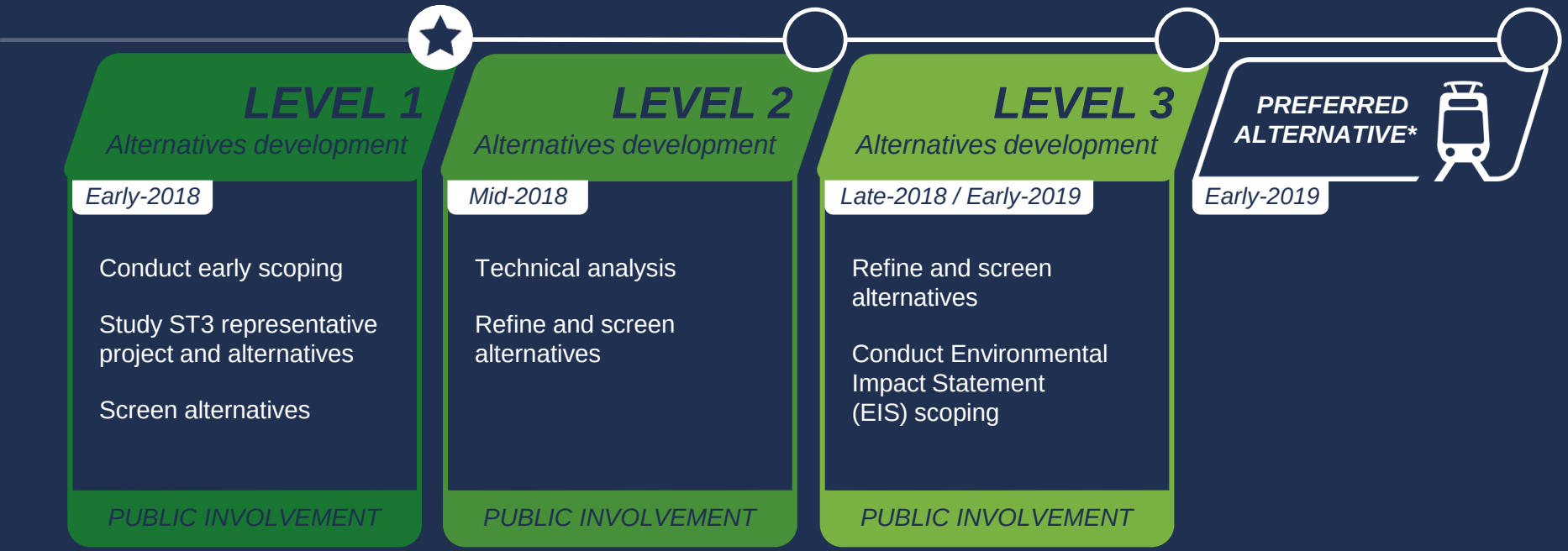
West Seattle and Ballard Link Extensions

Stakeholder Advisory Group Meeting | July 16, 2018

Agenda

- *Welcome and Introductions*
- *Community Engagement & Collaboration*
- *SODO Evaluation Results & Recommendation*
- *Chinatown-International District Evaluation Results & Recommendation*
- *Technical Briefings*
- *Next steps*

Alternatives development process



*The Sound Transit Board identifies preferred alternatives and other alternatives to study.

Alternatives development process

LEVEL 1
Alternatives development

Early-2018

Conduct early scoping

Study ST3 representative project and alternatives

Screen alternatives

PUBLIC INVOLVEMENT

LEVEL 2
Alternatives development

Mid-2018

Technical analysis

Refine and screen alternatives

PUBLIC INVOLVEMENT

LEVEL 3
Alternatives development

Late-2018 / Early-2019

Refine and screen alternatives

Conduct Environmental Impact Statement (EIS) scoping

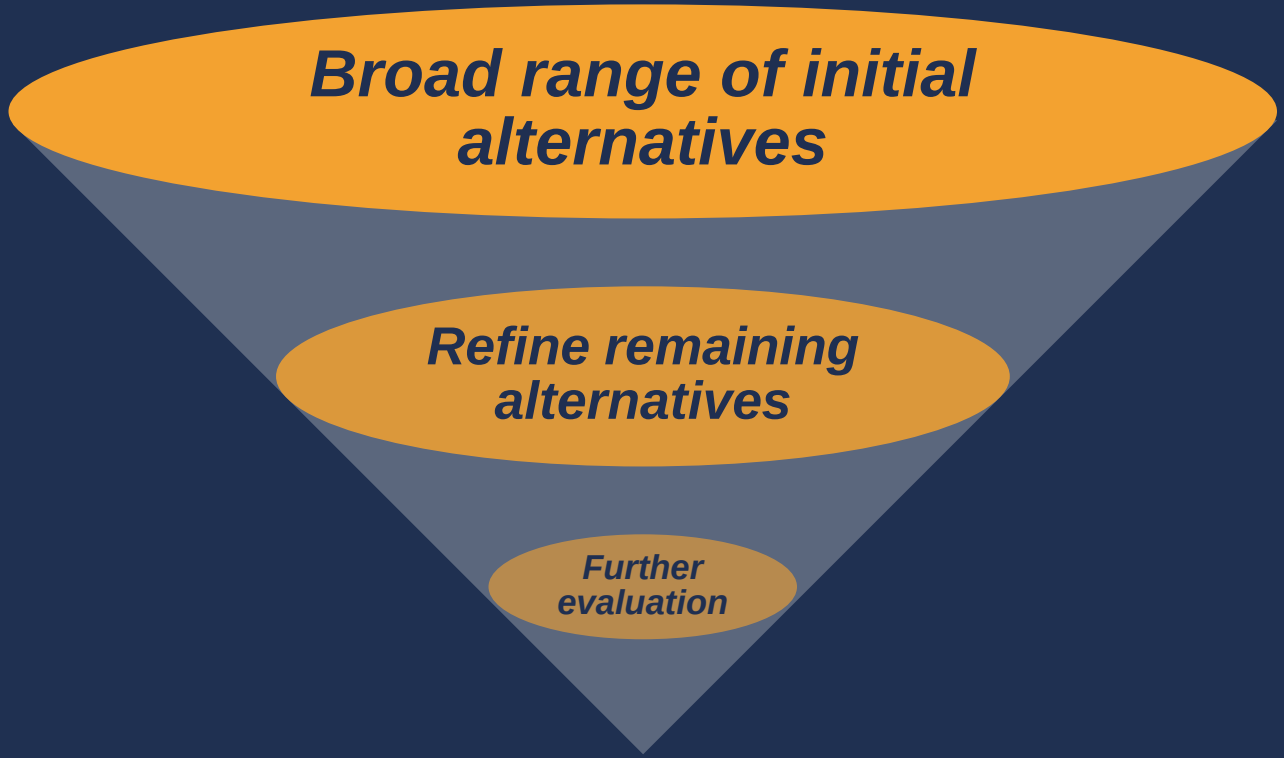
PUBLIC INVOLVEMENT

PREFERRED ALTERNATIVE*

Early-2019

*The Sound Transit Board identifies preferred alternatives and other alternatives to study.

Screening process



Preferred Alternative and other EIS alternatives

Community Engagement & Collaboration

Community engagement and collaboration

Meeting dates subject to change.

External Engagement Report: June 2018

- **4** comments and questions
- **2** email updates engaging more than **3,450** subscribers
- **1** Tweet engaging more than **82,000** users
- **1** post engaging more than **29,500** users
- **3** social service provider interviews
- **15** community briefings
- **2** festivals engaging more than **350** community members
- **1** Stakeholder Advisory Group meeting

June-July briefings snapshot

- ✓ Chinatown-International District BIA (6/7)
- ✓ Seattle Design Commission (6/7)
- ✓ Pigeon Point Neighborhood Council (6/11)
- ✓ South downtown stakeholders (6/12)
- ✓ Seattle Planning Commission (6/14)
- ✓ Neighborcare Health Ballard (6/18)
- ✓ SODO BIA Transportation Committee (6/19)
- ✓ Ballard Food Bank (6/20)
- ✓ Sound Transit Citizen Oversight Panel (6/21)
- ✓ CID Framework Capital Projects Coordination Workgroup (6/22)
- ✓ UW Medicine (6/25)
- ✓ NSIA (6/26)
- ✓ Ethiopian Community in Seattle (6/26)
- ✓ West Seattle Food Bank (6/28)
- ✓ Southwest Youth & Family Services (6/29)
- ✓ WSB Station Access Discussion (7/6)
- ✓ Mary's Place (7/10)
- ✓ Central Ballard Residents Council (7/12)
- ✓ South downtown stakeholders (7/12)
- ✓ SODO BIA Transportation Committee (7/13)

2018 Festivals

- ✓ Morgan Junction Festival (6/16)
- ✓ Festival Sundiata (6/16-6/17)
- ✓ West Seattle Summer Fest (7/13-7/15)
- ✓ Ballard Seafood Fest (7/13-7/15)
- ✓ Dragon Fest (7/14-7/15)
- South Lake Union Block Party (8/10)
- Delridge Day (8/11)
- Celebrate Little Saigon (8/26)
- Night Market (9/8)
- Fishermen's Fall Festival (9/15)
- Sustainable Ballard Festival (9/22)
- Dia de Muertos (10/27-10/28)
- Magnolia Farmers Market (TBD)

Coming soon: Neighborhood Forums/Open Houses

West Seattle

(Includes Delridge, Avalon and Alaska Junction stations)

Saturday, Sept. 8
9 – 11:30 a.m.
Seattle Lutheran High School Gym
(4100 SW Genesee St., Seattle)

Downtown Seattle

(Includes Denny, South Lake Union, Seattle Center, Midtown, Westlake, Chinatown-International District, Stadium and SODO stations)

Tuesday, Sept. 11
5:30 – 8 p.m.
Ruth Fisher Boardroom,
Union Station
(401 S. Jackson St., Seattle)

Ballard

(Includes Smith Cove, Interbay and Ballard stations)

Monday, Sept. 17
5:30 – 8 p.m.
Ballard Eagleson VFW
(2812 NW Market St.,
Seattle)

SODO Evaluation Results & Discussion

Level 2 alternatives

SODO and Chinatown-ID

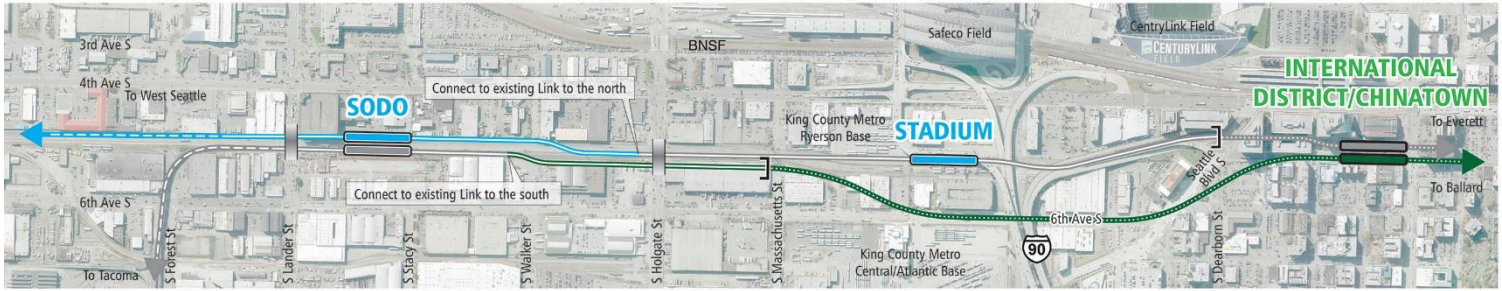
- ST3 Representative Project
- Massachusetts Tunnel Portal
- Surface E-3

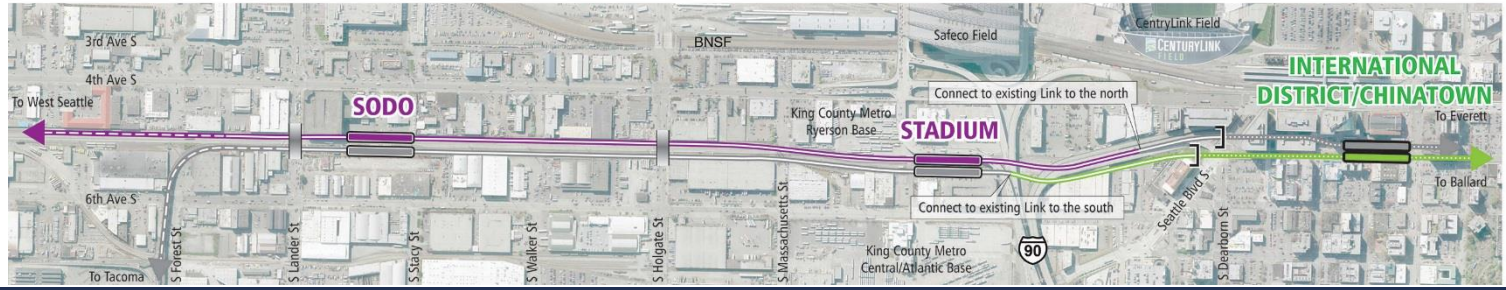
KEY MAP

- West Seattle extension/Station area
- Ballard extension/Station area

LEGEND

- ST3 representative project - West Seattle extension/Ballard extension
- Massachusetts tunnel portal - West Seattle extension/Ballard extension
- Surface E-3 - West Seattle extension/Ballard extension
- Existing Link light rail
- Approximate portal location
- New roadway overcrossing
- Surface
- Elevated guideway
- Tunnel
- Surface station
- Elevated station





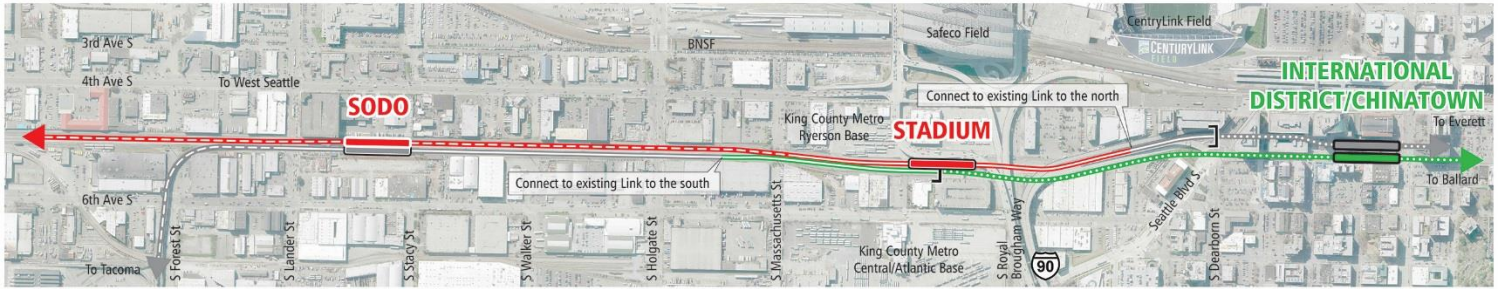
SODO and Chinatown-ID – Level 2 alternatives

KEY MAP

- West Seattle extension/Station area
- Ballard extension/Station area

LEGEND

- ST3 representative project - West Seattle extension/Ballard extension
- Massachusetts tunnel portal - West Seattle extension/Ballard extension
- Surface E-3 - West Seattle extension/Ballard extension
- Existing Link light rail
- Approximate portal location
- New roadway overcrossing
- Surface
- Elevated guideway
- Tunnel
- Surface station
- Elevated station



SODO and Chinatown-ID

Level 2 Alternative – *ST3 Representative Project*

KEY MAP

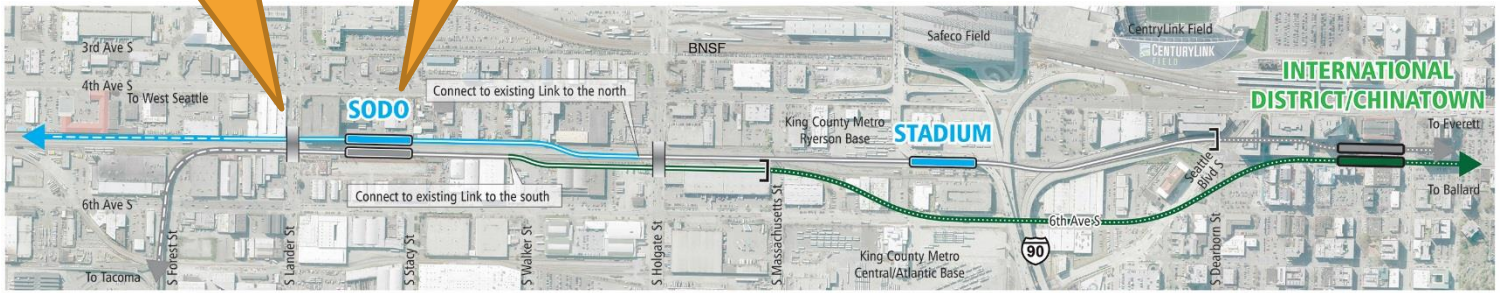
- West Seattle extension/Station area
- Ballard extension/Station area

LEGEND

- ST3 representative project - West Seattle extension/Ballard extension
- Massachusetts tunnel portal - West Seattle extension/Ballard extension
- Surface E-3 - West Seattle extension/Ballard extension
- Existing Link light rail
- Approximate portal location
- New roadway overcrossing
- Surface
- Elevated guideway
- Tunnel
- Surface station
- Elevated station

New Lander roadway overcrossing

At-grade SODO Station



= Refinement from Level 1

SODO and Chinatown-ID

Level 2 Alternative – *Massachusetts Tunnel Portal*

KEY MAP

West Seattle extension/Station area

Ballard extension/Station area

LEGEND

- ST3 representative project - West Seattle extension/Ballard extension
- Massachusetts tunnel portal - West Seattle extension/Ballard extension
- Surface E-3 - West Seattle extension/Ballard extension
- Existing Link light rail
- Approximate portal location
- New roadway overcrossing
- Surface
- Elevated guideway
- Tunnel
- Surface station
- Elevated station

SODO and Chinatown-ID

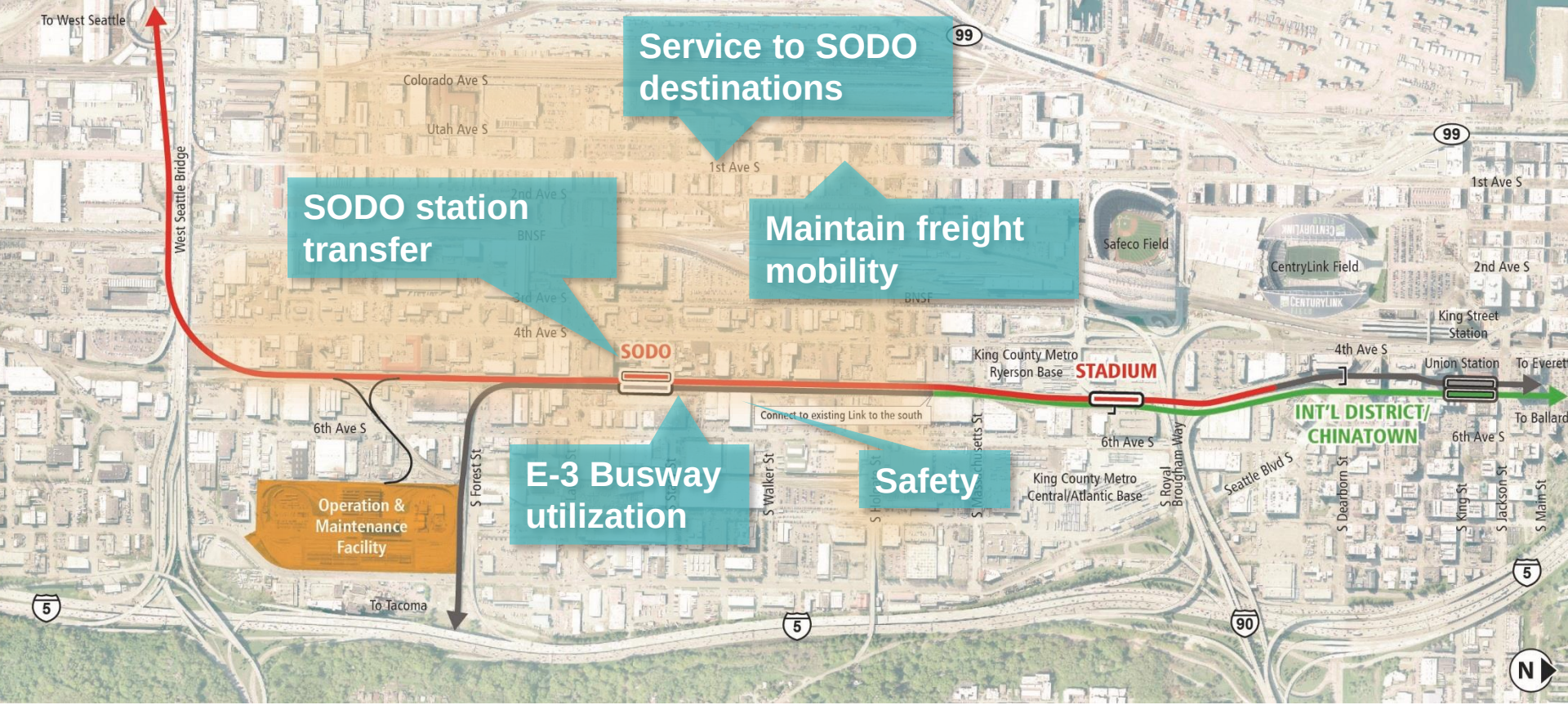
Level 2 Alternative – *Surface E-3*

Additional feedback

SODO and Chinatown-ID

- Consider 4th Avenue location for Chinatown-ID station
- Explore alignments further west of ST3 Representative Project

SODO Alignment and Station Alternatives

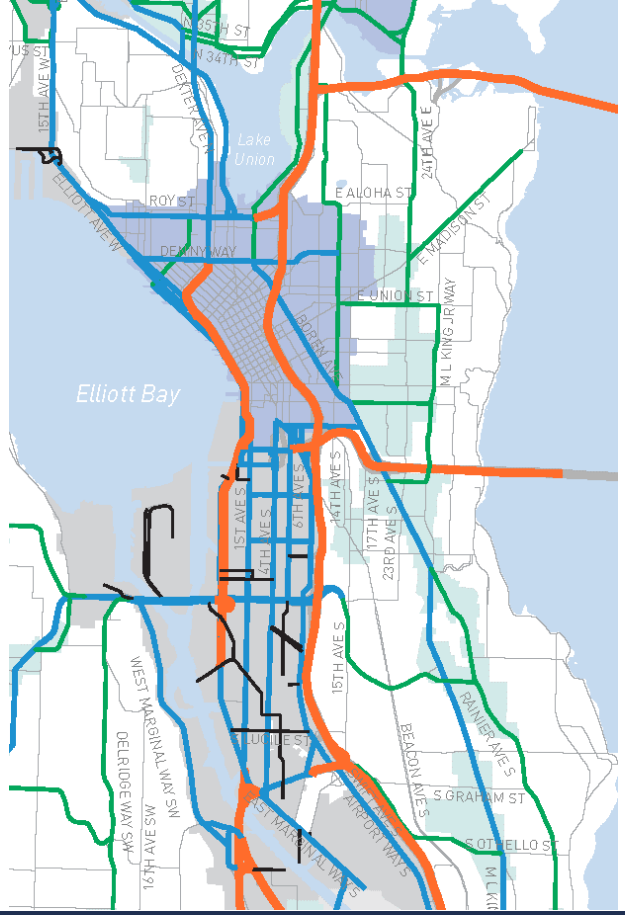


SODO segment community concerns

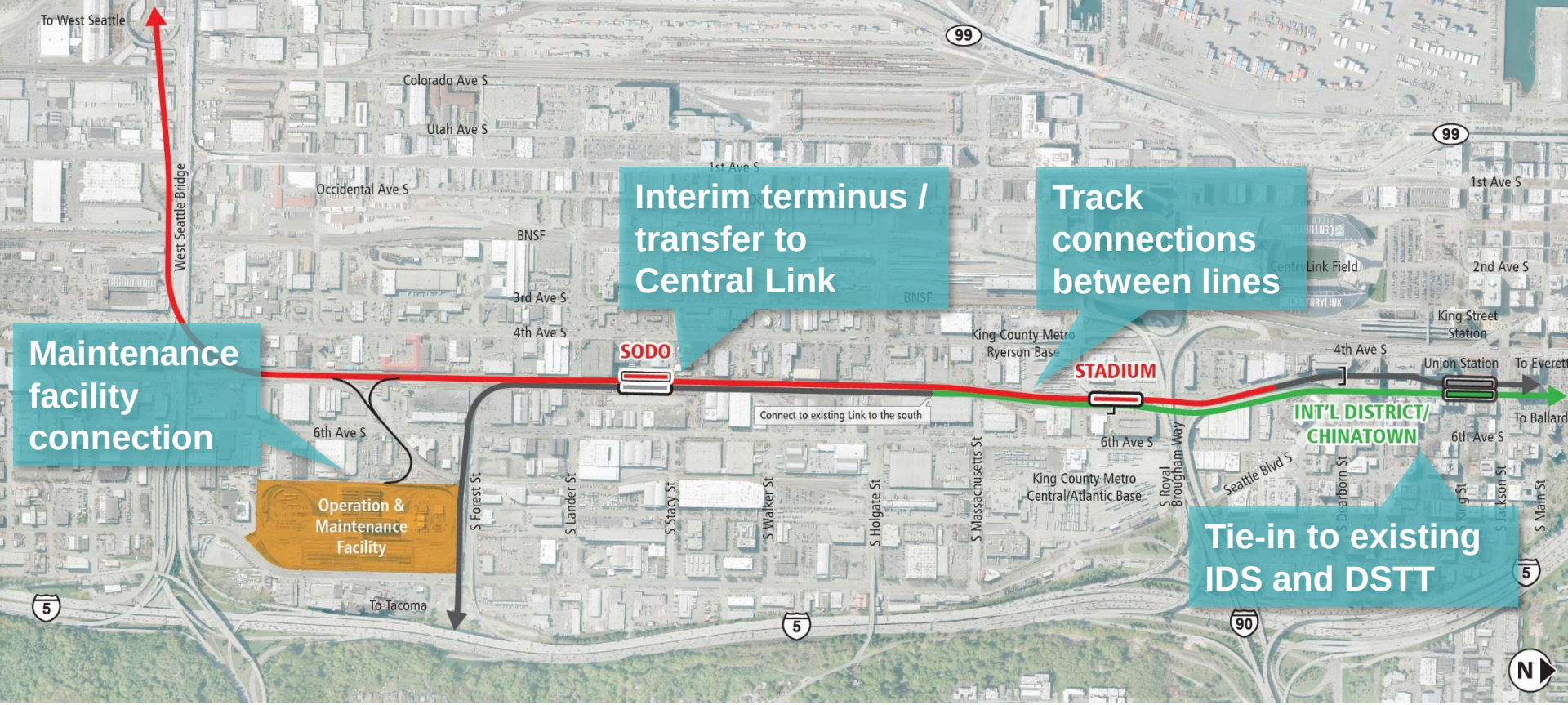
Service to SODO Destinations

SODO Station Transfer

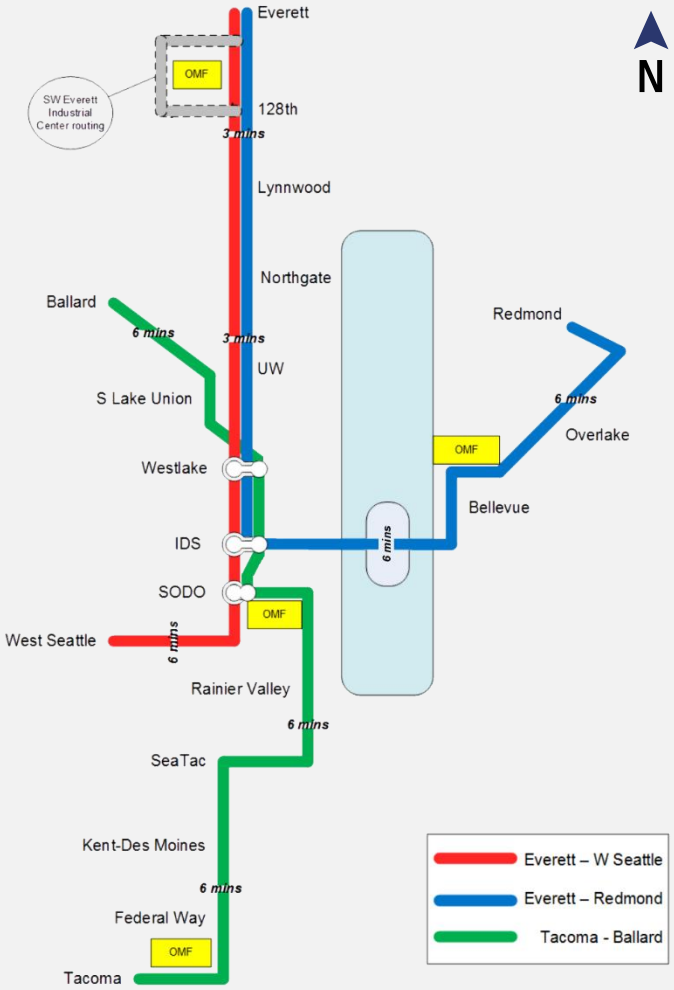
E-3 Busway Utilization



Maintain Freight Mobility



SODO Segment Operational Needs

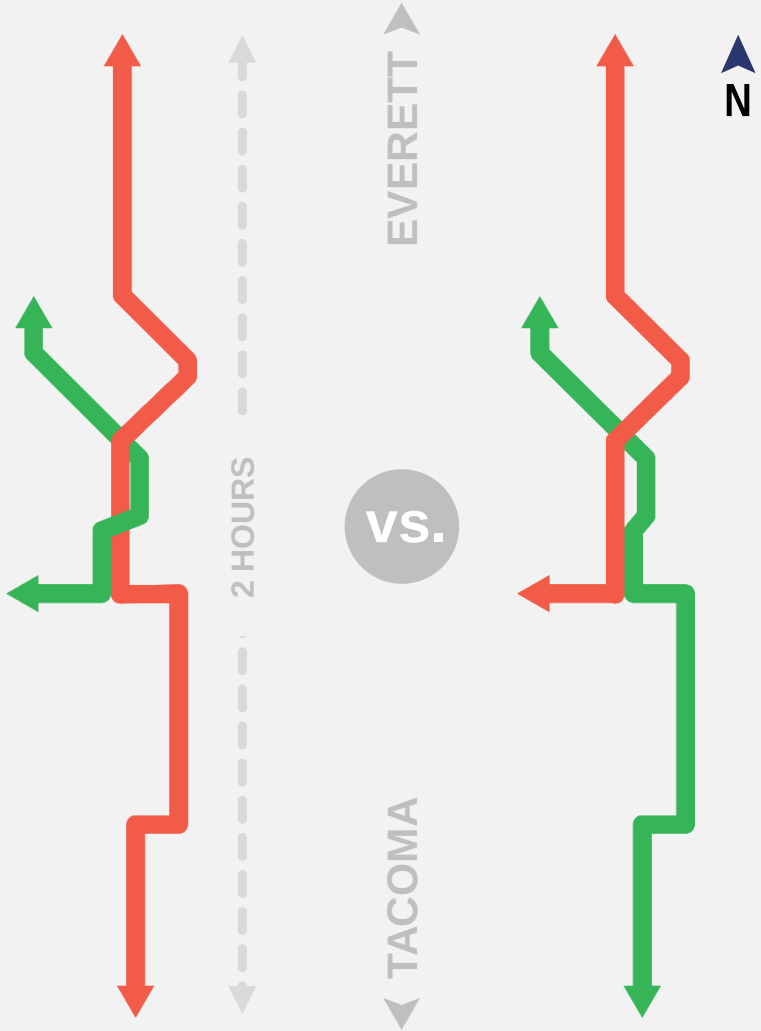


Operating plan

Everett to West Seattle via Downtown Seattle Transit Tunnel

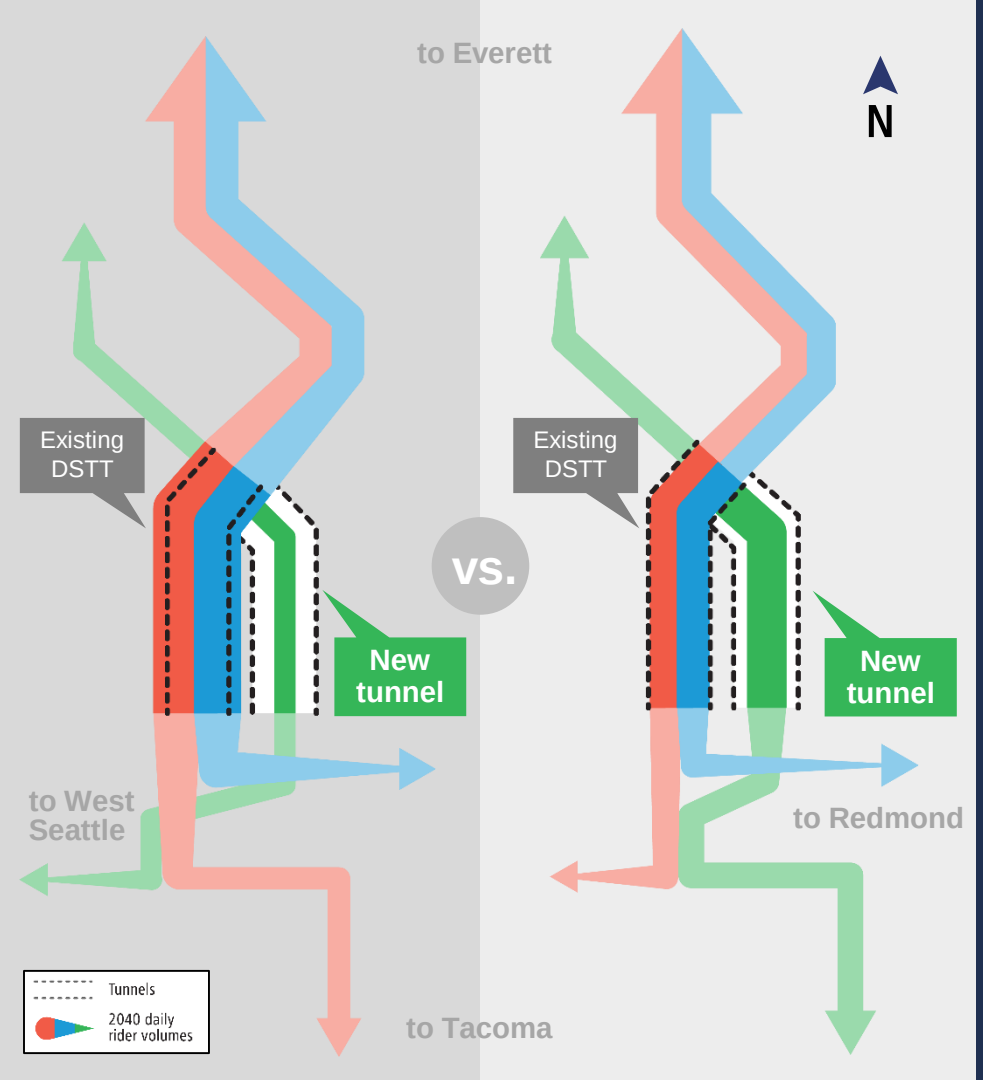
Everett to Downtown Redmond via Downtown Seattle Transit Tunnel

