



# City of Bellevue Transportation Department

## South Bellevue Station Alternative Location Analysis



**July 2010 | Final Report**





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**July 2010**

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# Executive Summary

This study considered the feasibility of having a station along Sound Transit’s light rail B-7 alignment in the vicinity of Bellevue Way SE. The B7 alignment as currently defined does not have a station in this area.

The station includes four major components: light rail platforms; bus transit station including active and layover bays; parking garage for 1,400 cars and Access van area including drop off and layover. In addition to these major components the station will have all the support function spaces typically found in Sound Transit’s Link Light Rail, Regional Express Bus and parking garage transit facilities. Pedestrian connections including vertical circulation and sky bridges are provided as required by the relationship of the primary function areas. There will be vehicular access for both buses and privately owned vehicles from Bellevue Way SE and access for bicyclist and pedestrians from existing trails and other city streets.

Vehicle access to the station will be through the use of right turns off Bellevue Way to avoid the need for a signalization at Bellevue Way/SE 30th Street intersection. This access will be provided through the use of grade separation and flyover ramps as required. Local vehicle access to SE 30th; 113th Avenue SE and the Sweylocken boat launch and city pump station is maintained although turning movements may be modified in some cases.

Initially six alternatives were screened and two were considered for additional analysis. Alternative A-2 is located on the west side of Bellevue Way SE between 113<sup>th</sup> Ave SE, and is south of SE 30<sup>th</sup> Street. Alternative C is situated over the I-90/Bellevue Way SE interchange ramps.

## Alternative A-2:

- Requires acquiring 13 residential parcels, 12 with houses.
- Impacts neighborhood character by moving residential edge from WSDOT right-of-way to 113th Ave. SE
- Significant excavation in hillside would result in high traffic loads during construction.
- Tucked into hillside, minimal viewshed impact from adjacent residences.
- Reasonable vehicular access to and from Bellevue Way SE.
- Moderately long pedestrian connections between bus and rail platforms.
- Very long pedestrian walk from north end of garage to rail platforms
- Approximate Station Cost: \$170m



### Alternative C:

- Requires acquiring at least 1 residential parcels.
- Entire facility is over the top of active WSDOT I-90 ramps resulting in significant viewshed impact from adjacent residences.
- Facility would be constructed on poor soils adding unpredictability and expense.
- Located on WSDOT right-of-way; approvals may result in substantial unplanned costs.
- Requires phased construction over active ramps causing traffic problems during construction.
- WSDOT would classify the structure over the ramps as a tunnel. Stringent ventilation, lighting and fire life safety measures would be required.
- Proximity to Mercer Slough Park will result in more mitigation.
- Blockage of single exit that serves facility would shutdown facility for vehicles.
- Access from Bellevue Way will require grade separation of the northbound lanes at the SE 30th Street Intersection.
- Approximate Station Cost: \$210m

For comparison, the cost for the B2M South Bellevue Station located at the existing Park & Ride is approximately \$130 million. The cost for the B-7, 118<sup>th</sup> Ave SE Station is approximately \$114 million.

# 1. Introduction

## BACKGROUND

As part of the Eastlink Light Rail Transit (LRT) planning, Sound Transit is evaluating a number of routes through south Bellevue from the I-90 East Channel Bridge to downtown Bellevue, including the B2M and B-7 routes. The B2M Route runs up the east side of Bellevue Way SE to 112<sup>th</sup> Ave SE and then follows 112<sup>th</sup> Ave. SE into downtown. The proposed station along this route would be at the site of the existing South Bellevue Park & Ride lot on Bellevue Way SE. The B-7 route crosses Mercer Slough Park to the BNSF Railway right of way where it turns to the north and continues along the old railroad alignment, crossing 118<sup>th</sup> Ave SE, and continuing north to approximately SE 8<sup>th</sup> Street. At SE 8<sup>th</sup> the alignment swings to the northwest and on into downtown. See Figure 1. Vicinity Map.

Sound Transit's initial plans for the B-7 alignment did not include a station in the vicinity of I-90 and Bellevue Way. Rather, the station would be located directly south of SE 8<sup>th</sup> Street along 118<sup>th</sup> Ave SE. This station, according to the Sound Transit DEIS, would not yield the access and ridership of the South Bellevue Station. Therefore, the City of Bellevue commissioned this study to determine the feasibility of a Park & Ride and station in the vicinity of the I-90/Bellevue Way interchange that could be served by the B7 line.

## DESCRIPTION OF ANALYSIS

Initially a number of station alternatives were developed. They included stations located over the top of the main line of the freeway, as well as over the ramps, in Mercer Slough Park and the residential neighborhood west of the interchange. If it was physically possible to locate the facility, it was included on the list.

Concept plans were developed for each of these alternatives except for the alternative that considered a station over the main line of I-90. These alternatives were presented to members of the City Council and the Mayor. Based on feedback, the concepts were adjusted and a sixth alternative added. These six alternatives were reviewed by staff from the City of Bellevue, Washington State Department of Transportation (WSDOT) and Sound Transit to identify major issues and considerations. An initial screening analysis selected the two most promising alternatives for more detailed analysis. This initial screening analysis is documented in Section 4 of the report.



The feasibility of the top two alternatives was evaluated upon the following criteria:

- Transportation and Accessibility
- Park Impacts
- Environmental Impacts
- Neighborhood Impacts
- Constructability

A traffic analysis was performed for the intersection of SE 30<sup>th</sup> Street and Bellevue Way SE. The results of this analysis are covered in Section 5.

The results of the feasibility study are covered in Section 6, and a comparison between a station in the vicinity of the I-90/Bellevue Way SE interchange, the one proposed at the existing Park & Ride, and the 118<sup>th</sup> Station are presented in Section 7.

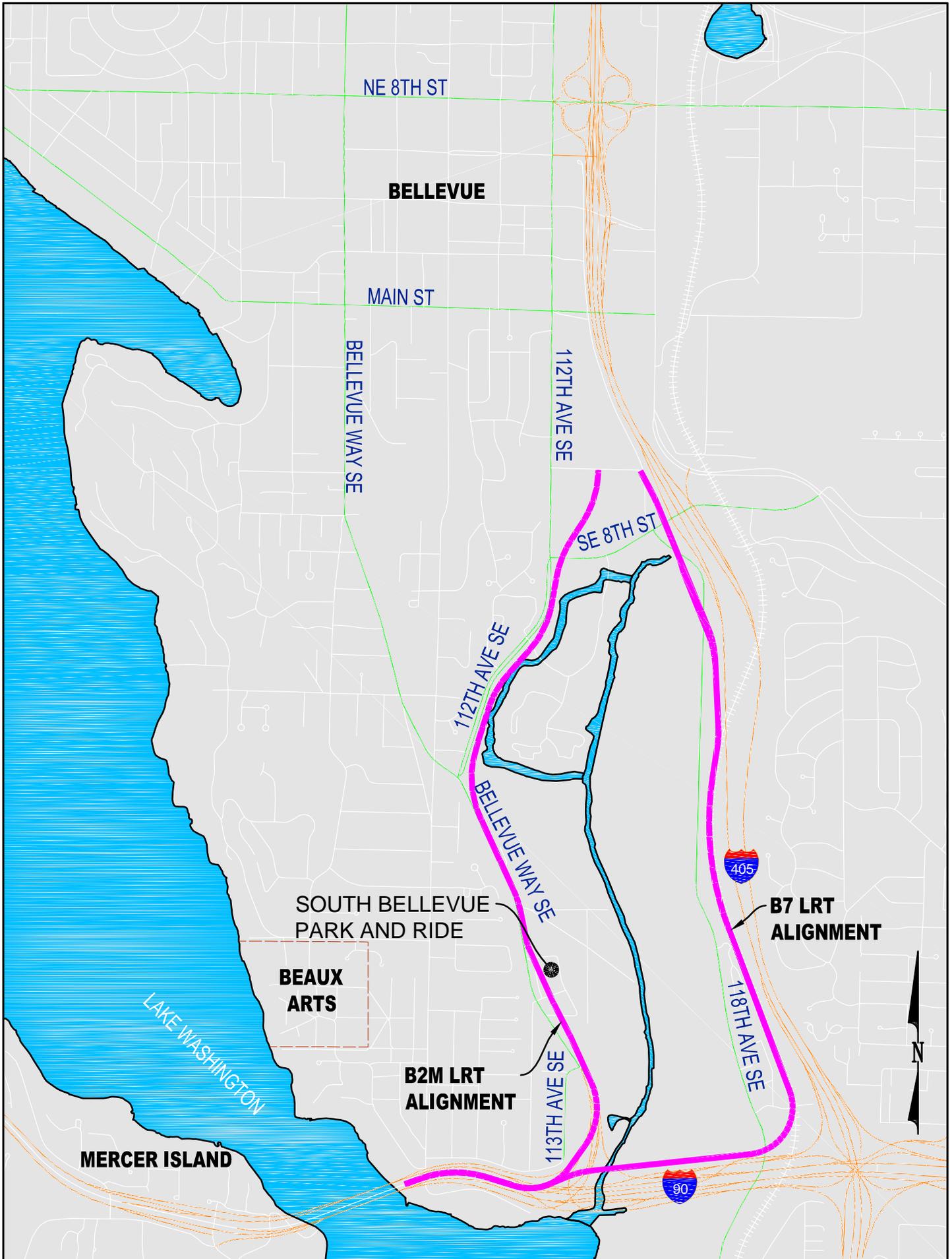


Figure 2 - Study Area Map



## 2. Station Program Elements

The South Bellevue Light Rail Station will accommodate intermodal travel among: light rail; bus; automobile; bicycle and pedestrians. To accommodate the needs of these various modes of travel the station will require the following primary program elements:

- 1,400 parking stalls
- 2 Independent arrival and departure bus bays
- 5 layover bus bays
- 1 Access Van bay
- 5 Access Van layover bays
- Light rail station including 380 feet of rail platform
- Kiss and Ride and Waiting zones
- 45 bike lockers

The elements for this station are the same as those programmed for the South Bellevue station located at the existing South Bellevue Park & Ride as noted in the draft Environmental Impact Statement.



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### 3. Alternatives Considered

This South Bellevue Station study examined six (6) alternative locations for the combined parking garage/bus transit facility/Sound Transit Light Rail Platform, collectively referred to as the South Bellevue Station. Each alternative contains all the program elements prescribed for the station alternative at the existing South Bellevue Park & Ride. These basic elements include: a bus transit center with 2 active and 5 layover bus bays; 1 active and 5 layover Access Van bays, and a parking garage with capacity for 1,400 vehicles, 380 foot long light rail platforms; 45 bike lockers; a kiss and ride/pick-up zone, road/drive connections to the local streets; and pedestrian connections to the local trail system and city streets.

To situate a LRT station in the vicinity of the I-90/Bellevue Way SE interchange requires a modification to the proposed B-7 alignment that would result in moving the alignment to the north as it comes off the East Channel Bridge. This change would move the LRT closer to SE 34<sup>th</sup> Street.

