

West Seattle and Ballard

Link Extensions

To: Stephen Mak, Sound Transit

From: HNTB

Prepared by: Seth Gallant, Mariel Kirschen, and Salima Hamlin

Date: January 24, 2023

Re: Ballard Extension Further Studies: Chinatown/International District (CID) Ideas

INTRODUCTION

On July 28th, 2022, the Sound Transit Board requested further studies and public engagement in some areas to inform potential additional future Board action to confirm or modify the Draft Environmental Impact Statement (EIS) Preferred Alternative for the Ballard Link Extension.¹ This memo focuses on the results of the further studies requested for the Chinatown/International District (CID) segment of the Ballard Link Extension.

Board Direction

Board Motion M2022-57 directed further study of the following in the CID segment:

- Further study and engagement between community and agency partners focused on the shallow CID station options. Alignment options will seek to collectively address remaining questions, minimize potential impacts and maximize community benefits through design, mitigation approaches and/or as part of broader partnerships.
- This work will include exploring how to create an integrated, well-connected hub for all modes of transportation, opportunities to enhance ridership and access, activation and/or modified uses of Union Station and the adjacent plaza, as well as funding and cost savings opportunities.
- The study should include concepts requested by community and agency partners, including, but not limited to, work to define a 4th Avenue shallow tunnel option with the goal of maximizing benefits while minimizing costs and impacts.

¹ West Seattle and Ballard Link Extensions Draft Environmental Impact Statement, January 2022, Sound Transit, <https://www.soundtransit.org/get-to-know-us/documents-reports/west-seattle-ballard-link-extensions-draft-environmental-impact-0>

Study Focus Areas

Based on the Board Motion, the following focus areas were developed to guide the further studies in CID:

- Include ideas requested by community and agency partners
- Minimize potential impacts to the CID neighborhood
- Maximize community benefits through design and mitigation approaches
- Explore how to create an integrated, well-connected hub for all modes of transportation
- Explore opportunities to enhance ridership and access, and for activation and/or modified uses of Union Station and the adjacent plaza
- Explore cost savings opportunities

This memo discusses the various ways the project team met the study focus through community workshops, identification of new ideas, and analysis of the further study ideas.

Community Workshops

To engage the community early, shape the further study scope, and inform the engagement process, the project team held a series of meetings during the study period:

1. **Kick-off Open House** (October 13, 2022) – Provided opportunity for feedback to shape the engagement approach and scope of the studies
2. **Workshop #1: Options** (November 2, 2022) – Reviewed ideas for further study and began a discussion of opportunities and challenges with community
3. **Workshop #2: Tradeoffs** (November 16, 2022) – Began discussion of tradeoffs and potential refinements
4. **Workshop #3: Key Issues** (December 14, 2022) – Engaged in problem-solving around key issues and potential mitigation approaches
5. **Workshop #4: Summary** (January 5, 2023) – Summarized findings and began collecting feedback for the Sound Transit Board

For a summary of the materials shared at the workshops, see the [Workshop #4 Meeting Materials](#).² In addition, this series of community workshops was augmented by two online surveys, community briefings, meetings, tours and outreach to businesses and residents.

² West Seattle and Ballard Link Extension Further Studies CID Workshop #4 Meeting Materials, January 2023, <https://oohwsblink.blob.core.windows.net/media/Default/pdfs/AE%200036-17%20CID%20Further%20Studies%20Workshop%204%20Meeting%20Materials%20EngTChn.pdf>

Further Study Ideas

To meet the study focus of including ideas requested by community and agency partners, the Kick-off Open House and online survey provided an opportunity for the public to share ideas for potential refinements to the *Draft EIS 4th Avenue Shallow Alternative (CID-1a)* and other locations for a station outside of CID. Based on the Board direction and input from community, the project team identified the following refinements and ideas for further study:

1. Refinements to CID-1a, including:
 - Refinements to minimize construction impacts
 - Methods to reduce costs and construction duration
 - Strategies to minimize or avoid residential displacements to ICON building
 - Strategies for detour routes and maintaining access during construction
 - Relocate ventilation shaft/emergency egress away from Union Station building
 - A lid over BNSF tracks for traffic detours
 - Sounder to Link pedestrian tunnel
 - Public realm opportunities
 - Explore a shallower station
2. New alignment and station locations not previously studied in the Draft EIS, including:
 - An alignment with a new station North of the proposed station in CID
 - An alignment with a new station South of the proposed station in CID
 - An alignment with both a new station North of the proposed station in CID and a new station South of the proposed station in CID

Summary

Figure 1 summarizes the key findings from an exploration of refinements to CID-1a. Figure 2 summarizes the key findings from further study of new alignment and station locations not previously studied in the Draft EIS. More details on each of the further study ideas are provided in the body of this memo. Costs are shown as a change from the Sound Transit 3 Plan as represented in the realigned financial plan.

Figure 1 Summary of Refinements to the Draft EIS 4th Avenue Shallow (CID-1a) Alternative

Idea	Key Findings
Methods to reduce construction impacts	A range of strategies would be implemented to minimize effects related to noise, visual, dust, and roadway closures.
Methods to reduce cost and construction duration	Eliminating temporary viaduct construction for 4th Avenue reduces duration of partial roadway closures by one year. Proposing a different type of support of excavation would potentially reduce risks when working adjacent to BNSF but adds one year to overall construction duration (up to 12 years).
Strategies to minimize residential displacements to ICON Building	Temporary decking during construction in front of the ICON Building reduces temporary displacement of residents from 4 years to two periods of two months each.
Strategies for detour routes and maintaining access during construction	Substantial traffic would need to divert elsewhere during construction due to closures on 4th Avenue, Jackson Street, and Main Street. With mitigating measures to divert traffic, drivers could experience up to 15 minutes of added delay along 4th Avenue; the addition of traffic onto parallel routes would exacerbate congestion on those corridors, potentially including some roadways in the CID and Pioneer Square neighborhoods. Various strategies can be used to reduce these effects. Sidewalk detours create 5 to 10 minutes of additional walk time. About 100 bus routes may use alternate routes in peak hour. Streetcar service truncated at 5th and Jackson Street.
Relocate ventilation shaft/emergency egress away from Union Station Building	Vent and emergency egress locations could be located outside of Union Station and plaza area and designed to integrate with area.
Lid over BNSF tracks for traffic detours	A lid over BNSF tracks is not practical due to interruptions to BNSF, Amtrak, and Sounder operations; inability to provide continuous roadway; and an increase in construction duration and cost.
Sounder to Link Pedestrian Tunnel	Pedestrian tunnel connection between Sounder and Link platforms not practical due to insufficient Sounder platform width to accommodate vertical circulation, poor soils resulting in much deeper tunnel, building effects, and requires temporary shutdown of existing station in CID due to underground structure conflicts.
Public realm opportunities	Opportunities to enhance public spaces within the station area include activation of Union Station, sidewalk and streetscaping improvements, and addition of open space on a lid structure spanning over the existing railroad tracks.
Explore a shallower station	Station platform depth can be reduced by 35 feet with increased construction effects and cost; Connecting to a shallower CID 4th Avenue Shallow Station reduces Midtown Station depth by about 55-60 feet to 140-145 feet.

Figure 2 Summary of Further Studies of New Alignment and Station Locations

Idea	Key Findings	Cost Change compared to realigned financial plan (in 2019\$)
<p>Station North of CID</p>	<ul style="list-style-type: none"> • Idea would have the following effects on station access and passenger experience: <ul style="list-style-type: none"> • Station would be within a 10-minute walk of CID, Pioneer Square, Colman Dock, and south end of Downtown/Midtown Seattle • Station provides transfer within fare paid zone between 1, 2, and 3 Lines via underground walkway. Transfer to Sounder via 12 minute at-grade walk or transfer to 2 and 3 Line • Additional three minutes of out-of-direction travel time for passengers transferring between the 1 Line and 2/3 Lines. • Consolidates stations in Midtown and CID • Platform depth about 80 to 105 feet • Located near key node of citywide bike network. Bi-level entrance could serve walking and biking route to Yesler Terrace and CID. Could integrate with bus routes serving First Hill, hospitals, and Central District • Idea would have the following construction effects: <ul style="list-style-type: none"> • Avoids direct displacements in CID neighborhood due to station construction • Construction truck traffic would use main arterials • Results in full closure of James Street between 3rd and 4th Avenues for four years and a part of Jefferson Street for 6 years. Closure of east curb lane along 4th Avenue between Terrace Street and James Street • Results in displacement of King County Administration Building and other historic properties that house social services • Idea would have the following development and public realm opportunities: <ul style="list-style-type: none"> • Increased potential for equitable Transit Oriented Development (eTOD) on existing publicly owned property • Opportunity for partnerships on additional or reconfigured existing station entrances to improve public safety 	<p>-\$364 million</p>

<p>Station South of CID</p>	<ul style="list-style-type: none"> • Idea would have the following effects on station access and passenger experience <ul style="list-style-type: none"> • Station would be within a 10-minute walk of existing CID station, Lumen Field, T-Mobile Park, and northern CID • Does not provide transfers within fare paid zone between 1, 2, and 3 Lines. Station only provides direct service to 1 Line. Transfers to 2 Line, 3 Line and Sounder can be made via a 10-minute walk at street level to existing CID and Sounder stations. Transfers to 3 Line can also be made via a 5-minute walk at street level to Stadium station. Alternatively, transfers from 1 Line to 2 and 3 Lines can be made at Westlake Station • Additional 3 to 5 minutes of out-of-direction travel time for passengers transferring between the 2 Line and areas south on the 1 Line • Platform depth of about 95 to 115 feet • Idea would have the following construction effects: <ul style="list-style-type: none"> • Avoids direct displacements in CID neighborhood due to station construction • Construction truck traffic would use main arterials • Potential conflict with high pressure gas line and planned Seattle City Light high voltage power line on 6th Avenue S • Results in closure of 6th Avenue S between Seattle Blvd S and Royal Brougham Way S for 5-6 years (currently closed) which has fewer overall traffic and road closure implications • Idea would have the following development and public realm opportunities: <ul style="list-style-type: none"> • Potential to incorporate station entrance into potential future eTOD with affordable housing and retail and to partner on potential future development in the area. • Opportunities for a station entrance closer to CID with new public space and creative street and plaza design • Opportunity for new or improved connections from existing light rail and Sounder station to new station 	<p>+\$84 million</p>
<p>Station North of CID and Station South of CID</p>	<ul style="list-style-type: none"> • Provides benefits and challenges of both the Station North of CID and Station South of CID, including: <ul style="list-style-type: none"> • Station provides transfer within fare paid zone between 1, 2, and 3 Lines via underground walkway. Transfer to Sounder via 12 minute at-grade walk or transfer to 2 and 3 Line • Additional three minutes of out-of-direction travel time for passengers transferring between the 1 Line and 2/3 Lines • Avoids direct displacements in CID neighborhood due to station construction • Displaces King County Administration building and social services • Presents eTOD and public realm opportunities 	<p>+\$157 million</p>

