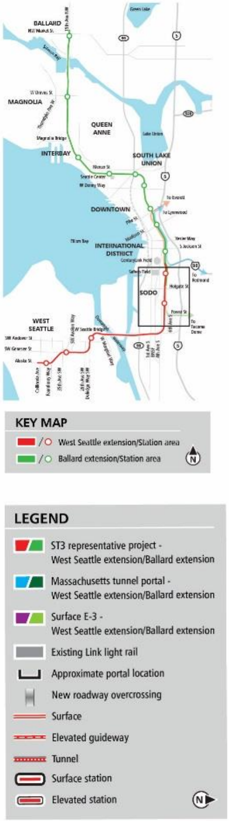
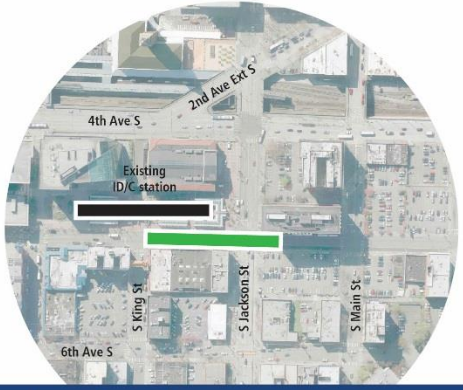
West Seattle and Ballard Link Extensions

DRAFT Stakeholder Advisory Group | 7.16.18

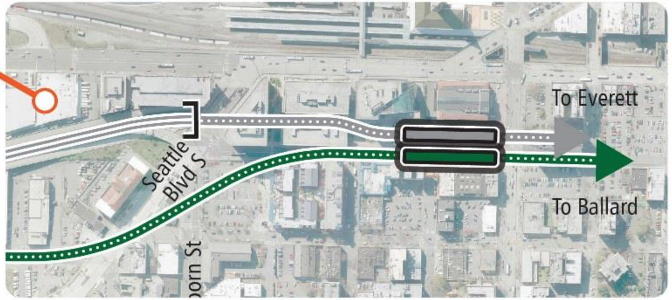
Chinatown-ID Evaluation Results





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

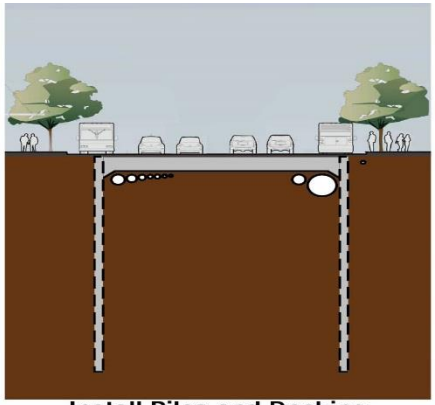
Additional feedback

SODO and Chinatown-ID

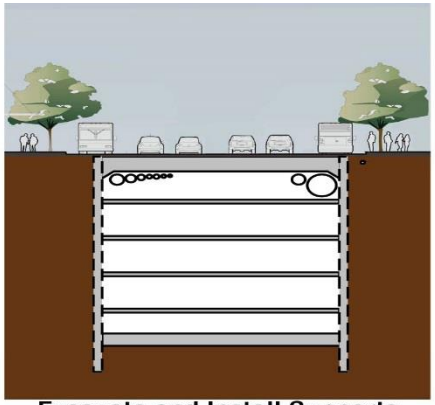
- Consider 4th Avenue location for Chinatown-ID station
- Explore alignments further west of ST3 Representative Project

Chinatown-ID community concerns

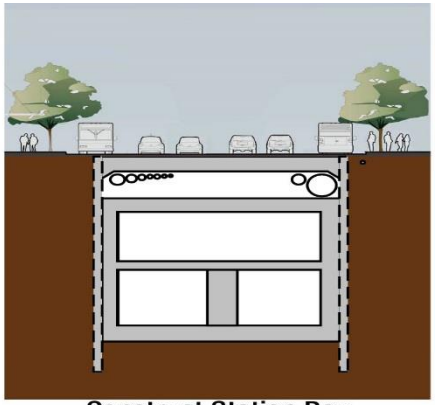
Agency workshop feedback



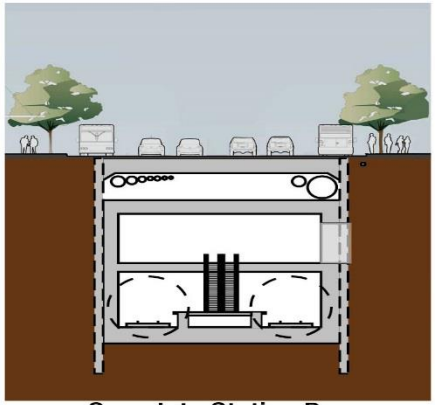
Install Piles and Decking



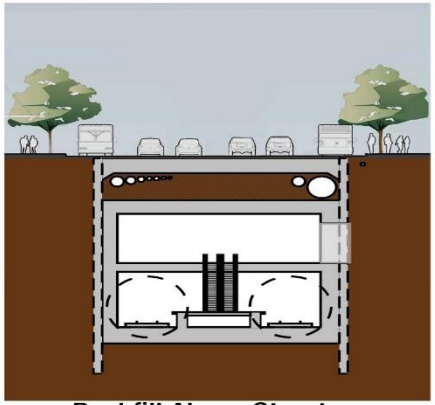
Excavate and Install Supports
(from beneath decking)



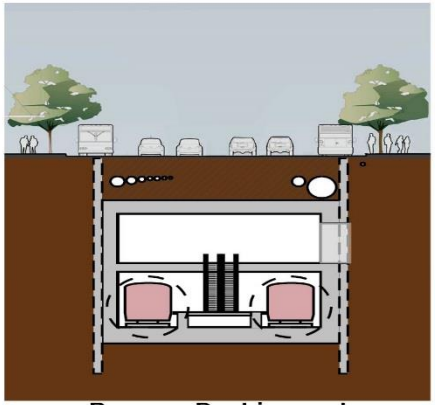
Construct Station Box



Complete Station Box

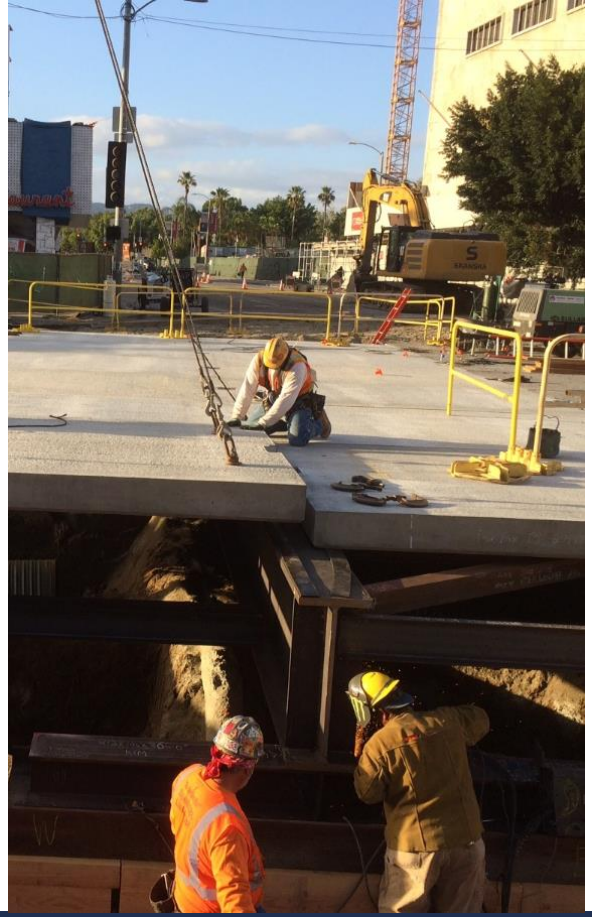


Backfill Above Structure

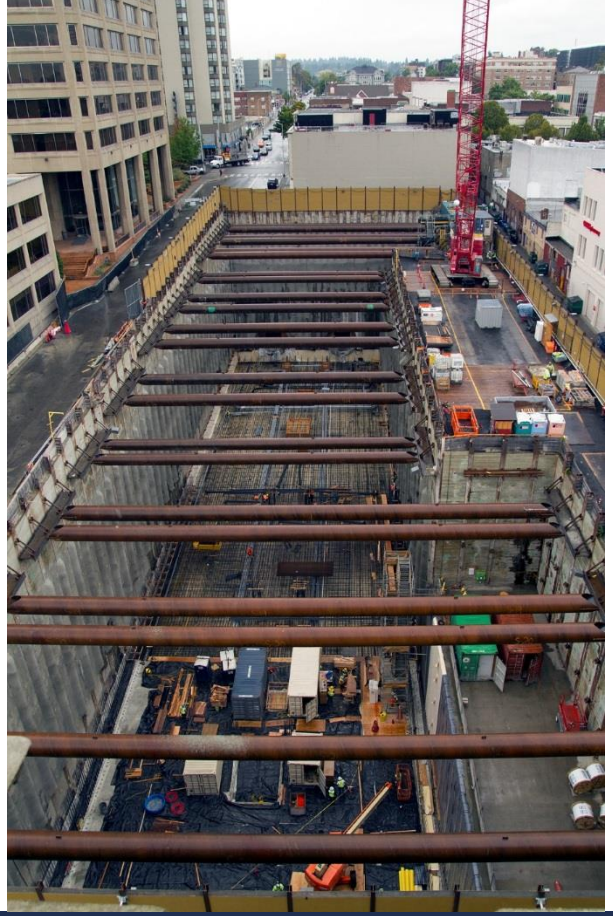


Remove Decking and
Restore Street

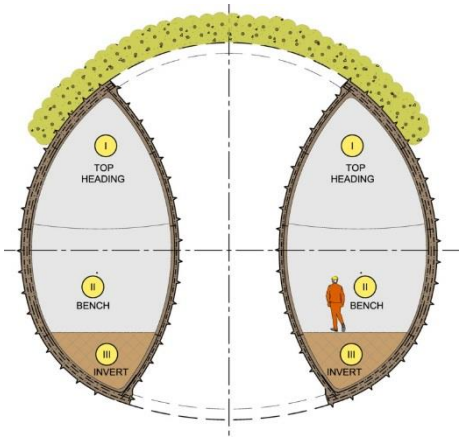
Cut and Cover Station Construction



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

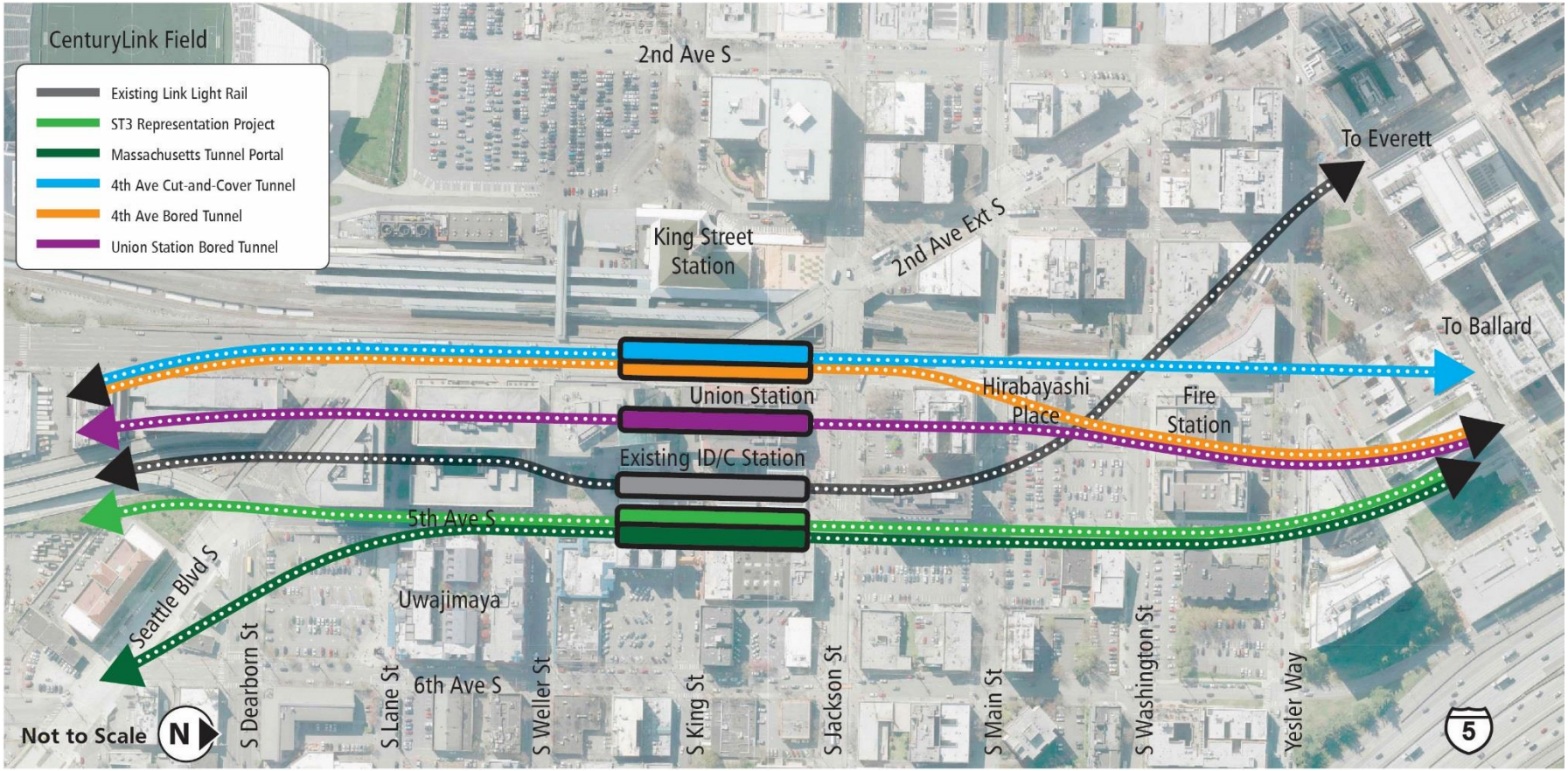
- Limited right-of-way
- Poor soil conditions
- Deep piles under 4th Ave, Union Station, existing ID/C Station
- Conflicts with existing DSTT structures