WSDOT has also indicated there can be no changes at the SE 30<sup>th</sup> Street/Bellevue Way SE intersection that would adversely affect the flow of northbound traffic. This effectively eliminates consideration of a new signal at this intersection.

#### **ALTERNATIVE A-1**

##### **Physical Location**

This alternative utilizes the Sound Transit B7 light rail alignment with a modification to provide a required tangent section for the platform and is parallel to I-90. The rail station platforms are located over the WSDOT on-off ramps to I-90. The light rail platforms are about 25 feet above the I-90 on ramps which places them about 65 feet above the eastbound I-90 off ramps to northbound Bellevue Way SE. This option requires that the 13 parcels between 113th Ave SE, including 12 residences, and the WSDOT ramps be acquired and utilized for the bus transit and parking garage facilities. The overall facility development will include a parking garage; the bus transit station and the associated roads and drives to support them. This option will require excavation of up to 55 feet at 113th Ave SE to construct the parking garage/bus facility. An aerial pedestrian connection above the WSDOT ramps from the parking garage/bus facility to the light rail platforms is required. This option requires a vehicle flyover ramp from the transit station to the east side of Bellevue Way where it touches down in existing park property. This ramp is needed because there will not be a signal at the intersection of SE 30<sup>th</sup> Street and Bellevue Way SE.

## Road Connections

Alternative A-1 connects the parking garage/bus facility to 113th Ave SE and to the road end of SE 30th St east of Bellevue Way (via the flyover ramps). Vehicles using the 113th Ave SE connection merge with SE 30th St. just west of Bellevue Way SE. These two connections allow both northbound and southbound traffic (cars and buses) on Bellevue Way/WSDOT ramps to enter and exit the parking garage/bus facility without turning left in front of traffic. This option also allows the SE 30th St./Bellevue Way SE intersection to remain unsignalized.

## Distinctive Features

- Alternative A-1 places the parking garage/bus facility between 113th Ave SE and the WSDOT ramps.
- About half of the bus/parking garage is below the sight line of adjacent homes that are west of 113th Ave SE.
- The bus loop is at the lowest level of the parking structure.
- The parking garage is both around the loop and stacked above it.
- Bus patrons would circulate vertically from the bus loop via escalators or elevators at the south end of the loop to the top deck of the structure.
- At the top deck of the structure a pedestrian bridge provides access to the light rail platform.

# SOUTH BELLEVUE LRT STATION STUDY ALTERNATIVE A-1



## ALTERNATIVE A-2

### Physical Location

This alternative utilizes the Sound Transit B7 light rail alignment with a modification to provide a required tangent section for the platform and is parallel to I-90. The rail station platforms are located over the WSDOT on-off ramps to I-90 (See Figures 6 and 7). The light rail platforms are about 25 feet above the I-90 on ramps which places them about 65 feet above the eastbound I-90 off ramps to northbound Bellevue Way. This option requires that the 13 parcels including 12 residences between 113th Ave SE and the WSDOT ramps be acquired and utilized for the bus transit and parking garage facilities. The overall facility development will include a parking garage; the bus transit station and the associated roads and drives to support them. This option will require excavation of up to 55 feet at 113th Ave SE to construct the parking garage/bus facility. An aerial pedestrian connection above the WSDOT ramps from the parking garage/bus facility to the light rail platforms is required. This option also requires a vehicle flyover ramp from the transit station to the east side of Bellevue Way where the flyover touches down in existing park property.

### Road Connections

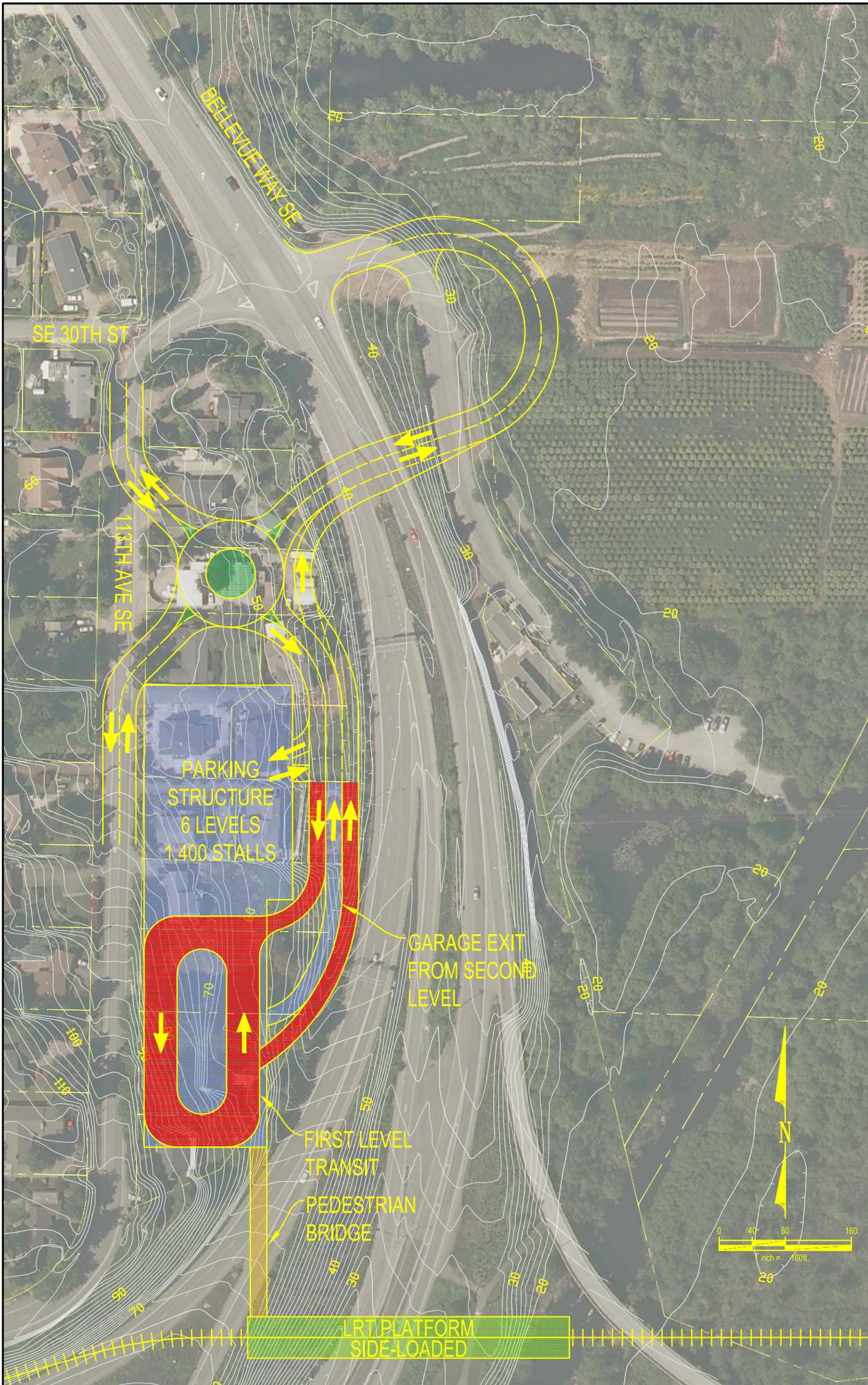
Alternative A-2 connects the parking garage/bus facility to 113th Ave SE (via a roundabout) and to the road end of SE 30th St east of Bellevue Way (via a flyover ramps). Vehicles using the 113th Ave SE connection merge with neighborhood traffic in the roundabout and join SE 30th St. just west of Bellevue Way. These two connections allow both northbound and southbound traffic (cars and buses) on Bellevue Way/WSDOT ramps to enter and exit the parking garage/bus facility without turning left in front of traffic. This option also allows the SE 30th St./Bellevue Way SE intersection to remain unsignalized, as signalizing that intersection would be problematic for (or, more likely, prohibited by) WSDOT.

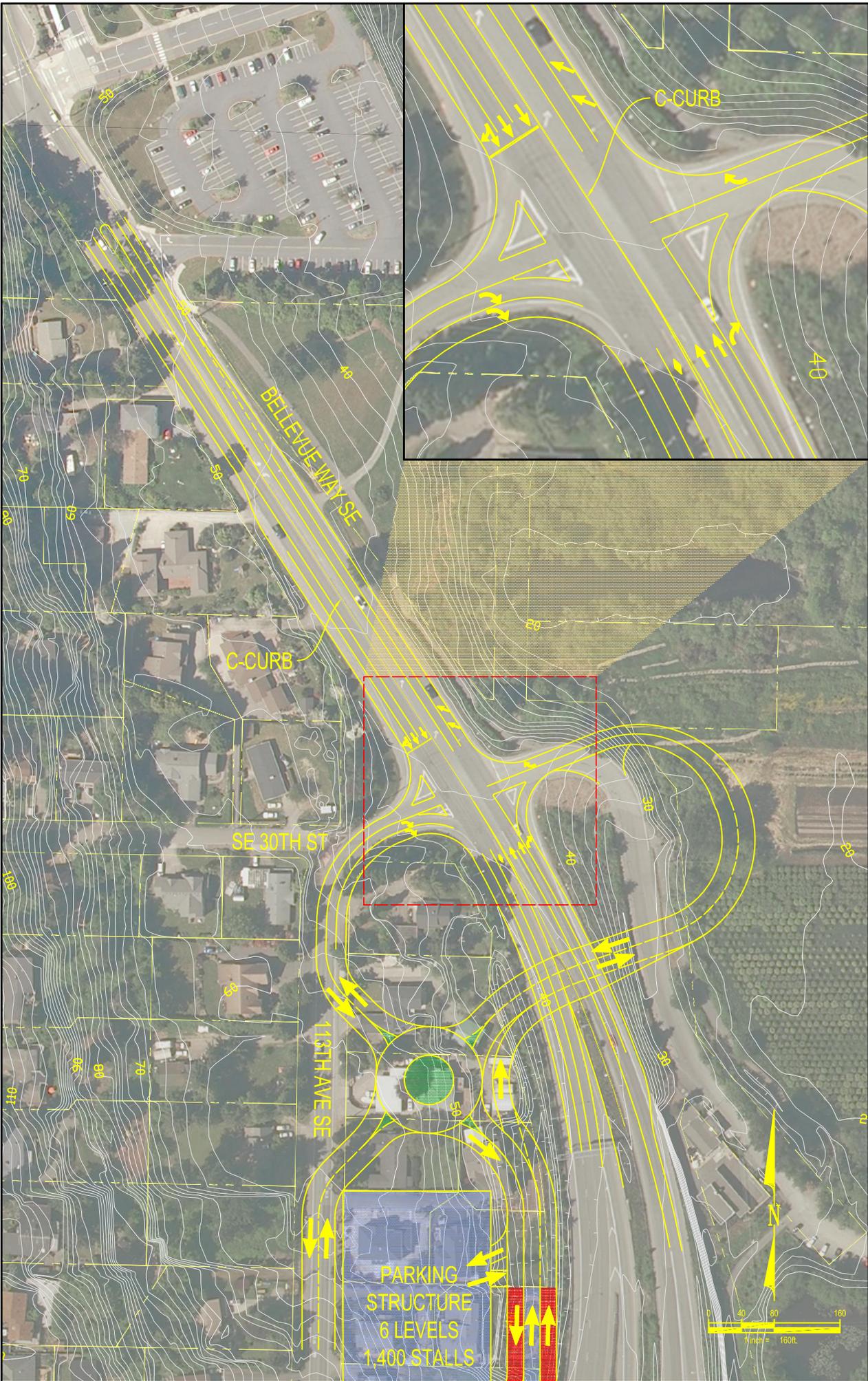
### Distinctive Features

- Alternative A-2 places the parking garage/bus facility between 113th Ave SE and the WSDOT ramps.
- This alternative also requires that existing neighborhood traffic merge with the transit patrons and buses in the roundabout.
- About half of the bus/parking garage is below the sight line of adjacent homes that are west of 113th Ave SE.
- The garage will be stepped down to follow grade on 113<sup>th</sup> and minimize visual impact.
- The bus loop is at the lowest level of the structure and is at the south end of the facility thereby reducing pedestrian travel distance to the light rail platforms.

