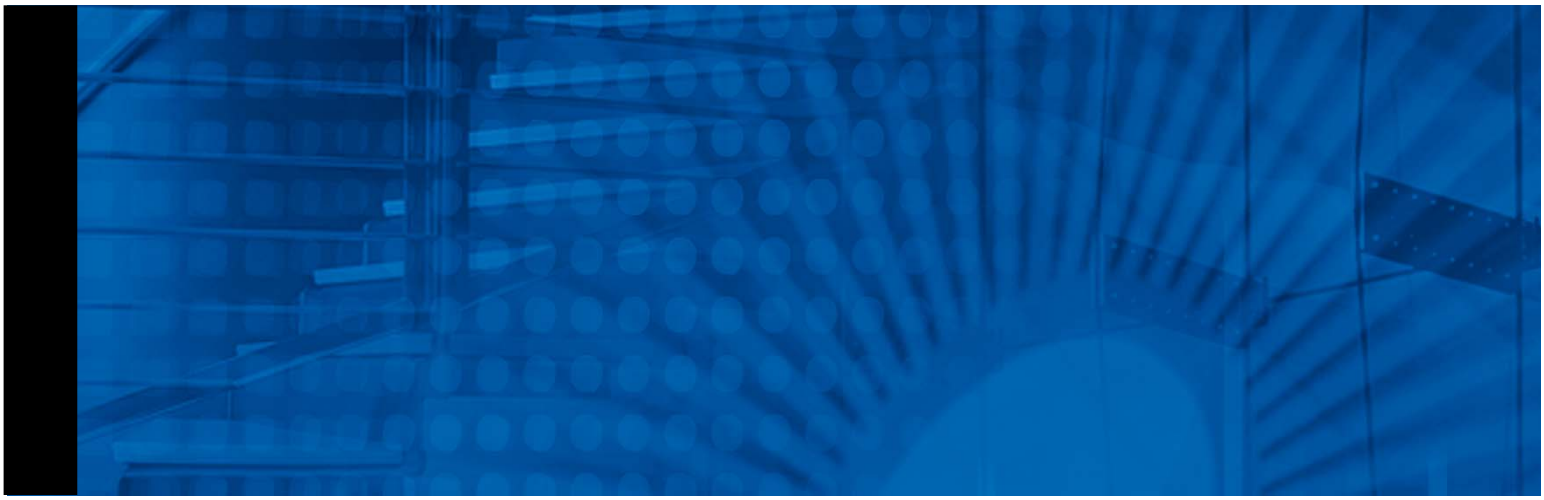
City of Bellevue
Transportation Department

South Bellevue Station
Alternative Location Analysis



July 2010 | Final Report

50 YEARS kpff Consulting Engineers

City of Bellevue Transportation Department

South Bellevue Station Alternative Location Analysis

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 Sweyolocken 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 wide of Bellevue Way SE between 113th Ave SE, and is south of SE 30th 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, 118th 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 112th Ave SE and then follows 112th 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 118th Ave SE, and continuing north to approximately SE 8th Street. At SE 8th 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 8th Street along 118th 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 30th 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 118th Station are presented in Section 7.

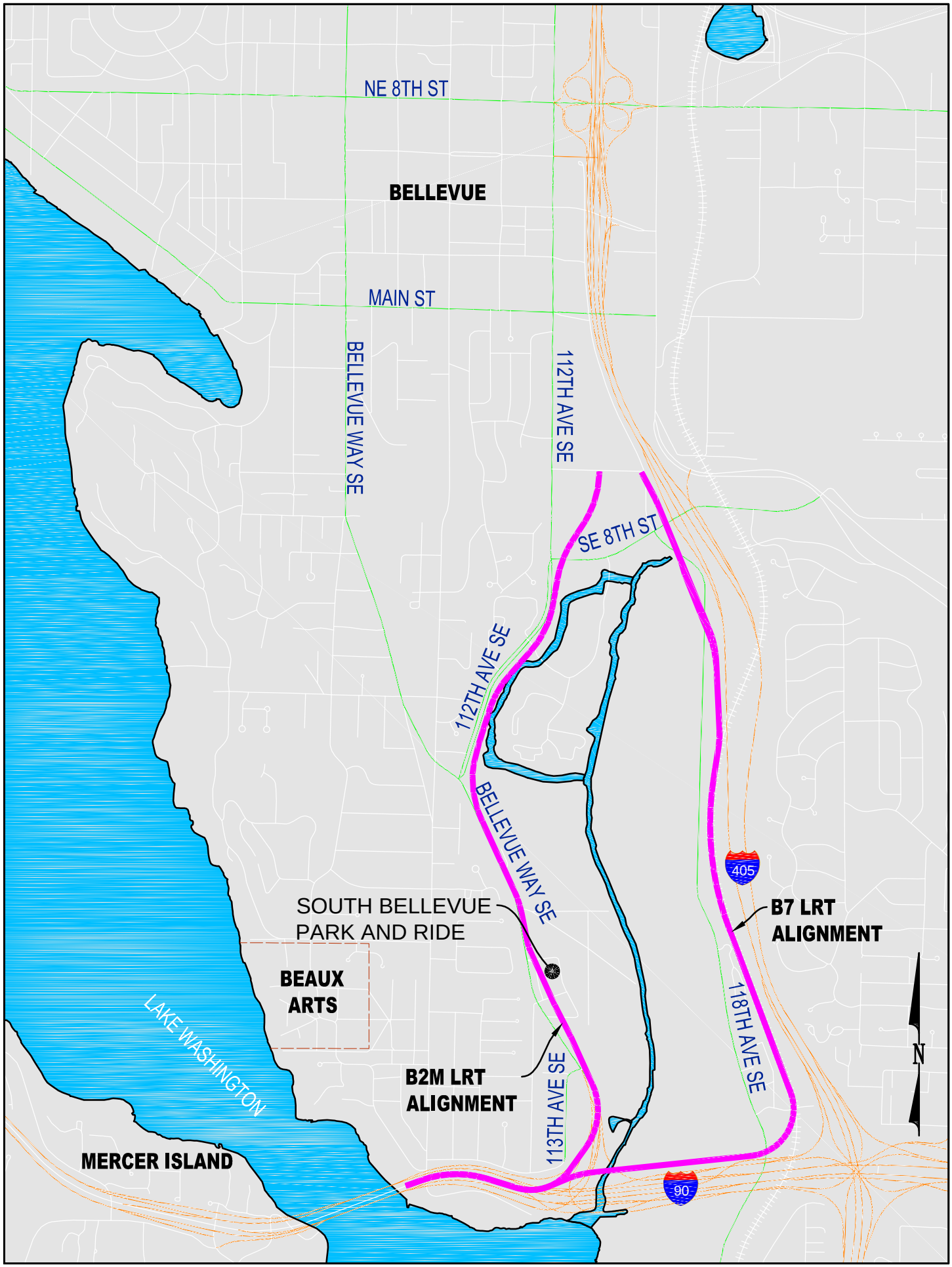
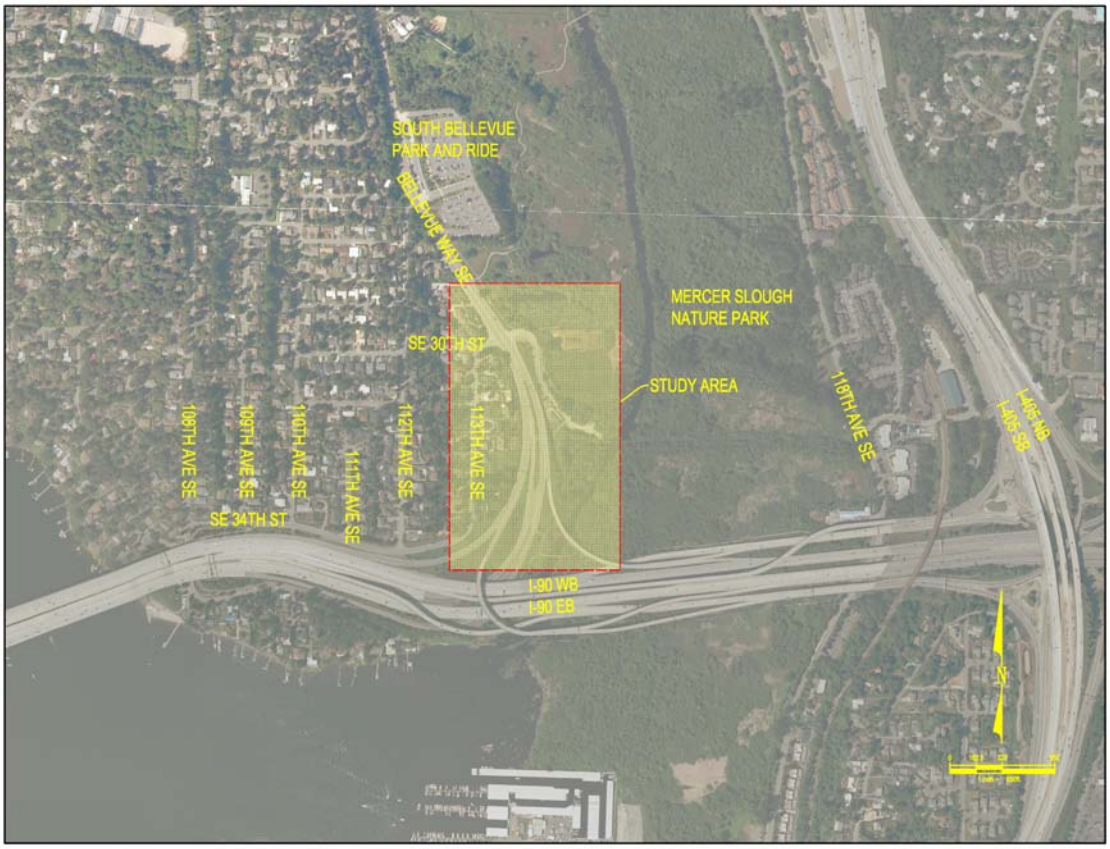

NE 8TH ST
BELLEVUE
MAIN ST
BELLEVUE WAY SE
112TH AVE SE
SE 8TH ST
112TH AVE SE
BELLEVUE WAY SE
405
SOUTH BELLEVUE
PARK AND RIDE
B7 LRT
ALIGNMENT
BEAUX
ARTS
LAKE WASHINGTON
118TH AVE SE
N
B2M LRT
ALIGNMENT
113TH AVE SE
MERCER ISLAND
90

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 34th Street.

WSDOT has also indicated there can be no changes at the SE 30th 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

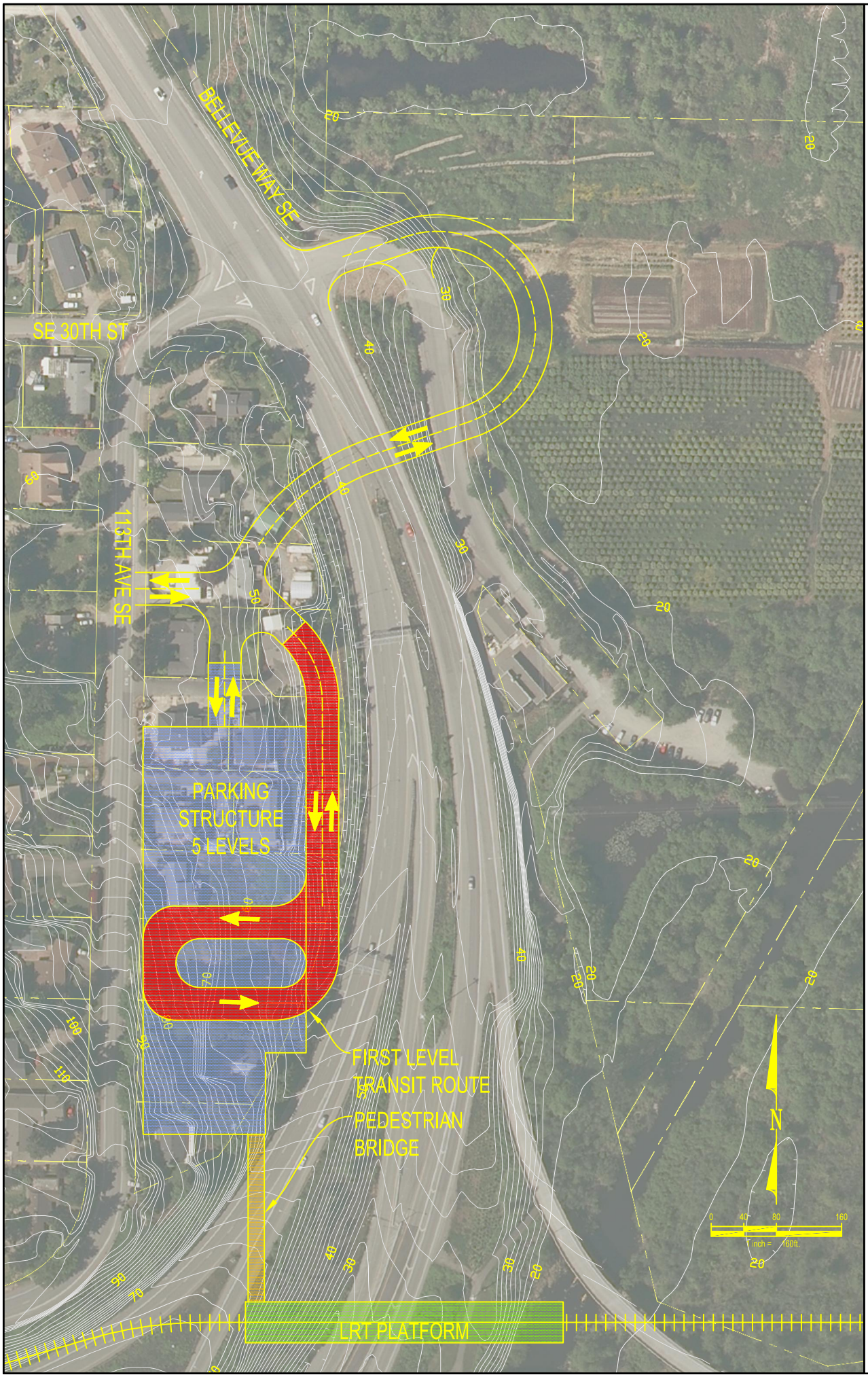
This alternative utilizes the Sound Transit B7 light rail alignment with a modification to provide a required tangent section for the platform and is parallel to I-90. The rail station platforms are located over the WSDOT on-off ramps to I-90. The light rail platforms are about 25 feet above the I-90 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 30th 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.



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JULY 14, 2010

SOUTH BELLEVUE LRT STATION STUDY
ALTERNATIVE A-1

CITY OF BELLEVUE WASHINGTON

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.

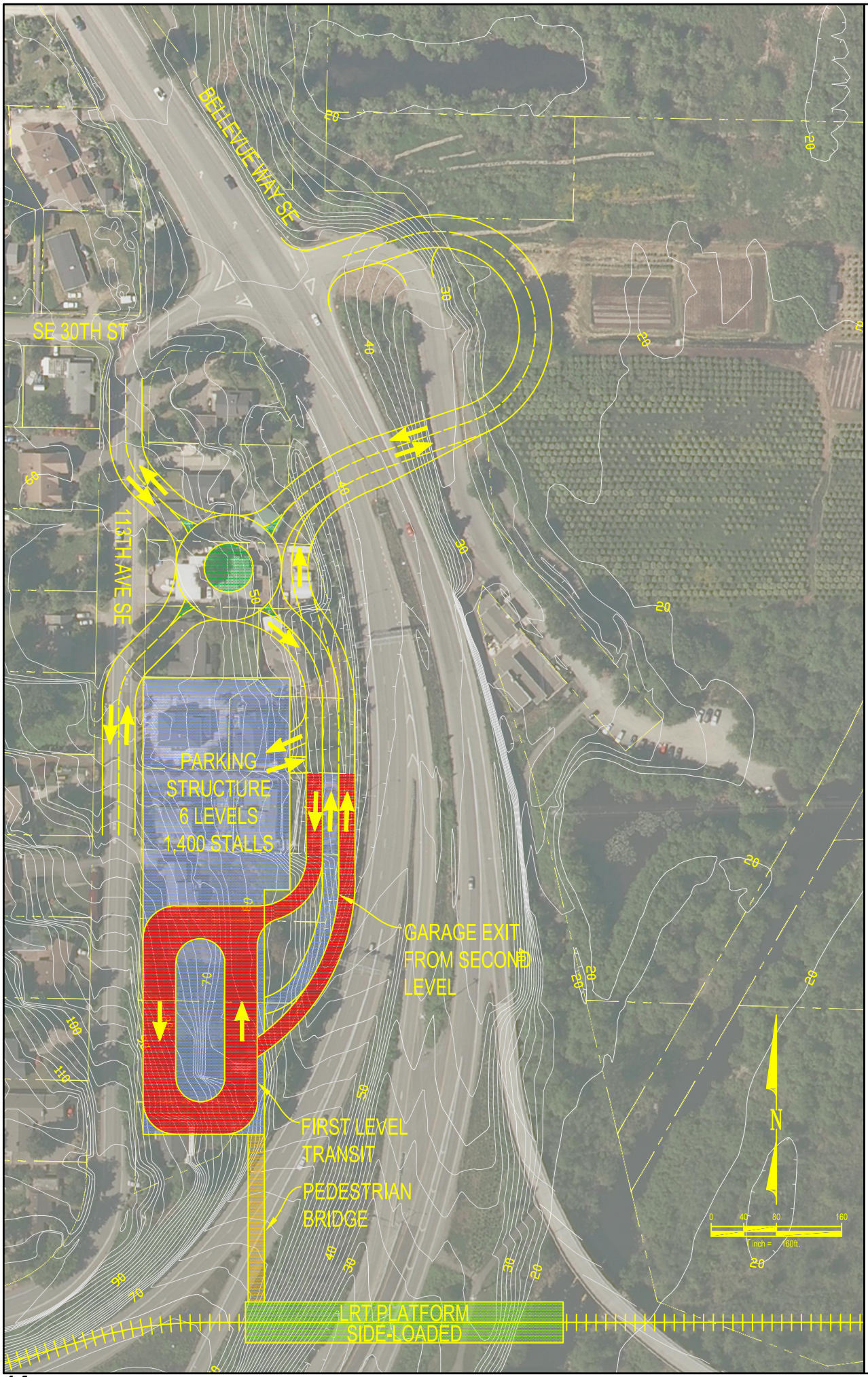
Road Connections

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 113th 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.