Ballard to Tacoma via new rail-only tunnel



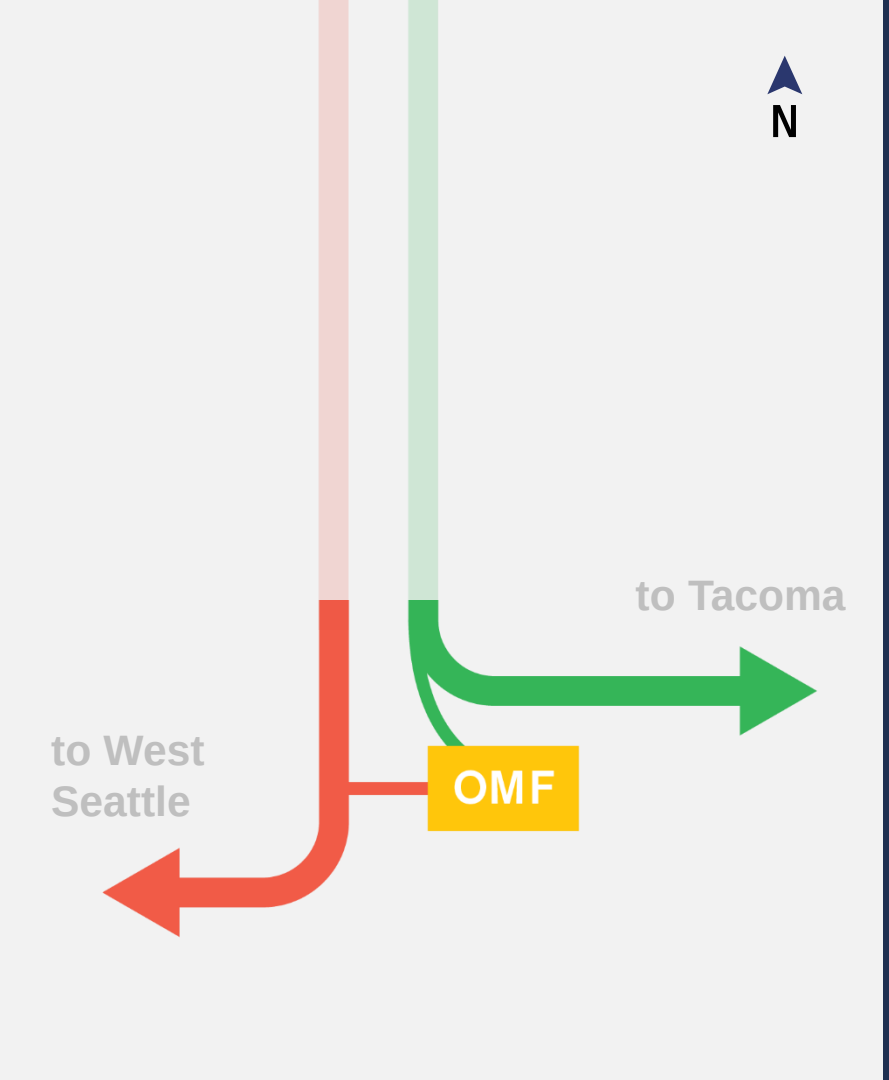
Spine segmentation

- ✓ Splits long trips from Tacoma to Everett



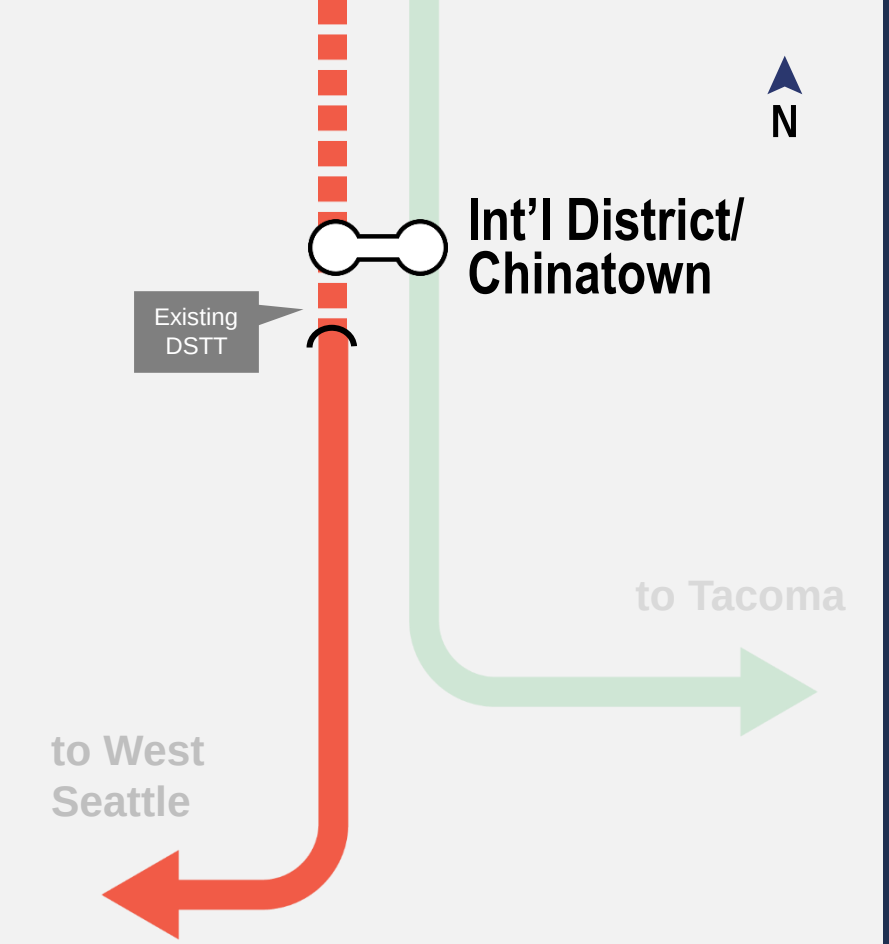
Balanced loads

- ✓ Balances passenger loads, enabling future growth
- ✓ All users benefit from core capacity expansion



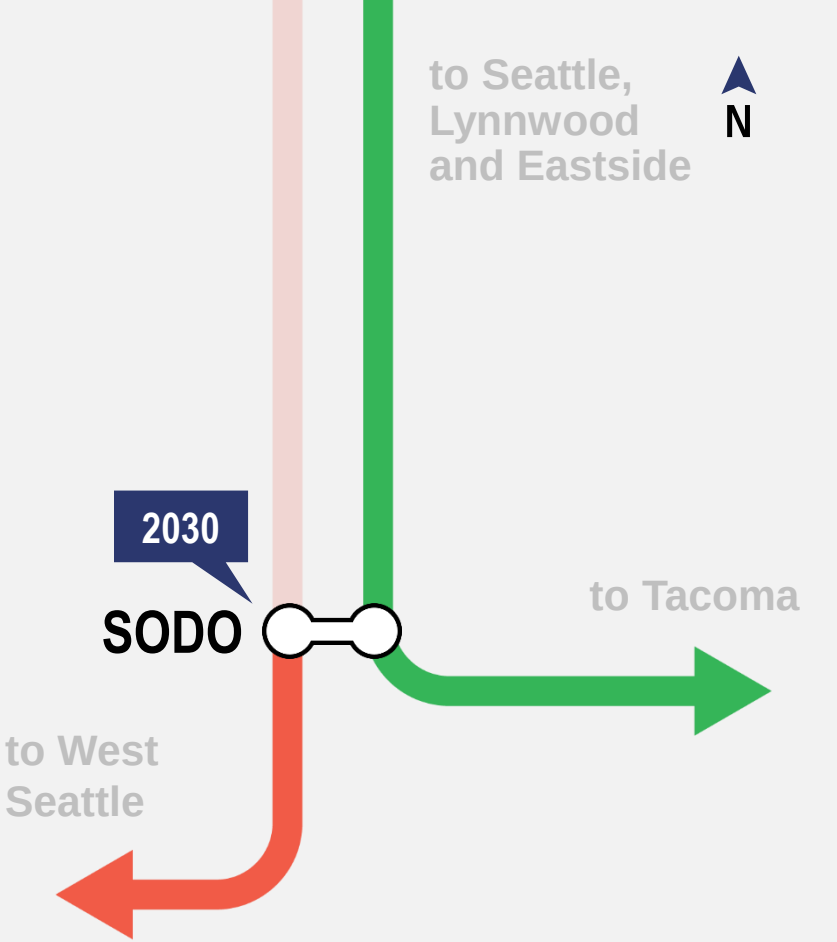
Maintenance facility connection

- ✓ Accommodate connection from West Seattle Link to existing maintenance facility at Forest Street



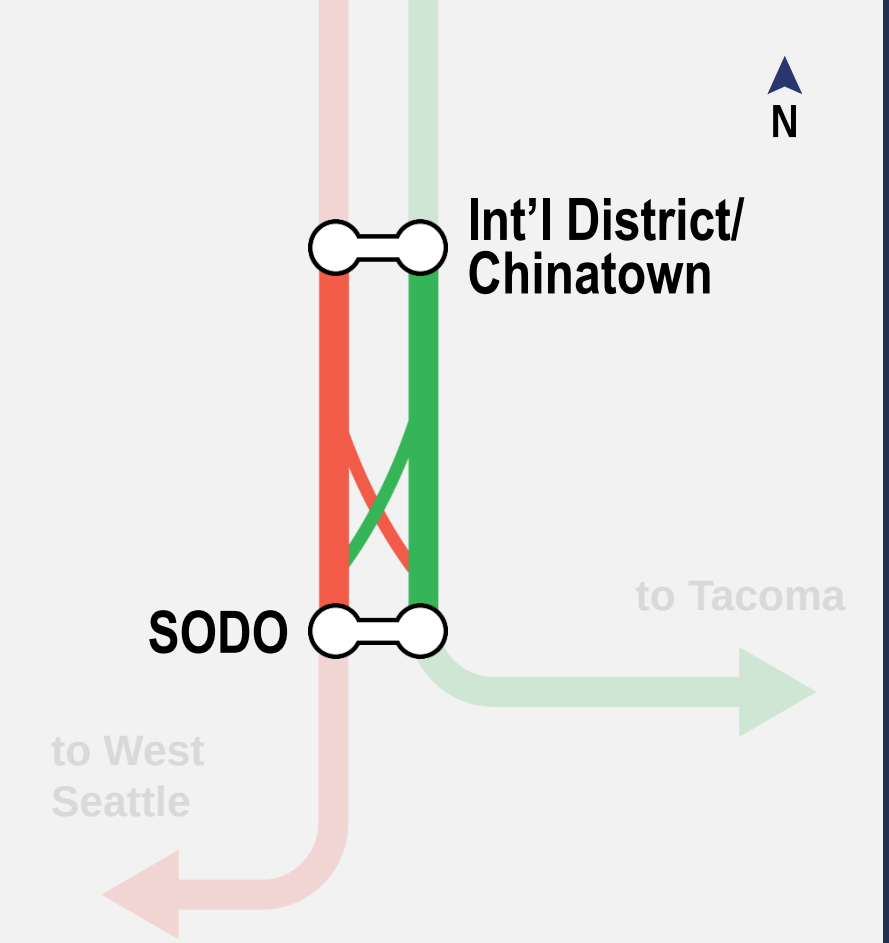
Tie-in to existing DSTT

- ✓ Connect to existing DSTT International District/ Chinatown Station



Interim terminus / transfer to Central Link

- ✓ Accommodate interim transfer to northbound Central Link and permanent transfer to southbound Central Link



Track connections between lines

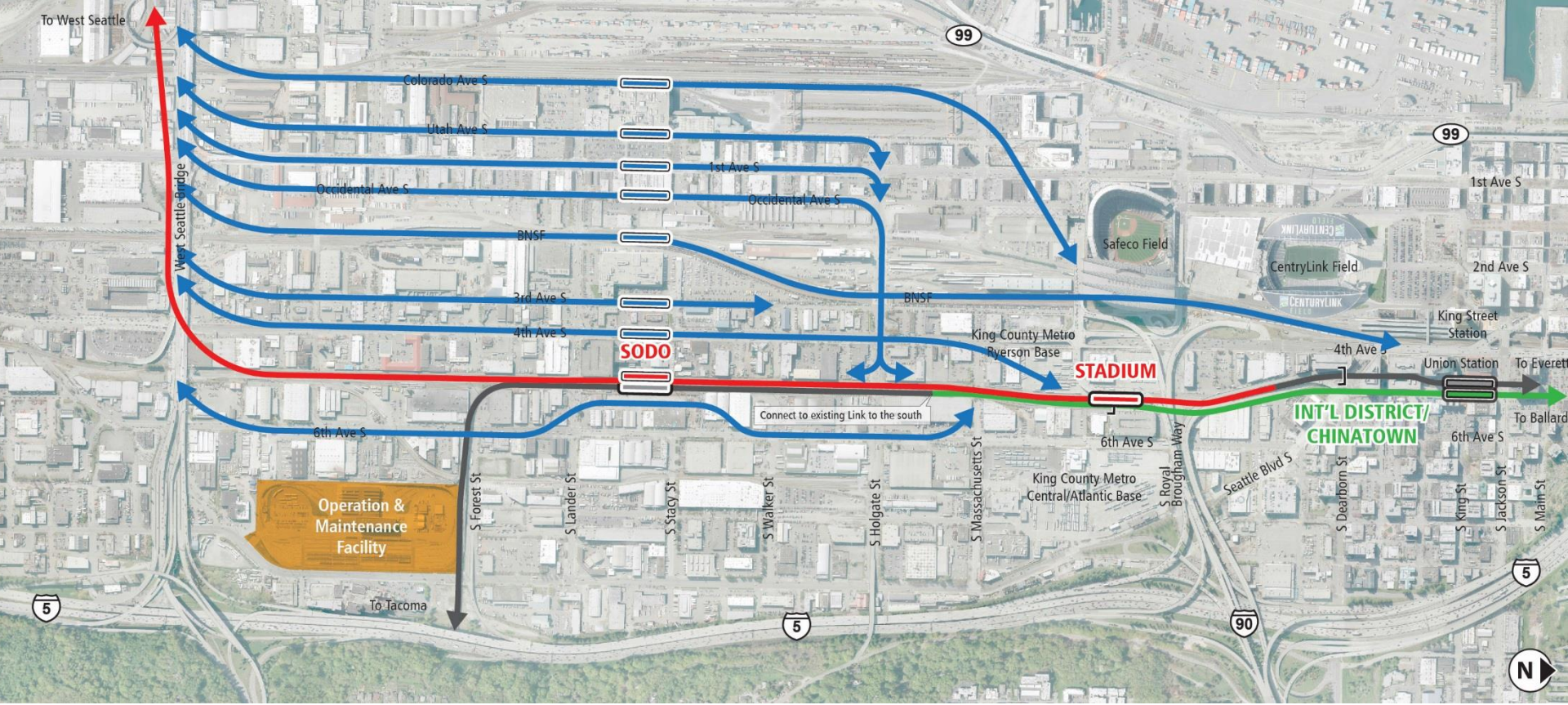
- ✓ Accommodate track connections between West Seattle Link and Ballard Link to allow for movement of trains and failure management

SODO community concerns

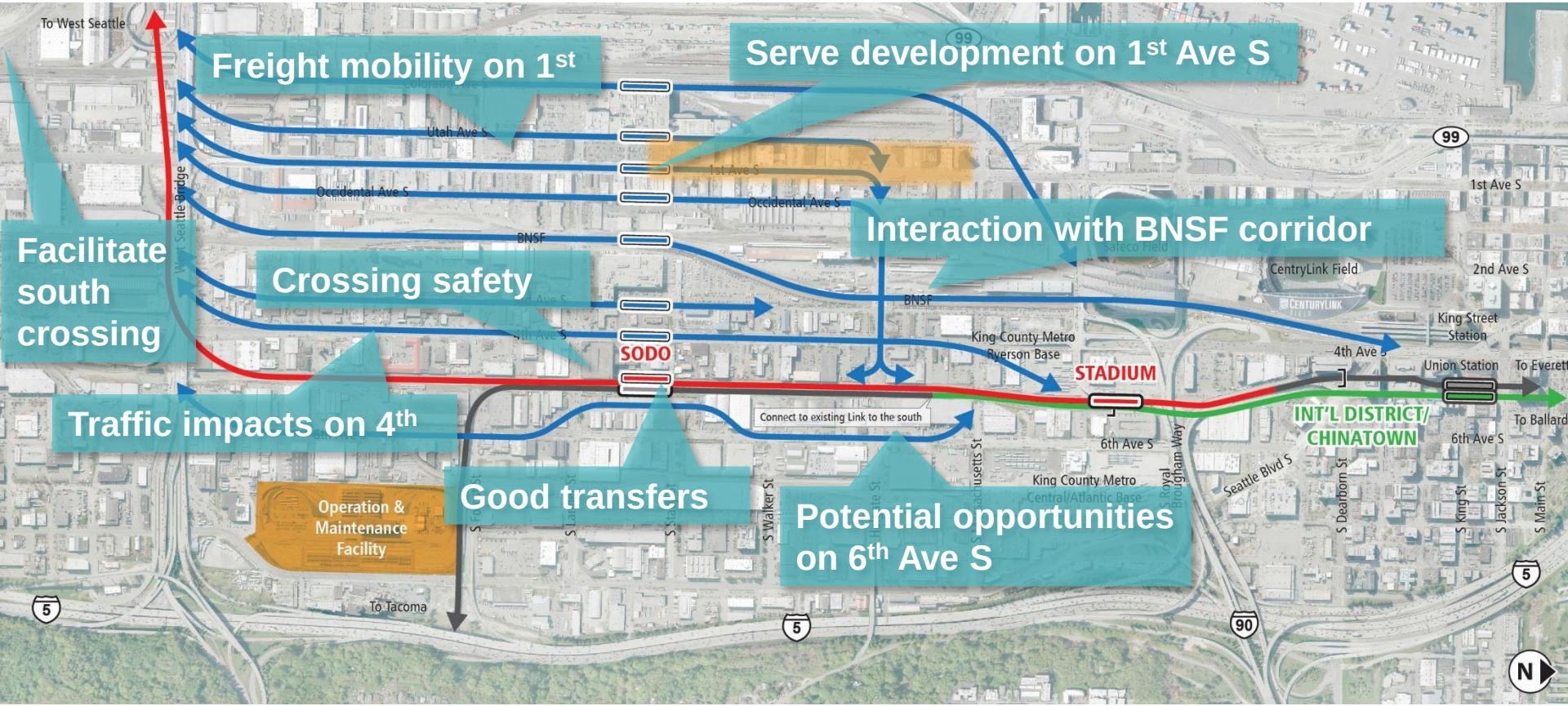
- ✓ SODO station transfer
- ✓ E-3 busway utilization
- ✓ Service to SODO destinations
- ✓ Freight mobility
- ✓ Safety

Operational needs

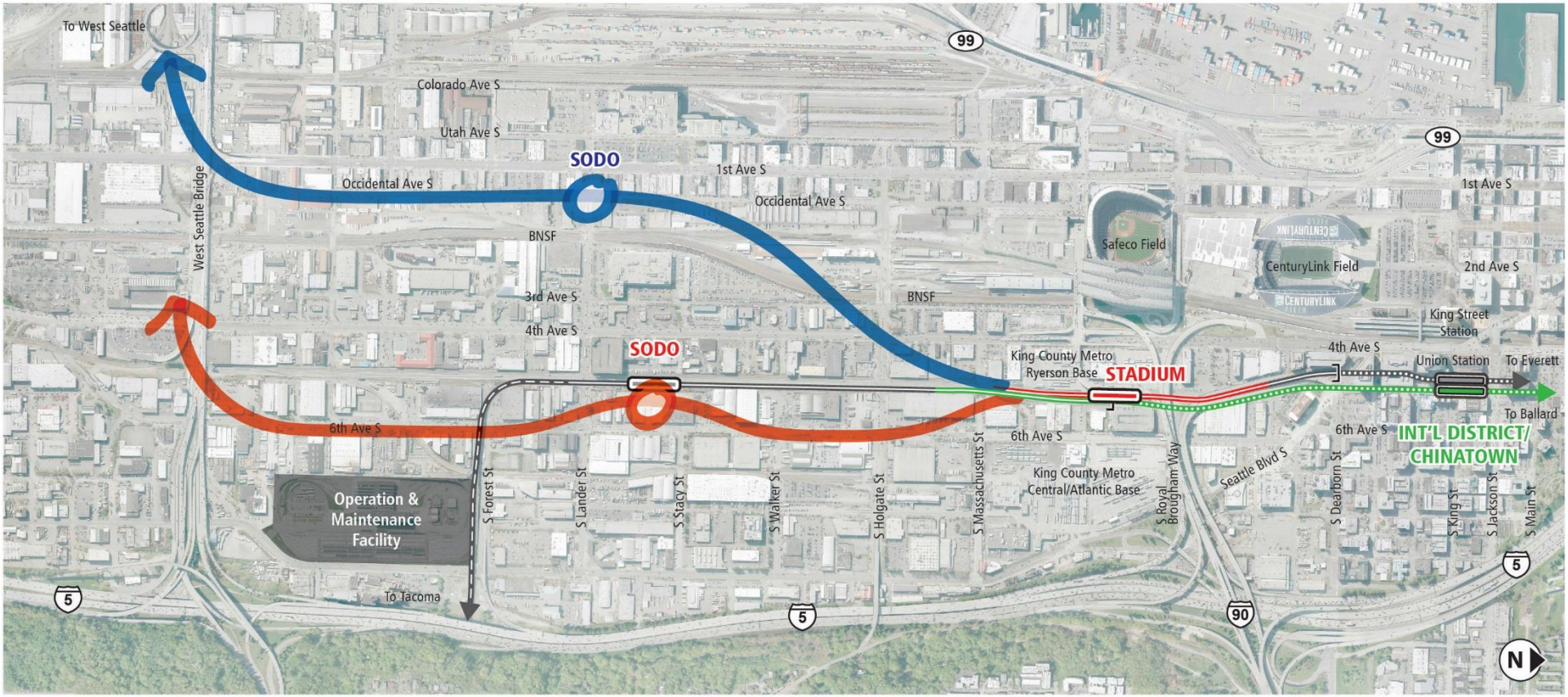
- ✓ Maintenance facility connection
- ✓ Tie-in to DSTT
- ✓ Interim terminus
- ✓ Track connections



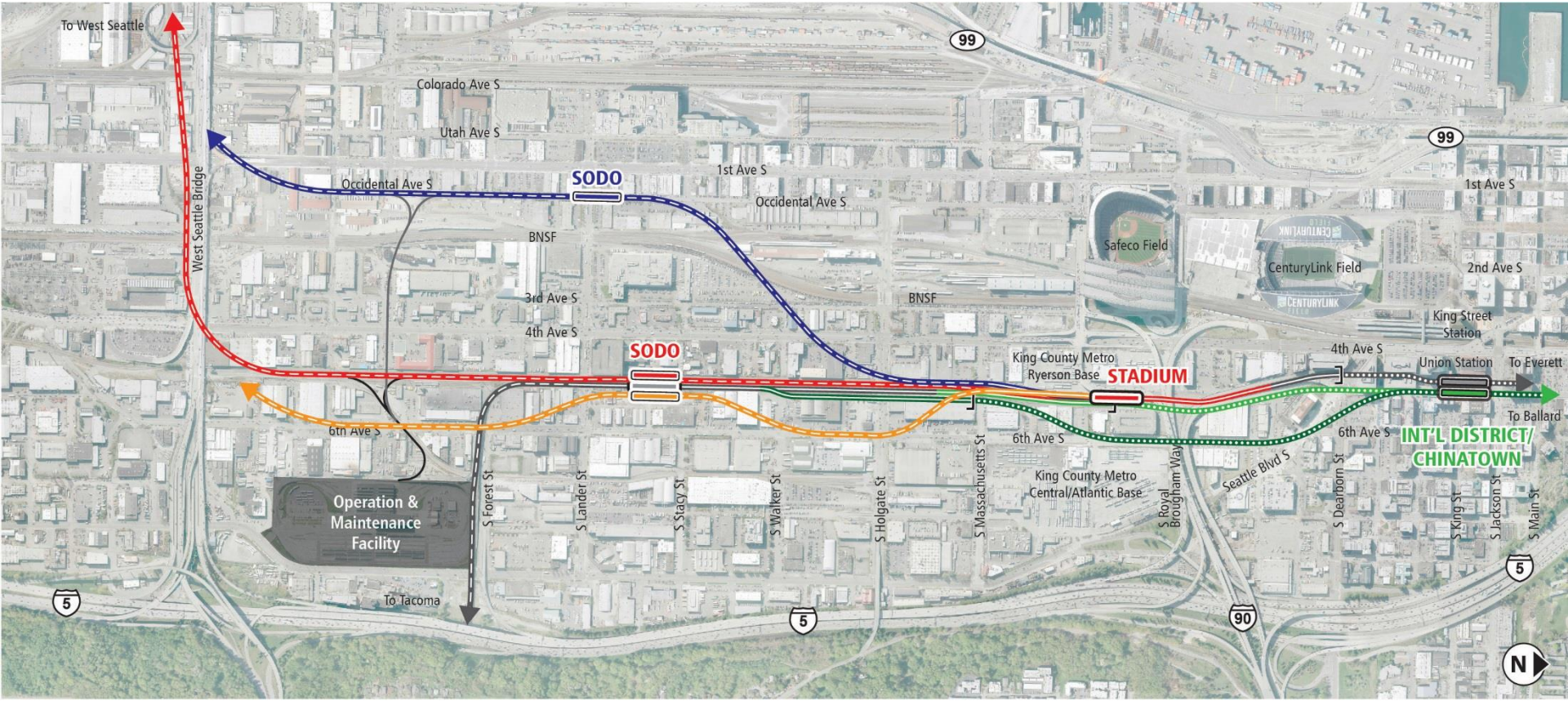
SODO route ideas from agency workshop



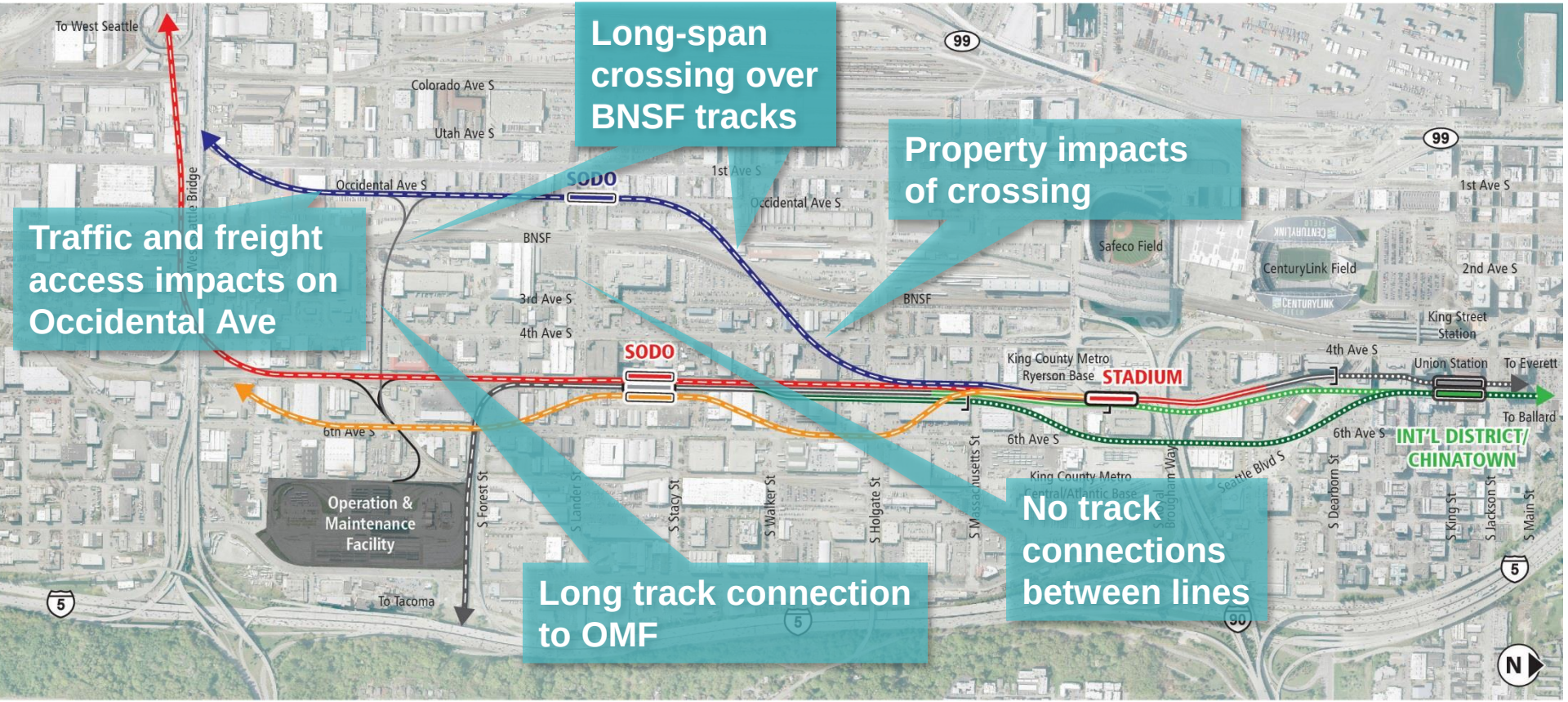
Agency workshop concerns/issues



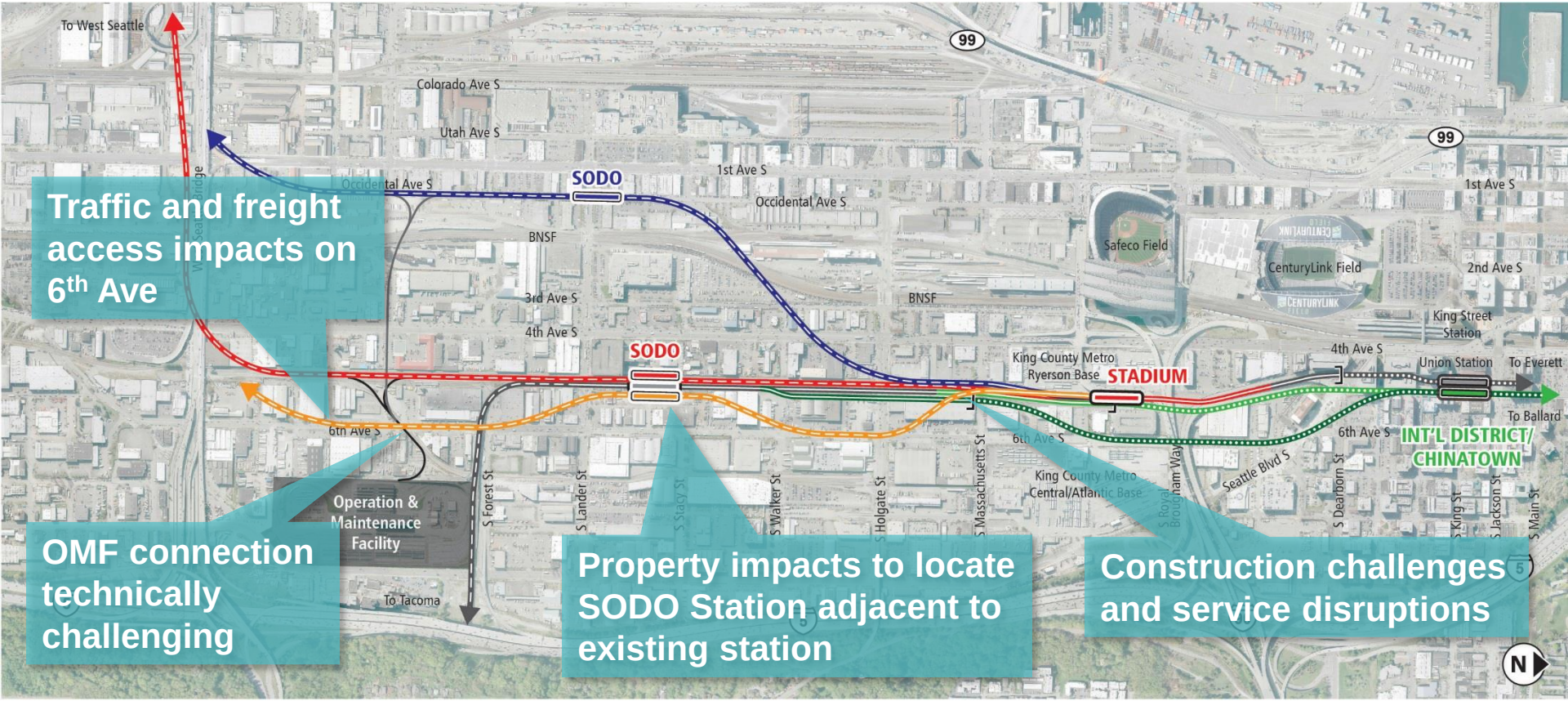
Potential alternatives from agency workshop