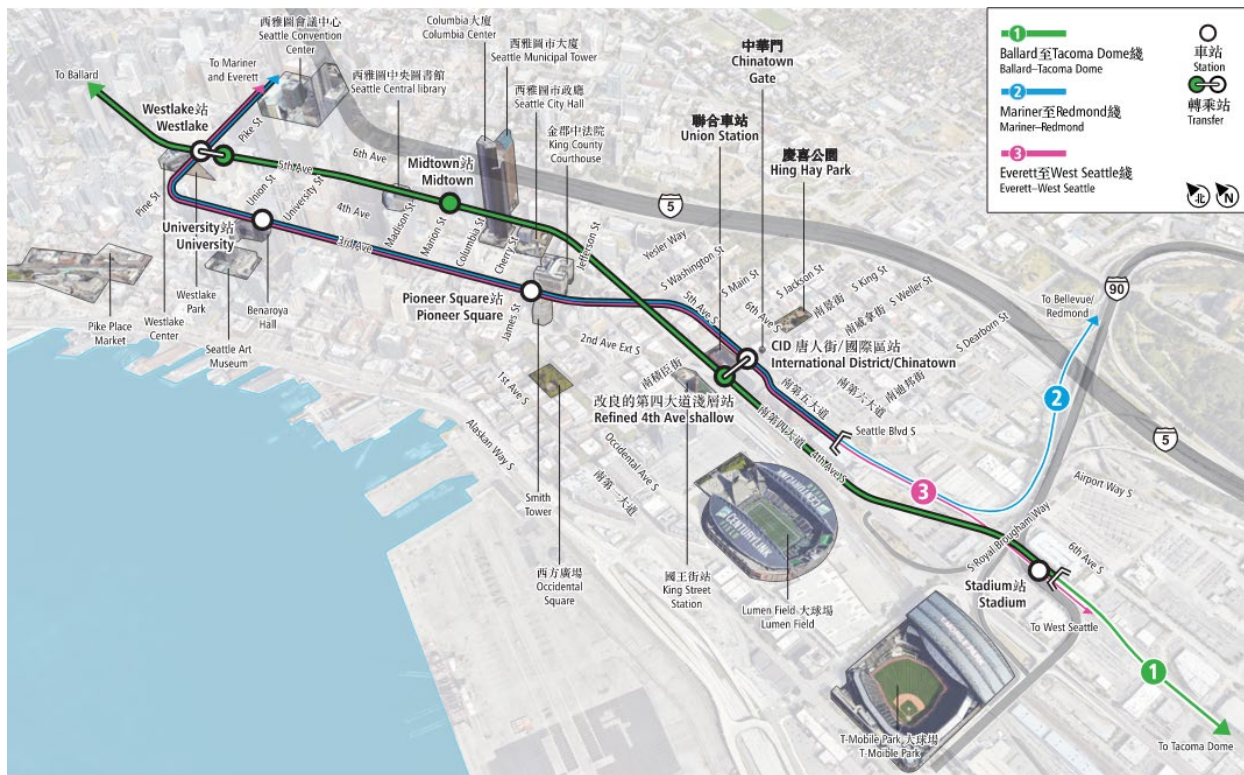
CID FURTHER STUDIES RESULTS

This section of the memo addresses the refinements to CID-1a and defines each of the ideas and presents the results for each of the CID further studies.

Refinements to the Draft EIS 4th Avenue Shallow (CID-1a) Alternative

To address the study focus and the Board’s direction, the project team explored a variety of refinements to CID-1a based on feedback from the community. Figure 3 shows a map of the alternative as shown in the Draft EIS, including the connection to the Downtown Segment. Each refinement is studied independent of the others; if refinements were to be combined, they would need to be further evaluated to determine any conflicts.

Figure 3 4th Avenue Shallow (CID-1a) and Midtown Station



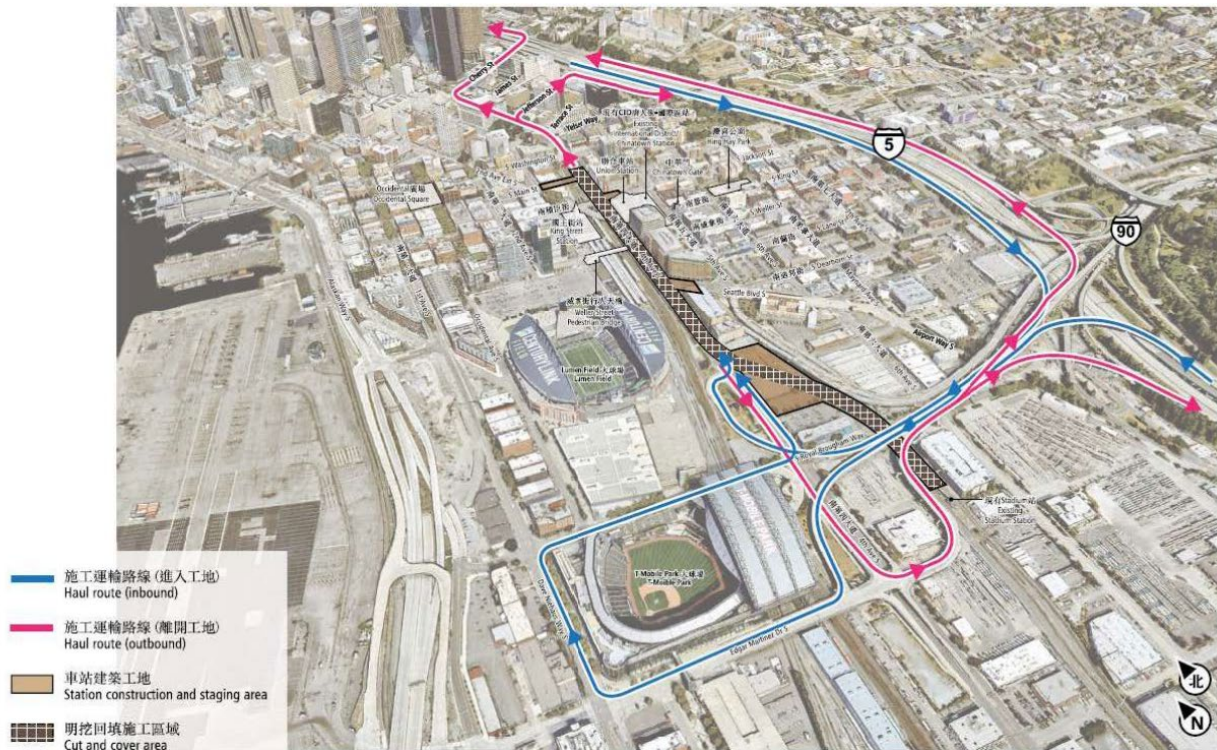
Methods to reduce construction impacts

To address the Board’s direction, the project team presented several construction methods to reduce construction effects to the CID neighborhood and adjacent properties to the community, including those captured in the Draft EIS under Noise and Vibration Technical Report Section 7.2, Chapter 3 Transportation Environment and Consequences Section 3.19.7, and in Appendix L4.6F Air Quality. The results of further studies on the ideas below were shared with the community:

- **Temporary roadway decking:** During cut-and-cover excavation, concrete decking would be utilized to cover the work area so that roadways, access to adjacent buildings, and sidewalks can be kept open longer while work continues below ground.

- **Impacts to BNSF:** As part of the Draft EIS comments, BNSF raised questions about the construction feasibility of the CID-1a concept. The risk of soil movement during construction would have to be addressed to support the excavation adjacent to the BNSF tracks and the methods available to manage this risk could extend the construction duration. Possible approaches, including changing the support of excavation method from slurry walls to secant piles, could extend the overall construction duration by one year and would need to be reviewed by BNSF.
- **Sound walls and barriers:** To the extent possible, the construction area would be enclosed behind barrier walls to reduce construction noise.
- **Temporary art / creative construction screening:** Sound walls enclosing the construction area can be used for murals or other creative purposes.
- **Low-noise equipment:** There is a wide range of construction equipment available that creates less noise than is typical, including high-grade exhaust silencers and/or engine shrouds. Noisy equipment can also be enclosed in sound-rated enclosures to reduce noise in the surrounding neighborhood.
- **Limiting construction work hours to daytime:** Construction could be limited to daytime hours minimizing noise-creating activities outside of the hours allowed by the City's noise ordinance.
- **Phased construction closures:** Roadway closures can be phased to minimize disruption and maintain access to adjacent properties.
- **Access management:** Restricting the core of CID to business and local access only can discourage through traffic, as can turn restrictions and/or traffic diverters.
- **Cover truck loads:** Trucks delivering materials or removing tunneling spoils can be required to have their loads covered.
- **Dust removal:** Exposed dirt can be sprayed with water to reduce airborne dust.
- **Truck wheel washing:** Trucks tires can be sprayed to remove mud and dirt before leaving the construction site.
- **Haul routes:** As shown in Figure 4, the haul routes would use major truck routes, arterials, and highways to and from the construction site.
- **Impacts to BNSF:** As part of the Draft EIS comments, BNSF raised questions about the construction feasibility of the CID-1a concept. The risk of soil movement during construction would have to be addressed to support the excavation adjacent to the BNSF tracks and the methods available to manage this risk could extend the construction duration. Possible approaches, including changing the support of excavation method from slurry walls to secant piles, could extend the overall construction duration by one year and would need to be reviewed by BNSF.

Figure 4 CID-1a Construction Staging Area and Haul Routes:



Methods to reduce cost and construction durations

The project team explored ways to reduce project cost and the duration of construction in the CID neighborhood. One of the impacts of the Draft EIS CID-1a is a long-term partial closure of 4th Avenue to reconstruct the 4th Avenue viaduct and the station in CID. The Draft EIS assumes installation of temporary decking of the viaduct followed by permanent decking. A refined approach would eliminate the need for temporary decking by going straight to permanent decking, thus reducing the partial closure duration between the I-90 off-ramp and S Jackson Street from six- to five-years.

In this case, however, this would not reduce the overall station construction duration. For the CID-1a concept, it is not practical to temporarily deck over 4th Avenue North of Jackson Street to reduce the 4-year closure. Instead, cut-and-cover construction is assumed because of the complex roadway structure north of Jackson Street, proximity to BNSF, a need to retrieve construction materials from the north, construction staging area needs, and schedule constraints.

Additionally, the team looked at having construction crews working around the clock and seven days a week, to reduce construction duration. This schedule does not usually produce major time savings, but often causes problems, such as:

- Crew fatigue – after an extended period crews become fatigued, resulting in mistakes and safety concerns.
- Noise nuisance at night – noise carries further at night and is more noticeable because other background noise is less, and because residents are trying to sleep.

- Sunday noise nuisance – if there is no break in construction, the noise and activity becomes increasingly annoying to nearby residents.
- Truck traffic is not usually allowed at nights or on Sundays/Holidays, reducing the benefit of working longer hours.
- Permissible noise limits at night are lower than during the day (even with a noise variance), so the range of activities that can be done at night is limited, reducing the benefits of the extra work hours.

Finally, the project team studied five construction method ideas brainstormed by a consultant to the Board’s Technical Advisory Group to potentially reduce cost and construction durations. Figure 5 summarizes the findings from the study of the methods.