- Bus patrons would circulate vertically from the transit loop via escalators or elevators to the top deck of the structure.
- At the top deck of the structure a pedestrian bridge provides access to the light rail platform.
- The parking garage is stacked above transit loop.

# SOUTH BELLEVUE LRT STATION STUDY ALTERNATIVE A-2





# SOUTH BELLEVUE LRT STATION STUDY

AT GRADE INTERSECTION (ALTERNATIVE A-2)



Figure 6

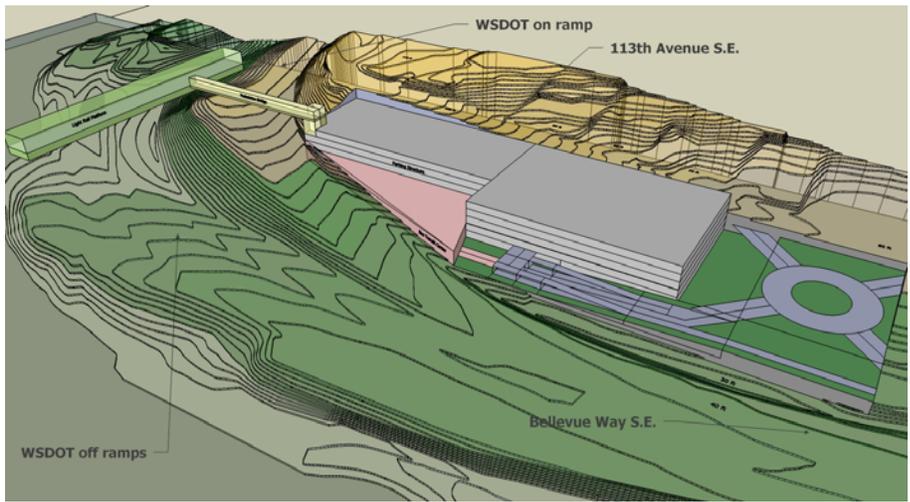
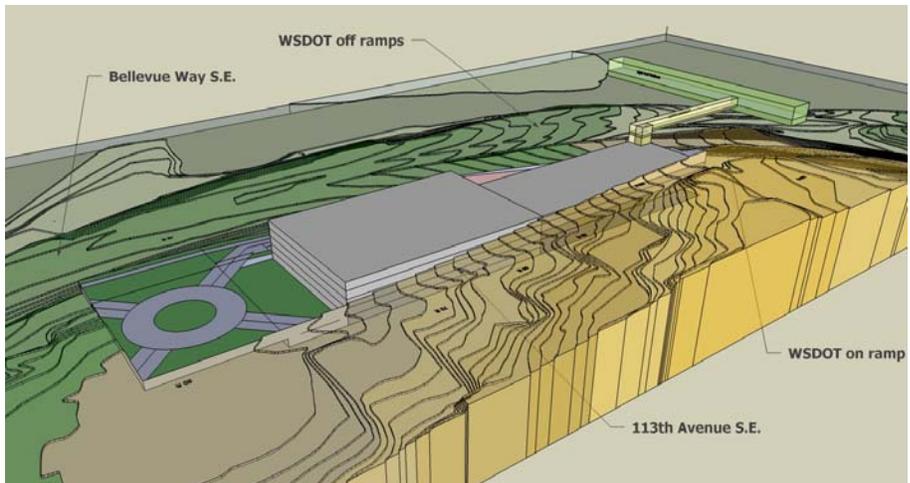


Figure 7



## **ALTERNATIVE B**

### **Physical Location**

This alternative utilizes the Sound Transit B7 light rail alignment with a modification to provide a required tangent section for the platform and is parallel to I-90. The rail station platforms and the bus loop are located over the WSDOT on-off ramps to I-90. The light rail platforms are about 25 feet above the I-90 on ramps which places them about 65 feet above the eastbound I-90 off ramps to northbound Bellevue Way. The bus loop is located vertically between the WSDOT ramps and the light rail platform. This option requires that the 13 parcels including 12 residences between 113th Ave SE and the WSDOT ramps be acquired and utilized for the parking garage and driveways. This option will require excavation of up to 55 feet at 113th Ave SE to construct the parking garage. An aerial pedestrian connection above the WSDOT ramps from the parking garage to the light rail platforms is required. A vertical connection is also required from the bus transit loop to the light rail platforms. This option also requires a vehicle flyover ramp from the transit station to the east side of Bellevue Way where the flyover touches down in existing park property.

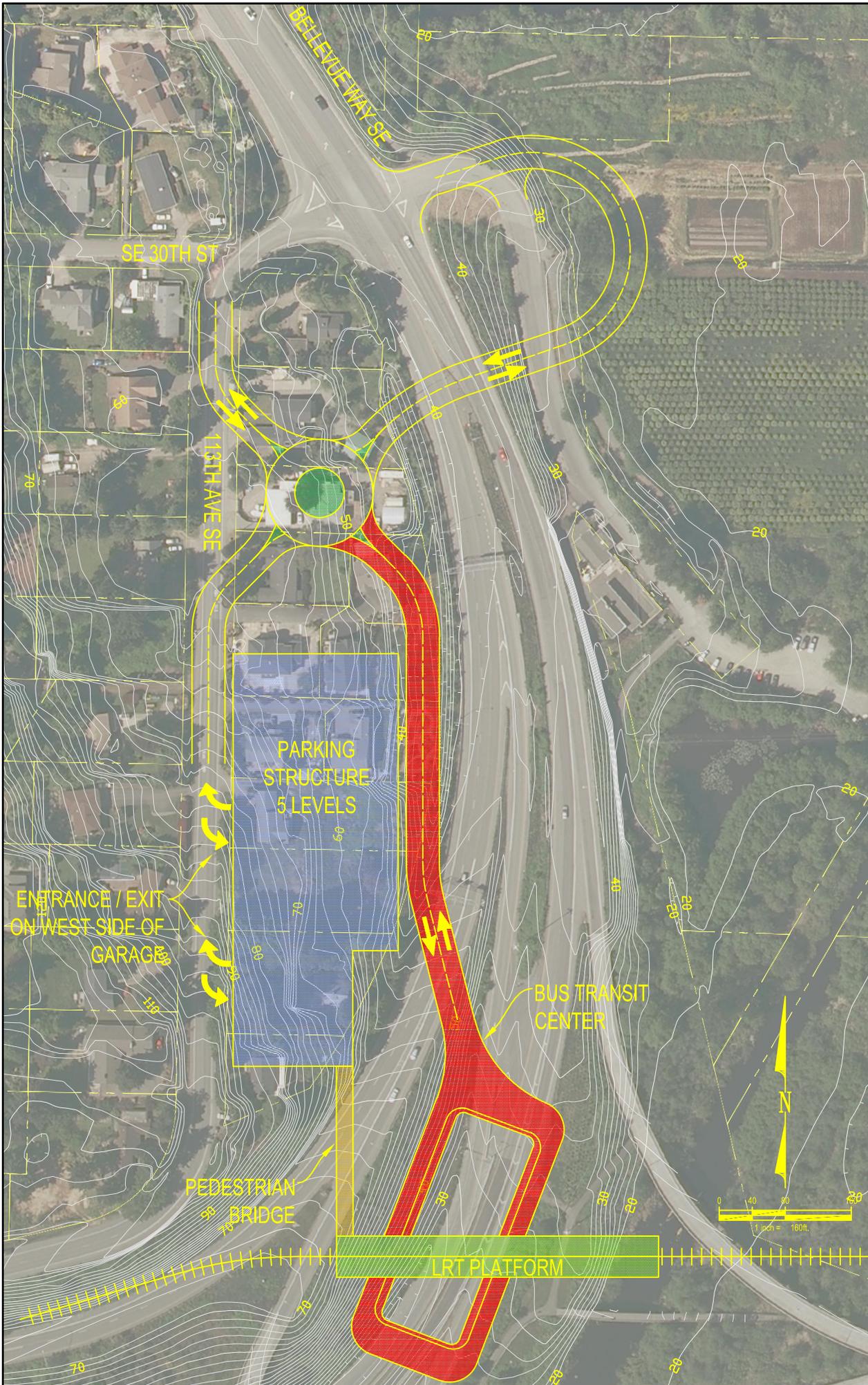
### **Road Connections**

Alternative B connects the bus facility to 113th Ave SE (via a roundabout) and to the road end of SE 30th St east of Bellevue Way SE (via a flyover ramp). Vehicles using the 113th Ave SE connection merge with neighborhood traffic in the roundabout and join SE 30th St. just west of Bellevue Way. Parking garage patron vehicles enter and exit the parking garage directly to 113th Ave SE south of the roundabout. These two connections allow both northbound and southbound traffic (cars and buses) on Bellevue Way/WSDOT ramps to enter and exit the parking garage/bus facility without turning left in front of traffic. This option also allows the SE 30th St./Bellevue Way intersection to remain unsignalized.

### **Distinctive Features**

- Alternative B places the parking garage between 113th Ave SE and the WSDOT ramps.
- This alternative places the bus transit center and the light rail platforms above the WSDOT ramps.
- Alternative B requires that existing neighborhood traffic merge with buses in the roundabout.
- The parking garage facility is generally below the sight line of adjacent homes that are west of 113th Ave SE.
- The bus loop is over the WSDOT ramps directly below the light rail platforms thereby reducing pedestrian travel distance between bus and rail.
- Patrons using the parking garage would circulate vertically via escalators or elevators to the top deck of the structure.
- At the top deck of the structure a pedestrian bridge provides access to the light rail platform.

# SOUTH BELLEVUE LRT STATION STUDY ALTERNATIVE B



## ALTERNATIVE C

### Physical Location

This alternative utilizes the Sound Transit B7 light rail alignment with a modification to provide a required tangent section for the platform and is parallel to I-90 (see Figures 10 and 11). The rail station platforms, the parking garage and the bus loop are located over the WSDOT on-off ramps to I-90. The light rail platforms are about 25 feet above the I-90 on ramps which places them about 65 feet above the eastbound I-90 off ramps to northbound Bellevue Way. The bus loop is located vertically between the WSDOT ramps and the light rail platform. The parking garage starts at the bus loop elevation and rises above the elevation of the light rail platforms. A vertical pedestrian connection links the bus loop, parking garage and the light rail platforms.