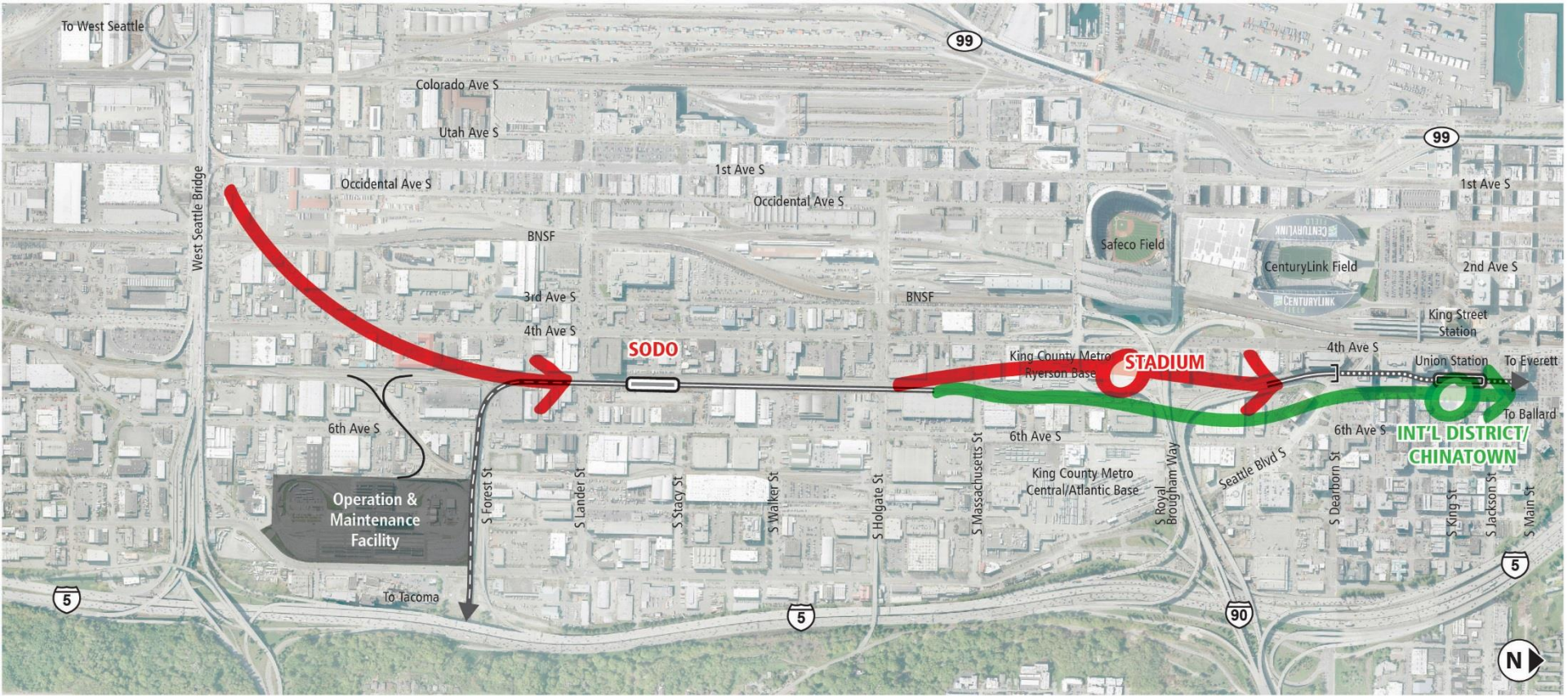
New SODO Level 1 Alternatives



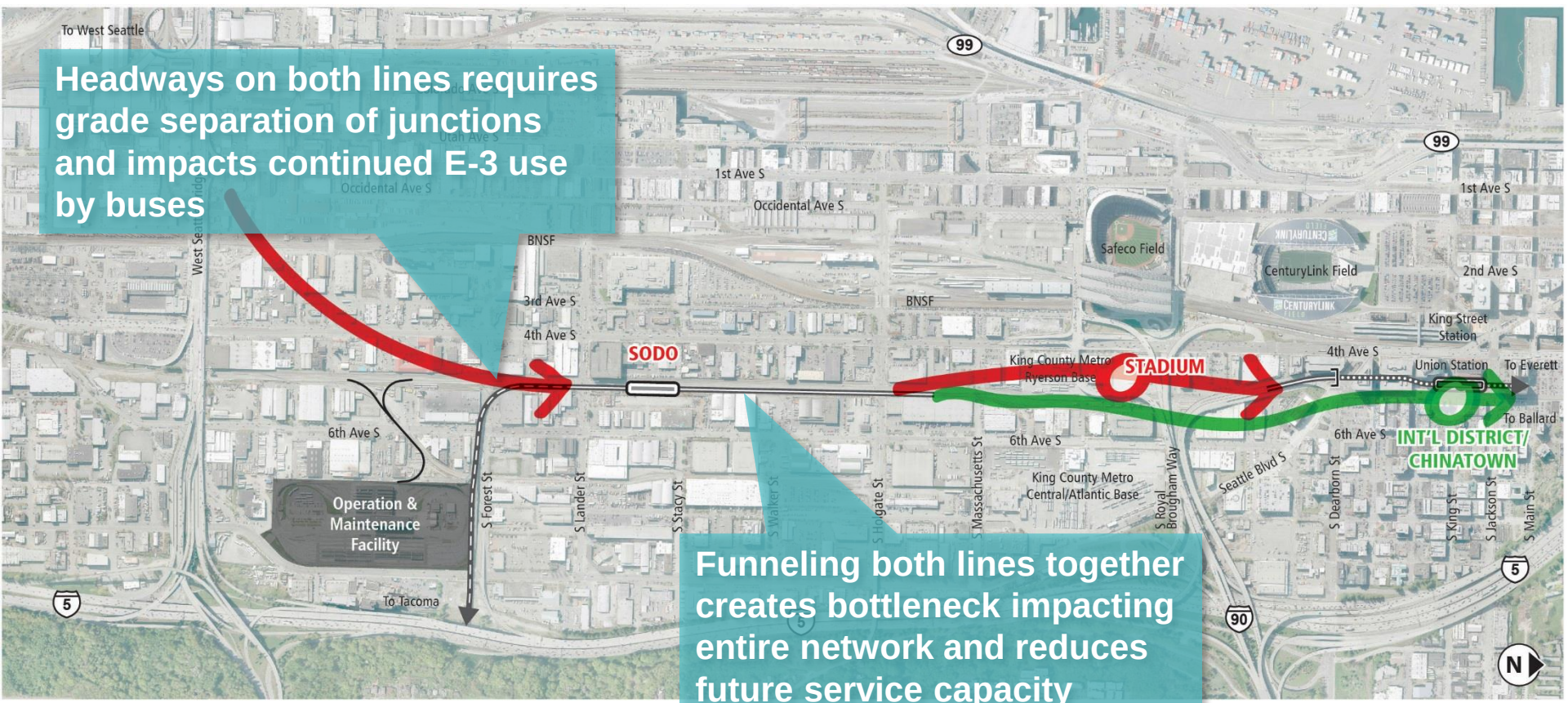
Occidental Ave – Key Findings



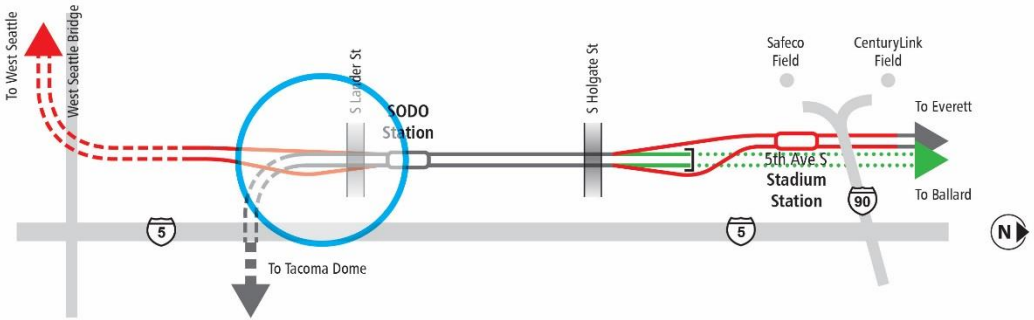
6th Ave – Key Findings

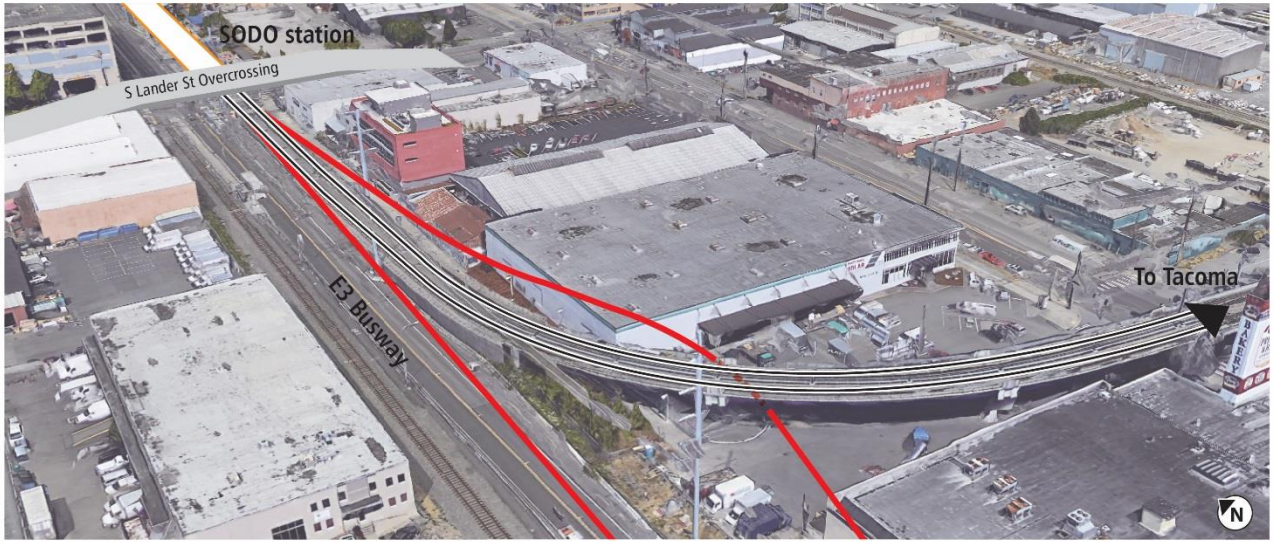


Other suggestions – "Track interlining"

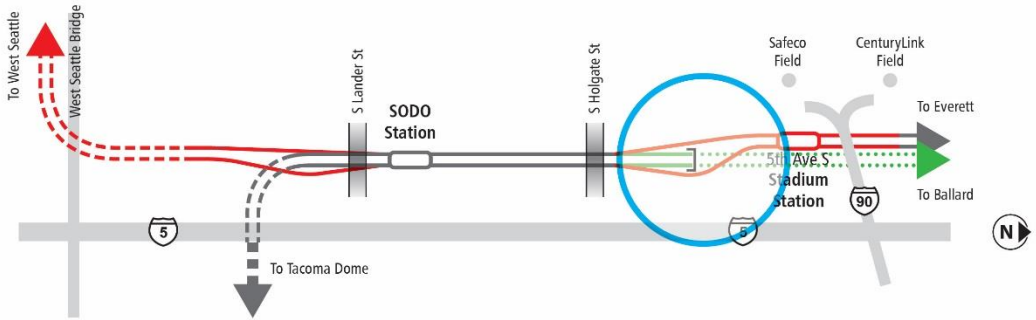


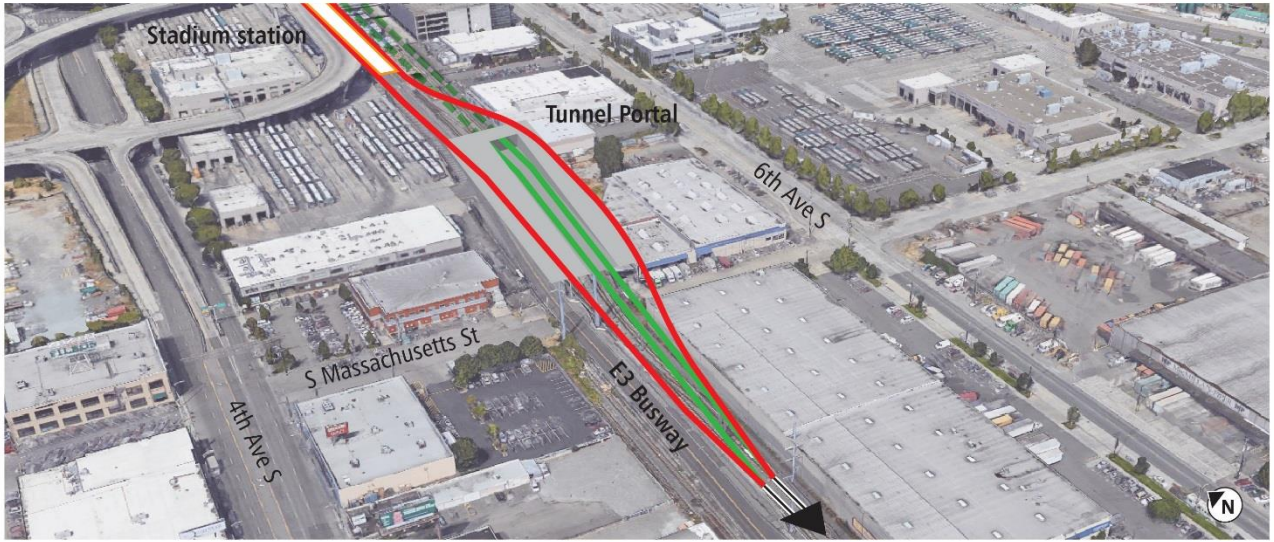
Other suggestions – "Track interlining"



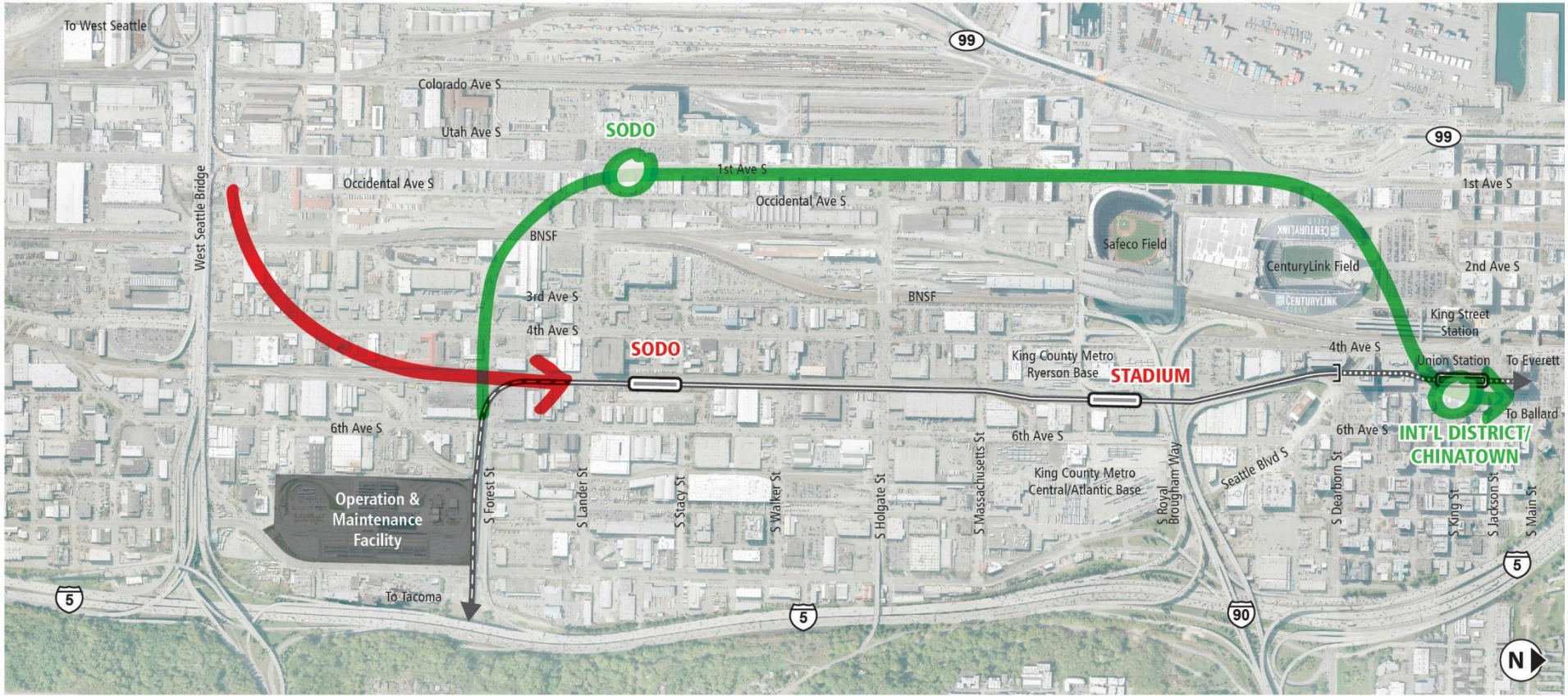


Track interlining – Forest Street junction

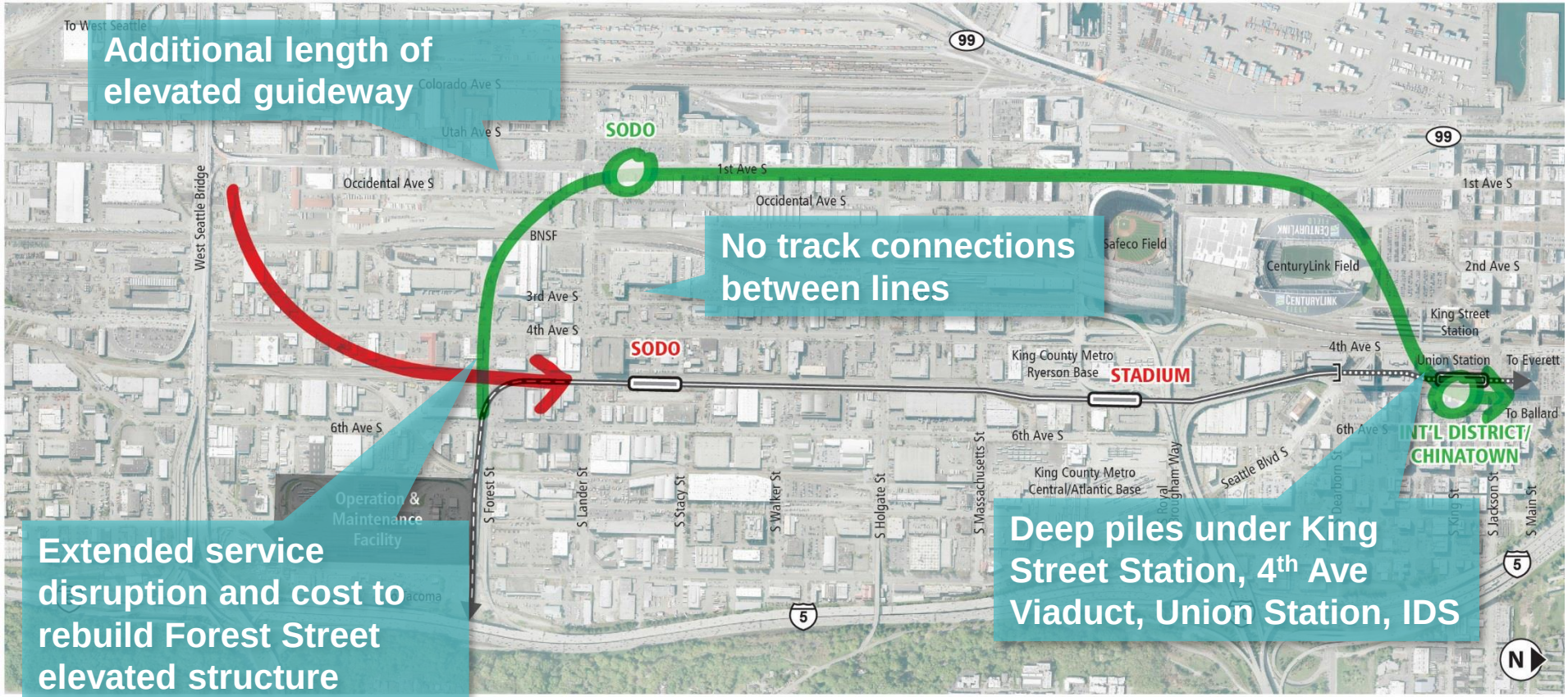




Track interlining – Stadium junction

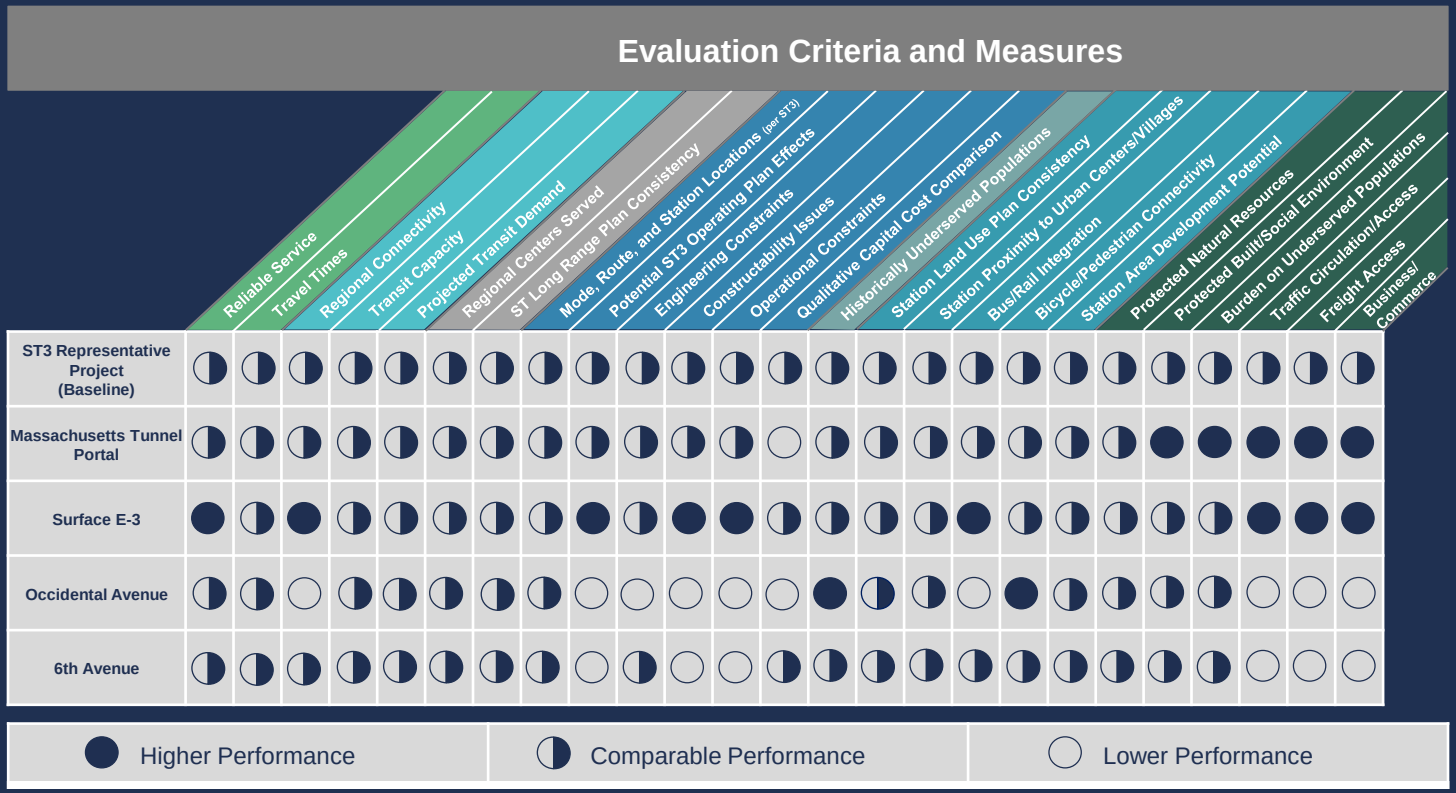


Other suggestions –"Extended Ballard line"

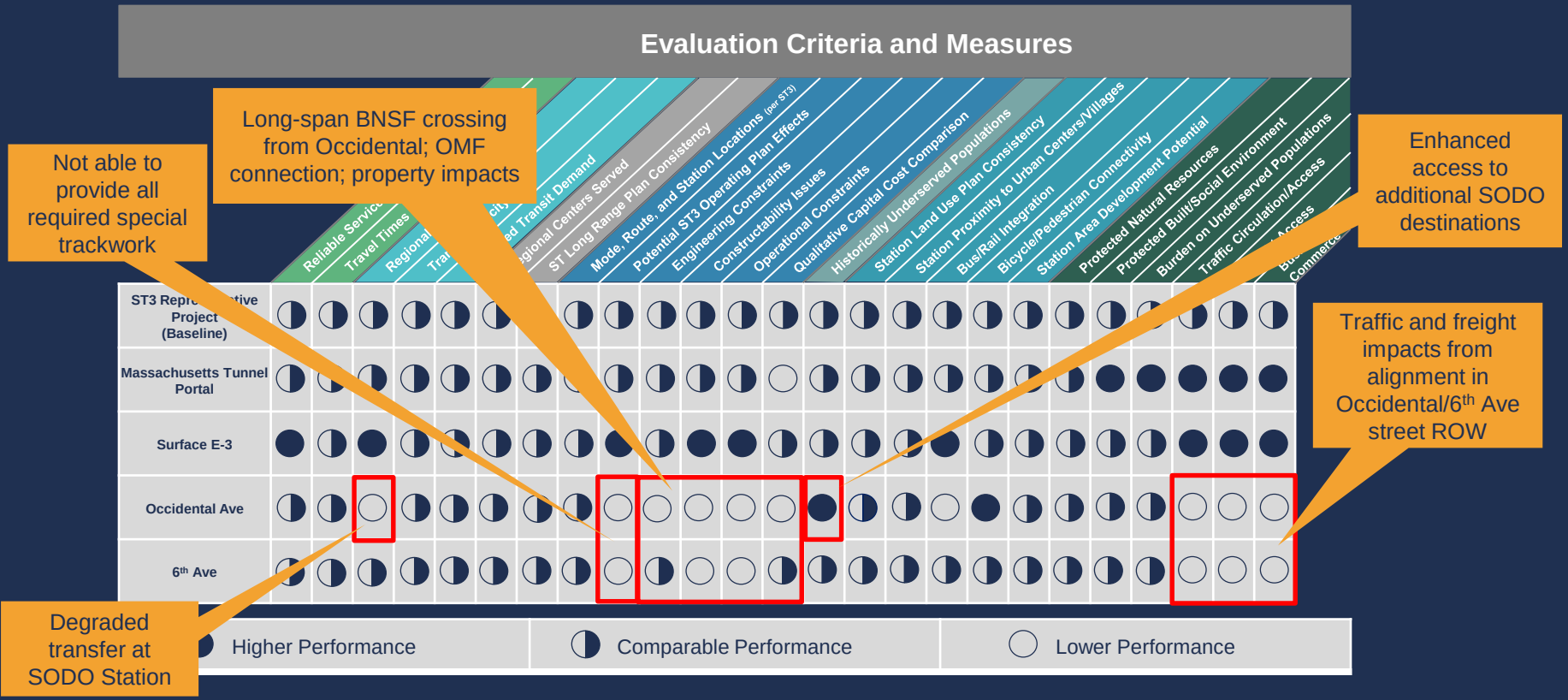


Other suggestions –"Extended Ballard line"

