

Concept designs evaluated for 238th/242nd

On April 18, 2012, the EMCP steering committee reviewed project options (see below) for the 238th/242nd area between Glisan and Halsey. The Steering Committee directed staff to:

- Provide more detail about operational effects of Option 2, including losing a climbing lane.
- Develop a refined Option 2 that would preserve the climbing lane while allowing for improved truck turning, bicycle and pedestrian facilities.

This memo contains the concept designs evaluated for 238th/242nd, including the concept design and performance of the refined Option 2:

- No-Build (Option 1)
- Improved 238th/242nd with 2 lanes (Option 2)
- **Refined 238th/242nd with 3 lanes; this is new information** (Option 2 refined)
- 242nd extension (Option 3)

Refined 238th/242nd with 3 lanes (Option 2 refined)

Based on the Steering Committee direction from April 18, 2012, staff developed a refined Option 2. This option includes the following considerations and improvements. (see pages 3-5)

- The changes to the existing 238th/242nd would be introduced to allow for improved truck turning, and bicycle and pedestrian facilities.
- The project maintains the existing 10% grade on 238th/242nd.
- Can be built with no private property acquisition (some property owned by City of Wool Village would be required).
- Retaining wall in one location on north of road (15 foot maximum height).
- Retaining wall in one location on south of road (5 foot max height).
- Rebuilt road can provide opportunities for improved drainage and vegetation.
- Cross section modification from Oregon Street to south of Arata:
 - The cross section would include a 14-foot southbound (uphill) lane, with 12-foot passing lane, and a 15-foot northbound lane.
 - 10-foot multimodal facilities on northbound (downhill) and southbound sides. This concept assumes a raised and widened sidewalk with bike sharrows (see page 5), but final design for the multimodal facilities can be refined in project design.

Summary

A comparison of the options studied for the East Metro Connections Plan is found on page 2.

Comparison chart.....page 2
 Option 2 refinements (new)pages 3-5
 Options 1-3 (developed in December 2011 – March 2012).....pages 6-12
 Design assumptions.....page 13

Comparison

	No-Build (Option 1)	Improved 238th/242nd with 2 lanes (Option 2)	Refined 238th/242nd with 3 lanes (Option 2 refined)	242nd extension (Option 3)
Cost	\$0	\$1-5 million	\$5-9 million	\$40.5 million
Performance	Restricted for trucks larger than 40'	Southbound/uphill delay possible at times with slow moving vehicles	Allows for trucks and for climbing lane	5 lanes but less direct route to I-84
Freight	Freight restricted	Permitted; 10% max grade	Permitted; 10% max grade	Permitted; 7% max grade
Multimodal	Poor	Improved	10' multiuse on both sides	Improved plus additional route
Safety	Missing multimodal facilities; no improvements to drainage	Reduces multimodal conflict; improvements to drainage	Reduces multimodal conflict; improvements to drainage	Reduces multimodal conflict; no improvements to 238th drainage
Effects	No major changes to existing roadway; limits ability for trucks to use this route; incomplete multimodal facilities limits use for walking and biking	Concerns about effect to nearby residents, however this option can be constructed within existing right-of-way; Opportunity to balance mobility among the four I-84 interchanges.	Concerns about effect to nearby residents, however this option can be constructed with no private property acquisition; Opportunity to balance mobility among the four I-84 interchanges.	Can be completed almost completely within existing right-of-way; Concerns about direct and indirect effects to Edgefield, Donald L. Robertson Park, School district property, wetlands, and inconsistency with Halsey Main Street Design Concept