Figure 5 Review of Methods to Reduce Cost and Construction Durations

Construction Method Idea	Key Findings
<p>Case 1: Top-down construction with new viaduct The concept involves eliminating the temporary decking and going straight to permanent decking by using Soldier Pile Tremie Concrete (SPTC) slurry walls with cross-bracing for support of excavation.</p>	<ul style="list-style-type: none"> • Challenges include slurry wall construction adjacent to BNSF and construction of staged deep temporary cross brace support. • The construction of staged deep temporary cross brace support is deemed not practical. A project team refinement would be to use permanent deep foundations for viaduct replacement and use secant piles instead of slurry walls. By eliminating the temporary structure, it would reduce the partial roadway closure between I-90 off-ramp to S Jackson Street from six years to five years. It could potentially reduce cost due to the elimination of the temporary structure; however, the secant pile would add to the cost and overall construction schedule.
<p>Case 2: Top-down construction with existing viaduct The concept involves maintaining the existing viaduct structure and transferring the loads permanently to SPTC walls constructed below the existing viaduct.</p>	<ul style="list-style-type: none"> • Challenges include: the long-term performance of the existing viaduct; limited availability and limited space for low headroom slurry wall equipment; increased construction duration and associated costs; slurry wall construction adjacent to BNSF tracks; the need for a deep transfer beam that would push track and station deeper, extending the vertical circulation; and disruption to Link operations due potential future replacement of viaduct over an active station. • This concept was deemed not practical due to limited availability and limited space for low headroom equipment and the risk to the existing viaduct and long-term viaduct performance.
<p>Case 3: Retained cut with viaduct canopy</p>	<ul style="list-style-type: none"> • The concept is deemed not practical as an open cut trench configuration is not applicable with the viaduct over the station.
<p>Case 4: Station and track at-grade The concept would mirror the existing station in CID</p>	<ul style="list-style-type: none"> • The concept is deemed not practical due to undesirable circulation and the need for an enclosed station adjacent to BNSF. Emergency ventilation and smoke storage would be required over the track, noise and diesel fumes from railroad operations can enter the platform, and a crash wall would be required adjacent to BNSF.
<p>Case 5: Optimize profile Concept was to reduce clearance requirements above or below DSTT and increase maximum grade (6 to 7%) for approach to DT-1 Midtown Station</p>	<ul style="list-style-type: none"> • In response to community feedback, a shallower station going over the DSTT was already explored by the project team and is discussed under the “Explore a Shallower Station” section of this memo. It results in similar station construction duration but increases the cost of CID -1a by \$100 million and affects the King County Administration Building and historic buildings that house social services. • For constructability purposes, the tunnel grades control the track profile and are within the desirable 5% grade; in addition, the depth of Midtown Station is not controlled by profile grade but by adjacent building foundations.

Strategies to minimize residential displacements to ICON Building

Due to the cut-and-cover construction of 4th Avenue S, CID-1a would disrupt vehicular and pedestrian access to the ICON Apartment Building during construction. This disruption would include service access to garbage and recycling, as well as fire access and these restrictions would require that all residents of the building be displaced for four years.

To minimize the duration of residential displacement, the project team identified temporary decking as a strategy to allow temporary access to the building. The decking would lie over a short and narrow segment of the construction between S Main Street and S Jackson Street. This decking could potentially reduce the period of displacement from four years to two periods of two months each. This would potentially increase the overall construction duration and result in a need to stagger the work on S Jackson Street. The concept would need to be confirmed and reviewed by the City.

Strategies for detour routes and maintaining access during construction

Today, 4th Avenue S is a principal arterial providing access between downtown Seattle and the south and carries approximately 30,000 vehicles per day. CID-1a would require three primary phases of 4th Avenue S roadway closure during construction:

- **Partial closure (east):** The east side of 4th Avenue S would be closed for approximately three years between the I-90 off-ramp and S Jackson Street while the west side is being constructed (this includes approximately two years initially and one year at the end of construction period). The I-90 off-ramp would remain open. One lane northbound and one lane southbound on 4th Avenue S would remain open. Pedestrian access across 4th Avenue S at the Weller Street Bridge would be closed.
- **Partial closure (west):** The west side of 4th Avenue S would be closed for approximately three years between S Jackson Street and the I-90 off-ramp, (this includes approximately two years initially and one year at the end of construction period). One lane northbound and one lane southbound would remain open. Pedestrian access across 4th Avenue S at the Weller Street Bridge would be closed.
- **Full closure:** 4th Avenue S would be fully closed from the intersection of 4th Avenue S and S Jackson Street to just north of S Main Street for approximately four years. A detour route would use 2nd Avenue Extension.

Based on the design information to date, Figure 6 shows the current thinking regarding the potential sequence of road closures on 4th Avenue S. Note that Year 1 indicates the beginning of the year of the 4th Avenue S roadway closure. For more information on construction closures and detour routes, please see [Workshop #4 Materials](#).

Figure 6 Potential Sequence of Roadway Closures of 4th Avenue S for Refined CID-1a

Roadway Closures	Refined CID-1a
4th Avenue S partial east side closure (I-90 off ramp to S Jackson Street)	Year 1 & 2 (Total 2 years)
4th Avenue S partial west side closure (I-90 off ramp to S Jackson Street)	Year 3, 4 & 5 (Total 3 years)
4th Ave S full closure (S Jackson Street to S Main Street)	Year 6, 7, 8 & 9 (Total 4 years)

As part of the further studies, traffic operations analyses were performed to determine the potential effects to traffic and circulation during construction and to identify strategies to minimize/ reduce those effects. In addition to general traffic detour routes, potential detour routes for pedestrians, bicycles, transit, and freight were developed, and the effects to travel during large events at Lumen Field were evaluated. Figure 7 identifies the key traffic findings and potential strategies to reduce effects.

Figure 7 4th Avenue Construction Closure Traffic Key Findings and Potential Mitigation Strategies

Traffic Key Findings	Potential Strategies to Reduce Effects
<p>CID-1a would require long-term partial and full closures of 4th Avenue S. The closures would detour approximately half of the current volumes (15,000 vehicles per day) to avoid heavy congestion.</p> <ul style="list-style-type: none"> • 4th Avenue Partial Closure: Approximately 1,100 cars and trucks per hour would need to divert from 4th Avenue S or change travel behavior. With that level of diversion, drivers on 4th Avenue S might experience 10 to 15 minutes additional delay during the AM and PM peak periods. • 4th Avenue Full Closure: Approximately 600 cars and trucks per hour from 4th Avenue and all traffic from S Jackson Street and S Main Street would need to divert or change travel behavior. With that level of diversion, drivers on 4th Avenue S might experience 5 to 10 minutes additional delay during the AM and PM peak periods. 	<p>To keep traffic moving during construction, the following strategies can be employed:</p> <ul style="list-style-type: none"> • Divert traffic to other regional roadways such as SR 99, I-5, Alaskan Way, and 1st Avenue through clear advanced signing, including variable message signs, and coordinated public information campaigns. The addition of traffic detoured from the construction area onto parallel routes would exacerbate congestion on those corridors, including in the Pioneer Square neighborhood. • Explore additional ideas for adding capacity to accommodate increased traffic on detour routes, such as creating a temporary contraflow lane on an I-5 collector-distributor ramp. • Leverage upcoming Link expansion by incentivizing/ encouraging more regular transit use, as well as carpooling and vanpooling, particularly during large events.
<p>Transit routes and streetcar would be disrupted</p> <ul style="list-style-type: none"> • 100 active bus trips per peak hour on 4th Avenue S would be affected • The streetcar stop on Jackson Street east of 5th Avenue would temporarily be a terminus station during the full closure period, requiring an additional walk for passengers wishing to access Pioneer Square 	<ul style="list-style-type: none"> • Designate a dedicated bus corridor (potentially along 5th Avenue S in CID) to maintain bus speeds and reliability during construction and maintain access to CID.
<p>Detours could add 5-10 minutes to walk time, including disruption of the Sounder to Link passenger transfer pathway</p>	<ul style="list-style-type: none"> • Provide clearly signed pedestrian detour routes • Provide temporary walkways and crosswalks to facilitate pedestrian travel • Explore alternative pedestrian pathways across 4th Avenue while the connection to Weller Street Bridge is closed
<p>An additional 160-180 vehicles may divert into CID neighborhood during peak hour without mitigating measures</p>	<ul style="list-style-type: none"> • Designate portions of CID as a business and local access only zone • Explore ways to limit through traffic in CID, such as turn restrictions or traffic diverters

<p>Multiple roadways and sidewalks would be at or over capacity during large stadium events</p>	<ul style="list-style-type: none"> • Encourage use of other modes (transit, carpool, etc.) • Provide parking options west and north of Lumen Field to keep traffic and pedestrians away from CID and the construction area • Implement parking restrictions to prevent event parking within CID • Implement specific game day detour routes and demand management strategies • Explore alternative pedestrian pathways while connection to Weller Street Bridge is closed
--	--

Relocate ventilation shaft/emergency egress away from Union Station building

Sound Transit requires all light rail stations to include an emergency egress at the end of each station in the event of an emergency, such as a fire. Additionally, underground stations must have ventilation shafts/structures to evacuate smoke from the tunnel in the event of a fire.

The community raised concerns regarding noise and the quality of the air from the ventilation shaft, and also expressed concern about the location of the ventilation shaft in front of the Union Station building. As part of the workshop, the team explained the purpose of the ventilation shafts and the need to meet the Seattle Mechanical Code, the International Mechanical Code and the National Fire Protection Association (NFPA 130) which provide fire protection and life-safety requirements. The team also addressed each of the concerns as follows:

- **Air quality:** The new light rail will be powered by electricity, therefore, there would be no direct emissions of mobile source air toxics from light rail operation.
- **Noise issue:** The fans have sound attenuators, and noise levels are tested at the street level and within the station. At the street level, the noise level is often not noticeable compared with ambient noise levels. If directly near a shaft, it is usually less noisy than a parking garage ventilation system or a restaurant exhaust system.
- **Incorporating structures into the urban environment:** These facilities can be designed to blend into the urban environment and existing buildings with architectural features and other amenities, such as weather protection and benches. These shafts could have lighting and art built into them.

The project team also explored alternate locations for the northern ventilation shaft and emergency egress located in front of the Union Station Building for Alternative CID-1a. Potential alternate locations include:

- Locate both ventilation and emergency egress north of Jackson Street on the west side of 4th Avenue S. This would affect King County Metro operations by displacing the bus lane and bus stop on 4th Avenue.
- Locate the ventilation shaft north of S Jackson Street and the emergency exit south of S Jackson Street on the west side of 4th Avenue S with a partial or full lid of the existing gap between viaduct structures. This would affect King County Metro operation by displacing the bus lane and bus stop on the north side of Jackson.
- Locate the ventilation shaft on the east side of Union Station and emergency exit south of S Jackson Street on the west side of 4th Avenue S.

All options would need to be studied further to evaluate constructability, sight lines, aesthetics and will need to be closely coordinated with the City, King County, and BNSF.

Lid over BNSF tracks for traffic detours

A proposed idea is to build a lid over the existing railroad tracks. The lid would provide a temporary traffic detour off of 4th Avenue S during the required reconstruction of the 4th Avenue viaduct and the CID station.

A study of this idea found it is not practical for several reasons:

- It would require a substantial structure with deep foundations; there is limited space for support columns; and it would interrupt BNSF, Amtrak, and Sounder operations.
- A lid for a traffic detour would likely need to span between S Royal Brougham Way and S Main Street and would need to be substantially higher than the adjacent and crossing roadways to provide minimum required vertical clearance of 23.5 feet above the BNSF tracks, as well as to account for a deeper girder to span over the BNSF and Sounder tracks. Thus, it would not be able to be tied back into existing 4th Avenue S and crossing roadways.
- Construction of the lid would require an additional construction staging area resulting in lane closures along 4th Avenue S for a long period of time.
- It could trigger additional tunnel ventilation requirements.
- It would conflict with the CID-1a construction when connecting to 4th Avenue S at the south end of the lid.
- A large structure like this would extend the overall construction duration and increase the cost of CID-1a

While the team found that a roadway lid over BNSF is not practical for a traffic detour, the concept of open space over the lid could be explored in the future. For more information, see the *public realm opportunities section* below.