C-ID community concerns

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

Construction constraints

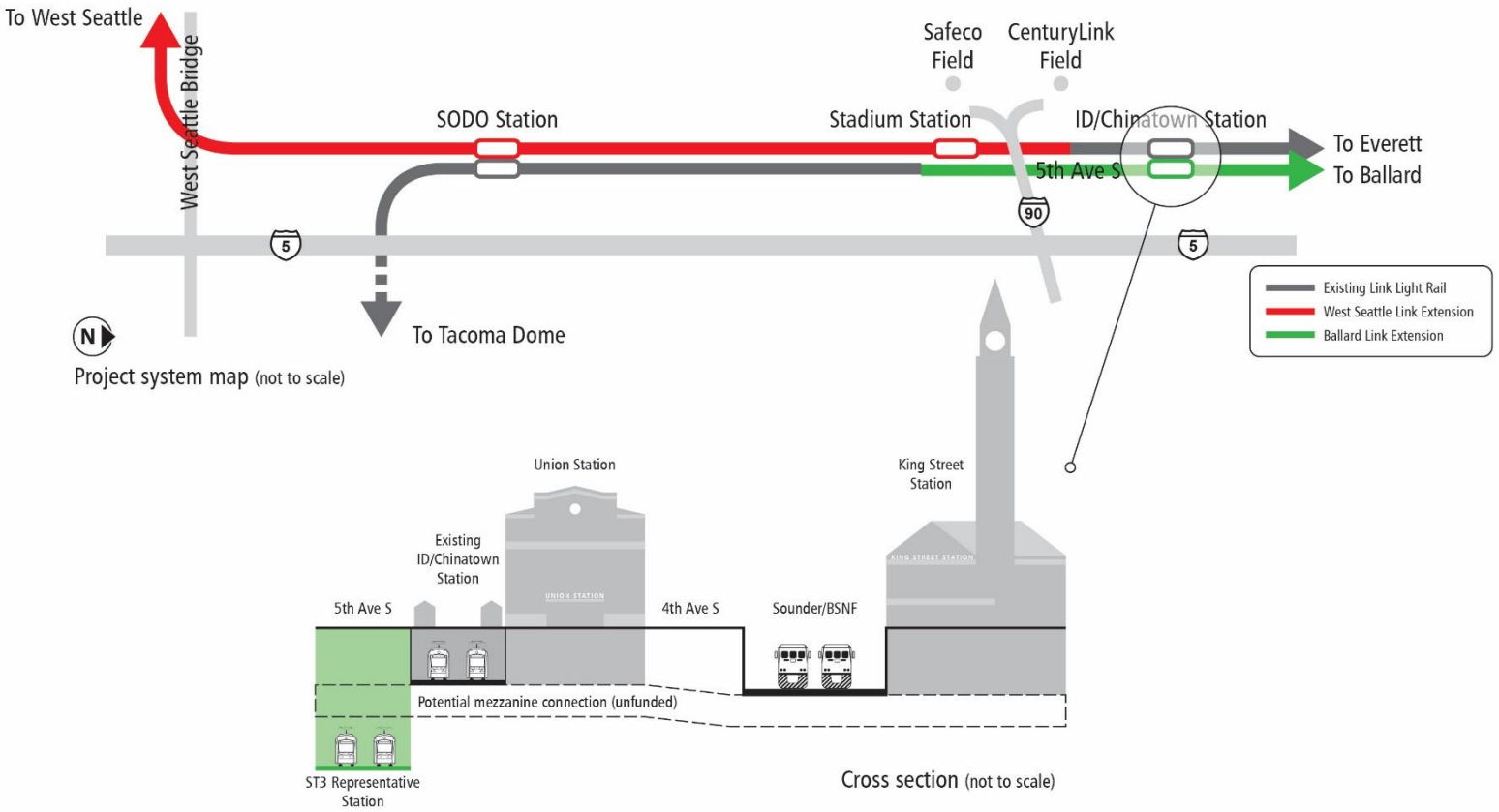
- ✓ Limited right-of-way
- ✓ Poor soil conditions
- ✓ Deep piles under 4th Ave, Union Station, ID/C Station
- ✓ Conflicts with existing DSTT structures



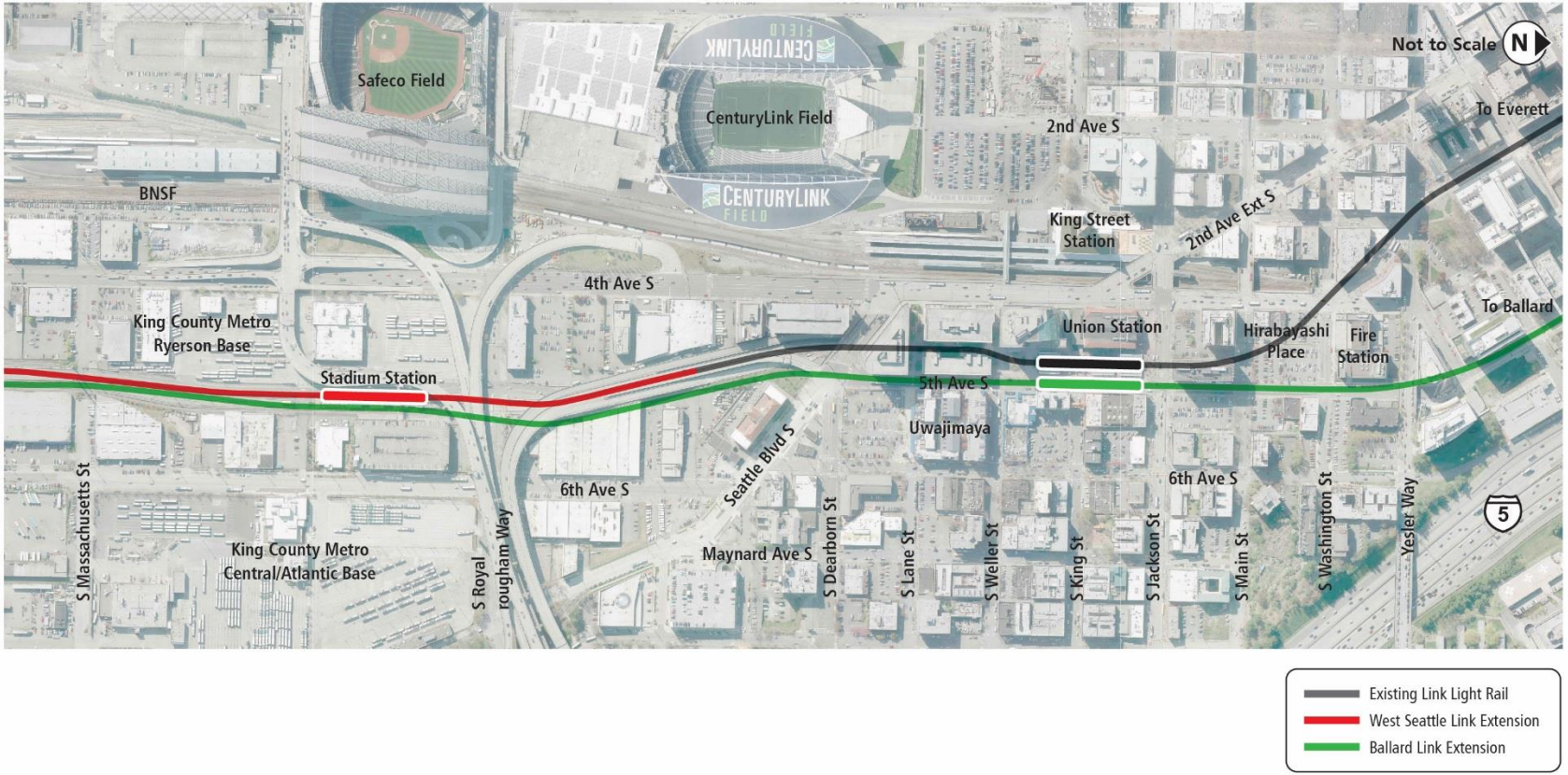
New Chinatown–ID Level 1 Alternatives

Potential C-ID Station Locations

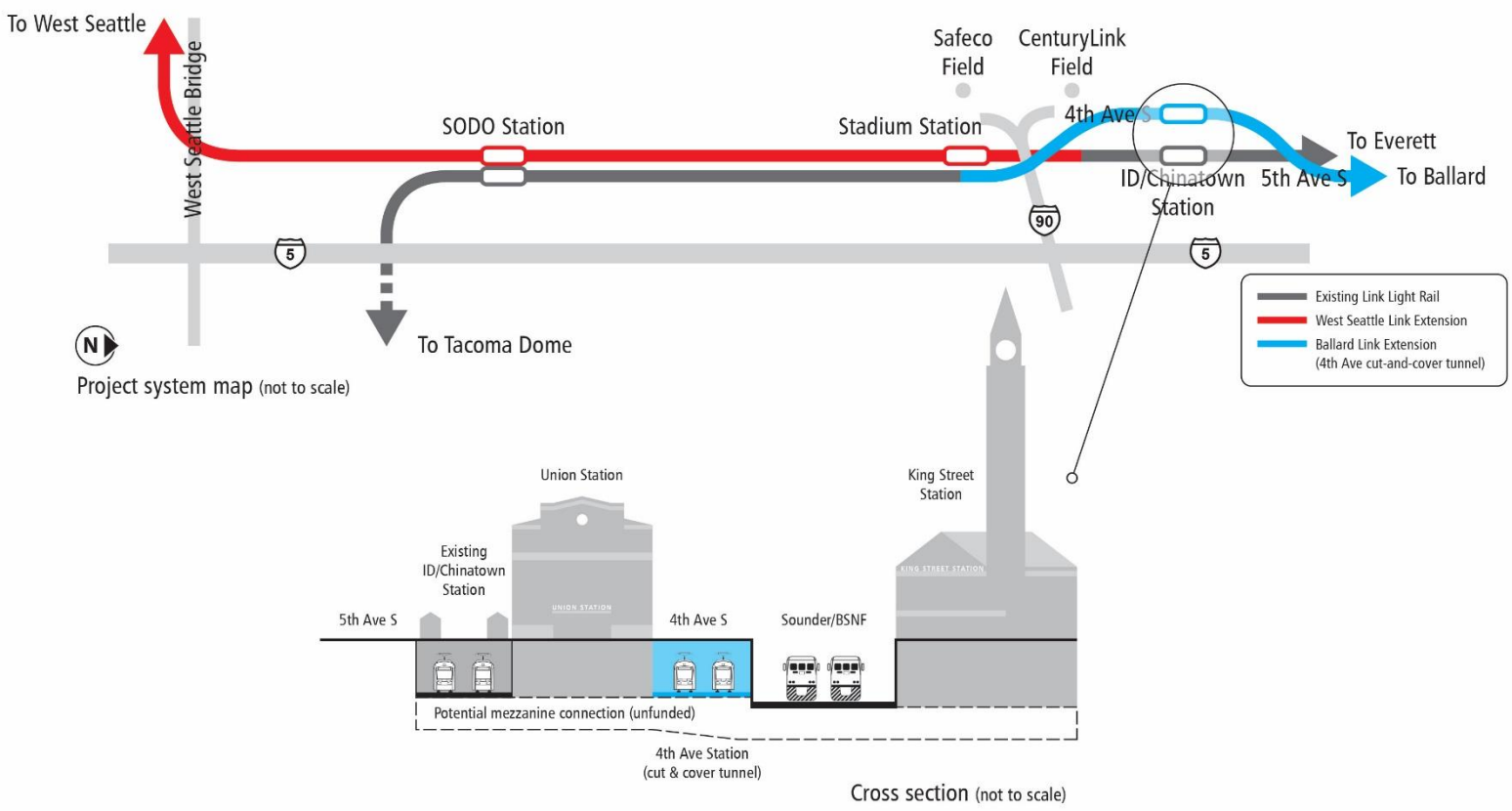
Tunnel / Station Type	5th Ave	4th Ave	Union Station
Cut-and-cover	✓	✓	✗
Platform depth:	(40-50’)	(30-40’)	
Bored / mined	✓	✓	✓
Platform depth:	(100-120’)	(150-200’)	(150-200’)