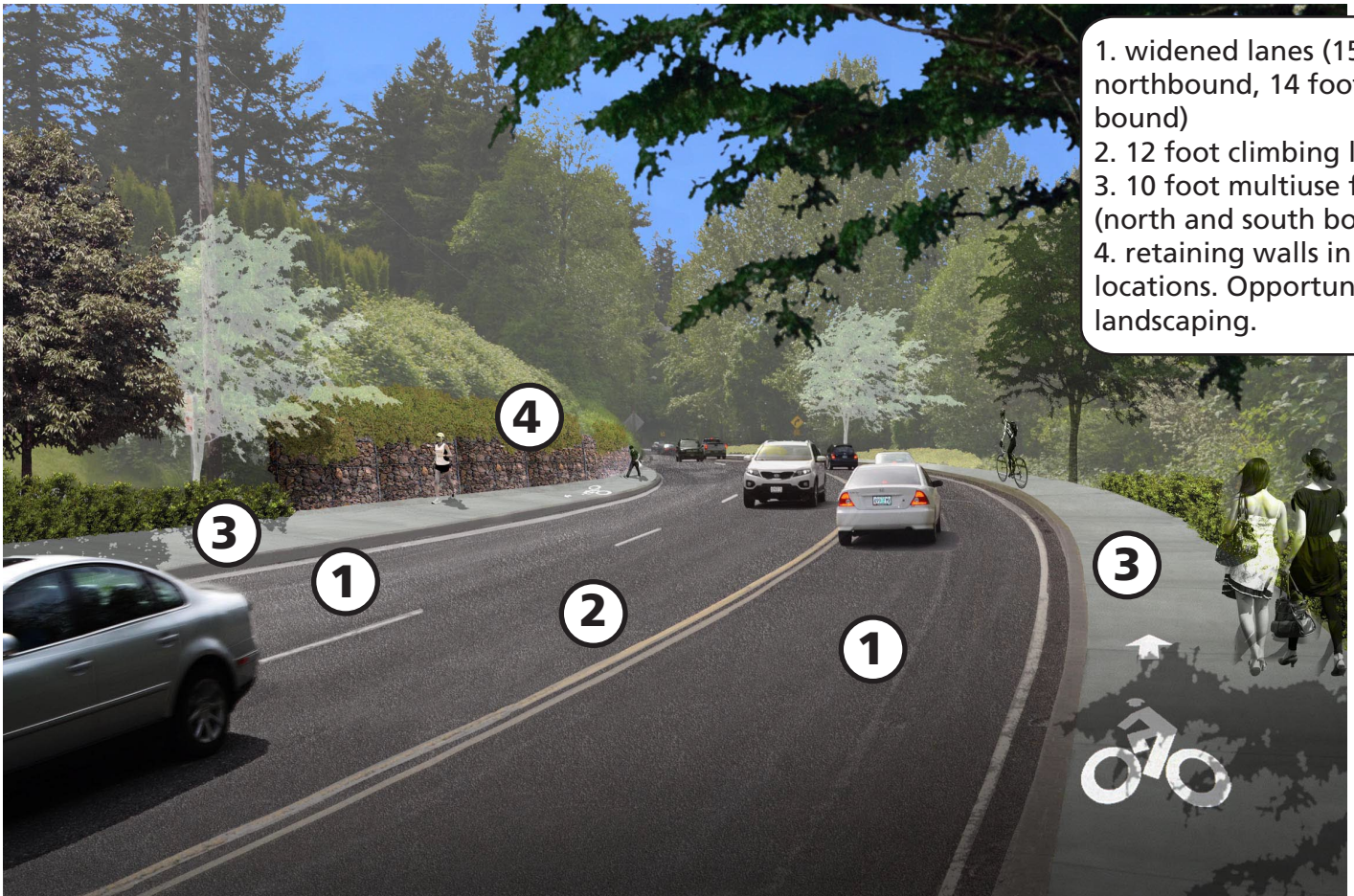
The No-Build, Option 2, Option 2 Refined, and Option 3, all operate within capacity and within regional motor vehicle performance targets for Future Year (2035) forecasts.