SODO Level 1 Alternatives – Evaluation Results



SODO Level 1 Alternatives – Evaluation Results



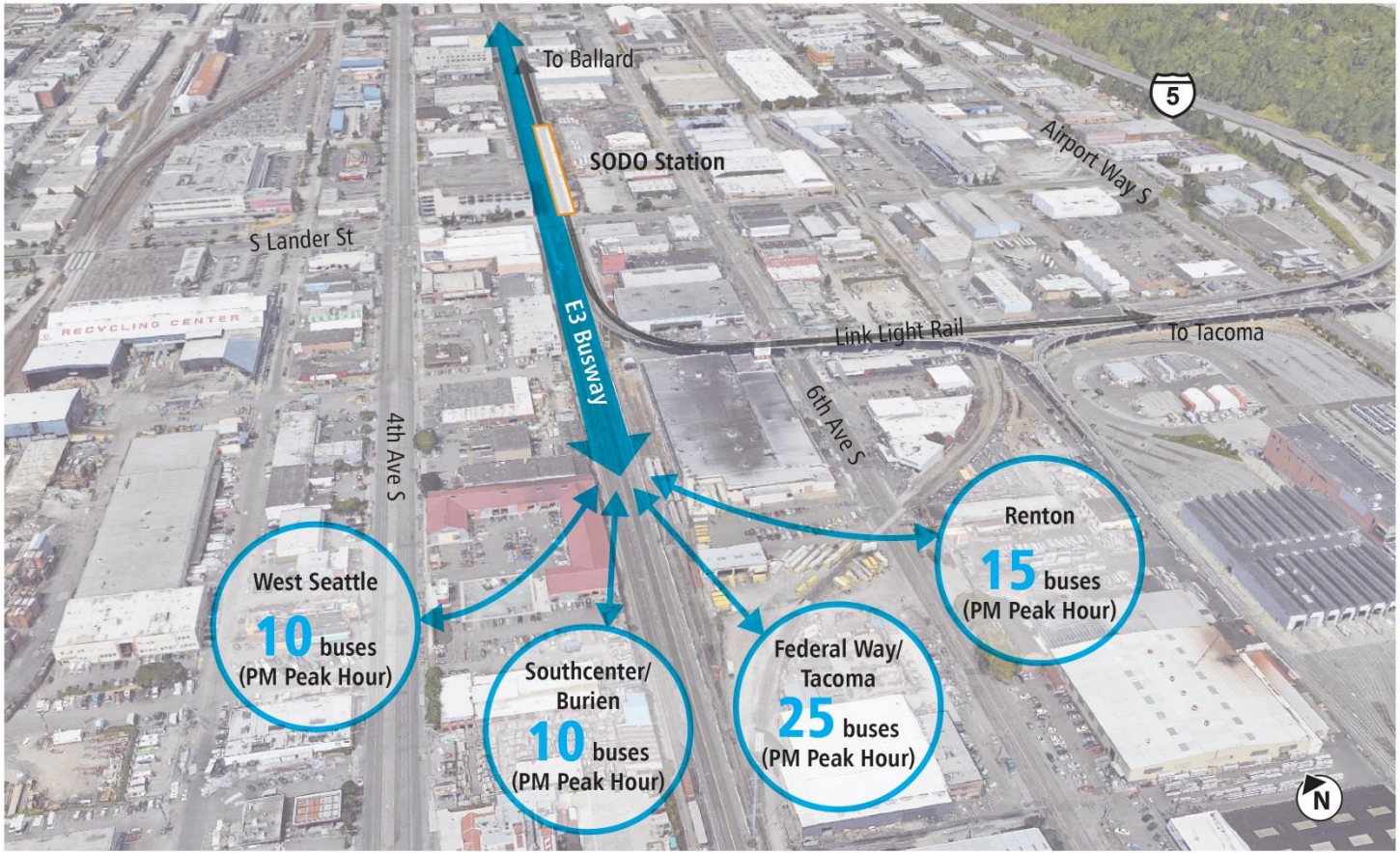
Not able to provide all required special trackwork

Long-span BNSF crossing from Occidental; OMF connection; property impacts

Enhanced access to additional SODO destinations

Traffic and freight impacts from alignment in Occidental/6th Ave street ROW

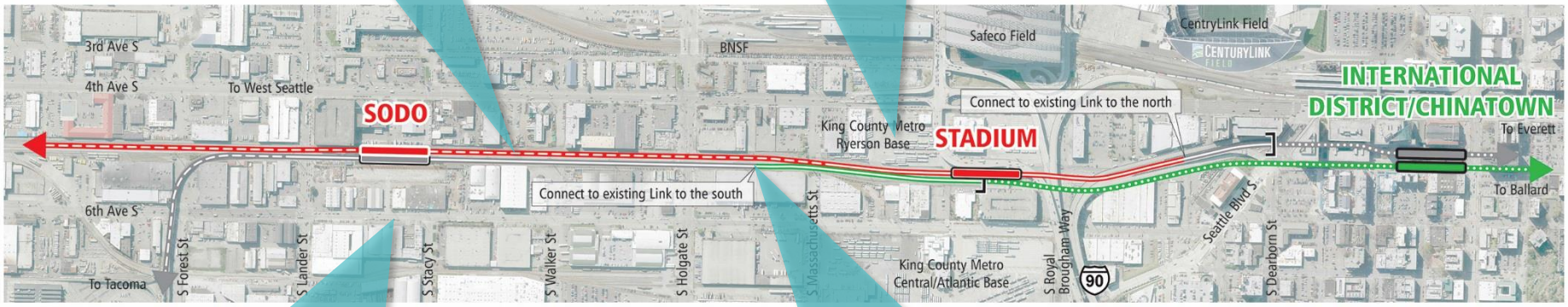
Degraded transfer at SODO Station



E-3 Busway – Existing Bus Volumes (PM Peak Hour)

Confirm future bus volumes expected to use E-3 corridor

Confirm extent of potential Ryerson Base capacity impacts



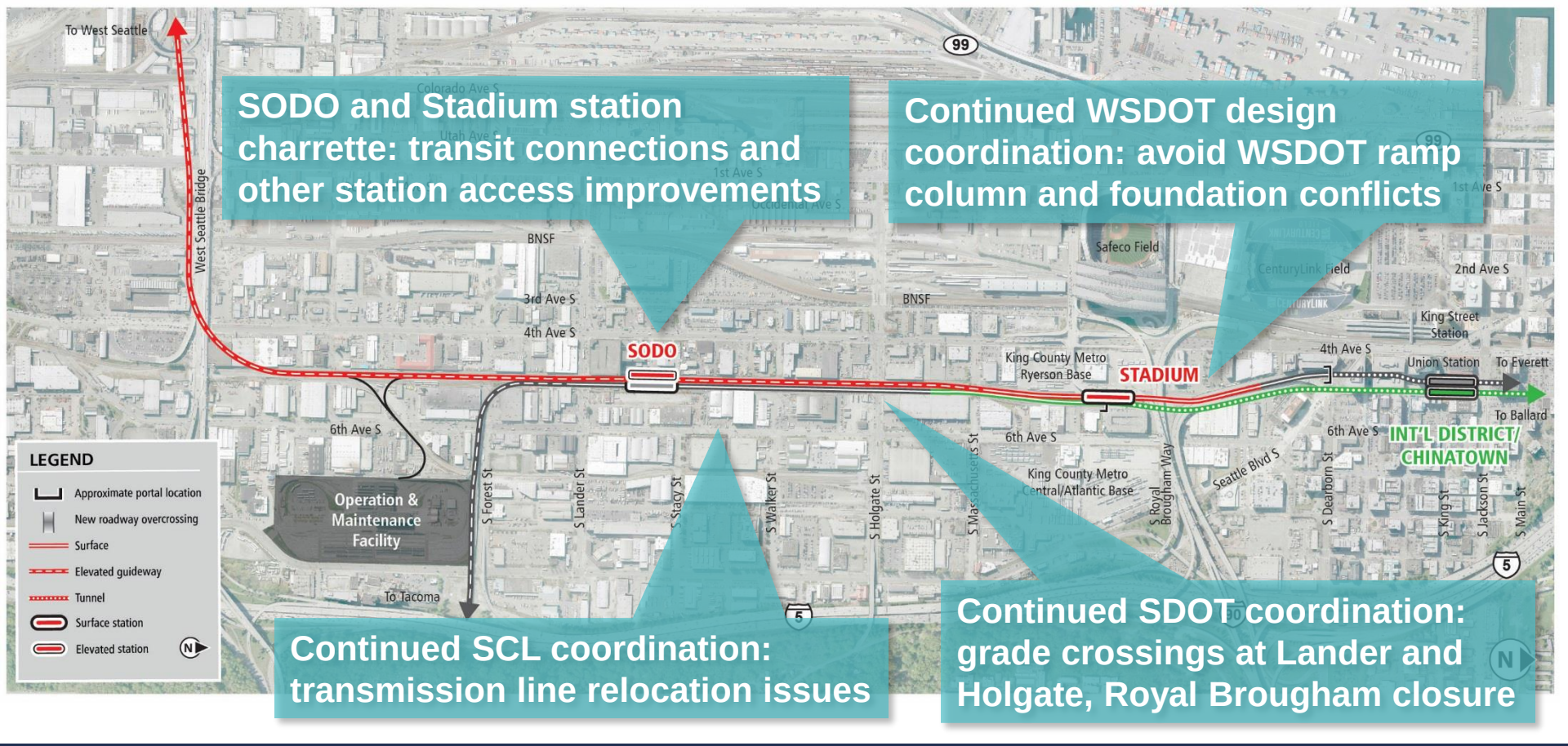
Assess potential 6th Ave roadway improvements to accommodate bus use

Confirm extent of future bus layover needs

E-3 Busway – Level 2 technical work

On-going discussions with partner agencies

SODO station access technical work



Level 2 – other technical work activities

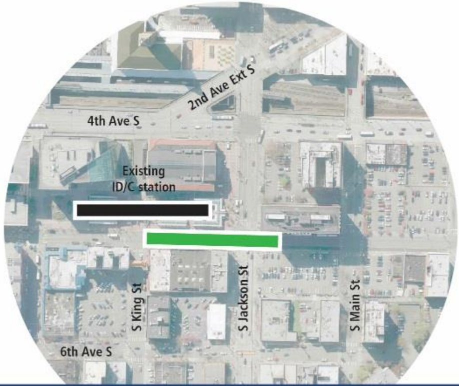
SODO Alternatives Summary – Level 1

Alternatives with more potential	ST3 Representative Project	• Baseline for comparison
	Surface E-3	• Moved forward to Level 2
	Massachusetts Tunnel Portal	• Moved forward to Level 2
Alternatives with greater challenges	Occidental Ave	• Long-span elevated crossing over BNSF tracks • Traffic and freight access effects on Occidental Ave • Property impacts of alignment crossing from Occidental Ave to Stadium Station • Long track connection to OMF; no track connections between lines
	6th Ave	• OMF connection technically challenging • Property impacts to locate SODO Station adjacent to existing station • Braiding lines could have major construction challenges and service disruptions
Not practical concepts	“Track interlining”	• Requires grade-separated junctions; does not accommodate buses on E-3 • Creates bottleneck; impacts service reliability and limits system capacity
	“Extended Ballard line”	• Rebuild of Forest St junction requires disruption of existing LRT service • Deep mined C-ID station; constructability challenges • Additional guideway length; no track connections

Chinatown-ID Evaluation Results & Discussion

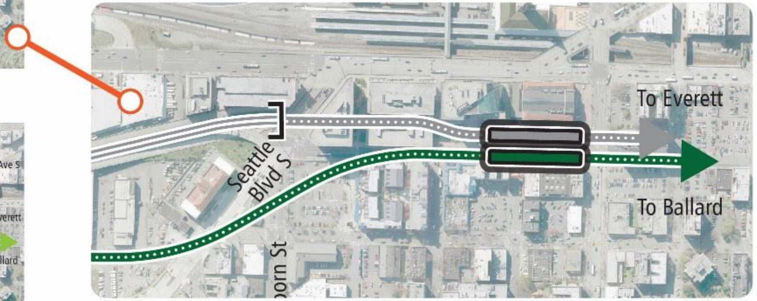
KEY MAP
West Seattle extension/Station area
Ballard extension/Station area

LEGEND
ST3 representative project - West Seattle extension/Ballard extension
Massachusetts tunnel portal - West Seattle extension/Ballard extension
Surface E-3 - West Seattle extension/Ballard extension
Existing Link light rail
Approximate portal location
New roadway overcrossing
Surface
Elevated guideway
Tunnel
Surface station
Elevated station



Station location alternative (straddle S Jackson St)

Note: applicable to both cut and cover and bored tunnel alternatives



Bored tunnel alternative

Reduces in-street cut-and-cover construction from 1,600′ to 400′

C-ID alignment and station alternatives

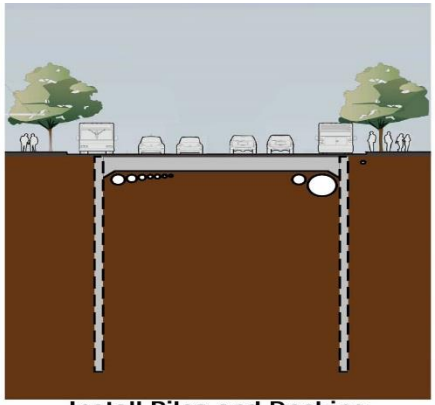
Additional feedback

SODO and Chinatown-ID

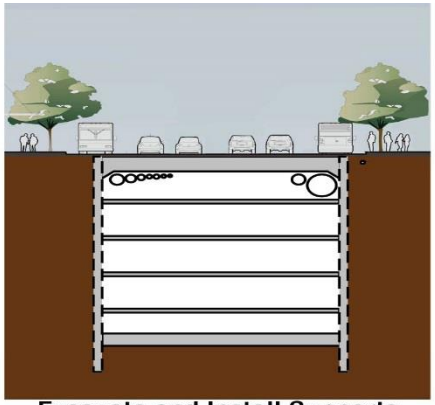
- Consider 4th Avenue location for Chinatown-ID station
- Explore alignments further west of ST3 Representative Project

Chinatown-ID community concerns

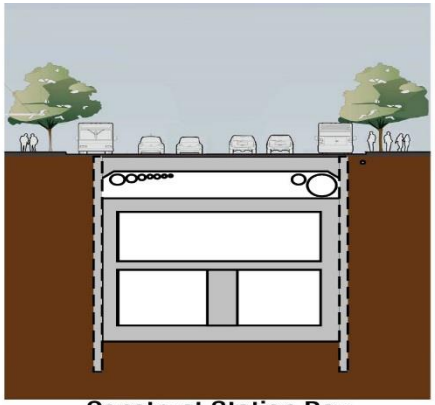
Agency workshop feedback



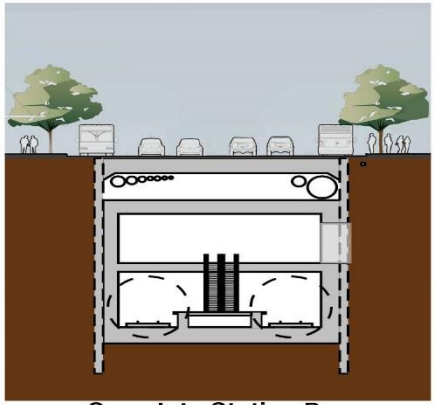
Install Piles and Decking



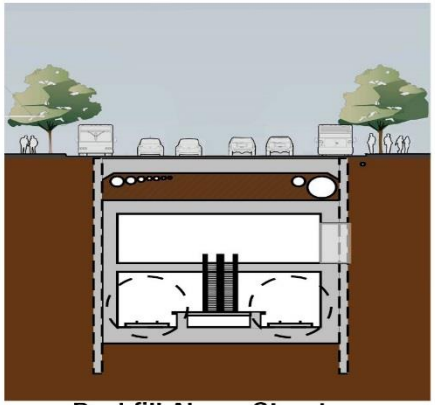
Excavate and Install Supports
(from beneath decking)



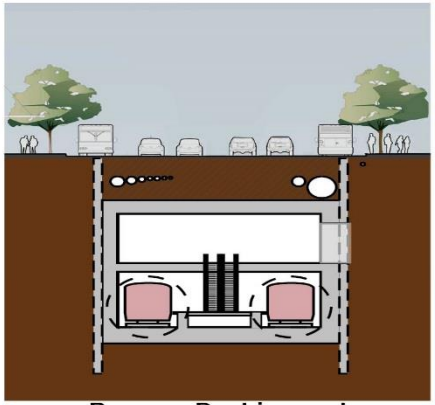
Construct Station Box



Complete Station Box

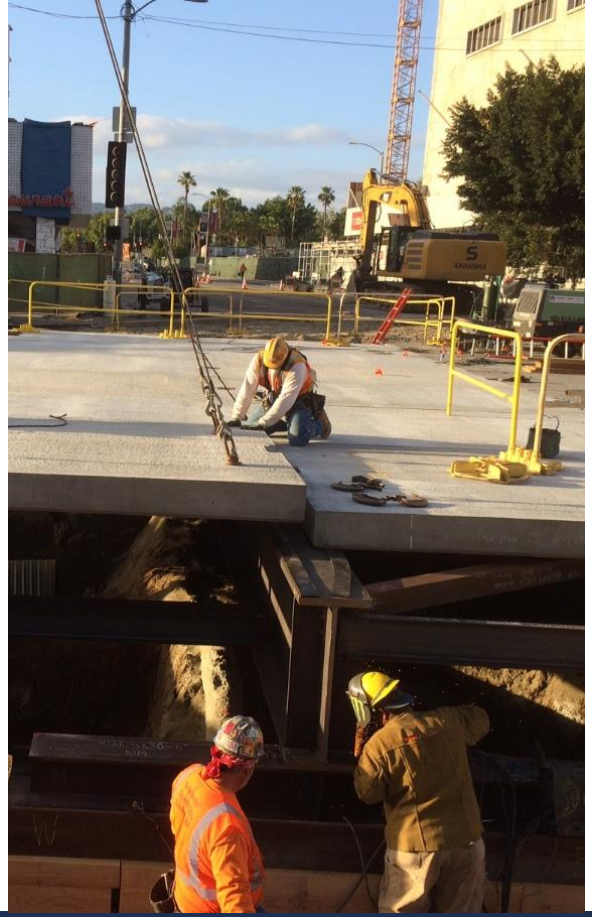


Backfill Above Structure

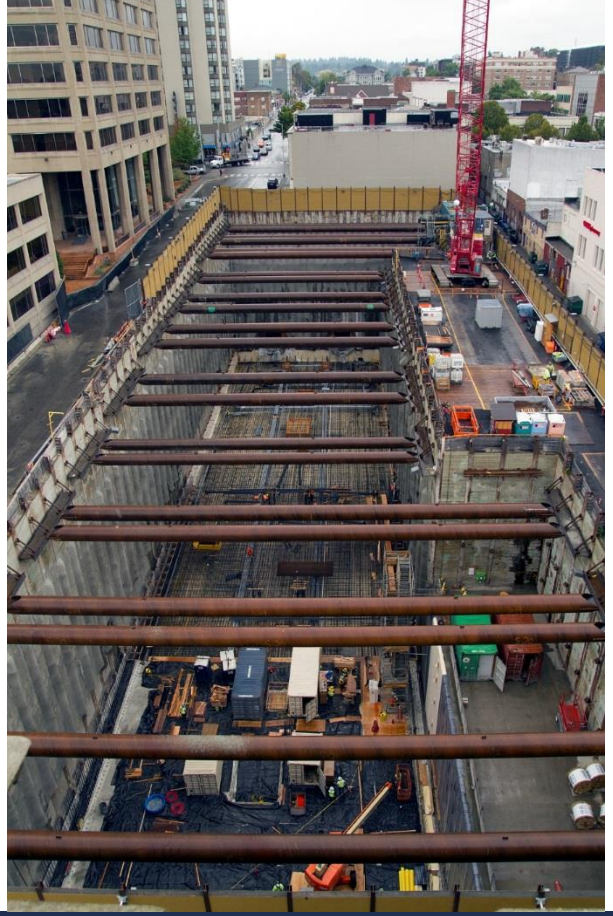


Remove Decking and
Restore Street

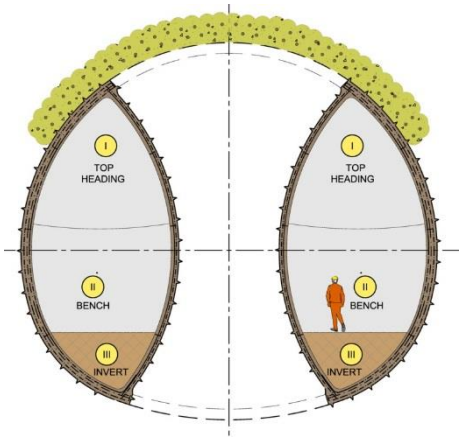
Cut and Cover Station Construction



Cut and Cover Station Construction



Open Cut Station Construction



Mined Station Construction

Underground Stations in Seattle

Cut-and-cover stations:

- Pioneer Square, University Street (DSTT)

Open-cut stations:

- U District, Roosevelt (Northgate Link)
- Capitol Hill, UW (U-Link)
- International District/Chinatown, Westlake, Convention Place (DSTT)

Mined stations:

- Beacon Hill (Central Link)

C-ID Station Construction Constraints

Initial technical challenges

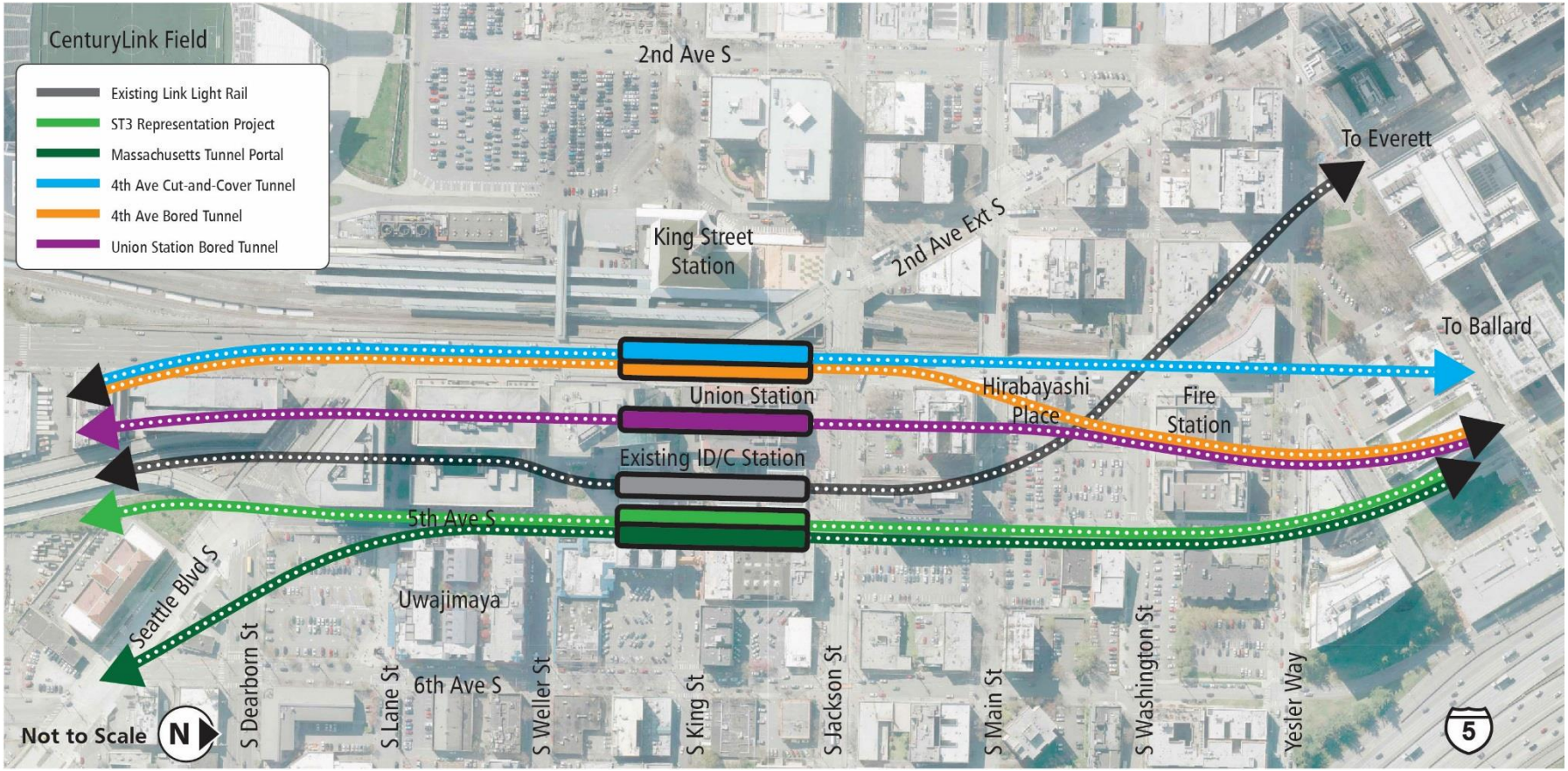
- Limited right-of-way
- Poor soil conditions
- Deep piles under 4th Ave, Union Station, existing ID/C Station
- Conflicts with existing DSTT structures

C-ID community concerns

- ✓ Minimize construction impacts
- ✓ Improve intermodal connections
- ✓ Activate Union Station

Construction constraints

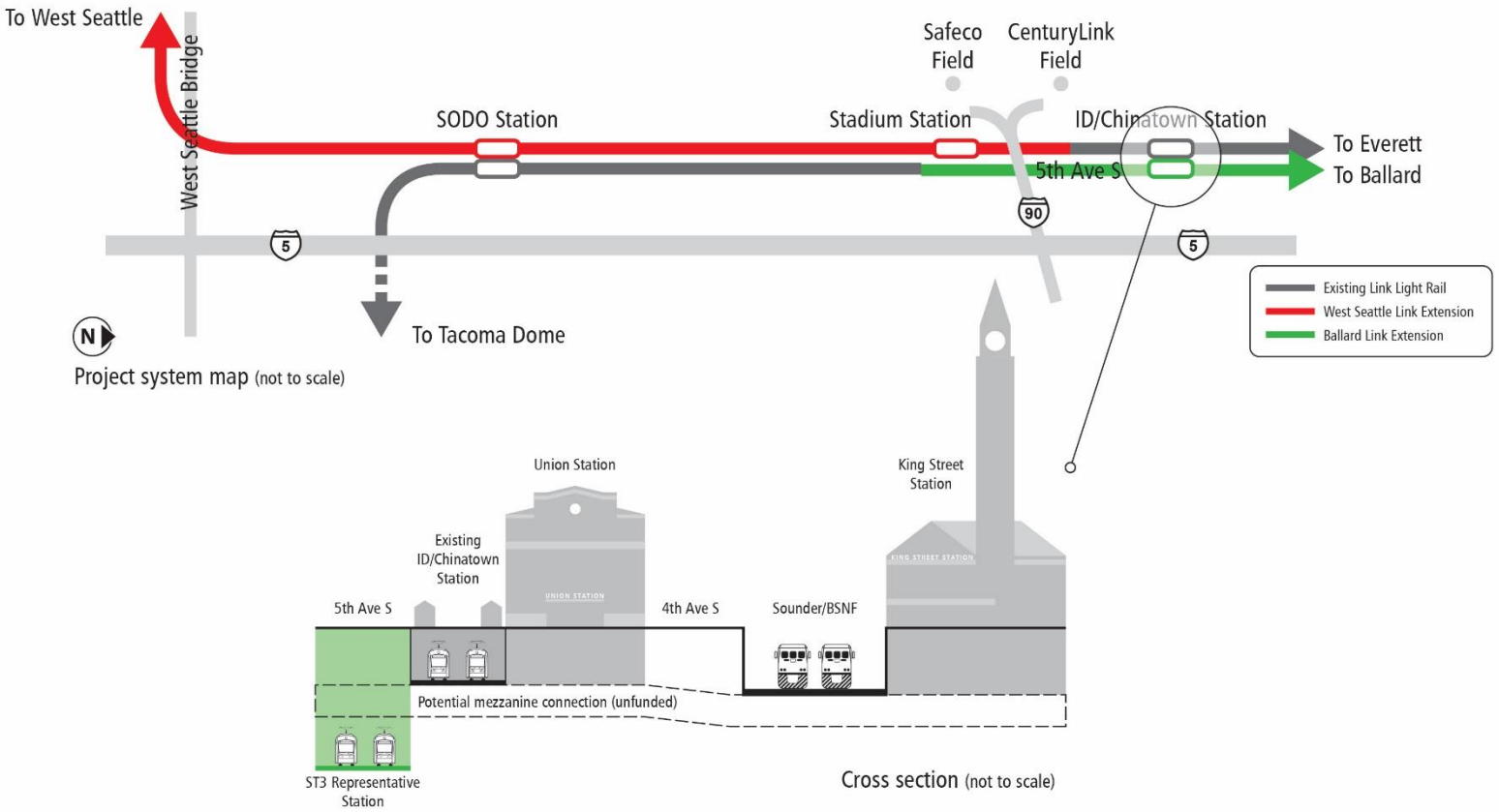
- ✓ Limited right-of-way
- ✓ Poor soil conditions
- ✓ Deep piles under 4th Ave, Union Station, ID/C Station
- ✓ Conflicts with existing DSTT structures



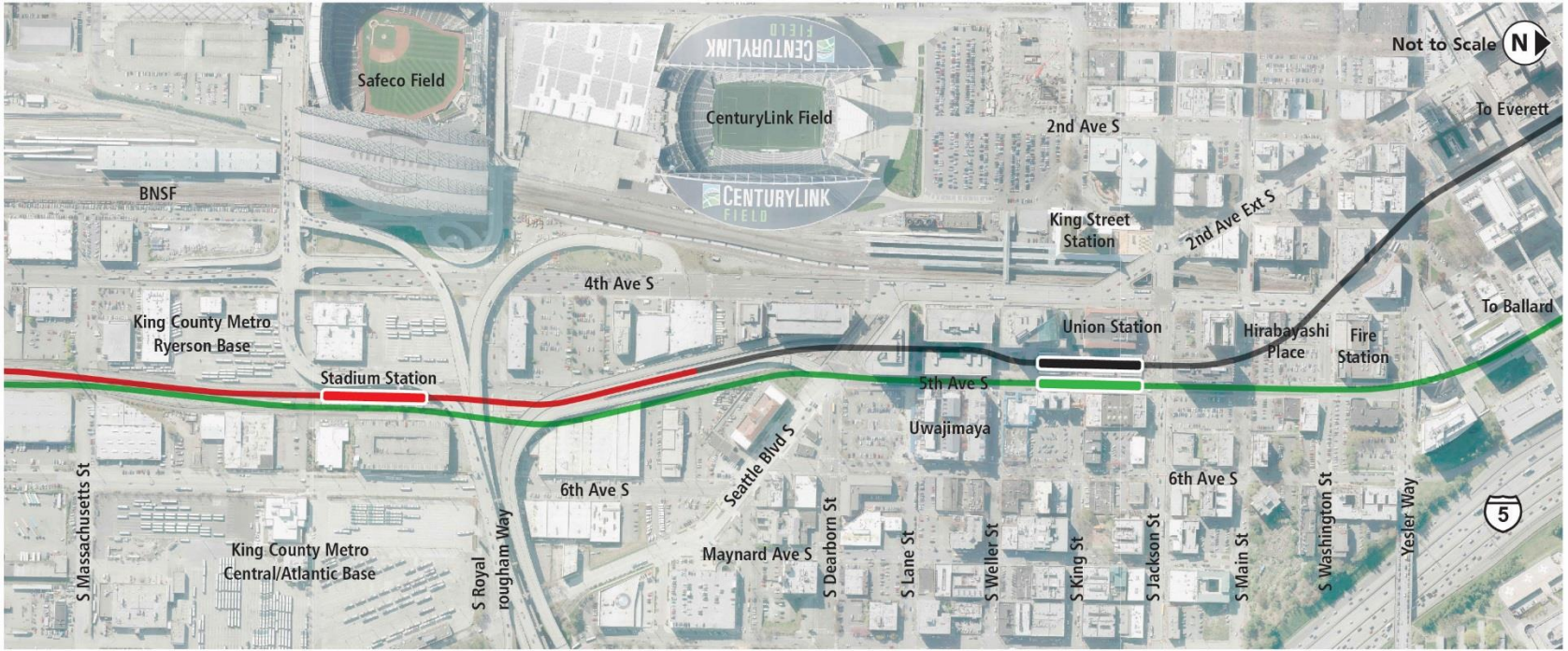
New Chinatown–ID Level 1 Alternatives

Potential C-ID Station Locations

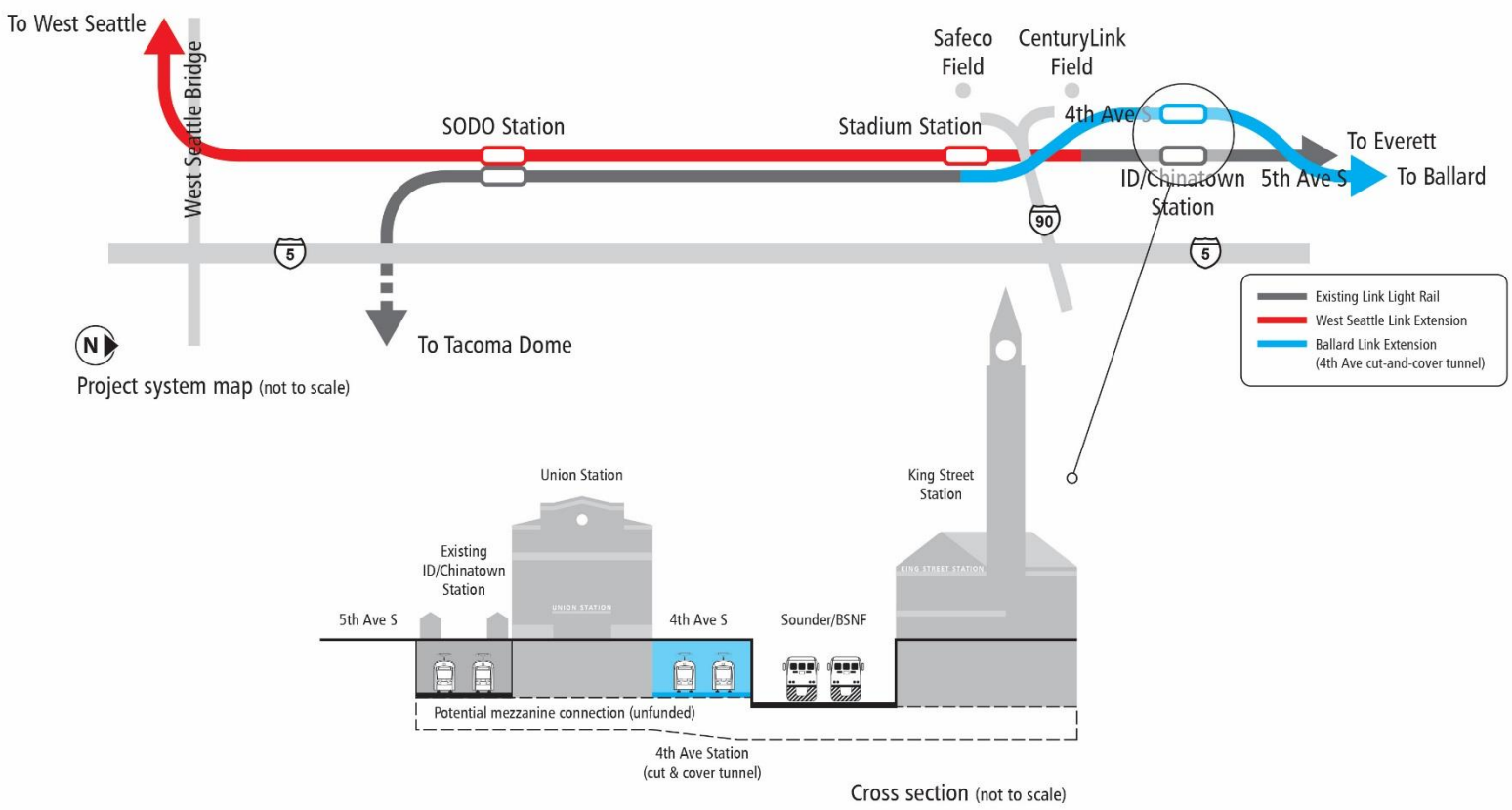
Tunnel / Station Type	5th Ave	4th Ave	Union Station
Cut-and-cover	✓	✓	✗
Platform depth:	(40-50’)	(30-40’)	
Bored / mined	✓	✓	✓
Platform depth:	(100-120’)	(150-200’)	(150-200’)