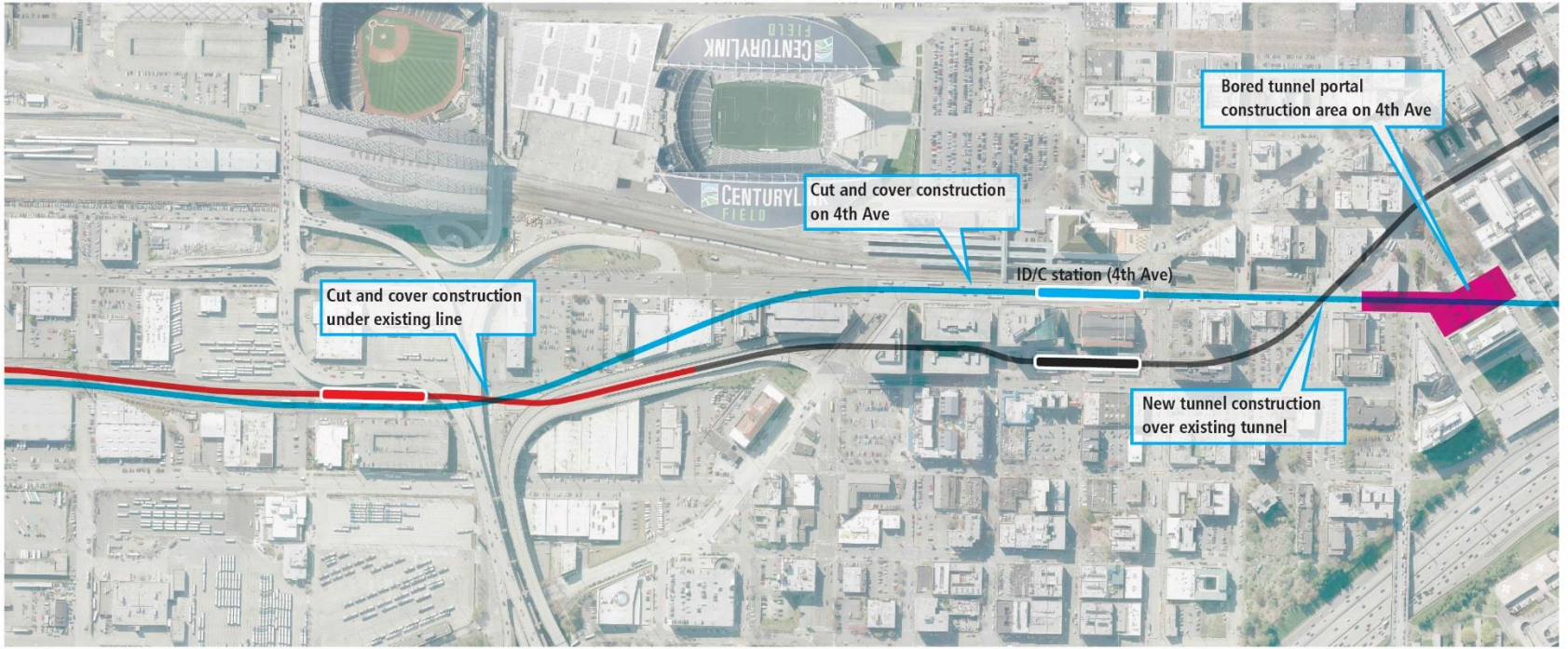
C-ID Station at 5th Ave S



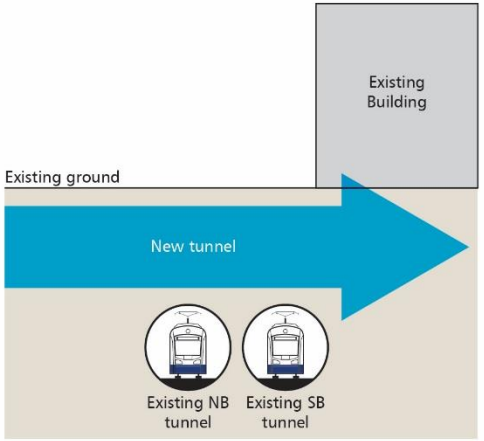
C-ID Station at 5th Ave S

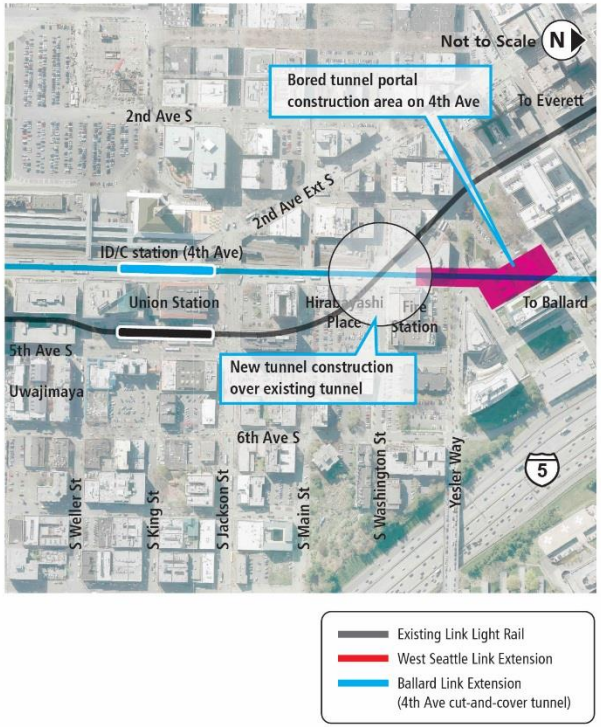


C-ID Station at 4th Ave S *Cut-and-cover*

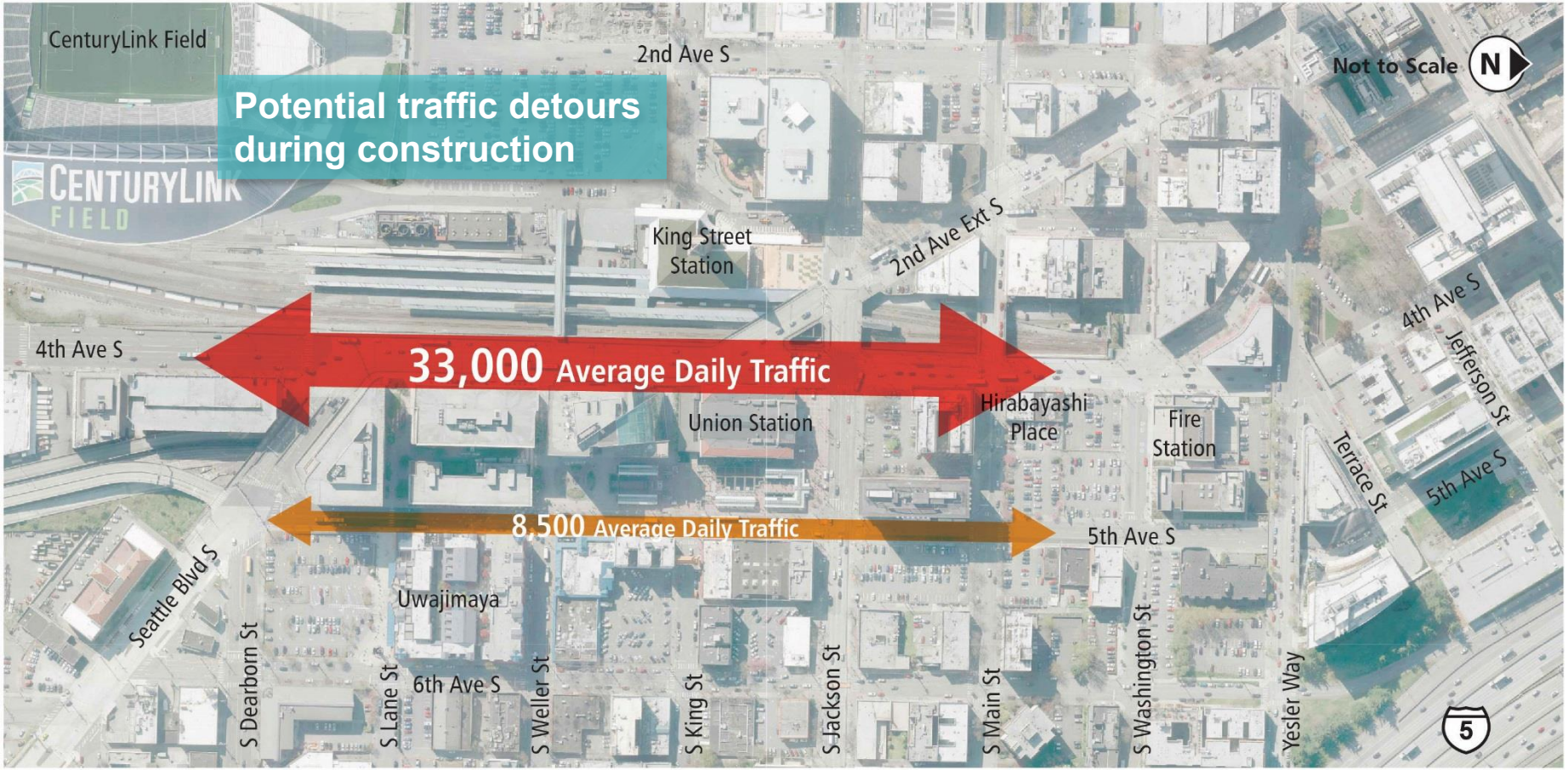


C-ID Station at 4th Ave S *Cut-and-cover*