Existing 238th - looking north



Refined 238th - looking north

widened travel lanes, widened bicycle and pedestrian facility for safety

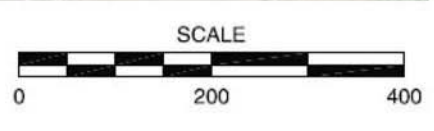
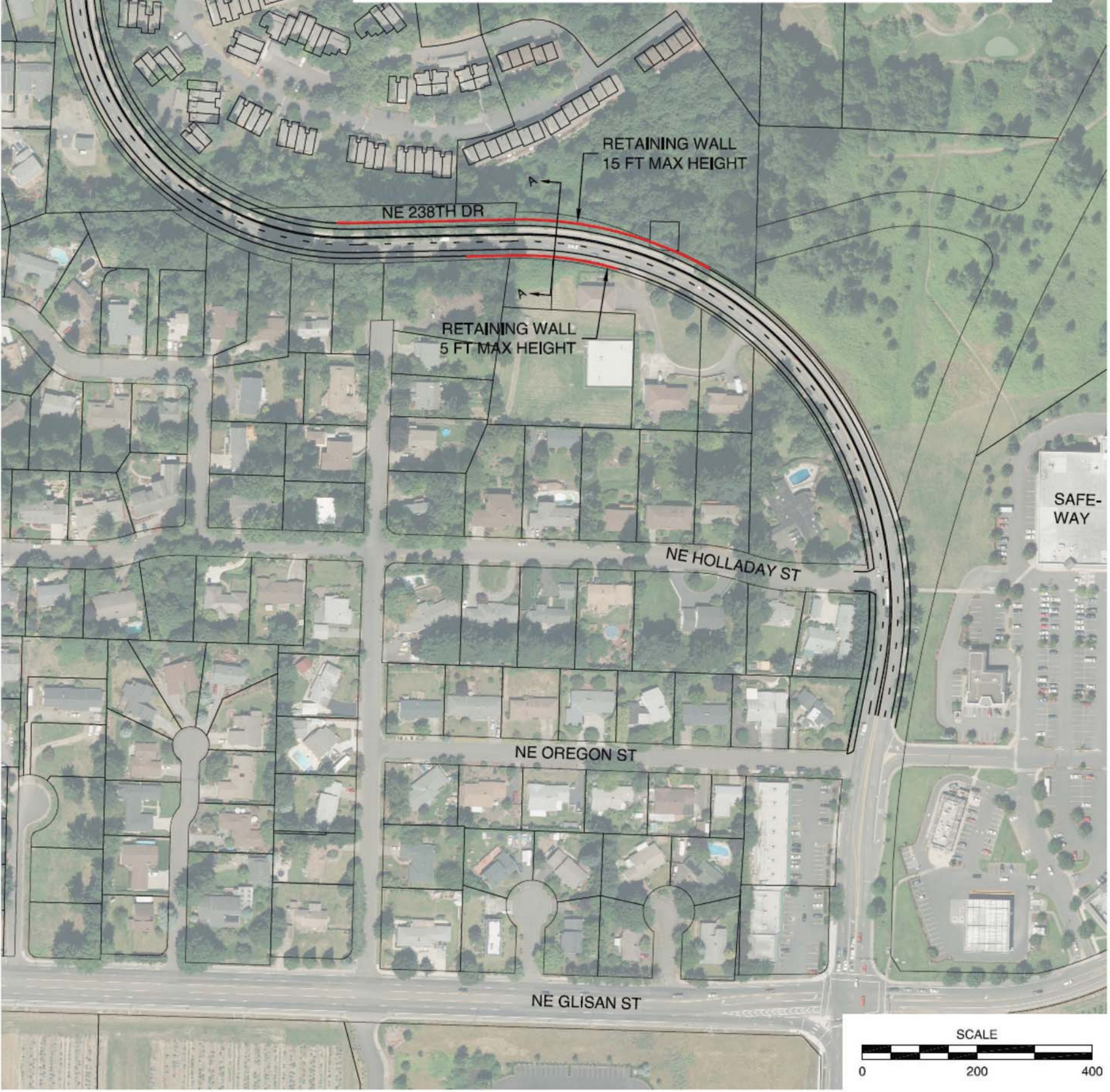
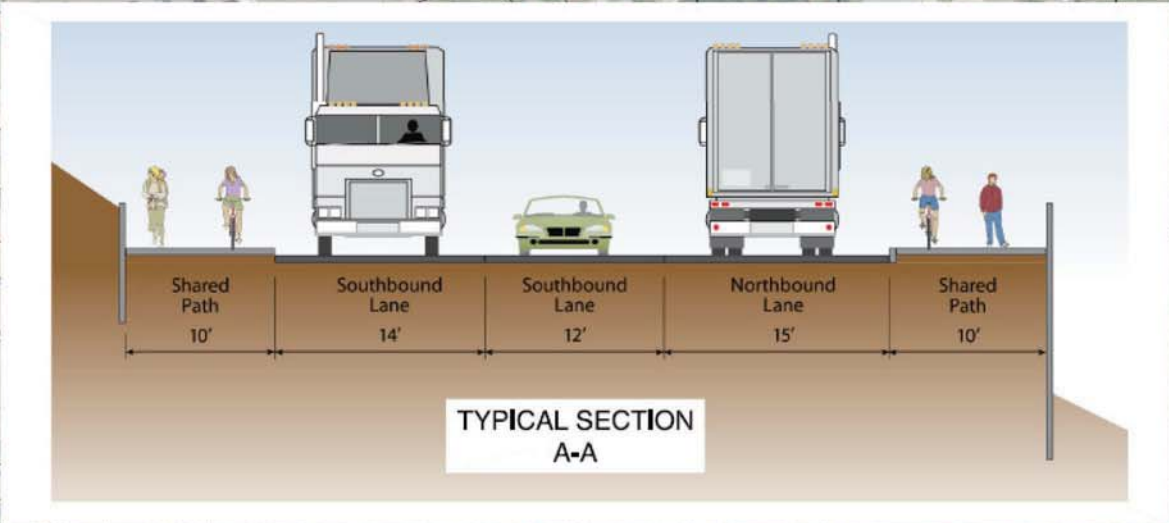


- 1. widened lanes (15 foot northbound, 14 foot south-bound)
- 2. 12 foot climbing lane
- 3. 10 foot multiuse facility (north and south bound)
- 4. retaining walls in two locations. Opportunities for landscaping.