Sounder to Link pedestrian tunnel

Based on its proximity to existing Sounder Commuter Rail service, the proposed station in CID is a critical transfer location for Sounder passengers. The CID-1a station as included in the Draft EIS would provide a station entrance on the west side of 4th Avenue S to accommodate Link-Sounder transfers. Sounder passengers transferring to the 2 Line or 3 Line at the existing station in CID would need to cross 4th Avenue at street level.

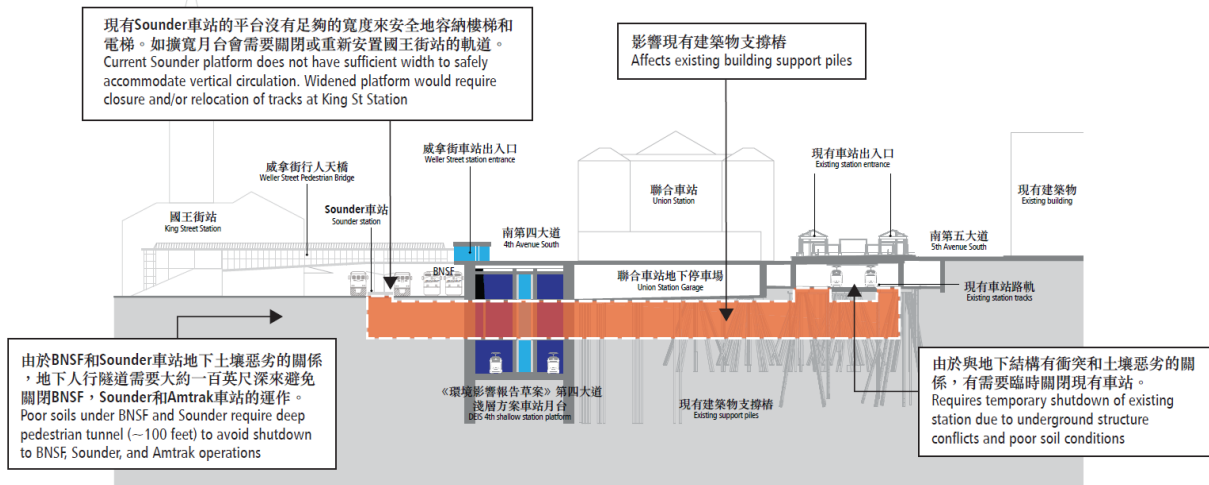
To improve the transfer experience, an idea was proposed to create a direct underground connection between the Sounder platform, the CID-1a station (served by the 1 Line), and the existing station in CID (served by the 2 Line and 3 Line). This tunnel would be located below Weller Street and the Sounder/BNSF tracks (Figure 8). It would connect to the south station entrance of the new station in CID and continue east to a connection point north of the existing station in CID.

An analysis of this idea found it not practical for several reasons:

- The current Sounder platform is not wide enough to accommodate the additional vertical circulation needed to connect to the undercrossing. Widening the platform would require closure or relocation of one or more tracks at King Street Station and likely affect capacity and service.
- To avoid poor, liquefiable soils below the rail tracks, the tunnel would need to be about 100 feet deep to avoid shutting down BNSF, Amtrak, and Sounder operations during construction.
- Construction would affect the supporting structures, or piles, beneath existing buildings in the Union Station complex compromising the structural integrity of the buildings.

- Construction would require temporary shutdown of the existing station in CID.

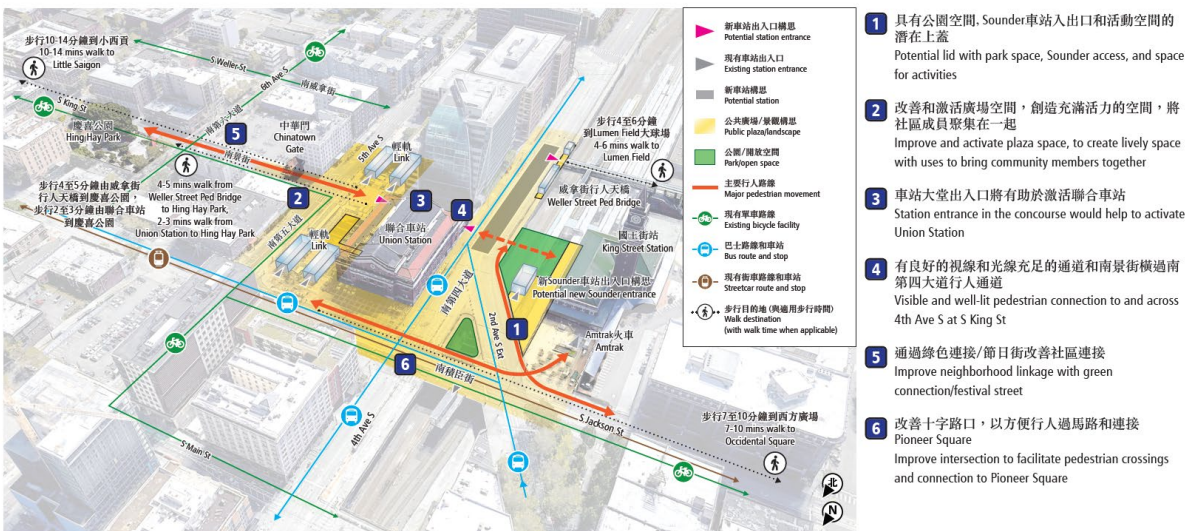
Figure 8 Sounder to Link Pedestrian Tunnel Concept Section



Public realm opportunities

Opportunities to enhance public spaces within the station area are shown in Figure 9. The activation of Union Station and the surrounding plazas are the biggest opportunities and are discussed further in a later section of this memo. Sidewalk and streetscape improvements along S Jackson Street and at key intersections could improve pedestrian crossings and knit the Pioneer Square and CID communities together. The addition of open space on a lid structure spanning over the existing railroad tracks could connect transit uses and provide the potential for a new Sounder entrance in a more welcoming environment. This element would require further development and coordination with BNSF, Amtrak, and the City of Seattle, and is not included in the project cost estimate.

Figure 9 CID-1a Public Realm Opportunities



Explore a shallower station

To address concerns with passenger experience and access to CID-1a, the project team explored ways to reduce the depth of the station. The station depth in CID-1a is primarily driven by the alignment crossing under the Downtown Seattle Transit Tunnel (DSTT). By going over the DSTT, the station depth can be reduced by approximately 35 feet. This refinement would also increase the cost of the CID-1a in the CID Segment by approximately \$300 million primarily due to additional properties affected by construction and staging, while at the same time it would decrease the cost in the Downtown Segment by approximately \$200 million due to a shallower Midtown Station resulting in an overall increase of \$100 million.

The shallower station design would slightly reduce the transfer time between Link light rail lines. The reduced station depth would reduce the amount of vertical circulation needed (i.e., escalator and elevator height) for passengers to access the station and transfer between other light rail or buses. Transfers between the new station (served by the 1 Line) and the existing station in CID (served by the 2 Line and 3 Line) would take about 45 seconds less than with CID-1a. The refinements would also reduce the depth of Midtown Station along 5th Avenue by about 55 to 60 feet and provide for improved passenger experience by providing elevators, escalators and stairs to access the station.

The shallower station and going over the DSTT would result in the following:

- The tunnel portal shifts to the north, extending the cut-and-cover construction by approximately 900 feet from S Main Street to just south of Jefferson Street. The extension of cut-and-cover would likely extend the full roadway closure of 4th Avenue S from Main Street to Terrace Street just north of Yesler Bridge.
- Reduces roadway closures at Midtown Station from full closure of 5th Avenue between Madison Street and Columbia Street to a partial closure of 5th Avenue between Marion Street and Columbia Street, for 18 months.
- Avoids reconstruction of the Main Street Bridge.
- Affects the Yesler Bridge foundations resulting in reconstruction of Yesler Bridge.
- Additional closures include Yesler Way for approximately two years, which would need to be staggered with S Jackson Street closure.
- Would fully close Washington Street at 4th Avenue for approximately two years affecting Seattle Fire Department access and circulation. This would also affect access from the west to the Seattle Office of Emergency Management located east of the fire department.
- Requires that four historic properties eligible for the National Register be demolished: the vacated King County Administration Building; 420 4th Avenue; Hotel Reynolds – a work release facility; and Macrae Parking Garage. In addition, two King County parcels that are assumed to support social services would be acquired.
- To minimize risk and to monitor the DSTT during construction, would likely require closure of the DSTT during non-revenue service hours, which could extend into regular service hours resulting in service disruptions.
- Additional constructability issues related to working near the century-old BNSF tunnel and added reconstruction of the BNSF retaining wall construction from S Main Street to the BNSF portal.
- Overall station construction duration would be similar to CID-1a station.

New alignment and station locations not previously studied in the Draft EIS

Beyond the refinements to current Draft EIS alternatives discussed above, the project team also solicited input from community members about other station locations that meet the study focus to minimize potential impacts to the CID neighborhood, while still creating an integrated, well-connected hub for all modes of transportation, as called for in the ST3 Plan.

The station in CID envisioned in the ST3 Plan needs to serve multiple key functions to support the regional transit system. It would be one of three transfer locations (along with Westlake Station and SODO Station) between the 1 Line and the 3 Line. The existing station in CID would be served by the 2 Line and 3 Line while the new station in CID would be served by the 1 Line. The station in CID would be the first transfer opportunity for passengers transferring between the 2 Line from the east and the 1 Line going north and south. The station in CID would provide a connection point for Sounder commuter rail riders to all three lines. The new station in CID would also provide access to the stadiums and to the 1 Line.

Initial Feasibility Study

Based on community and agency partner input at the Kick-off Open House and online survey in October, the project team explored alternatives to the station locations and alignments included in the Draft EIS. Figure 10 shows a list of those ideas and whether they were carried forward for further study after an initial feasibility screening. The findings from three concepts that were carried forward for further study are provided in the next section.

Figure 10 Station Location in CID and Alignment Ideas for Initial Assessment

Community Idea	Further Study	Reason Not Carried Forward for Further Study
North of CID – close to Pioneer Square Station, east of 4th Avenue	Yes	
South of CID – under 6th Avenue S, between S Royal Brougham Way and Seattle Blvd S	Yes	
No new station in CID	No	<ul style="list-style-type: none"> Does not facilitate transfer to 2 Line (Mariner/Redmond) and 3 Line (Everett/West Seattle) Potentially shifts transfers to Westlake Station with no ability to transfer between 1 Line, 2 Line, and Sounder in south downtown While there was interest in a station outside of CID, there was limited interest in eliminating a station in south downtown
North of CID – close to Pioneer Square Station, east of 3rd Avenue	No	<ul style="list-style-type: none"> This option was not carried forward for further study, but could be considered as a refinement to the North of CID option east of 4th Avenue which was identified as being the most promising
South of CID – under 6th Avenue S, south of S Royal Brougham Way	No	<ul style="list-style-type: none"> Cut-and-cover construction would prevent access to King County Metro garage and affect operations at Central and Atlantic Bases and the Greyhound bus station

West of CID – Lumen Field north parking lot	No	<ul style="list-style-type: none"> Limited interest for this station location Concern about length of transfer connection between Link lines Results in a deep Midtown Station
5th Avenue S north of S Jackson Street	No	<ul style="list-style-type: none"> Station would not fit within street right-of way, would affect CID businesses/buildings north of Jackson Street and would have a similar construction effect in CID as the 5th Shallow alternative
Use existing Downtown Seattle Transit Tunnel	No	<ul style="list-style-type: none"> Not consistent with ST3 plan, which proposed a second tunnel to accommodate future service levels and system expansions across the region Existing DSTT is unable to accommodate future service levels and would require additional tunnel ventilation and platform capacity to meet fire, life, and safety requirements
Infill East Link transfer station south of CID	No	<ul style="list-style-type: none"> Requires an impractical station design due to grade and curvature of approach to existing station in CID from I-90 alignment
Judkins Park to First Hill	No	<ul style="list-style-type: none"> Envisions a different corridor and serves different station areas than those identified in voter approved ST3 plan
Station below Union Station	No	<ul style="list-style-type: none"> Results in substantial effects to existing and National Register Listed historic structure or requires a very deep station
Station adjacent to 4th Avenue S, south of Seattle Boulevard S	No	<ul style="list-style-type: none"> Results in substantial effects to existing structures and historic structures in the National Register such as Union Station, or requires very deep station

Further Study

After the initial feasibility screening and workshop with the public, the following ideas were carried forward to continue further study.

