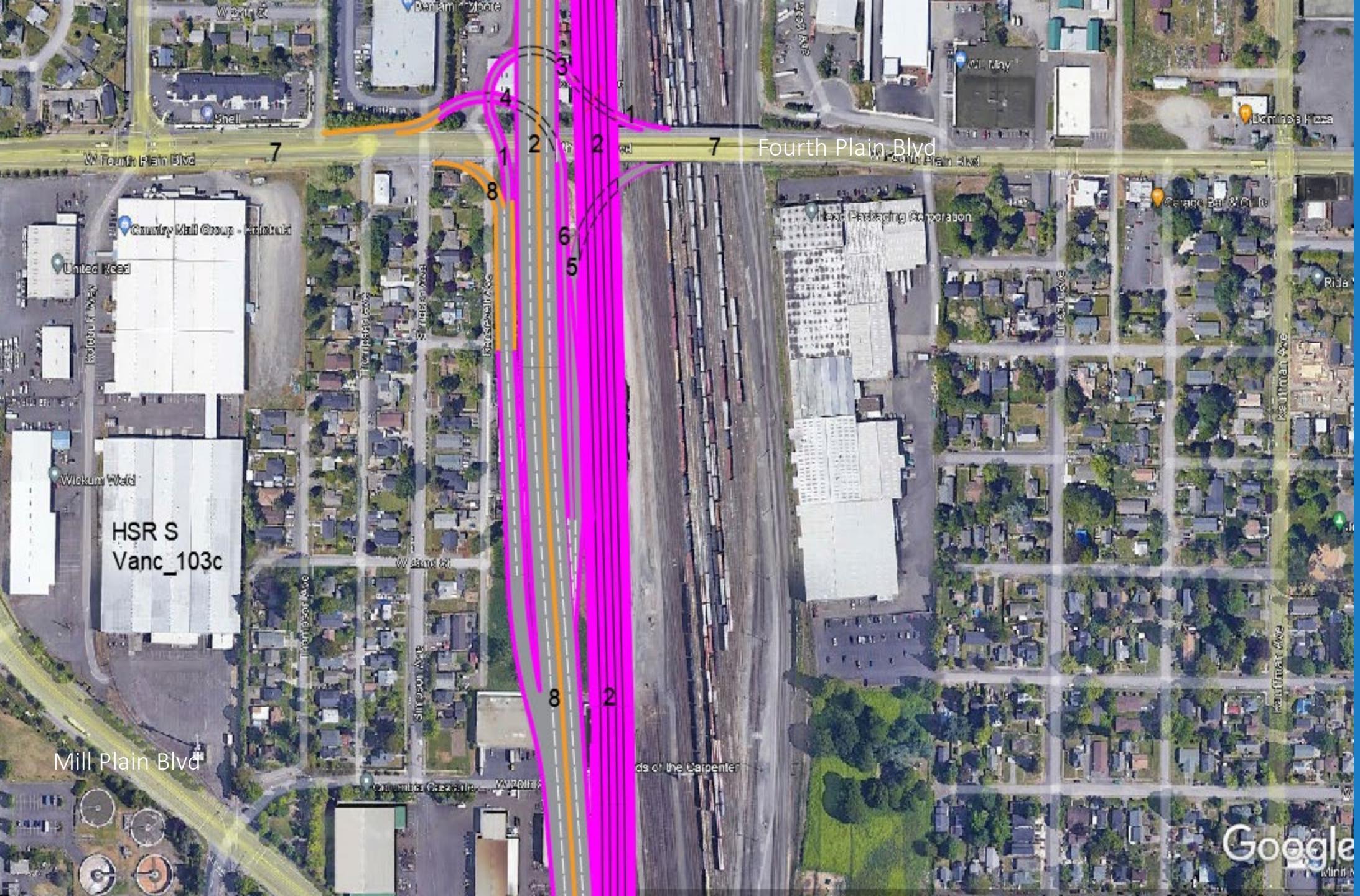
W 6th St
E 5th St
501
5
14
120
© 2015 Google
Google earth

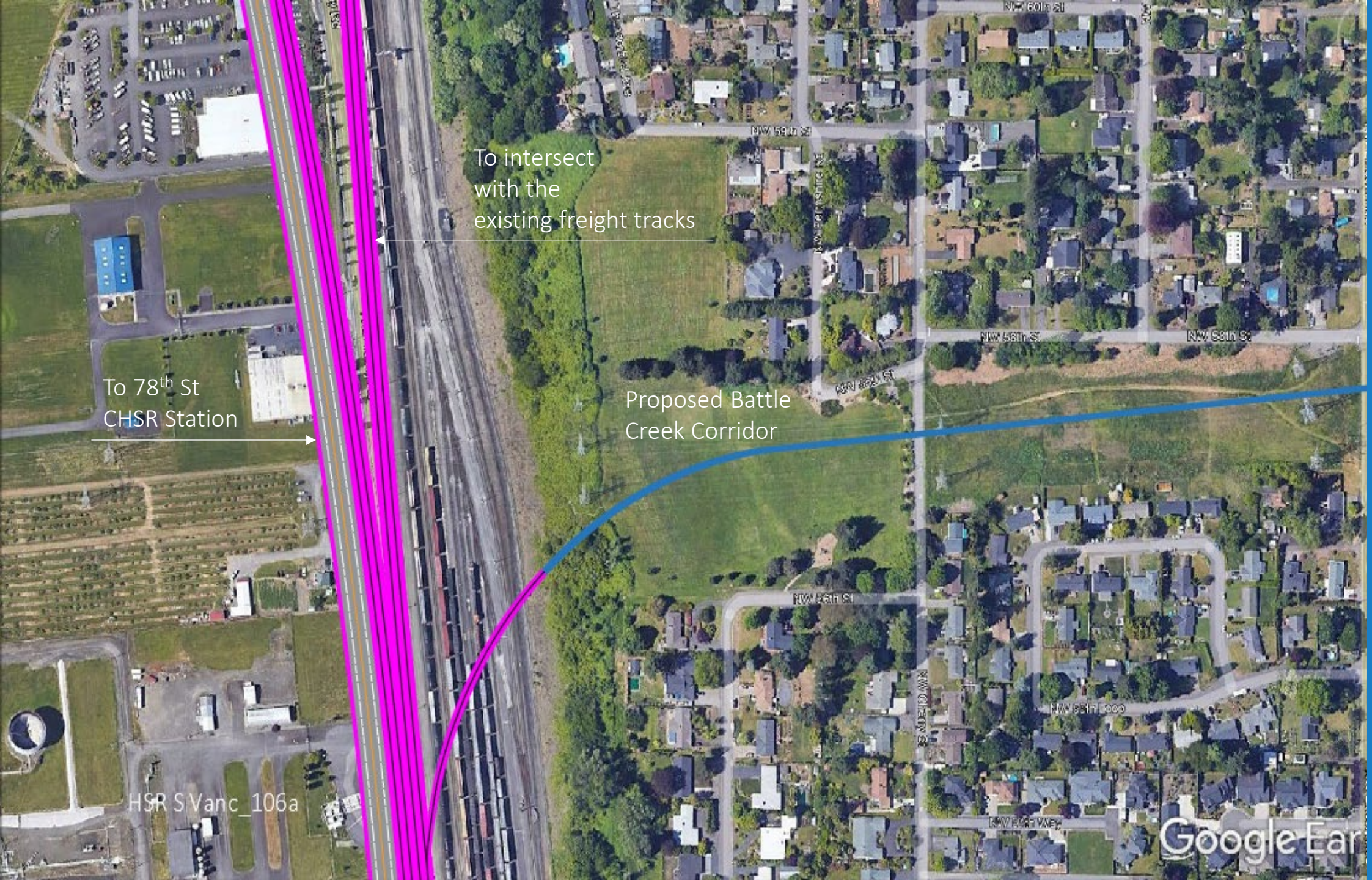

MILL PLAIN BLVD
LINCOLN AVE
W 11TH STREET
CASCADIA COMMUTER EXPRESS STATION
TIERED GREEN PARKING STRUCTURE
WATERFRONT PARK CONNECTION
COLUMBIA RIVER
PROPOSED DEVELOPMENT BOUNDARY
MAX GSF (5:1 FAR)= 9.0 mil. SF
RECOMMENDED GSF (3:1 FAR)= 5.4 mil. SF
EXISTING MAX FAR (1:1) = 1.8 mil. SF
VANCOUVER WATERFRONT



CHSR Corridor over Mill Plain and Fourth Plain Blvd

Future roadway intersections.
will allow a seamless automotive transition.

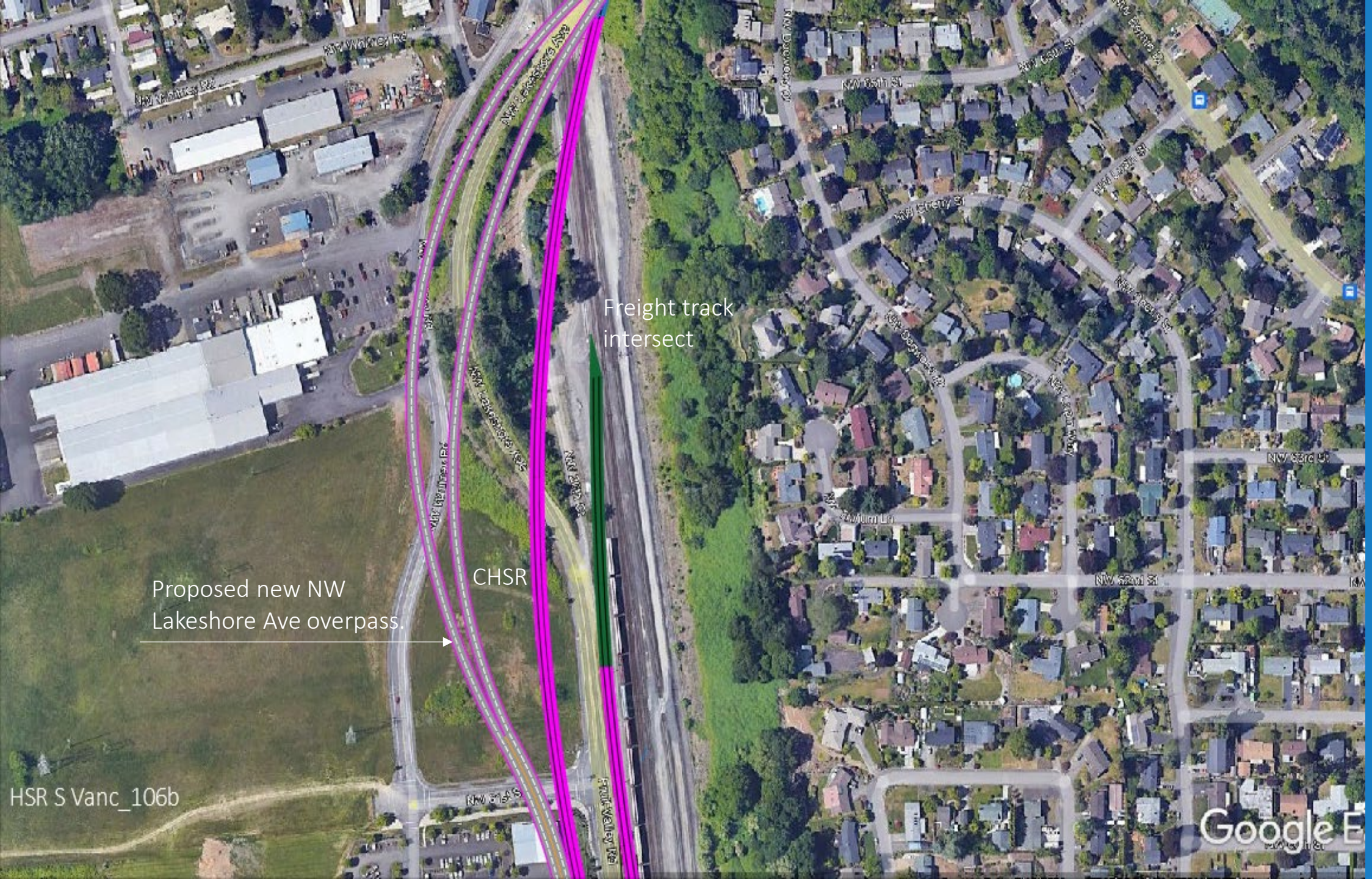
1 southbound ramp
2 CHSR BNSF line
3 roadway underpass
4 4th Plain underpass
5 4th Plain on-ramp
6 4th Plain off-ramp
7 W Fourth Plaine Blvd
8 New Fruit Valley Rd bypass, connecting with NW 78 Street.