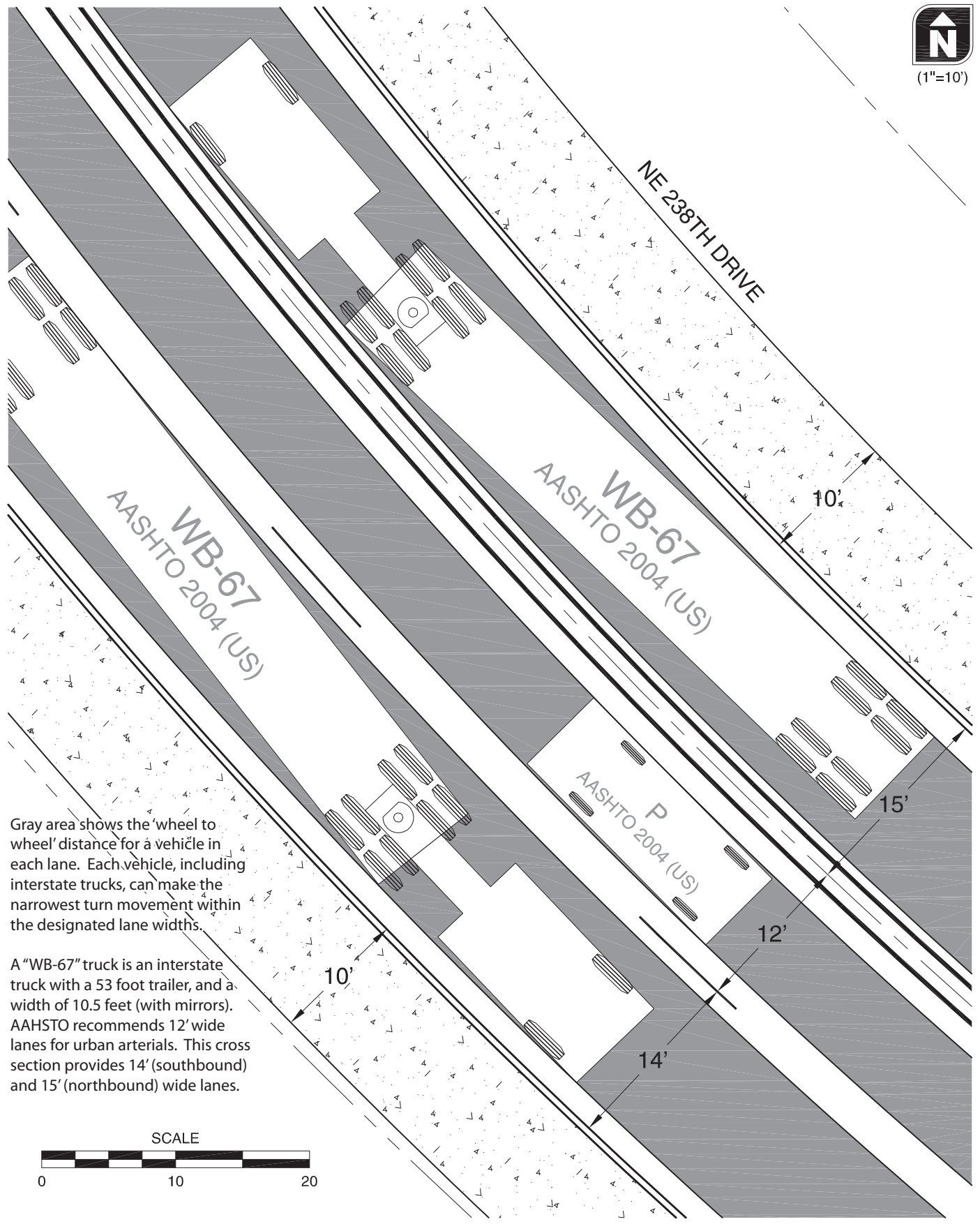
- Option 2 Refined:**
- Allows for widened travel lanes with a climbing lane
 - Allows for 10' multimodal facilities on both sides (north and south)
 - Can be done with no private property acquisition (some City of Wood Village taxlots required for small portion)
 - Retain wall in one location on south of road (5 foot max height shown in red)
 - Retain wall in one location on north of road (15 foot max height shown in red)
 - Rebuilt road can provide improved drainage and vegetation

W ARATA RD



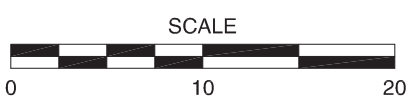
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ALTERNATIVE 2B NE 238TH DRIVE ENHANCEMENT **FIGURE 2B-1**



Gray area shows the 'wheel to wheel' distance for a vehicle in each lane. Each vehicle, including interstate trucks, can make the narrowest turn movement within the designated lane widths.