A pedestrian bridge above the WSDOT ramps from 113th Ave SE allows a connection from the neighborhood to the station. One residential parcel on 113<sup>th</sup> Ave. SE would be required for a neighborhood drop off zone at the pedestrian bridge.

This option requires vehicle flyover ramps both northbound and southbound to access the bus loop and the parking garage. A flyover on the west allows vehicles to enter the facility. The flyover from the station to the east side of Bellevue Way touches down in existing park property. The northbound traffic (bus and cars) accessing the station and all the traffic leaving the station will use the eastern flyover which necessitates a grade separation of the SE 30th St and Bellevue Way intersection to avoid the need for a signal.

### Road Connections

In Alternative C southbound buses and cars from Bellevue Way SE enter via a one way ramp that is south of SE 30<sup>th</sup> street. Cars and buses coming northbound on Bellevue Way will use a ramp that starts at the east leg of the SE 30<sup>th</sup> Street intersection with Bellevue Way SE. This ramp will be the only exit from the facility for cars and buses. There will be a grade separation over the existing SE 30th St intersection joining the northbound WSDOT ramps with northbound Bellevue Way allowing vehicles exiting the facility to merge northbound (to Bellevue Way) or southbound (to the WSDOT ramps). With the grade separation in place existing neighborhood traffic on SE 30th St will not be able to turn left and head north on Bellevue Way.

### Distinctive Features

- Alternative C places the entire rail/bus/parking facility over the WSDOT ramps.
- This creates a compact footprint with relatively short pedestrian travel distances.
- The WSDOT ramps would be classified as a tunnel structure below the garage and will require fire and life safety protection measures.
- To function properly this alternative utilizes flyovers and grade separations and all structures including the garage and bus transit loop are elevated.
- While 12 of the 13 lots between 113th Ave SE and the WSDOT ramps are not redeveloped the facility that is constructed over the WSDOT ramps is fairly massive and will block views to the east.



- A pedestrian connection to the neighborhood requires that a residential lot be redeveloped as a drop off point.
- The facility will be 7 elevated parking levels (about 65' to top deck) above the tunnel base. This would put the top deck at about 25' above the crest of 113<sup>th</sup> Avenue NE.

# SOUTH BELLEVUE LRT STATION STUDY ALTERNATIVE C

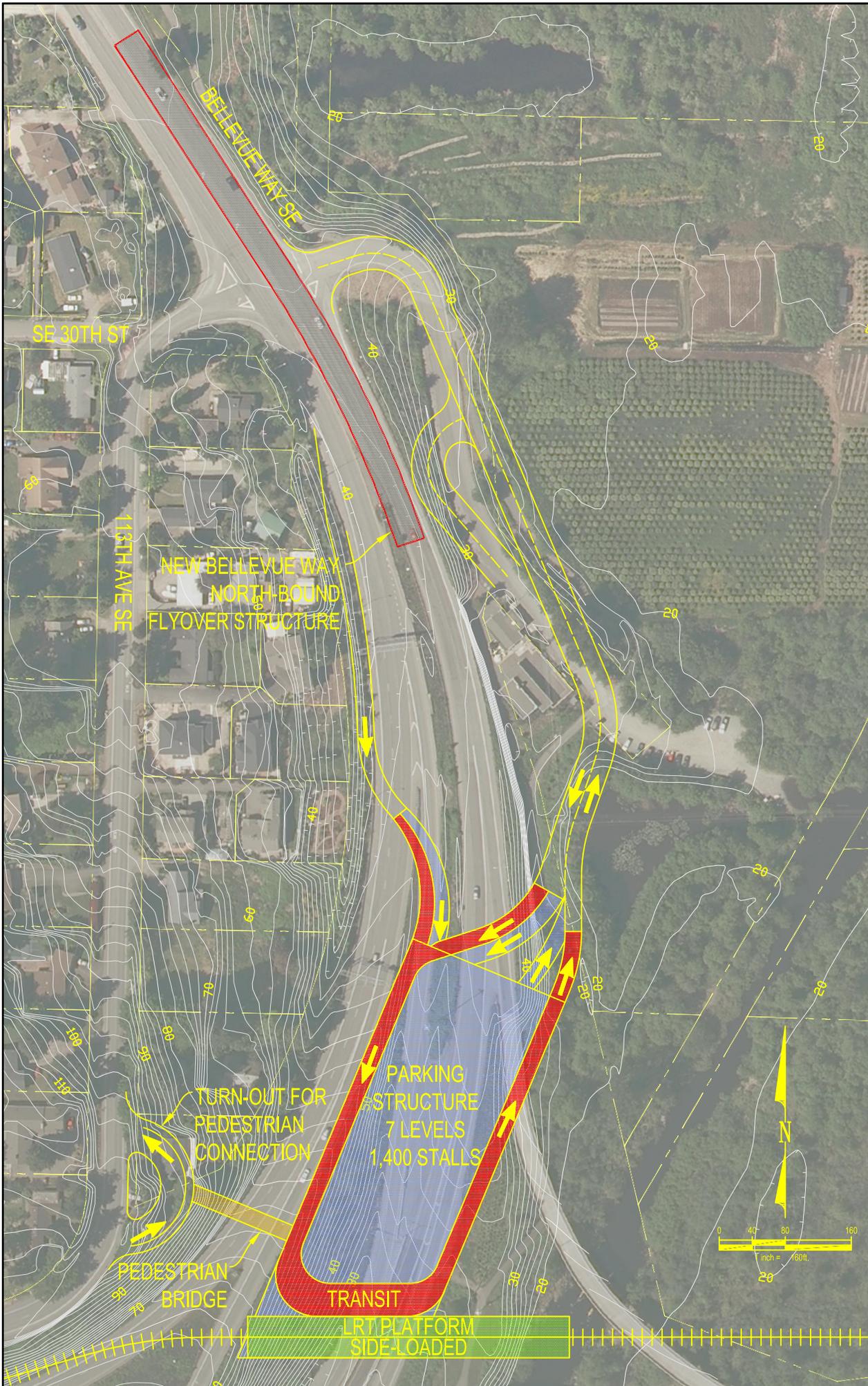
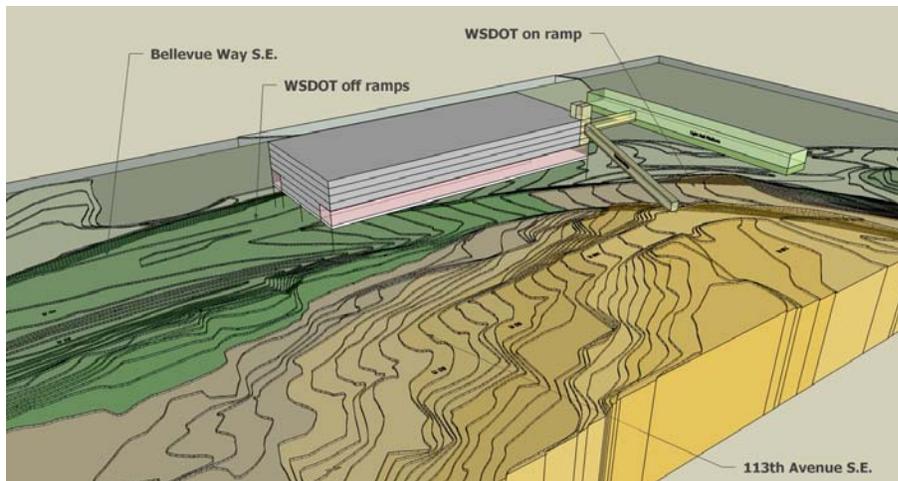
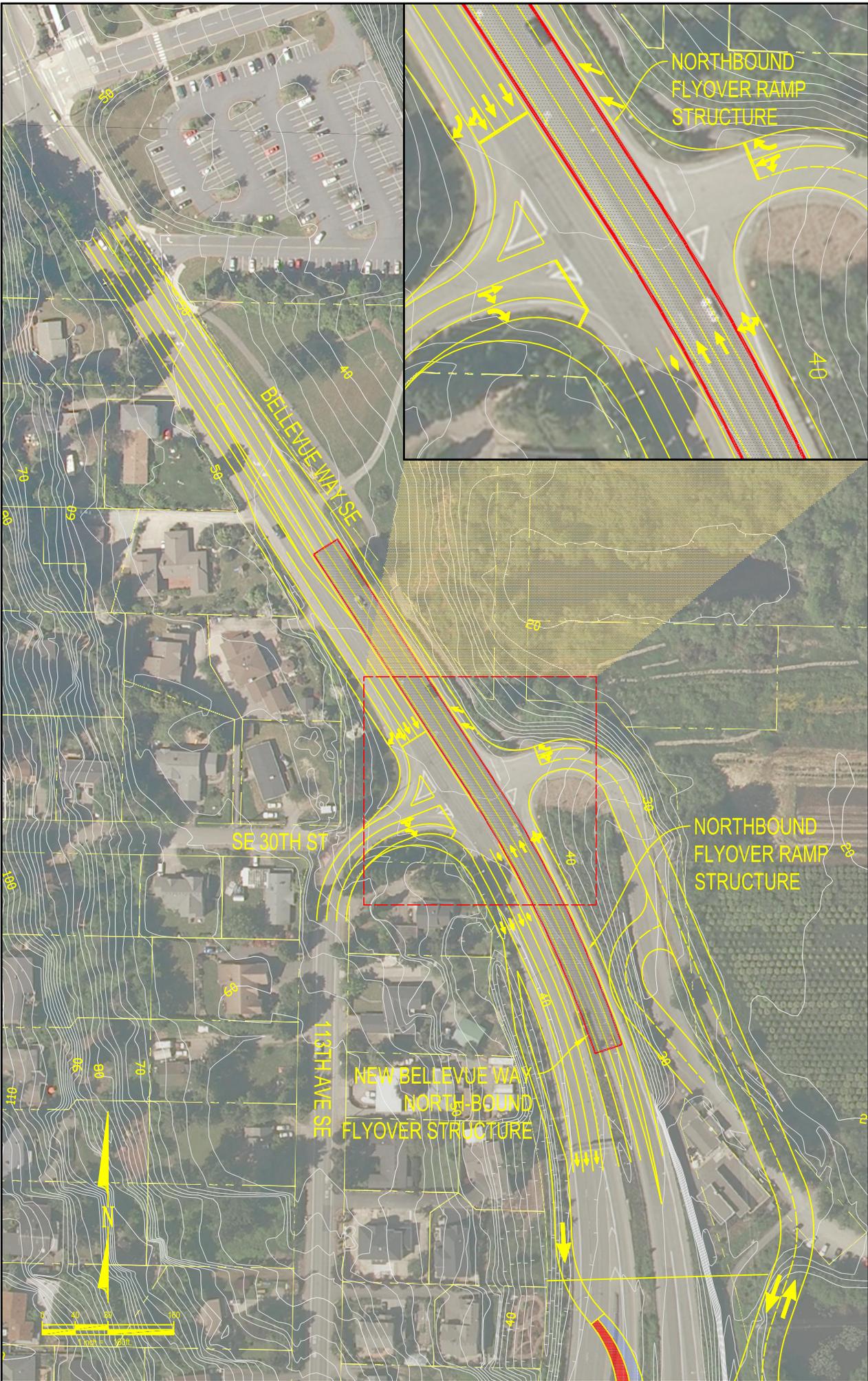


Figure 10



Figure 11





# SOUTH BELLEVUE LRT STATION STUDY

## FLYOVER RAMP AT INTERSECTION (ALTERNATIVE C)



## ALTERNATIVE D

### Physical Location

This alternative's rail alignment curves to the northeast away from Sound Transit's B7 alignment at the WSDOT ramps to place rail platforms near the existing Swayolocken Boat Launch. This allows the bus transit loop and the parking garage to be located on grade immediately adjacent to the rail platforms. Due to poor soils all structures would have pile support including the lowest level. Directly east of the platforms the rail line would curve to rejoin the B7 alignment. The light rail line and platforms are elevated above the WSDOT ramps and Mercer Slough.