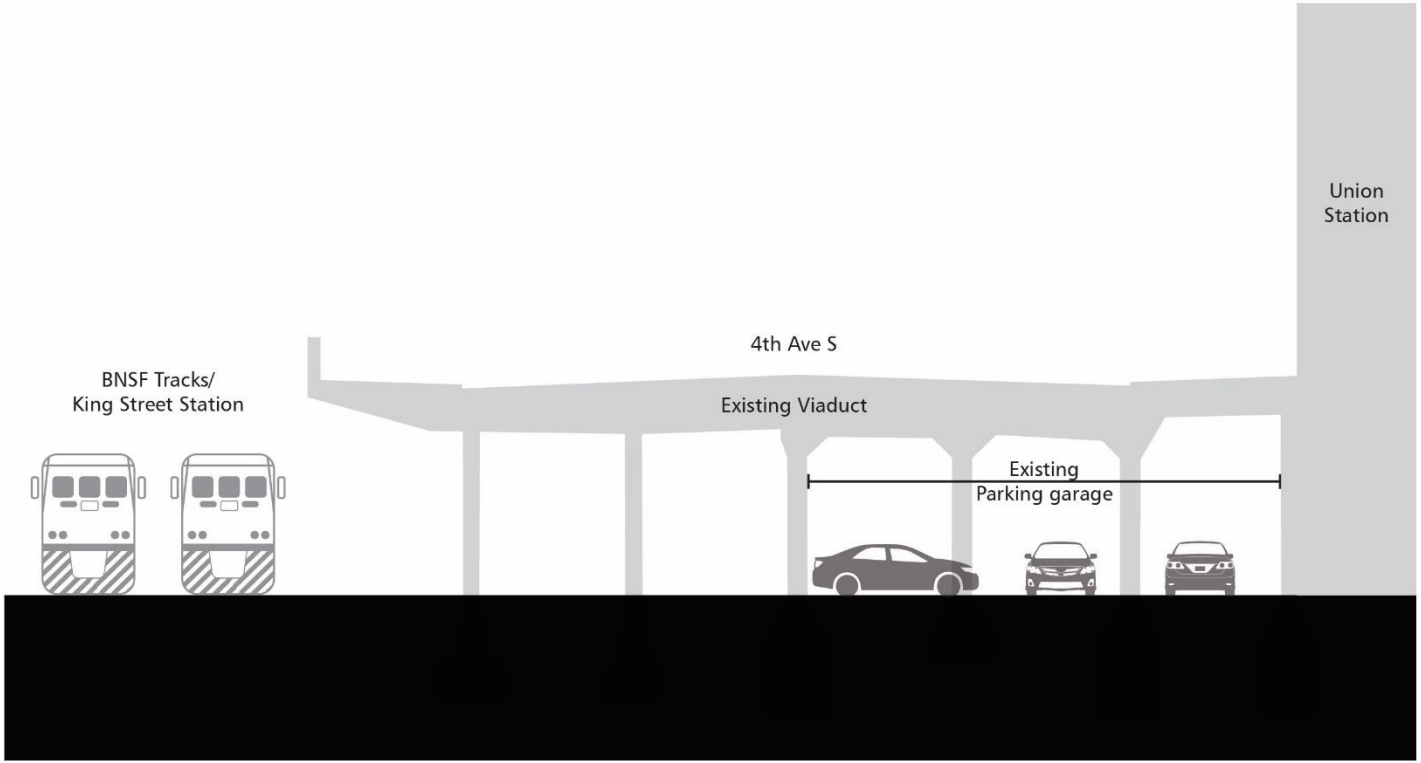




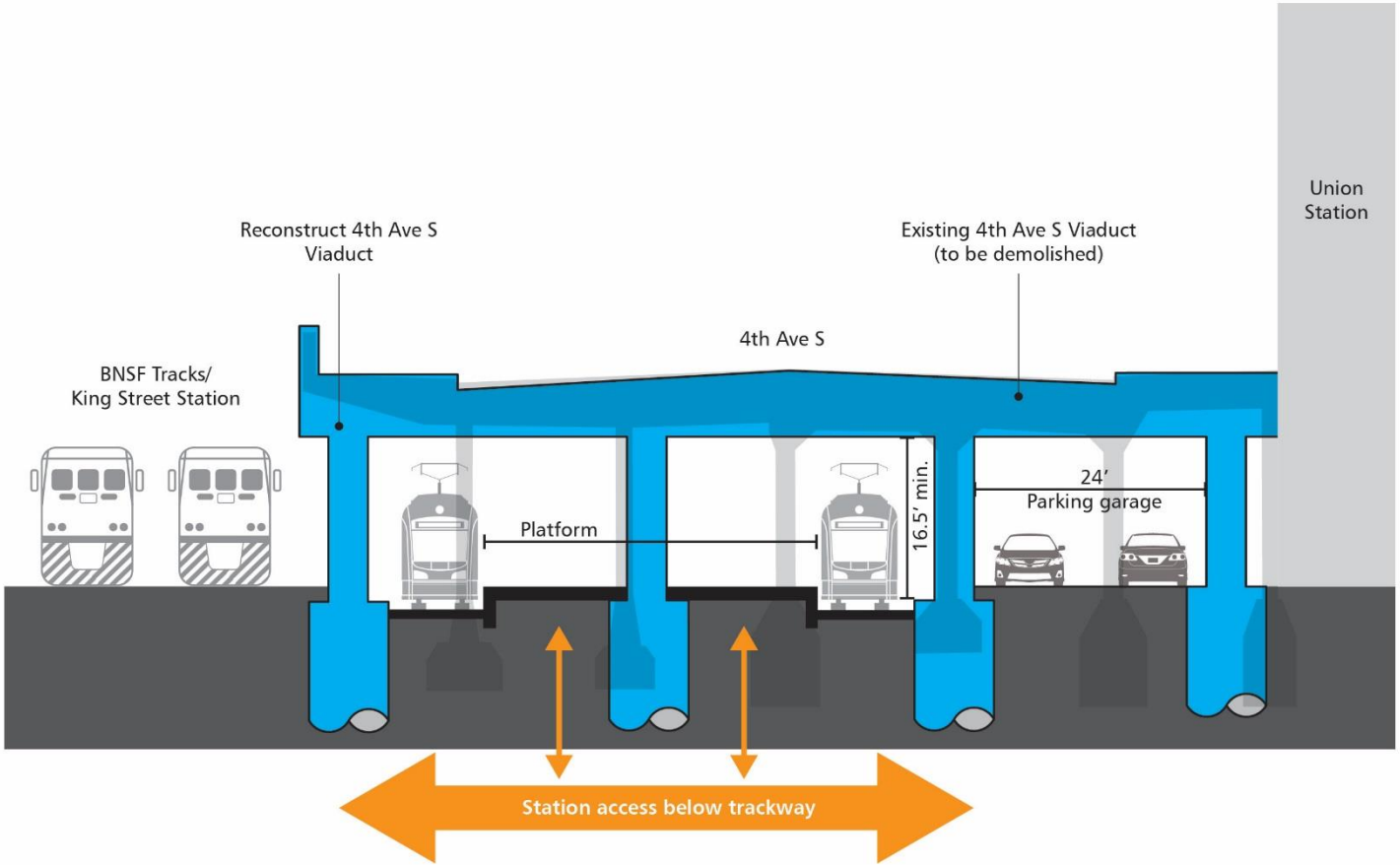
C-ID Station at 4th Ave S *Cut-and-cover*



Construction impacts/traffic diversion

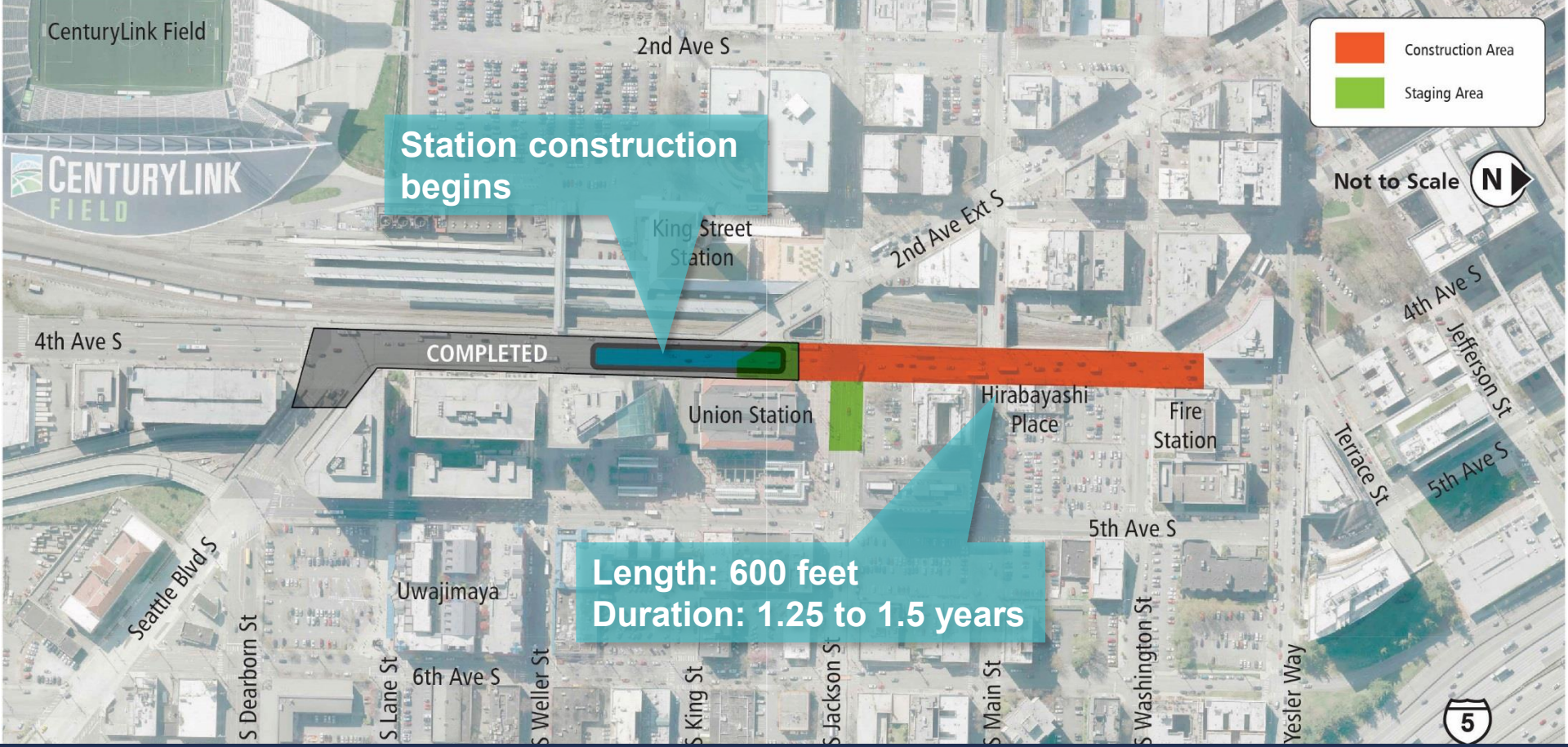


4th Ave Viaduct – section looking north



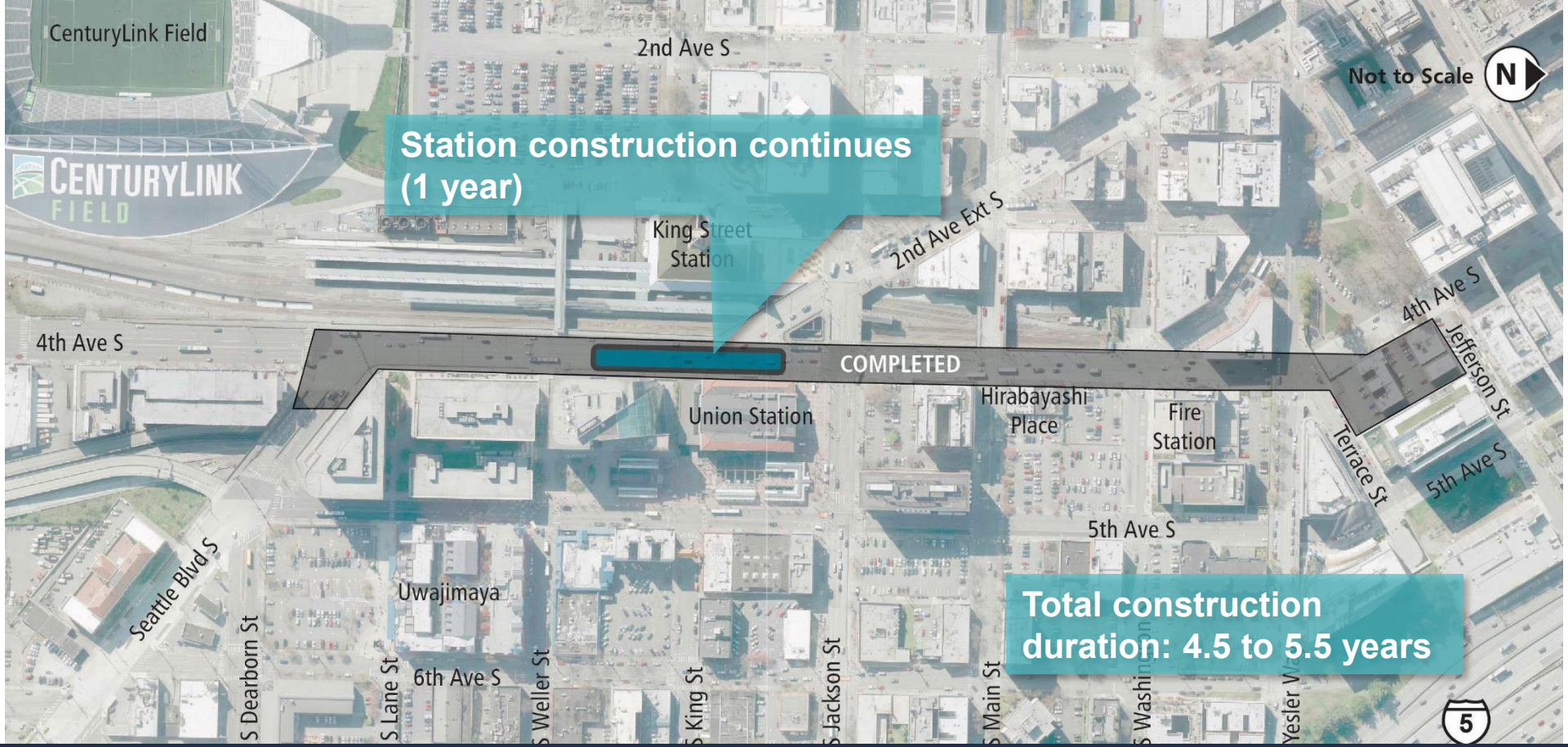
4th Ave Viaduct Rebuild – section looking north