A "WB-67" truck is an interstate truck with a 53 foot trailer, and a width of 10.5 feet (with mirrors). AAHSTO recommends 12' wide lanes for urban arterials. This cross section provides 14' (southbound) and 15' (northbound) wide lanes.



DESIGN VEHICLE PATHS
NE 238TH DRIVE - ALTERNATIVE 2B **FIGURE 2B-2**

H:\profile\11823 - East Metro Connections Plans\dwg\design\238th ALT1 Truck Paths.dwg May 22, 2012 - 10:43am - rrippee Layout Tab: Figure 2B

Previously reviewed options

On December 14, 2011, The EMCP Steering Committee recommended to study three options regarding 242nd: A No-Build (Option 1); Improved 238th/242nd (Option 2); New 242nd Connection (Option 3). The following drawings represent the concept designs for an improved 238th/242nd connection (Option 2), and the proposed extension of 244th (Option 3). In January 2012, the technical advisory committee provided direction to the engineering team to develop these concept designs.

Summary

238th/242nd improvements “Steering Committee Option 2” (see attached Figure 2 and Figure 2A):

- The changes to the existing 238th/244th would be introduced to allow for improved truck turning, and bicycle and pedestrian facilities. This option reduces the existing southbound travel lanes from two to one (removing the climbing lane).
- The project requires approximately 4 feet of widening (which includes cut into the hillside).
- The project maintains the existing 10% grade on 238th/242nd.
- Cross section modification from Oregon Street to south of Arata:
 - Two 15-foot lanes (allowing for heavy vehicle traffic).
 - 5-foot (existing) sidewalk on northbound (downhill) side.
 - 8-foot shared path on southbound (uphill) side.

242nd extension “Steering Committee Option 3” (see attached Figure 3 and Figure 3A):

- The new facility would be built as a 4 to 5 lane arterial connection between Glisan and Halsey. The facility includes intersections at 238th (new) and Halsey. The facility is largely within the preserved right-of-way, including the new intersection and link to 238th. A segment of the existing 238th would be closed, and the intersection at NE Holladay St would be closed.
- Majority of the new extension would be at 7% grade.
- The new facility would meet Glisan and Halsey Streets at-grade and uses the existing intersection at NE Glisan/Cherry Park. The design preserves the existing access to Safeway.
- In order to maintain an acceptable grade and meet the elevation of Halsey, the concept design has an elevated structure for approximately one-quarter of a mile (1200 feet), beginning just north of the new intersection to 238th, plus 500 feet of retaining walls on the south end of the structure.
- Based on conceptual profile, 242nd Extension will be below existing ground from north of Safeway Access to new 238th intersection.
- Based on conceptual profile, 242nd Extension will be elevated approximately 40-45 feet (maximum height) above existing ground on north side of the bluff.
- Design allows for a consolidated intersection with 244th at Halsey, pending future development of the “north Edgefield” site.
- Project expands Halsey to a 5-lane arterial with sidewalks and bike lanes between the new extension and the intersection at 238th (approximately 4/10th of a mile – 2200 feet). Design changes at 238th and Halsey would include dual rights northbound for access to the interchange.
- Right-of-way acquisition would be required at two-parcels in Wood Village near the existing 238th, and along Halsey for the expanded intersection and 5-lane road.
- Shifts the predominant flow of traffic from 238th Drive to 242nd Extension and Halsey. The design would reduce traffic volumes on 238th south of Halsey.
- 238th is de-emphasized south of Halsey and reduced to 2 lanes.

Other options screened but not advanced

The design team also considered 1) below-grade alternative that acknowledges the concept as envisioned in the 2007 MOU and 2) more direct connection from the existing 242nd to the existing 244th/Halsey intersection. These alternatives were considered less feasible. In terms of the below-grade alternative:

- A below grade extension of 242nd would require digging further south of NE Glisan. Glisan is approximately 200 feet higher in elevation than Halsey; constructing the facility below-grade would require much longer distance and cut/fill, and would likely require substantial tunneling. This design would remove access to Safeway and the neighborhood at NE Oregon and NE Holladay, due to the facility being below grade or underground.
- A ‘straight line’ connection that would align the new extension with the intersection of Halsey/244th would require significant right-of-way acquisition, steeper than allowed grades, and greater impacts to the schools and Donald L. Robertson Park. Land acquisition would be required from Donald L. Robertson Park and the school district. The location of structure would also change access to Arata Creek School.