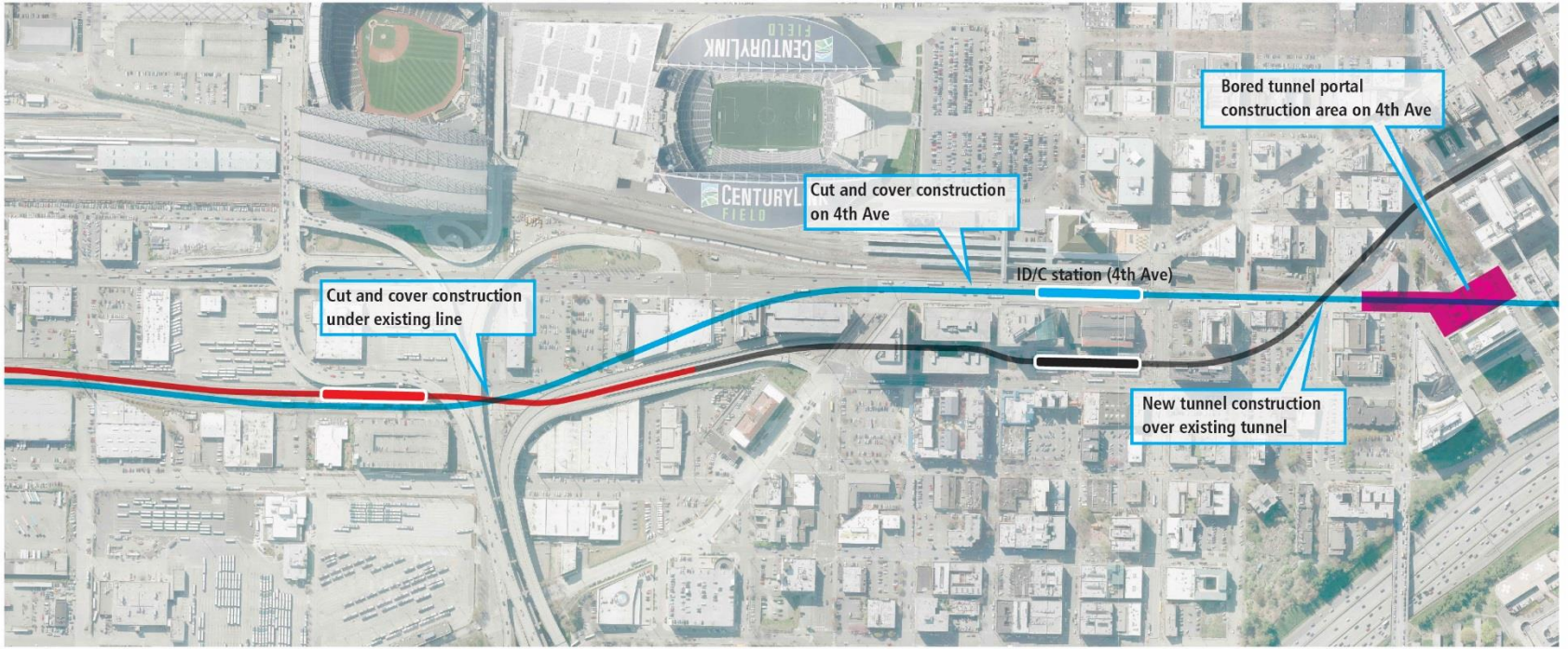
C-ID Station at 5th Ave S



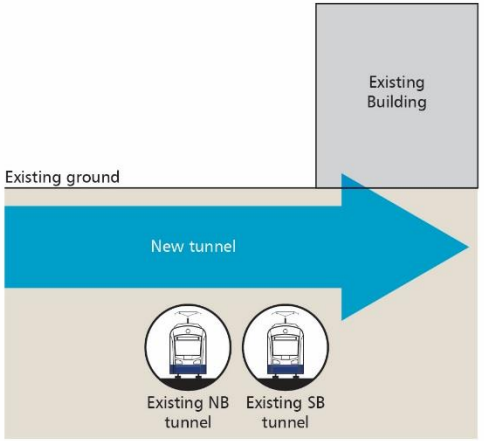
C-ID Station at 5th Ave S

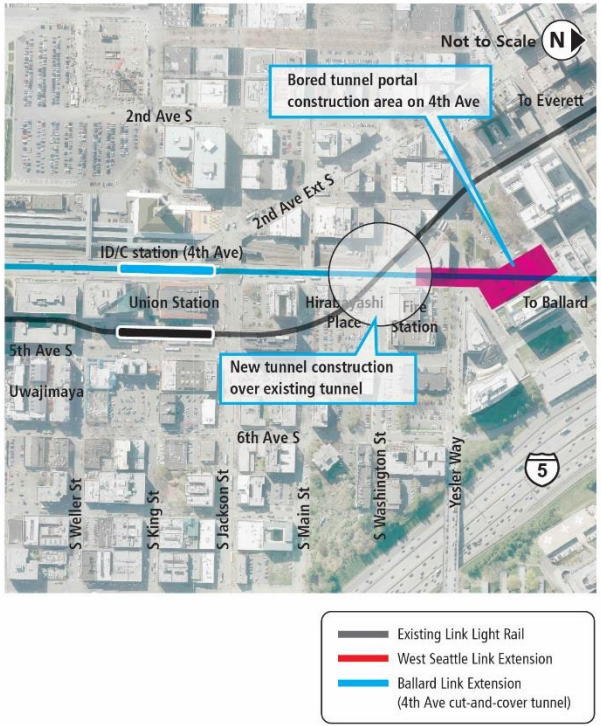


C-ID Station at 4th Ave S *Cut-and-cover*

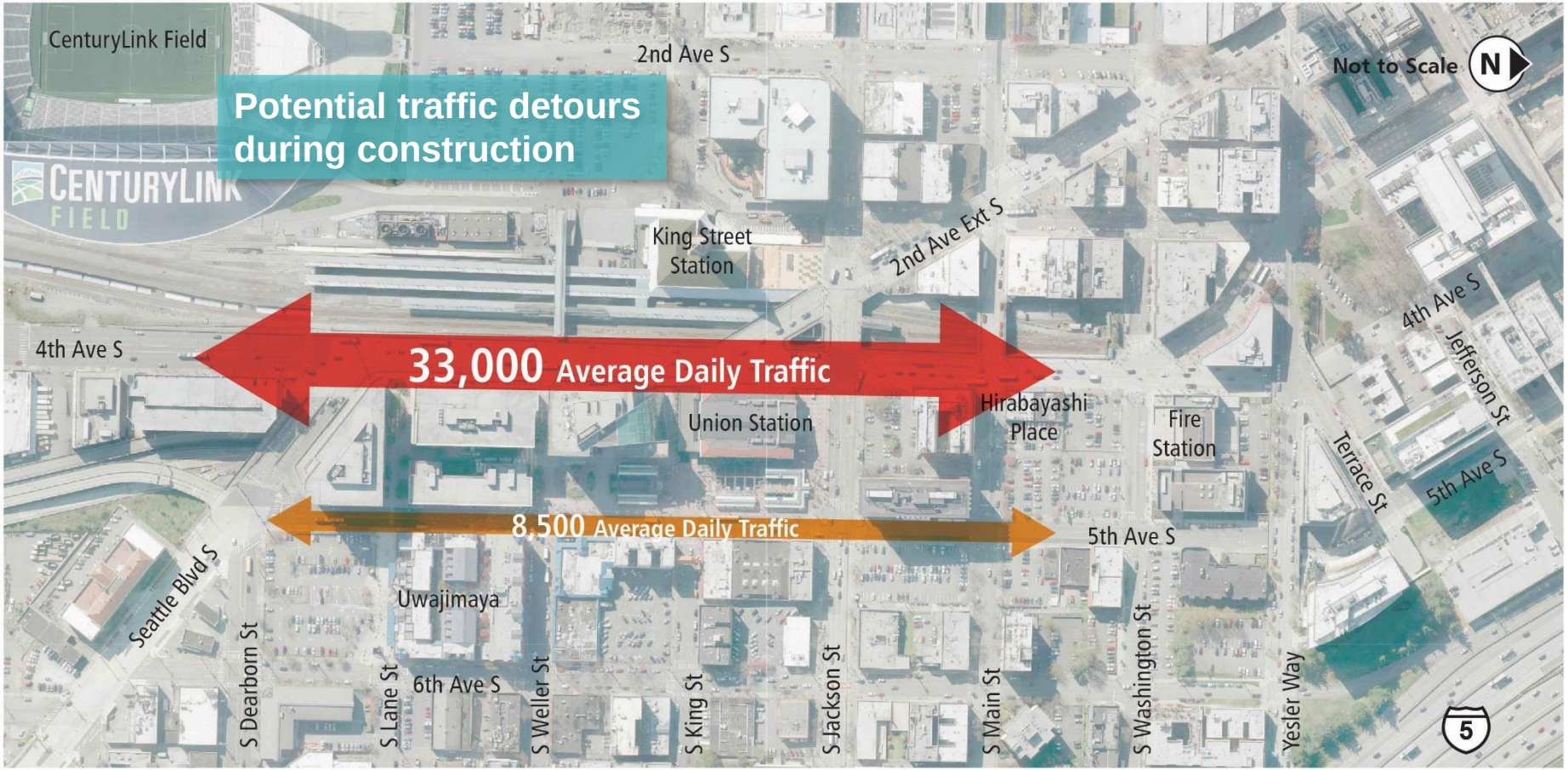


C-ID Station at 4th Ave S *Cut-and-cover*

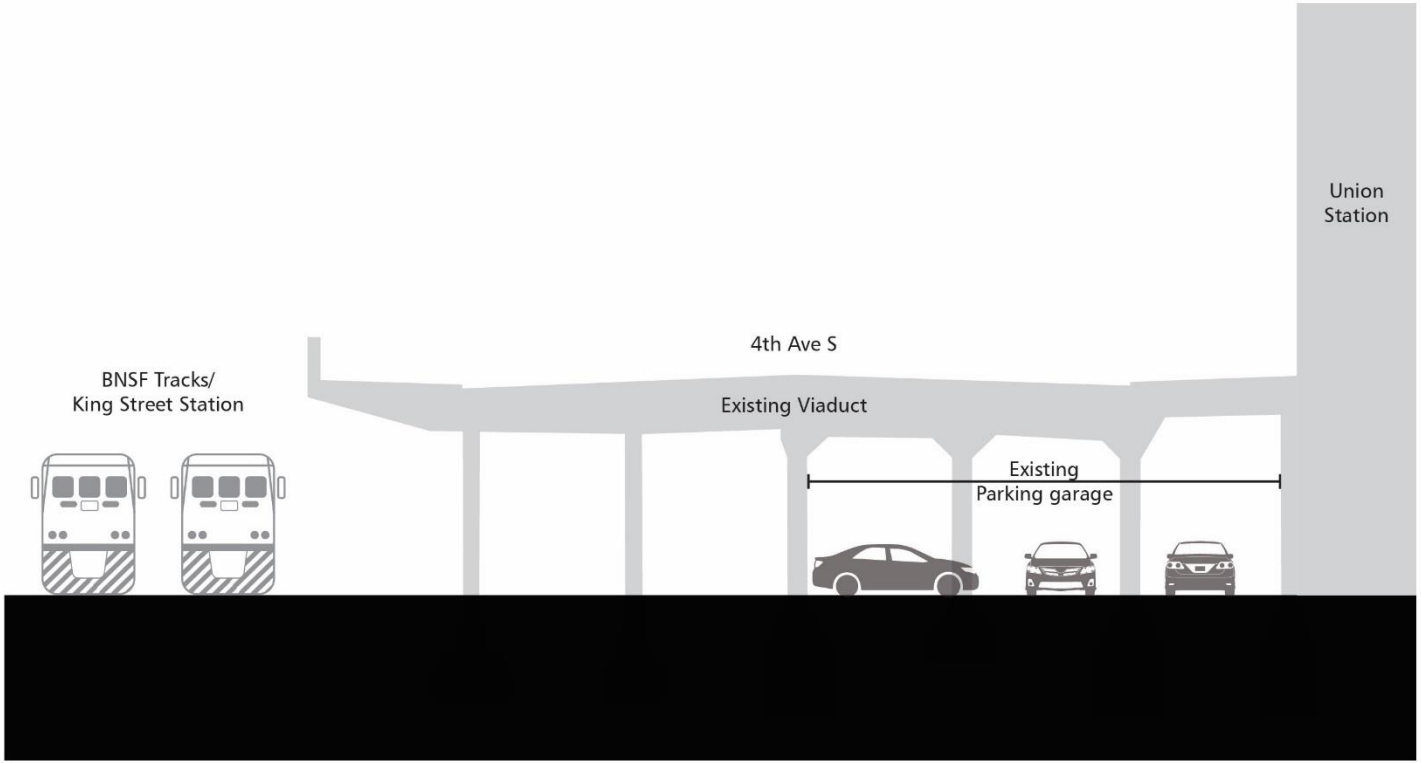




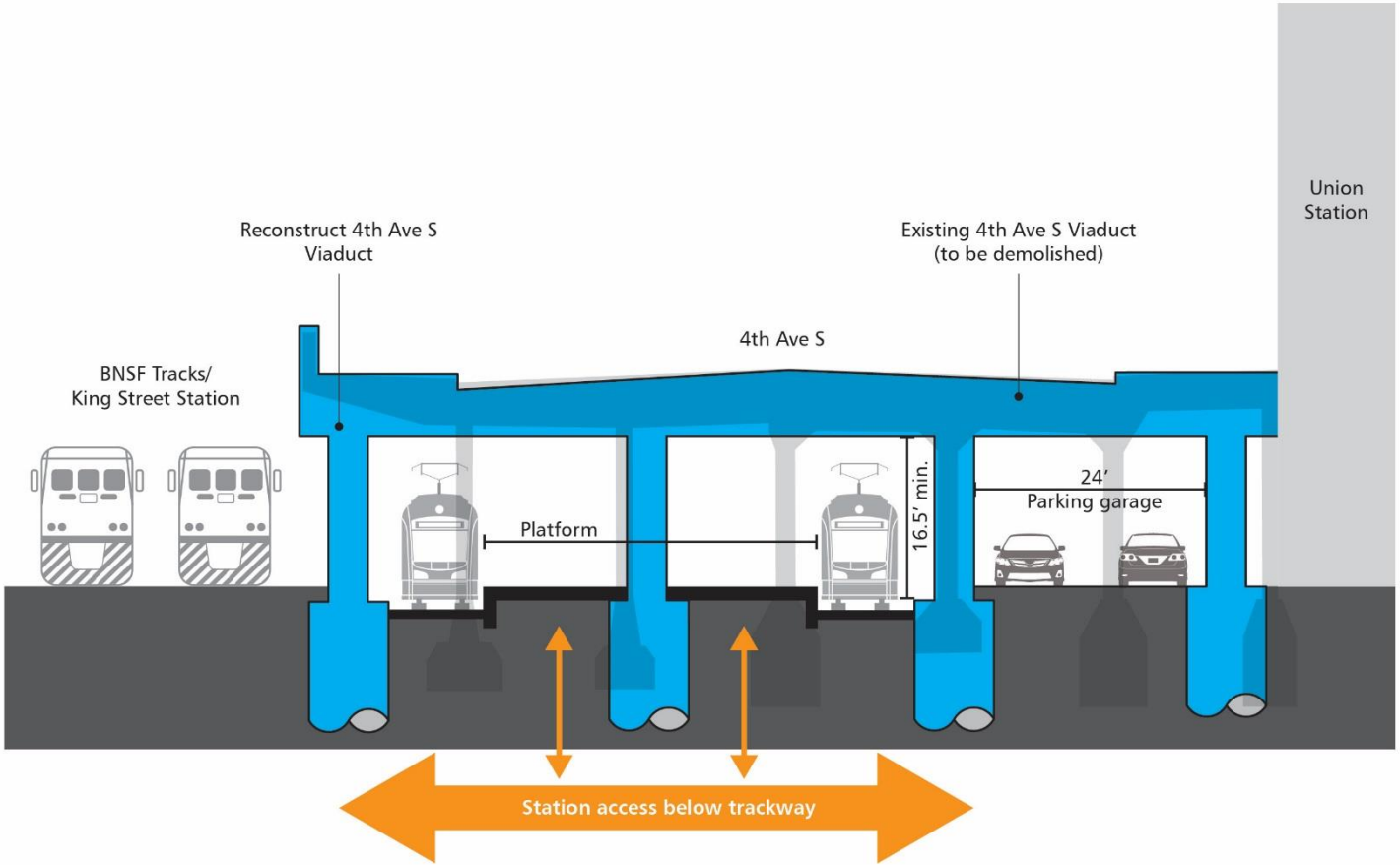
C-ID Station at 4th Ave S *Cut-and-cover*



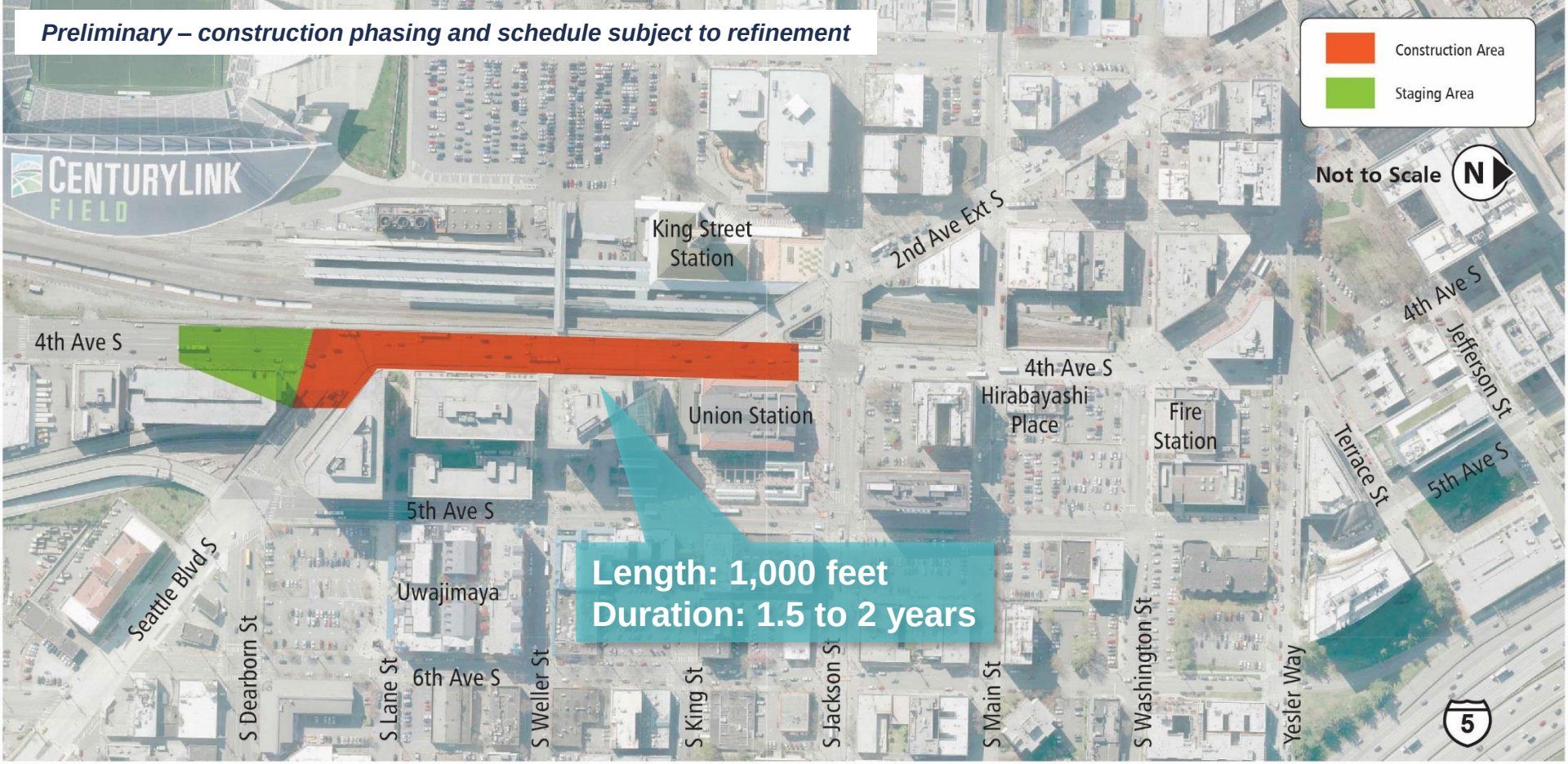
Construction impacts/traffic diversion



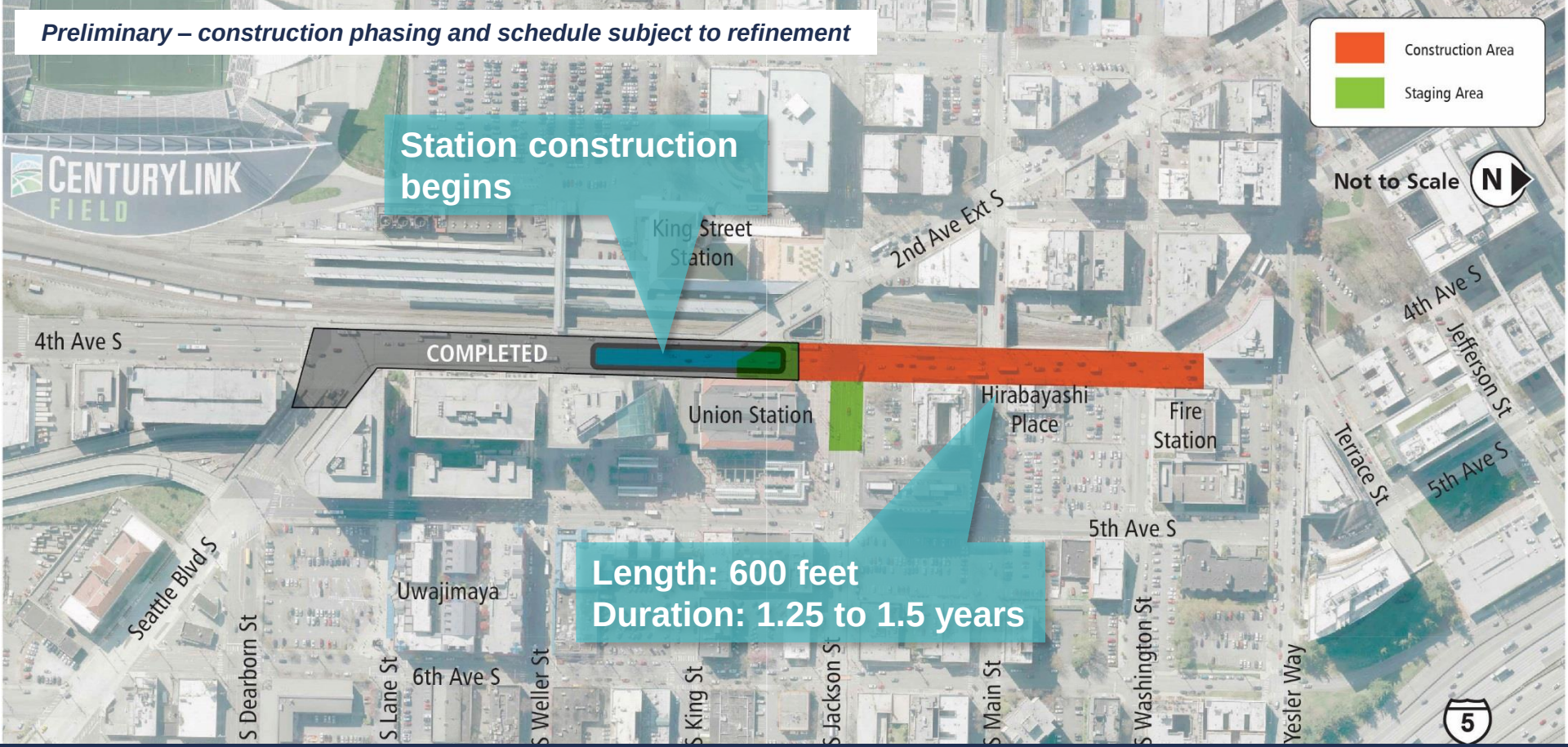
4th Ave Viaduct – section looking north



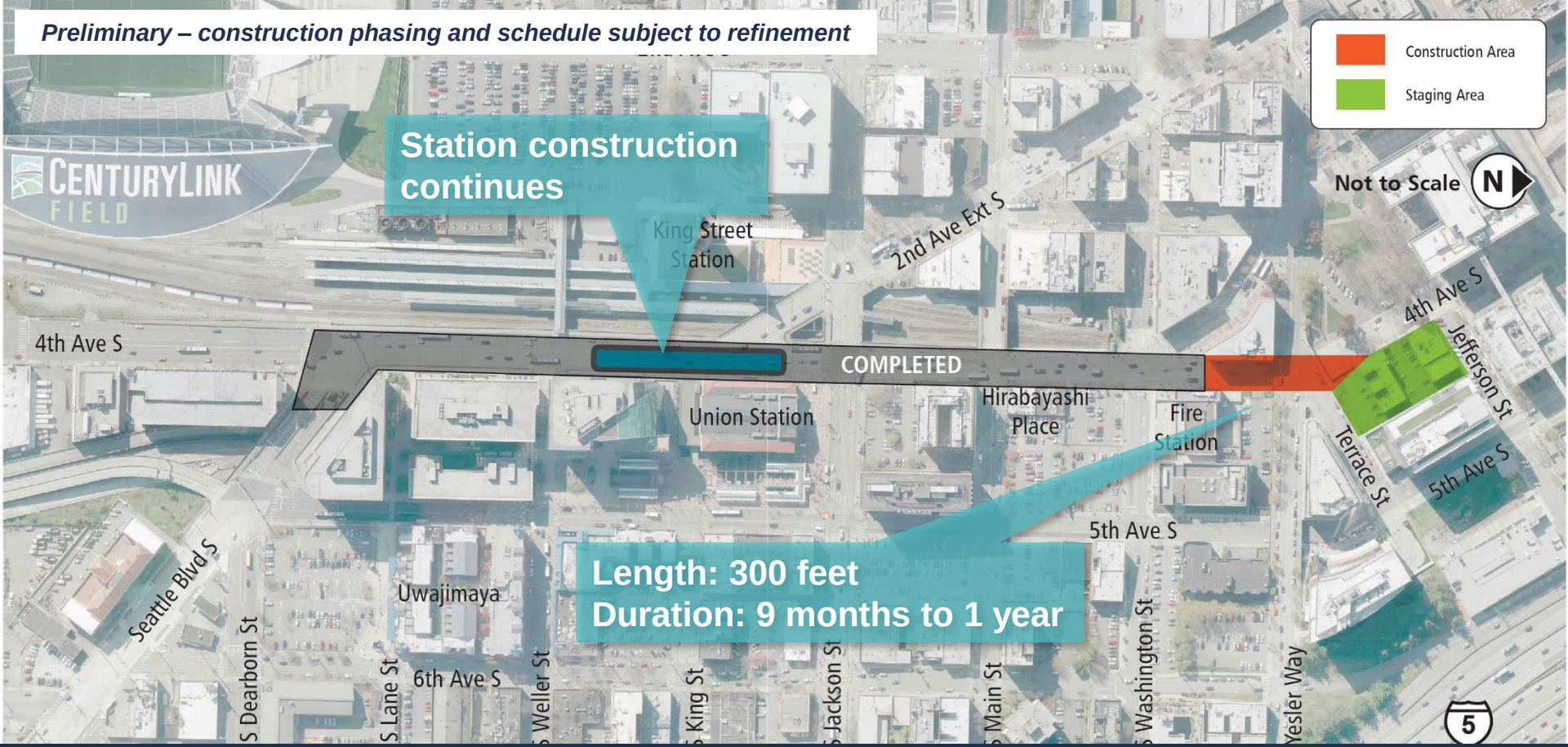
4th Ave Viaduct Rebuild – section looking north