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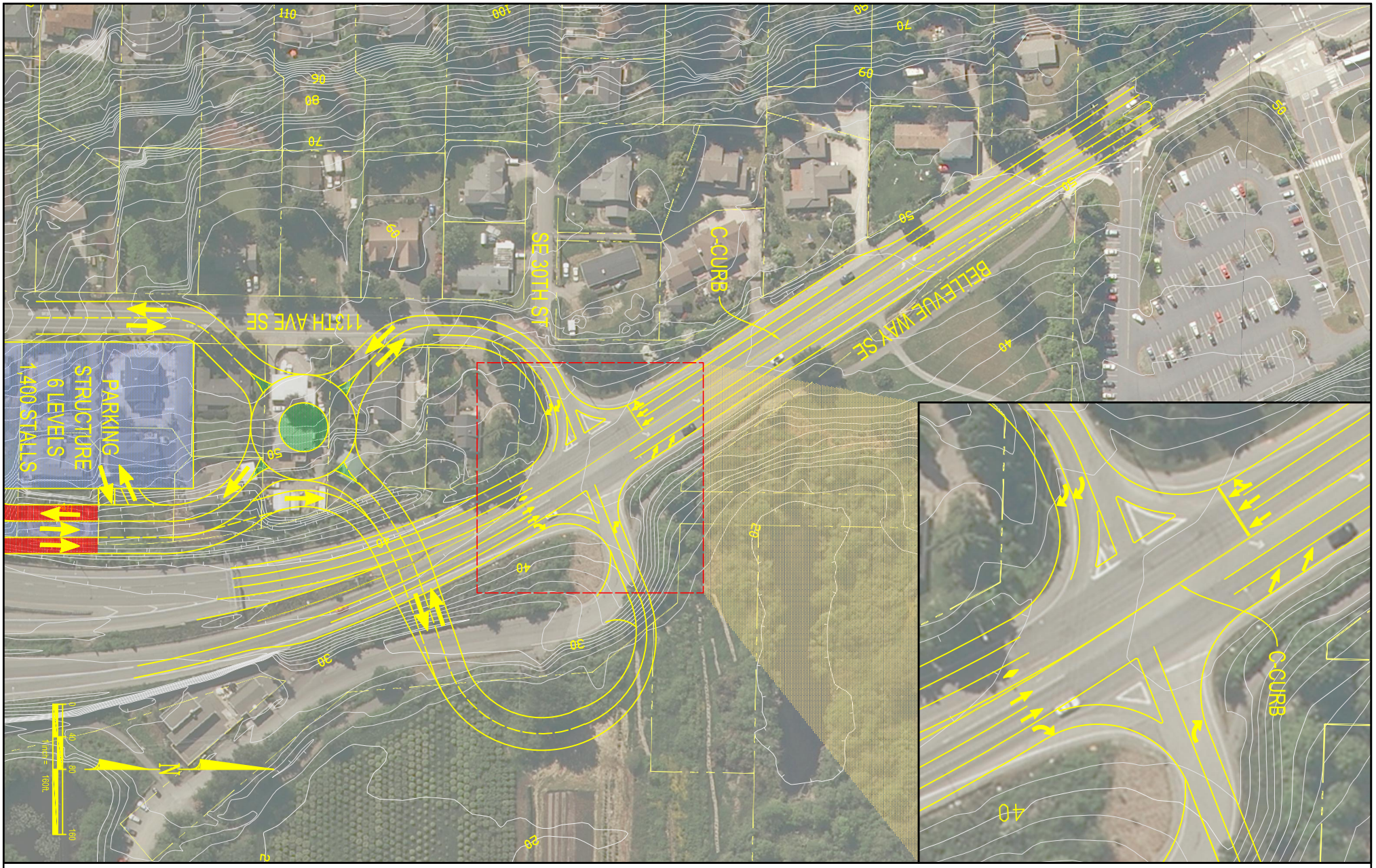
SOUTH BELLEVUE LRT STATION STUDY
ALTERNATIVE A-2

CITY OF BELLEVUE WASHINGTON



SOUTH BELLEVUE LRT STATION STUDY

AT GRADE INTERSECTION (ALTERNATIVE A-2)

CITY OF BELLEVUE WASHINGTON

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Figure 6

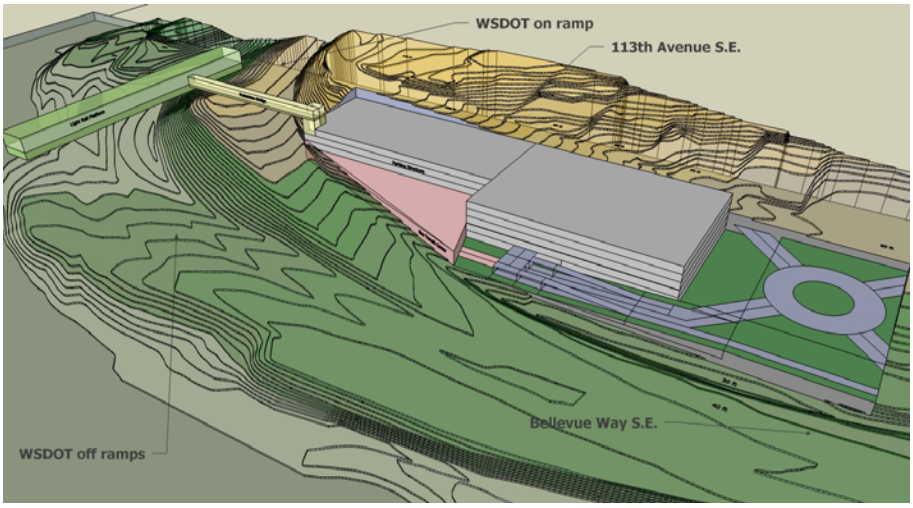
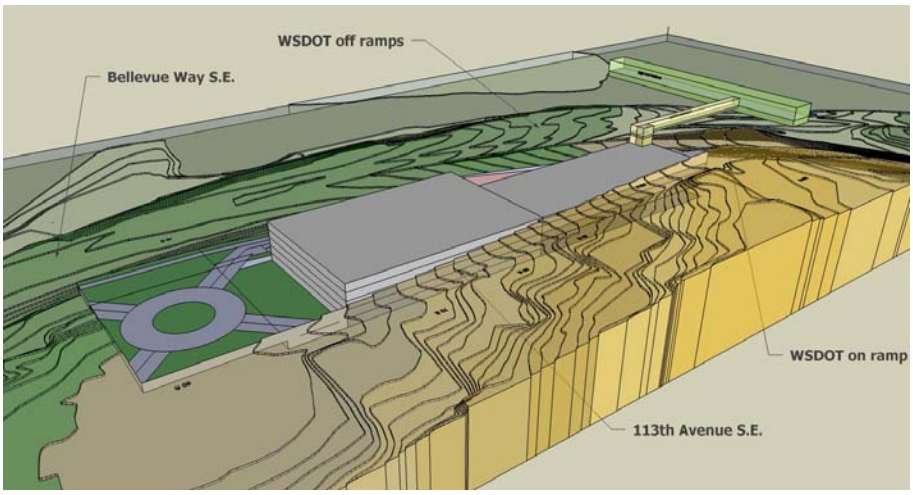


Figure 7



ALTERNATIVE B

Physical Location

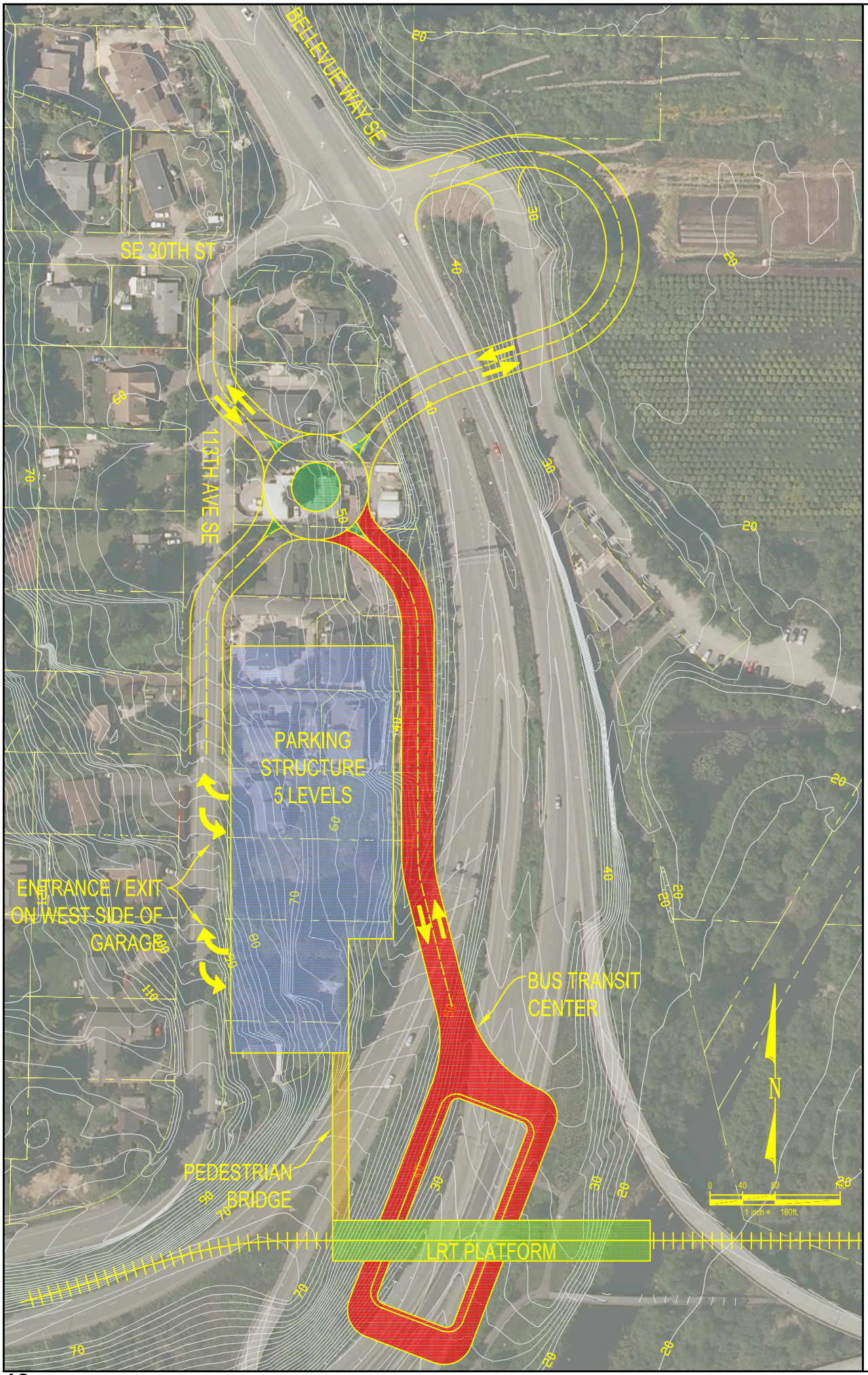
This alternative utilizes the Sound Transit B7 light rail alignment with a modification to provide a required tangent section for the platform and is parallel to I-90. The rail station platforms and the bus loop are located over the WSDOT on-off ramps to I-90. The light rail platforms are about 25 feet 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 113thAve 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.



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SOUTH BELLEVUE LRT STATION STUDY
ALTERNATIVE B

CITY OF BELLEVUE WASHINGTON

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 113th 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.

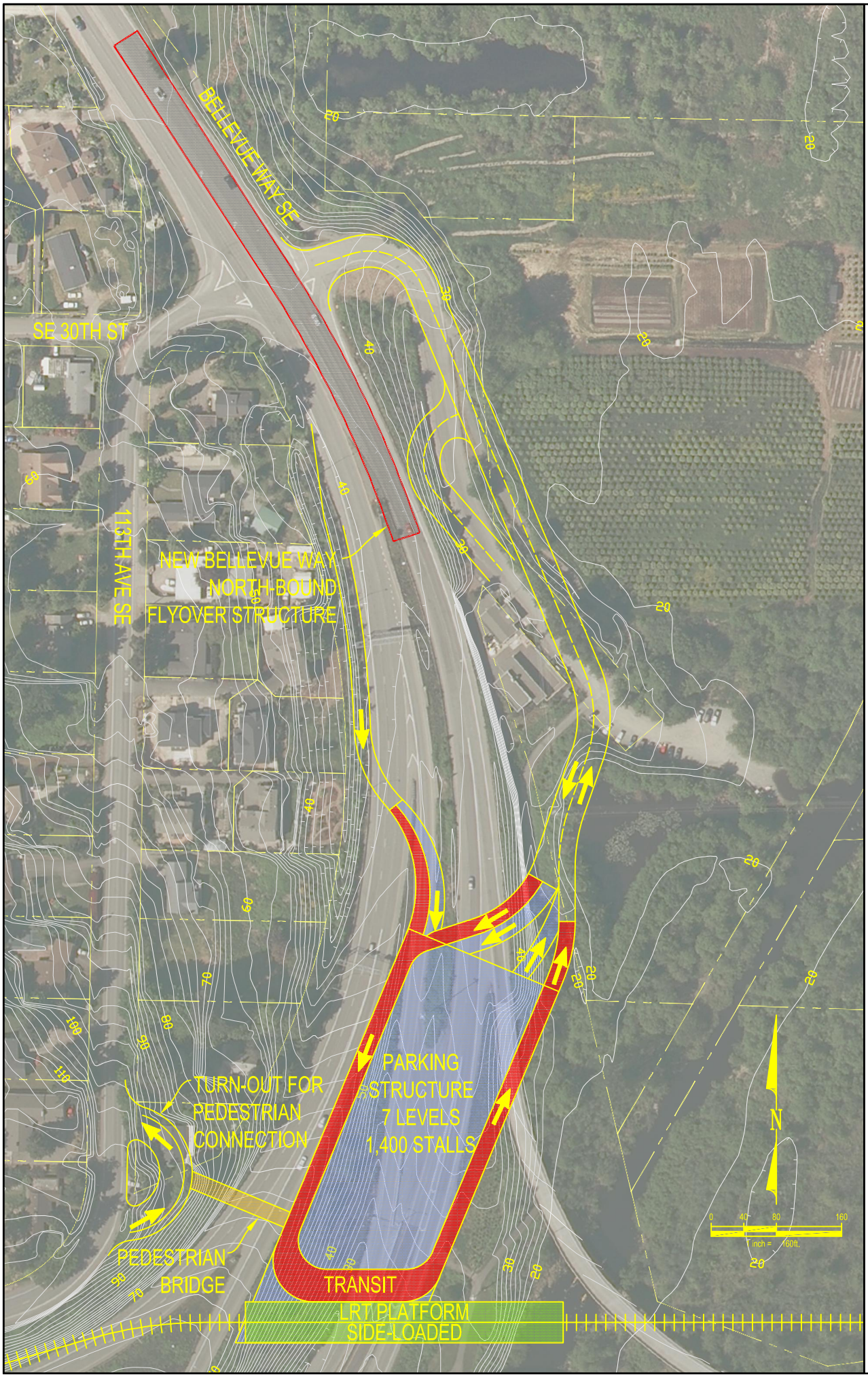
Road Connections

In Alternative C southbound buses and cars from Bellevue Way SE enter via a one way ramp that is south of SE 30th street. Cars and buses coming northbound on Bellevue Way will use a ramp that starts at the east leg of the SE 30th 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 113th Avenue NE.



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SOUTH BELLEVUE LRT STATION STUDY
ALTERNATIVE C

CITY OF BELLEVUE WASHINGTON

Figure 10

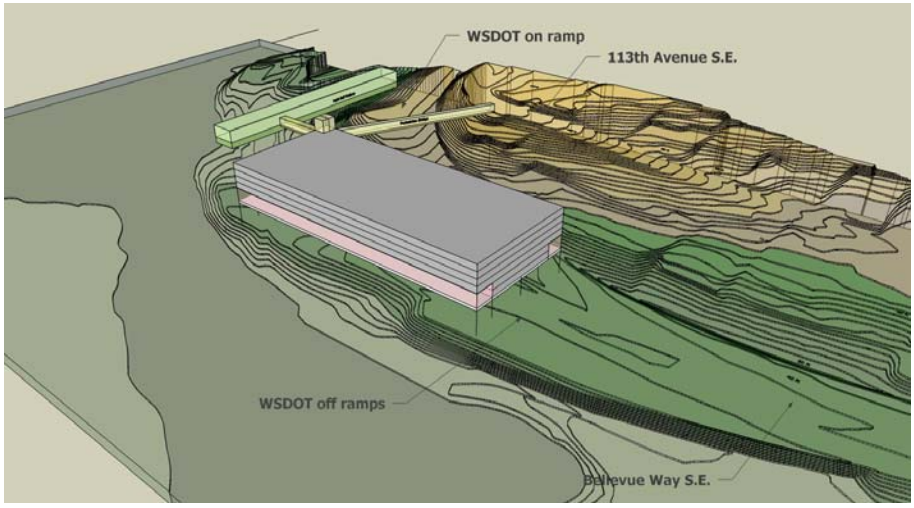
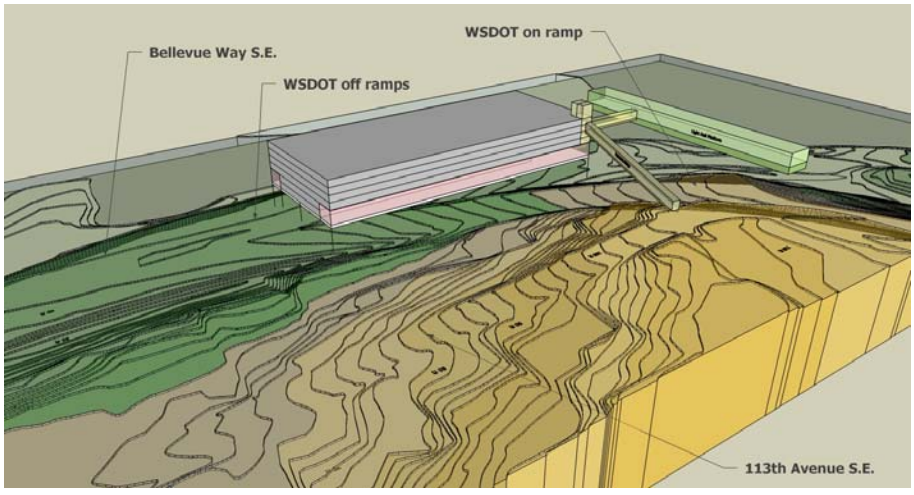
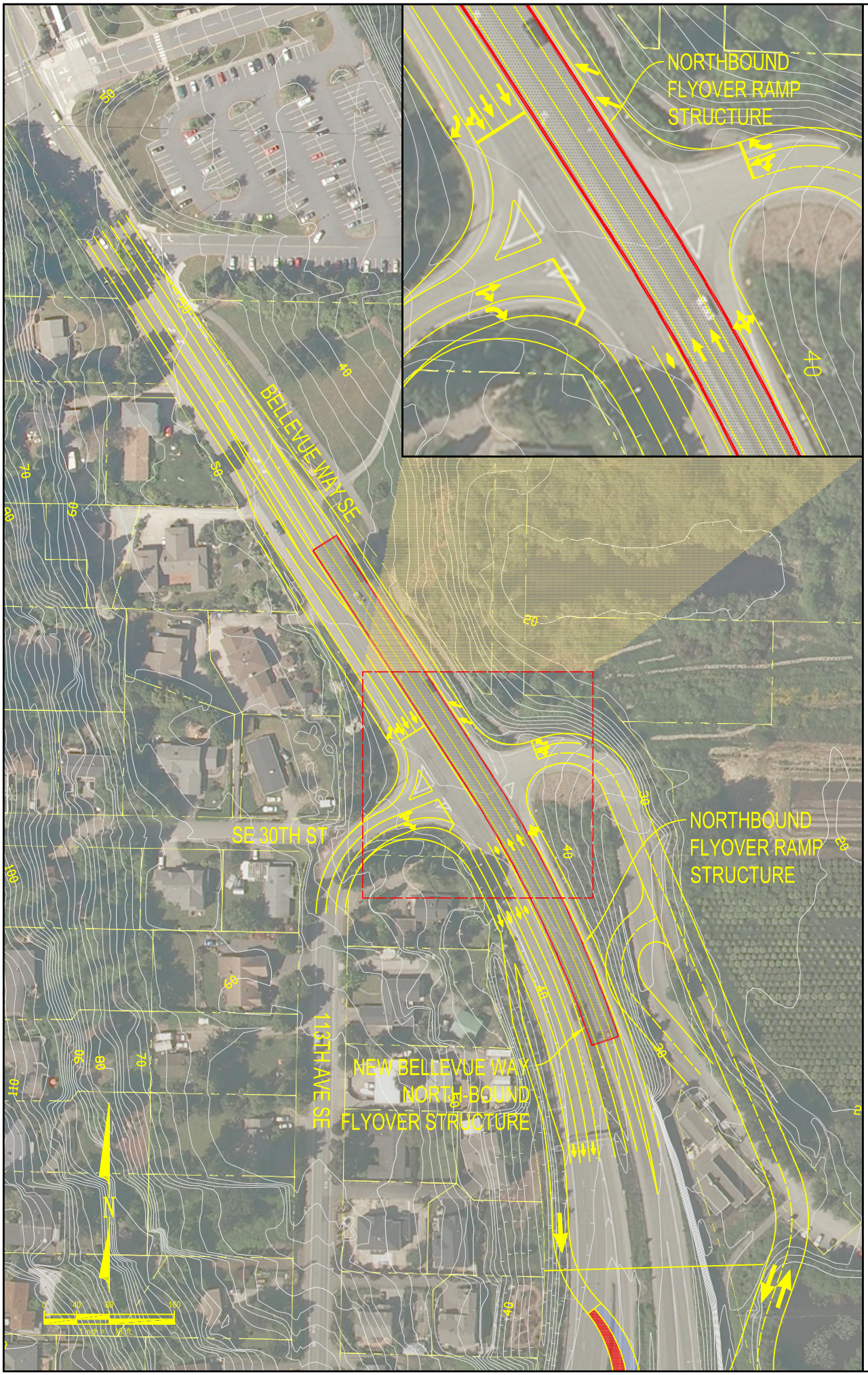


Figure 11





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SOUTH BELLEVUE LRT STATION STUDY

FLYOVER RAMP AT INTERSECTION (ALTERNATIVE C)

CITY OF BELLEVUE WASHINGTON

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 Sweyolocken 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.

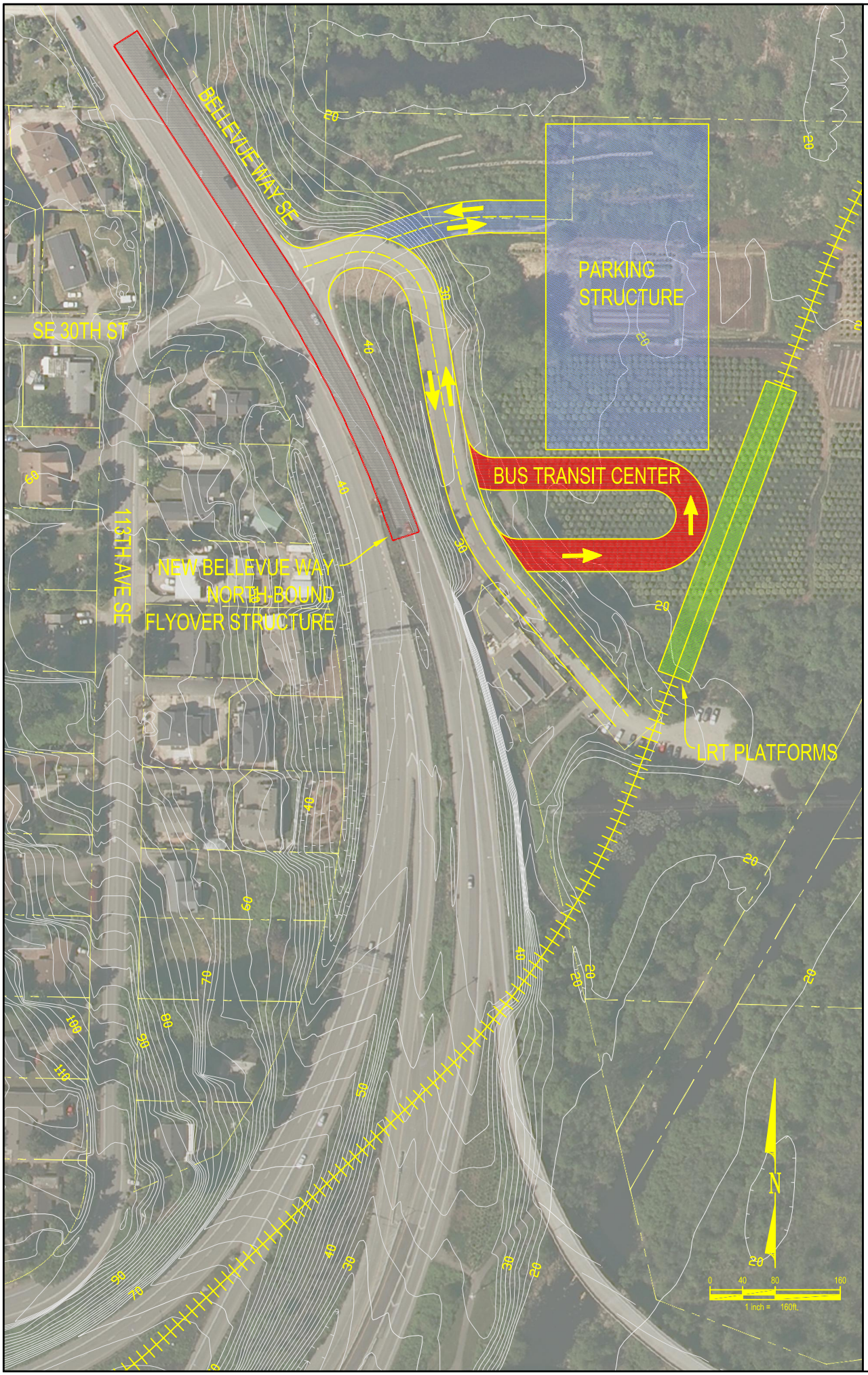
The rail station platforms, the parking garage and the bus loop are located on existing park property. A vertical pedestrian connection links the bus loop, parking garage and the light rail platforms. This option requires vehicle grade separation of the SE 30th St and Bellevue Way intersection.