Transportation Performance

Option 2, Option 3, and the No-Build all operate within capacity and within regional motor vehicle performance targets for Future Year (2035) forecasts. Option 2 leaves the potential for slow-moving trucks to substantially slow motorists due to the loss of the climbing lane.

Option 2 and Option 3 provide improved pedestrian/bicycle facilities between Halsey and Glisan Streets, as compared to the substandard facilities along 238th under the No-Build.

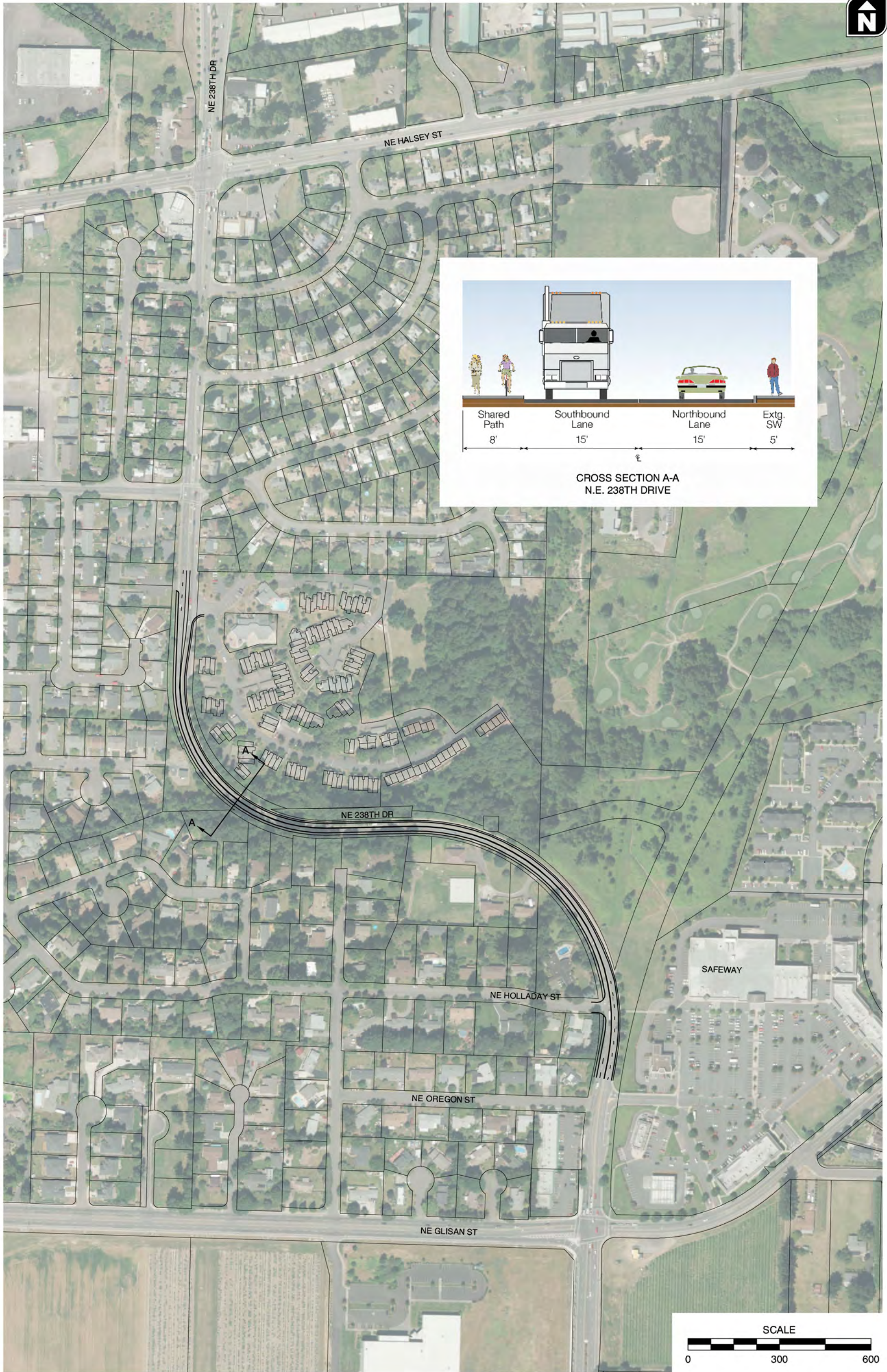
Option 2 results in a slight improvement to freight mobility over the No-Build with wider lanes but on a steep and curvy grade, while Option 3 results in a greater improvement to freight mobility by providing a less curvy and steep – but also less direct – route for trucks.