4th Ave Cut-and-Cover construction Phase 1

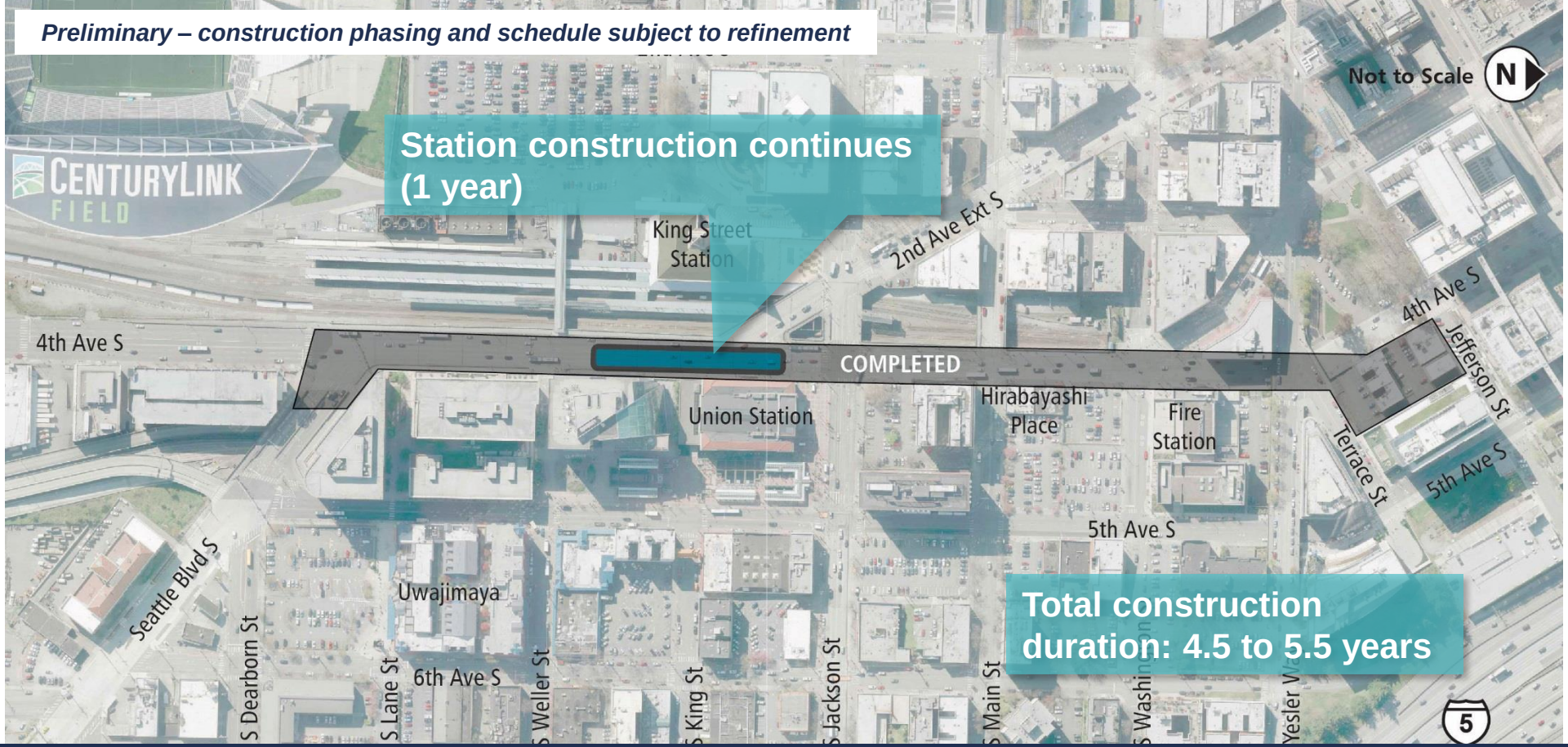


4th Ave Cut-and-Cover construction Phase 2

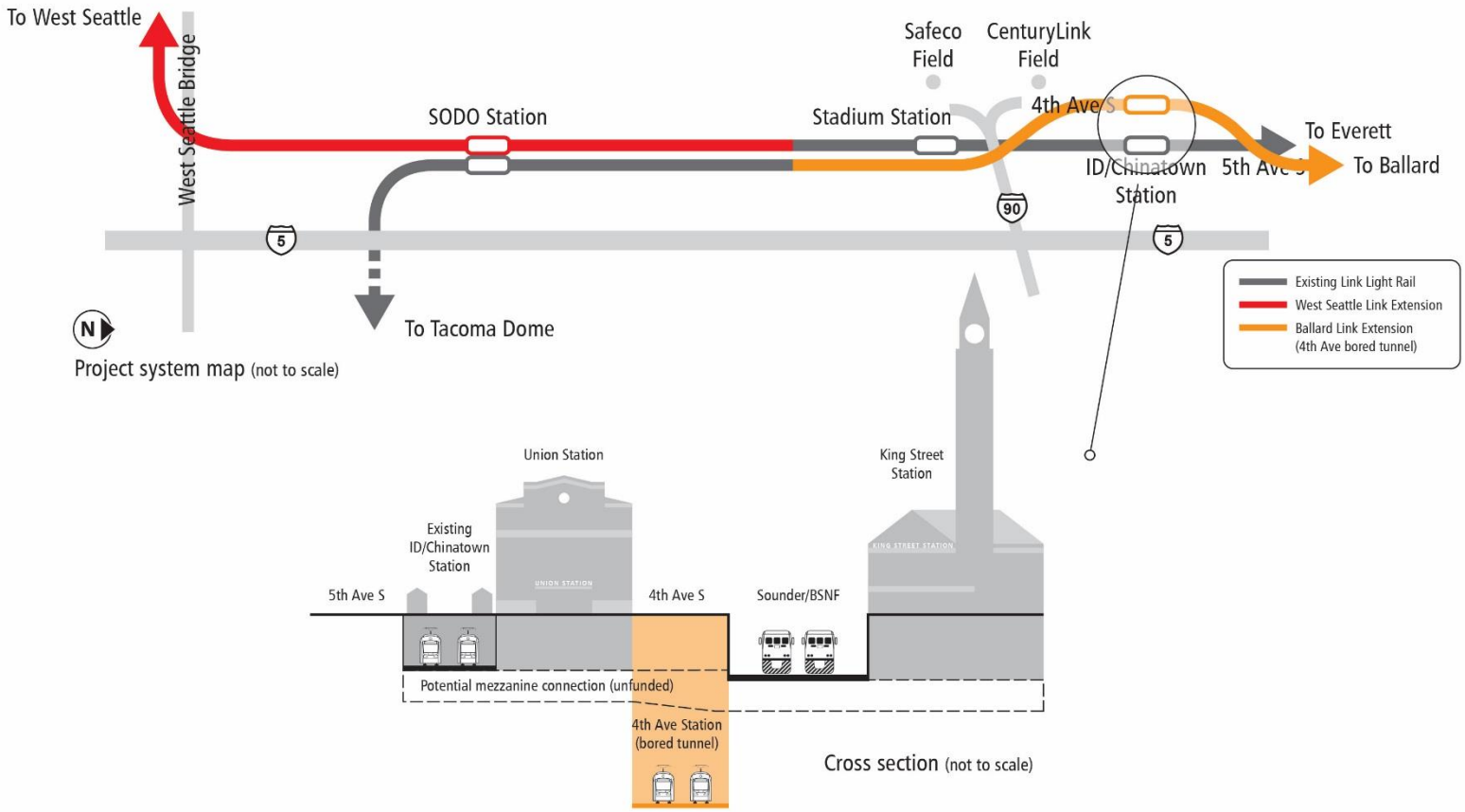


4th Ave Cut-and-Cover construction Phase 3

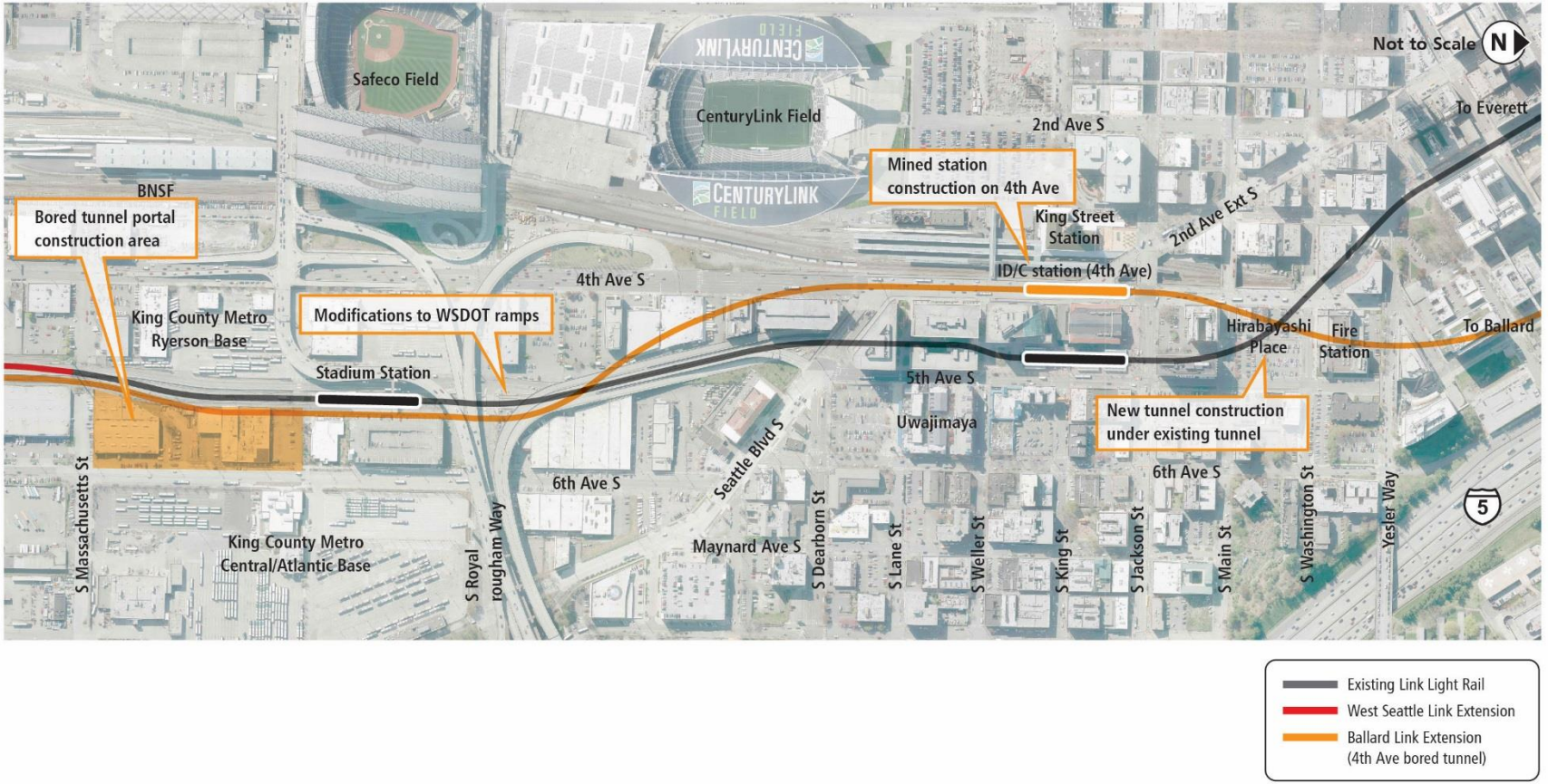
Preliminary – construction phasing and schedule subject to refinement



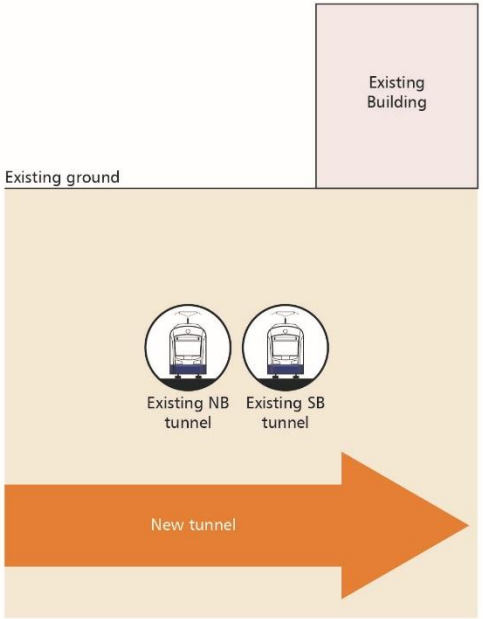
4th Ave Cut-and-Cover construction Phase 4

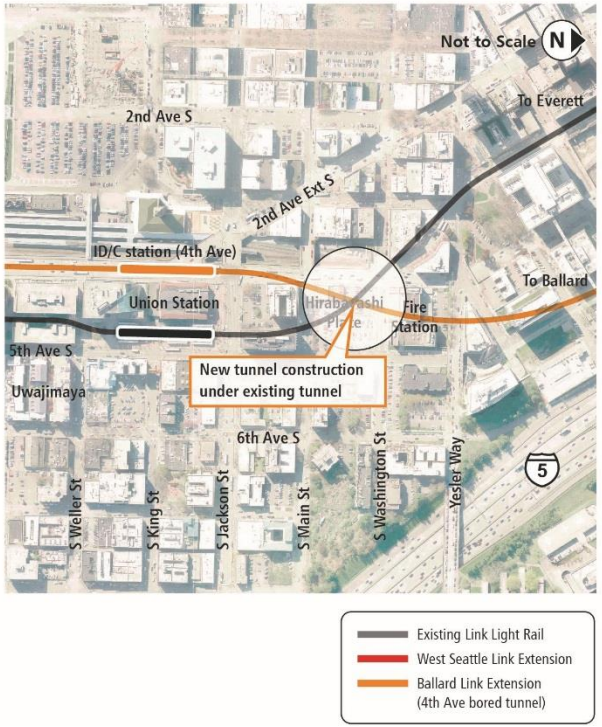


C-ID Station at 4th Ave S **Bored tunnel**

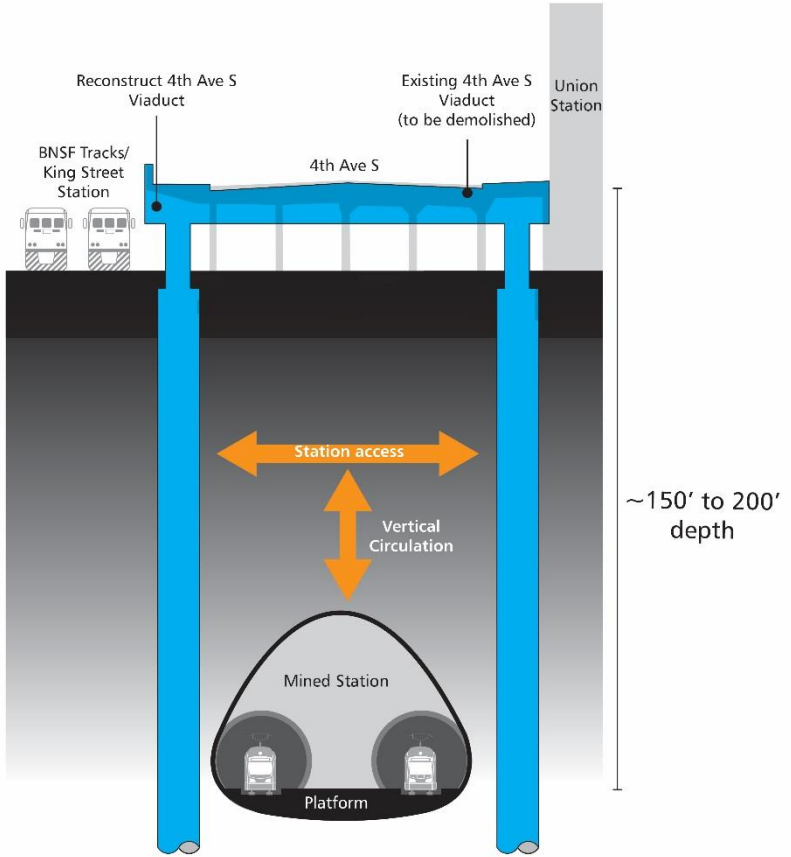


C-ID Station at 4th Ave S *Bored tunnel*

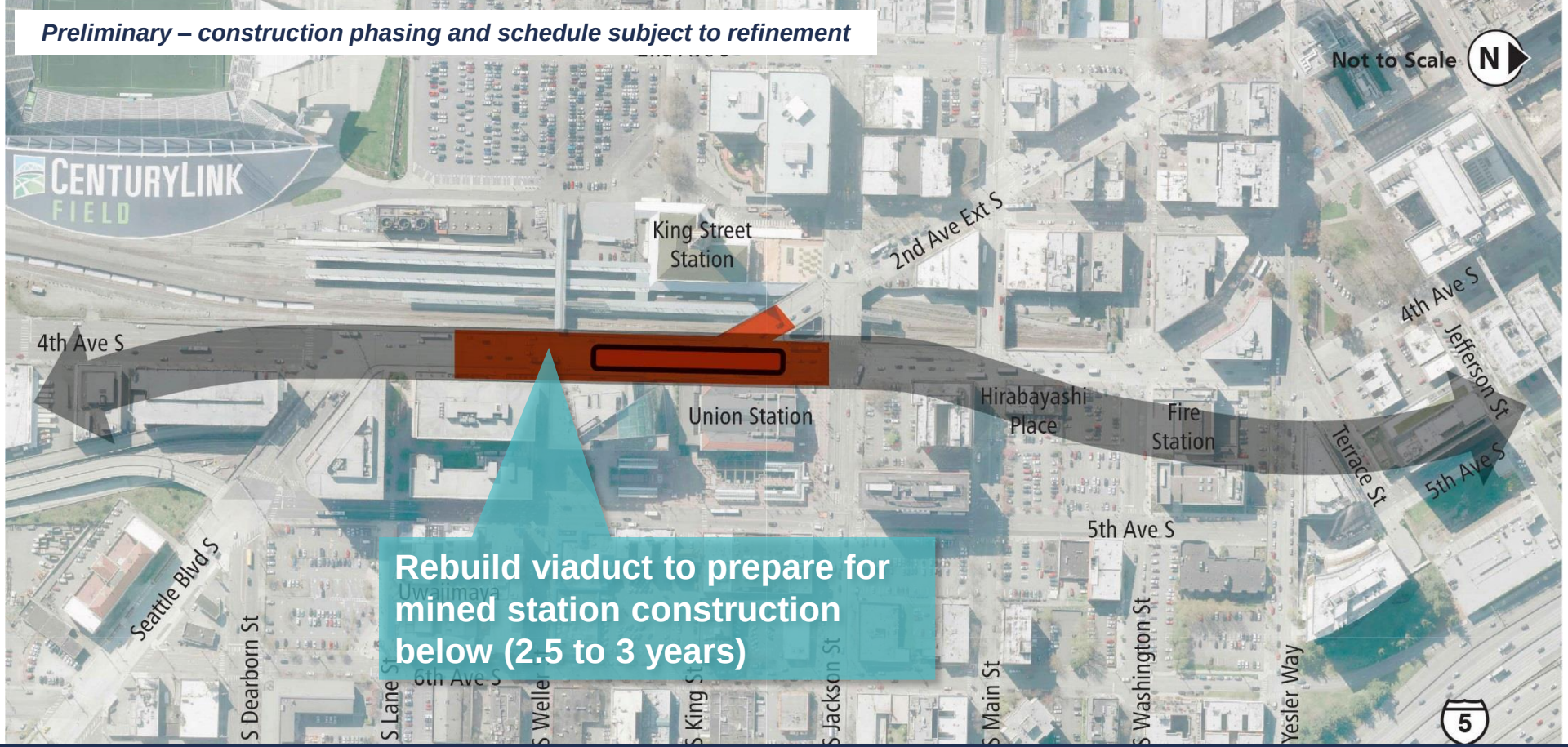




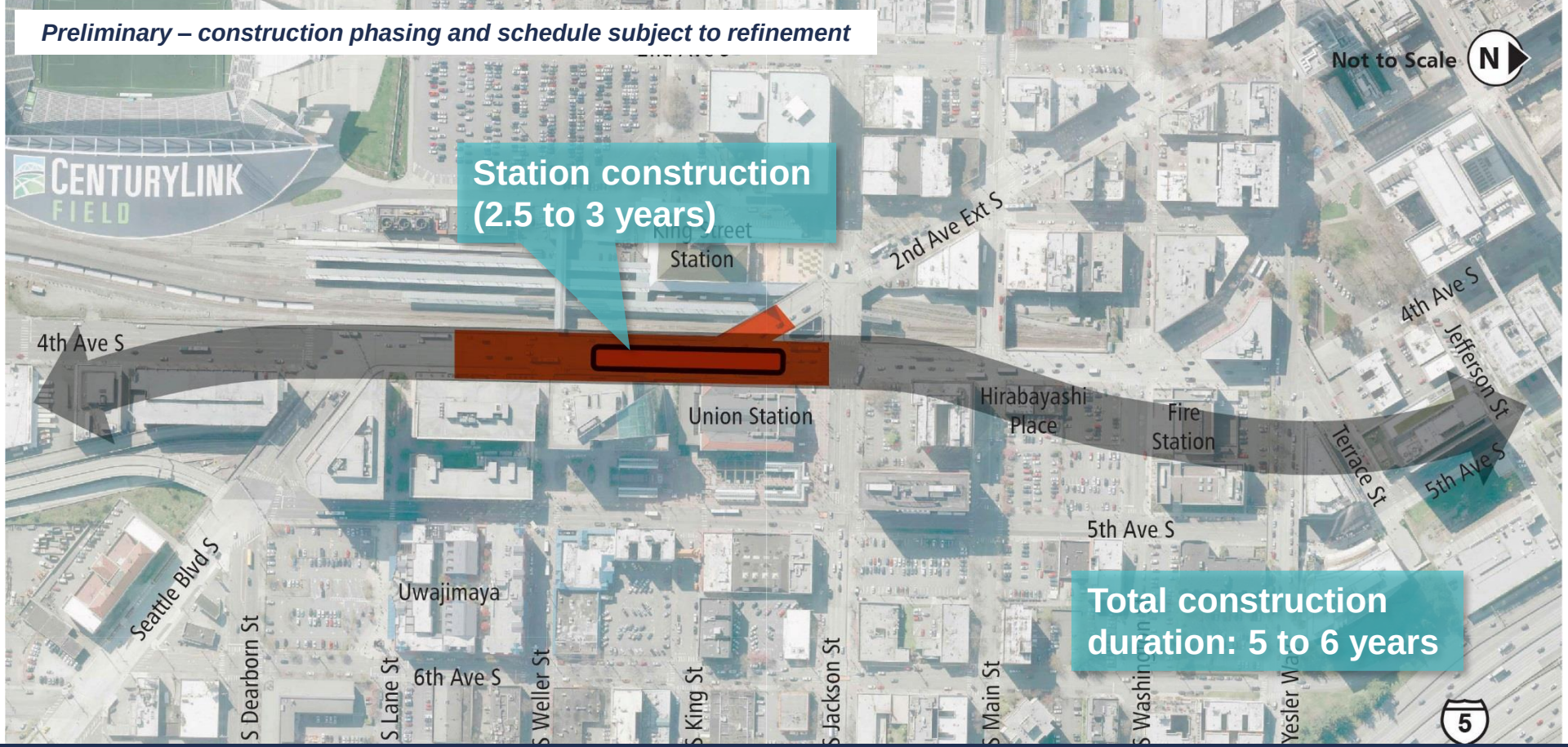
C-ID Station at 4th Ave S *Bored tunnel*



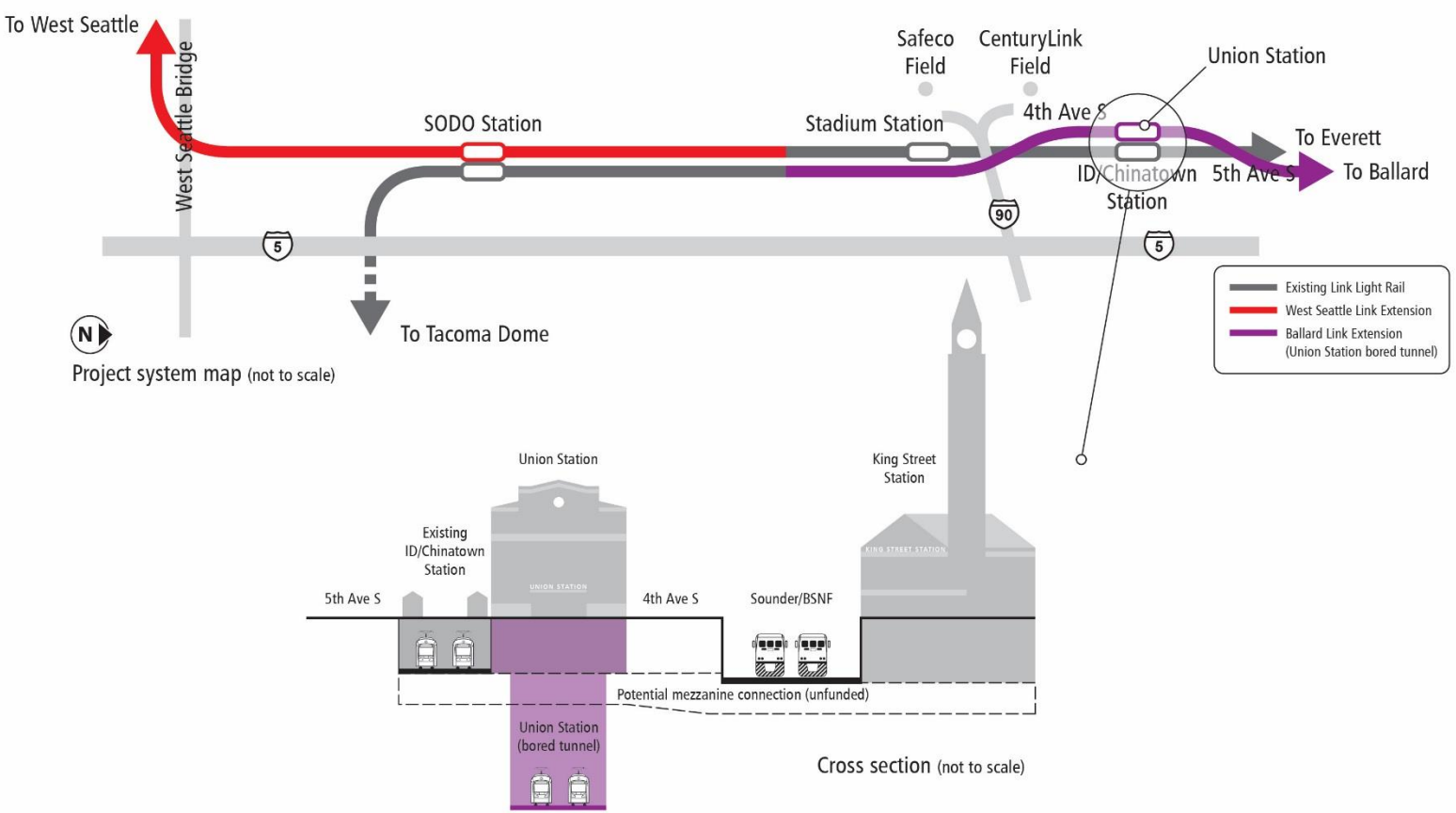
4th Ave Bored Tunnel *Mined Station Construction*



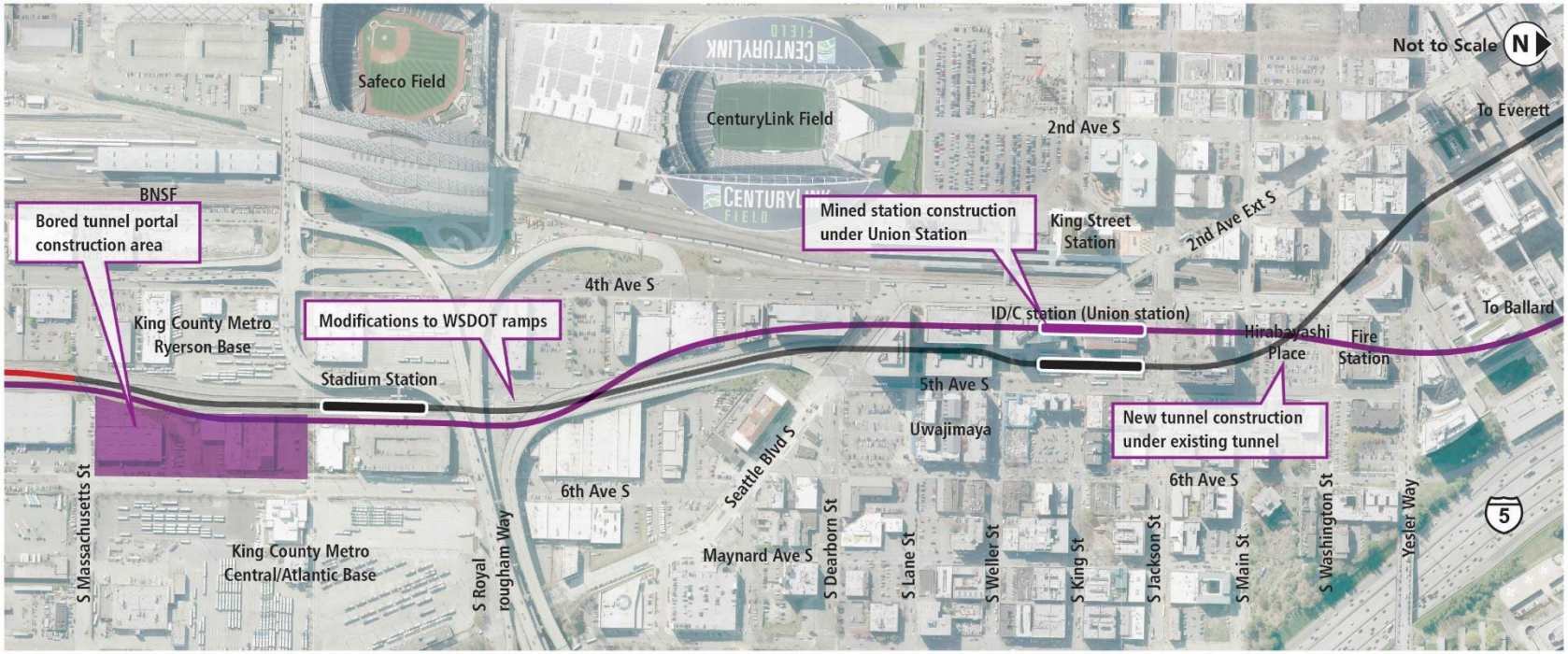
4th Ave Bored Tunnel – Construction Phase 1



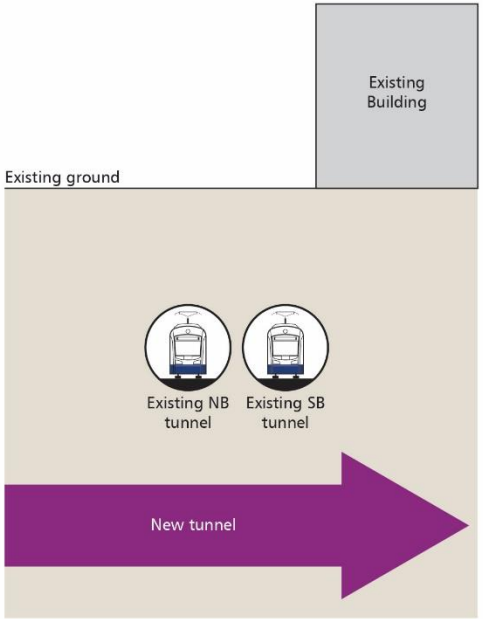
4th Ave Bored Tunnel – Construction Phase 2