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.



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SOUTH BELLEVUE LRT STATION STUDY
ALTERNATIVE D

CITY OF BELLEVUE WASHINGTON

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.

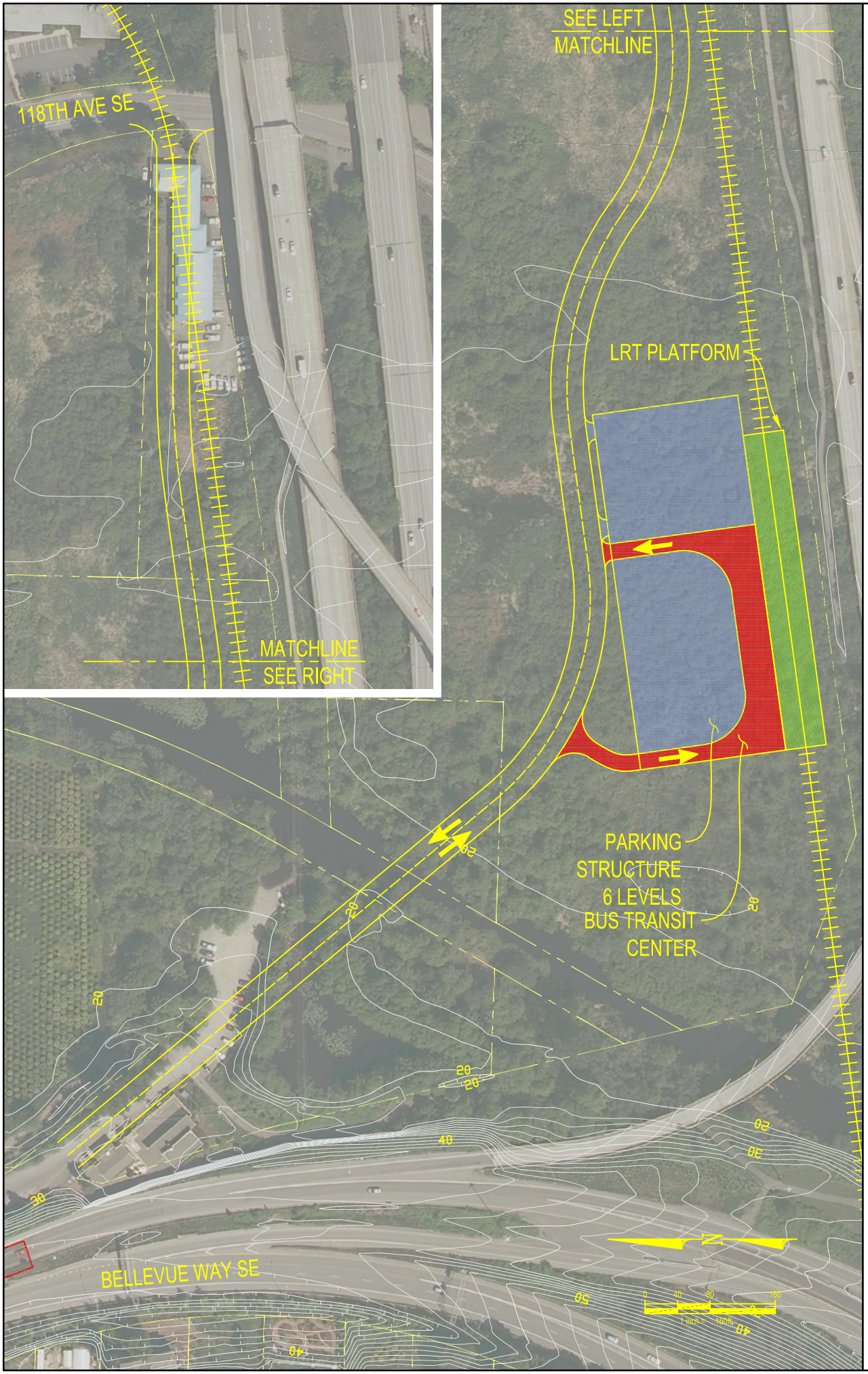
The rail station platforms, the parking garage and the bus loop are located on existing park property. A vertical pedestrian connection links the bus loop, parking garage and the light rail platforms. This option requires vehicle grade separation of the SE 30th St and Bellevue Way intersection.

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.



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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.

	Transportation	Park	Environmental	Neighborhood Character	Constructability and risk	Regional Consistency
Option A-1 (West)	-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 113th 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
Option A-2 (West)	-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

	Transportation	Park	Environmental	Neighborhood Character	Constructability and risk	Regional Consistency
Option B (West)	-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
Option C (East)	-Ped access via bridge from 113th 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 30th 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

	Transportation	Park	Environmental	Neighborhood Character	Constructability and risk	Regional Consistency
Option D (East)	-All exiting mvmts on east side of BW; requires grade separated NB BW off ramps to allow SE 30th to be signalized (per WSDOT) -Access off of east side of Bellevue Way longer ped walk distance (as compared to Option C); would require sidewalks or crosswalks at SE 30th signal	-Location of guideway will impact open space value and recreational uses -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)	-More wetland and wildlife habitat impacts than C because of new structure and corridor through the Slough	-Change in view with garage structure and station visible from neighborhood	-Construction would require temporary access road and staging area in Mercer Slough -Potentially more complexity in building in wetlands than Option C -Higher construction risk with soils (per WSDOT)	-New grade separated NB BW off ramps in WSDOT limited access ROW; require WSDOT approvals -Meets Sound Transit's programmatic requirements

	Transportation	Park	Environmental	Neighborhood Character	Constructability and risk	Regional Consistency
Option E (East)	-All exiting mvmts on east side of BW; requires grade separated NB BW off ramps to allow SE 30th to be signalized -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 30th signal -Access of 118th increases local access for those east of Mercer Slough -Increase bus travel time (operational costs inc.) because of longer distance to station	-Most park impacts because of new garage, guideway, and road structure in park -Potential chance in visual character for park users -Potential to mitigate through replacement property north of park	-Most wetland impact with new structure, guideway, and road -Multiple agencies involved in permitting in wetlands; have to pass "no feasible alternative" test; unlikely to be permitted (See Appendix D for more detail) -Existing I-90 mitigation site affected; increases mitigation requirements; likely not able to mitigate within Slough (See Appendix D for more detail)	-Change in view with garage structure visible from neighborhood -Farthest away from neighborhood, increasing access time for all modes	-Construction would require temporary access road and staging area in Mercer Slough -Potentially more complexity in accessing site than other options -Potentially more complexity in building in wetlands than other options -Higher construction risk with soils (per WSDOT)	- New grade separate NB BW off ramps in WSDOT limited access ROW; require WSDOT approvals -Meets Sound Transit's programmatic requirements

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 30th 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 30th 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 no 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.

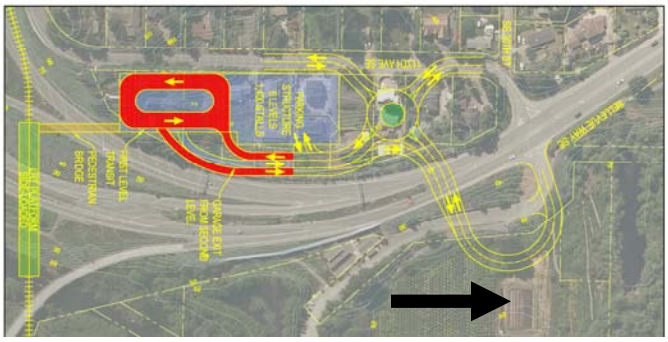

Figure 15: Alternative A2

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.

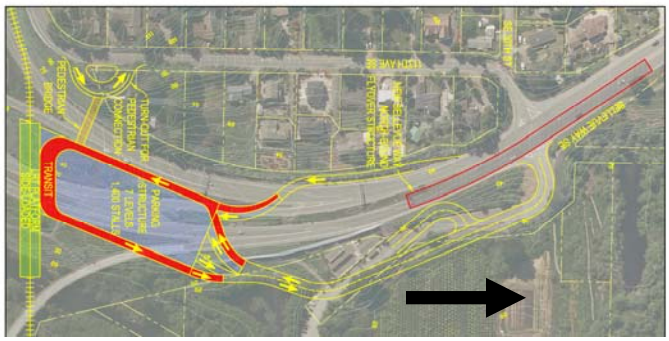

Figure 16: Alternative C

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 112th 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
• 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. • The elevation difference between the bus and rail platforms may be up to 40 feet. • All rail users will have to cross a 200 foot long pedestrian bridge to access the rail platforms. • 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 • 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 & Ride bus stop configuration. See Traffic Analysis Section 5 for more detail. • The intersection level of service at SE 30th Street and Bellevue Way SE will be "B" for the PM peak.	• 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. • 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. • 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 & Ride bus stop configuration. See Traffic Analysis Section 5 for more detail. • The intersection level of service at SE 30th Street and Bellevue Way SE will be "C".

Provide access for existing residences

Alternative A-2	Alternative C
• 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 & Ride. • 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.	• 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. • At a minimum a pick up and drop off zone on 113th would be needed. This is likely to require the acquisition of at least one residential parcel. • Pedestrians coming from the west would have to walk further to get to the facility when compared with A-2

PARK IMPACTS:

Alternative A-2	Alternative C
• Lesser impact on Mercer Slough Park • 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.	• Greater impact on Mercer Slough Park. • 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. • The proximity of the station to the park will detract from the park user experience.

ENVIRONMENTAL IMPACTS:

Alternative A-2	Alternative C
• Portions of the LRT Platforms will be constructed over or very close to the Slough • 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. • Approximately 0.3 acres of wetland areas will have degraded habitat due to shading impacts. • 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. • Approximately 4.5 acres of urban residential habitat will be lost. • Mitigation costs for the wetland impacts are $3.5 to $4.5 million based on a 6:1 ratio.	• The LRT platform impacts are the same as those noted in Alternative A-2. • Impact to wildlife and park habitat is greater then alternative A-2. • 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. • Mitigation costs for the wetland fill are $6.3 to $8.1 million based on a 6:1 ratio.

NEIGHBORHOOD CHARACTER:

Protect and enhance the character and livability of existing neighborhoods

Alternative A-2	Alternative C
• Will significantly change the neighborhood character of 113th Ave SE. The remaining homes on the west side of the street will no longer feel like they are on a residential street. • Traffic from the local neighborhood will increase. • The views from some of the houses on 113th Ave SE may be impacted by the	• The northbound flyover will change the character of Bellevue Way SE making it feel more like an extension of the freeway off ramps. . • The bulk of the parking structure will obstruct the views from homes on the east side of 113th Ave SE. • May result in the loss of at least one residential parcel to create the

north end of the parking structure. • The ability to make a right turn from NB Bellevue Way to SE 30th Street and loop around to 113th Ave SE is likely to attract traffic that now goes up to 112th Ave SE to make a left turn. • A-2 will likely have less of a visual and noise impact then Alternative C. • A-2 will result in the loss of up to 13 residences and one undeveloped parcel. • LRT 140' closer with B-7 modified horizontal alignment.	connection with 113th Ave SE for non-motorized users. • LRT 140' closer.

CONSTRUCTABILITY AND RISK:

Duration of construction

Alternative A-2	Alternative C
• The cost to construct A-2 is $170 million, including right-of-way and mitigation costs. • Staging for construction could be accommodated within the site. • Expect for the extensive shoring required along the east side of 113th Ave SE. The construction of the parking garage bus transit facilities and access ramps are fairly typical. • Construction of the rail station facilities are similar for both alternatives	• The cost to construct C is $210 million, including right-of-way and mitigation costs. • 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. • The potential for encountering changed soil conditions is much greater with Alternative C when compared with A-2. • The difficulty of construction the facility over active freeway ramps adds additional risk and complexity to the construction. • Alternative C will have a greater impact to traffic on Bellevue Way SE due to construction of the northbound flyover.

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 30th 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 be 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 113th 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 113th 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 113th 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 30th 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
Option A-2	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 113th 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
Option C	Northbound flyover on Bellevue Way required at SE 30th 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).
B2M (South Bellevue Station)	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).
B7 (118th SE Station)	Closest access is to I-405 at SE 8th. 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 8th/118th 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.

Appendix A

Cost Estimates

COST ESTIMATING METHODOLOGY

1. Cost model preparation follows memorandum entitled Sound Transit Eastside HCT Study – Alternative Screening Evaluations – Phase 2, Basis of Estimate for Alternative Cost Comparison prepared by CH2M HILL, February 15, 2008.
2. Costs are in 2007 dollars, except for right-of-way costs associated with property acquisition for the Alternatives A-2 and C studied in this report. These right-of-way costs were prepared by City of Bellevue staff for inclusion into the cost estimates. The right-of way costs for the B7 118th Ave SE station properties were calculated by KPFF and are based on current King County tax assessment of total value.
3. A 40% contingency has been added to the unit costs to account for design and allocated contingencies to be more in-line with CH2M HILL estimating practices. The 40% contingency added into the estimate allows for a 20% design contingency and a 20% allocated contingency.
4. Percentages used to calculate soft costs used to develop project costs are based on Sound Transit input. See estimate work-sheet for exact percentages.
5. Cost estimate does not include abandonment of existing South Bellevue Park & Ride.
6. There is no increase in Category 10 – Guideway & Track Elements cost since LRT station is at current track elevation for B2/B3 alternative. Approximate LRT platform elevation is 95.
7. A Station mezzanine for ticket vending, way-finding, stairs, and escalators is required beneath LRT platform.
8. Pedestrian bridge would have similar finishes and appearance to Canyon Park I-405 pedestrian bridge.
9. Cost for flyover ramp associated with Alternative C is contained in both Category 20 – Stations, Stops, Terminal, Intermodal and Category 40 – Sitework and Special Conditions.
10. Bellevue Way SE is reconstructed for length of re-channelization and widening improvements for both alternatives. Approximate limits are from existing South Bellevue Park & Ride to I-90 on and off-ramps.
11. An additional 10' high retaining wall along east side of Bellevue Way SE is required to accommodate roadway improvements and flyover ramp configuration.
12. Additional right-of-way is not required for associated roadway improvements along Bellevue Way SE for either alternative.

13. Heavy streetscaping is required for Bellevue Way SE for both alternatives. Moderate streetscaping is required for 113th Avenue SE and SE 30th Street for alternative A-2.
14. Both alternatives do not require stormwater detention or flow control per 2010 City of Bellevue Surface Water Engineering Standard D3-05 due to proximity to Mercer Slough and Lake Washington. Assumed that new storm connection and outfall can be constructed in the vicinity of either alternative.
15. Stormwater treatment occurs in a vault per CH2M HILL estimate. 0.1 acre-feet per acre of development is required to provide basic treatment per computer modeling assuming 0.9 acre of pollution generating impervious surface and 0.1 acre of landscape pervious determined.
16. Water quality treatment is provided for new station areas and improvements to Bellevue Way SE.
17. The existing pump station will not be impacted by either alternative.

SOUTH BELLEVUE STATION COST ESTIMATE

CAT	SUB POINT	DESCRIPTION	UOM	COMPOSITE UNIT COST	ALTERNATIVE A-2 QTY	ALTERNATIVE A-2 SUBTOTAL $	ALTERNATIVE C QTY	ALTERNATIVE C SUBTOTAL $
20 STATIONS, STOPS, TERMINALS, INTERMODAL								
	20.02	Aerial station, stop shelter, mall, terminal, platform (B3)	SP	$ 23,940,000	1	$ 23,940,000	1	$ 23,940,000
		Circulation mezzanine below track level	LS	$ 6,650,000	1	$ 6,650,000	1	$ 6,650,000
		Additional 25' elevation over B3	LS	$ 2,380,000	1	$ 2,380,000	1	$ 2,380,000
		Side Loaded Platform adder	LS	$ 10,000,000	1	$ 10,000,000	1	$ 10,000,000
	20.06	Station Site Facilities - Parking Garage Alt A-2	SP	$ 26,740	1400	$ 37,436,000		$ -
		Excavation, Shoring, Ventilation adder	LS	$2,800,000	1	$ 2,800,000		$ -
	20.06	Station Site Facilities - Parking Garage Alt C	SP	$ 42,420		$ -	1400	$ 59,388,000
		Parking Garage Foundation adder	LS	$ 5,600,000		$ -	1	$ 5,600,000
		Fire Protection Measures adder	LS	$ 2,100,000		$ -	1	$ 2,100,000
		Traffic Control (Freeway Ramps)	LS	$ 500,000		$ -	1	$ 500,000
	20.07	Pedestrian Vertical Access - Elevator, 40 ft.	EA	$ 383,600	1	$ 383,600	1	$ 383,600
	20.07	Pedestrian Vertical Access - Escalator, 40 ft.	EA	$ 463,400	1	$ 463,400	1	$ 463,400
		Roadway Bridge	SF	$ 560	18020	$ 10,091,200	34936	$ 19,564,160
		Structural Earth Wall (SEW)	SF	$ 98		$ -	14748	$ 1,445,304
		Traffic Barrier, Moment Slab for SEW	LF	$ 280		$ -	1820	$ 509,600
		Pedestrian Bridge	SF	$ 350	2800	$ 980,000	2800	$ 980,000
		Subtotal Category 20				**$ 95,124,200**		**$ 133,904,064**
40 SITEWORK AND SPECIAL CONDITIONS								
	40.01	Demolition Allow. - Existing Building, Moderate	EA	$ 67,662	13	$ 879,606	1	$ 67,662
	40.02	Storm Water Piping - 18" CPE Pipe Buried	RF	$ 1,396	440	$ 614,152	200	$ 279,160
	40.02	Metro Trunk Sewer 21"-30"	RF	$ 616		$ -	350	$ 215,600
		Miscellaneous Utility Relocations	LS	$ 100,000	1	$ 100,000	1	$ 100,000
	40.05	Retaining Wall - CIP (Avg 10')	RF	$ 1,060	580	$ 614,684	520	$ 551,096
	40.05	Retaining Wall - CIP (Avg 20')	RF	$ 2,142	300	$ 642,600		$ -
	40.07	Roadway Reconstruction Allow. - 4 Travel Lanes ACP with island	RF	$ 1,680		$ -	1400	$ 2,352,000
	40.07	Roadway Reconstruction Allow. - 5 Travel Lanes ACP with island	RF	$ 1,890	1400	$ 2,646,000		$ -
	40.07	Roadway Modifications Allow. - AC Paving (New Road Construction)	SF	$ 31	64395	$ 1,983,366	54464	$ 1,677,491
		1/2 Street Improvements - 113th Ave SE	LS	$ 1,000,000	1	$ 1,000,000		$ -
	40.07	Streetscaping Allow. - Moderate	RF	$ 592	700	$ 414,540		$ -
	40.07	Streetscaping Allow. - Heavy	RF	$ 918	1400	$ 1,285,760	1400	$ 1,285,760
		Subtotal Category 40				**$ 10,180,708**		**$ 6,528,769**
50 SYSTEMS								
	50.02	Roadway Modifications Allow. - New Signal	EA	$ 491,400	1	$ 491,400	1	$ 491,400
	50.05	Communications, Station	EA	$ 873,600	1	$ 873,600	1	$ 873,600
	50.06	Fare Collection - 1 Entrance	EA	$ 362,600	1	$ 362,600	1	$ 362,600
		Subtotal Category 50				**$ 1,727,600**		**$ 1,727,600**
60 ROW, LAND, EXISTING IMPROVEMENTS								
		Right of Way (13 Parcels)	LS	$ 13,200,000	1	$ 13,200,000		$ -
		Right of Way (1 Parcels)	LS	$ 655,000		$ -	1	$ 655,000
		Subtotal Category 60				**$ 13,200,000**		**$ 655,000**