CHSR Corridor 1.6 Miles North of 4th Plain Blvd

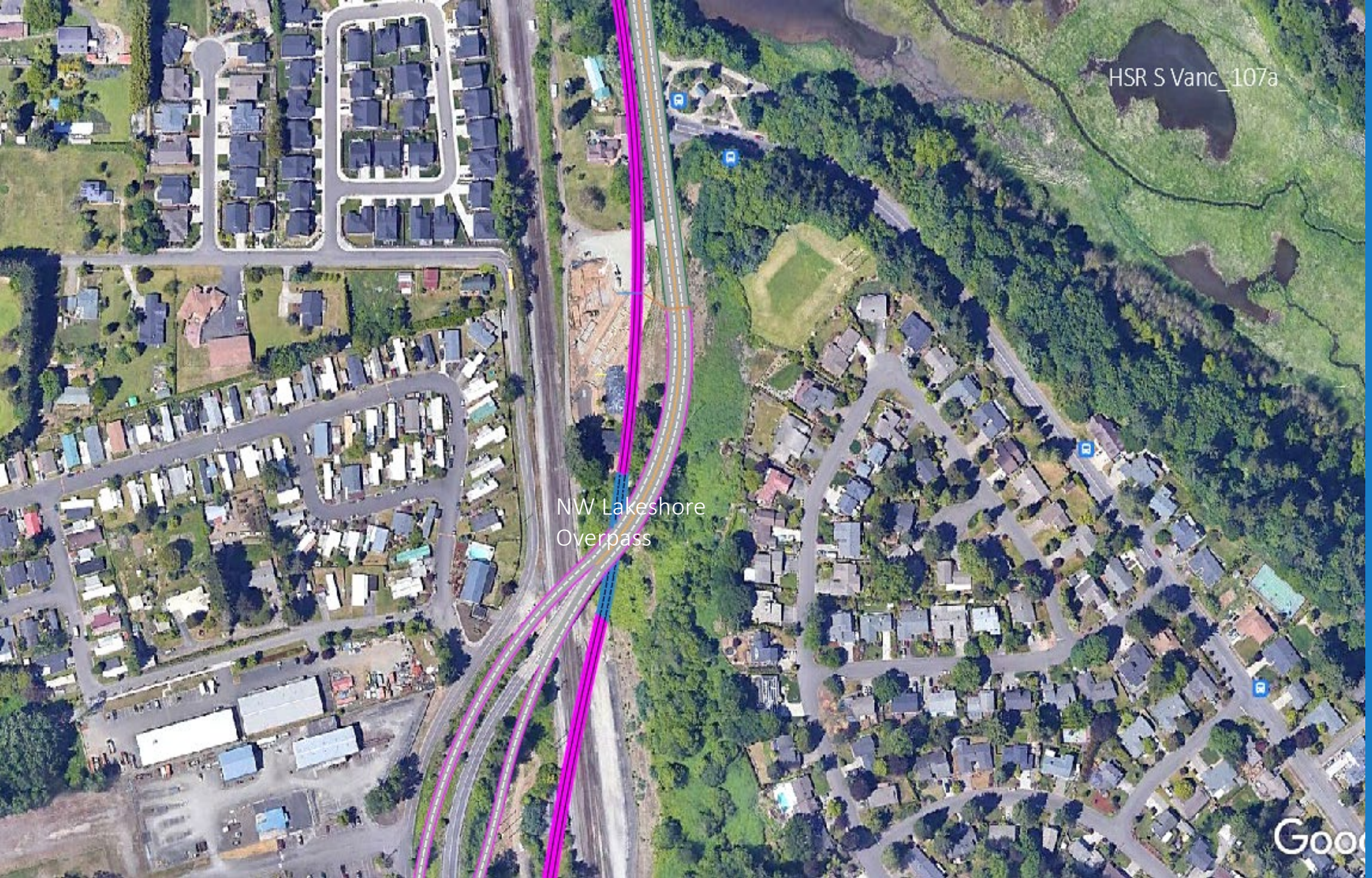
At this point, the CHSR corridor will split. The freight line will re-connect with the existing freight tracks, and the CHSR will continue north.

The Battle Creek Corridor is a proposed line to serve commuters in northwest Vancouver.



Freight Track Interchange and CHSR Corridor Flyover South of NW 78th Street

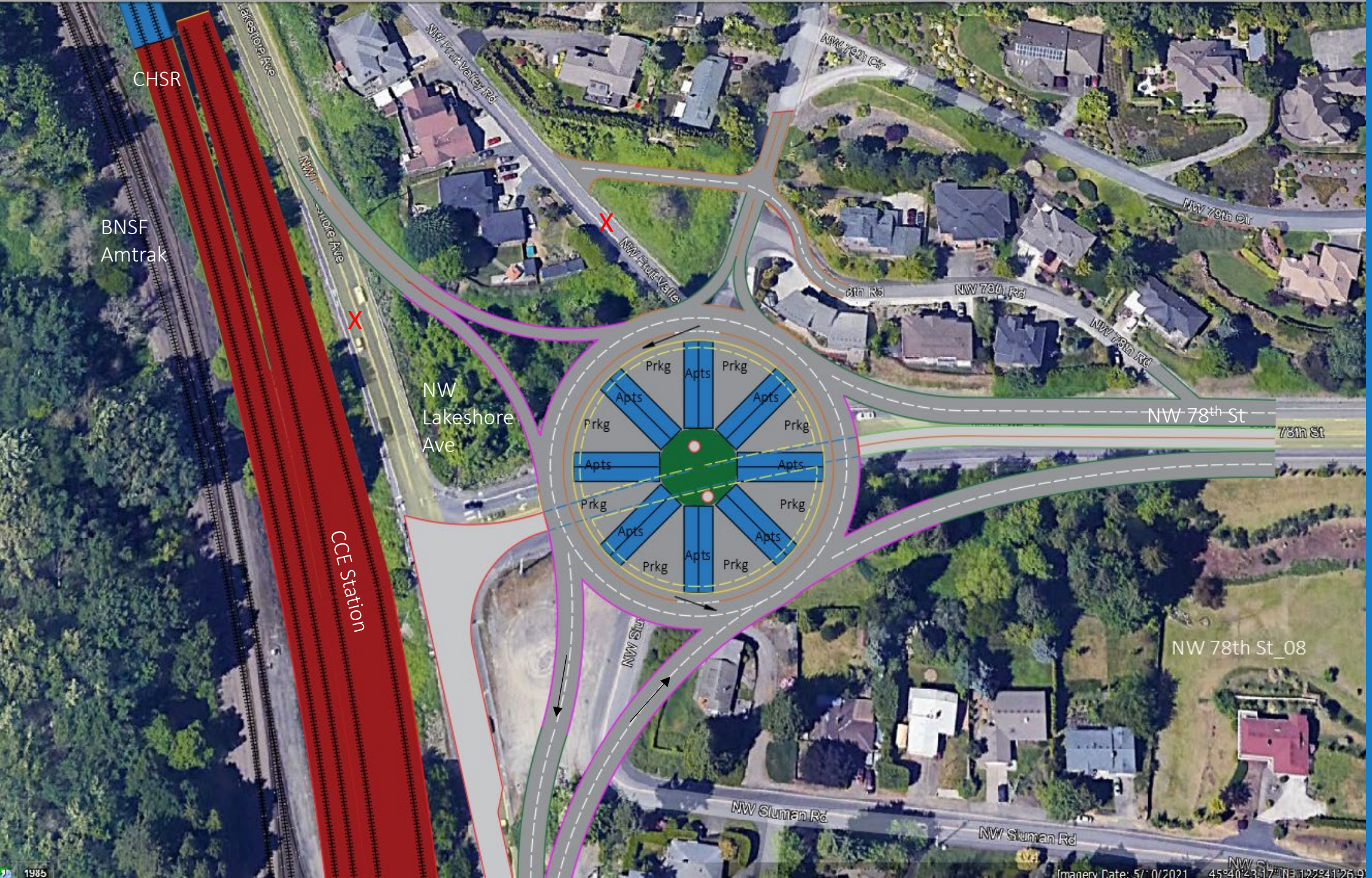
The proposed freight tracks over the CHSR Multi-Modal Bridge intersect at this point with the existing on-ground freight tracks.



CHSR Corridor at the Proposed Lakeshore Overpass

The new NW Lakeshore overpass will become a four-lane corridor.

The CHSR is in a short tunnel below the new NW Lakeshore Ave bridge.

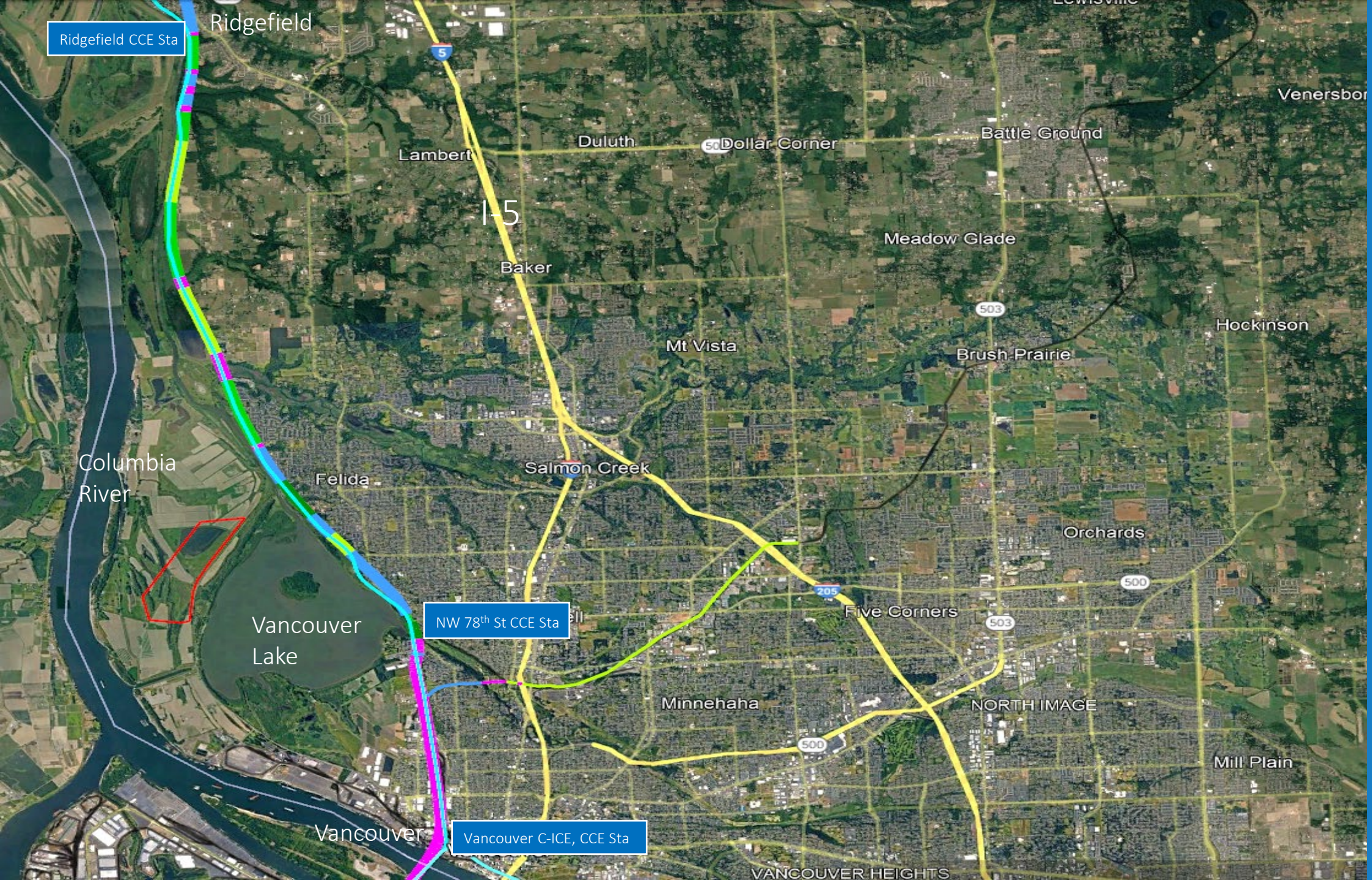


CHSR Corridor with CCE Station at NW 78th St and Possible Town Center/TOD Plan

There are train storage and service tracks north of the CCE station.