The rail station platforms, the parking garage and the bus loop are located on existing park property. A vertical pedestrian connection links the bus loop, parking garage and the light rail platforms. This option requires vehicle grade separation of the SE 30th St and Bellevue Way intersection.

### Road Connections

There will be a grade separation over the existing SE 30th St intersection for the northbound lanes of Bellevue Way SE. This structure will allow southbound buses and cars from Bellevue Way SE enter the facility by passing under the northbound flyover. Northbound buses and cars from the WSDOT ramps enter the facility by passing to the east of the flyover. Southbound exiting vehicles pass under the flyover and merge with southbound traffic while northbound exiting vehicles stay to the east of the flyover and then merge with northbound Bellevue way traffic. With the grade separation in place existing neighborhood traffic on SE 30th St will be able to turn left and head north on Bellevue Way.

### Distinctive Features

- Alternative D places the entire rail/bus parking facility east of Bellevue Way.
- This allows the bus facility and the garage to be at grade with the rail platforms as aerial structures.
- This creates a compact footprint with relatively short pedestrian travel distances.
- The entire facility is on park land near Mercer Slough.
- To function properly this alternative utilizes a grade separation flyover on northbound Bellevue Way.
- No direct pedestrian connection to the neighborhood west of Bellevue Way.
- The soil conditions are unfavorable in the slough requiring pile support and structure monitoring.



# SOUTH BELLEVUE LRT STATION STUDY ALTERNATIVE D



## ALTERNATIVE E

### Physical Location

This alternative utilizes the Sound Transit B7 horizontal light rail alignment with platforms that run parallel to I-90. The rail station platforms, the parking garage and the bus loop are located adjacent to I-90 in existing wetlands. The light rail platforms would be higher than the current B-7 alignment since the current alignment calls for a sag curve where the platforms would be located. Due to poor soils all structures would have pile support including the lowest level.

The rail station platforms, the parking garage and the bus loop are located on existing park property. A vertical pedestrian connection links the bus loop, parking garage and the light rail platforms. This option requires vehicle grade separation of the SE 30th St and Bellevue Way intersection.

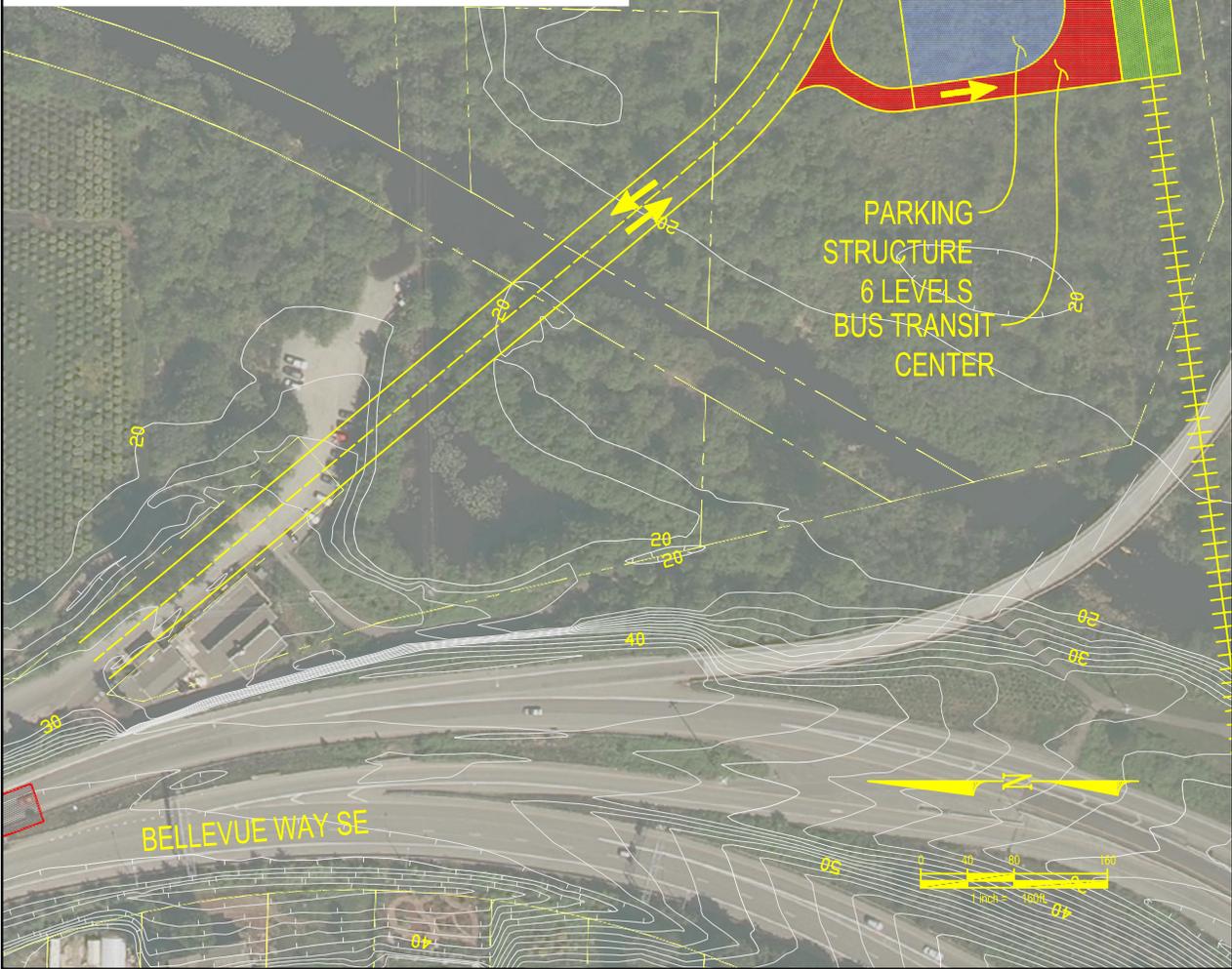
### Road Connections

There will be a new bridge structure across Mercer Slough linking the SE 30th St road end (Sweyolocken Boat Launch) to 118th Ave SE. There will be a grade separation over the existing SE 30th St intersection joining the northbound WSDOT ramps with northbound Bellevue Way. This structure will allow southbound buses and cars from Bellevue Way to enter the facility by passing under the northbound grade separation flyover. Northbound buses and cars from the WSDOT ramps enter the facility by passing to the east of the flyover. Southbound exiting vehicles pass under the flyover and merge with southbound traffic while northbound exiting vehicles stay to the east of the flyover and then merge with northbound Bellevue way traffic. With the grade separation in place existing neighborhood traffic on SE 30th St would not be able to turn left and head north on Bellevue Way.

### Distinctive Features

- Alternative E places the entire rail/bus/parking facility east of Bellevue Way.
- This allows the bus facility and the garage to be at grade with the rail platforms as aerial structures.
- This creates a compact footprint with relatively short pedestrian travel distances.
- The entire facility is on park land near Mercer Slough.
- To function properly this alternative utilizes a grade separation flyover on northbound Bellevue Way SE.
- This option could also create a new road/bridge structure to connect Bellevue Way SE with 118th Ave SE, although this would increase the impact to the park.
- The facility is about 80' from base to top of parking deck.
- The soil conditions are unfavorable in the slough requiring pile support and structure monitoring.
- No direct pedestrian connection to neighborhoods.

# SOUTH BELLEVUE LRT STATION STUDY ALTERNATIVE E





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## 4. Initial Screening Analysis

The objective of the initial screen was to identify the most promising alternative locations for the South Bellevue Station serving the B-7 alignment in the vicinity of Bellevue Way SE. The Project Team utilized screening criteria to narrow down the six potential options to two for a more detailed feasibility analysis. The Project Team also considered relevant physical constraints and requirements identified through discussions with WSDOT and Sound Transit. Initial feedback from WSDOT suggested keeping any garage or access structures north of the light rail platform, so as not to encroach on the I-90 mainline. WSDOT also mentioned that any structure over 300 feet in length and situated over a ramp would be treated as a tunnel and need to provide fire and life safety measures. Sound Transit noted all options should meet the same programmatic requirements used for the South Bellevue Station as proposed for alignment B2M.

The screening process was comparative across the six options, and did not compare against the proposed South Bellevue Station at the existing South Bellevue Park & Ride or the 118th Station option included as part of the B7 alignment in the DEIS. The comparison considered the pros and cons of a new station including the new parking structure and associated access improvements.

The following screening criteria were developed based on adopted Council policy.