CAT	SUB POINT	DESCRIPTION	UOM	COMPOSITE UNIT COST	ALTERNATIVE			
					A-2		C	
					QTY	SUBTOTAL $	QTY	SUBTOTAL $
TOTAL ESTIMATED COST OF CONSTRUCTION (CAT 20-50)						**$ 107,040,000**		**$ 142,170,000**
ESTIMATED SOFT COSTS BASED ON ESTIMATED COST OF CONSTRUCTION								
		Construction Management (8.5%)				$ 9,098,000		$ 12,084,000
		Preliminary Engineering & Environmental Documentation (5%)				$ 5,352,000		$ 7,109,000
		Final Design & Third-Party Review (12%)				$ 12,845,000		$ 17,060,000
		Permits (0.5%)				$ 535,000		$ 711,000
		Subtotal				**$ 27,830,000**		**$ 36,964,000**
		Project Administration (6% of Subtotal Above)				$ 1,670,000		$ 2,218,000
TOTAL ESTIMATED SOFT COSTS						**$ 29,500,000**		**$ 39,182,000**
TOTAL ESTIMATED CONSTRUCTION CONTINGENCIES (10% OF ESTIMATED CONSTRUCTION COST)						**$ 10,704,000**		**$ 14,217,000**
TOTAL RIGHT-OF-WAY COSTS						**$ 13,200,000**		**$ 655,000**
TOTAL ENVIRONMENTAL MITIGATION COSTS (BY ESA ADOLFSON)						**$ 4,564,000**		**$ 8,313,000**
TOTAL PROJECT COSTS						**$166,000,000**		**$205,000,000**

COST ESTIMATE FOR PREVIOUS ALTERNATIVES STUDY

118TH AVENUE STATION (B7)		
TOTAL ESTIMATED COST OF CONSTRUCTION (SEE NOTE 1)	**$**	**83,000,000**
ESTIMATED SOFT COSTS BASED ON ESTIMATED COST OF CONSTRUCTION		
Construction Management (8.5%)	$	7,055,000
Preliminary Engineering & Environmental Documentation (5%)	$	4,150,000
Final Design & Third-Party Review (12%)	$	9,960,000
Permits (0.5%)	$	415,000
Subtotal	**$**	**21,580,000**
Project Administration (6% of Subtotal Above)	$	1,295,000
TOTAL ESTIMATED SOFT COSTS	**$**	**22,875,000**
TOTAL ESTIMATED CONSTRUCTION CONTINGENCIES (10% OF ESTIMATED CONSTRUCTION COST)	**$**	**8,300,000**
TOTAL PROJECT COSTS	**$**	**115,000,000**

S BELLEVUE WAY STATION (B2M)		
TOTAL ESTIMATED COST OF CONSTRUCTION (SEE NOTE 2)	**$**	**93,432,384**
ESTIMATED SOFT COSTS BASED ON ESTIMATED COST OF CONSTRUCTION		
Construction Management (8.5%)	$	7,942,000
Preliminary Engineering & Environmental Documentation (5%)	$	4,672,000
Final Design & Third-Party Review (12%)	$	11,212,000
Permits (0.5%)	$	467,000
Subtotal	**$**	**24,293,000**
Project Administration (6% of Subtotal Above)	$	1,458,000
TOTAL ESTIMATED SOFT COSTS	**$**	**25,751,000**
TOTAL ESTIMATED CONSTRUCTION CONTINGENCIES (10% OF ESTIMATED CONSTRUCTION COST)	**$**	**9,343,238**
TOTAL PROJECT COSTS	**$**	**129,000,000**

Notes:

1. For the purposes of comparison, a cost estimate for the B7 station was approximated based on Sound Transit DEIS cost estimates. They were developed consistent with the A-2 and C cost estimates to allow comparison among the options. The $83 million is approximate and includes a 40% contingency (20% design & 20% allocated).

2. For the purposes of comparison, a cost estimate for the B2M station was approximated based on Sound Transit DEIS cost estimates. They were developed consistent with the A-2 and C cost estimates to allow comparison among the options. The cost approximate and includes a 40% contingency (20% design & 20% allocated).

Appendix B

Site Photos

113th Avenue SE looking north

113th Avenue SE looking south

Bellevue Way looking north

Bellevue Way looking south

Existing Pump Station

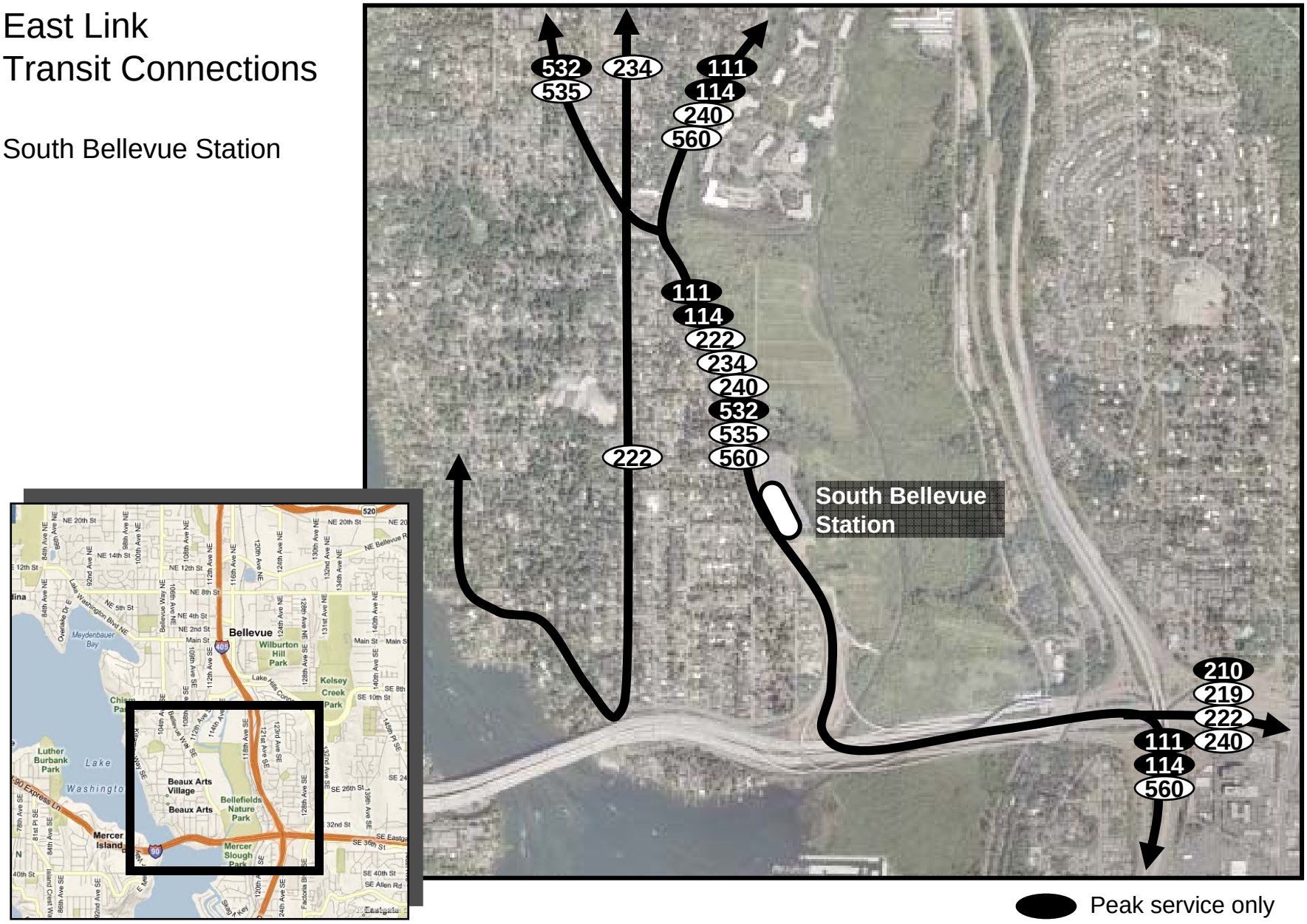
Mercer Slough Boat Launch

Appendix C

Bus Service Routes

East Link
Transit Connections

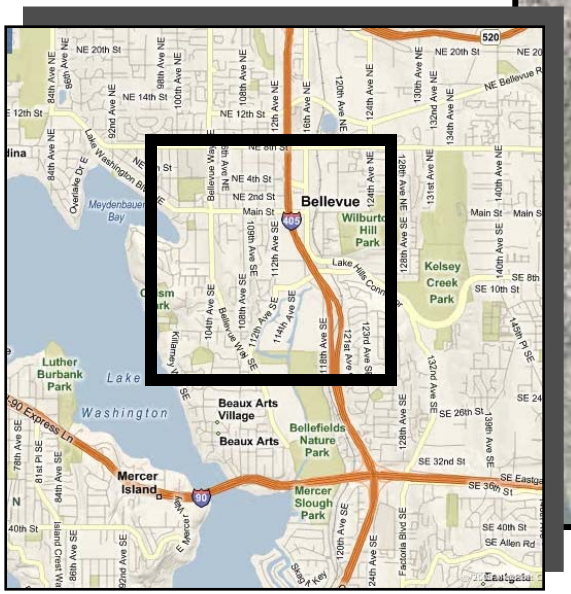
South Bellevue Station



Source: Sound Transit, 2009

East Link
Transit Connections

East Main Station
118th Station



Peak service only

Source: Sound Transit, 2009

Appendix D

Environmental Issues

South Bellevue LRT Station Study

NATURAL ENVIRONMENT IMPACTS

The following description of the existing conditions in the vicinity of the proposed South Bellevue LRT is based upon the East Link Project Draft EIS (Sound Transit, 2008a) and the Sound Transit East Link Ecosystems Technical Report (Appendix H3 of the EIS) (Sound Transit, 2008b). No field work was performed for the analysis presented in this report.

EXISTING CONDITIONS

Areas within the project vicinity can be described as:

- Urban residential
- Transportation corridor
- Mercer Slough Park (includes some natural area of Interstate 90 (I-90) right-of-way adjacent to the off-ramp)

The urban residential areas in the project vicinity, located west of Bellevue Way, contain single-family homes, accessory buildings, lawns and landscaping, and paved driveways, walkways patios. The vegetated portions of the residential areas are dominated by upland habitat of lawn, and native and non-native shrubs and trees. Wildlife likely to use these habitats includes urban-adapted species such as eastern gray squirrel, raccoon, song sparrow, spotted towhee, and black-capped chickadee.

The transportation corridor area includes Bellevue Way SE, 113thAvenue SE, on- and off-ramps to Interstate 90 (I-90), and the access road to the Sweyolocken Trail and boat launch (Access Road). This area is predominantly covered with impervious surfaces, but some right-of-way areas contain grass and scattered shrubs. A few trees are present; primarily east of the I-90 exit and west of Bellevue Way SE. Wildlife using this habitat would be similar to the species listed above.

Mercer Slough Park extends into the east portion of the project area. Park vegetation is dominated by trees and shrubs, though an open water wetland area is located just east of the off-ramp from I-90. The northern portion of the park in the project area contains an active blueberry farm; the southern portion is dominated by red alder and willows. Mercer Slough (the stream channel) is located within the project area at the south end.

The majority of the park in this area is mapped as scrub-shrub and forested wetland. Wildlife species listed in the EIS as using this area include four federal species of concern: bald eagle, peregrine falcon, olive-sided flycatcher, and willow flycatcher. State candidate and monitor species include: great-blue heron, pileated woodpecker, osprey, Vaux's swift, western toad, purple martin, western grebe, merlin, red-necked grebe, horned grebe, great egret, and several others (Sound Transit, 2008a and 2008b). Four federal- and state-listed fish species occur in the Lake Washington and may use portions of the Mercer Slough Park, including both the stream channel and the associated wetlands:

Chinook salmon, steelhead, Coastal-Puget Sound bull trout, and river lamprey (Sound Transit, 2008a and 2008b). Mercer Slough conveys flows from Sturtevant and Kelsey Creeks into Lake Washington, and provides "core summer salmonid habitat" and migration corridor for salmon and trout (Sound Transit 2008a).

POTENTIAL IMPACT ANALYSIS

The impact of LRT platform and parking structure construction upon the natural vegetation can be expressed as the following: permanent loss of habitat (e.g. clearing vegetation and constructing roads or structures), conversion of one habitat type to another (e.g. converting forest to grassed roadside verges or to urban landscaped areas), or temporary construction impact (e.g. disturbed area is revegetated following construction). Disturbed area is vulnerable to increased incursion of noxious weeds, which decreases available habitat for native vegetation and decreases value as forage and shelter for wildlife. Other potential impacts to wildlife are related to loss of temporary or permanent loss of vegetated habitat, and temporary disturbance related to construction, usually related to noise, human activity, and/or light. Small terrestrial wildlife can perish during construction; larger animals or those that can fly can relocate to other nearby habitat areas where they may or may not survive (Sound Transit, 2008).

The following sections describe impacts associated with the construction of the LRT Platform (constructed under both Alternative A-2 and C), and the different impacts associated with Alternative A-2 and Alternative C parking structure and associated roadways.

LRT Platform

Under both alternatives, the LRT Platform will be constructed on an elevated portion of the B-7 track location, about 65 feet above the stream channel. Approximately half of the platform (14,900 square feet) would be constructed over transportation corridor (Bellevue Way SE), and half would be located over park habitat including some portion over the Mercer Slough stream channel. The impacts of construction of the elevated track are discussed in the EIS and Ecosystem Technical Report (Sound Transit, 2008a; 2008b). Additional impacts associated with the construction of a station in this location would occur due to the additional support pilings, use of additional equipment, and an extended construction period.

Temporary impacts associated with construction include: loss of vegetation, introduction of noxious weeds, increased human activity disturbance, additional noise, and lighting. Although best management practices (BMP) for erosion and sediment control will be employed, increased sediment may enter the wetlands and stream channel. Noise generated by driving pile can result in sound pressure levels that can harm nearby wildlife and fish, in addition to creating disturbance that causes them to leave the vicinity. Impacts to federally-listed species will be described in the biological assessment prepared for the project 404 permit (Sound Transit, 2008a; 2008b); pile driving is an impact that has a high potential to harm listed species of fish and wildlife. Although support piles were assessed for this location in the EIS, it is likely that additional, or larger, piles will be required for construction of a station, resulting in increased level and duration of impacts to wildlife in the vicinity.

Operational impacts include increased noise and activity at the station site and permanent loss of wetland habitat related to the placement of pile supports. The platform will be located approximately 65 feet above wetland areas, which will have degraded habitat, due to shading impacts, and increased noise and disturbance. Noise levels for operation of the elevated track are described as being greater than existing conditions (Sound Transit, 2008b); additional noise related to train stopping and starting, and disturbance associated with human use of the station will add to the already elevated noise and activity levels disturbing wildlife.

LRT Impacts

- Wetland Degradation: Shading of approximately 0.3 acres of wetland by the trestle and station; likely increase in noxious weeds; potential for sedimentation in wetland
- Wildlife Disturbance: Increased noise, light, and human activity

Alternative A-2 Parking & Roadways

Under Alternative A-2, impacts to urban residential habitat is greater than under Alternative C; roadways and roundabout and the parking structure would be located primarily in residential urban habitat; approximately 4.5 acres total land area would be cleared, including structures and paving that cover at much of that area. Most of the trees and shrubs in this area would be removed during construction. Virtually all wildlife would leave the area, and small terrestrial species would likely perish.

Construction would also occur in transportation corridor area, on 113thAvenue SE and on/over the Access Road; increases in impervious cover would change incrementally. The few individual animals and birds using this area would leave during construction, but could return following completion of construction.

Under Alternative A-2, impact to urban Park habitat is less than under Alternative C. A portion of the Alternative A-2 project (the access from Bellevue Way SE northbound to the garage) goes into the Park, including both forested area and blueberry farm - approximately 0.4 acres) 16,800 square feet) east of Bellevue Way SE; additional vegetated habitat will be cut-off from the rest of Mercer Slough Park within the sweep of this entrance road to the parking garage. Because this portion of the Park is being farmed, wildlife use may be lower than in less-disturbed areas of the Park, but the loss of forested and shrub habitat will eliminate wildlife habitat while bringing both construction disturbance and operational disturbance (associated with traffic accessing the garage) to an area that is currently far less disturbed.

Alternative A-2 Impacts:

- Wetland Loss: approximately 0.4 acre, most near blueberry farm
- Wetland Degradation: likely increase in noxious weeds; potential for sedimentation in wetland
- Wildlife Disturbance: Increased noise, light, and human activity near lower-value wetland community

Alternative C Parking & Roadways

Under Alternative C, impact to urban residential habitat is less than under Alternative A-2, as the vast majority of the construction would occur east of Bellevue Way SE; the small portion occurring west of Bellevue Way SE is located in the right-of-way of the road, in transportation corridor area. Impact to wildlife in the residential urban habitat would be limited to increased noise, activity, and light associated with construction and operation of the garage and access road to the garage. Operational impacts to wildlife would be related to the increased activity and lighting in the vicinity.

Impact to the transportation corridor is much greater than under Alternative A-2. Under Alternative C, the majority of parking structure construction would happen on or above existing road right-of-way. The few individual animals and birds using this area would leave during construction, and would be unlikely to return following completion of construction.

Under Alternative C, impact to Park habitat is greater than under Alternative A-2. The portion of this Alternative proposed east of Bellevue Way SE in vegetated park habitat area is approximately one acre (45,200 square feet). There would be loss of shrub area and a few trees between the Access Road and the blueberry farm. The exit and entrance roadways to the garage are located on, and adjacent to, an open-water wetland area in the park. This is an area of relatively high habitat value, due to the mosaic of forested wetland, scrub-shrub wetland, and open-water wetland communities. Wildlife using this area would likely not remain during construction, and few of the species would likely return after completion of construction. The operation of the entrance- and exit-ramps would introduce increased noise, activity, and light to this area, creating a lasting disturbance to wildlife.

Alternative C Impacts:

- Wetland Loss: approximately 1.0 acre, including high quality open-water and forested wetland areas
- Wetland Degradation: likely increase in noxious weeds; potential for sedimentation in wetland
- Wildlife Disturbance: Increased noise, light, and human activity near high value wetland community

Potential Mitigation Requirements & Costs

The following sections describe mitigation requirements likely to be triggered by construction of the LRT, parking structure, and associated roadways. Rough planning-level cost estimates for mitigation are also provided.

Mitigation may be performed at the current site of the Bellevue Way SE Park & Ride lot or within the park, so cost of land purchase was assumed to be zero. If land is needed for mitigation, the King County Assessor's office lists $25 per square foot as the current assumption.

LRT Platform

The proposed construction described in this memorandum is part of a larger project, and permits for impacts to critical areas have been listed in the Ecosystems Technical Report (Sound Transit, 2008b). No additional permits would be required for the proposed LRT alternative construction; however,

additional mitigation would be required, associated with additional impacts to wetland and stream areas in Mercer Slough Park.

The City of Bellevue rates the Mercer Slough Wetland as a Category 1 Wetland, with a buffer of 75 to 225 feet, depending upon functional scores (Bellevue City Code [BCC] 20.25H.095[C]1). Impacts to Category 1 Wetlands are mitigated at a 6:1 ratio of impact to restoration or creation, if the mitigation is in-kind and on-site (BCC 20.25H.105[C]). Buffer areas are mitigated on a 1:1 ratio. Wetland enhancement is allowed as mitigation, although no ratio is provided in the BCC (20.25H.105[D]).

Creation or restoration of a high-value wetland, including forest, scrub-shrub, and open water habitats, costs between $15 and $20 per square foot, based upon WSDOT unit costs and experience with projects of this type and size. Required mitigation monitoring and reporting is likely to cost $20,000 to 30,000 (in 2010 dollars) per year for each of ten years of monitoring. Table 1 summarizes estimated mitigation costs.

Federal Section 404(b)(1) 404 Individual Department of the Army Clean Water Act Permits require an alternatives analysis as part of the submittal (Corps, 2008). The alternative analysis must identify the most practicable alternative with the least adverse impact to the aquatic ecosystem. The 404 Permit for LINK could require mitigation above and beyond that required by the City of Bellevue.

Alternative A-2 Parking & Roadways

The scale of additional impacts to wetlands and streams associated with Alternative A2 (exclusive of the LRT platform) is less than the additional impacts associated with Alternative C. Approximately 0.4 acre of vegetated area in the Park would be lost under this alternative. Mitigation costs would be similar to those described above, although construction costs would be closer to the low end of the range ($15 per square foot); design drawings and reporting would be as described above.

Table 1: Estimated Wetland and Stream Mitigation Costs

Mitigation Element	Estimated Cost	LRT 0.34-acre impact	Parking Structure Alternative A-2 0.4-acre impact	Parking Structure Alternative C 1.0-acre impact
Land	$25/sf#			
Wetland Creation, Enhancement, or Restoration (6:1 Ratio)	$15-20/sf	$1,341,000 to 1,788,000	$1,512,000 to $2,016,000	$4,068,000 to $5,424,000
Mitigation Plan Report	$80,000	_	$80,000	$80,000
Mitigation Design Drawings	10% to 15% of construction costs	$134,000 to 17,8800	$151,200 to $201,600	$406,800 to $542,400

Mitigation Element	Estimated Cost	LRT 0.34-acre impact	Parking Structure Alternative A-2 0.4-acre impact	Parking Structure Alternative C 1.0-acre impact
Monitoring (10 years)	$300,000	_	$300,000	$300,000
		Total LRT plus Parking	$3,518,300 to $4,564,400	$6,329,900 to $8,313,200

From KC Assessor's Office; Assumed zero needed, as the existing Park & Ride lot can be used.