4th Ave Cut-and-Cover construction Phase 1

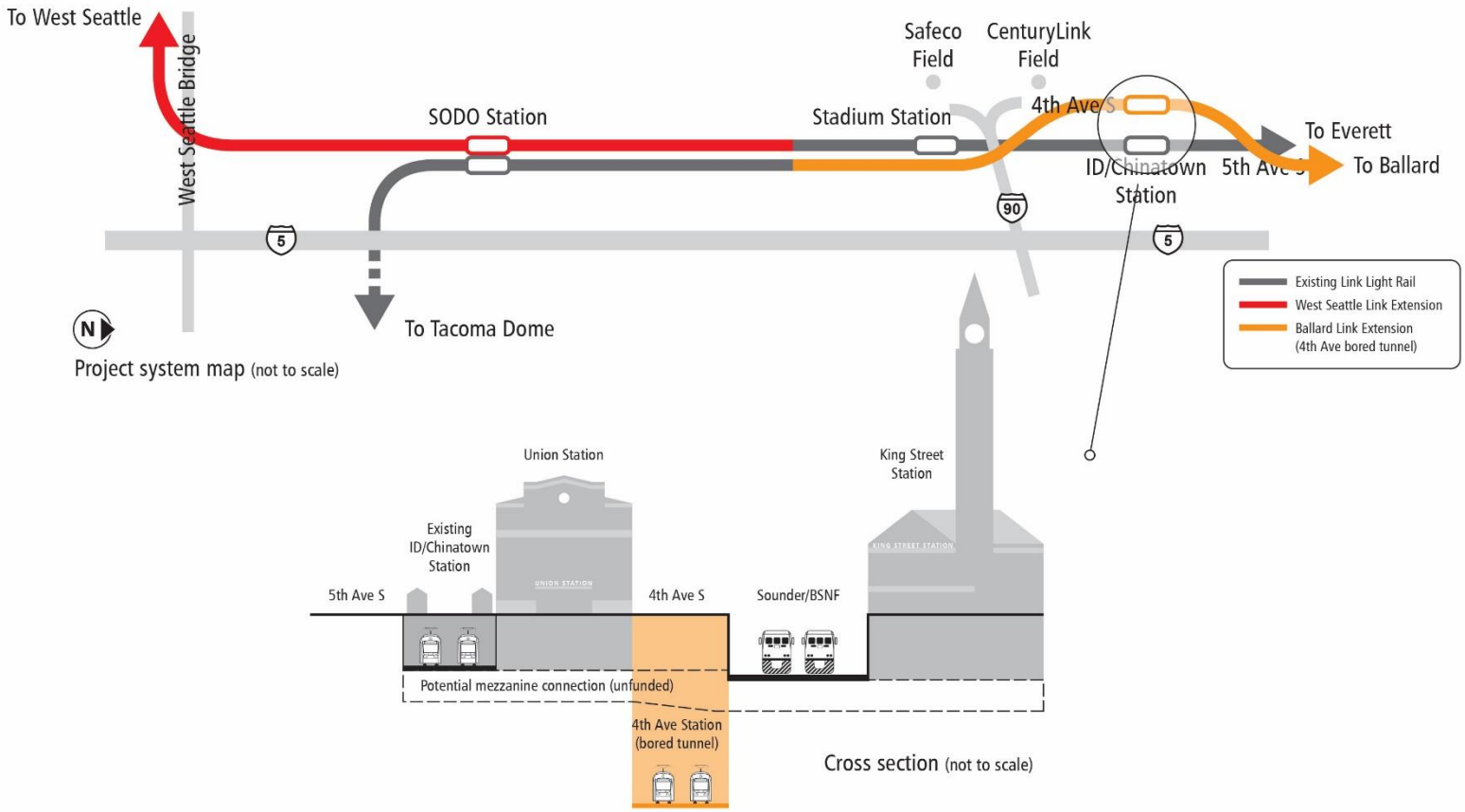


4th Ave Cut-and-Cover construction Phase 2

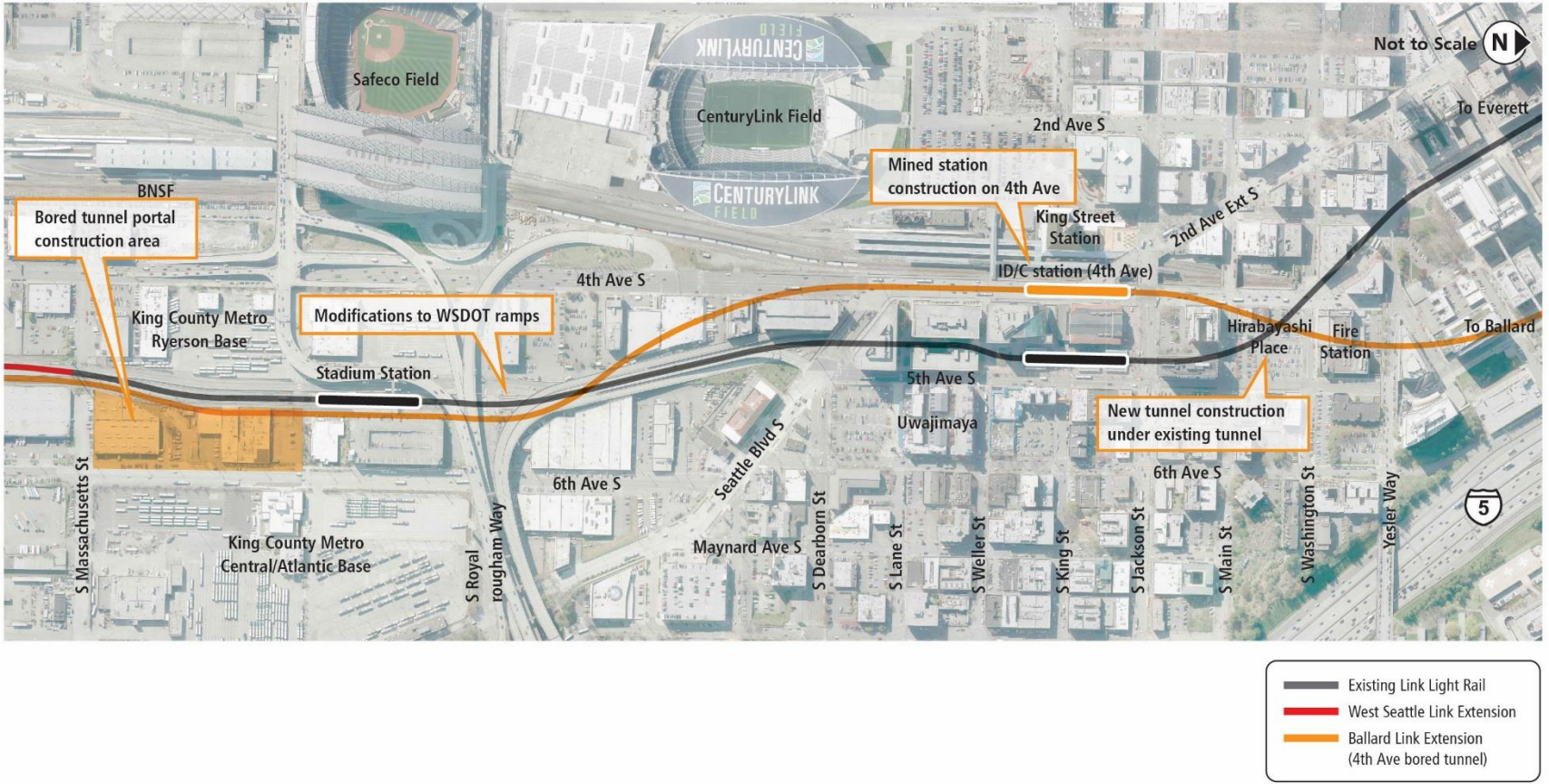
4th Ave Cut-and-Cover construction Phase 3



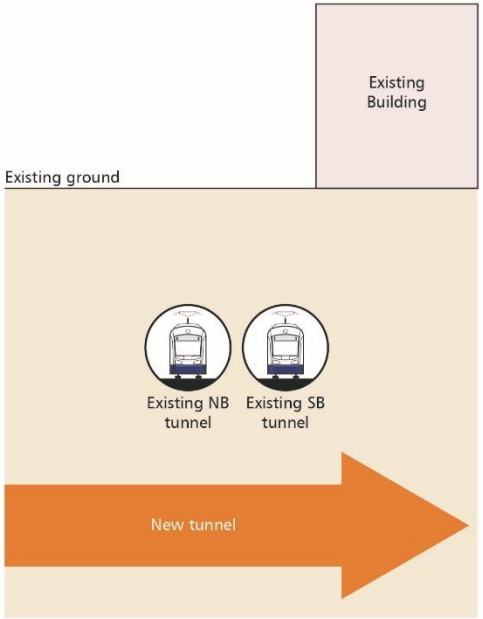
4th Ave Cut-and-Cover construction Phase 4