CHSR C-ICE trains do not stop here.

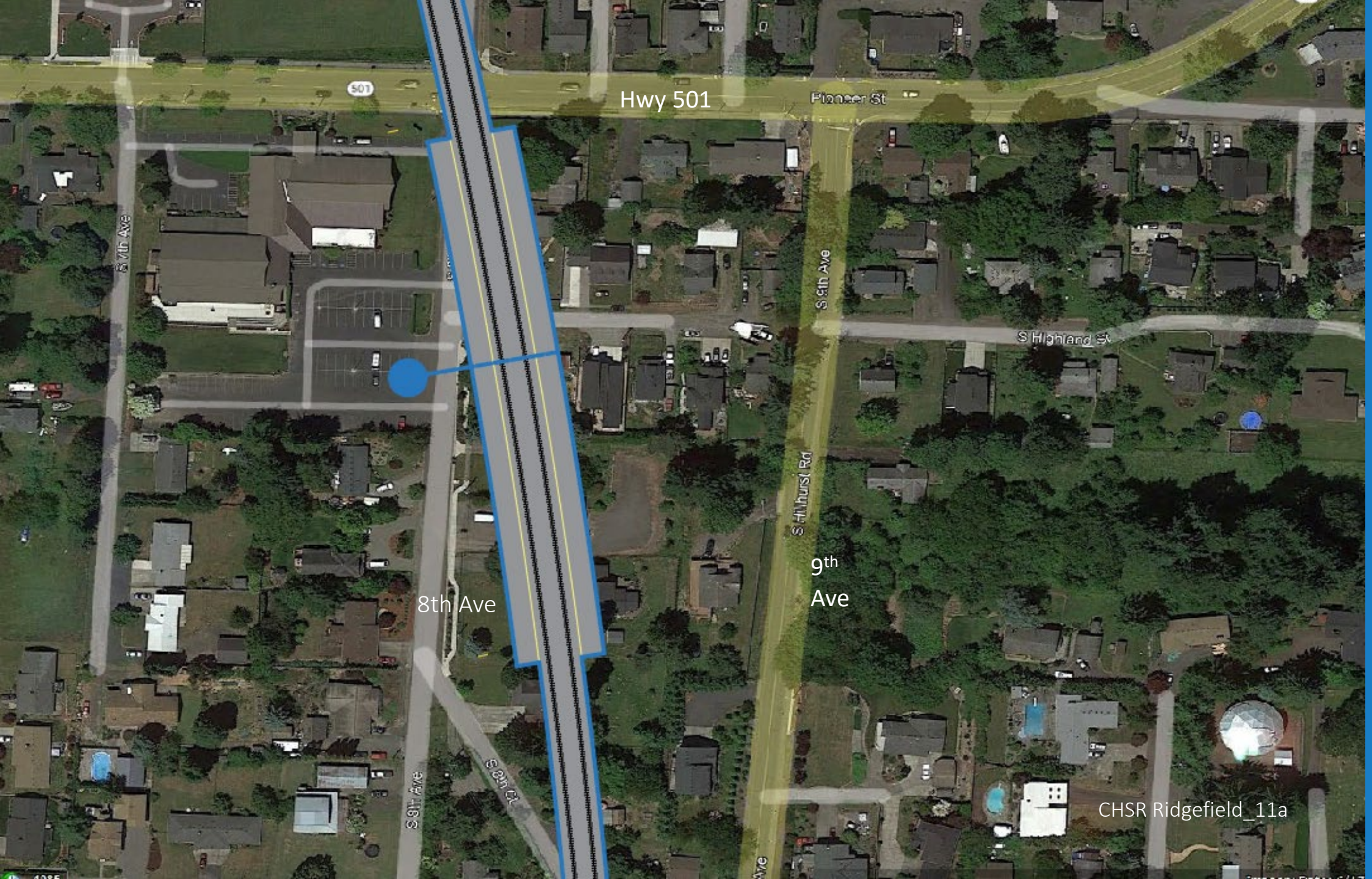
CCE station pedestrian access to the roundabout is on the ground.
X = closed.



CHSR between NW 78th St in Vancouver and Ridgefield

Several miles are along a hillside with a 9% slope.

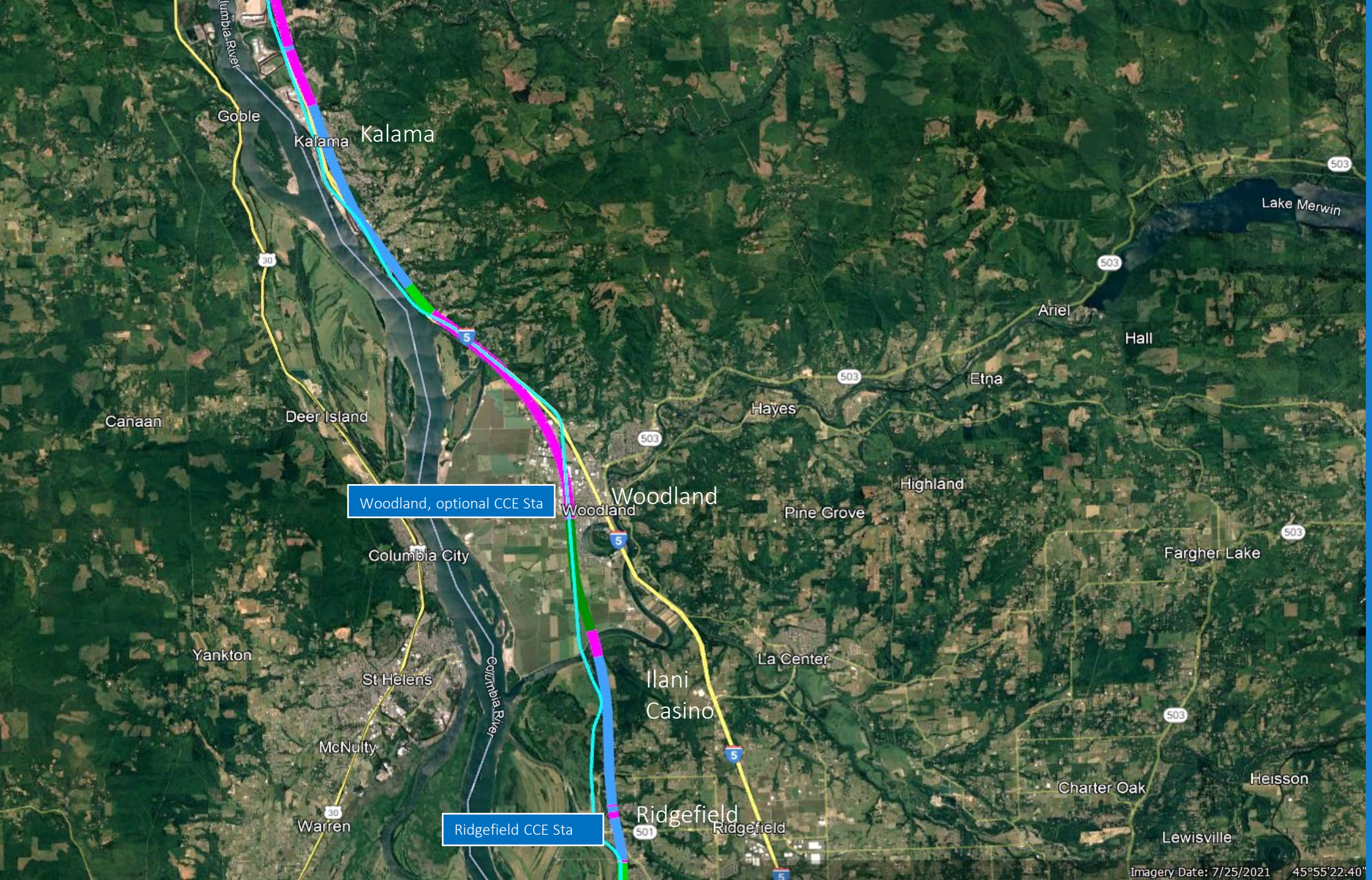
See Stabilization Plan Addendum.



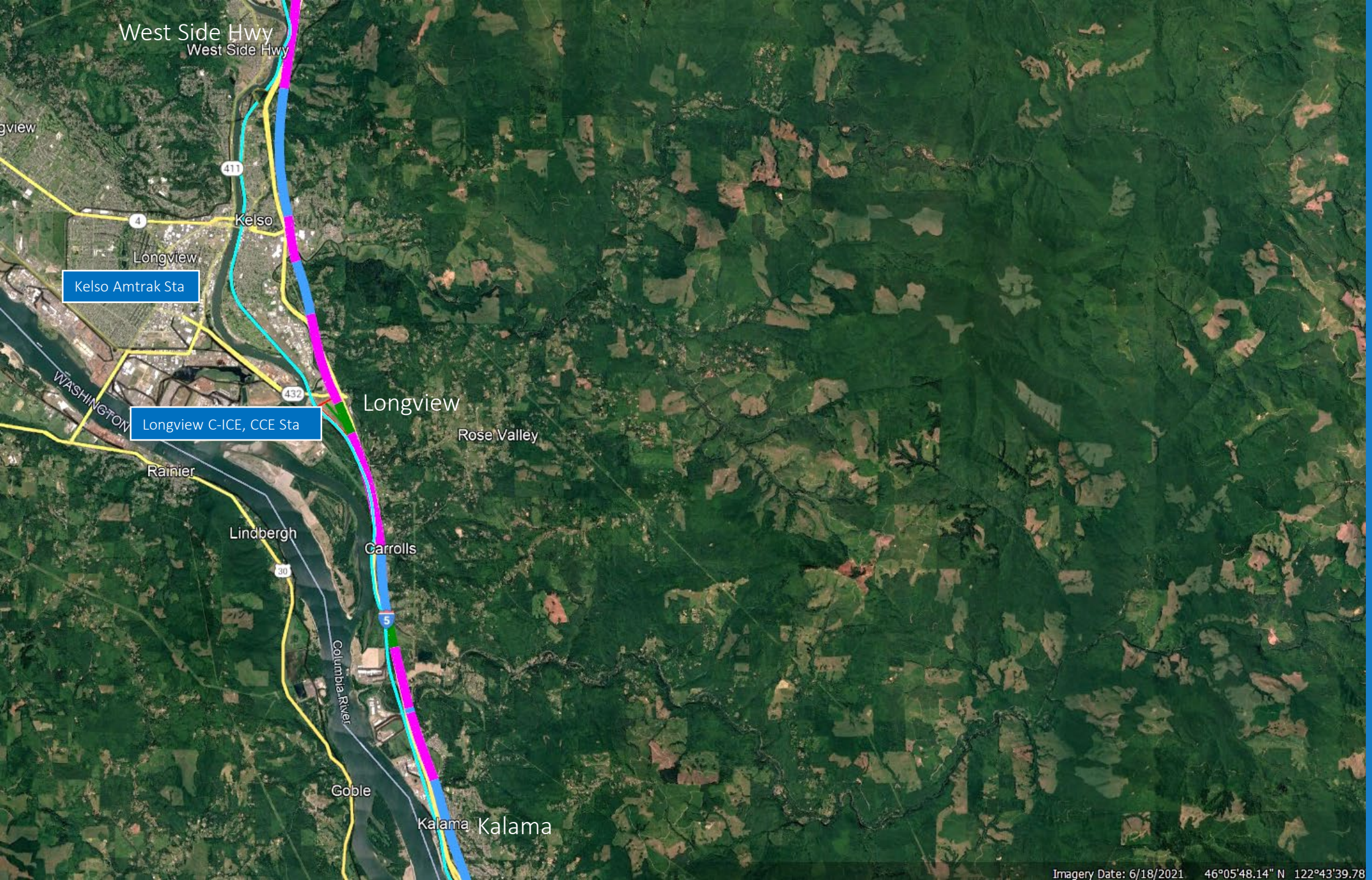
CHSR Ridgefield CCE Underground Station

The overall station width is 76 ft, and the length is 750 feet.