*BCC does not have a mitigation ratio for enhancement; we have assumed a similar ratio to the restoration as an assumption

Alternative C Parking & Roadways

Impacts associated with the parking structure and ancillary roadways under Alternative C is greater than under alternative A-2, as the area of park impacted is approximately one acre. Mitigation costs would be similar to those described above, although construction costs would be closer to the high end of the range ($20 per square foot); design drawings and reporting would be as described above.

PARKS IMPACTS

Parks Agreements and their Effects on Feasibility of the Alternatives

The following sections describe existing park agreements and their affect upon permitting Alternatives A-2 and C.

Washington State Department of Transportation (WSDOT) Agreement for I-90 Mitigation sites (1993)

The South Bellevue Station Alternatives A-2 and C would not affect any of the areas identified in the January 21, 1993 agreement between WSDOT and the City of Bellevue regarding the mitigation sites that WSDOT was to develop in Mercer Slough Nature Park. Of the three areas identified as wetland mitigation sites in that agreement, the Interpretive Center Pond is the closest to the location of Alternative A-2. The mitigation site is located north of the access road to the Sweyolocken trail and boat launch, which is also the location of the access ramp to Alternative A-2. The mitigation site included creation of open water as well as upland buffer plantings. The access ramp for Alternative A-2 would be located south of the buffer planting in the Interpretive Center Pond mitigation site in the agreement. Alternative C is even further removed from all mitigation sites in the agreement.

Mercer Slough Purchase - Land and Water Conservation Funds Act (LWCF)

According to the Recreation and Conservation Office (RCO), Mercer Slough Nature Park was purchased using LWCF funds. This purchase carries with it protections under section 6(f) (3) of the LWCF (36 CFR 59.3) that restrict conversion of such lands to other uses without the prior approval of the National

Park Service. Such approval requires first that all practical alternatives have been evaluated and that suitable replacement property has been provided.

Both Alternative A-2 and Alternative C would convert land in Mercer Slough Nature Park to transportation uses. Based on the project footprint in the preliminary plans for Alternative A-2, the ramp on the east side of Bellevue Way SE is the only portion that would extend into Mercer Slough Nature Park. This would convert approximately 0.4 acres (16,800 square feet) of park land.

For Alternative C, two areas would be converted. One would be east of the Sweyolocken Trail and boat ramp access road and the other would be southwest of the boat ramp and trailhead parking area. Approximately1.04 acre (45,200 square feet) of park area would be converted based on the preliminary project footprint.

References

Corps (Army Corps of Engineers). 2008. *Alternatives Analysis Guidelines*. http://www.nws.usace.army.mil/publicmenu/DOCUMENTS/REG/AltGuidance.pdf

Sound Transit. 2008a. *Sound Transit Projects East Link Project Draft Environmental Impact Statemen*t. http://www.soundtransit.org/Projects-Home/East-Link-Project/East-Link-DEIS.xml

Sound Transit. 2008b. *Sound Transit Projects East Link Project Draft Environmental Impact Statement*, Appendix H-3: Ecosystems Technical Report. http://www.soundtransit.org/Projects-Home/East-Link-Project/East-Link-DEIS-App.xml

ESA Adolfson

5309 Shilshole Avenue NW
Suite 200
Seattle, WA 98107
206.789.9658 phone
206.789.9684 fax

www.adolfson.com

memorandum

date July 8, 2010

to Ron Leimkuhler
KPFF Engineers

from Catherine Conolly

cc Margaret Clancy

subject Review of Initial Screening Analysis (July 1, 2010)

ESA reviewed the results of the Initial Screening Analysis for six alternative options for locating the Sound Transit South Bellevue Station in relation to effects on the natural environment and to parks. The purpose of our review was to provide an independent assessment of the results based on our professional judgment and expertise. We relied on concept drawings preliminary descriptions of the alternatives provided by KPFF, and did not conduct any additional analyses or investigations of the project or study area.

Specific screening criteria were established to narrow down the six potential alternatives to two for a more detailed feasibility analysis. The stated objective of the initial screening was to:

- Identify the most promising alternative locations for the South Bellevue Station on the west side of Bellevue Way and on the east side.
- Consider relevant physical constraints and requirements identified through discussions with WSDOT and Sound Transit. For WSDOT, initial feedback suggested keeping any garage or access structures north of the light rail platform, so as not to encroach on the I-90 mainline. For Sound Transit, this meant all options should meet the same programmatic requirements for the South Bellevue Station.

The comparison considered the new parking structure, station, and associated access improvements The screening process compared only the six options, and did not compare the six to the alternative locations examined in the DEIS (South Bellevue Station at the existing South Bellevue Park and Ride or the 118th Station option included as part of the B7 alignment in the DEIS).

The environmental screening criteria applied in the analysis were:

- 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)

The document summarized the effect of the alternatives on the environment and ranked the options, from “Less Promising” to “More Promising.” ESA’s preliminary assessment of the alternatives in terms of their effects on the

natural environment is summarized below. These findings should be revisited and refined as details of the project location and design become available.

EFFECTS OF ALTERNATIVES ON NATURAL ENVIRONMENT

Alternatives Options A-1 and A-2

With relation to the environmental criteria, Alternatives A-1 and A-2 have similar environmental impacts. Much of the construction occurs west of Bellevue Way SE, with only about a half acre of impact in Mercer Slough Park in the vicinity of the blueberry farm, where habitat quality is relatively low. The location of the station, elevated over the wetland in the vicinity of Mercer Slough increases the overall wetland impact to approximately 0.7 acre. Alternative A-1 was ranked as "Promising" and Alternative A-2 "More Promising" based largely upon increased traffic feasibility. In our opinion, these two alternatives have less environmental impact than the other alternatives.

Alternative Option B

Alternative B is similar to Alternative A-2 from an environmental perspective. However, the placement of the transit stop and layover beneath the light rail station increases the amount of construction and operational disturbance in close proximity to Mercer Slough and high quality habitat areas, resulting in a higher level of disturbance to wildlife and wetland habitat than Alternatives A-1 and A-2.

Alternative Option C

Alternative C has more acreage of wetland impact than the Alternatives A-1 and A-2, and B. The wetland impact (approximately 1.3 acre) is spread over a larger area, potentially impacting more wildlife habitat with activity, light, and noise, and greater impact to high-quality open-water wetland habitat. The location of the parking structure and ramps is closer to the Park than in Alternatives A-1, A-2, and B, potentially having greater impact to wildlife (noise, light, activity) than those alternatives.

Alternative Option D

Alternative D places the vast majority of construction in Mercer Slough Park (approximately 3.3 acres of vegetation removal). The parking structure, bus transit center, and the LRT station are located in wetland, though likely in the most disturbed wetland area of the Park. The location of the station requires that the rail line cross a large portion of Mercer Slough Park, and will introduce human activity, noise, and light into relatively undisturbed portions of the Park, having a noticeable effect upon wildlife habitat quality throughout the park. The elevated rail line will cross over high-quality open-water wetland south of the Sweyolocken Access Road. Alternative D has a greater impact upon habitat than Alternatives A-1, A-2, B, and C. This Alternative has somewhat less wetland impact than Alternative E (described below), and has proposed facilities clustered in a Park location that is currently more disturbed. However, the location of the proposed rail line in the Park north of the station is unidentified; if the impact of the rail line through the park is factored into this analysis, the magnitude of the impact upon the park likely would be even greater.

Alternative Option E

In Alternative E, the parking structure and access roads are located entirely in undeveloped Park, impacting approximately 3.8 acres of Park land. Although adjacent to Interstate 90, the proposed location of the parking structure is relatively undisturbed by human activity. The garage entrance and exit-ramps cross Mercer Slough and open-water wetland habitat. Building a new access road to the parking structure would likely impact Mercer Slough, and a sizeable area of Park and wetland habitat, creating additional impacts that cannot be fully quantified until the road location is determined. Alternative E has greater environmental impacts than Alternatives A-1, A-2, B, and C. It is not possible to compare this alternative with Alternative D, as both likely have environmental impacts beyond the boundaries of the figures provided.

EFFECTS ON FEASIBILITY OF THE ALTERNATIVES RELATED TO PARKS AGREEMENTS

The following sections describe existing park agreements and their affect upon permitting alternative options.

Washington State Department of Transportation (WSDOT) Agreement for I-90 Mitigation sites (1993)

The South Bellevue Station Alternatives A-1, A-2, B, C, and E would not affect any portions of Mercer Slough Park identified in the January 21, 1993 agreement between WSDOT and the City of Bellevue as designated mitigation sites for the Bellevue Access, Transit and HOV – Phase 2 project. Of the three areas identified as wetland mitigation sites in that agreement, the Interpretive Center Pond is the closest to the location of Alternatives A-1, A-2, and B. The mitigation site is located north of the access road to the Sweyolocken trail and boat launch, which is the location of the proposed Alternatives A-1, A-2, and B access ramps. The proposed access ramp for those alternatives would be located south of the Interpretive Center Pond mitigation site in the agreement, and do not to encroach on the designated mitigation area.

Alternatives C and E are further removed from all mitigation sites in the agreement. Alternative D is located in the vicinity of the Interpretive Center Pond buffer; if the construction remains outside of the buffer, the alternative will not affect any area protected by the 1993 agreement.

Mercer Slough Purchase - Land and Water Conservation Funds Act (LWCF)

According to the Recreation and Conservation Office (RCO), Mercer Slough Nature Park was purchased using LWCF funds. This purchase carries with it protections under Section 6(f) (3) of the LWCF (36 CFR 59.3) that restrict conversion of such lands to other uses without the prior approval of the National Park Service. Such approval requires that all practical alternatives have been evaluated and that suitable replacement property has been provided.

All of the alternatives would convert land in Mercer Slough Nature Park to transportation uses; the extent of the impact is related to the size of the construction footprint within the park. Impacts to Mercer Slough Park under Alternatives A-1, A-2, B, and C are similar in scope to those identified in the DEIS. However, the Park impacts associated with Alternatives D and E appear to be substantially greater than the alternatives examined in the DEIS. Unless all other alternatives proved to be impractical, The RCO and the United States Department of the Interior would not authorize conversion as envisioned in Alternatives D and E under 6(f).

Summary

In summary, based upon the figures and descriptions provided by KPFF on July 1, 2010, the alternatives with the least impact to the environment are A-1 and A-2. Alternative B and C are more impactful, and Alternatives D and E have the largest effect upon the environment of the Mercer Slough Park. This ranking is consistent with the analysis of alternative feasibility related to existing park agreements.

As was noted in the screening analysis, Federal Section 404(b)(1) Individual Department of the Army Clean Water Act Permits require an alternatives analysis as part of the permit submittal. The alternative analysis must identify the most practicable alternative with the least adverse impact to the aquatic ecosystem. NEPA also requires project proponents to identify alternatives with the least impact on the environment and various City, State and Federal laws require permit applicants to avoid and minimize adverse impacts as a first step in the impact mitigation sequence. Selecting an alternative that has potentially significant adverse effects on the environment is likely to be very problematic when there are viable alternatives that have less adverse impact. As a result, pursuing Alternatives such as D and E with the greatest impact to wetlands and streams could put the project at risk in terms of permitting or otherwise create substantial obstacles in the approval process.

Natural Resources Building
1111 Washington St SE
Olympia WA 98501

PO Box 40917
Olympia WA 98504-0917

(360) 902-3000
TTY (360) 902-1996
Fax: (360) 902-3026

E-mail: info@rco.wa.gov
Web site: www.rco.wa.gov

STATE OF WASHINGTON

RECREATION AND CONSERVATION OFFICE

February 19, 2010

Patrick Foran, Director
Bellevue Parks & Community Services
P.O. Box 90012
Bellevue WA 98009-9012

Dear Mr. Foran,

The Bellevue City Council has recently requested that Sound Transit consider an alternative route for the East Link Light Rail Project which would bisect Mercer Slough Nature Park. Please be advised that Mercer Slough was purchased with the assistance of state and federal public funds from 4 separate grants for which the Recreation and Conservation Office (RCO) is the long-term trustee.

RCO staff has reviewed the grant agreement and believe that such a rail route would constitute a "conversion" of use of the grant-funded property contrary to the purposes of the grant. A conversion is lawful under state and federal law ONLY after a reasoned determination that there is no feasible alternative to the conversion, when suitable replacement property can be purchased by the sponsor, and it is approved by the Recreation and Conservation Funding Board and in this instance, the National Park Service.

Replacement property must be reasonably equivalent in both current market value and conservation and wildlife utility. The area of the property that would need to be replaced is not simply the footprint of the rail corridor, but would also include any adverse impacts from the rail line on the remainder of the park (e.g. noise, light, access impacts).

I have attached a letter which I recently received from Michael Linde of the National Park Service (NPS) expressing considerable concern about this proposed alternative. NPS has particular interest in this project because Mercer Slough was funded in part through a national competition from the Secretary of Interior's Contingency Reserve Fund due it its uniqueness and statewide significance.

RCO is happy to provide technical assistance to you and your staff as you consider future decisions regarding the light rail corridor. You may contact me directly at (360) 902-3016 or marguerite.austin@rco.wa.gov or have your staff contact Outdoor Grants Manager Laura Moxham at (360) 902-2587 or Laura.moxham@rco.wa.gov if you would like such assistance.

Sincerely,

Marguerite Austin
Recreation Section Manager

Attachment: Linde letter from the National Park Service

cc: Heather Ramsay, NPS

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
909 First Avenue, Fifth Floor
Seattle, Washington 98104-1060

RECEIVED
FEB 11 2010
RECREATION AND CONSERVATION OFFICE

IN REPLY REFER TO:
L32 (PWR-PPR)
53-00218

FEB 09 2010

Ms. Kaleen Cottingham, Director
WA Recreation and Conservation Office
PO Box 40917
Olympia, WA 98504-0917

Dear ~~Ms. Cottingham:~~ KALEEN:

It has come to our attention that the Bellevue City Council has requested that Sound Transit consider an alternative routing of the East Link Light Rail, which would bisect Mercer Slough Nature Park. As you know, this park is protected by section 6(f)(3) of the Land and Water Conservation Fund Act (LWCF) against conversion to other than outdoor recreation and approvals for conversion are contingent on demonstrating that all practical alternatives have been evaluated and that suitable replacement property has been provided.

NPS is gravely concerned that the current routing proposal represents the potential to significantly affect the outdoor recreation experience at Mercer Slough. Once sound corridors and visual impacts are considered, NPS fears the current proposal would result in a total park conversion for LWCF purposes.

Unlike most of the LWCF sites in Washington State that were competed through a statewide competition and funded through your regular apportionment, Mercer Slough was competed at the national level and was funded through the Secretary of the Interior's Contingency Reserve Fund based on its unique characteristics and importance as a state wide resource.

It is this very uniqueness that raises concerns about whether suitable replacement property could ever be acquired, without which NPS could not approve conversion of the park.

We know that the RCO will provide to Bellevue and State Parks the technical guidance necessary for them to make the best choices for management of this important regional resource. We trust you to monitor this project on our behalf and appreciate this opportunity to point out the factors that make this grant unique from other projects. If you have questions, or would like to discuss this matter further, please do not hesitate to contact me at 206.220.4113.

Sincerely,

Michael J. Linde
Leader, Partnership Programs

TAKE PRIDE® IN AMERICA

FILED NO 18761
CITY OF BELLEVUE
DATE 1/25/93
CLERK Sharon Mast

AGREEMENT

THIS AGREEMENT, made and entered into this 21st day of January, 1993 by and between the State of Washington, Department of Transportation, acting by and through the Secretary of the Department of Transportation, hereinafter called the "State", and the City of Bellevue Parks and Recreation Department, P.O. Box 90012, Bellevue, Washington, 98009-0912, hereinafter called "Parks",

WHEREAS, the State is planning the construction of a project on SR-90 entitled "Bellevue Access, Transit and HOV - Phase 2", and

WHEREAS, the project will include the construction of wetland replacement areas which will be located in the Interpretive Center, Winter House and East Meadow sites, and

WHEREAS, "Parks" has completed the design for the wetlands replacement. and

WHEREAS, it is considered to be in the best public interest for the State to construct the wetland facilities and Parks to operate and maintain the system, and

NOW, THEREFORE, IT IS MUTUALLY AGREED AS FOLLOWS:

I
CONSTRUCTION

The State, at it's cost and through it's construction contractor or contractors, shall furnish all labor, material, equipment and tools required to construct the wetland systems in accordance with Parks approved Plans and Specifications. A copy of the plans are attached hereto and entitled Exhibit "B" and by this reference made a part of this Agreement. Parks reserves the right to inspect the construction of the facilities. The State shall provide Parks with a monthly progress report until the project is completed. The State has five (5) years to complete construction of the project and receive acceptance by Parks. If the States fails to complete construction in accordance with the Parks provided plans and specifications or fails to correct deficiencies, Parks may complete the project and recover all costs from the State. Except with respect to activities for which Parks is responsible, the State shall pay as due all claims for work done on, and for services rendered or material furnished to, the Property, and shall keep the Property free from all liens. The State shall be responsible for the States employees and Contractors safety during

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construction, operation, and maintenance activities related to this Agreement. All tools, equipment, and other property taken upon or placed upon the land by the State or its agents shall be removed at the completion of construction. Upon completion of constructionand 5 year plant establishment period, all improvements, and other property remaining upon the land shall become the property of Parks.

II
SCHEDULING

The State shall notify Parks of the work schedule for each major item of the project. The State shall notify Parks when a major item of work is substantially completed. Parks reserves the right to approve and accept the construction of each major item of work. If the work is not in accordance with Parks supplied plans and specifications, Park shall give written notice to the State of the deficiency. The State shall begin corrective action within 30 days of the notice if allowable under the Construction Contract Permits, if not allowable the State shall notify Parks and begin work within 30 days after authorized under Construction Contract Permits. If the State does not start work within the time period shown above Parks may terminate the Agreement. If the Agreement is terminated Parks agrees that the subject properties shall be maintained as wetlands in accordance with section III.

A joint field review shall be conducted by Parks and the State to assure satisfactory accomplishment of the work to be constructed in this Agreement. Parks shall deliver a letter of acceptance that the work has been completed to the contract plans and specifications.

III
POLICING & MAINTENANCE

Upon completion of the State's contract to construct the wetlands, Parks shall assume responsibility for the policing and maintenance, except that Parks maintenance responsibility in the wetland area shall be limited to litter control until the completion of the vegetation establishment period under the Construction Contract, which is one year from the completion of the construction of the project. The State shall be responsible for the establishment of the vegetation planted in the wetlands replacement area for a period of five (5) years. The State will monitor the wetland for a 5 year period or more to document the development of the wetland. If, during the first 5 years it is determined that the goal of having a functioning riparian/wetland is

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not achieved, the State will consult with resource agencies and determine an appropriate corrective course of action.

Parks shall assume responsibility for the maintenance of the wetland sites, at the completion of a one (1) year plant establishment period. Modification of work within said wetland will be prohibited, with the exception of those activities necessary to correct emergency situations that threaten human life, health or property. If Parks maintenance should not meet recognized minimum requirement, the State shall notify Parks in writing, setting a specified period of time in which corrective measures must be taken. If Parks fails to comply with the request, the State may bring said section up to the proper standards with it's own forces. The State reserves the right to examine and approve or disapprove Parks maintenance and policing of the wetland facilities.

At least once each year for the remaining 4 year vegetation establishment period, the proposed maintenance program for the sites for that year will be furnished to the WSDOT Biologist for review and approval. Following that period a general plan for the site for future years shall be reviewed and approved by the Biologist.

The property designated as the wetland area shall be retained in perpetuity by Parks. The wetland area shall be maintained as a natural area. Amenities that would encourage use of the wetland area by the public will be discouraged.

IV
RIGHT OF ENTRY

Parks hereby grants and conveys to the State the right of entry upon all land which Parks has interest for the purpose of construction, maintenance, repair, and monitoring of the wetland enhancement sites and to place personnel equipment and machinery on those sites described as Winter House Pond, Interpretive Center Pond, East Meadow Pond as described in EXHIBIT "B" attached hereto and for all purposes made part of this Agreement.

V
PAYMENT

The State shall reimburse Parks for the cost of the design of the Wetlands in the lump sum amount of $49,368.15 within 30 days after execution of this Agreement. In addition to the above payment the State shall reimburse Parks for maintenance of the wetland areas for the four (4) year period between the plant established period and the wetland development period.

The State, in consideration of the faithful performance of the work to be done by Parks, agrees to reimburse Parks for the actual direct and related indirect cost of the work. An itemized estimate of cost for work to be performed by Parks at the State's expense is marked Exhibit "A", and is attached hereto and by this reference made a part of this Agreement.

Partial payments shall be made by the State, upon request of Parks, to cover costs incurred. These payments are not to be more frequent than one (1) per month. It is agreed that any such partial payment will not constitute agreement as to the appropriateness of any item and that, at the time of final audit, all required adjustments will be made and reflected in a final payment.

Parks agrees to submit a final bill to the State within forty-five (45) days after Parks has completed the work.

VI
CHANGES

In the event unforeseen conditions require an increase in the cost from that agreed to on Exhibit "A." for maintenance by Parks, this Agreement will be modified by supplemental Agreement covering said increase.

In the event it is determined that any change from the description of work contained in this Agreement is required, approval must be secured from the State prior to the beginning of such work. Where the change is substantial, written approval must be secured.

Reimbursement for increased work and/or a substantial change in the description of work shall be limited to costs covered by a written modification, change order or extra work order approved by the State.