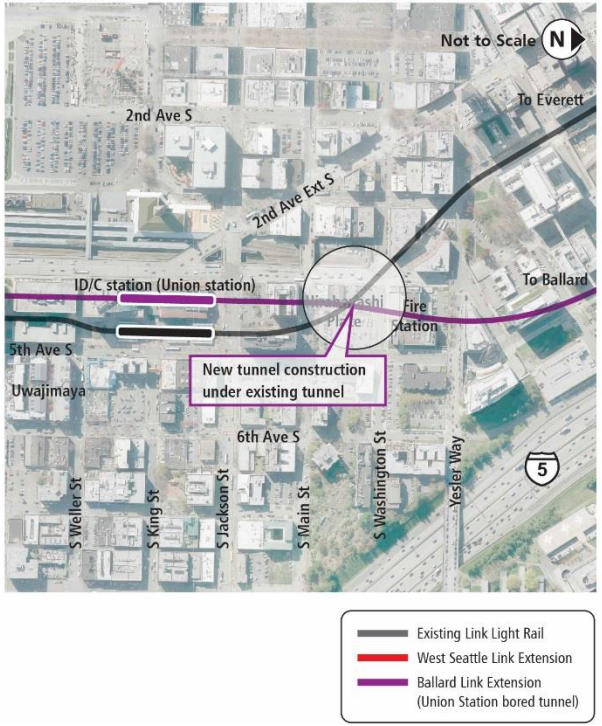


C-ID Station under Union Station **Bored tunnel**

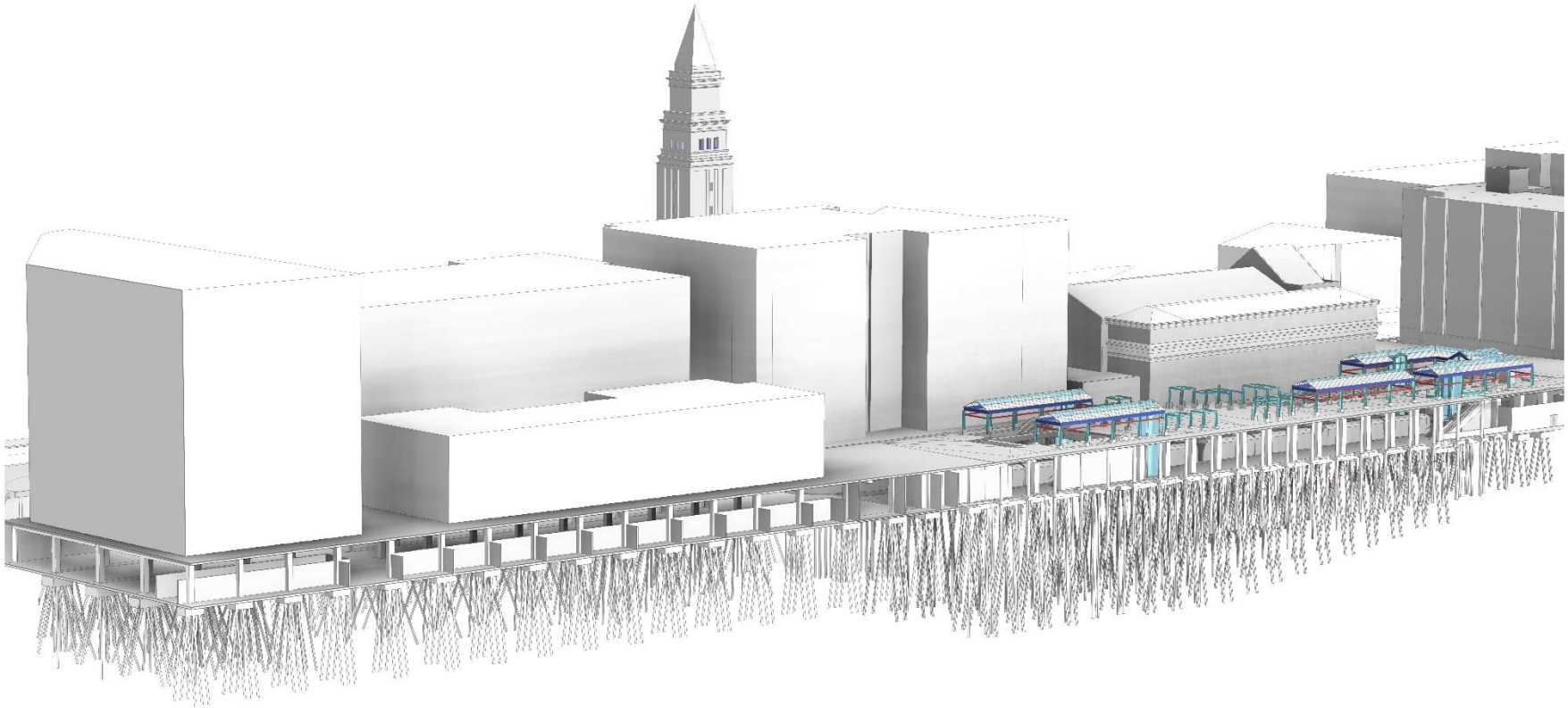


C-ID Station under Union Station Bored tunnel



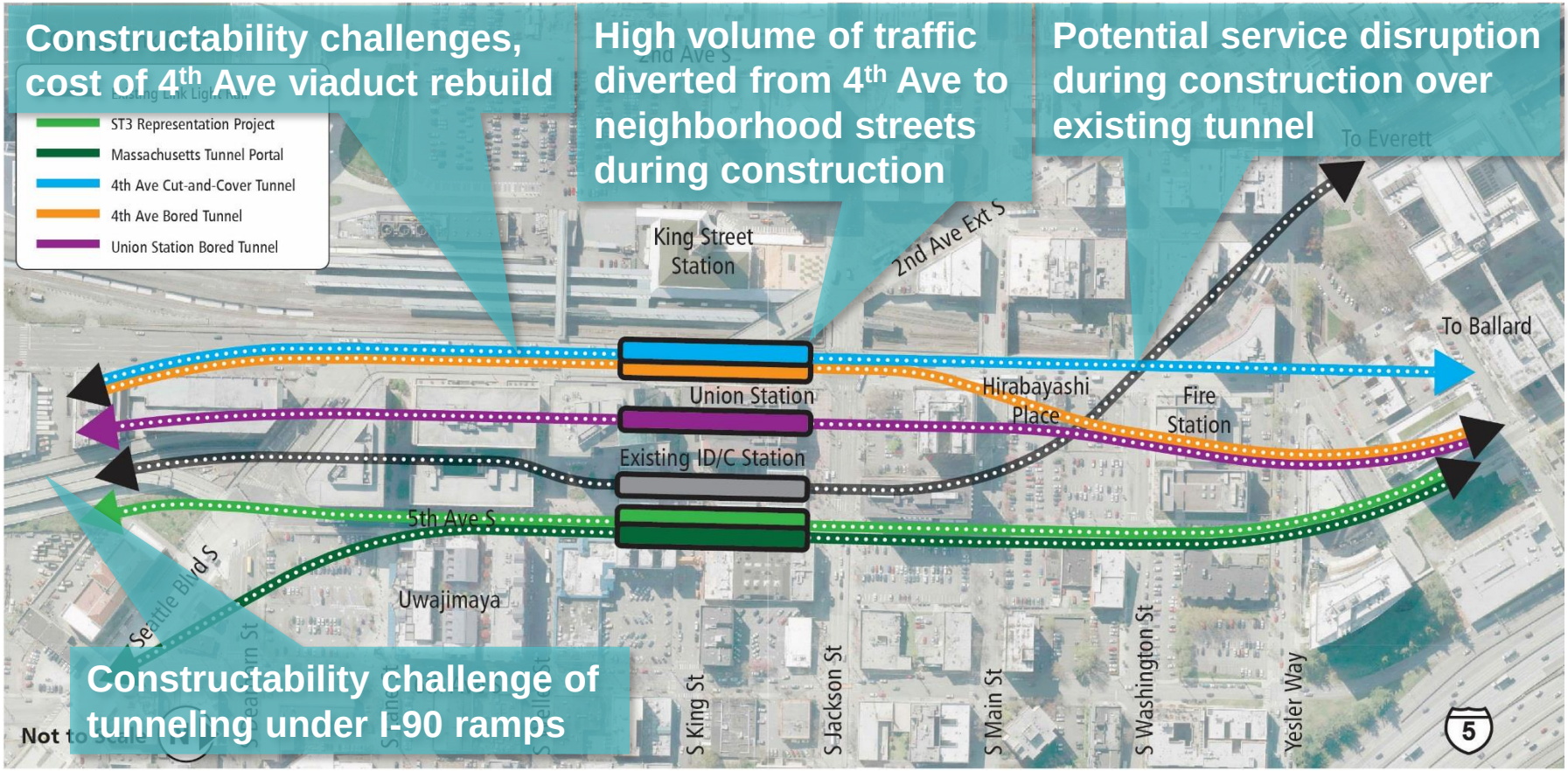


C-ID Station under Union Station Bored tunnel

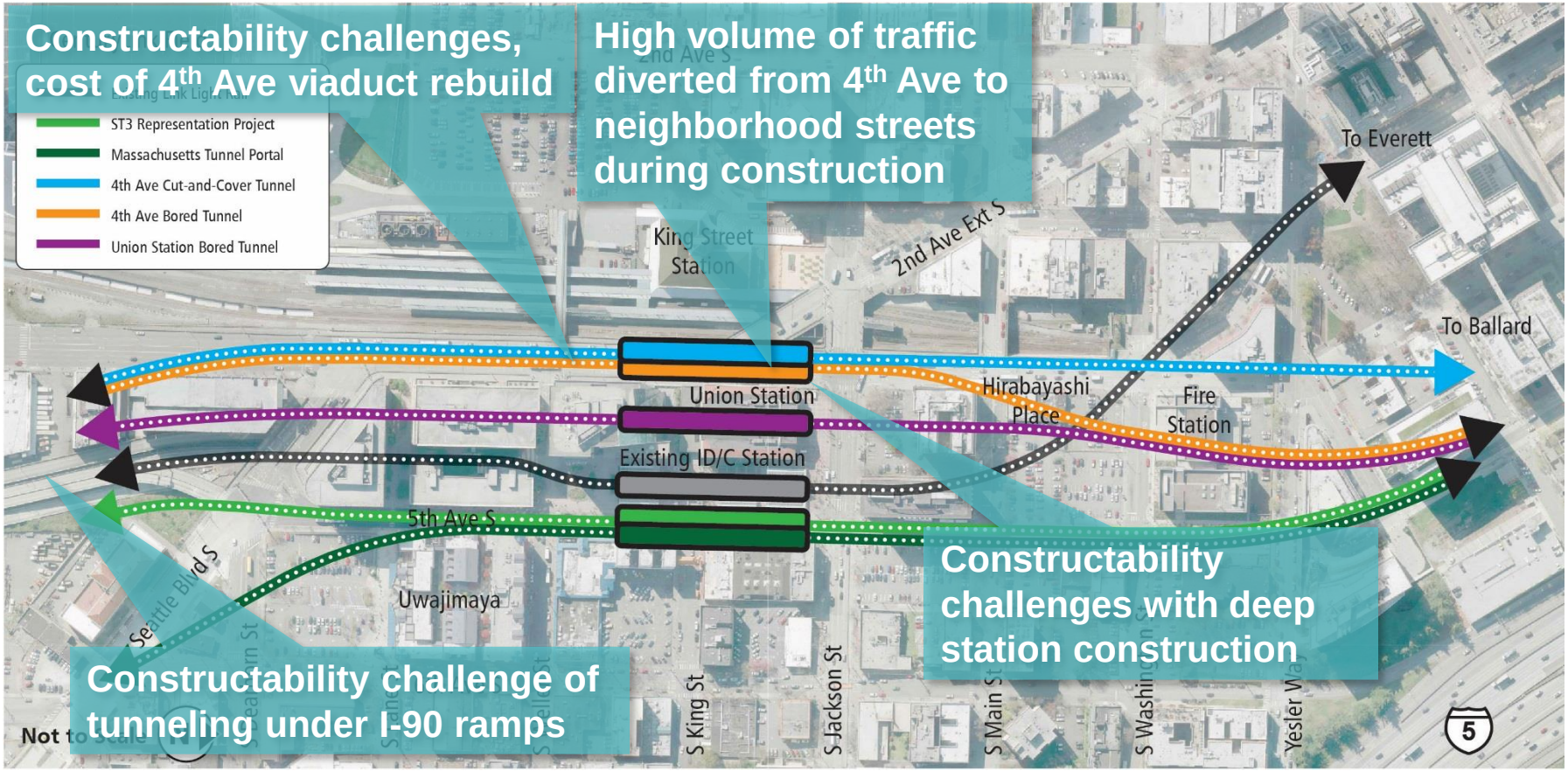


Conceptual drawing not to scale.

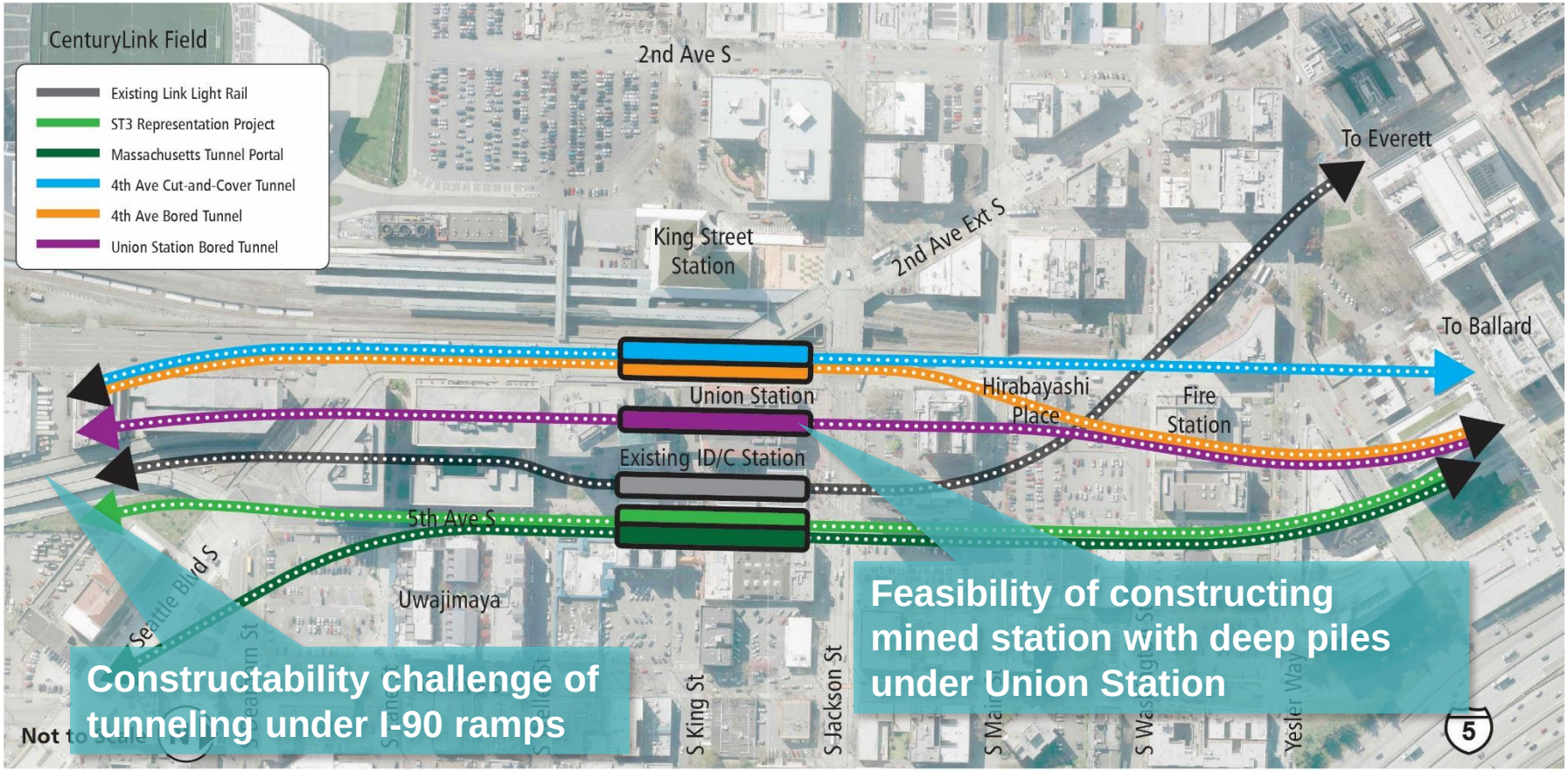
Piles under Union Station/IDS complex



4th Ave Cut-and-Cover Tunnel – Key Findings

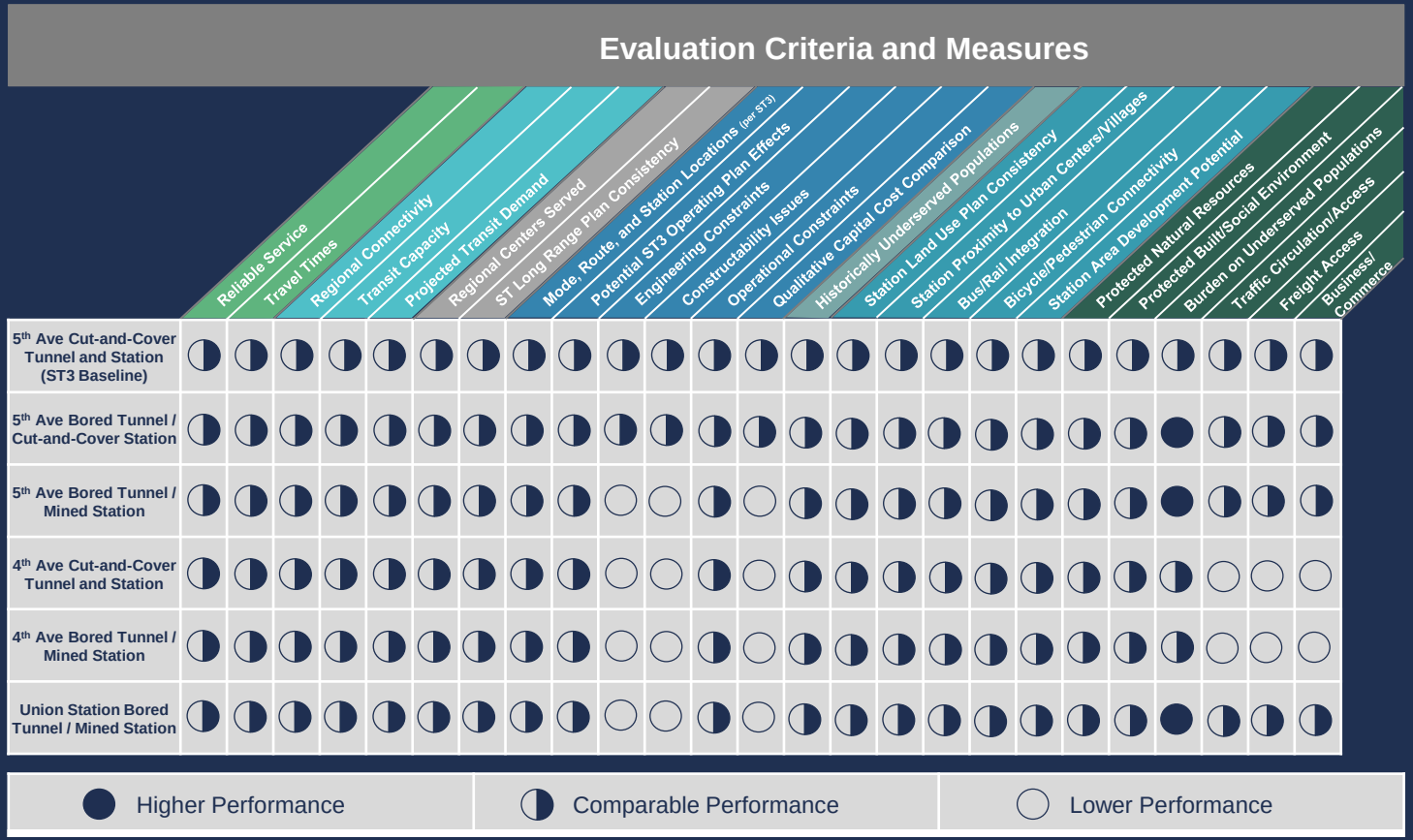


4th Ave Bored Tunnel – Key Findings

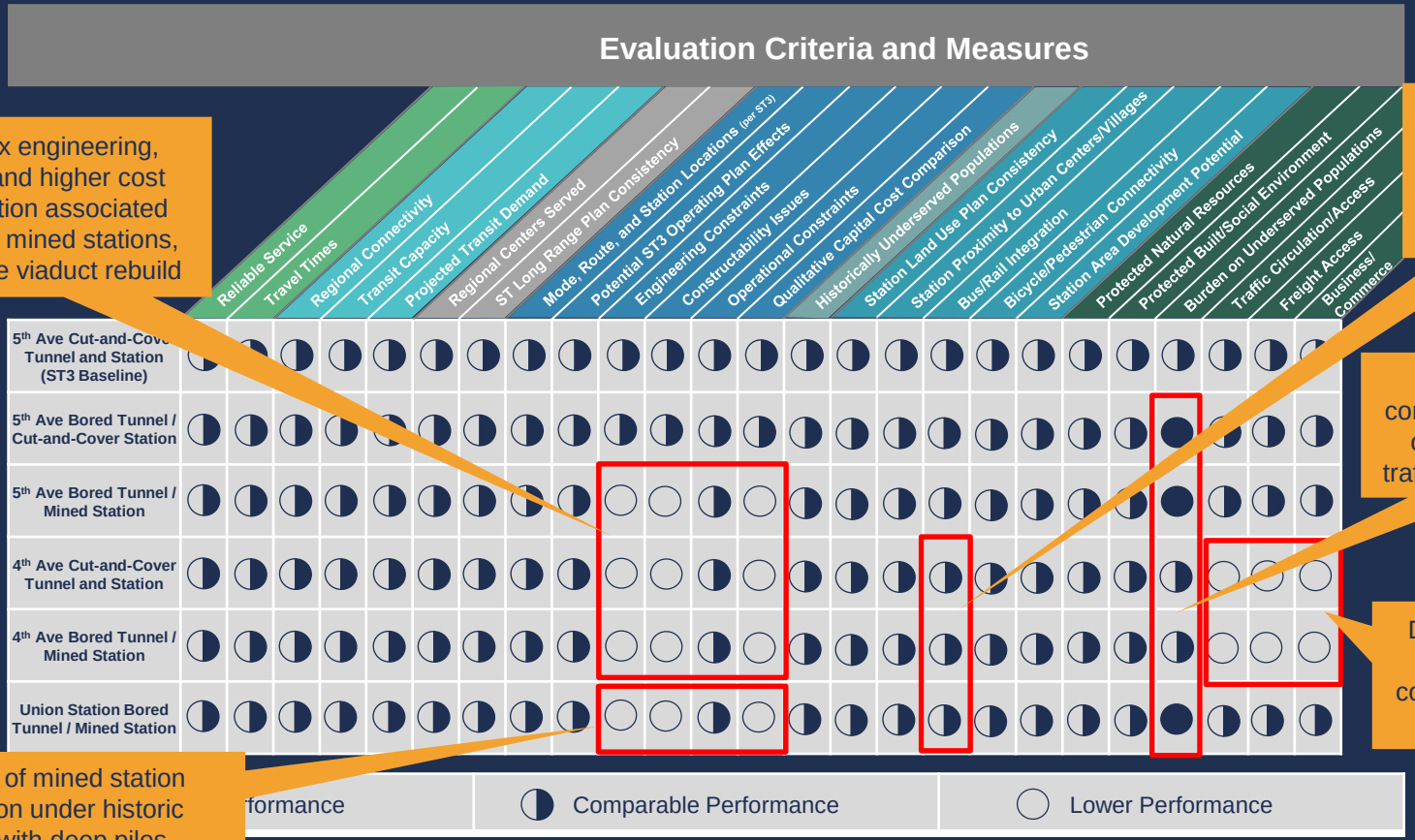


Union Station Bored Tunnel – Key Findings

C-ID Level 1 Alternatives – Evaluation Results



C-ID Level 1 Alternatives – Evaluation Results



Complex engineering, difficult and higher cost construction associated with deep mined stations, 4th Avenue viaduct rebuild

Closer proximity to Sounder, but less convenient LRT transfers

Reduced construction impacts offset by 4th Ave traffic detour impacts

Detours from 4th Avenue during construction affect traffic, freight

Feasibility of mined station construction under historic building with deep piles

Chinatown-ID Alternatives Summary – Level 1

Alternatives with more potential	5th Ave Cut-and-Cover Tunnel and Station (ST3/Baseline)	• Baseline for comparison
	5th Ave Bored Tunnel / Cut-and-Cover Station	• Reduces extent of cut-and-cover construction impacts • Moved forward to Level 2
Alternatives with greater challenges	5th Ave Bored Tunnel / Mined Station	• Reduces extent of cut-and-cover construction impacts • Deep mined station construction technically challenging (platform 100 – 120’ deep)
	4th Ave Cut-and-Cover Tunnel and Station	• 4th Ave viaduct rebuild; potential major traffic, freight, and transit mobility impacts • Construction detours could impact neighborhood streets • 4th Ave viaduct rebuild; requires third party funding • LRT service disruptions during construction over existing tunnel • Constructability challenge of tunneling under I-90 ramps
	4th Ave Bored Tunnel / Mined Station	• 4th Ave viaduct rebuild (at station); potential traffic, freight, and transit mobility impacts • Construction detours could impact neighborhood streets • Deep mined station construction under 4th Ave (platform 150 – 200’ deep) • Property impacts of TBM portal site in E-3 busway
Not practical concept	Union Station Bored Tunnel / Mined Station	• Deep piles under Union Station, existing ID Station and adjacent buildings require deep mined station (platform 150 - 200’ deep) • Deep station precludes easy ped connections to IDS and King St. stations • Risk of settlement damage to landmark US building • Lacks construction staging and access shaft sites


Equity and Inclusion

New approach to project development

- Enhance commitment to partnership, community engagement, collaboration, transparency and accountability
- Apply innovative ideas and lessons learned to streamline project delivery
- Enhance access to the system and develop an equitable regional TOD strategy

Equity and the environmental process

During environmental review, Sound Transit conducts an ***environmental justice analysis*** in compliance with federal regulations.

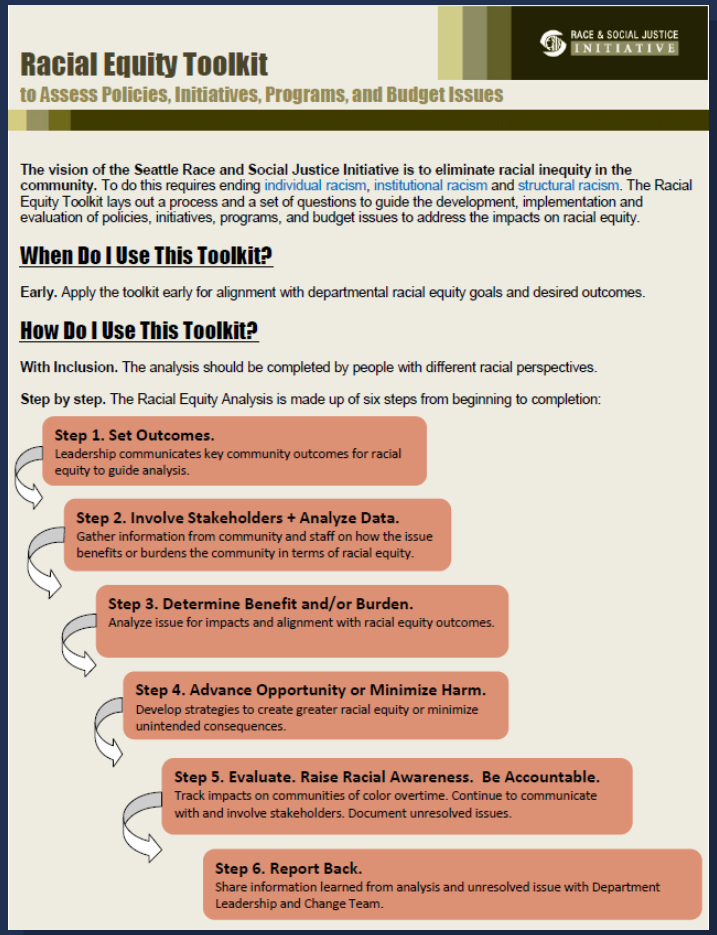
- **Executive Order 12898:** Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (1994)
- **USDOT Order 5610.2:** Actions to Address Environmental Justice (1997) and 2012 Update
- FTA environmental justice policy guidance, FTA Circular

Partnership with the City of Seattle

Partnering agreement provides framework for Sound Transit and the City to ***work closely together*** during the alternatives development phase of the project to ***identify a preferred alternative*** as well as other alternatives to study in the EIS.

Mayor Durkan Executive Order

- An Executive Order affirming the City of Seattle's commitment to the ***Race and Social Justice Initiative (RSJI).***
- The RSJI vision is to ***achieve racial equity*** in the community and the mission is to ***end institutional and structural racism*** in City government, ***promoting inclusion*** and full participation of all residents, and ***partnering with the community*** to achieve racial equity across Seattle.



Racial Equity Toolkit

to Assess Policies, Initiatives, Programs, and Budget Issues

RACE & SOCIAL JUSTICE INITIATIVE

The vision of the Seattle Race and Social Justice Initiative is to eliminate racial inequity in the community. To do this requires ending individual racism, institutional racism and structural racism. The Racial Equity Toolkit lays out a process and a set of questions to guide the development, implementation and evaluation of policies, initiatives, programs, and budget issues to address the impacts on racial equity.

When Do I Use This Toolkit?

Early. Apply the toolkit early for alignment with departmental racial equity goals and desired outcomes.

How Do I Use This Toolkit?

With Inclusion. The analysis should be completed by people with different racial perspectives.

Step by step. The Racial Equity Analysis is made up of six steps from beginning to completion:

Step 1. Set Outcomes.
Leadership communicates key community outcomes for racial equity to guide analysis.

Step 2. Involve Stakeholders + Analyze Data.
Gather information from community and staff on how the issue benefits or burdens the community in terms of racial equity.

Step 3. Determine Benefit and/or Burden.
Analyze issue for impacts and alignment with racial equity outcomes.

Step 4. Advance Opportunity or Minimize Harm.
Develop strategies to create greater racial equity or minimize unintended consequences.

Step 5. Evaluate. Raise Racial Awareness. Be Accountable.
Track impacts on communities of color overtime. Continue to communicate with and involve stakeholders. Document unresolved issues.

Step 6. Report Back.
Share information learned from analysis and unresolved issue with Department Leadership and Change Team.

What is a Racial Equity Toolkit (RET)?