### **TRANSPORTATION AND ACCESSIBILITY:**

- Maximize user convenience, including transit, pedestrian, and bike connections
- Provide access for existing residences and businesses
- Minimize traffic impacts on existing streets
- Meet regional transportation system needs, including allowing for regional transit connections
- Allow for functional multi-modal operation of local street network

*Policy basis: Comp Plan TR 71, 75.5, 75.6, 75.9, 75.25, 75.27, & 75.30; Light Rail Best Practices (LRBP) Guiding Principle #1; LRBP Elevated, At-Grade & Tunnel Best Practices A, B, C, D; Future HCT Interest Statement (June 2005); Regional Mobility Interest Statement (Nov. 2004).*

### **PARK IMPACTS:**

- Minimizes impacts to core functions of Mercer Slough, including recreational uses, environmental education functions, and open space value

- Ability to meet federal requirements for equivalent park replacement and opportunities for mitigation within Mercer Slough Park

*Policy basis: Mercer Slough Open Space Master Plan objectives (1990).*

### **ENVIRONMENTAL IMPACTS:**

- Minimize impacts to riparian areas, wetlands, and wildlife habitat
- Ability to accommodate mitigation within Mercer Slough

*Policy basis: Comp Plan TR 75.1 & 75.11; LRBP Land Use Best Practice A.*

### **NEIGHBORHOOD CHARACTER:**

- Protect and enhance the character and livability of existing neighborhoods
- Minimize visual and noise impacts to surrounding areas
- Provide local access for Bellevue neighborhoods
- Minimize property impacts (number, types, acres)

*Policy basis: Comp Plan TR 75.1, 75.7, 75.9; LRBP Guiding Principle #4; LRBP Land Use Best Practice A; LRBP Elevated, At-Grade & Tunnel Best Practices A, B, C, D, F; Regional Mobility Interest Statement (Nov. 2004).*

### **CONSTRUCTABILITY AND RISK:**

- Duration of construction
- Impacts to street and highway operation
- Risk factors
- Staging areas
- Ability to mitigate impacts

*Policy basis: Comp Plan 75.18, 75.30 & 75.35; LRBP Guiding Principle #3; LRBP Construction Impacts & Mitigation Best Practice B.*

## REGIONAL CONSISTENCY:

- Opportunities to be compatible with WSDOT plans and functions in the Bellevue Way/I-90 interchange
- Compatible with Sound Transit’s long-range plans and East Link programmatic requirements (as detailed on p. 7)

*Policy basis: Comp Plan TR 2, 29, 31, 66.*

	<b>Transportation</b>	<b>Park</b>	<b>Environmental</b>	<b>Neighborhood Character</b>	<b>Constructability and risk</b>	<b>Regional Consistency</b>
<b>Option A-1 (West)</b>	-Right turn entering and exiting mvmts minimize traffic ops impacts -150’ walk from garage to platform; ped access thru garage -300’ walk from bus transit platform to rail platform.	-NB access overpass will require some park acquisition east of SE 30th	-NB access overpass will have some wetland impacts east of SE 30th	-Top level of garage at same grade as high point of 113 <sup>th</sup> Ave SE b/c built into hillside -13 residences removed -Change in view with garage and station for residents on west side of 113th -Change in adjacent use for residents on west side of 113th	-Staging can be accommodated on site -Short span constructed over Bellevue Way may require limited closure -Some construction impacts in park/wetland east of SE 30th	-Ped bridge and station over WSDOT right-of-way; require WSDOT approvals -Meets Sound Transit’s programmatic requirements
<b>Option A-2 (West)</b>	-Roundabout could help smooth traffic flow into and out of facility -Transit further from platform than A-1 -Traffic and ped same as A-1	-Same as A-1	-Same as A-1	-Same as A-1	-Same as A-1	-Same as A-1

	<b>Transportation</b>	<b>Park</b>	<b>Environmental</b>	<b>Neighborhood Character</b>	<b>Constructability and risk</b>	<b>Regional Consistency</b>
<b>Option B (West)</b>	-Transit access closer to platform -Traffic and ped same as A-1	-Same as A-1	-Same as A-1	-Same as A-1 -Additional transit structure creates more structure in view from Enatai	-Same as above -Additional construction complexity with ramps and bus facility over I-90 off-ramps -Additional staging required for bus transit facility, as compared to A-1	-Ped bridge, station, and bus transit facility over WSDOT right-of-way; require WSDOT approvals -Meets Sound Transit's programmatic requirements
<b>Option C (East)</b>	-Ped access via bridge from 113 <sup>th</sup> Ave SE -New access ramps to garage from east and west side of BW -All exiting mvmts on east side of BW; assume requires grade separated NB BW off ramps to allow SE 30 <sup>th</sup> to be signalized (per WSDOT)	-Access ramps on east side of BW will have some parks impacts -New ramps and structure will be visible to park users, such as non-motorized boaters and the I-90 ped/bike path users	-Access ramps on east side of BW will have some permanent and temporary wetland and/or buffer impacts -Mitigation likely could be accommodated within Mercer Slough	-Change in view with garage structure and station visible from neighborhood -Change in view from neighborhood with Bellevue Way grade separation	-Construction complexity increased because of location over active I-90 off ramps -Likely require rebuilding off ramps; potentially require putting ramps into a full tunnel structure (e.g. Mt. Baker Tunnel) depending on length, which increases structure and cost -More disruption to I-90 users during construction than other options	-Significant new structure within WSDOT limited access ROW; WSDOT approvals required; adds complexity and time to project -Meets Sound Transit's programmatic requirements

	<b>Transportation</b>	<b>Park</b>	<b>Environmental</b>	<b>Neighborhood Character</b>	<b>Constructability and risk</b>	<b>Regional Consistency</b>
<b>Option D (East)</b>	<ul style="list-style-type: none"> <li>-All exiting mvmts on east side of BW; requires grade separated NB BW off ramps to allow SE 30<sup>th</sup> to be signalized (per WSDOT)</li> <li>-Access off of east side of Bellevue Way longer ped walk distance (as compared to Option C); would require sidewalks or crosswalks at SE 30<sup>th</sup> signal</li> </ul>	<ul style="list-style-type: none"> <li>-Location of guideway will impact open space value and recreational uses</li> <li>-Likely difficult to find replacement property, similar to “B7 Modified,” because of unique characteristics and statewide resources (per NPS letter to Council Feb 11, 2010)</li> </ul>	<ul style="list-style-type: none"> <li>-More wetland and wildlife habitat impacts than C because of new structure and corridor through the Slough</li> </ul>	<ul style="list-style-type: none"> <li>-Change in view with garage structure and station visible from neighborhood</li> </ul>	<ul style="list-style-type: none"> <li>-Construction would require temporary access road and staging area in Mercer Slough</li> <li>-Potentially more complexity in building in wetlands than Option C</li> <li>-Higher construction risk with soils (per WSDOT)</li> </ul>	<ul style="list-style-type: none"> <li>-New grade separated NB BW off ramps in WSDOT limited access ROW; require WSDOT approvals</li> <li>-Meets Sound Transit’s programmatic requirements</li> </ul>

	<b>Transportation</b>	<b>Park</b>	<b>Environmental</b>	<b>Neighborhood Character</b>	<b>Constructability and risk</b>	<b>Regional Consistency</b>
<b>Option E (East)</b>	<ul style="list-style-type: none"> <li>-All exiting mvmts on east side of BW; requires grade separated NB BW off ramps to allow SE 30<sup>th</sup> to be signalized</li> <li>-Access off of east side of Bellevue Way longest ped walk distance (as compared to Options C and D); would require sidewalks or crosswalks at SE 30<sup>th</sup> signal</li> <li>-Access of 118<sup>th</sup> increases local access for those east of Mercer Slough</li> <li>-Increase bus travel time (operational costs inc.) because of longer distance to station</li> </ul>	<ul style="list-style-type: none"> <li>-Most park impacts because of new garage, guideway, and road structure in park</li> <li>-Potential chance in visual character for park users</li> <li>-Potential to mitigate through replacement property north of park</li> </ul>	<ul style="list-style-type: none"> <li>-Most wetland impact with new structure, guideway, and road</li> <li>-Multiple agencies involved in permitting in wetlands; have to pass “no feasible alternative” test; unlikely to be permitted (See Appendix D for more detail)</li> <li>-Existing I-90 mitigation site affected; increases mitigation requirements; likely not able to mitigate within Slough (See Appendix D for more detail)</li> </ul>	<ul style="list-style-type: none"> <li>-Change in view with garage structure visible from neighborhood</li> <li>-Farthest away from neighborhood, increasing access time for all modes</li> </ul>	<ul style="list-style-type: none"> <li>-Construction would require temporary access road and staging area in Mercer Slough</li> <li>-Potentially more complexity in accessing site than other options</li> <li>-Potentially more complexity in building in wetlands than other options</li> <li>-Higher construction risk with soils (per WSDOT)</li> </ul>	<ul style="list-style-type: none"> <li>- New grade separate NB BW off ramps in WSDOT limited access ROW; require WSDOT approvals</li> <li>-Meets Sound Transit’s programmatic requirements</li> </ul>

## DISCUSSION OF SCREENING ASSESSMENT

### West Side of Bellevue Way Options

#### Alternative A-1 – *Promising*

Alternative A-1 had a number of advantages compared to other alternatives. The majority of this option is built outside of the Mercer Slough Park and sensitive areas. The land is more likely to be dry than land in the park. The topography of the site is favorable to build a multi-story parking garage into the hillside, minimizing the bulk and amount of structure visible to the neighborhood. The location provides the closest access for all modes for the neighborhood. Construction staging could likely be accommodated on site.

The weaknesses of this option include displacement of twelve residences, increased traffic volumes on 113th Avenue SE, a residential street, and change in view, particularly at the north end of the site. This design would also require some building within the Park and Slough for the access ramps on the east side of Bellevue Way, and building of the station and structure over the I-90 off-ramps would add complexity to station construction.

Given the advantages described above, this option was viewed as promising from a feasibility perspective.

#### Alternative A-2 – *More Promising*

Alternative A-2 is largely the same as A-1, with the main difference being a roundabout as part of the garage entrance design. The transit facility within the garage is a bit closer to the platform than the design in A-1. All of the comments above apply, and the roundabout was viewed as a promising design variation to manage traffic flow on 113th Ave SE and Bellevue Way SE.

Given that this has all of the advantages as A-1, and makes an improvement to traffic flow, this option was viewed as more promising from a feasibility perspective.

#### Alternative B – *Less Promising*

Alternative B is very similar to Alternative A-2. The main difference is that the bus transit platforms and layover functions are accommodated by a separate facility directly underneath the light rail station. This change would make it significantly more convenient for switching from bus to rail. However, it would be less convenient for bus/car users. This added significant structure parallel to the garage and over the I-90 off ramps. Given that the transit functions can be accommodated within the garage structure in A-2 without making it extremely tall, the potential to provide attractive walk access for transit patrons in the garage via the ped bridge, and the additional cost of building a more substantial structure over the I-90 off ramps, this option was not viewed as being as promising as options A-1 or A-2.

## East Side of Bellevue Way Options

### Alternative C –*More Promising*

Alternative C advantages include avoiding residential displacements, combining all station functions in one area and minimizing park and environmental impacts by largely locating in an area currently serving transportation uses. Weaknesses include constructing an entirely elevated facility over active freeway ramps and dealing with the challenging soil conditions. The facility will require longer access ramps dictated by the southern location and the need to grade-separate the northbound lanes on Bellevue Way SE to allow for a full signal at SE 30th. The full signal is necessary to allow a safe and reliable SB movement from the garage to the I-90 off-ramps. Other considerations include the height and bulk of the garage, which will change views from the neighborhood. A major challenge with this alternative will be securing WSDOT approval for the location of a significant permanent structure within WSDOT right-of-way and over active ramps. (Per initial feedback from WSDOT, the original design of Alternative C was modified to locate the garage completely north of the platform, rather than under and closer to the I-90 mainline.)

This option was viewed as more promising given the avoidance of major property, parks, and wetland impacts.

### Alternative D –*Less Promising*

Alternative D advantages include avoiding residential displacements and the proximity to the east side of Bellevue Way, reducing transportation access facilities needed to reach the garage, bus facility, and platform. Weaknesses include wetland impacts, poor neighborhood connectivity, very poor soils, and the limited opportunity to mitigate the parks impact, consistent with the National Parks Service assessment of the B7 Modified alignment in February 2010.