VII
INSURANCE

The State shall require its Contractor to purchase insurance and name the City of Bellevue on the Contractor's insurance policy in accordance with the provisions of Exhibit "C" attached hereto and made part of this Agreement for all intents and purposes.

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VIII
TERMINATION OF AGREEMENT

1. Parks shall have the right to terminate this Agreement by written notice to the State upon the occurrence of any of the following events, provided that an event of default by the State has occurs and the State has not corrected such default or begun correction within thirty (30) days after written notice from Parks unless the State is prohibited by the Construction permit or other legal authority beyond the States control. An event of default shall occur if the State:

a. Fails to complete the project or the construction is not in accordance with Parks supplied plans and specifications.

b. Fails to fulfill any obligation or term of this Agreement.

2. If the Agreement is terminated Parks agrees that the subject properties shall be maintained as wetlands in accordance with section III, and the State shall notify:

The Director of Environmental Unit, Department of Ecology State of Washington.

3. Upon notice to terminate by Parks or State, the Agreement shall terminate and be of no further force or effect with the exception of section III. Unless otherwise agreed between the parties, the State shall remove the equipment placed on the property by the State in a timely manner.

IX
ASSIGNMENT OF AGREEMENT

The State shall not assign any rights or obligations under this Agreement without written concurrence from Parks.

X
NOTIFICATION

Any notice required or permitted under this Agreement shall be deemed received when actually delivered, or 48 hours after deposited in the United States mail as certified mail, addressed to the addresses as specified below or from time to time changed by either of the parties in writing.

OM 1296

CITY OF BELLEVUE
Attn.: Planning and Construction Division
Parks and Recreation Department
P.O. Box 90012
Bellevue, Washington, 98009-9012

STATE OF WASHINGTON
DEPARTMENT OF TRANSPORTATION
15700 Dayton Ave North
Seattle, Washington, 98133

XI
INDEMNIFICATION

The State does hereby release, indemnify, and promise to defend and save Parks harmless from and against any and all liability, loss, damage, expense, actions, and claims, including the cost of reasonable attorney's fees incurred by Parks in defense thereof resulting or arising directly or indirectly on account of or out of acts or omissions of the State or its servants, agents, employees, and contractors in the exercise of the rights granted herein; provided however, this paragraph does not purport to indemnify Parks against liability for damages arising out of bodily injury to persons or damage to property caused by or resulting from the negligence of Parks or Park's agents or employees, and provided, however, that this paragraph is subject to RCW 4.24.115.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

Approved as to form:

Lori Mecklenburg
Assistant City Attorney

CITY OF BELLEVUE
Pam Bissonnette, Deputy City Manager

By: Pam Bissonnette

STATE OF WASHINGTON
DEPARTMENT OF TRANSPORTATION

By: LeRoy J. Jaworski
Design/Utilities/Railroad Engineer
11/1/93

Approved as to form

_____, 199____

_____
Assistant Attorney General

GM 1276

EXHIBIT A

Mercer Slough Wetland Enhancement Sites

The following is a list of tasks, frequencies, and time standards for maintenance and management of the Mercer Slough wetland mitigation sites. We used the existing Department of Transportation maintenance and management format for our estimates. The following is a breakdown of our concerns:

- o Man-hours per acre from the Sweylocken Landscape Estimate Sheet were deemed adequate by the Bellevue Parks Department resource Management Division.
- o Due to the specific growth patterns of weeds and planted materials in the Mercer Slough, the maintenance frequency per year was deemed too few.
- o The Resource Management developed the time per occupance by dividing the total time per year for each maintenance occurrence supplied by DOT by the number of frequencies Resource Management found adequate.
- o The cost for plant replacement is based on the estimate supplied by the DOT on the Landscape Maintenance Estimate sheet supplied during the Sweylocken project. This was found to be approximately $600 per acre.

City of Bellevue maintenance staff time was based on the total yearly hours calculated for each maintenance task x 1.22 (City adjustment for setup, breaks, sick leave, etc.) x 1.22 for average travel time. The city wages was calculated to be $19/hr. including wages, medical, etc.

Estimated cost include labor, equipment, and materials. The cost does not include management and inspections.

			Resource Management Division		
	No. Times per Year	DOT Man-Hour/Acre	Man-Hours/Year	Freq./Year	Hrs./Freq./Acre
Hand weed	2	44	88	9	10
Postherb	2	3	6	6	1
Brushing	1	10	10	3	3.3
Litter	1	1.5	1.5	10	.15

EXHIBIT "A"
ESTIMATE OF COS
AND ...OF L...

GM 1276

EXHIBIT A
EQUIPMENT

Equipment costs were based on the below factors for each our of actual use:

Truck—$15 for each hour of truck use. This was multiplied by the average travel time for each site (1.22 x total annual hours).

Sprayer—$10 for each hour of sprayer use including all product applied.

Weedeater—$3 for each our of weedeater use. This is multiplied by the annual brushing hours.

Estimated contract prices are based on total annual hours x $28/hour (including travel time and all overhead costs).

Exhibit "A"
Estimate of Cost
Page 2 of 6

LOCATION: WINTERS HOUSE-WETLAND ENHANCEMENT

PAGE OF

TIME STANDARD	TIME/ OCCURENCE	FREQUENCY FOR MONTH J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL FRQNCY	ANNUAL HOURS	ADJUST MENT %	ADJUSTED ANNUAL H
10 HRS/ACRE	4			1	1	1	1	1	1	1	1	1		9	36	1.22	43.9
1 HR/ACRE	0.4				1	1	1	1		1	1			6	2.4	1.22	2.9
3.3 HRS/ACRE	1.32		1				1					1		3	4	1.22	4.9
.15HRS/ACRE	0.6		1	1	1	1	1	1	1	1	1	1		10	0.6	1.22	0.72
$600/ACRE																	
		TOTA	TOTA												43		52.4

COST/HR	TOTAL
$15/HR	$142.50
$10/HR	$24
$9/HR	$12
	$178.50

52.4 TOTAL ADJUSTED HRS X 1.22 (TRAVEL TIME = 64 TOTAL BILLING HOURS

64 HRS X $19 (INHOUSE BILLING RATE) = $1,216

$1,216 LABOR + $178.50 EQUIP. COSTS = $1,394 PER YEAR MAINTENANCE COSTS

PLANT REPLACEMENT - $600/ACRE X .4 = $240 - TOTAL COST LIMITED TO YEARS, 2 THRU 5, OF PROJECT

LOCATION: INTERPRETIVE CENTER-WETLAND ENHANCEMENT

PAGE OF

EQUENCY FOR MONTH									ANNUAL FRONCY	ANNUAL HOURS	ADJUST MENT %	ADJUSTED ANNUAL H
A	M	J	J	A	S	O	N	D				
1	1	1	1	1	1	1	1		9	198	1.22	241.6
1	1	1	1		1	1			6	13.2	1.22	16.1
		1					1		3	21.9	1.22	26.7
1	1	1	1	1	1	1	1		10	3	1.22	3.7
NUAL HOURS										236		288

TAL ADJUSTED HRS X 1.22 (TRAVEL TIME) = 351 TOTAL BILLING HOURS

S X $19 (INHOUSE BILLING RATE) = $6,669

LABOR + $976.20 EQUIP. COSTS = $7,636 PER YEAR MAINTENANCE COSTS

REPLACEMENT - $600/ACRE X 2.2 = $1,320 - TOTAL COST LIMITED TO
, 2 THRU 5, OF PROJECT

MAINTENANCE
DISTRICT:
ACTIVITY

HARDWEED

HERBICIDE
BRUSH
CONTROL

LITTER

PLANT
REPLACE

EQUIPMENT C

EQUIPMENT

TRUCK

SPRAYER

WEEDEATER

TOTAL ANNU

GM 1276

Page 5 of

MENT PLAN — LOCATION: EAST MEADOWS-WETLAND ENHANCEMENT — PAGE OF

ORY TY	TIME STANDARD	TIME/ OCCURENCE	FREQUENCY FOR MONTH J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL FRQNCY	ANNUAL HOURS	ADJUST MENT %	ADJUSTED ANNUAL H
ES	10 HRS/ACRE	12			1	1	1	1	1	1	1	1	1		9	108	1.22	131.8
ES	1 HR/ACRE	1.2				1	1	1	1		1	1			6	7.2	1.22	8.8
ES	3.3 HRS/ACRE	4		1				1					1		3	12	1.22	14.6
ES	.15HRS/ACRE	0.2 0.2		1	1	1	1	1	1	1	1	1	1		10	2	1.22	2.4
ES	$600/ACRE																	
			TOTAL ANNUAL HOURS													129		155

	COST/HR	TOTAL
9	$15/HR	$426
	$10/HR	$72
	$3/HR	$36
ENT COST		$534

155 TOTAL ADJUSTED HRS X 1.22 (TRAVEL TIME) = 190 TOTAL BILLING HOURS

190 HRS X $19 (INHOUSE BILLING RATE) = $3,610

$3,610 LABOR + $534 EQUIP. COSTS = $4,144 PER YEAR MAINTENANCE COSTS

PLANT REPLACEMENT - $600/ACRE X 1.2 = $720 - TOTAL COST LIMITED TO YEARS, 2 THRU 5, OF PROJECT

B	C	D	E	F	G
d Enhancement Sites					
mmary					
ear One	Year Two	Year Three	Year Four	Year Five	Total Maintenance Cost Per Pond
y Contractor	$1,394.00	$1,394.00	$1,394.00	$1,394.00	$5,576.00
y Contractor	$7,636.00	$7,636.00	$7,636.00	$7,636.00	$30,544.00
y Contractor	$4,144.00	$4,144.00	$4,144.00	$4,144.00	$16,576.00
	$240.00				
	$1,320.00				Total Plant Replcement Cost
	$720.00				$2,280.00
	$15,454.00	$13,174.00	$13,174.00	$13,174.00	
reement Value					$54,976.00

WORK IN WETLAND ENHANCEMENT SITES - LIABILITY

The Contractor shall provide liability insurance for operations in Wetland Enhancement Sites, details of which are shown on sheets ER1 through ER11 of the Plans and these Special Provisions. Liability requirement are as specified in the following requirements. In lieu of a separate policy, the Contractors may provide an endorsement to insurance obtained pursuant to Section 1-07.18 of the Standard Specifications adding the City of Bellevue, Washington as a Named Insured as set forth therein.

Additional Contractors Insurance Requirements

The Contractor shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or sub-Contractors. The cost as such insurance shall be paid by the Contractor.

A. Minimum Scope of Insurance
Coverage shall be at least as broad as:

1. Insurance Services Offices from number GL 0002(Ed. 1/73) covering Comprehensive General Liability and Insurance Services Office form number GL 0404(ed. 1/81) covering Broad Form Comprehensive General Liability; or Insurance Services Office Commercial General Liability coverage ("occurrence" form CG 0001 - Ed 11 85).

2. Insurance Services Offices form number CA 0001(Ed. 1/87) covering Automobile Liability, code 1 "any auto", and endorsement CA 0025 (Ed. 12/88).

3. Worker's Compensation coverage as

EXHIBIT "C"
INSURANCE
PAGE 1 of 3

required by the Worker's Compensation Act of the State of Washington.

B. Minimum Limits of Insurance
Contractor shall maintain limits of insurance no less than:

1. Comprehensive General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.

2. Automobile liability: $1,000,000 combined single limit per accident for bodily injury and property damage.

3. Worker's Compensation coverage as required by the Worker's Compensation Act of the State of Washington.

C. Deductible and Self-Insured Retentions
Any deductibles or self-insured retentions must be declared to and approved by the City of Bellevue. At the option of the City of Bellevue, either; the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City of Bellevue, its officials and employees; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

D. The policies are to contain or be endorsed to contain, the following provision:

1. General Liability and Automobile Liability Coverages

a. The City of Bellevue, its officials, employees and volunteers are to be covered as additional insured as respects; liability arising out of activities performed by or on behalf of the Contractor; premises owned, leased or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor; The coverage shall contain no special limitations on the scope of protection afforded to the City of Bellevue, its officials, employees or volunteers.

b. The Contractor's insurance coverage shall be primary insurance as respects the City of Bellevue, its officials, employees and volunteers. Any insurance or self-insurance maintained

by the City of Bellevue, its officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

c. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City of Bellevue, its officials, employees or volunteers.

d. Coverage shall state that the Contractor's insurance shall apply separately to each insured against who claim is made or suit is brought, except with respect to the limits of the insurer's liability.

2. All Coverages

Each insurance policy required by this clause shall state that coverage shall not be cancelled by either party, except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City of Bellevue.

E. Acceptability of Insurers
Insurance is to be placed with insurers with a Bests' rating of no less than B:XIII, or with an insurer acceptable to the City of Bellevue.

F. Verification of Coverage
Contractor shall furnish the City of Bellevue with certificates of insurance affecting coverage required by this clause. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates are to be received and approved by the City of Bellevue before work commences. The City of Bellevue reserves the right to require complete, certified copies of all required insurance policies, at any time.

G. Sub-Contractors
Contractor shall include all sub-Contractors as insureds under its policies or shall furnish separate certificates for each sub-Contractor. All coverages for sub-Contractors shall be subject to all of the requirements stated herein.

Exhibit "C"
Insurance
Page 3 of 3

[redacted]

EXHIBIT [redacted] page 1 of 9

WETLAND ENHANCEMENT SITES

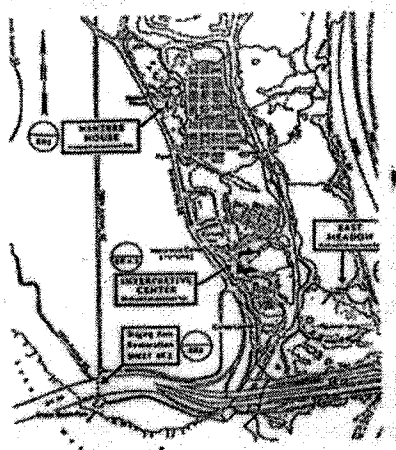


EXHIBIT "B"
C.S. 1905 SR. 90
Bellevue Access & HOV
City of Bellevue, Parks
AGREEMENT NO. GM 1276
SHEET 1 OF 2 SHEETS Oct. 19 92
SCALE As Shown

HIGHWAY DIVISION

Washington State Department of Transportation

Wetland Enhancement Sites

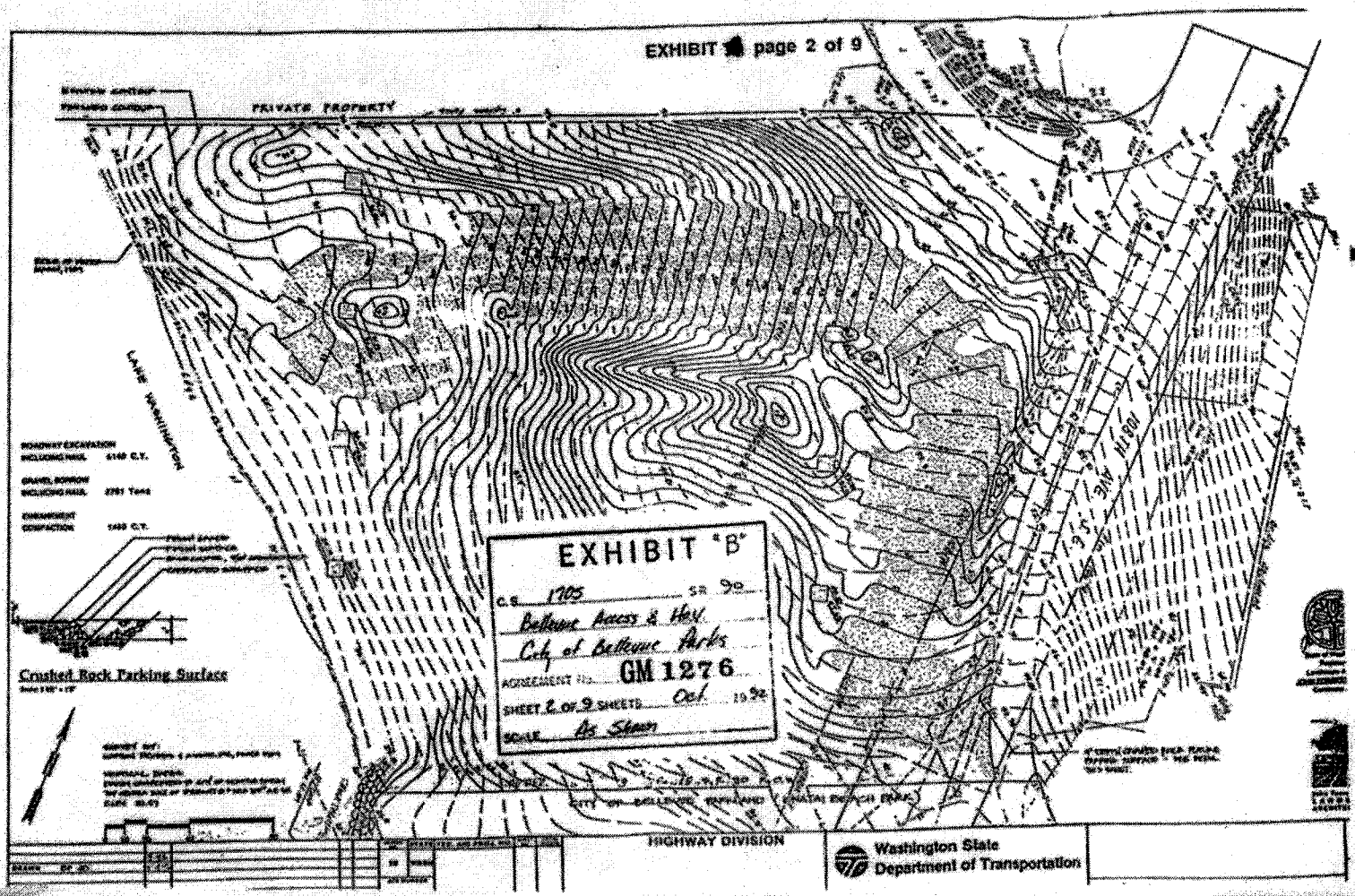

PRIVATE PROPERTY
LAKE WASHINGTON
Crushed Rock Parking Surface
EXHIBIT "B"
C.S. 1705 SR 90
Bellevue Access & Haul
City of Bellevue Parks
AGREEMENT No. GM 1276
SHEET 2 OF 9 SHEETS Oct 1992
SCALE As Shown
HIGHWAY DIVISION
Washington State Department of Transportation