- Station north of CID:** close to Pioneer Square Station, east of 4th Avenue
- Station south of CID:** under 6th Avenue S, north of S Royal Brougham Way

After *Workshop #3: Key Issues* in December, where the community suggested exploring the idea of adding a station north of CID and a station south of CID, the project team also assessed this additional idea:

3. Station North of CID and Station South of CID

This section provides details on each of the ideas and the results from the further studies.

Station North of CID

Definition of Idea

The *Station North of CID* idea includes:

- New tunnel cut-and-cover station on the 1 Line, just east of 4th Avenue S between Terrace Street and James Street at a depth of 80 to 105 feet below 4th Avenue
- New bored tunnel alignment running from the Massachusetts portal under 6th Avenue S curving towards 5th Avenue S just north of S Washington Street and then running east of

the existing BNSF tunnel below 4th Avenue continuing north onto 5th Avenue towards the new Westlake Station

- Remote ventilation facility between south tunnel portal and new station north of CID
- Station entrances at the northeast corner of 4th Avenue S and Terrace Street and the southeast corner of 4th Avenue and James Street
- A direct underground transfer connection (within the fare paid zone) to the 2 Line and 3 Line at the existing Pioneer Square Station

Due to the proximity of the proposed station location to the Midtown Stations evaluated in the Draft EIS, the Station North of CID idea would consolidate the station in CID and Midtown Station to one station. Figure 11 shows a map of the idea. Figure 12 shows a station plan of the proposed station close to Pioneer Square Station. Figure 13 shows an architectural drawing of the proposed station.

Figure 11 Station North of CID Map Alignment

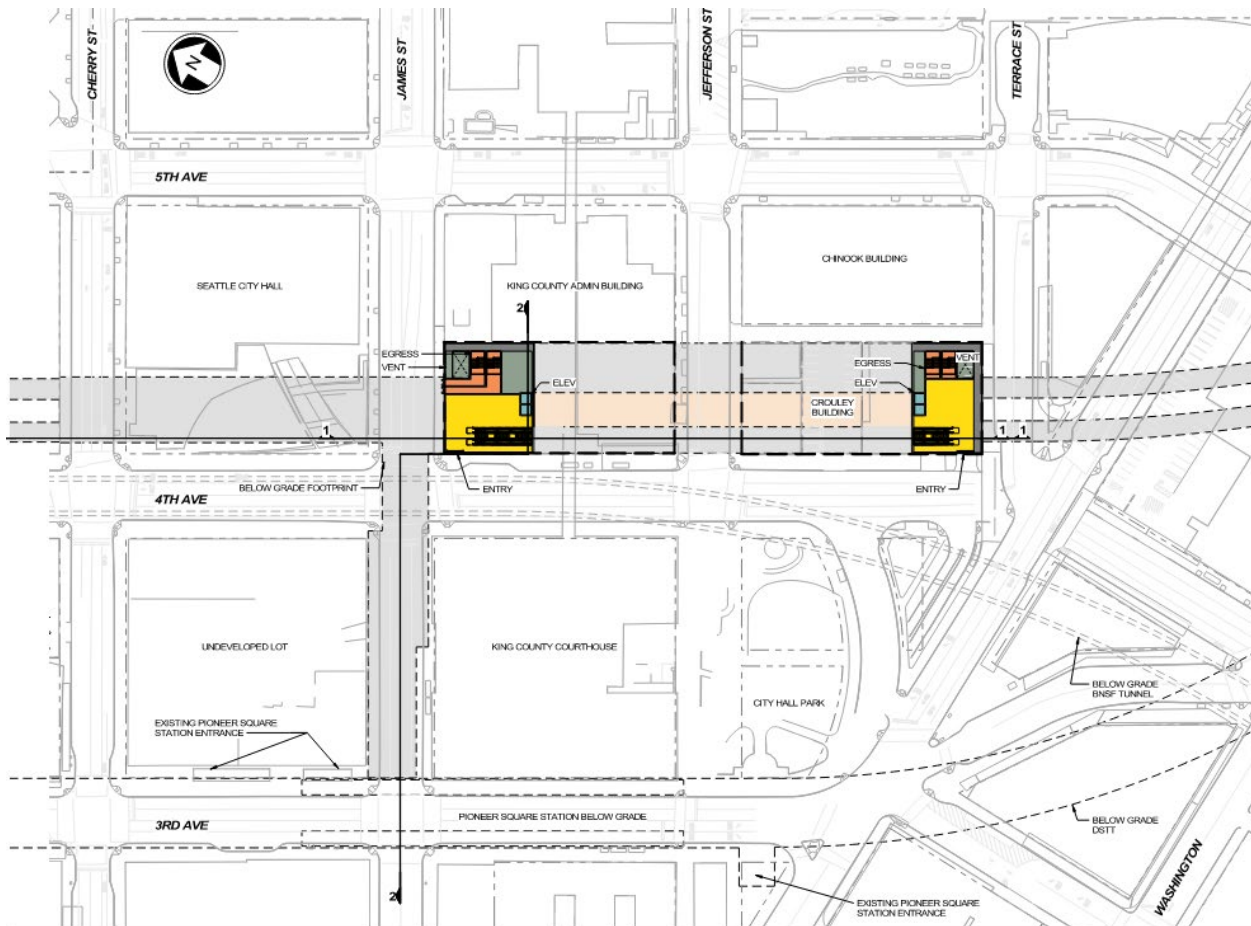


初步研究結果，分析仍在進行中，可能會作出變更。
Preliminary findings. Analysis is ongoing and is subject to change.

Figure 12 Station North of CID Station Plan



Figure 13 Station North of CID Architectural Station Plan



Study Results

This section summarizes findings from the further study including construction effects; station access and passenger experiences; property acquisitions, displacements, and environmental concerns; development potential and public realm opportunities; and cost.

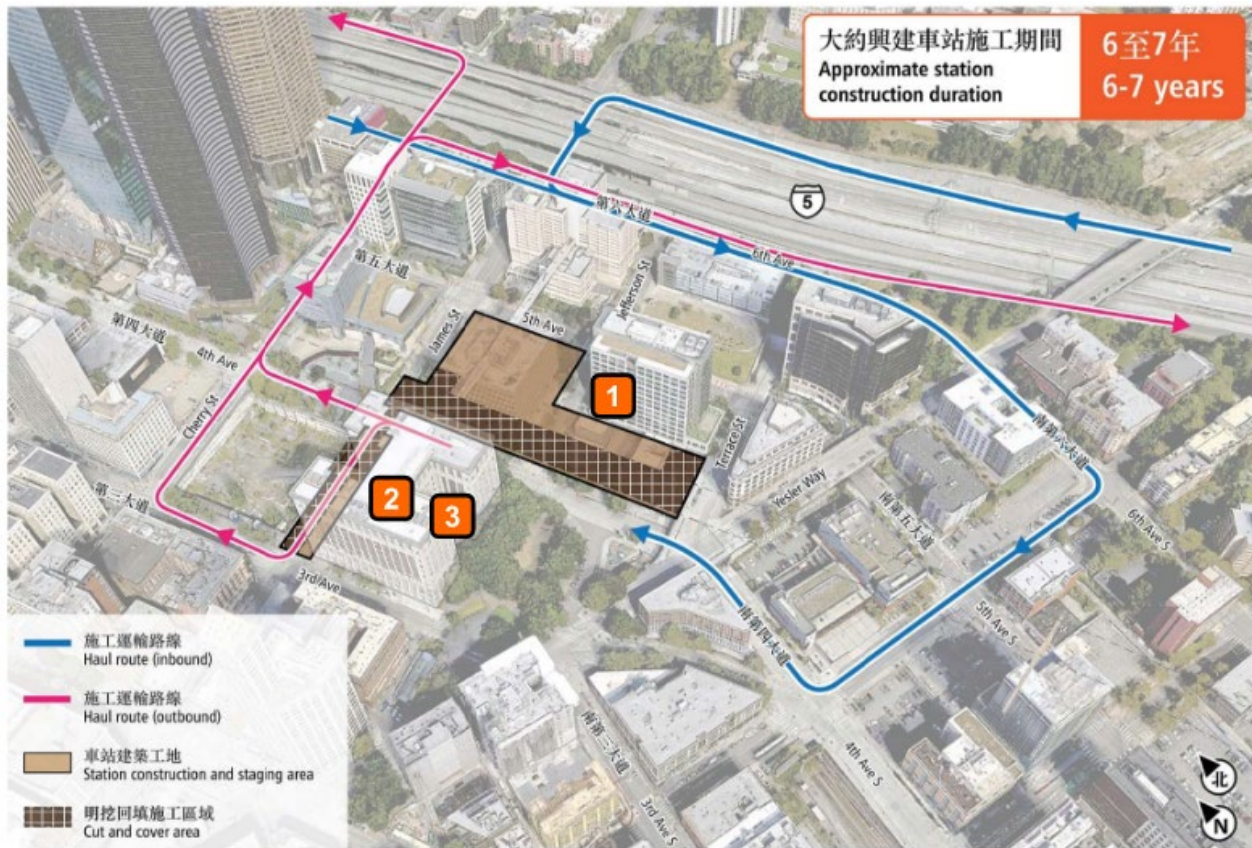
Construction effects

The *Station North of CID* idea can minimize impacts to CID by avoiding direct station construction disruptions within the neighborhood. Instead, construction would be shifted north to a commercial area of Pioneer Square. The station would be constructed off-street using the cut-and-cover construction method resulting in the following road closures:

- Full closure of James Street between 3rd and 4th avenues for four years to construct the underground pedestrian connection between the new station and the existing Pioneer Square Station. This would require temporary rerouting of trolley wires for Metro routes 3 and 4 to other corridors. Closure could be avoided by constructing the pedestrian connection to existing Pioneer Square within an adjacent private parcel.
- Full closure of Jefferson Street east of 4th Avenue and west of Chinook Building alley for six years.
- Closure of east curb lane on 4th Avenue between Terrace and James streets for six years. Three lanes and the two-way cycle track would remain open.
- Partial closure of James Street at the intersection of James Street and 4th Avenue for approximately 1.5 years. 4th Avenue throughput would be maintained.

The magnitude of traffic on the affected roadways and nature of the closures are expected to result in substantially less traffic effects during construction than would occur with CID-1a. While direct construction impacts would be moved out of CID, construction truck traffic could use main arterials near the CID neighborhood. Figure 14 shows the construction staging areas and the truck haul routes that would be used to move materials out of the construction area.