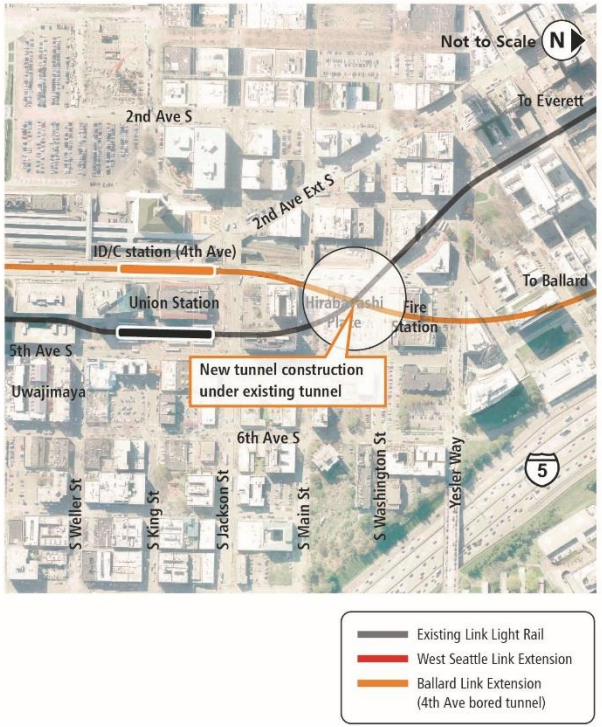


C-ID Station at 4th Ave S *Bored tunnel*

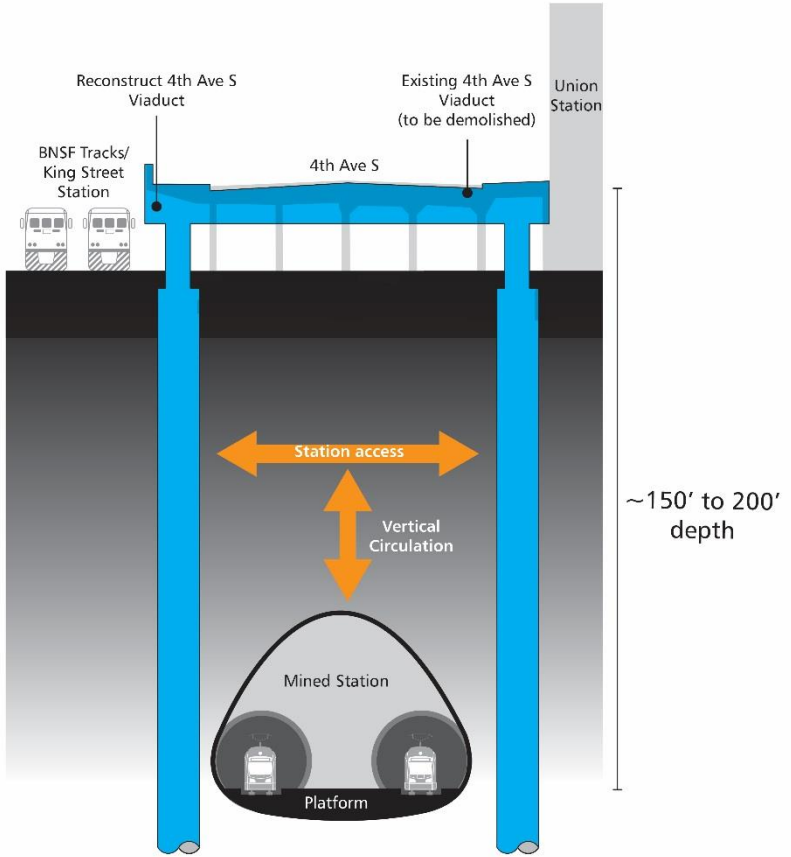


C-ID Station at 4th Ave S Bored tunnel

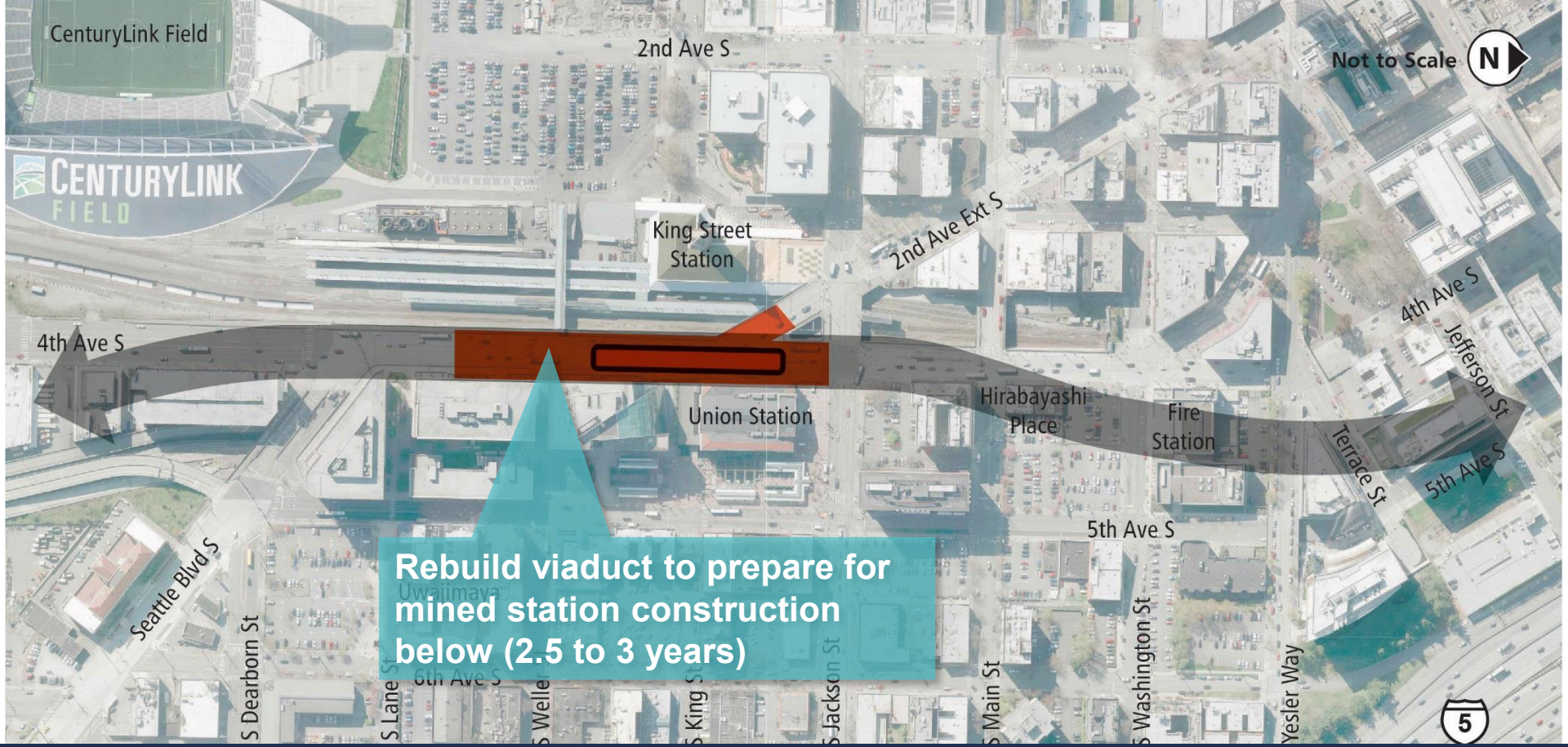




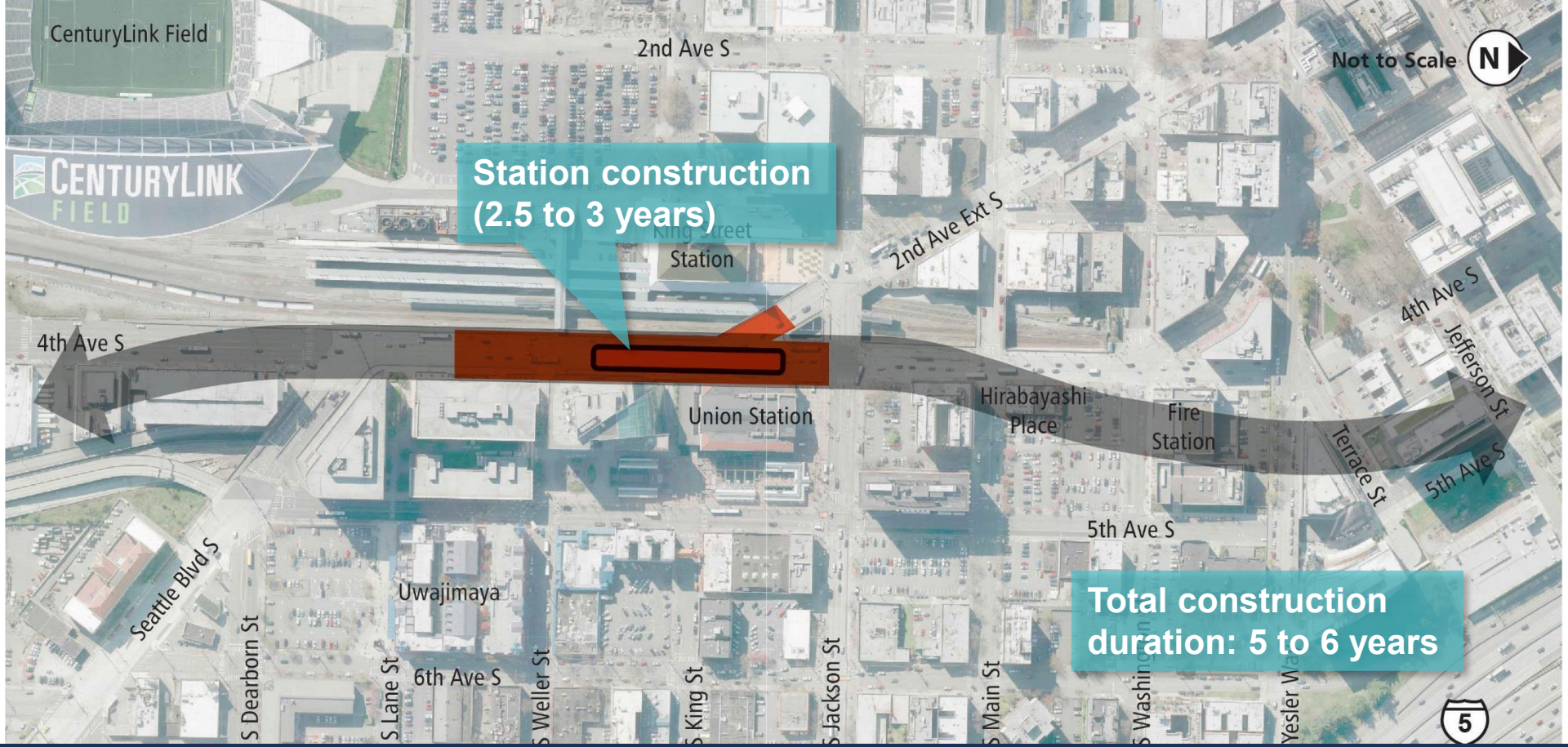
C-ID Station at 4th Ave S *Bored tunnel*



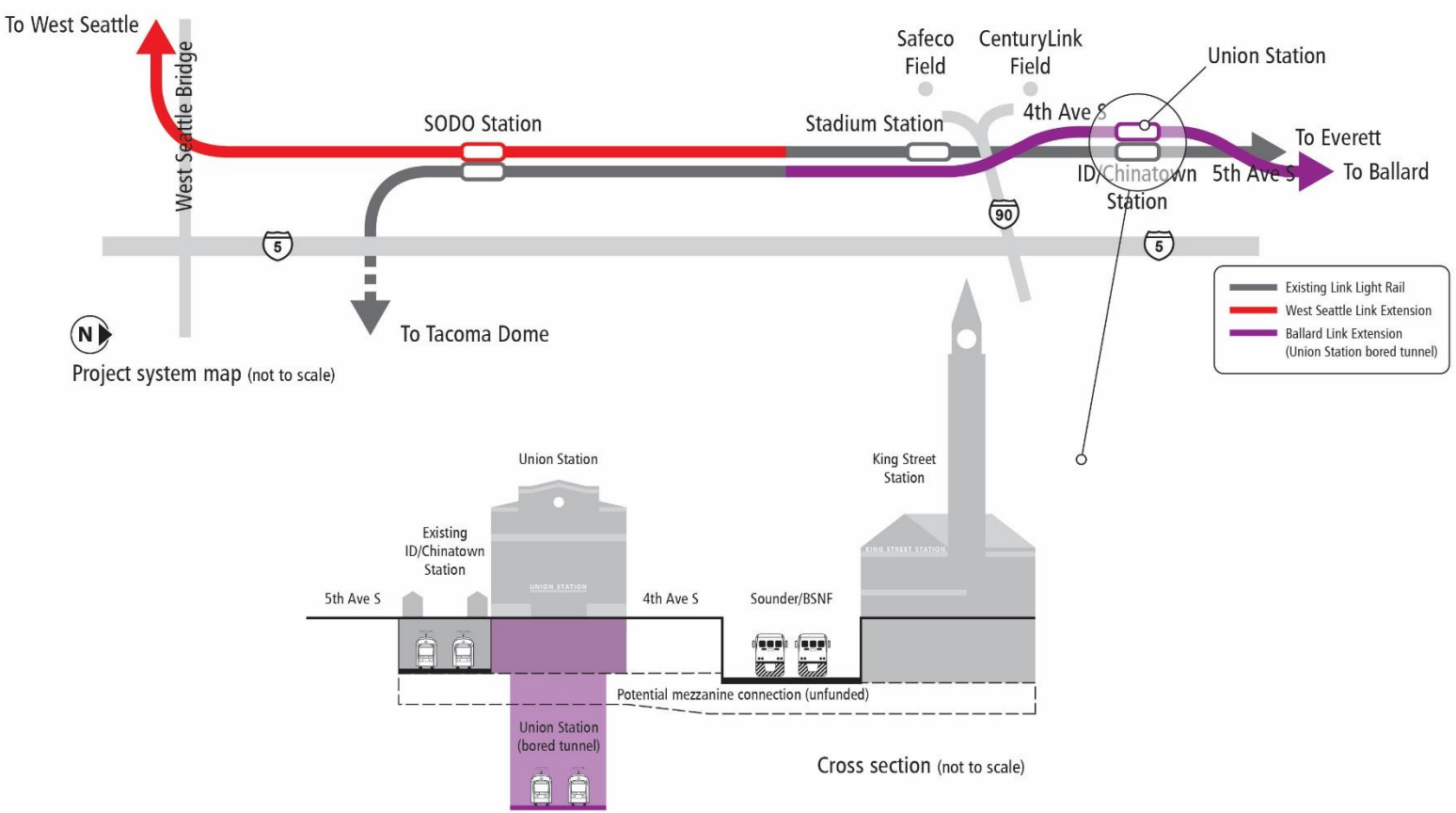
4th Ave Bored Tunnel Mined Station Construction



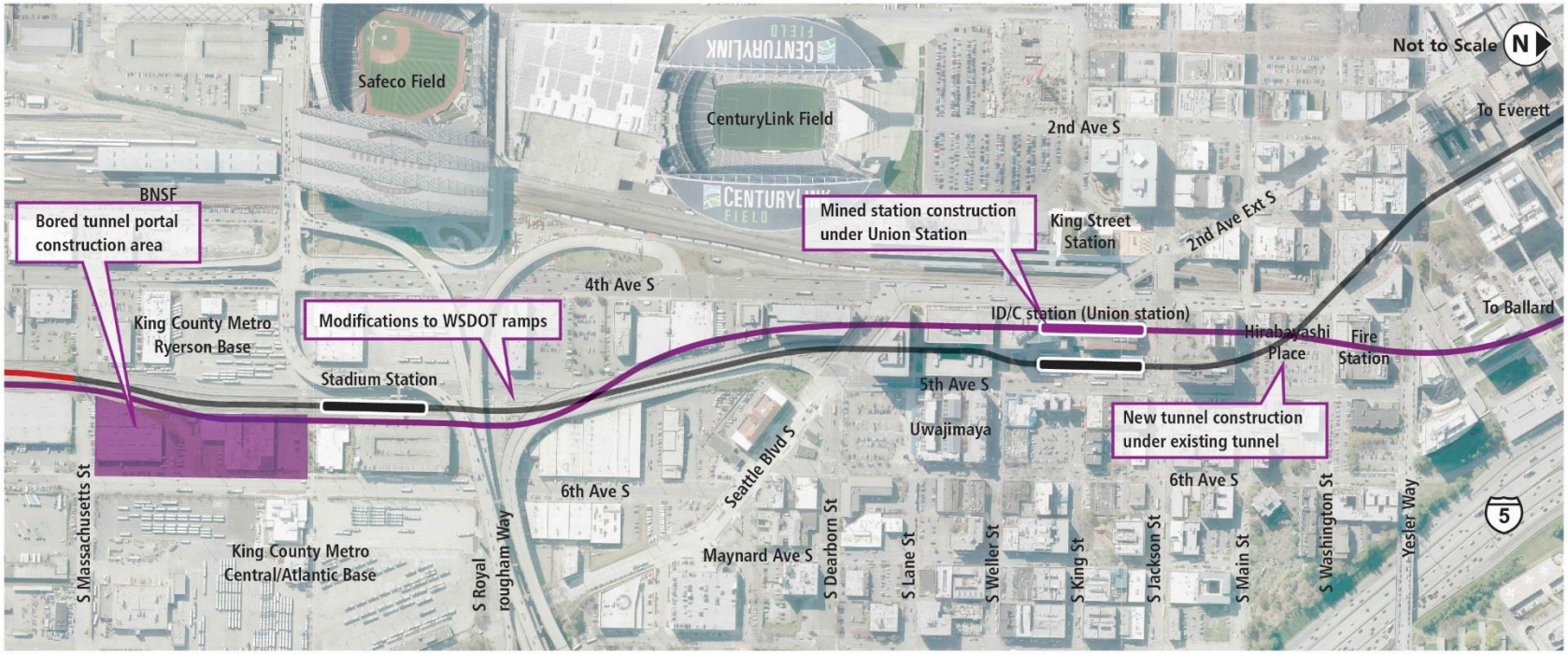
4th Ave Bored Tunnel – Construction Phase 1