Commuter trains are shorter than C-ICE trains.



CHSR Corridor between Ridgefield and North Kalama

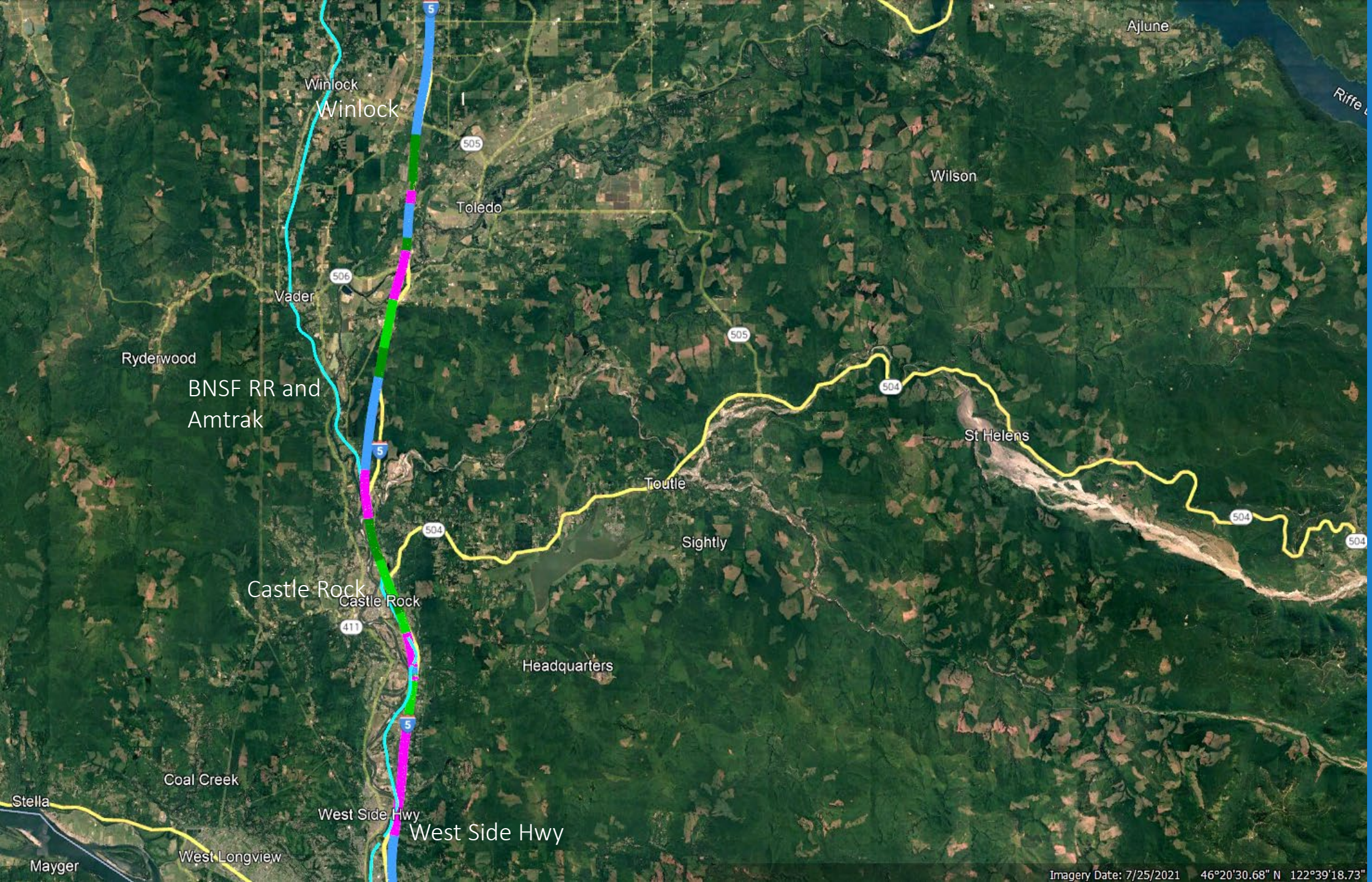


CHSR Corridor between Kalama and West Side Hwy

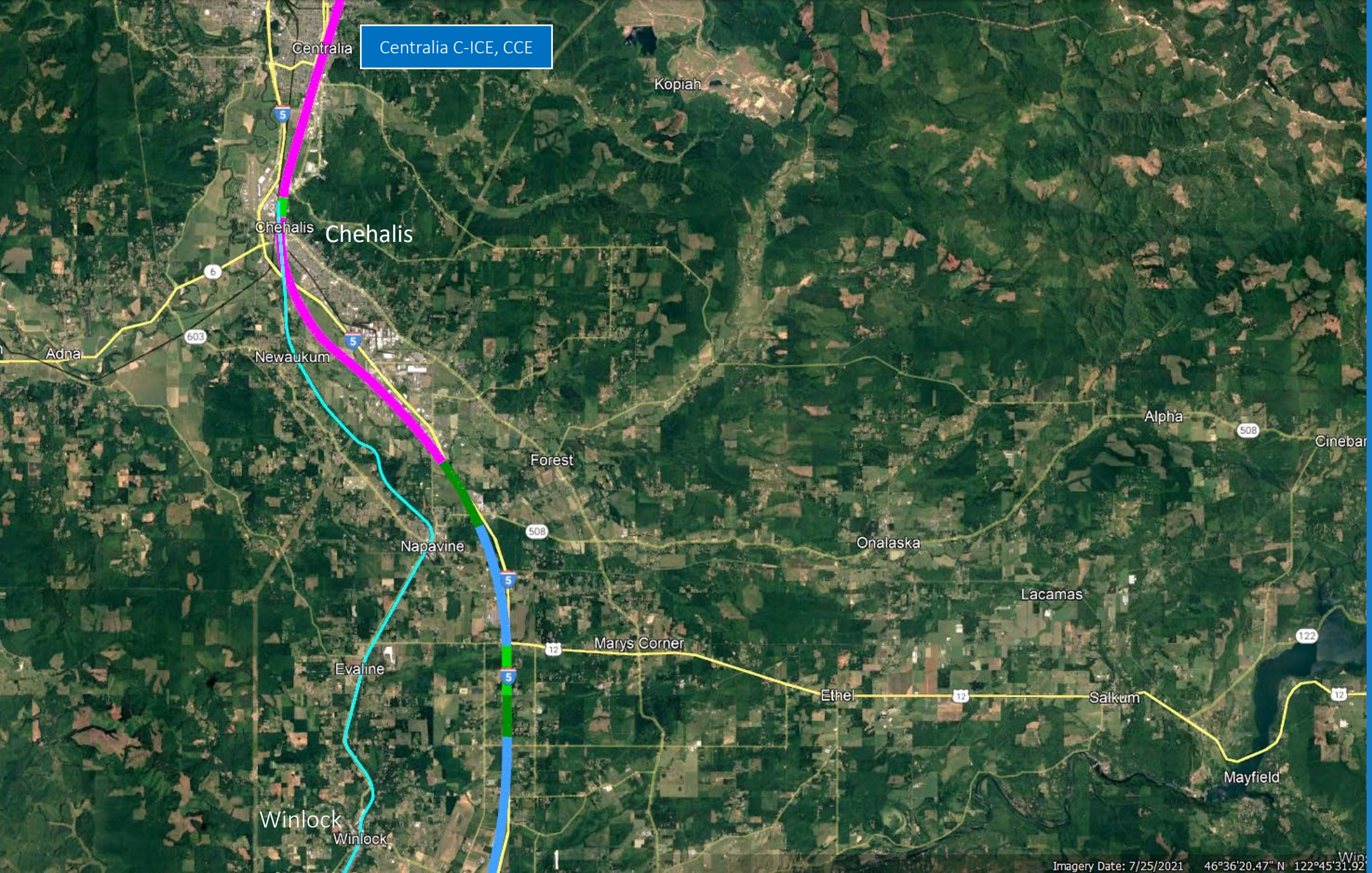
CHSR Corridor Longview Station and Yard

The Longview yard is a full-service facility to maintain the CHSR train fleet, including heavy services, such as wheel re-profiling, traction motor exchange, pantograph repair, car repairs, car wash general cleaning, and restocking.

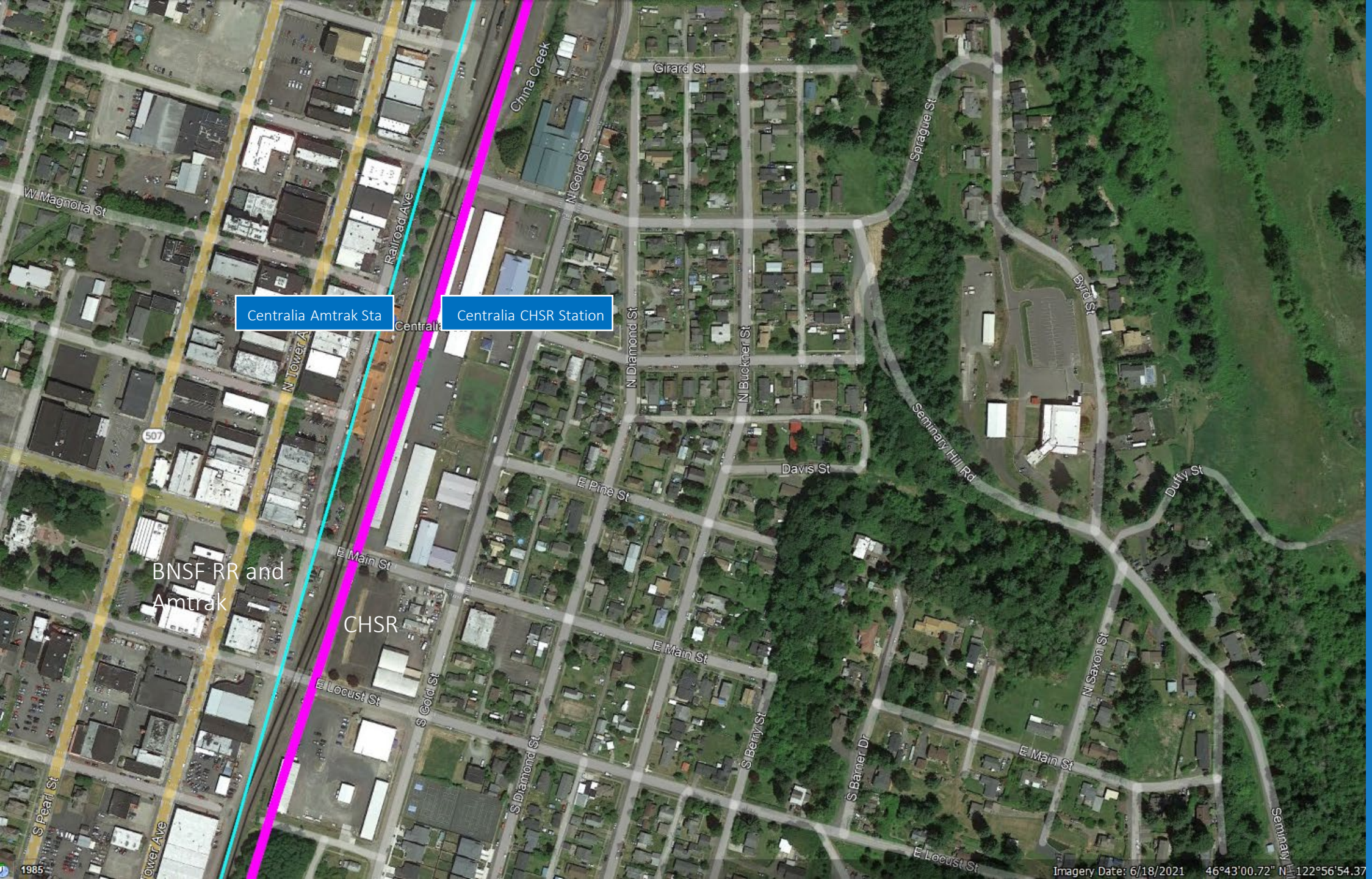
The yard is on ± 35 ft infill; the approach tracks are on flyovers to provide roadway clearance.