Figure 14 Station North of CID Construction Staging Areas and Haul Routes



Station access and passenger experience

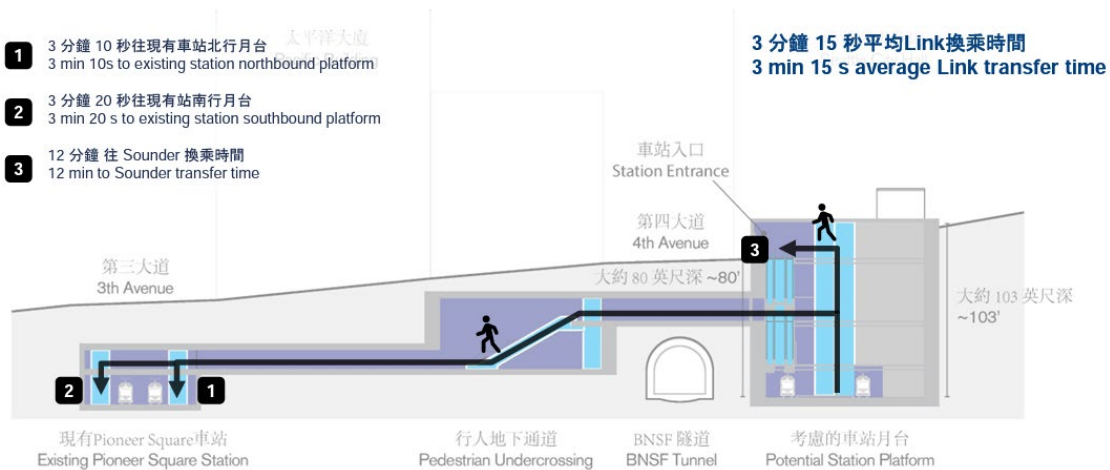
The idea would have the following effects to station access and passenger experience:

- Station would serve CID, Pioneer Square, Colman Dock, and the south end of Downtown/Midtown Seattle within a 10-minute walk. The location provides partnership opportunities to improve existing Pioneer Square station entrance and connections between stations, potentially supporting efforts to improve public safety in the area.
- Station would maintain some of the functionality envisioned for the station in CID in the ST3 Plan by providing a transfer within a fare paid zone between the 1 Line and 2 Line and 3 Line (Figure 15). This station is about four blocks north of the CID-1a station and would add approximately three minutes of out-of-direction travel time for passengers transferring between the 2 Line from areas to the east (e.g., Bellevue, Redmond) and areas south on the 1 Line (e.g., Rainier Valley, Sea-Tac Airport). The station North of CID would also provide light rail access to the stadiums and to Sounder commuter rail; however, the walk time to reach the station North of CID from those locations would be up to eight minutes longer than the CID-1a station.
- Station location would be approximately three blocks south of DT-1 Midtown Station and four blocks north of the CID-1a station in CID. The South entrance at 4th Avenue and Yesler would interface with existing structures and grades to provide walking and biking access to CID and Yesler Terrace, while the north entrance and transfer tunnel would readily integrate with bus service to CID and SODO and up First Hill to Harborview Medical Center and the Central District. Opportunities to partner on additional entrances could provide access to the

Columbia Tower concourse, Seattle Municipal Tower, and Bank of America building, fulfilling a key connection made by Midtown Station.

- Station location increases walking distance from the future Madison Rapid Ride G-Line, which is planned to have a station adjacent to DT-1 Midtown Station (three blocks north). While the new station location would not directly serve the G-Line as currently planned, Sound Transit is discussing potential routing changes with the City and King County Metro to serve a station north of CID.
- Could result in additional boardings and transfers at Westlake Station due to the change in station location from Midtown Station to the Station North of CID. In addition, the transfer time from the new station to the existing station will be longer at a station north of CID compared to Westlake Station.

Figure 15 Station North of CID Transfer Pathways and Times



Property acquisitions, displacements, and environmental concerns

The *Station North of CID* idea would have the following effects on property acquisitions, displacements, and environmental concerns:

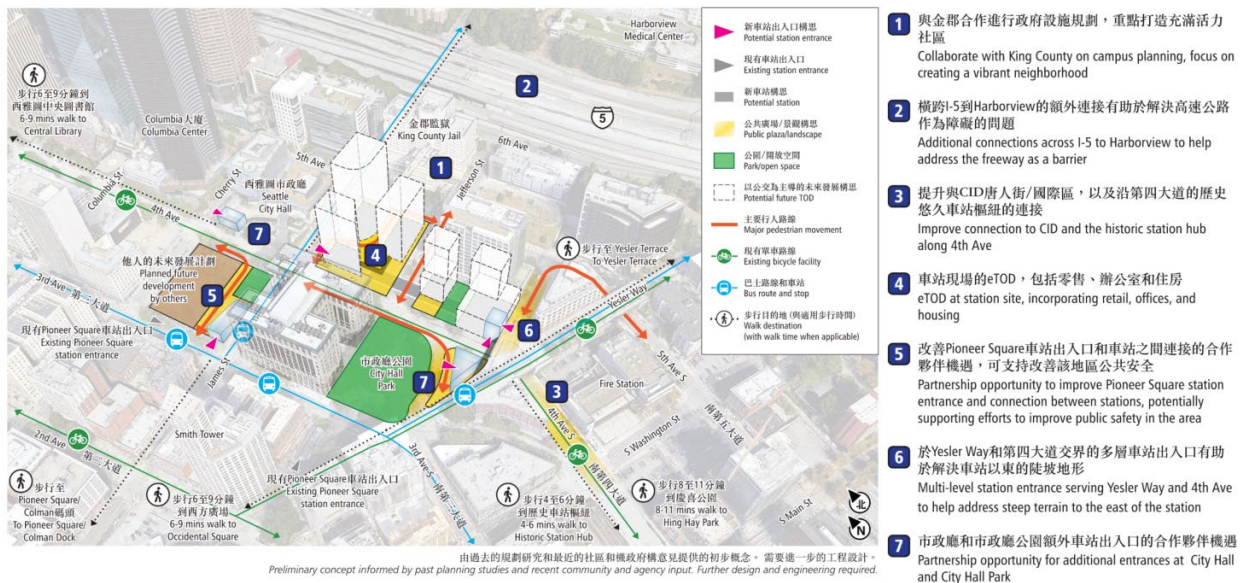
- Avoids direct displacement in the CID neighborhood
- This refinement is anticipated to adversely affect four additional historic properties eligible for the National Register: the vacated King County Administration Building; 420 4th Avenue; Hotel Reynolds – a work release facility; and Macrae Parking Garage, which would all be demolished. In addition, two King County parcels that are assumed to support social services would be acquired.
- Avoids adverse effects to the Seattle Chinatown Historic District.
- Avoids two National Register eligible historic properties in CID neighborhood which would be adversely affected by *5th Avenue Shallow Alternative (CID-2a)*: the Seattle First National Bank – International District Branch which is eligible for the National Register, and the Hoven Building, both of which contribute to the Seattle Chinatown Historic District
- Avoids affecting two National Register eligible historic properties (Bank of California Building and Grand Central Garage) which would be affected by the Midtown Station in DT-1

Development potential and public realm opportunities

The *Station North of CID* idea has increased potential for equitable transit-oriented development compared to the Draft EIS alternatives in CID. The station footprint is primarily made up of the King County Administration Building lot, existing publicly owned property already identified for redevelopment through King County’s Civic Campus master planning process. This provides an opportunity for public agencies to partner to realize multiple public benefits through an integrated station development, including affordable housing, offices and services, and retail/food and beverage, activating the street level in front of City Hall Park. Additional partnerships on secondary or reconfigured existing station entrances could improve public safety and passenger experience and support new development. Ongoing coordination between agencies and community partners would be necessary to realize this opportunity.

Figure 16 illustrates how new development could be incorporated into the station footprint. Public space improvements, such as City Hall Park, and connections to key destinations like City Hall, Columbia Tower, Pioneer Square, and Colman Dock could also be enhanced with this station location.

Figure 16 Station North of CID Opportunities and Issues



Cost effects

The *Station North of CID* idea has the potential to lower the cost of the project compared to the realigned financial plan by \$364 million (Figure 17). Figure 18 shows the total cost from Pike Street to S Holgate Street with this idea. The primary cost drivers include:

- Longer bored tunnel
- Consolidation of Midtown and CID stations into one station in Pioneer Square
- Additional need for a remote ventilation facility between the south tunnel portal and the new station in the vicinity of Seattle Boulevard S and 6th Avenue S
- Avoidance of major utility relocations in CID neighborhood
- Additional property acquisition for station entrances and staging

Figure 17 Station North of CID Cost Implications

Cost Category	Station North of CID Cost Implications (in 2019\$ millions)
Construction	-357
Longer bored tunnel	+57
Number of stations, station type	-390
Remote ventilation facility	+5
Utility relocation	-29
Property Acquisitions	+148
Professional Services	-118
Unallocated Contingency	-36
Cost delta compared to realigned financial plan	-364

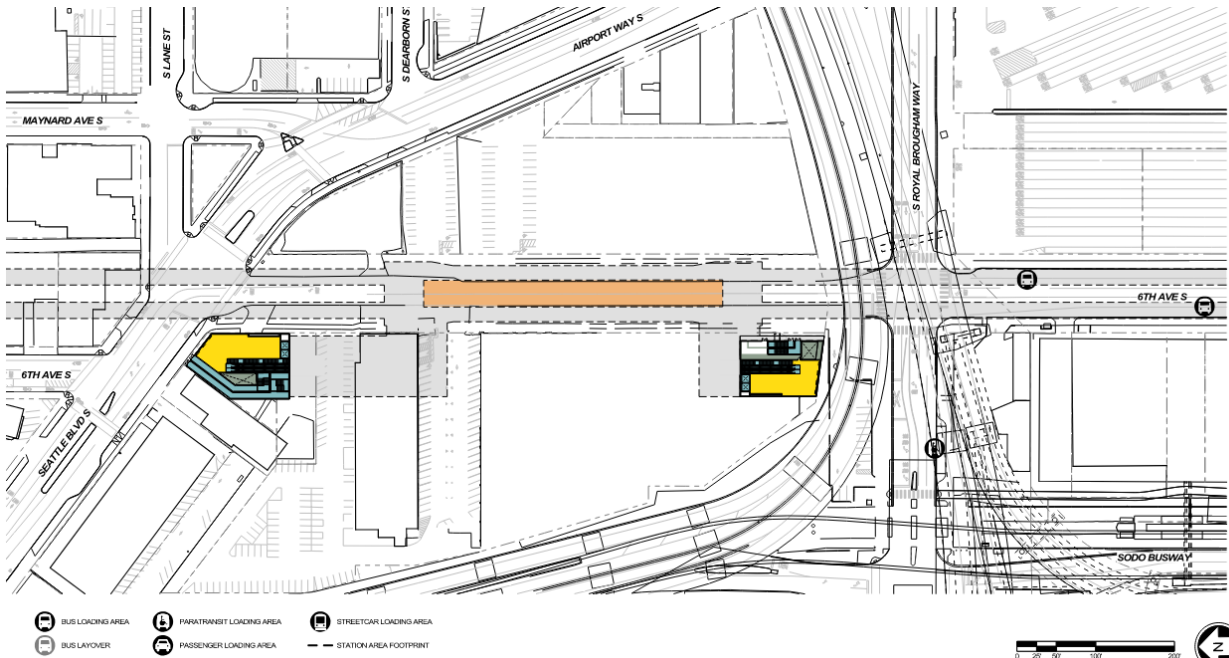
Figure 18 Station North of CID: Pike Street to S Holgate Street Total Cost

Segment	Station North of CID: Pike Street to S Holgate Street Cost Implications (in 2019\$ millions)
Downtown Segment in realigned financial plan (Pike Street to James Street)	1,200
CID Segment in realigned financial plan (James Street to S Holgate Street)	1,200
Cost delta of Station North of CID (rounded)	-350
Total Cost from Pike Street to S Holgate Street Cost	2,050

Figure 20 Station South of CID Station Plan



Figure 21 Station South of CID Architectural Station Plan



Study Results

This section summarizes findings from the further study including construction effects; station access and passenger experiences; property acquisitions, displacements, and environmental concerns; development potential and public realm opportunities; and cost.