This option was viewed as less promising, given the environmental impacts, and mitigation requirements and the permitting challenges given that other alternatives exist. See Appendix D for additional information on permitting challenges.

### Alternative E –*Less Promising*

Alternative E advantages are the location along the B7 alignment, which allows B7 to stay close to the existing I-90 corridor, and the potential to provide direct access from 118th Ave SE. The most significant weaknesses are the wetland impacts caused by the new structure and access roads, the very poor soils, and the associated permitting risk. Multiple agencies have permitting authority for construction in the wetlands. The alternative would have to pass a “no feasible alternative” test, meaning that Sound Transit would have to argue that this is the only feasible alternative based on a number of factors. Given the variety of other options, there is risk that this option could meet significant permitting hurdles. (See Appendix D for more detail.) Other weaknesses include the increased distance to the station from Bellevue Way, the height and bulk of the new structure which

would be visible from the neighborhood, impact to park functions, and the increased construction risk and challenges of building in a wetland away from existing access roads and potential staging areas.

This option was viewed as less promising, given the environmental impacts, very poor soils, permitting risk, and construction challenges.

## **RESULTS**

The screening process resulted in the identification of Options A-2 and C as the most promising for advancement into a more detailed feasibility assessment.



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## 5. Traffic Analysis

Locating the South Bellevue Station near the intersection of SE 30<sup>th</sup> Street and Bellevue Way SE will significantly change the traffic patterns at that intersection. Currently traffic is heavy in the northbound direction in the AM peak due to commuter traffic accessing downtown Bellevue and the existing Park & Ride on Bellevue Way SE. Significant southbound backups occur at this intersection in the PM peak as a result of the I-90 westbound ramp meters.

To identify what improvements would be needed on Bellevue Way SE, a PM peak hour traffic analysis was conducted for alternatives A-2 and C. Each of these alternatives assumes the South Bellevue Park & Ride would be closed and all traffic coming to and from the new station will use the SE 30<sup>th</sup> Street/Bellevue Way SE intersection. Traffic associated with the existing Park & Ride was removed from the traffic network and redistributed based on the new location and projected growth. Table 1 illustrates the traffic volume entering and exiting the Station for both the existing condition (existing Park & Ride) and the future build condition (Multi-modal Transit Station – LRT and bus). The data was supplied by the City of Bellevue.

**Table 1. Comparison of PM peak hour Traffic Volumes at South Bellevue Park & Ride**

	Approach			
	Entering		Exiting	
	from the South	From the North	to the south	to the north
Existing	90	100	220	260
Future	130	135	435	485

Source: City of Bellevue Existing Condition Park & Ride Synchro model and Eastside High Capacity Transit (HCT) "build" Synchro model

The traffic modeling assumptions are as follows:

- Existing data based on 2001 year data.
- Existing data does not include northbound transit trips as these trips currently do not enter the Transit Center
- Future data estimates increased trips based on demand for LRT, and estimated bus transit volumes - including northbound bus transit trips that do not currently enter the facility.

- Bus transit volumes from the west such as Sound Transit’s Route 550 would be replaced by LRT service. All future bus transit service will be via Bellevue Way to the north and I-90, to and from the east. (See Appendix C)

The following describes the intersection configuration for each alternative:

**Alternative A-2: EB/SB Signal with site Roundabout**

Alternative A-2 provides an overcrossing of Bellevue Way SE in order to eliminate the need for a traffic signal at SE 30th Street. South Bellevue Station traffic would access the site via a right-in and right-out intersection configuration at SE 30th Street. The demand for left turns and east-west through traffic is reduced through the incorporation of a roundabout located within the project site.

Although it was desirable to eliminate the need for a traffic signal at the SE 30th Street/Bellevue Way SE intersection on SE 30th Street, an eastbound/southbound signal was considered the most appropriate control for this location. The need for this limited signal control was necessary to allow general purpose and transit traffic an opportunity to make the right turn onto Bellevue Way SE and change lanes quickly in order to access the HOV lanes and eastbound I-90. There would be no signalized control for northbound Bellevue Way traffic, allowing uninterrupted flow for northbound I-90 existing ramp traffic. The east leg of the SE 30th Street intersection would be limited to right-in/right-out movements.

Currently there is limited distance to weave from the eastbound I-90 off-ramps to the right lane on Bellevue Way SE in order to make a right turn at SE 30th Street. Modifications to the ramp channelization and/or shifting the east leg of the intersection to the north may be required to increase the weave length.



Figure 15: Alternative A2

### Alternative C: – NB Flyover with Signal

Alternative C includes a signal at SE 30th Street and a flyover structure for northbound Bellevue Way traffic. Southbound traffic entering the Station would use an off ramp just south of the existing SE 30th Street intersection. Northbound entering traffic would travel on Bellevue Way SE and turn right at SE 30th Street. The same weave-length issues mentioned in Alternative A-2 apply to this alternative. All exiting Station traffic would use the east approach at a new traffic signal. Northbound traffic on Bellevue Way would be uninterrupted and travel over this intersection in a 2-lane flyover structure. Northbound to westbound neighborhood traffic would be permitted, and would be controlled by a left turn signal phase.



Figure 16: Alternative C

As an Option to Alternative C, an at-grade Intersection with a full traffic signal was also examined. This concept was tested to quantify the northbound queue – a concern expressed by WSDOT. It should be noted that although the traffic is heavier overall in the PM peak hour, the AM peak hour is likely to have a higher northbound directional volume, so reported northbound queues will vary. An AM peak hour analysis was not conducted but should be reviewed if this option is explored further.

## TRAFFIC ANALYSIS RESULTS

The following compares the two alternatives.

**Table 2: Summary of Traffic Analysis**

Bellevue Way and SE 30th Street - PM Peak Hour							
Alternative Description	Movements Controlled by Signal	Free Flow Movements	Restricted Movements	NB (SB) 95th percentile Queue (ft)	Cycle length (Sec)	Delay/ Veh (sec)	LOS **
Alternative A2	SB (Thru, Rt) EB (Rt)	NB (Thru, Rt) WB (Rt)	NB/SB (Lt*) EB/WB (Lt, Thru*)	0 (567)	80	16.1	B
Alternative C	SB (Thru, Rt) EB (Lt, Rt) WB/NB (Lt)	NB (Thru, Rt) WB (Rt)	EB/WB (Thru) SB (Lt)	0 (738)	90	26.9	C
Alternative C Option	SB (Thru, Rt) NB (Lt, Th, Rt) EB (Lt, Rt) WB(Lt)	WB (Rt)	EB/WB (Thru) SB (Lt)	337 (738)	90	29.4	C

\* Movements are accommodated using right turn and roundabout.

\*\* Level of Service (LOS) per the Highway Capacity Manual See Table 3 below.

**Table 3: Level of Service (LOS)**

Level of Service (LOS)	Intersection Delay
A	≤10 sec
B	10-20 sec
C	20-35 sec
D	35-55 sec
E	55-80 sec
F	≥80 sec

According to the draft EIS, the Level of Service for this intersection is expected to degrade to a LOS F if no improvements were made for the B2M alignment with a station at the existing Park & Ride.

(Source: East Link Project Draft EIS, December 2008, Chapter 3, Transportation Environment and Consequences, Page 3-56, See Figure 17 below.) In addition, it should be noted that under either Alternative A2 or C, the traffic volume at the 112th Avenue SE /Bellevue Way SE intersection would be greatly reduced if the existing Park & Ride is closed.

## BUS TRANSIT IMPACTS

The existing South Bellevue Park & Ride is ideally suited for bus access. Buses traveling northbound on Bellevue Way pull into a bus pullout on the street, while all other buses use a load/unload zone that is adjacent to the street. Both Alternative A-2 and C will result in additional travel time when compared to the existing Park & Ride.

The following table illustrates the expected changes in transit delay.

**Table 4 – Summary of Change in Transit Delay**

Summary of Change in Transit Delay				
ALTERNATIVE	TRANSIT DIRECTION	EXISTING PARK & RIDE TRANSIT DELAY (min)	ALTERNATIVE TRANSIT DELAY (min)	CHANGE IN TRANSIT DELAY (min)
A-2	Northbound	0.3	3.2	2.9
	Southbound	1.2	3	1.8
C	Northbound	0.3	2.5	2.2
	Southbound	1.2	2.9	1.7

Assumptions:

- Travel time associated with a 10 mph travel time along the new Transit Station roadways and associated intersection delay
- Excludes bus dwell time, assumes equal for existing and future condition.
- Existing northbound delay is 0.3 minutes of delay associated with northbound buses required to merge into traffic
- Existing southbound delay is 1.2 minutes of signal delay making the westbound left turn from 112<sup>th</sup> Avenue SE to Bellevue Way SE.



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## 6. Feasibility Considerations

A feasibility analysis was conducted for Alternatives A-2 and C. The analysis considered:

- Transportation and Accessibility
- Parks Impacts
- Environmental Impacts
- Neighborhood Character
- Constructability and Risk

The objective of the analysis was to consider the functionality of each alternative, identify how it would impact the existing transportation system and determine what improvements would be needed to mitigate for those impacts. The analysis also included developing costs for each alternative and consideration of construction issues.

## TRANSPORTATION AND ACCESSIBILITY

Maximize user convenience, including transit, pedestrian, and bike connections

Alternative A-2	Alternative C
<ul style="list-style-type: none"> <li>• The site layout is not optimum for making connections between modes. Bus users may have to walk up to 300 feet between bus platform and rail platform.</li> <li>• The elevation difference between the bus and rail platforms may be up to 40 feet.</li> <li>• All rail users will have to cross a 200 foot long pedestrian bridge to access the rail platforms.</li> <li>• Pedestrians and bicyclist will be able to access the station from 113th Avenue SE, and via an over crossing of Bellevue Way SE that connects to the trail system in Mercer Slough Park. The overcrossing will eliminate the need to cross Bellevue Way SE at grade</li> <li>• A preliminary analysis of transit travel time for northbound and southbound buses using this facility is an additional 2.9 and 1.8 minutes, respectively as compared to the existing Park &amp; Ride bus stop configuration. See Traffic Analysis Section 5 for more detail.</li> <li>• The intersection level of service at SE 30<sup>th</sup> Street and Bellevue Way SE will be “B” for the PM peak.</li> </ul>	<ul style="list-style-type: none"> <li>• The bus platform is located below the rail platform requiring a minimum walking distance between modes. The parking garage is also ideally situated in close proximity to both rail and bus platforms.</li> <li>• Bicyclist and pedestrian access to the station is similar to alternative A-2, although it is slightly less convenient for non motorized users coming from the west side of Bellevue Way SE when compared to A-2.</li> <li>• A preliminary analysis of transit travel time for northbound and southbound buses using this facility is an additional 2.2 and 1.7 minutes, respectively as compared to the existing Park &amp; Ride bus stop configuration. See Traffic Analysis Section 5 for more detail.</li> <li>• The intersection level of service at SE 30<sup>th</sup> Street and Bellevue Way SE will be “C”.</li> </ul>