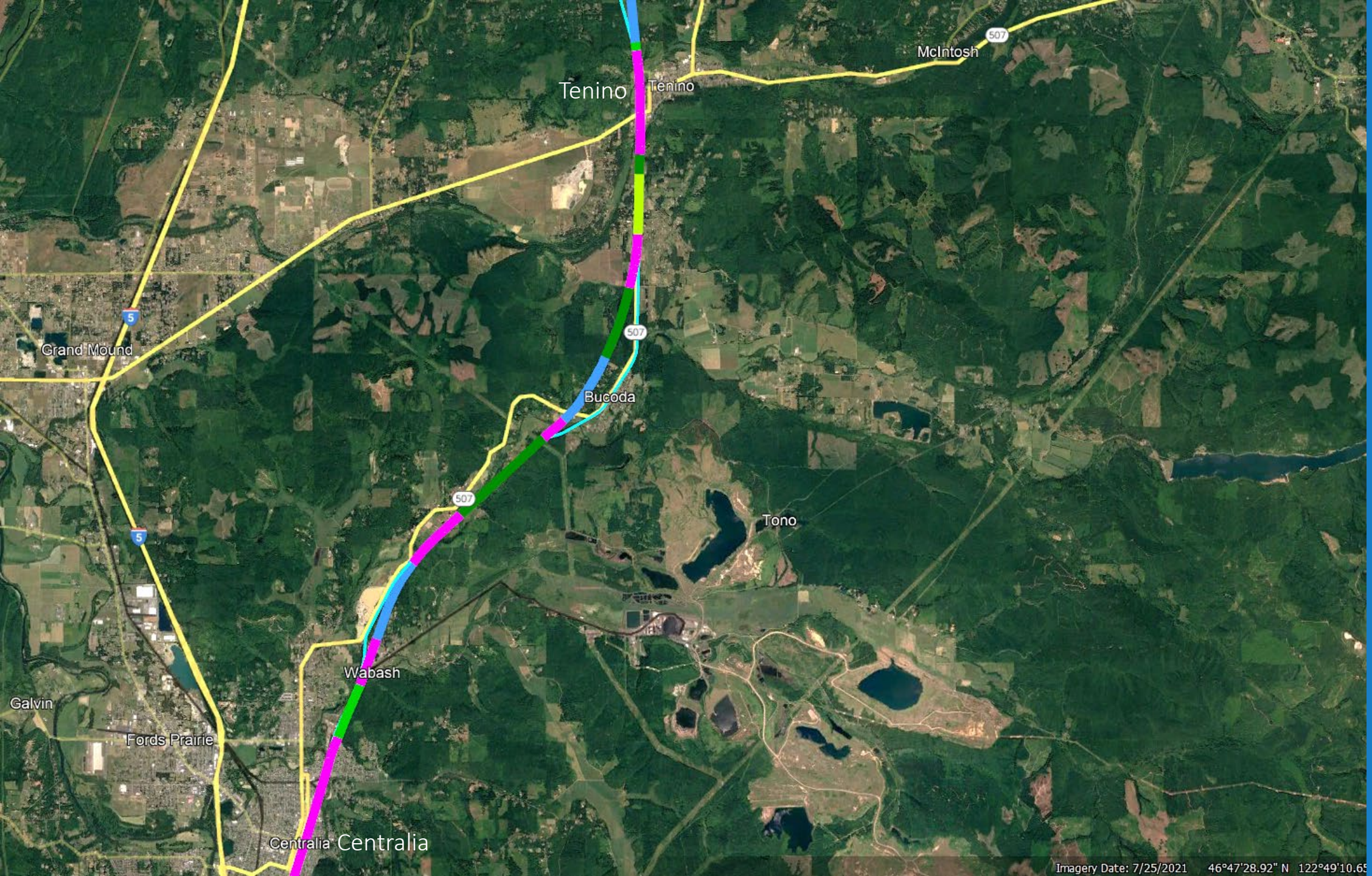
CHSR Corridor between West Side Hwy and East of Winlock



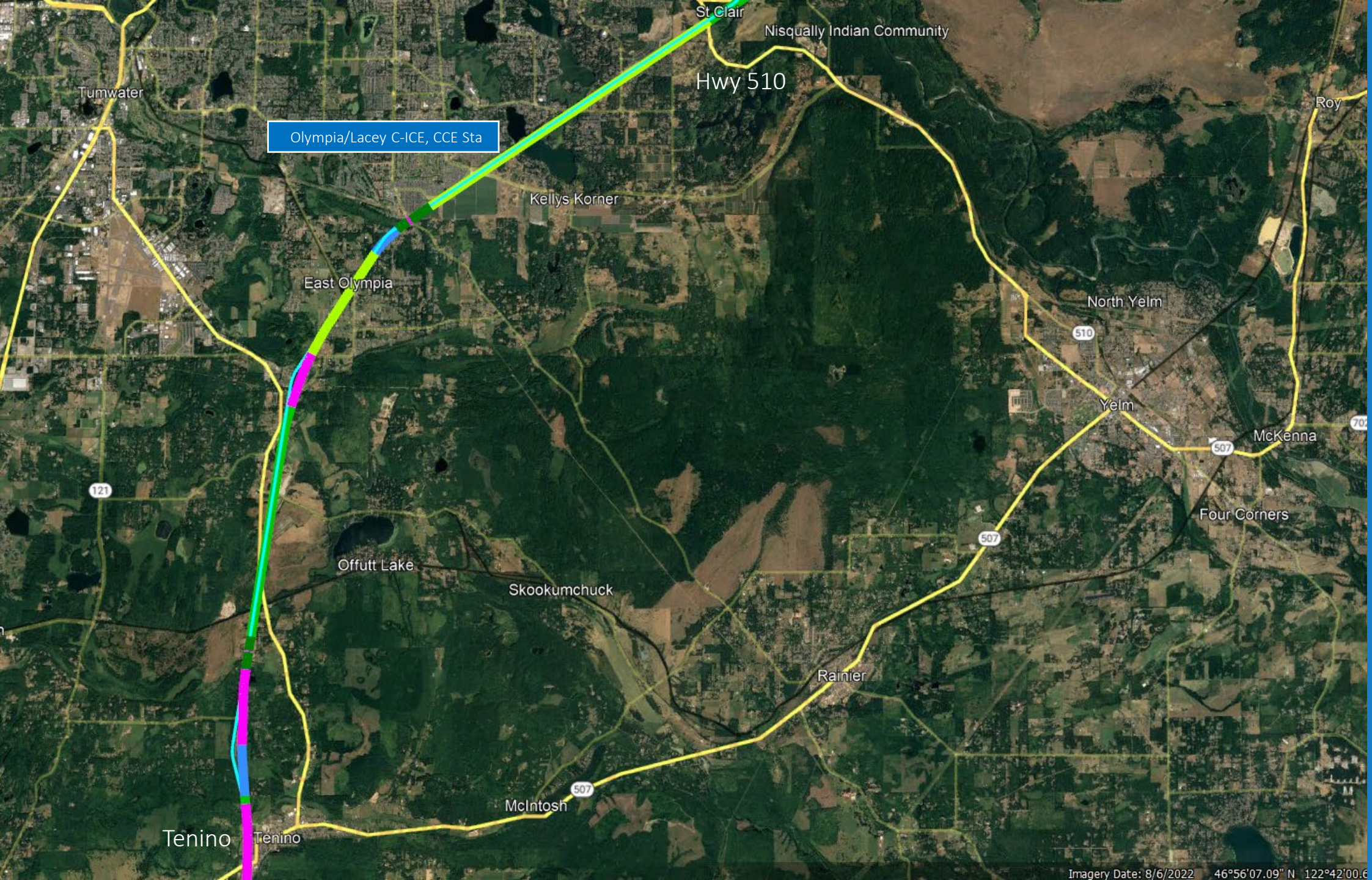
CHSR Corridor between East of Winlock and Centralia



Cascadia High Speed Rail and Amtrak Station in Centralia



CHSR Corridor between Centralia and Tenino

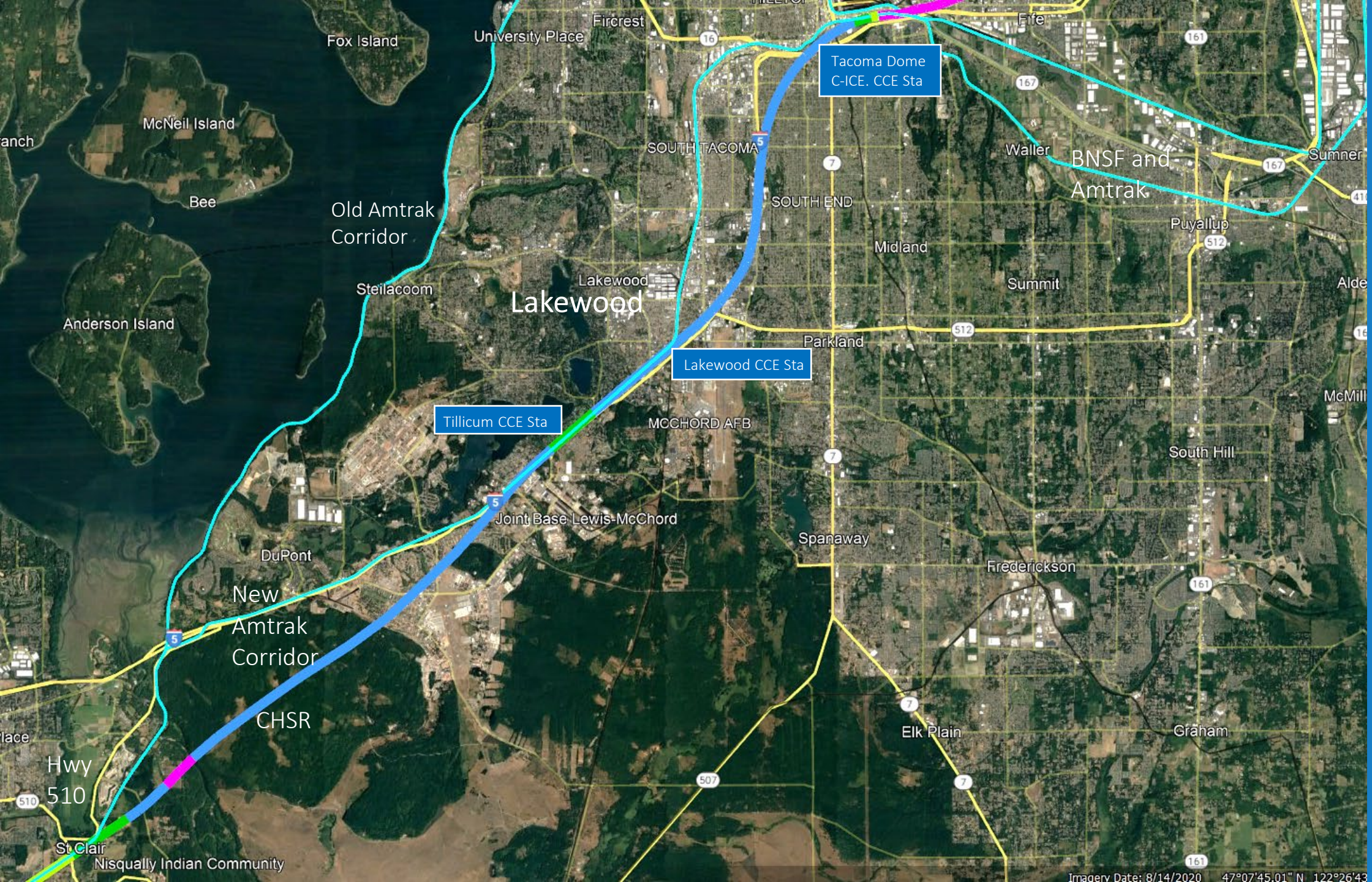


CHSR Corridor between Tenino and Hwy 510

Lacey/Olympia Poroposed CHSR and Existing Amtrak Stations

The CHSR corridor is in a widened cut under Yelm Hwy SE and at the same level as BNSF/Amtrak tracks.