EXHIBIT page 3 of 9

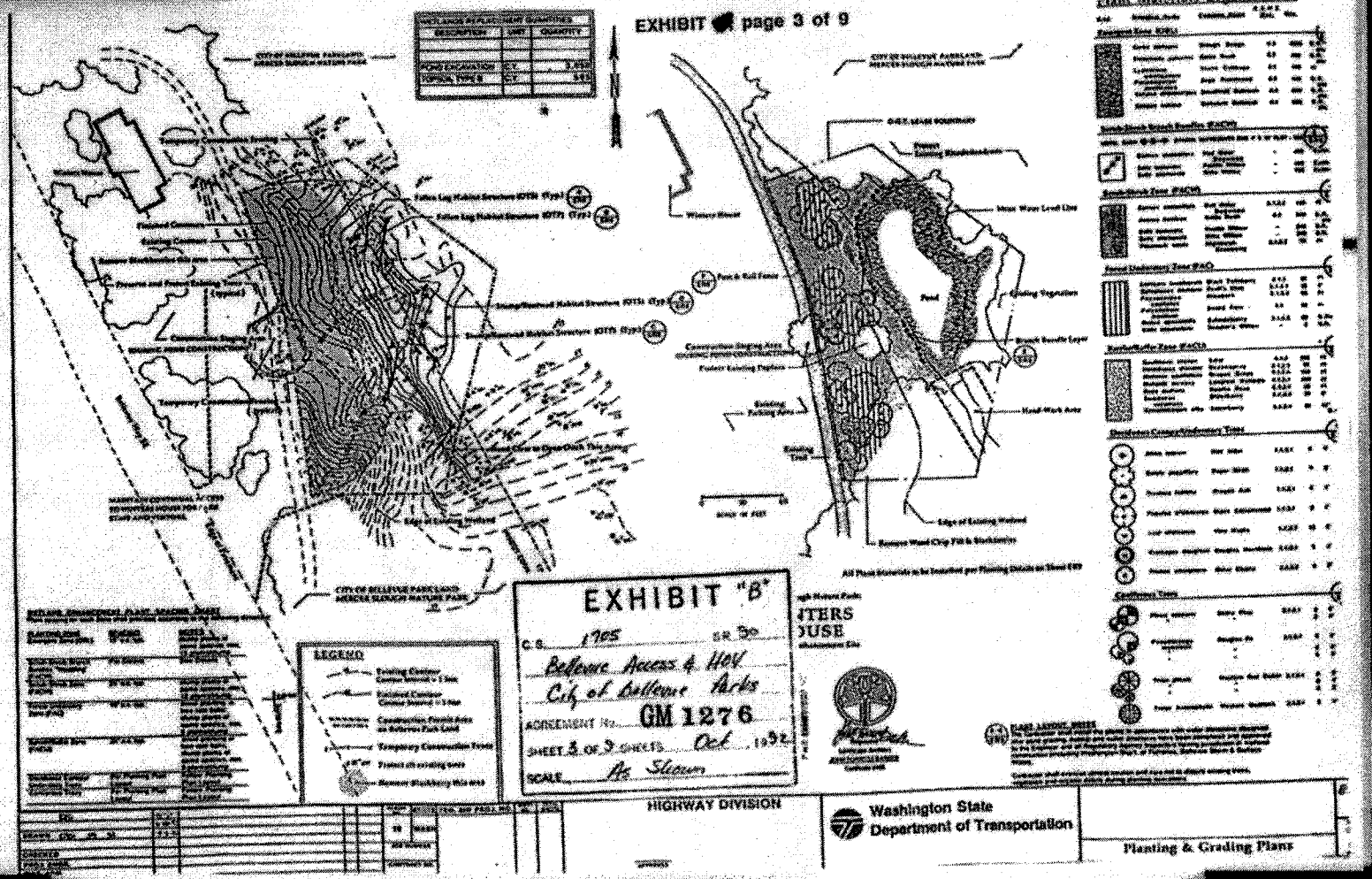
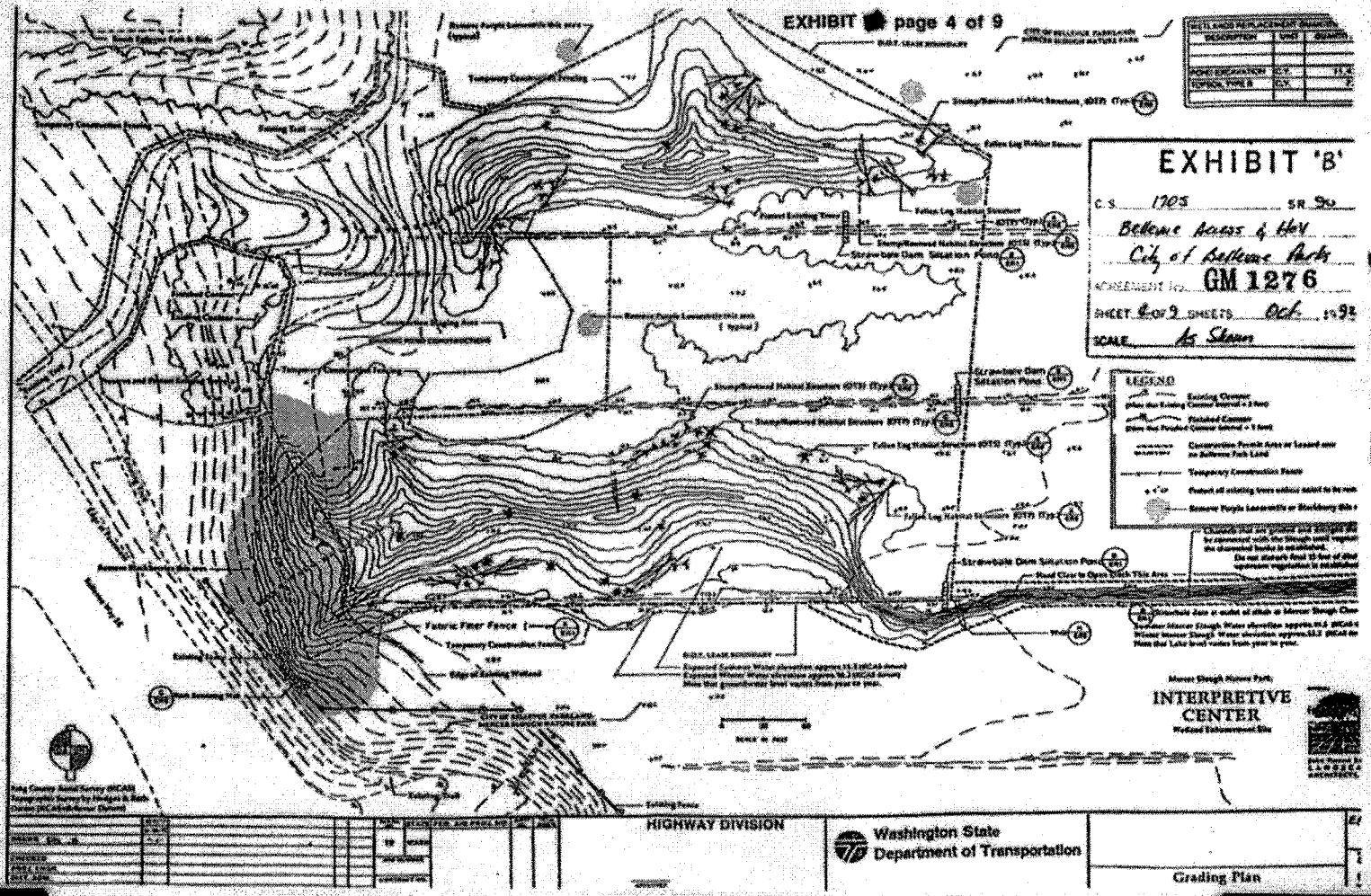


EXHIBIT page 4 of 9



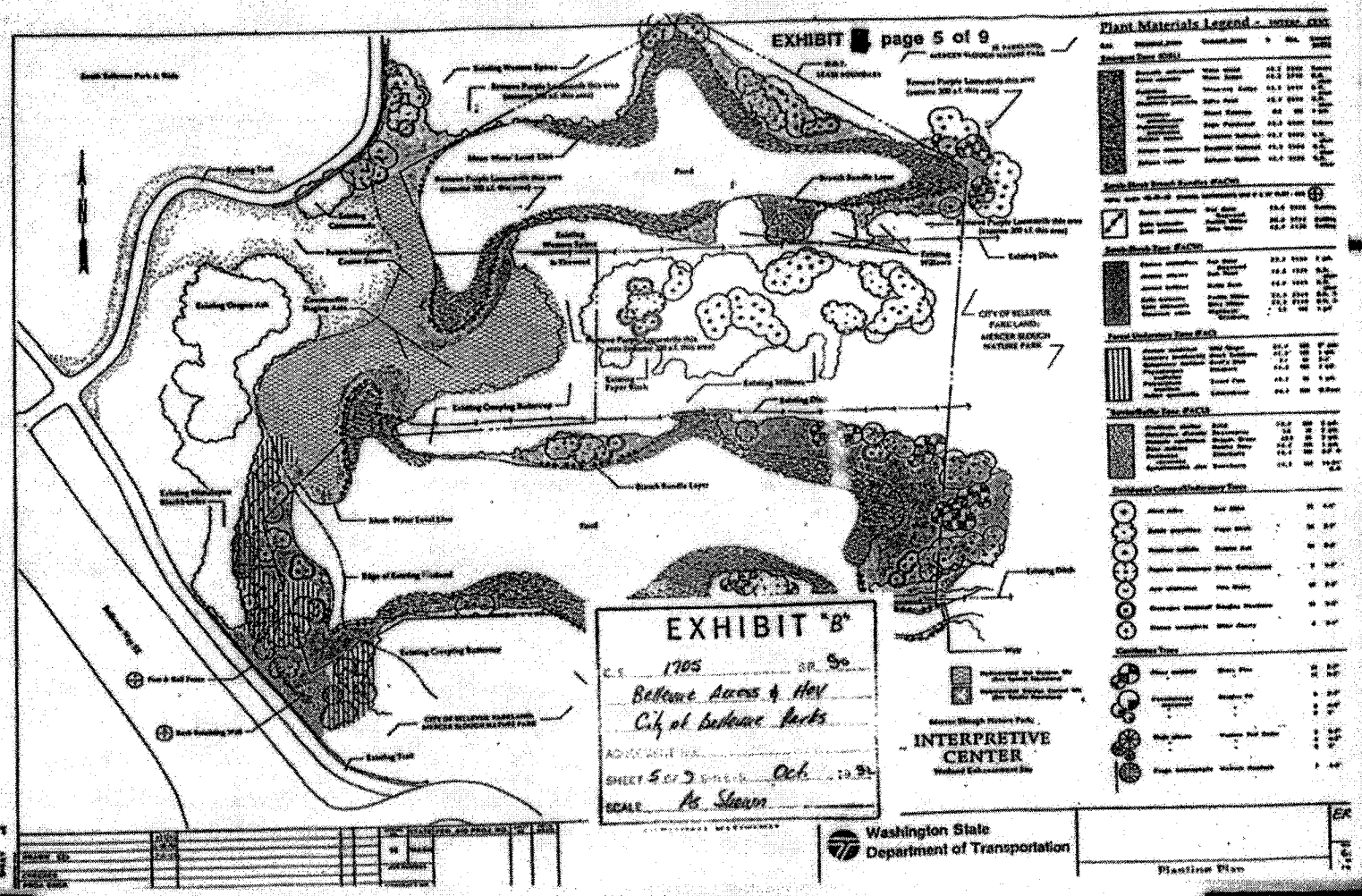
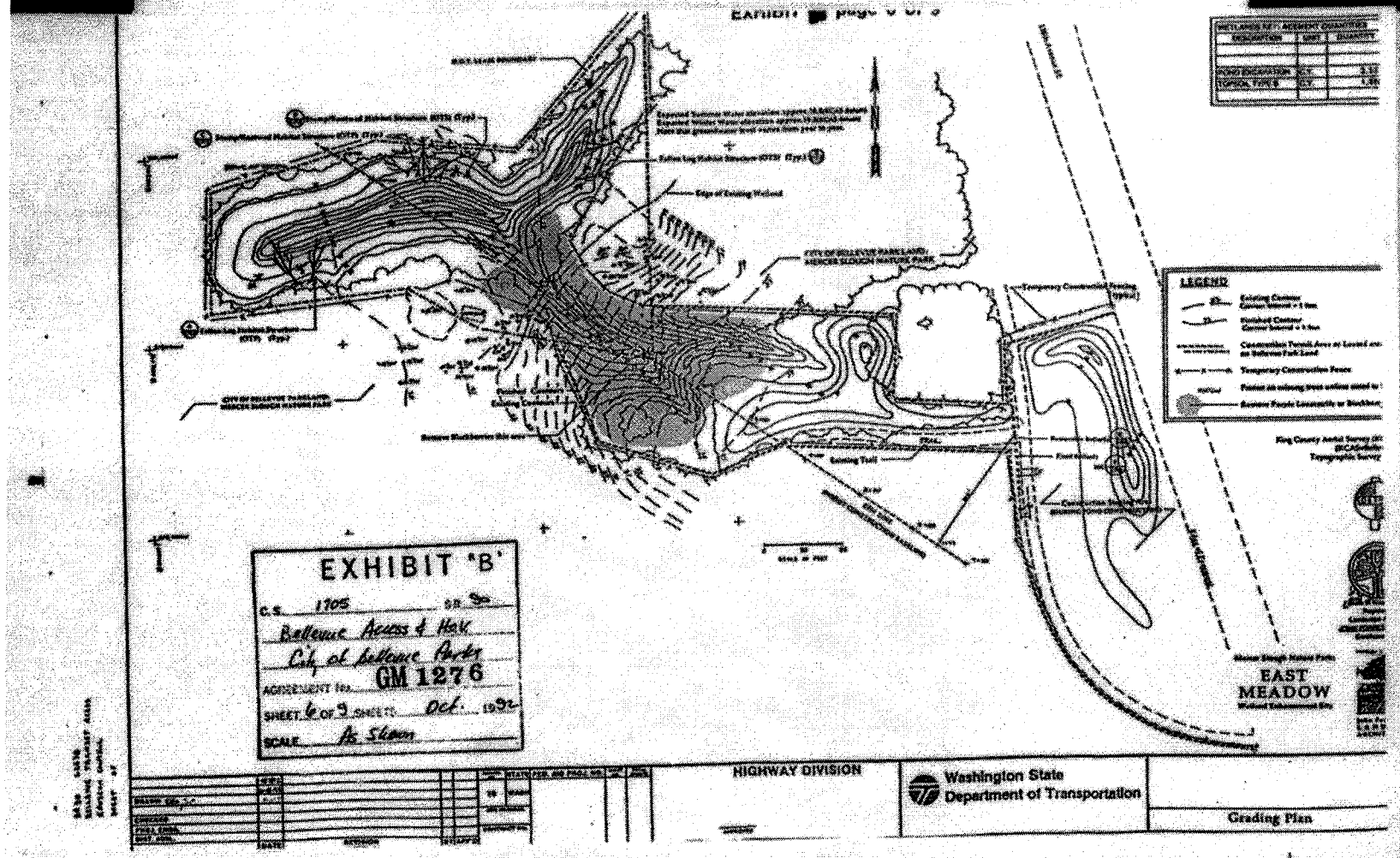


EXHIBIT page 5 of 9
Plant Materials Legend
EXHIBIT "B"
C.S. 1705 SR. 90
Bellevue Access & HOV
City of Bellevue Parks
SHEET 5 OF 9 SHEETS Oct. 19 94
SCALE As Shown
INTERPRETIVE CENTER
Washington State Department of Transportation
Planting Plan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C.S. 1105 SR 90
Bellevue Access & HOV
City of Bellevue Parks
AGREEMENT No. GM 1276
SHEET 6 OF 9 SHEETS Oct. 1992
SCALE As Shown
LEGEND
EAST MEADOW
HIGHWAY DIVISION
Washington State Department of Transportation
Grading Plan

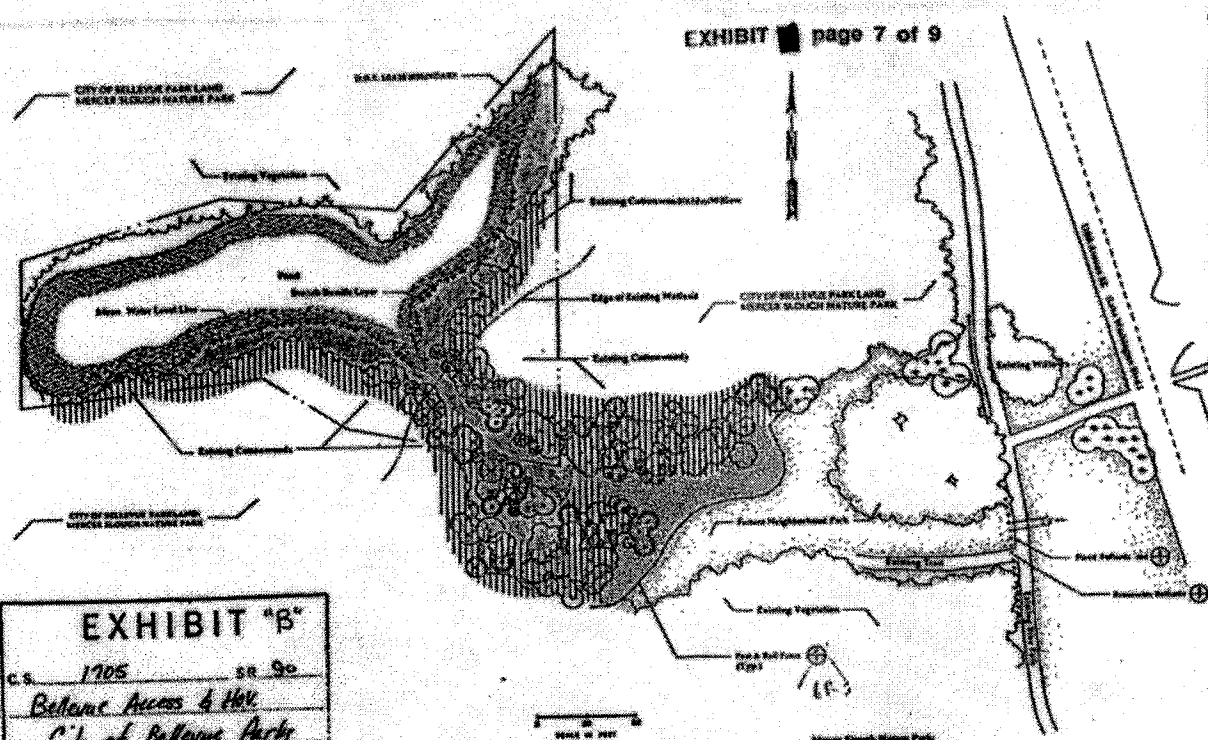


EXHIBIT "B"

C.S. 1705 SR 90

Bellevue Access & Hov.

City of Bellevue Parks

AGREEMENT No. GM 1276

SHEET 2 OF 3 SHEETS Oct. 1992

SCALE As Shown

HIGHWAY DIVISION

Washington State Department of Transportation

Planting Plan

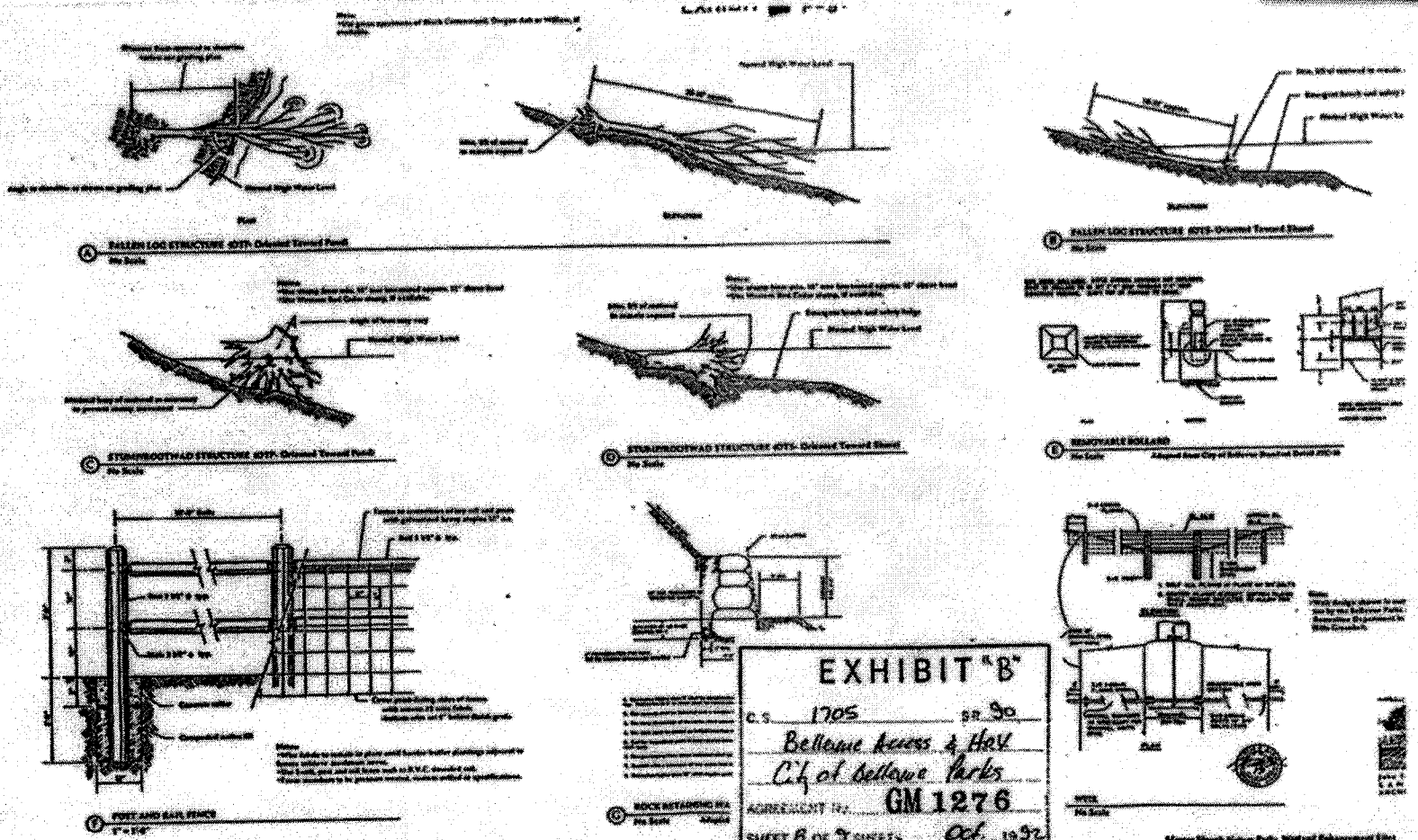
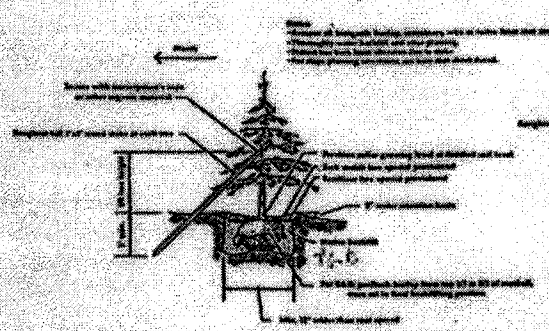


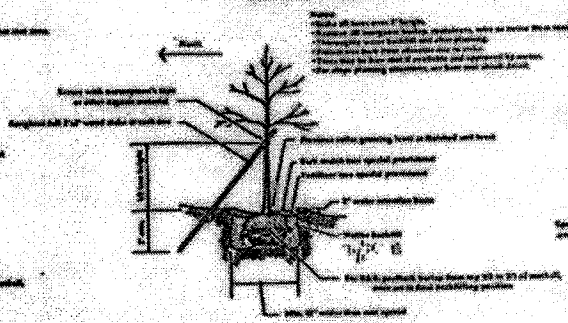
EXHIBIT "B"
C.S. 1705 SR 90
Bellevue Access & HOV
City of Bellevue Parks
AGREEMENT NO. GM 1276
SHEET 8 OF 9 SHEETS Oct. 1992
SCALE As Shown