Construction effects

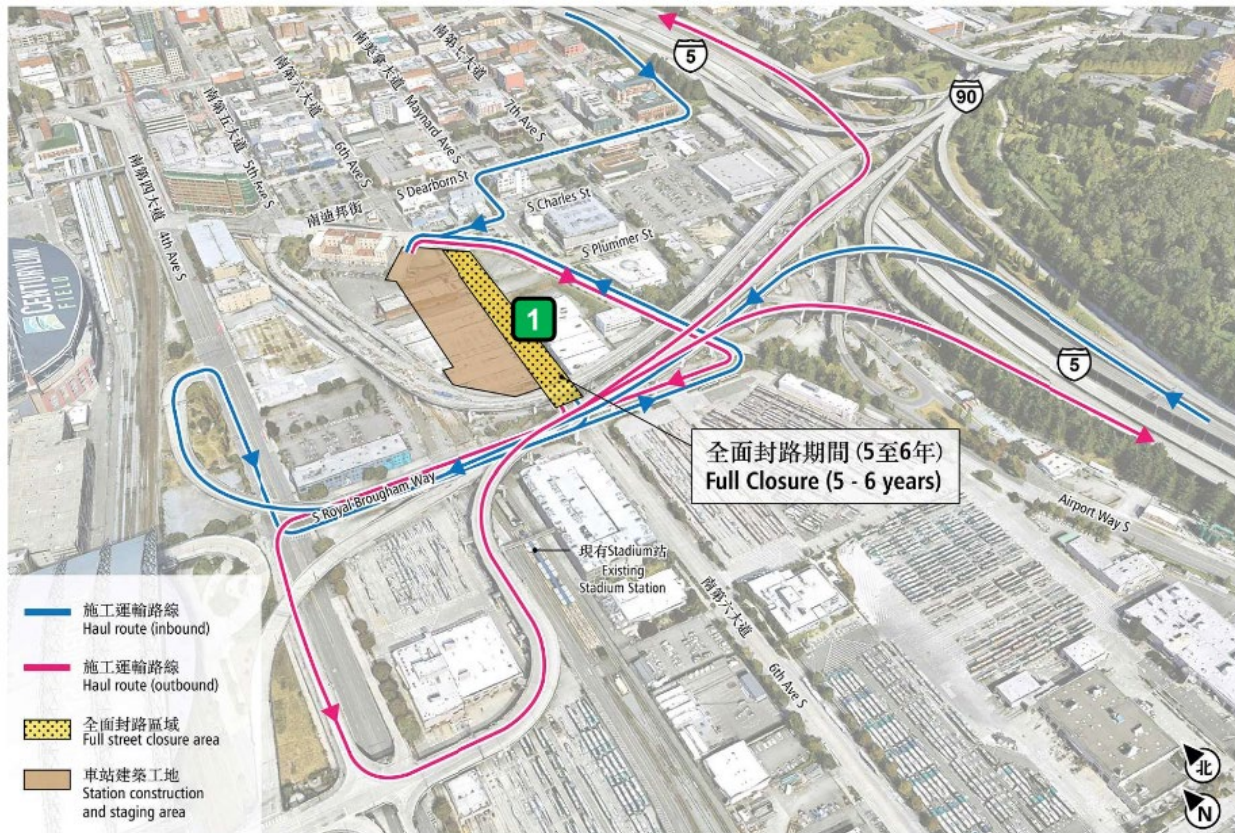
The *Station South of CID* idea minimizes impacts to CID by avoiding direct station construction disruptions within the neighborhood. Instead, construction would be shifted south to a commercial and industrial area with fewer residences.

Station construction would result in the following construction effects:

- Conflict with a high-pressure underground gas line along 6th Avenue S due to the station cut-and-cover construction.
- Roadway closure on 6th Avenue S between Seattle Blvd S and Royal Brougham Way S for 5 to 6 years (roadway is currently closed and is not serving a transportation function). This closure could affect existing and planned developments south of CID.

While direct construction impacts would be moved out of CID, construction truck traffic may use main arterials near the CID neighborhood, such as 4th Avenue S, Seattle Boulevard S, and S Dearborn Street. Figure 22 shows the construction staging areas and the truck haul routes that would be used to move materials out of the construction area.

Figure 22 Station South of CID Construction Staging Areas and Haul Routes



Station access and passenger experience

Key findings related to station access and passenger experience include:

- Station would be within a 10-minute walk of CID, Lumen Field, T-Mobile Park, and northern SODO. The streets and intersections around the station would be reconfigured to improve circulation and pedestrian access to nearby destinations, including CID and the stadiums. The station also provides an opportunity for a connection from Seattle Boulevard S to a potential Sounder Station entrance and a potential pedestrian bridge over BNSF tracks through a partnership.
- The station would not provide a direct transfer within a fare paid zone between the 1 Line to the 2 Line and 3 Line. A transfer between the 1 Line and the 3 Line could be made via a less than five-minute walk at street-level to the existing Stadium Station. A transfer between the 1 Line and the 2 Line or Sounder could be made via a less than ten-minute walk at street-level to the existing station in CID and Sounder Station. These times do not account for the time it would take a passenger to access the station platform (i.e., time on escalators or elevators).
- Station location could lead to more transfers at Westlake Station as a result of the loss of connections between the 1 Line and 2 Line and the loss of Sounder and 1 Line transfers.

Property acquisitions, displacements, and environmental concerns

The *Station South of CID* idea would have the following effects on property acquisitions, displacements, and environmental concerns:

- Avoids direct displacements in the CID neighborhood.
- Affects parcels planned for development. Station entrance and staging areas would need to be coordinated with any future development plans.
- Avoids affecting the Immigration and Naturalization Service (INS) building.
- Avoids two National Register eligible historic properties in CID neighborhood adversely affected by CID-2a, the Seattle First National Bank – International District Branch which is eligible for the National Register, and the Hoven Building, both of which contribute to the Seattle Chinatown Historic District.

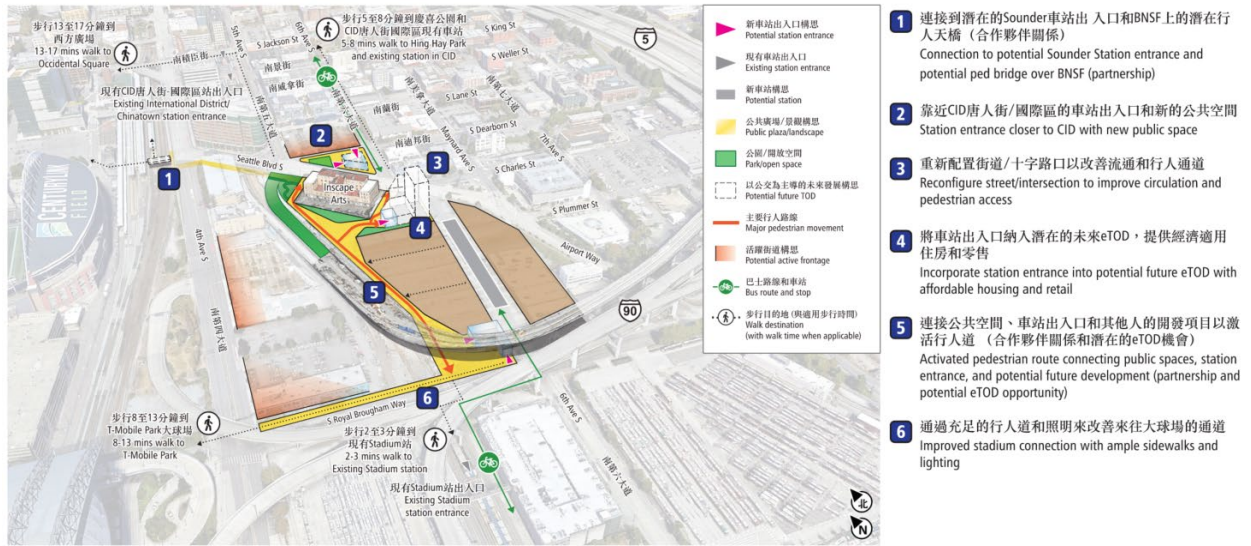
Development potential and public realm opportunities

This idea provides an opportunity for eTOD and potential joint development on properties affected by station construction. The focus of this partnership would be along the west side of 6th Avenue S. Much of the property is owned by a developer with active site entitlements, and there is potential to work with the developer, the City, and the community to develop a plan that integrates station entrances, eTOD and placemaking in a way that contributes to the community and improves access to the CID and Stadium District.

Additionally, community and agency engagement indicated interest in siting a station entrance north of Seattle Boulevard and exploring revisions to the street network that create a new public space and entrance to Link light rail oriented to Chinatown-International District. This would improve access to the station and expand the walkshed by reducing street crossings and delays for pedestrians.

Figure 23 illustrates how new development, public spaces, and enhanced connections to key destinations could be resolved and incorporated into the station footprint.

Figure 23 Station South of CID: Opportunities and Issues



由過去的規劃研究和最近的社區和機構意見提供的初步概念。需要進一步的工程設計。 Preliminary concept informed by past planning studies and recent community and agency input. Further design and engineering required.

Cost effects

The Station South of CID idea has the potential to increase the cost of project compared to the realigned financial plan by about \$84 million (Figure 24). Figure 25 shows the total cost from Pike Street to S Holgate Street with this idea. The primary cost drivers include:

- Longer bored tunnel
- Deeper station
- No pedestrian tunnel connecting to existing station in CID
- Additional need for a remote ventilation facility between the new station south of CID and the Midtown Station located in the vicinity of Terrace Street and 5th Avenue
- Avoidance of major utility relocations in CID neighborhood
- Additional property acquisition for station entrances and staging

Figure 24 Station South of CID Cost Implication

Cost Category	Station South of CID Cost Implications (in 2019\$ millions)
Construction	-9
Longer bored tunnel	+18
Deeper station	+13
No pedestrian tunnel	-19
Remote ventilation facility	+3
Utility relocation	-24
Property Acquisitions	+92
Professional Services	+2
Unallocated Contingency	-1
Cost delta compared to realigned financial plan	+84

Figure 25 Station South of CID: Pike Street to S Holgate Street Total Cost

Segment	Station North of CID: Pike Street to S Holgate Street Cost Implications (in 2019\$ millions)
Downtown Segment in realigned financial plan (Pike Street to James Street)	1,200
CID Segment in realigned financial plan (James Street to S Holgate Street)	1,200
Cost delta of Station South of CID (rounded)	+100
Total Cost from Pike Street to S Holgate Street Cost	2,500

Station North of CID and Station South of CID

Definition of Idea

This idea combines two community ideas: *Station North of CID* and *Station South of CID*. With this idea, Midtown Station would be shifted to the south near the existing Pioneer Square Station. The new station in CID would be shifted to the south of CID neighborhood. Figure 26 shows a map of the idea.