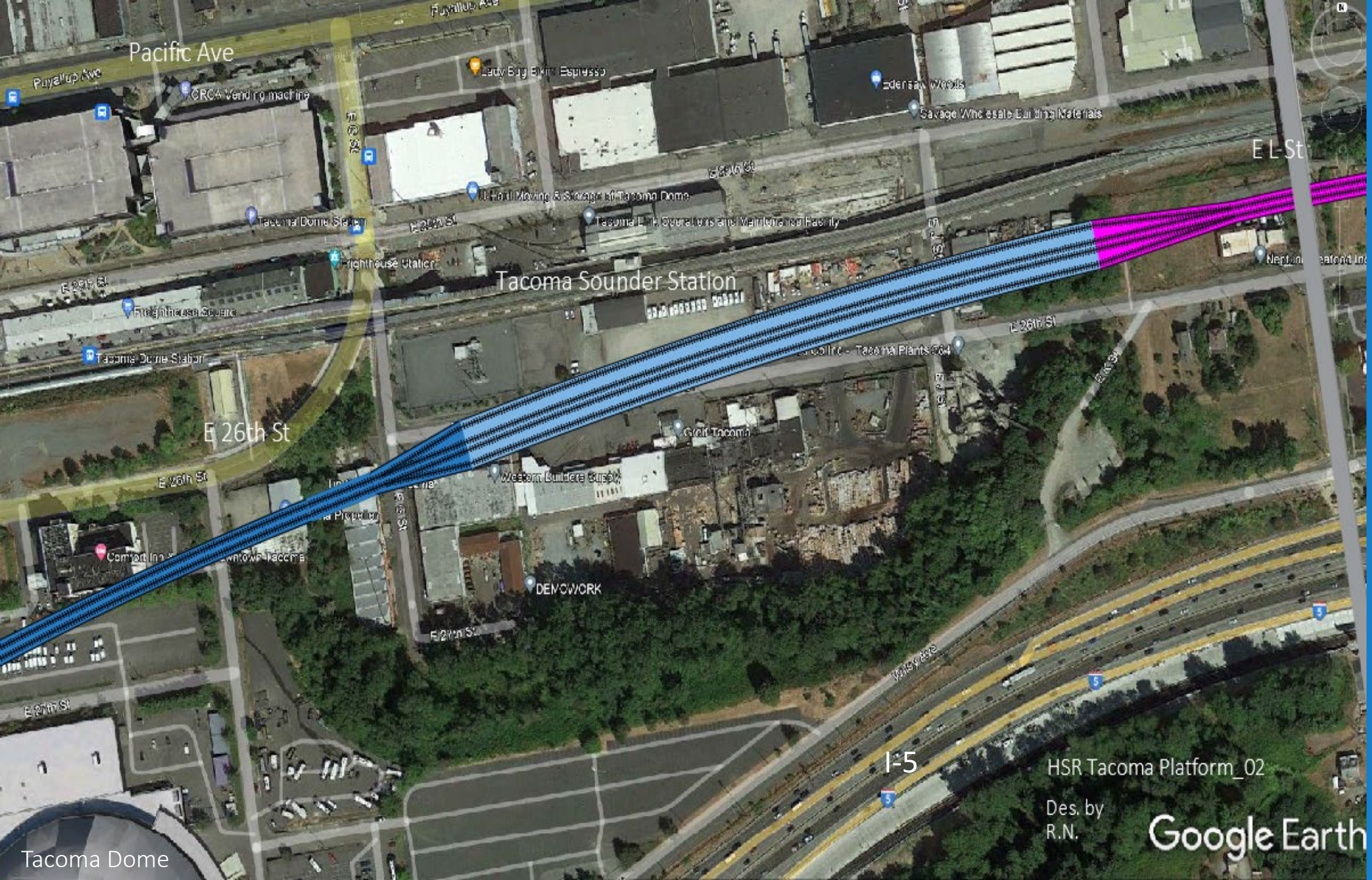
Farmland to the east is a good location to rezone for a new town center.



CHSR Corridor between Hwy 510 and Tacoma

The existing BNSF freight rail corridor has many tight curves, which are not suitable for CHSR trains.

The Tillicum station is in the cut and cover. The Lakewood and Tacoma stations are in the underground tunnels.

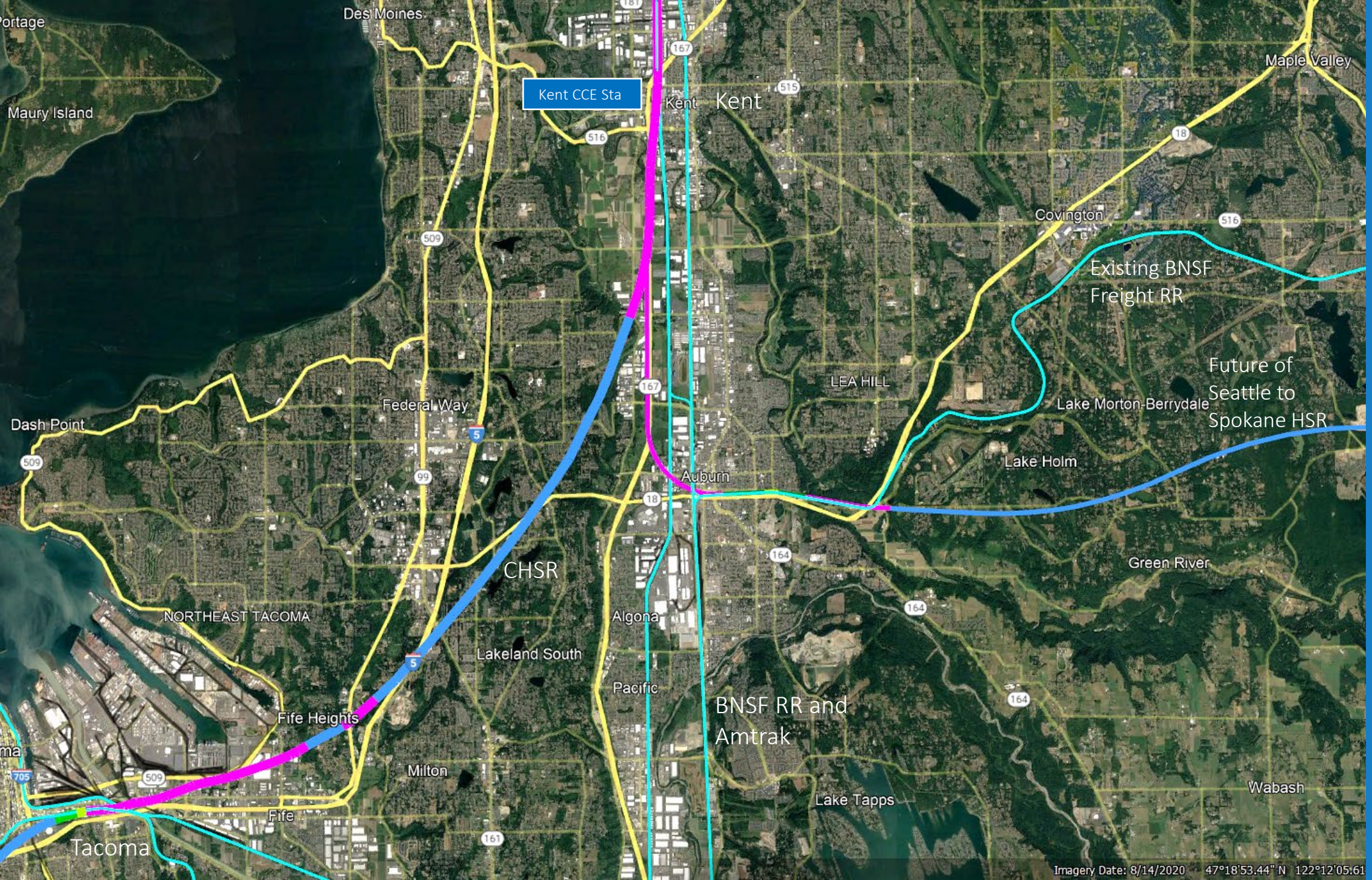


CHSR at the Tacoma Dome Station

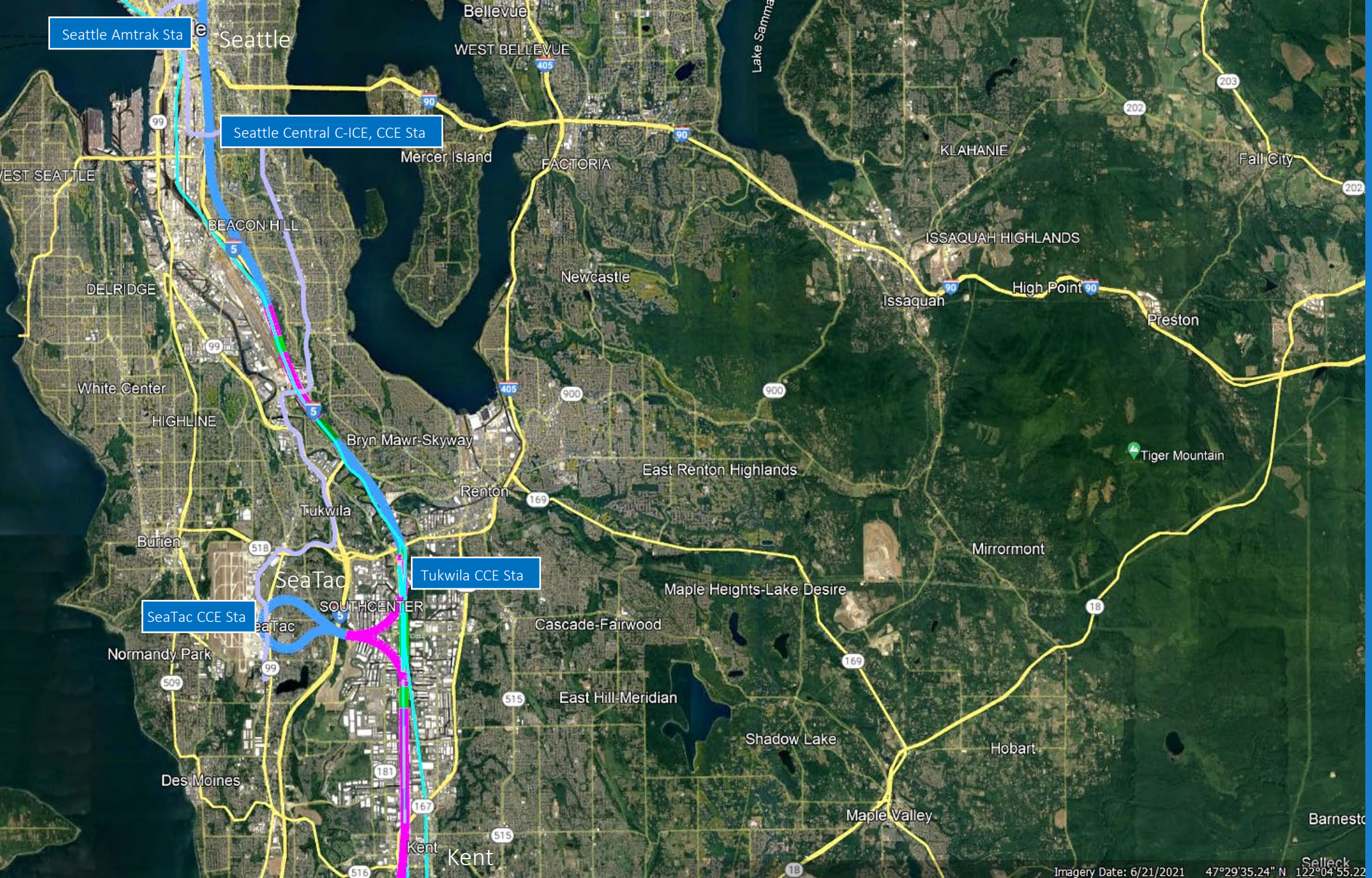
The CHSR C-ICE, CCE corridor is part tunnel and part cut and cover.