- Assessment tool developed by City of Seattle to address impacts on racial equity.
- Data-driven and inclusive

West Seattle and Ballard Link Extensions

RET process

- Sound Transit and City of Seattle RET collaborative team
- Working group structure focused on engagement and data analysis
- Conducted data analysis to determine focus areas

Level 1 data findings

- Mapped concentrations of communities of color in project corridor
- ***Chinatown/ID and Delridge Stations*** emerged as station areas of focus for RET analysis

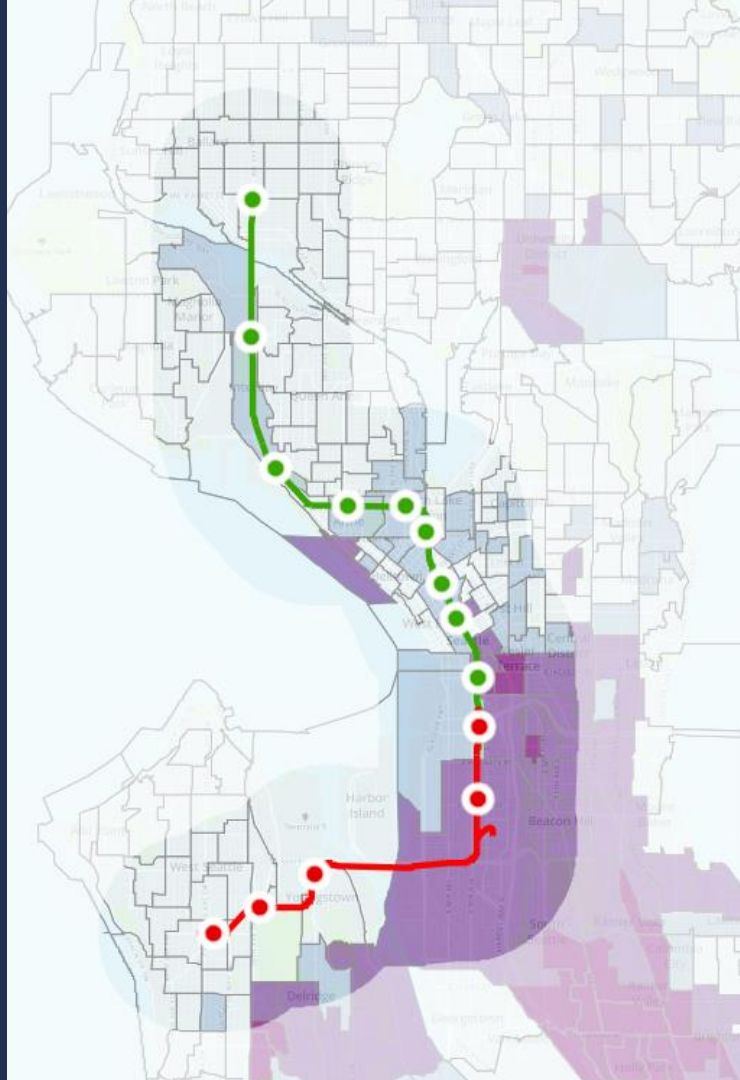


Figure: *Concentrated communities of color (non-white population)*

Source: 2011-2016 American Community Survey, projected in ArcGIS Online *WSBLE Community Conditions Basemap*

Level 1 data findings

- Chinatown/International District station area is the only station area ***densely populated by communities of color*** in the WSBLE project corridor

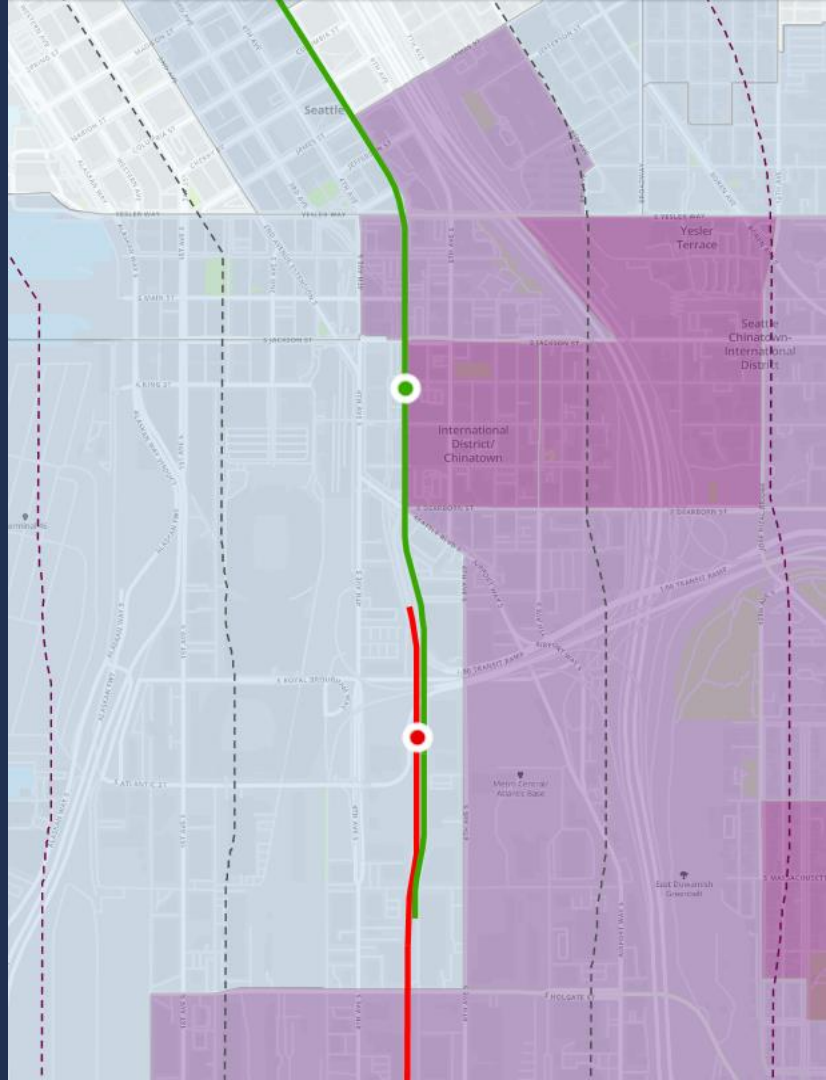


Figure 1: Communities of Color in ½ mile catchment of C/ID and South Downtown

Source: 2011-2016 American Community Survey, projected in ArcGIS Online *WSBLE Community Conditions Basemap*

Level 1 data findings

- Densely populated communities of color lie ***within the bike and transit sheds*** of the Delridge and Avalon stations, but are ***outside of those stations' immediate walksheds***

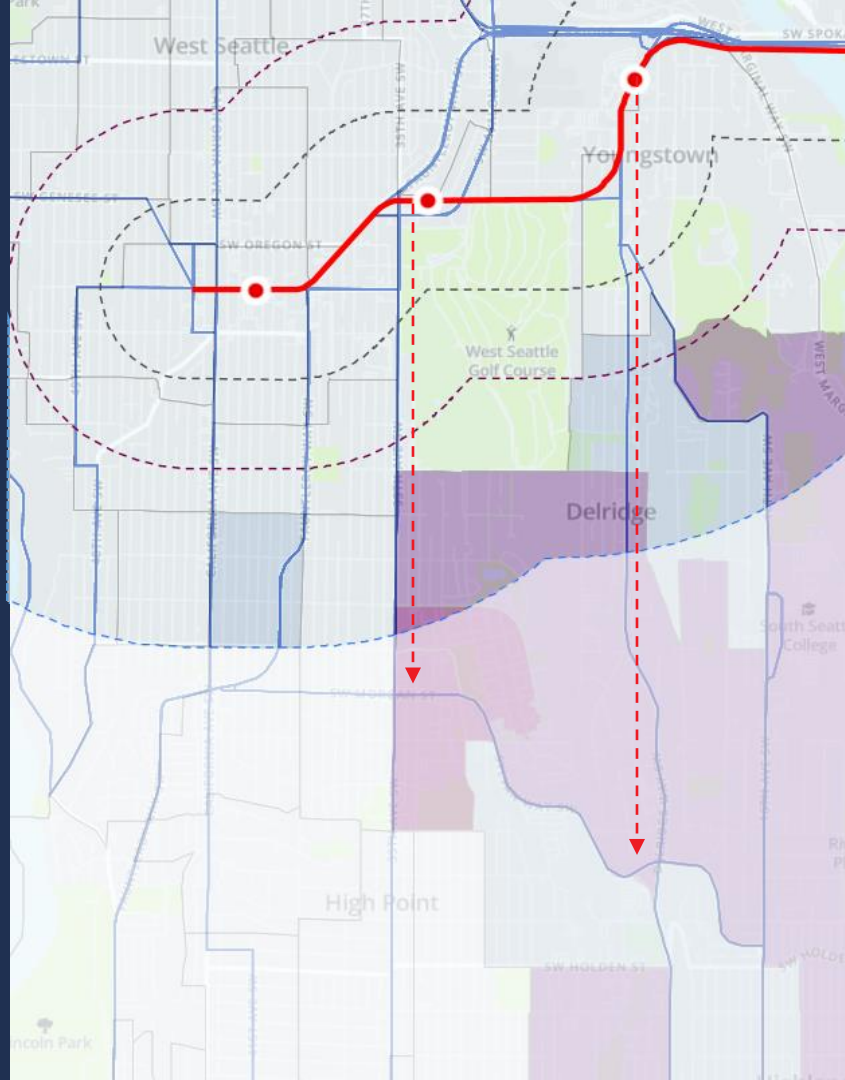


Figure 2: Communities of color beyond 1/2-mile catchment of Delridge and Avalon Stations and major bus routes

Source: 2011-2016 American Community Survey, projected in ArcGIS Online WSBLE Community Conditions Basemap)

Level 1 data findings

- Many stations in areas of ***"high opportunity"***
- ***Correlation between race and class*** where communities of color have lower incomes and access to opportunity than majority white communities

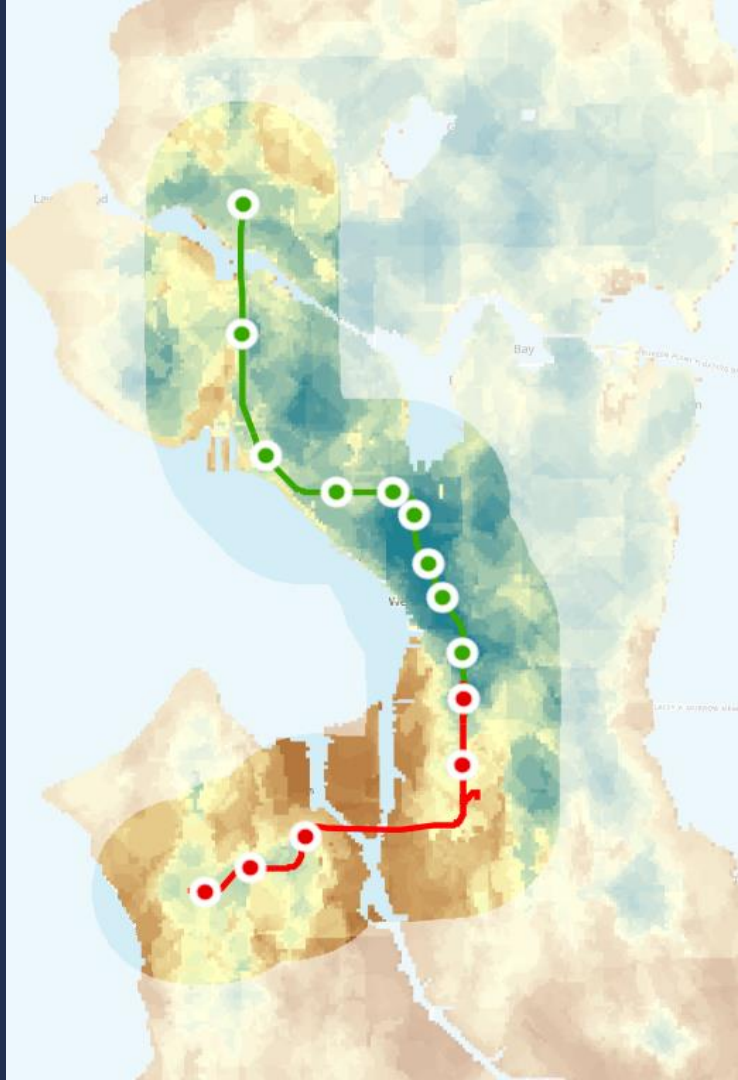


Figure 3: *Opportunity Index (blue = higher score, brown = lower score;* ***Source:*** *City of Seattle, projected in ArcGIS Online WSBLE Community Conditions Basemap)*

How the RET has informed work so far

- Established shared outcomes **(next slide)**
- Collaboration on Chinatown-International District engagement and alternatives development
- Social service provider interviews centering race
- Modifications to screening criteria
- Delridge station charrette collaboration

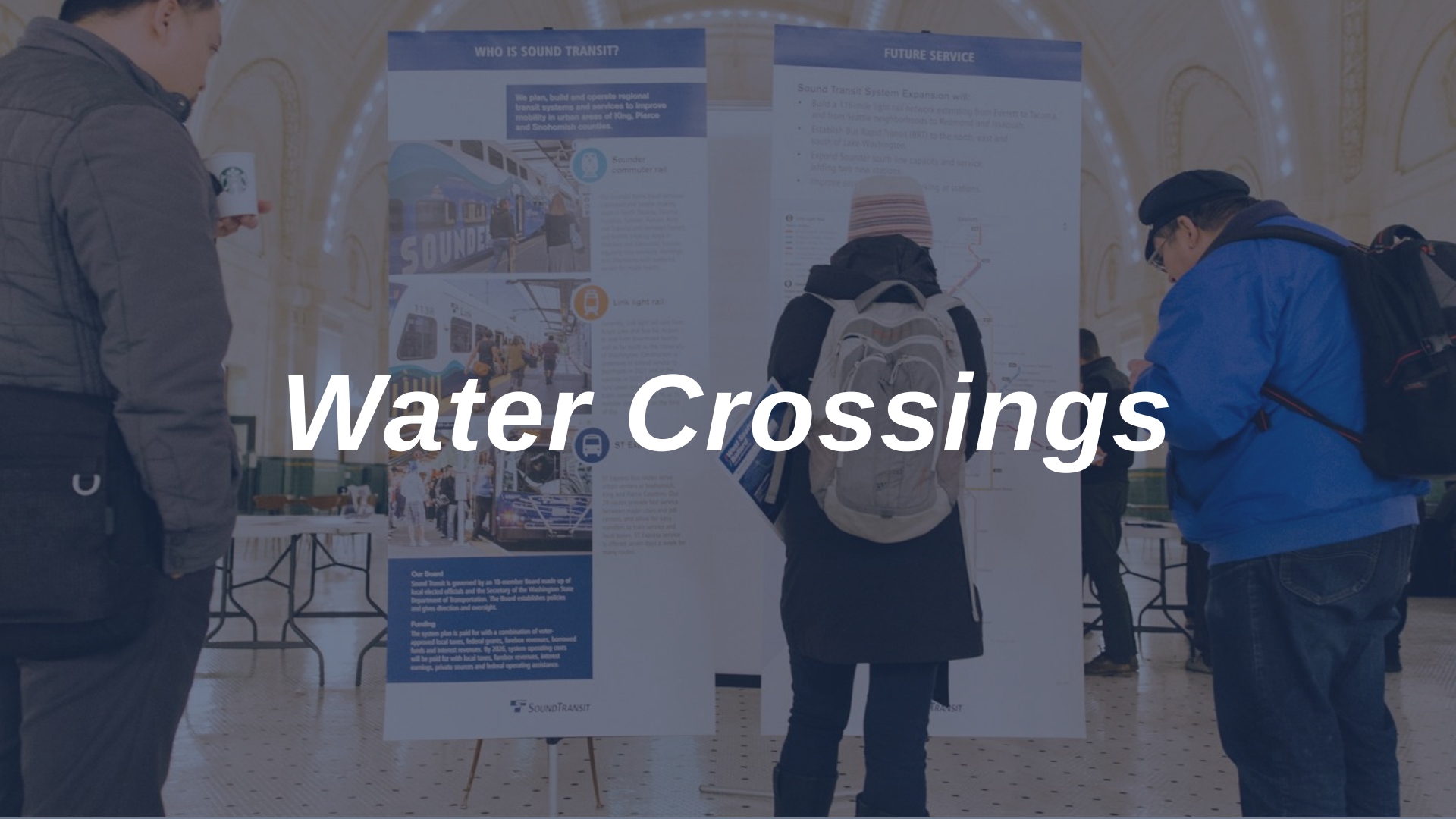
How the RET has informed work so far

Shared outcomes

- ***Enhance mobility and access*** to create opportunity for communities of color and low-income populations.
- Create opportunities for ***equitable development*** that benefit communities of color.
- ***Avoid disproportionate adverse impacts*** on communities of color and for low-income populations.
- ***Meaningful involvement*** with communities of color and low-income populations.

Looking ahead in Level 2

- Collaboration will continue to elevate issues and considerations to ***better inform the alternatives development process.***
- Strive to ***provide information*** that data alone cannot provide.
- ***Sharing findings*** of Level 2 data analysis and community engagement.



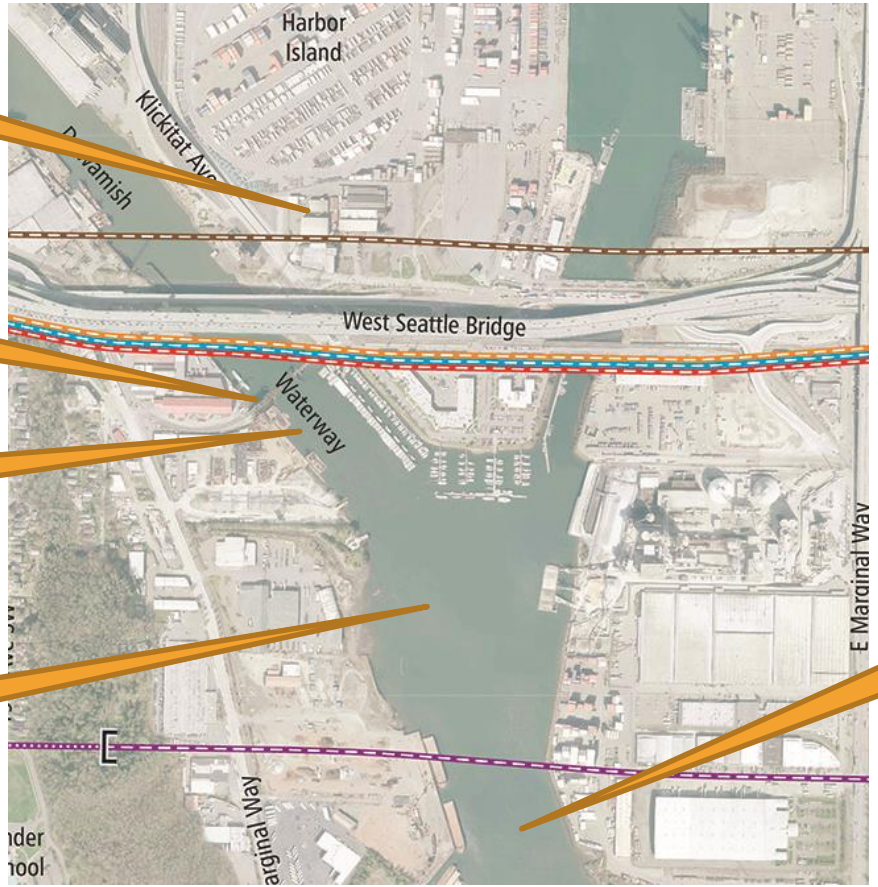
Water Crossings

Terminal operations and freight movement

Railroad operations

Waterway navigation channel

Waterway user needs



Tribal fishing within the Duwamish River basin

Habitat and cultural resources

Objects affecting navigable airspace

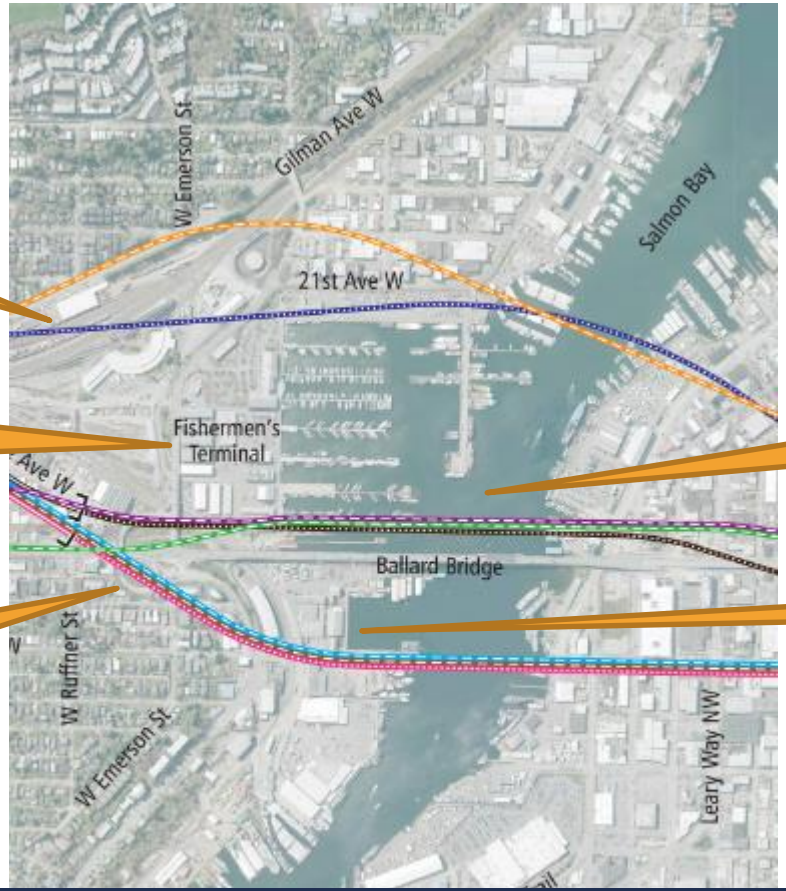
= Design Consideration

Duwamish Crossing Design Consideration

Railroad operations

Existing and future maritime business and commerce

Existing and future transportation projects



Tribal fishing in Salmon Bay and access to Puget Sound

Habitat and cultural resources

Federal navigation channel

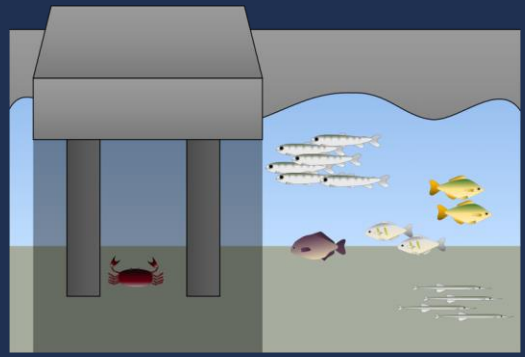
Waterway user needs

= Design Consideration

Salmon Bay Crossing Design Consideration

Tribal Considerations

- Lower Duwamish, Elliott Bay, and Salmon Bay are important areas for treaty fishing activities
- Construction and permanent in-water structures both have a potential to disrupt fishing activities and impact habitat for fish
- Upland areas around water crossings have high probability for finding cultural resources during ground disturbance



Environmental Permitting for Water Crossings

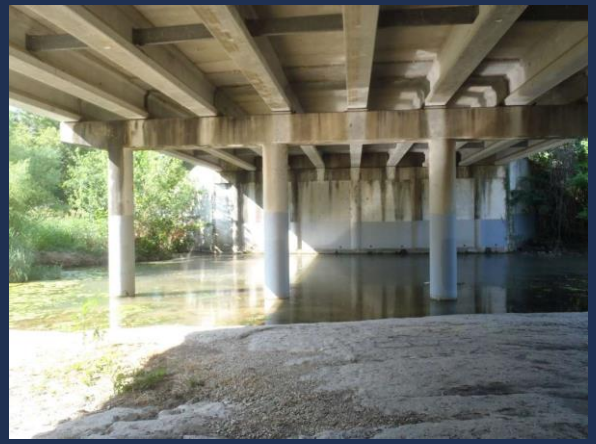
- U.S. Army Corps of Engineers (Corps)
- U.S. Coast Guard (Coast Guard)
- National Oceanic and Atmospheric Administration (NOAA) and U.S. Fish and Wildlife Services (USFWS)
- Washington State Department of Ecology (DOE)
- Washington Department of Fish and Wildlife (WDFW)
- City of Seattle

The **U.S. Army Corps of Engineers (Corps)** is responsible for regulating fill and dredging in the water and structures placed in navigable waterways.

If the Project will result in fill or dredging in the water then it will be subject to a Corps permit.

- The Corps must determine that the Project to be built is the “Least Environmentally Damaging Practicable Alternative” (LEDPA).

- Practicability can take into account cost, existing technology, and logistics.



U.S. Army Corps of Engineers

The **U.S. Coast Guard (Coast Guard)** is responsible for protecting and preserving navigation.

- Approval from the Coast Guard is required for any temporary or permanent bridges that may impede navigation.

U.S. Coast Guard

National Oceanic and Atmospheric Administration (NOAA) & U.S. Fish and Wildlife Services (USFWS) are responsible for administering the Endangered Species Act (ESA) and conserving and recovering ESA-listed species and their habitat

- Several ESA-listed fish, birds, and marine mammals are known to occur within the Project area.

- NOAA and USFWS must review and approve Project impacts to these species and their habitat as part of the EIS process.

NOAA & USFWS

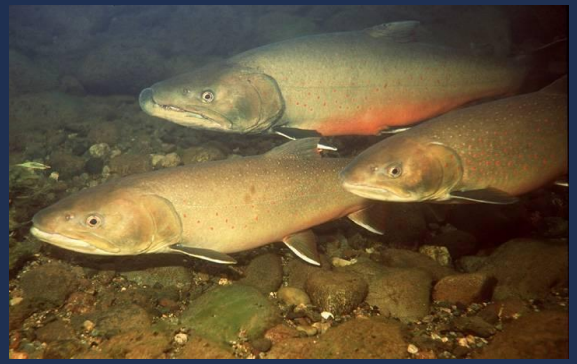
The **WA State Department of Ecology (DOE)** is responsible for ensuring the project complies with water quality standards and aquatic resource protection requirements

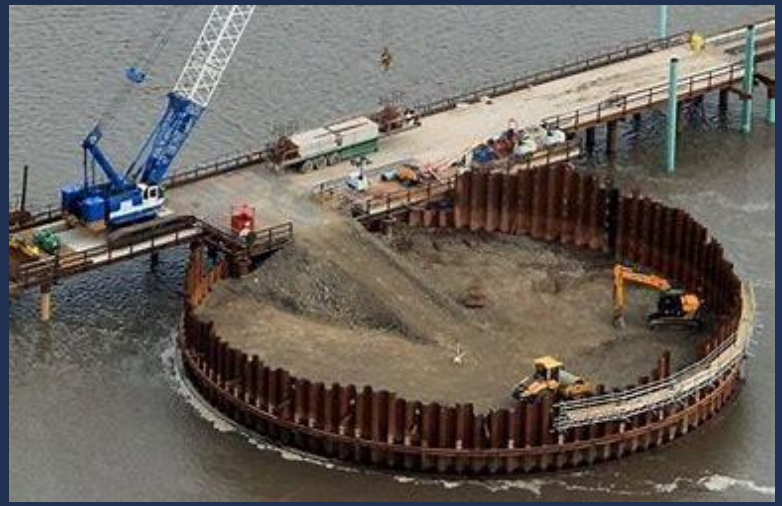
- Permits from DOE are required for stormwater discharges and work that may impact water quality.

WA State Department of Ecology

WA Department of Fish and Wildlife (WDFW) is responsible for ensuring that the Project is constructed in a manner that protects fish life.

- WDFW will issue a permit for any work that will use, divert, obstruct, or change the natural flow or bed of any water of the state.





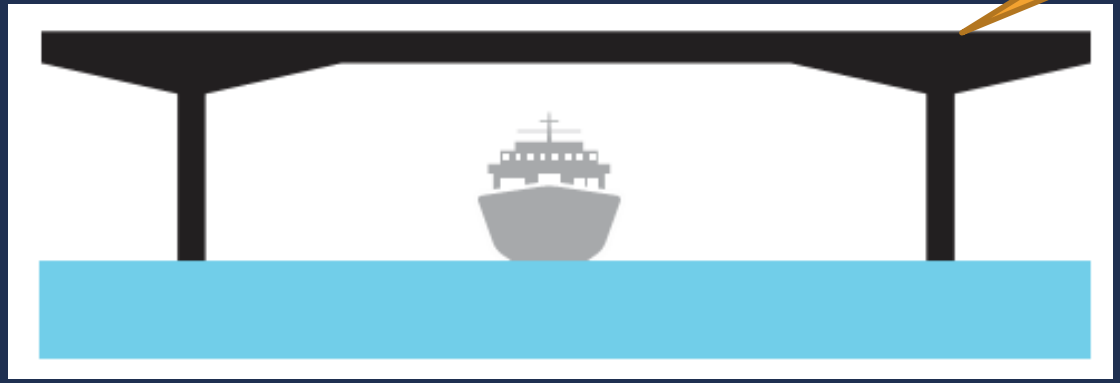
WA Department of Fish and Wildlife

City of Seattle is responsible for regulating impacts to Environmental Critical Areas and Shorelines.

- Environmentally Critical Areas include:
  - Wetlands
  - Geological Hazard Areas
  - Flood Zones
  - Fish and Wildlife Conservation Areas

City of Seattle

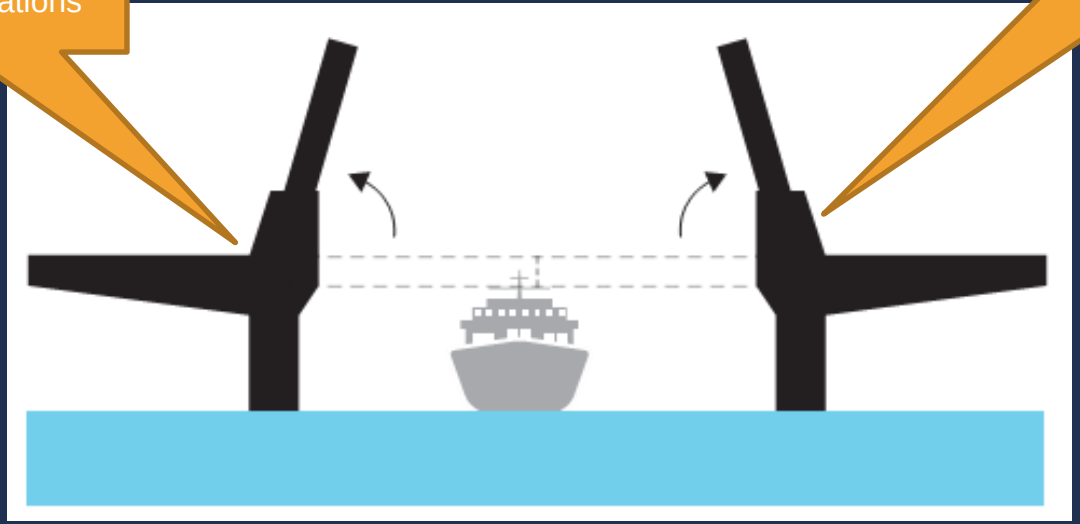
High-level fixed bridge



Moveable bridge

Pier and Foundations

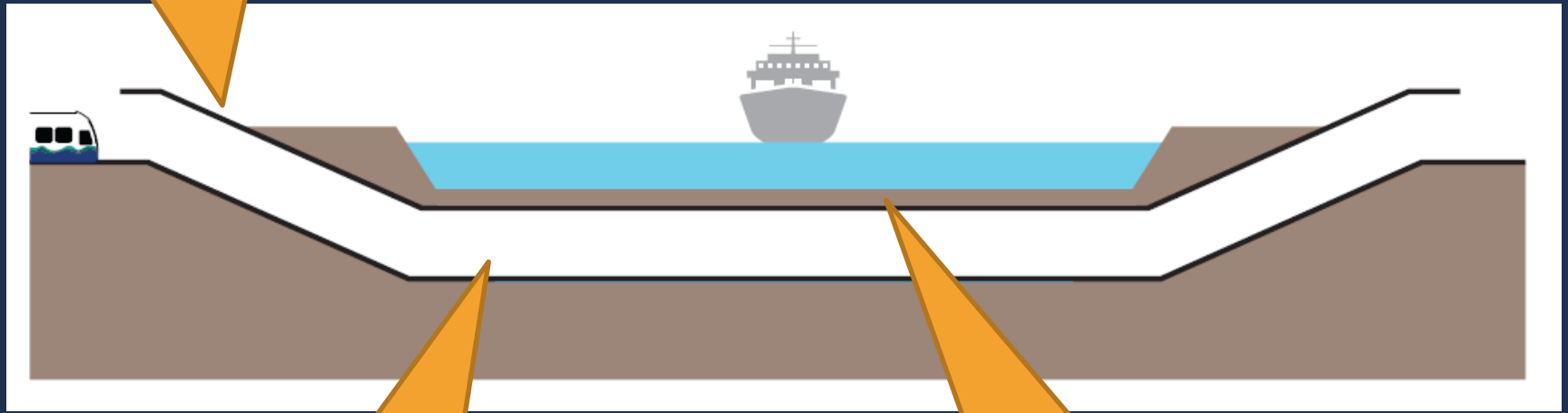
Requires lifting mechanics
requires maintenance



Span Length
to meet navigation requirement

Tunnel

Requires staging area (both sides)

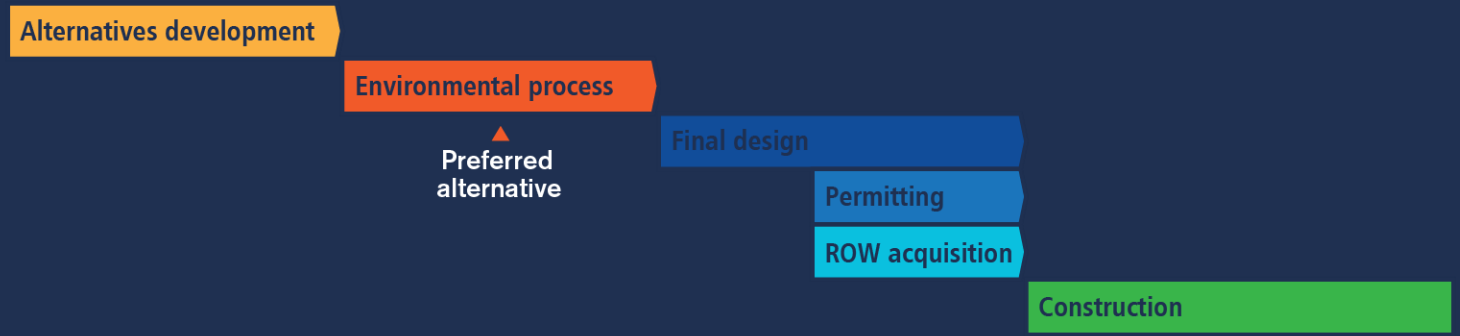


Potential for cross-passage or emergency egress shaft depending on length of tunnel

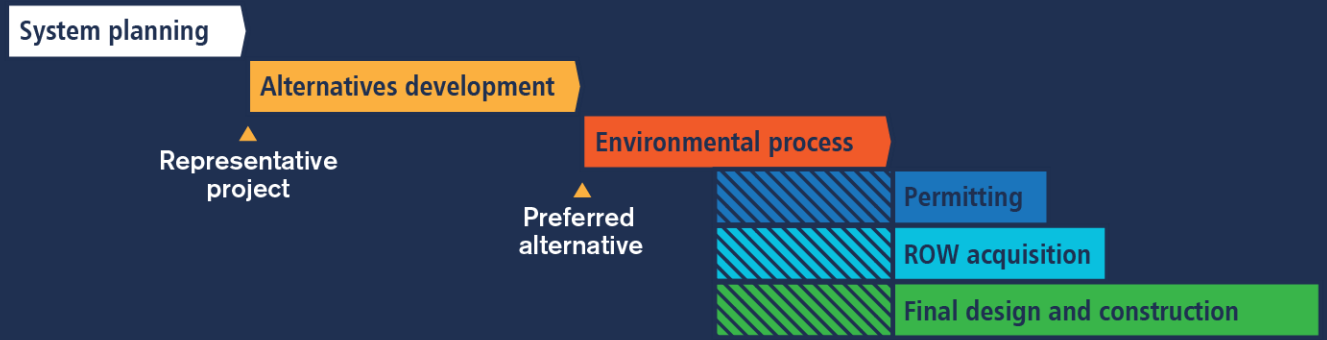
Maintain clearance to bottom of channel

New approach to project development

ST2 process



ST3 process




Next steps

Upcoming Level 2 Meetings

ELG Meeting July 19, 2018	• Stakeholder/community engagement • Chinatown/ID & SODO alignment and station alternatives
SAG Meeting #8 Sept. 5, 2018	• Stakeholder/community engagement • Level 2 evaluation results
SAG Meeting #9 Sept 26, 2018	• Stakeholder/community engagement • Level 2 recommendations
ELG Meeting Oct. 5, 2018	• Stakeholder/community engagement • Level 2 recommendations


soundtransit.org/wsblink
SoundTransit