**Provide access for existing residences**

Alternative A-2	Alternative C
<ul style="list-style-type: none"> <li>Residents will be able to access the station from 113th Avenue SE, and although they will not have to cross Bellevue Way SE, this location is not as central to the Enatai neighborhood as the existing Park &amp; Ride.</li> <li>Since SE 34th Street is the only Street that connects the Enatai neighborhood with 113th Ave SE it might be worthwhile to create a connection on SE 30th Street between 112th Ave SE and 113th Ave SE for non motorized users.</li> </ul>	<ul style="list-style-type: none"> <li>Access for existing residents would be similar to Alternative A-2, although slightly less convenient since there will not be vehicle access from 113th Avenue SE.</li> <li>At a minimum a pick up and drop off zone on 113<sup>th</sup> would be needed. This is likely to require the acquisition of at least one residential parcel.</li> <li>Pedestrians coming from the west would have to walk further to get to the facility when compared with A-2</li> </ul>

**PARK IMPACTS:**

Alternative A-2	Alternative C
<ul style="list-style-type: none"> <li>Lesser impact on Mercer Slough Park</li> <li>Alternative A-2 encroaches approximately 0.3 acres into the park to accommodate the access ramps. The proximity of the ramps and LRT platforms to the park will detract from the park user experience. This impact will be substantially less than the impact from Alternative C.</li> </ul>	<ul style="list-style-type: none"> <li>Greater impact on Mercer Slough Park.</li> <li>Alternative C encroaches approximately 0.4 acres into the park to accommodate the access ramps. The widening of Bellevue Way SE may result in wetland buffer impacts.</li> <li>The proximity of the station to the park will detract from the park user experience.</li> </ul>

## ENVIRONMENTAL IMPACTS:

Alternative A-2	Alternative C
<ul style="list-style-type: none"> <li>• Portions of the LRT Platforms will be constructed over or very close to the Slough</li> <li>• Operational Impacts of the LRT platforms will include increased noise and activity at the station and permanent loss of wetland habitat related to placement of the larger columns.</li> <li>• Approximately 0.3 acres of wetland areas will have degraded habitat due to shading impacts.</li> <li>• The roadway ramps will result in a loss of approximately 0.4 acres of wetland near the blueberry farm. This area is also within the Park boundaries and switching the use from park to transportation would require approval from the National Parks Service.</li> <li>• Approximately 4.5 acres of urban residential habitat will be lost.</li> <li>• Mitigation costs for the wetland impacts are \$3.5 to \$4.5 million based on a 6:1 ratio.</li> </ul>	<ul style="list-style-type: none"> <li>• The LRT platform impacts are the same as those noted in Alternative A-2.</li> <li>• Impact to wildlife and park habitat is greater than alternative A-2.</li> <li>• Approximately 1.0 acres of high quality wetland loss. Approximately 0.4 acres of this 1.0 acre are within the park area, and switching the use from parkland to transportation will require approval of the National Parks Service.</li> <li>• Mitigation costs for the wetland fill are \$6.3 to \$8.1 million based on a 6:1 ratio.</li> </ul>

## NEIGHBORHOOD CHARACTER:

Protect and enhance the character and livability of existing neighborhoods

Alternative A-2	Alternative C
<ul style="list-style-type: none"> <li>• Will significantly change the neighborhood character of 113<sup>th</sup> Ave SE. The remaining homes on the west side of the street will no longer feel like they are on a residential street.</li> <li>• Traffic from the local neighborhood will increase.</li> <li>• The views from some of the houses on 113<sup>th</sup> Ave SE may be impacted by the</li> </ul>	<ul style="list-style-type: none"> <li>• The northbound flyover will change the character of Bellevue Way SE making it feel more like an extension of the freeway off ramps. .</li> <li>• The bulk of the parking structure will obstruct the views from homes on the east side of 113<sup>th</sup> Ave SE.</li> <li>• May result in the loss of at least one residential parcel to create the</li> </ul>

<p>north end of the parking structure.</p> <ul style="list-style-type: none"><li>• The ability to make a right turn from NB Bellevue Way to SE 30<sup>th</sup> Street and loop around to 113<sup>th</sup> Ave SE is likely to attract traffic that now goes up to 112<sup>th</sup> Ave SE to make a left turn.</li><li>• A-2 will likely have less of a visual and noise impact than Alternative C.</li><li>• A-2 will result in the loss of up to 13 residences and one undeveloped parcel.</li><li>• LRT 140' closer with B-7 modified horizontal alignment.</li></ul>	<p>connection with 113<sup>th</sup> Ave SE for non-motorized users.</p> <ul style="list-style-type: none"><li>• LRT 140' closer.</li></ul>
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## CONSTRUCTABILITY AND RISK:

### Duration of construction

Alternative A-2	Alternative C
<ul style="list-style-type: none"> <li>• The cost to construct A-2 is \$170 million, including right-of-way and mitigation costs.</li> <li>• Staging for construction could be accommodated within the site.</li> <li>• Expect for the extensive shoring required along the east side of 113<sup>th</sup> Ave SE. The construction of the parking garage bus transit facilities and access ramps are fairly typical.</li> <li>• Construction of the rail station facilities are similar for both alternatives</li> </ul>	<ul style="list-style-type: none"> <li>• The cost to construct C is \$210 million, including right-of-way and mitigation costs.</li> <li>• A separate staging area would have to be identified for this alternative. If it is in the park there is likely to be mitigation required.</li> <li>• The potential for encountering changed soil conditions is much greater with Alternative C when compared with A-2.</li> <li>• The difficulty of construction the facility over active freeway ramps adds additional risk and complexity to the construction.</li> <li>• Alternative C will have a greater impact to traffic on Bellevue Way SE due to construction of the northbound flyover.</li> </ul>

## DISCUSSION

### Transportation and Accessibility

Considering the user experience, Alternative C has a much more convenient layout once the user is in the facility. All the primary mode shifts to and from rail, bus, car, bike and pedestrian are in close proximity to one another.

Pedestrian and bicycle access to Alternative C is slightly less convenient for users since the facility is further south from their point of connection. Vehicle access is similar for both alternatives, although Alternative A-2 results in an intersection level of service “B” at NE 30<sup>th</sup> Street and Bellevue Way SE and for Alternative C the level of service is “C”. There is an additional half-minute of travel time for buses to get to and from Bellevue Way SE for Alternative A-2 when compared to C. This travel time when multiplied by the number of buses service the facility can add up to a substantial amount of time.

### **Impacts to the Park and Natural Environment**

Impacts to Mercer Slough Park are significantly greater with Alternative C since the improvements associated with that alternative are closer to the park.

Both Alternatives will result in the need to convert 0.4 acres of parkland to transportation use, and this conversion will require approval from the National Park Service. Whether additional parkland can be created at the existing Park & Ride lot or if additional property needs to be acquired needs to be confirmed.

Alternative A-2 will require the filling of 0.4 acres of wetland and Alternative C will require the filling of 1.0 acres of wetland. The mitigation for this fill may be accommodated at the existing Park & Ride facility or within the Park.

Park users will definitely “feel” the presence of Alternative C since it will seem as though a major building has been situated next to the park. With Alternative A-2, Bellevue Way SE acts as a buffer from the facility and the park.

### **Neighborhood Character**

Both alternatives will impact the neighborhood, but in different ways. A-2 will change the character of 113<sup>th</sup> Ave SE, and it will result in the loss of 13 parcels including 12 single family residences. The facility itself will be tucked into the hill side and will have less of a visual impact, although it may partially obstruct the views of some residences on the west side of 113<sup>th</sup> Ave SE near the north end of the parking structure. The proposed roundabout and ramp overcrossing of Bellevue Way SE in A-2 will provide local residents who wish to travel northbound on Bellevue Way with a safer way to make that connection.

Alternative C may result in the loss of one single family residence on the east side of 113<sup>th</sup> Ave SE. It will impact the views from those houses that remain, especially those that are just west of the parking structure. The proposed flyover for the northbound lanes of Bellevue Way SE will change the character of that street by extending the freeway ramp environment north of SE 30<sup>th</sup> Street. This will impact at least two homes on the west side of the street.

### **Constructability and Risk**

From a constructability standpoint there are more issues with Alternative C. The soil conditions are not ideal and the complexity of constructing a completely elevated facility over active freeway ramps is much more complex. Obtaining the necessary approval from WSDOT for such a facility will be more time consuming when compared to Alternative A-2.



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## 7. Comparison with B2M and B-7 proposed Stations

This study generated two alternatives that were considered promising based on the initial screening analysis in Section 5. These are alternatives A-2 and C. The Sound Transit route B2M has located the South Bellevue light rail station at the current South Bellevue Park & Ride. The nearest station on route B7 is the 118th SE station which is located near the Wilburton Park & Ride.

The criteria used in the initial screening analysis are:

- Transportation and Accessibility
- Park Impacts
- Environmental Impacts
- Neighborhood Character
- Constructability and Risk

The following is a comparison of this study's Alternatives A-2 and C with the stations on B2M and B7 alignment's comparable stations.

	Transportation and Accessibility	Park	Environmental	Neighborhood Character	Constructability
<b>Option A-2</b>	Good access at juncture of Bellevue Way SE and WSDOT ramps. No signal required, all in and out movements can be right turns. Improves flow of traffic on Bellevue Way SE	Flyover ramp impacts Mercer Slough Park.  National Park Service approval required for conversion of parkland to transit use.	Loss of permeable surface, some stormwater impacts.  Requires filling 0.4 acres of wetland.	13 residential lots lost, neighborhood edge moved to west. Change to 113 <sup>th</sup> Ave SE character.	Majority can be constructed w/o impacting WSDOT ramps; good soil conditions; significant excavation

	Transportation and Accessibility	Park	Environmental	Neighborhood Character	Constructability
<b>Option C</b>	Northbound flyover on Bellevue Way required at SE 30 <sup>th</sup> Street	Access ramp impacts park. National Park Service approval required for switching parkland to transportation use. Close proximity of station will also impact park.	Over existing freeway ramps, low impact. Requires filling 1.0 acres of wetland.	One residential lot lost, neighborhood character affected by view change to the east.	Difficult phasing over ramps; high cost due to height of structure and expected poor soils (cost).
<b>B2M (South Bellevue Station)</b>	Good access from Bellevue Way SE for buses and vehicles. Additional traffic on Bellevue Way SE will degrade level of service at intersections.	Directly adjacent to park.	Redevelopment of existing site, low impact.	Creates only large structure on that side of Bellevue Way. Little impact on character of existing neighborhood.	Need to provide mitigation measures during construction, Poor soils (cost).
<b>B7 (118<sup>th</sup> SE Station)</b>	Closest access is to I-405 at SE 8 <sup>th</sup> . Does not serve the same ridership group. Site may not be able to accommodate save level of bus service. Will impact level of service at SE 8 <sup>th</sup> /118 <sup>th</sup> Ave SE intersection. Not as accessible to Enatai and surrounding neighborhoods. Not consistent with current bus routes.	No adjacent parks	Redevelopment of existing site, low impact	Generally suburban freeway character, little change.	Site is very constrained for the full program build out.





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