The station is below the city streets to the west and a flyover to the east. The CHSR will underpass E L Street.

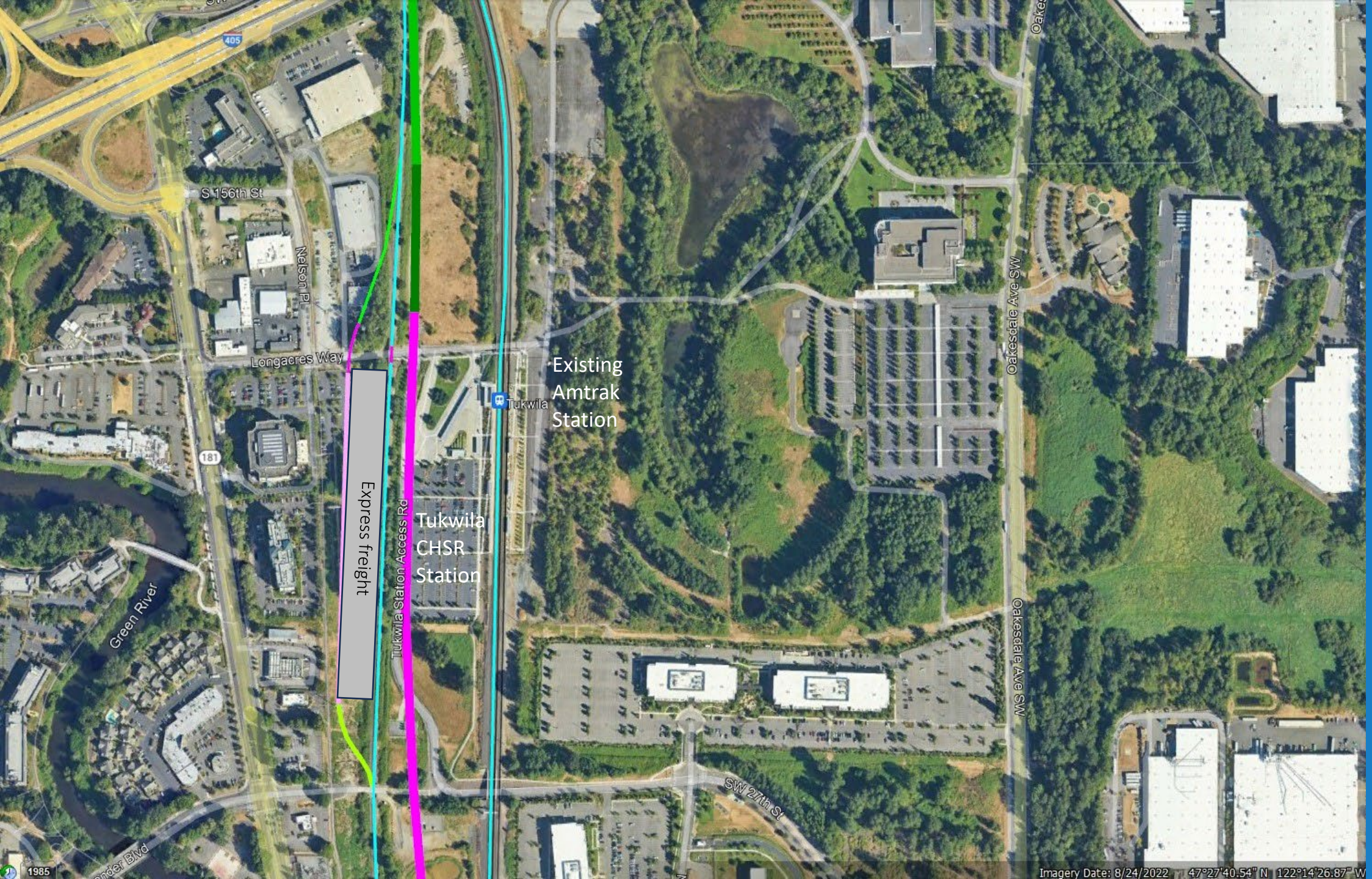
Land surrounding the new C-ICE, CCE Station is a good town center site. (see next page)



CHSR Corridor between Tacoma and Kent



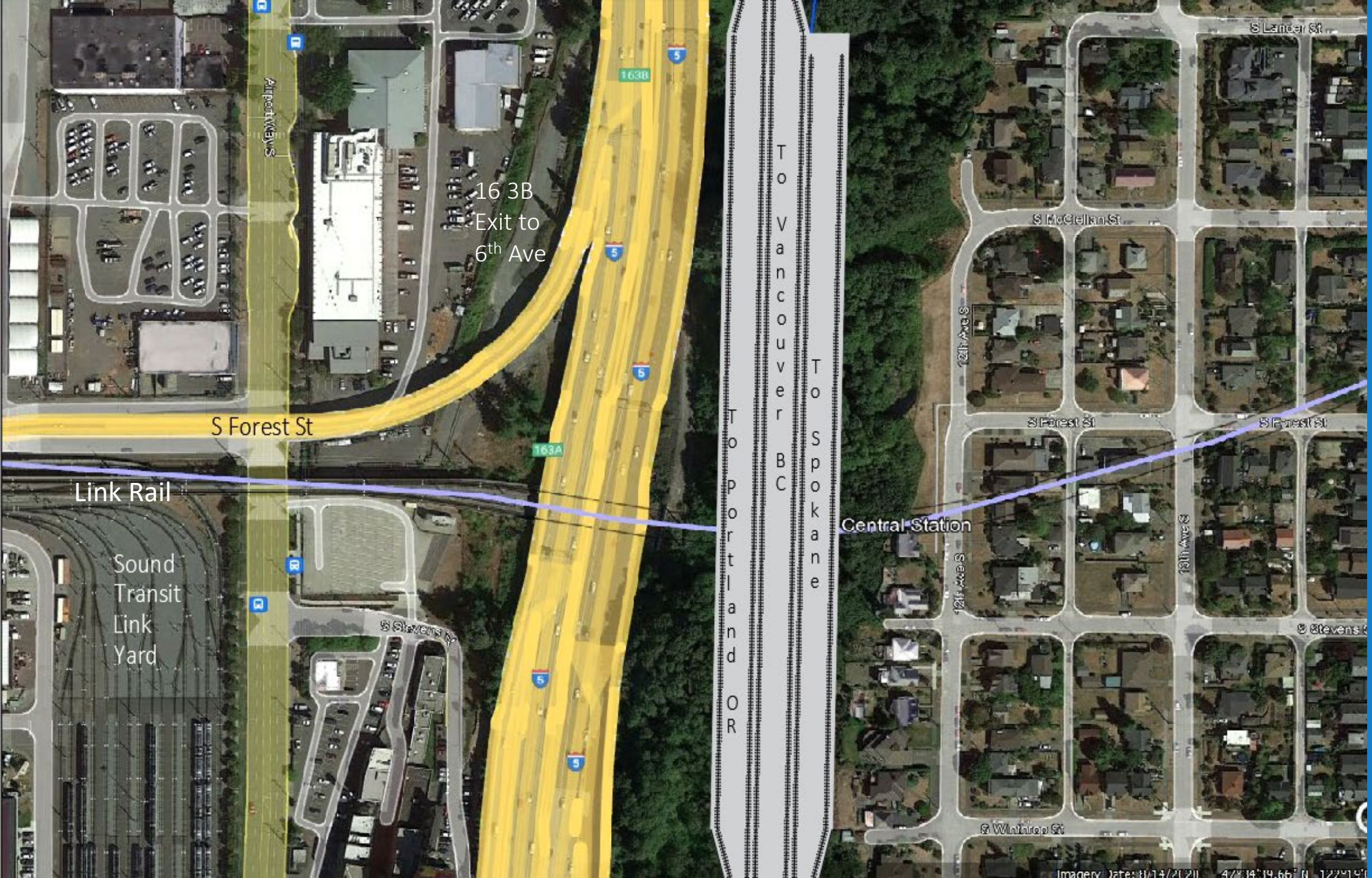
CHSR between Kent and Seattle



HSR at Tukwila

Here we have an express freight. Station to load/unload containers.

Not all trains will stop at Tukwila.



CHSR at the new Seattle Central Station

This station is below ground and above the Link-Rail Line.

The station has six tracks; two to Vancouver, BC, two to Portland, and two for a future Spokane connection.

Mixed-use development and parking are above the new underground Link Rail Station and CHSR Station.