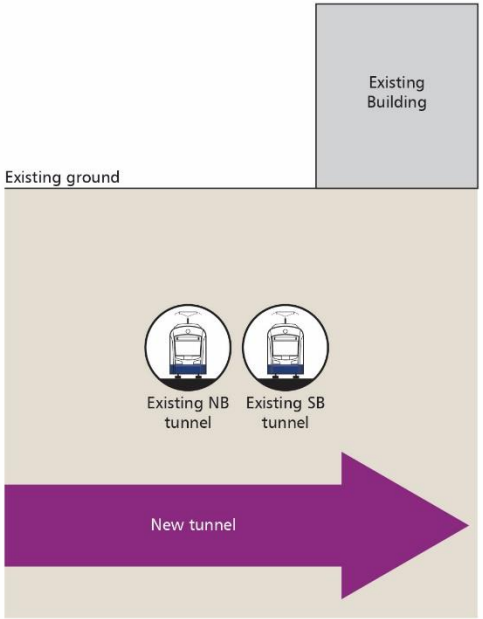
4th Ave Bored Tunnel – Construction Phase 2

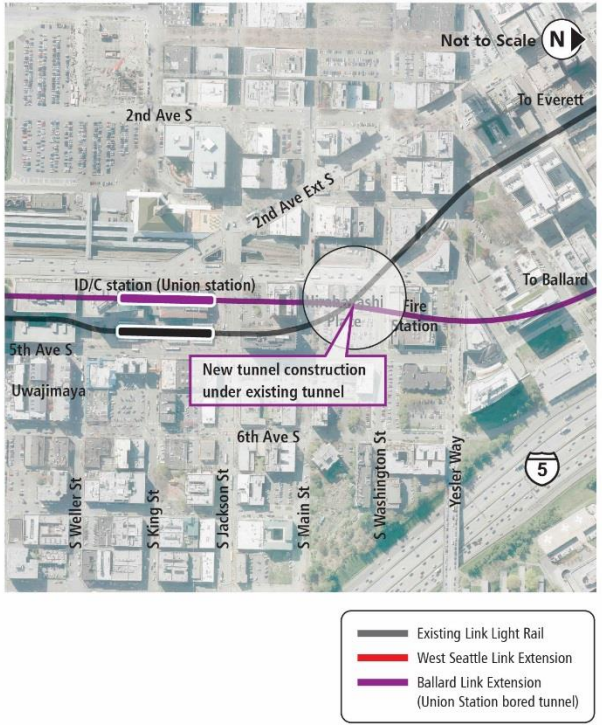


C-ID Station under Union Station Bored tunnel

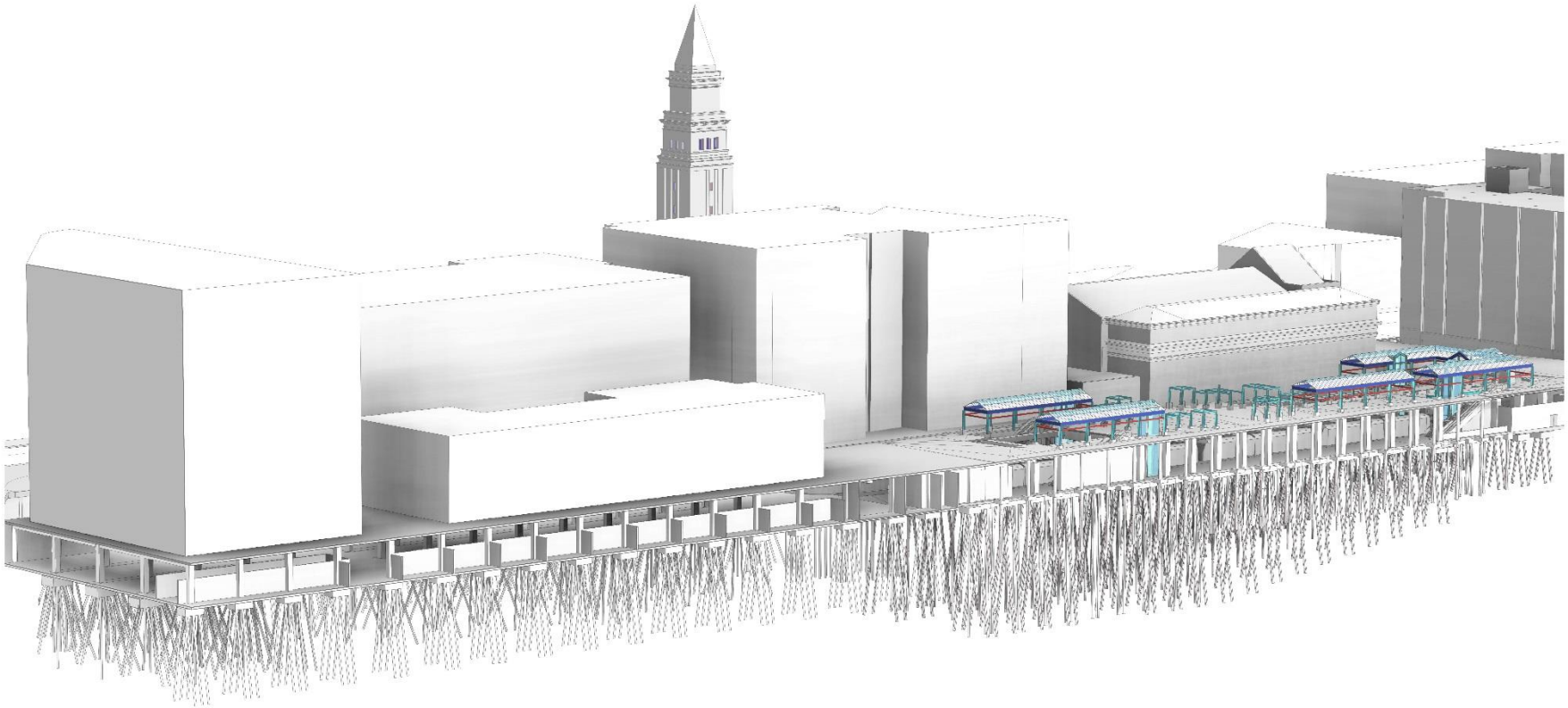


C-ID Station under Union Station Bored tunnel



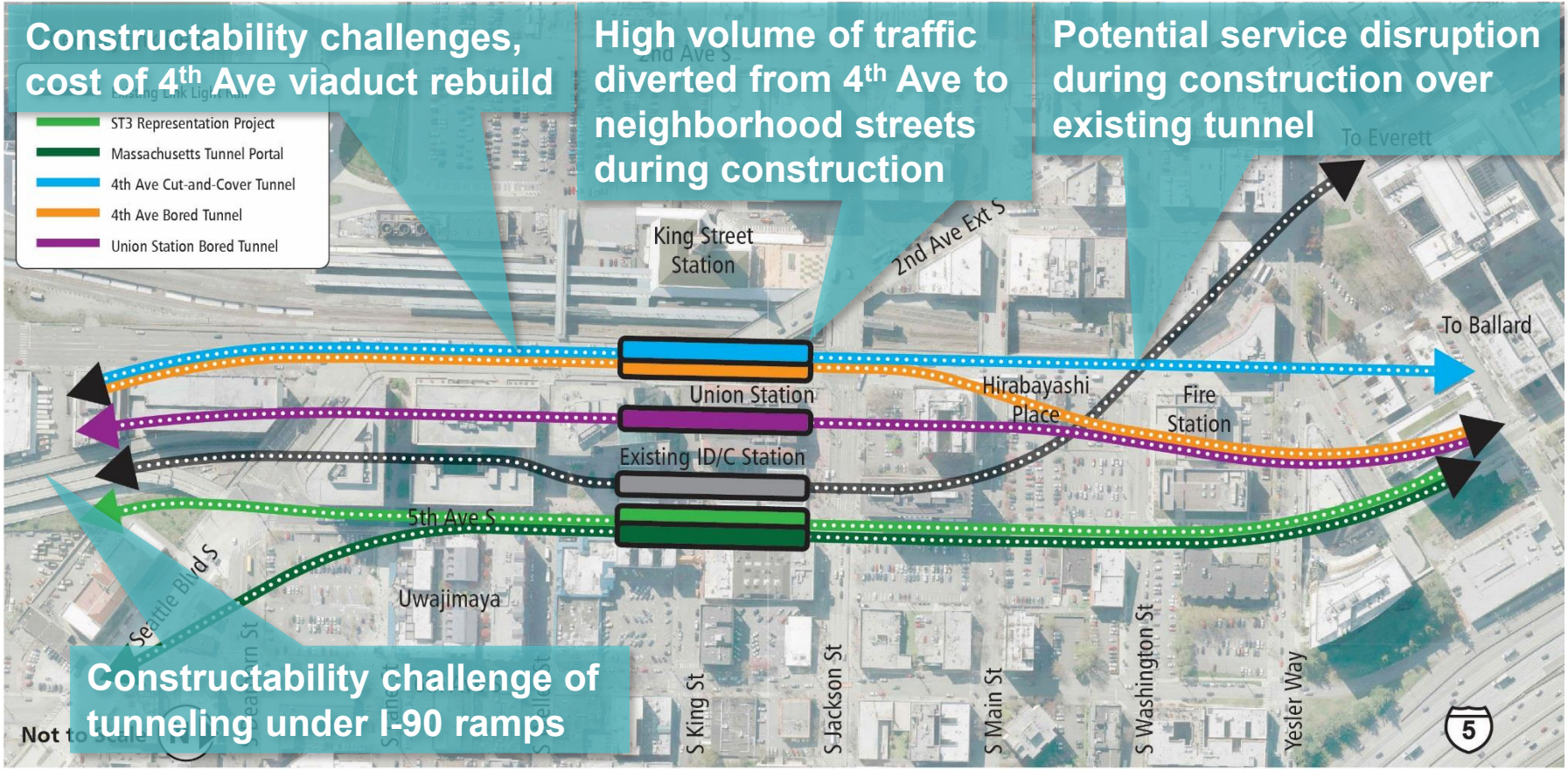


C-ID Station under Union Station Bored tunnel

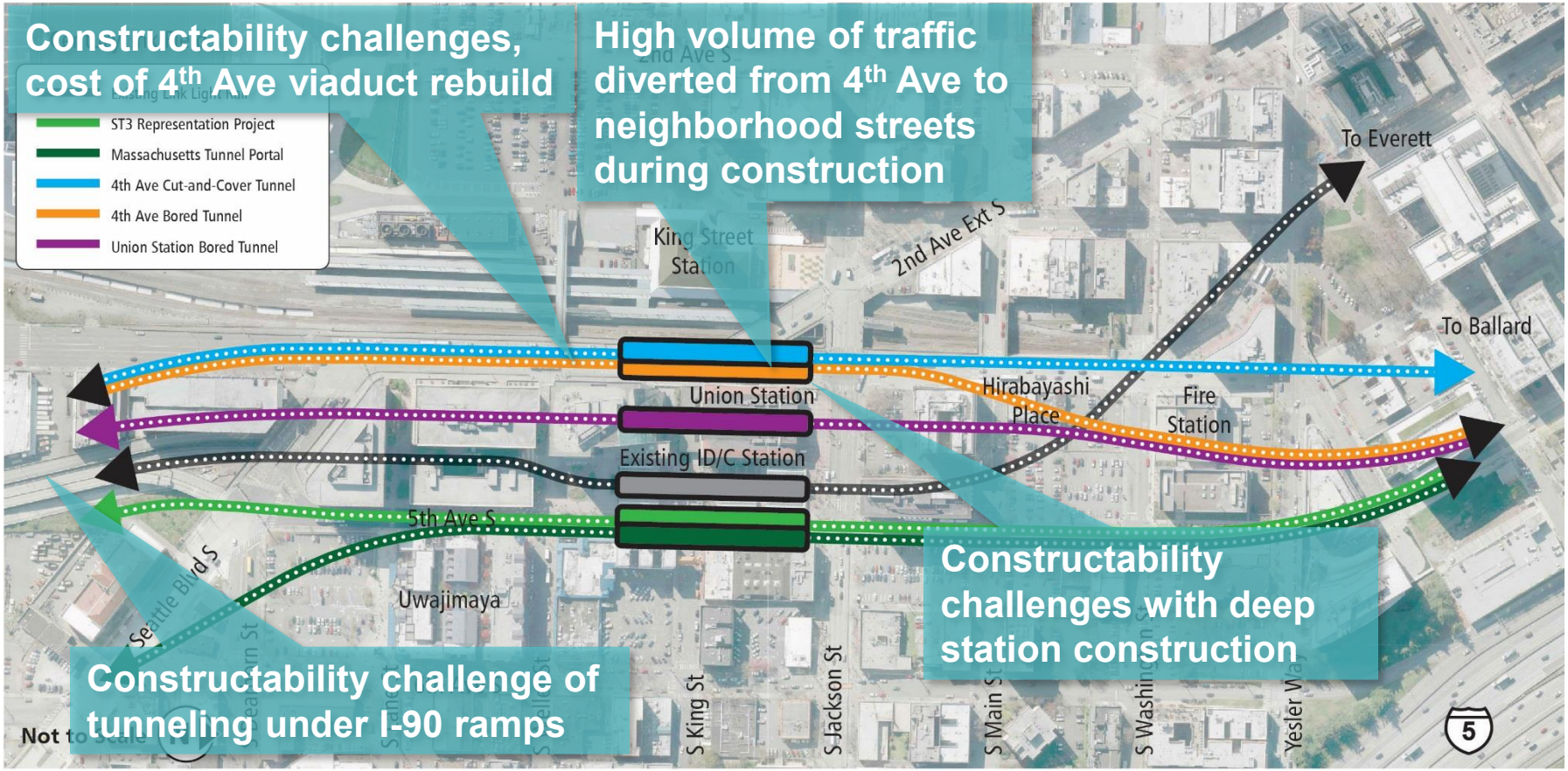


Conceptual drawing not to scale.