The Safety effects of Option 2 and Option 3 relative to the No-Build are unclear. The existing corridor, while steep and curvy, does not have a particularly high crash rate.

Cost estimate

A planning level cost estimate for Option 3, the 242nd extension is as follows:

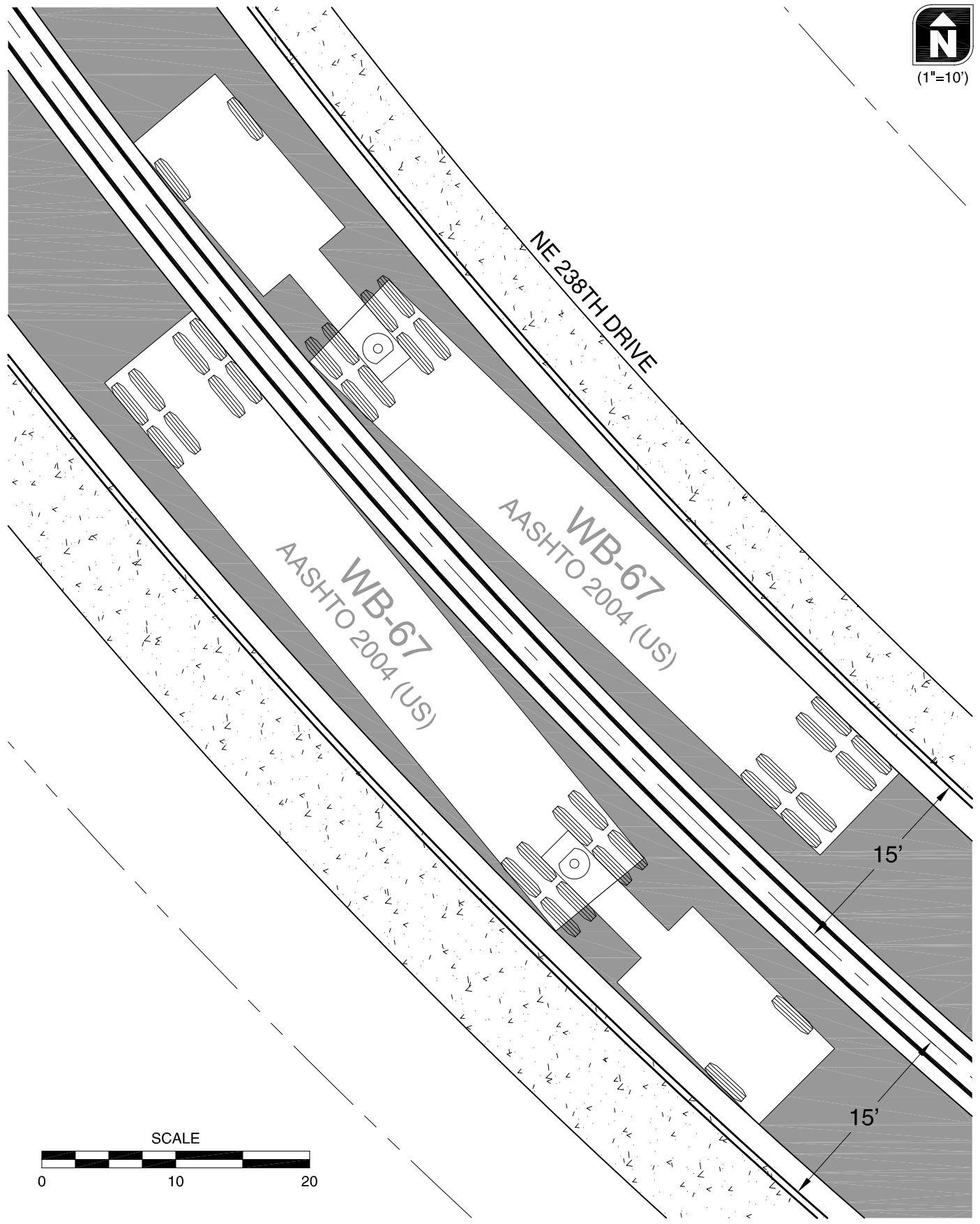
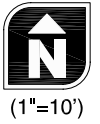
Construction Costs and Engineering			
	242nd extension	Extension of NE 242nd Ave from NE Holladay Ave to Halsey Ave	\$ 30,726,000
	NE Halsey	Rebuild NE Halsey St. from 3 lane to 5 lane from 238th Ave to 2950' to the east, including taper.	\$ 4,720,500
	238th extension	Extension of NE238th Ave to connect to new NE242nd Ave Extension	\$ 1,035,000
Subtotal			\$ 36,481,500
Environmental permitting			\$ 3,648,150
Estimated right-of-way			\$ 400,000
Total			\$ 40,529,650