LOPMENT BOUNDARY

	15,300,000 SF
(2:1 FAR)=	10,200,000 SF
1:1) =	5.1 mil. SF

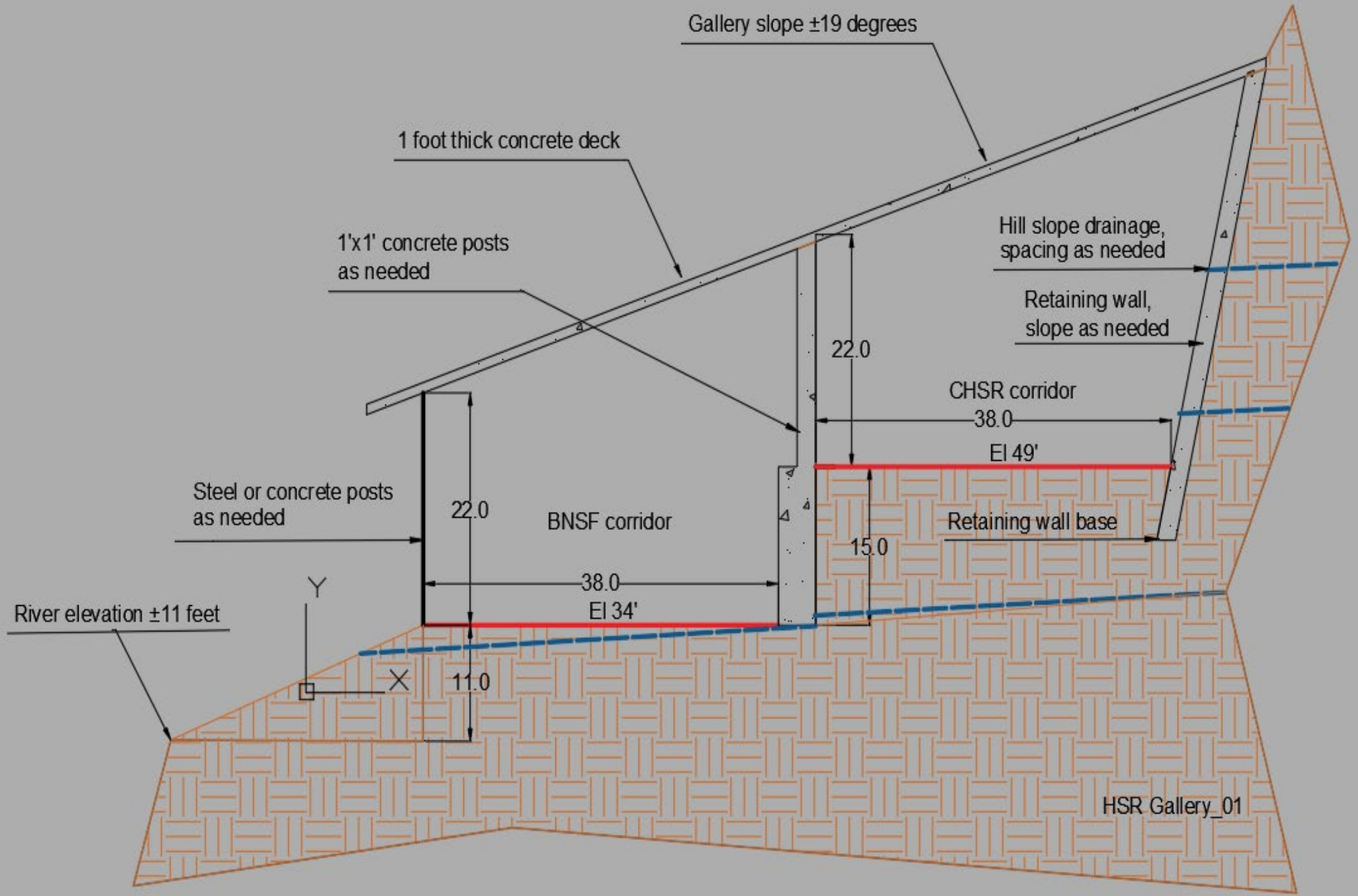
Portland CHSR Station to Olympia/Lacey CHSR Station Mileage and Times

Number One = Priority, Number two = Secondary Stops

Station to Station	CHR Corridor Milage	Estimated Travel Times
Portland-Vancouver, OR # 1	7.38 miles	7 minutes
Vancouver-NW 78th St # 2	3.98 miles	5 minutes
78th – Ridgefield # 2	10.28 miles	8 minutes
Ridgefield-Woodland # 2	5.84 miles	6 minutes
Woodland-Long View # 2	15.66 miles	10 minutes
Portland-Long view Direct # 1	43.14 miles	19 minutes
Long View-Centralia # 1	44.61 miles	18 minutes
Centralia-Olympia/Lacey # 1	24.26 miles	12 minutes
Via C-ICE with three stops	Portland-Olympia/Lacey	49 minutes
Via C-ICE with one-stop	Portland-Tacoma-Seattle Central	58 minutes

Olympia/Lacey CHSR Station to Seattle Central CHSR Station Mileage and Times

Station to Station	CHSR Corridor Milage	Estimated Travel Times
Olympia/Lacey-Tillicum	15.22 Miles	10 minutes
Tillicum-Lakewood	2.66 Miles	4 minutes
Lakewood-Tacoma Dome Sta	7.60 Miles	7 minutes
Tacoma Dome Sta-Kent	13.85 Miles	9 minutes
Kent-Tukwila	5.81 Miles	7 minutes
Tukwila-Seattle Central	8.81 Miles	7 minutes
Transportation Mode Comparison	Stop to Stop	Estimated Travel Time
Portland-Seattle King Station	187 miles (Amtrak)	3hr 45 minutes
Portland-Seattle	173.7 miles (Automobile)	2hr 56 minutes
Portland-Seattle Central Station	167 miles (CHSR)	58 minutes



Stabilization Plan, Ridgefield Section Plan, and Sounder Corridor between Seattle and Everett

The slope-drainage pipes prevent landslides.

Falling trees and debris will slide over the gallery roof without damaging the rail tracks.

CHSR Wildlife Under Crossing as Needed

This is an example of providing wildlife under passing. The underpass has open access with trees, shrubs, and greenery to copy the approach sides.

CHSR Wildlife Crossing as Needed

This is an example to provide wildlife overpassing. The overpass is fenced with trees, shrubs, and greenery to copy the approach sides.

CHSR Miles between Portland and Centralia, WA

On Ground	Cut/Fill	Flyover or Bridges	Tunnels or Underpass
0.23 Mi Po_013 BNSF *	0.27 Mi Po_010 new	0.70 Mi Po_001 new	1.10 Mi Po_003 new
1.16 Mi Po_020 BNSF	0.12 Mi Po_011 new	3.00 Mi Po_002 new	0.10 Mi Po_008 new
		3.82 Mi Po_004 UPRR/BNSF	
	0.10 Mi Po_015 BNSF	1.32 Mi Po_006 BNSF	1.11 Mi Po_012 new
	0.57 Mi Po_016 BNSF	0.79 Mi Po_007 BNSF *	0.51 Mi Po_014 new
	1.00 Mi Po_018 BNSF	0.20 Mi Po_009 new	0.56 Mi Po_017 new
	2.10 Mi Po_021 BNSF *	0.39 Mi Po_019 BNSF	0.79 Mi Po_025 new
	0.44 Mi Po_022 new	0.17 Mi Po_020a BNSF	0.10 Mi Po_027 new
	0.16 Mi Po_022b new	0.10 Mi Po_022a new	2.82 Mi Po_029 new
	0.19 Mi Po_022d new	0.12 Mi Po_022c new	4.43 Mi Po_034 new
	0.45 Mi Po_023 BNSF	0.10 Mi Po_022e new	0.10 Mi Po_036 I-5
	2.18 Mi Po_031 BNSF *	0.13 Mi Po_024 new	1.00 Mi Po_039 new
	0.39 Mi Po_033 new	0.12 Mi Po_026 new	0.84 Mi Po_043 new
	1.14 Mi Po_035a new	0.10 Mi Po_028 new	2.00 Mi Po_045 new
	0.56 Mi Po_038 I-5	0.51 Mi Po_030 new	0.20 Mi Po_050 new
	0.53 Mi Po_041 new	4.51 Mi Po_032 new	2.70 Mi Po_058 new
	1.17 Mi Po_047 I-5	0.99 Mi Po_037 I-5	0.98 Mi Po_063 I-5
	0.10 Mi Po_049 new	1.92 Mi Po_040 I-5 *	3.47 Mi Po_068 new
	0.60 Mi Po_052 new	1.48 Mi Po_042 new *	2.42 Mi Po_071 new
	0.39 Mi Po_053 I-5	0.76 Mi Po_044 new *	
	1.25 Mi Po_054 I-5	3.35 Mi Po_046 I-5 *	
	0.71 Mi Po_055 I-5	0.13 Mi Po_048 new	
	0.55 Mi Po_056 I-5	1.00 Mi Po_051 new	
	0.87 Mi Po_059 I-5	1.41 Mi Po_057 new *	
	1.42 Mi Po_060 I-5 *	1.47 Mi Po_061 new	
	0.38 Mi Po_062 I-5	0.39 Mi Po_064 I-5	
	0.26 Mi Po_065 I-5	6.00 Mi Po_073 new	
	0.80 Mi Po_066 new	3.13 Mi Po_075 BNSF	
	0.64 Mi Po_067 new		
	0.83 Mi Po_069 I-5		
	0.97 Mi Po_070 I-5		
	1.45 Mi Po_072 I-5		
	0.39 Mi Po_074 new		
1.39 Miles 1.58 %	**22.98 Miles** 26.20 %	**38.11 Miles** 43.45 %	**25.23 Miles** 28.76 %
			87.71 Miles Total HSR
			93 Miles Total Amtrak

New and existing Right of Way (RoW)

49.47 miles in a new corridor	38.24 miles in an existing right of way, BNSF, or Hwy
56.40 % of this CHSR RoW must be acquired	43.60% may be shared
Tunnel miles may be excluded from the RoW purchase.	

* = Some deviations, as some miles are aside from the named corridor segment.

CHSR Miles between Centralia, WA, and Seattle Central Station

On Ground	Cut/Fill	Flyover or Bridges	Tunnels or Underpass
0.77 Mi Po_086 Hwy 507	0.74 Mi Po_077 new	1.34 Mi Po_076 BNSF	1.14 Mi Po_079 new
1.56 Mi Po_097 BNSF	1.45 Mi Po_081 BNSF	0.62 Mi Po_078 new	0.96 Mi Po_083 new
2.42 Mi Po_102 BNSF	0.94 Mi Po_084 new	0.82 Mi Po_080 BNSF *	0.68 Mi Po_090 new
0.22 Mi Po_102b BNSF	0.26 Mi Po_087 Hwy 507	0.35 Mi Po_082 new	0.55 Mi Po_098 new
0.43 Mi Po_102d BNSF	0.11 Mi Po_089 new	0.72 Mi Po_085 new	0.91 Mi Po_104 new
	0.24 Mi Po_092 BNSF	1.33 Mi Po_088 BNSF *	8.59 Mi Po_106 new
	0.20 Mi Po_094 BNSF	1.00 Mi Po_091 new	1.66 Mi Po_108 Pac Hwy
	3.22 Mi Po_095 BNSF	0.05 Mi Po_093 BNSF	3.67 Mi Po_109 PC/I-5
	0.21 Mi Po_099 new	0.79 Mi Po_096 new	3.58 Mi Po_110 new *
	0.34 Mi Po_101 BNSF	0.05 Mi Po_100 BNSF	0.57 Mi Po_114 new
	1.74 Mi Po_103 BNSF *	0.10 Mi Po_102a BNSF	6.53 Mi Po_116 new
	1.00 Mi Po_107 I-5	1.13 Mi Po_102c BNSF	2.42 Mi Po_122 new
	0.32 Mi Po_111 new	0.71 Mi Po_105 new	3. 51 Mi Po_127 new *
	1.48 Mi Po_118 SP&S	0.77 Mi Po_112 new	
	1.10 Mi Po_119 SP%S	2.64 Mi Po_113 new	
	0.10 Mi Po_120 new	0.59 Mi Po_115 new	
		6.10 Mi Po_117 new, Hwy 167 and former SP&S	
	0.12 Mi Po_121 new	1.42 MI Po_124 I-5, BNSF	
	0.53 Mi Po_123 I-5, BNSF	0.59 Mi Po_126 I-5, BNSF	
	0.33 Mi Po_125 I-5, BNSF		
5.40 Miles 7.13 %	**14.43 Miles** 19.06 %	**21.12 Miles** 27.89 %	**34.77 Miles** 45.93 %
			75.72 Miles Total CHSR
			(79.72 via SeaTac) CHSR
		SeaTac Corridor	
		1.64 Mi Po_127a3 new	
			4.00 Mi Po_127a2 new
		2.11 Mi Po_127a1 new	
		3.75 Miles SeaTac CHSR	**4 Miles**
			7.75 Miles Total
			94 Miles Amtrak

New and existing Right of Way (RoW) declaration.

39.84 miles in a new corridor	39.88 miles in an existing right of way, BNSF, or Hwy
49.98 % of this CHSR RoW must be acquired.	50.03 % may be shared
Tunnel miles may be excluded from RoW purchase.	

* = Some deviation, as some miles are aside from the named corridor segment.

Please see below the educational videos of tunnel-boring machines for different geology. (Skip advertising)

(25) TBM Variable (25) TBM Variable Density® EN - YouTube® EN - YouTube

Tunnel Boring Machine (TBM) animation. - YouTube