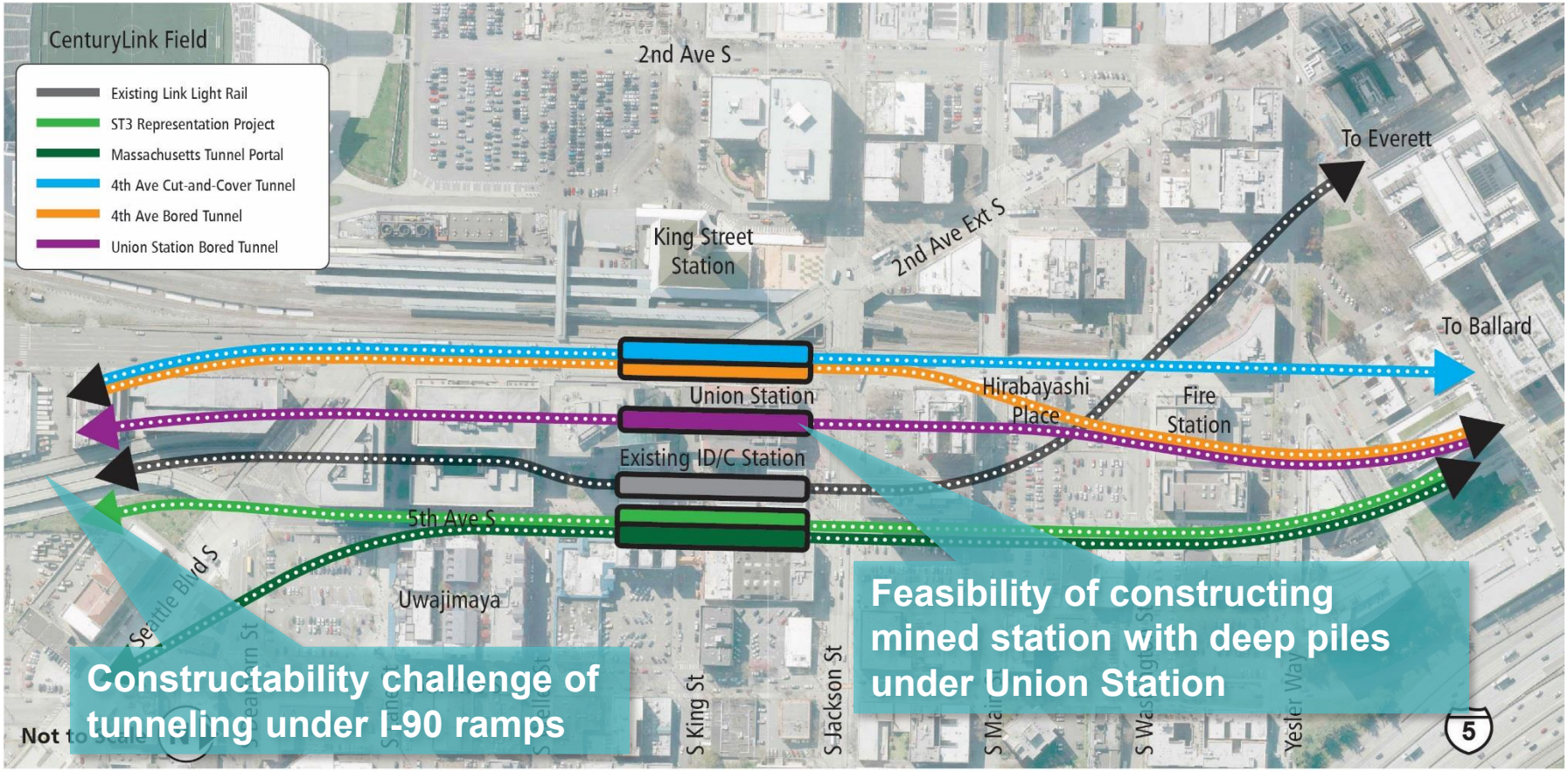
Piles under Union Station/IDS complex



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

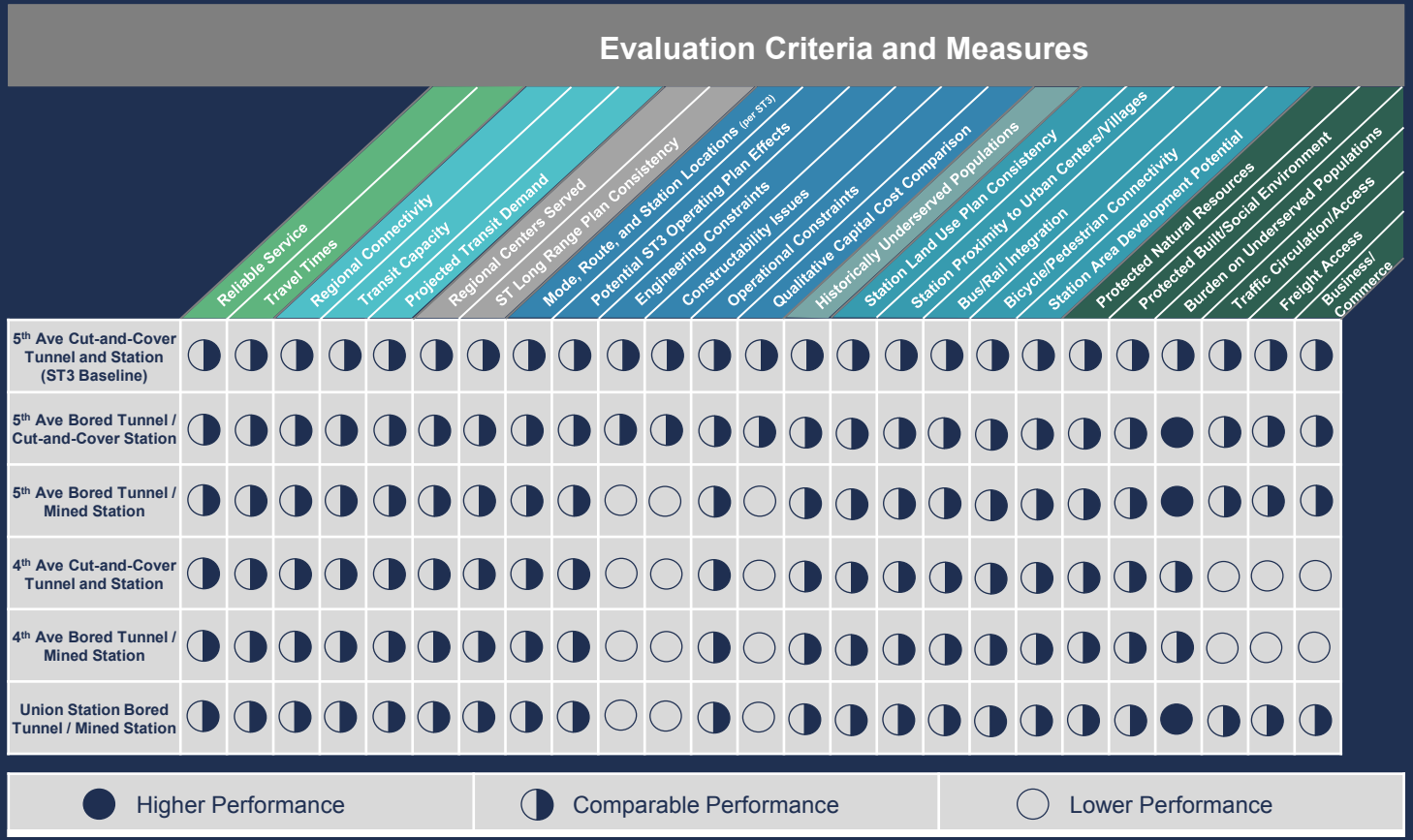


4th Ave Bored Tunnel – Key Findings

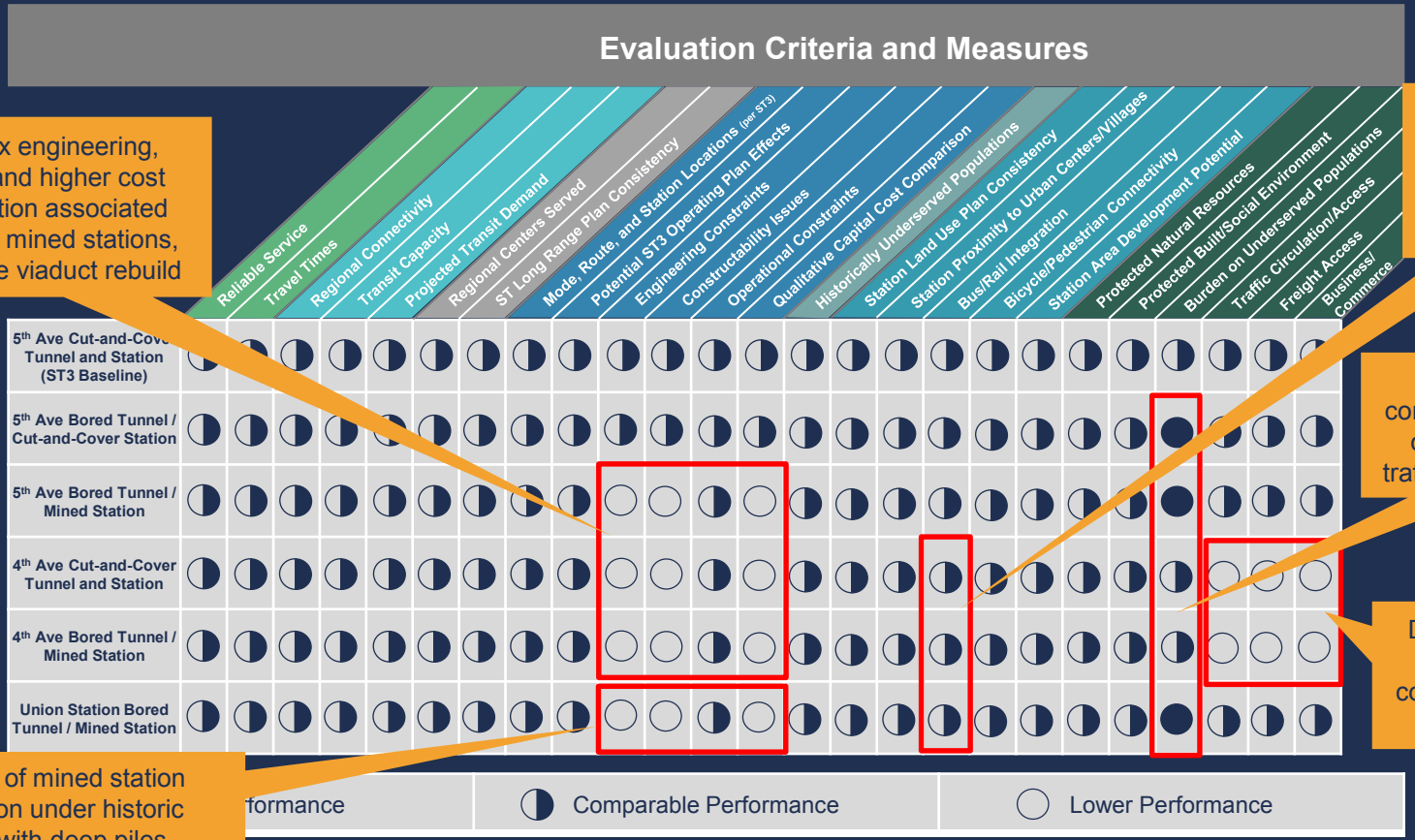


Union Station Bored Tunnel – Key Findings

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