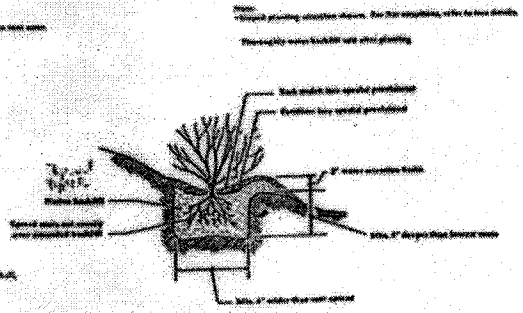
HIGHWAY

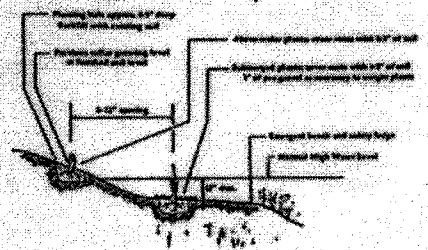
Department of Transportation

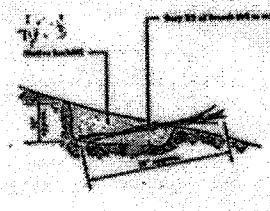
Details: Habitat Structures, Fence, Weir

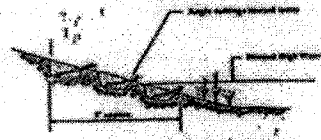












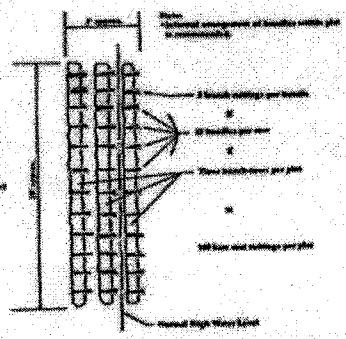


EXHIBIT "B"

C.P. 1705 SR. 90

Bellevue Access & HOV

City of Bellevue Parks

AGREEMENT NO. GM 1276

SHEET 9 OF 9 SHEETS Oct. 1992

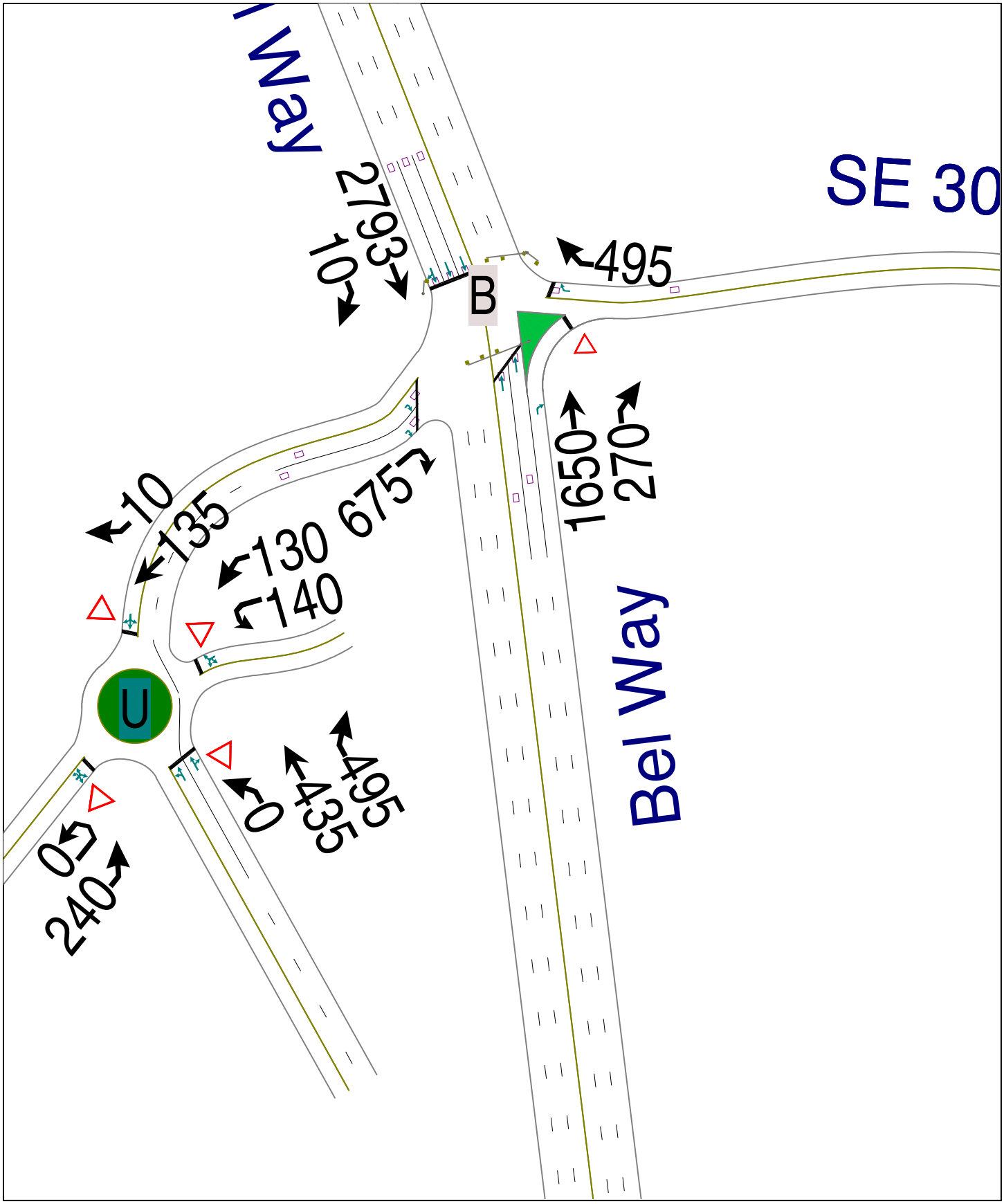
SCALE As Shown

ER9

Appendix E

Traffic Analysis – Synchro Output

Map - Eastside High Capacity Transit (HCT) Corridor
Levels of Service **6/30/2010**



Lane Group	WBR	NBT	NBR	SBT	NER2
Lane Configurations					
Volume (vph)	495	1650	270	2793	675
Lane Group Flow (vph)	707	1684	276	2951	758
Turn Type	Free		Perm		custom
Protected Phases		6		2	1
Permitted Phases	Free		6		
Detector Phase		6	6	2	1
Switch Phase					
Minimum Initial (s)		7.0	7.0	7.0	7.0
Minimum Split (s)		27.0	27.0	27.0	12.0
Total Split (s)	0.0	80.0	80.0	53.0	27.0
Total Split (%)	0.0%	100.0%	100.0%	66.3%	33.8%
Yellow Time (s)		2.0	2.0	4.0	4.0
All-Red Time (s)		0.0	0.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	1.0	1.0	4.0	4.0
Lead/Lag				Lag	Lead
Lead-Lag Optimize?					
Recall Mode		C-Min	C-Min	C-Min	None
Act Effct Green (s)	80.0	80.0	80.0	49.1	22.9
Actuated g/C Ratio	1.00	1.00	1.00	0.61	0.29
v/c Ratio	0.43	0.48	0.17	0.94	0.94
Control Delay	0.8	0.5	0.2	21.7	49.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	0.8	0.5	0.2	21.7	49.6
LOS	A	A	A	C	D
Approach Delay		0.4		21.7	
Approach LOS		A		C	
Queue Length 50th (ft)	0	0	0	442	207
Queue Length 95th (ft)	0	0	0	#567	#325
Internal Link Dist (ft)		782		352	
Turn Bay Length (ft)					
Base Capacity (vph)	1644	3539	1583	3151	810
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.48	0.17	0.94	0.94

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

Splits and Phases: 122: SE 30th St & Bel Way

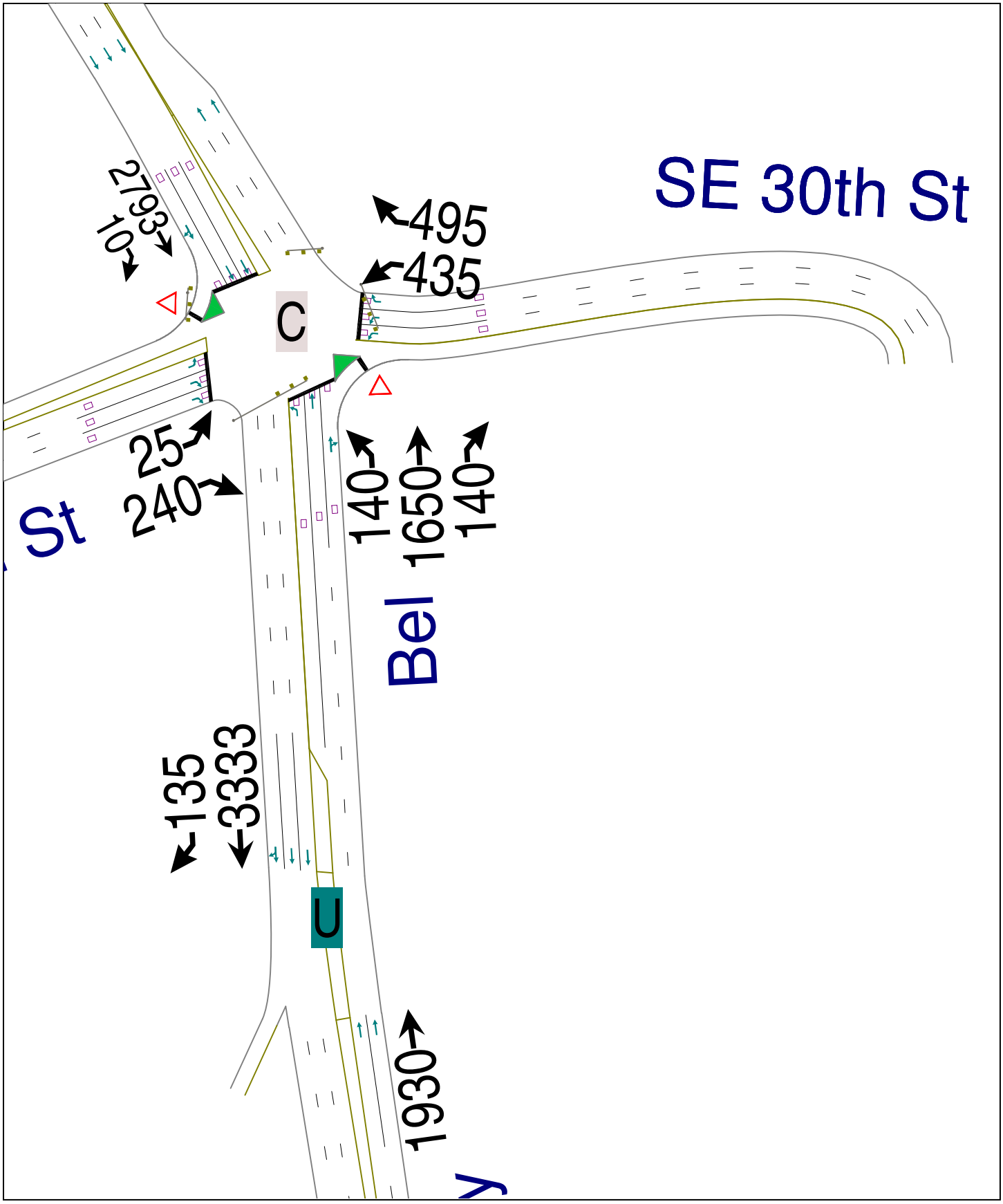
Alternative A2
5: SE 30th St & Roundabout

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (vph)	140	130	0	0	435	495	0	135	10	240	0
Satd. Flow (prot)	0	1770	0	0	1863	1583	0	1846	0	1770	0
Flt Permitted		0.950								0.950	
Satd. Flow (perm)	0	1770	0	0	1863	1583	0	1846	0	1770	0
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Adj. Flow (vph)	156	144	0	0	483	550	0	150	11	267	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	300	0	0	483	550	0	161	0	267	0
Sign Control		Yield			Yield			Yield		Yield	

Intersection Summary			
Control Type: Roundabout			
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			
Description: SE 30th & Roundabout			

Alternative C - At Grade

Map - Eastside High Capacity Transit (HCT) Corridor
Levels of Service **6/29/2010**



Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	SBT
Lane Configurations							
Volume (vph)	25	240	435	495	140	1650	2793
Lane Group Flow (vph)	28	270	621	707	143	1827	2951
Turn Type	Prot	Over	Prot	Free	Prot		
Protected Phases	3	1	7		1	6	2
Permitted Phases				Free			
Detector Phase	3	1	7		1	6	2
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	12.0	12.0	12.0		12.0	27.0	27.0
Total Split (s)	21.0	13.0	21.0	0.0	13.0	69.0	56.0
Total Split (%)	23.3%	14.4%	23.3%	0.0%	14.4%	76.7%	62.2%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lead/Lag		Lead			Lead		Lag
Lead-Lag Optimize?							
Recall Mode	None	None	None		None	C-Min	C-Min
Act Effct Green (s)	11.6	9.0	17.0	90.0	9.0	65.0	52.0
Actuated g/C Ratio	0.13	0.10	0.19	1.00	0.10	0.72	0.58
v/c Ratio	0.12	0.94	0.94	0.44	0.81	0.72	1.00
Control Delay	33.5	82.2	60.2	0.9	73.1	9.2	35.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	82.2	60.2	0.9	73.1	9.2	35.2
LOS	C	F	E	A	E	A	D
Approach Delay						13.9	35.2
Approach LOS						B	D
Queue Length 50th (ft)	15	86	180	0	81	261	566
Queue Length 95th (ft)	36	#169	179	0	#181	337	#738
Internal Link Dist (ft)						370	125
Turn Bay Length (ft)					250		
Base Capacity (vph)	338	286	661	1615	177	2533	2965
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.94	0.94	0.44	0.81	0.72	1.00

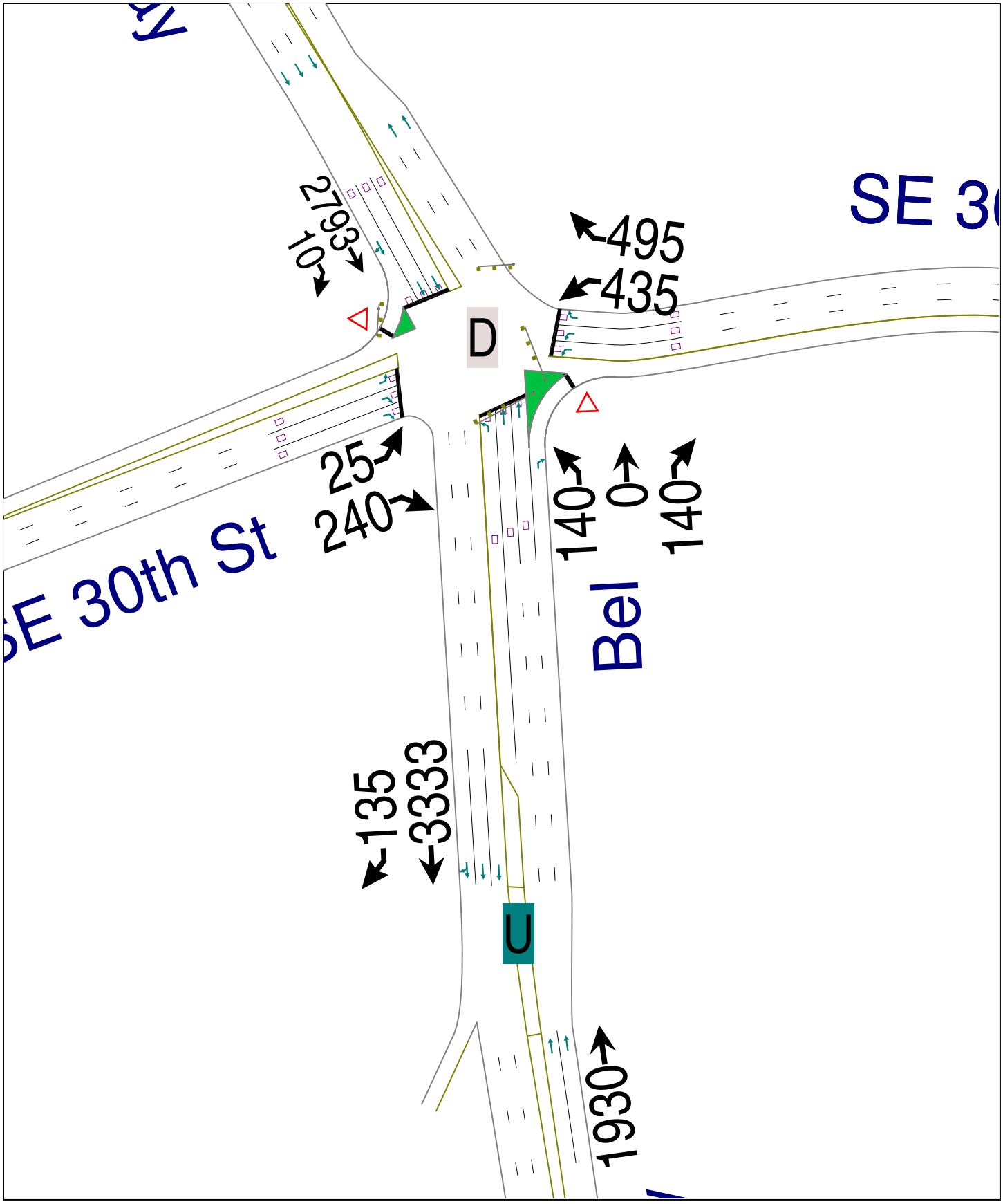
Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

Splits and Phases: 122: SE 30th St & Bel Way

Alternative C - NB Fly Over

Map - Eastside High Capacity Transit (HCT) Corridor
Levels of Service **6/29/2010**



Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBT
Lane Configurations								
Volume (vph)	25	240	435	495	140	1650	140	2793
Lane Group Flow (vph)	28	270	621	707	143	1684	143	2951
Turn Type	Prot	Over	Prot	Free	Prot		Perm	
Protected Phases	3!	1	3!		1	12!		2
Permitted Phases				Free			12	
Detector Phase	3	1	3		1	12	12	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0
Minimum Split (s)	12.0	12.0	12.0		12.0	27.0	27.0	27.0
Total Split (s)	21.0	13.0	21.0	0.0	13.0	90.0	90.0	56.0
Total Split (%)	23.3%	14.4%	23.3%	0.0%	14.4%	100.0%	100.0%	62.2%
Yellow Time (s)	4.0	4.0	4.0		4.0	2.0	2.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0	0.0	0.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	4.0	3.0	4.0	1.0	1.0	4.0
Lead/Lag		Lead			Lead			Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None		None	Min	Min	C-Min
Act Effct Green (s)	17.0	9.0	17.0	90.0	9.0	90.0	90.0	52.0
Actuated g/C Ratio	0.19	0.10	0.19	1.00	0.10	1.00	1.00	0.58
v/c Ratio	0.08	0.94	0.94	0.44	0.81	0.48	0.09	1.00
Control Delay	31.0	82.2	60.2	0.9	73.1	0.5	0.1	35.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	82.2	60.2	0.9	73.1	0.5	0.1	35.2
LOS	C	F	E	A	E	A	A	D
Approach Delay						5.7		35.2
Approach LOS						A		D
Queue Length 50th (ft)	13	86	180	0	81	0	0	566
Queue Length 95th (ft)	36	#169	179	0	#181	0	0	#738
Internal Link Dist (ft)						370		125
Turn Bay Length (ft)					250			
Base Capacity (vph)	338	286	661	1615	177	3539	1583	2965
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.94	0.94	0.44	0.81	0.48	0.09	1.00

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	
Description: Alternative C with NB Flyover	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

Splits and Phases: 122: SE 30th St & Bel Way

Lane Group	EBL	EBR	WBL	WBR	NBL	NBR	SBT	ø6
Lane Configurations								
Volume (vph)	25	240	435	495	140	140	2793	
Lane Group Flow (vph)	28	270	621	707	143	143	2951	
Turn Type	Prot	Over	Prot	Free	Prot	Free		
Protected Phases	3	1	7		1		2	6
Permitted Phases				Free		Free		
Detector Phase	3	1	7		1		2	
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0		7.0		7.0	7.0
Minimum Split (s)	12.0	12.0	12.0		12.0		27.0	27.0
Total Split (s)	21.0	13.0	21.0	0.0	13.0	0.0	56.0	69.0
Total Split (%)	23.3%	14.4%	23.3%	0.0%	14.4%	0.0%	62.2%	77%
Yellow Time (s)	4.0	4.0	4.0		4.0		4.0	4.0
All-Red Time (s)	1.0	1.0	1.0		1.0		1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	4.0	3.0	4.0	3.0	4.0	
Lead/Lag		Lead			Lead		Lag	
Lead-Lag Optimize?								
Recall Mode	None	None	None		None		C-Min	C-Min
Act Effct Green (s)	11.6	9.0	17.0	90.0	9.0	90.0	52.0	
Actuated g/C Ratio	0.13	0.10	0.19	1.00	0.10	1.00	0.58	
v/c Ratio	0.12	0.94	0.94	0.44	0.81	0.09	1.00	
Control Delay	33.5	82.2	60.2	0.9	73.1	0.1	35.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.5	82.2	60.2	0.9	73.1	0.1	35.2	
LOS	C	F	E	A	E	A	D	
Approach Delay							35.2	
Approach LOS							D	
Queue Length 50th (ft)	15	86	180	0	81	0	566	
Queue Length 95th (ft)	36	#169	179	0	#181	0	#738	
Internal Link Dist (ft)							125	
Turn Bay Length (ft)					250			
Base Capacity (vph)	338	286	661	1615	177	1583	2965	
Starvation Cap Reductn	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.08	0.94	0.94	0.44	0.81	0.09	1.00	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 36.1	Intersection LOS: D
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	

Queue shown is maximum after two cycles.

Splits and Phases: 122: SE 30th St & Bel Way

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