Figure 26 Station North of CID and Station South of CID Map



初步研究結果。分析仍在進行中，可能會作出變更。
Preliminary findings. Analysis is ongoing and is subject to change.

Study Results

The *Station North of CID and Station South of CID* idea results in many of the benefits and challenges of both the *Station North of CID* and *Station South of CID*. This section summarizes the higher-level study results including construction effects, station access and passenger experience, and cost.

Construction effects

As described in the separate *Station North of CID* and *Station South of CID* results sections above, the construction of both stations to the north and south minimizes impacts to the CID by avoiding direct station construction disruption in the neighborhood.

Station access and passenger experience

This idea presents many of the same passenger experience and access effects as described in the separate *Station North of CID* and *Station South of CID* results sections above. The north station provides a transfer point between the 1, 2, and 3 Lines (instead of passengers traveling to Westlake Station and SODO Station) while the south station provides access to the stadiums.

Both stations are within a 10-minute walking distance to the CID neighborhood, maintaining access for residents and businesses.

Cost effects

The *Station North of CID and Station South of CID* idea has the potential to increase the cost of the project compared to the realigned financial plan by about \$157 million (Figure 27). Figure 28 shows the total cost from Pike Street to S Holgate Street including the idea. The primary cost drivers for the idea include:

- Longer bored tunnel
- Eliminates a mined Midtown Station and adds a shallower cut and cover station.
- Avoidance of major utility relocations in CID neighborhood
- Additional property acquisition for station construction and staging

Figure 27 Station North of CID and Station South of CID Cost Implications

Cost Category	Station North of CID and Station South of CID Cost Implications (in 2019\$ millions)
Construction	-93
Longer bored tunnel	+35
Station types, depth	-102
Utility relocation	-27
Property Acquisitions	+277
Shift Midtown Station to North of CID	+222
Shift station in CID to South of CID	+55
Professional Services	-17
Unallocated Contingency	-9
Cost delta compared to realigned financial plan	+157

Figure 28 Station North of CID and Station South of CID: Pike Street to S Holgate Street Total Cost

Segment	Station North of CID and Station South of CID: Pike Street to S Holgate Street Cost Implications (in 2019\$ millions)
Downtown Segment in realigned financial plan (Pike Street to James Street)	1,200
CID Segment in realigned financial plan (James Street to S Holgate Street)	1,200
Cost delta of Station North of CID and Station South of CID (rounded)	+150
Total Cost from Pike Street to S Holgate Street Cost	2,550

Union Station Activation

This section summarizes work completed in collaboration with the community and agency partners to meet the study focus of exploring opportunities to enhance ridership and access, and to support activation and/or modified uses of Union Station and the adjacent plazas. A key finding of the work is widespread community support for investment in and active programming and management of the historic station and surrounding plaza. Desired uses and activities fall into three broad categories: mobility, commerce, and community, with public safety being a key value for design and management of both spaces.

Engagement methodology/process

Community engagement exercises around Union Station were programmed into four of the five CID Further Studies workshops. These were typically done as “intake” activities as attendees arrived at public meetings and were also replicated online. The [Workshop #4 Meeting Materials](#) includes materials related to Union Station activation. Below is a list of the engagement events and the key questions asked of community at each:

Kickoff/open house (October 13, 2022)

- *Key question:* How can the WSBLE project help support community goals and visions?
- *Key findings:* Activate Union Station with community-oriented uses confirmed as a key value; support public safety indicated as another key value.

Workshop #1 (November 2, 2022)

- *Key questions:* How would you like the plaza to be used? What amenities would you like to see in the plaza? What uses would you like to see in Union Station? What would help you feel safer in the plaza?
- *Key findings:* Respondents wanted to see space for small-scale commerce, such as kiosks and temporary/event-oriented markets, as well as space for community events/celebrations and performances.

Figure 29 Community preferences for uses in Union Station and surrounding plazas

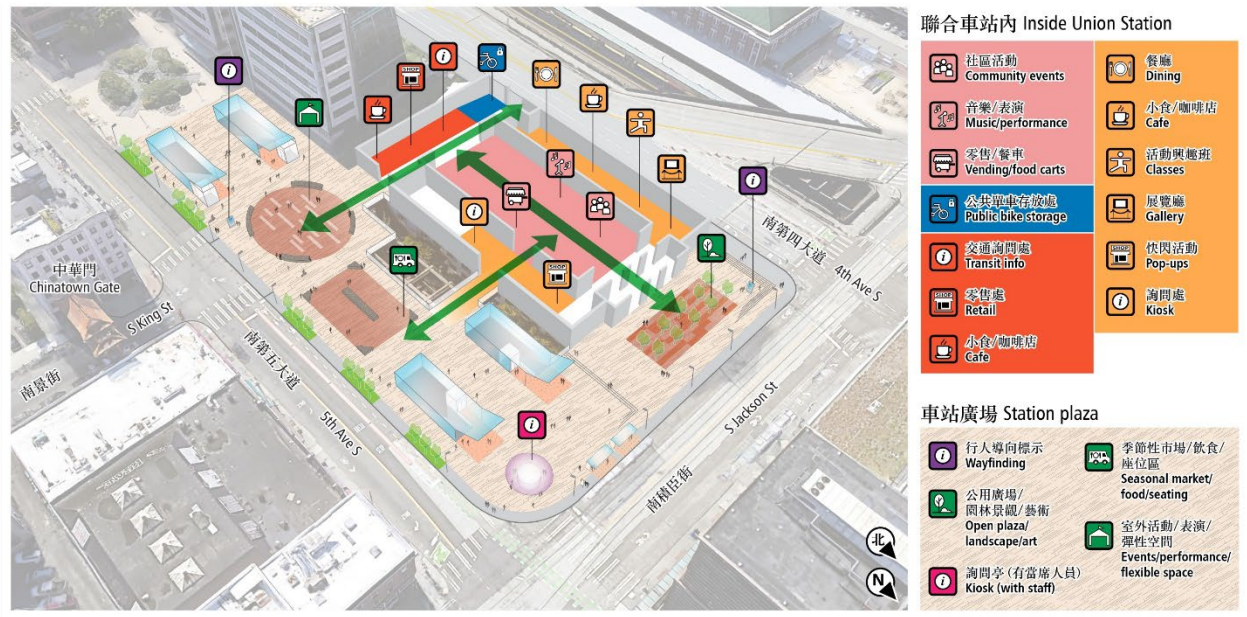


Workshops #2 and #3 (November 16, 2022, and December 14, 2022)

- *Key question:* Where would you like to see [preferred uses and amenities] on the plaza and in Union Station?
- *Key findings:* Figure 29 illustrates locations where participants noted they would like to see the activities and amenities identified in the previous workshop.

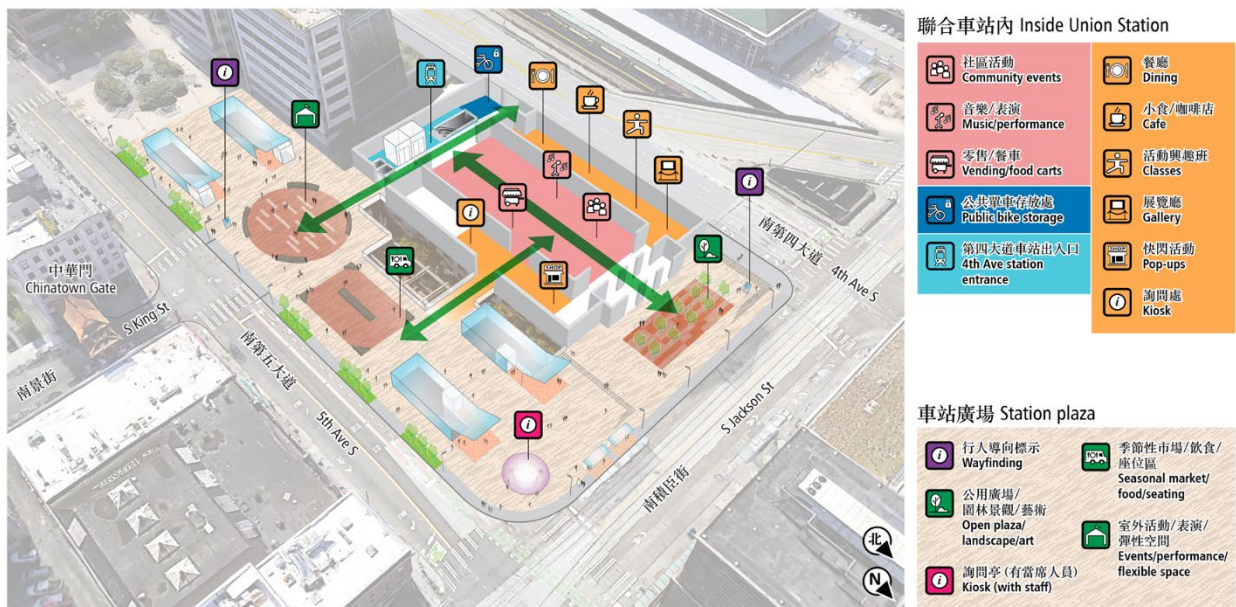
The project team compared input from community engagement exercises to past planning studies such as the Jackson Hub Planning Study (2019), South Jackson Street Connections (2016), and neighborhood plans of record in Chinatown-International District and Pioneer Square. Public input was largely consistent with the findings of those plans, with additional emphasis on public safety attributed to the lingering impacts of the pandemic on the hub station area and surrounding neighborhoods.

Figure 31 Potential activation concept for Union Station and surrounding plaza



The CID-1a station alternative presents an opportunity to directly introduce passengers transferring between light rail lines into this activated urban environment, providing a source of foot traffic and potential patronage for the activities and businesses located there. Figure 32 shows how the station access program changes the use of the Union Station concourse but ties directly into the S King Street neighborhood greenway desire line.

Figure 32 Potential activation concept for Union Station and surrounding plaza with CID-1a station



Key takeaways and next steps

Activating Union Station and surrounding plazas is an idea to potentially contribute to repairing the physical division of communities with roadway and rail infrastructure over 100 years ago. There are many challenges and details that must be resolved to successfully deliver on the vision, and these require sponsorship by Sound Transit and the City and partnership with the broader community. Some key takeaways and ideas for next steps are:

- There is widespread support for the idea of activating Union Station and surrounding plazas, and this support has only intensified in the aftermath of the COVID-19 pandemic. Many community members shared a desire to see activation proceed regardless of the station location(s) the Board chooses to move forward.
- The work summarized in this section did not include a detailed review of constructability and implementation strategies. Both sets of questions require dedicated study, along with guidance from the Board, in order to progress. Some critical constructability considerations include ensuring that ventilation requirements for the existing light rail station can be maintained with any additions to the plaza lid and determining the capacity of the existing structure to handle new surface elements. Some critical implementation considerations include quantifying costs of improvements, identifying potential financing sources, and determining organizational structures for delivery and management/programming of public spaces.
- From the three months of engagement activities and review of past plans, there is a sense that the Union Station building and plaza do not “belong” to any community, and this sense has only deepened during the COVID-19 pandemic. Community members and community-based organizations want to be involved and empowered in future work and progress toward realizing the vision of activation.