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OPTION 2
NE 238TH DRIVE ENHANCEMENT

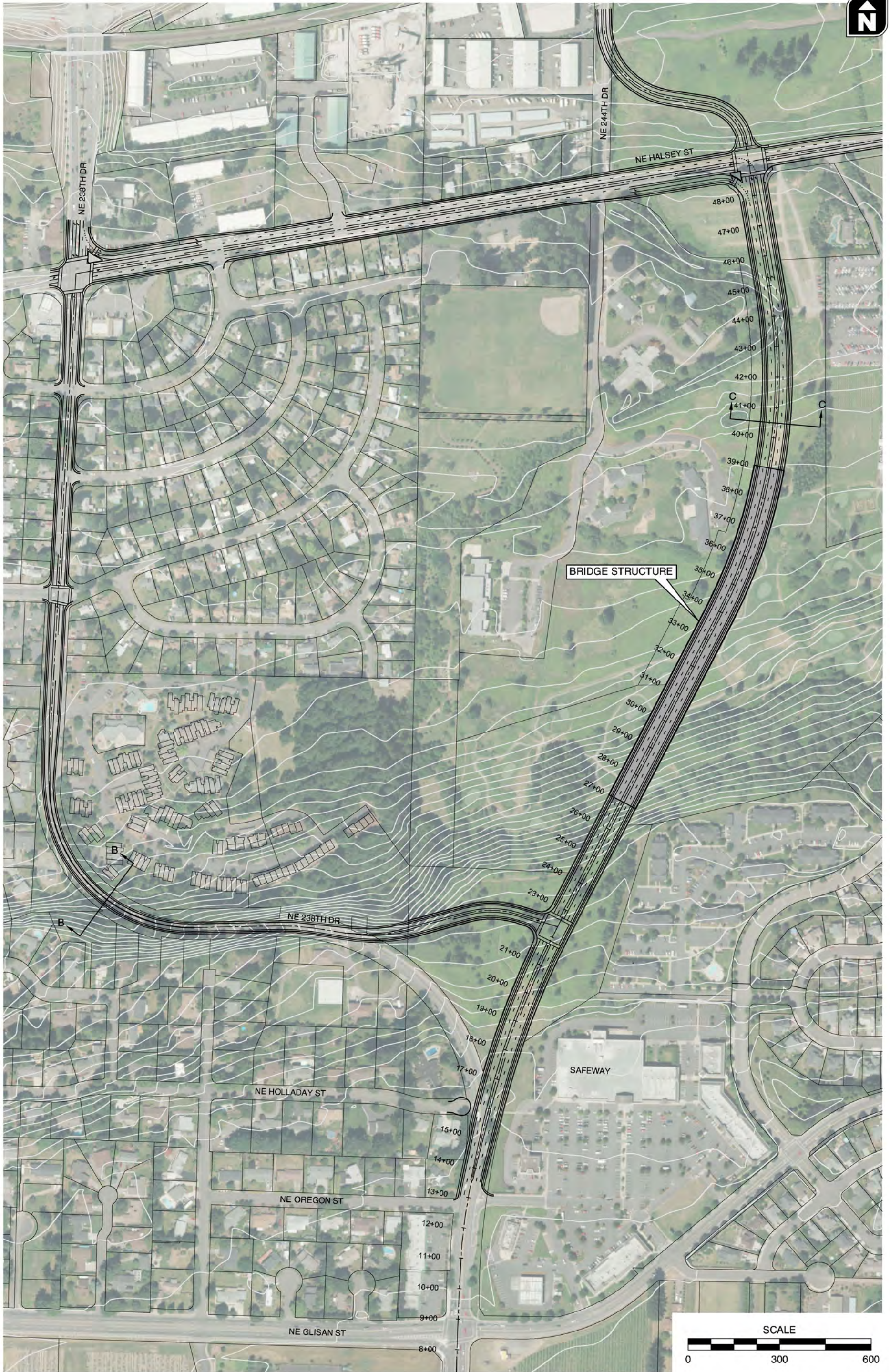
FIGURE
2



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WB-67 SWEEP PATHS
NE 238TH DRIVE

FIGURE
2A

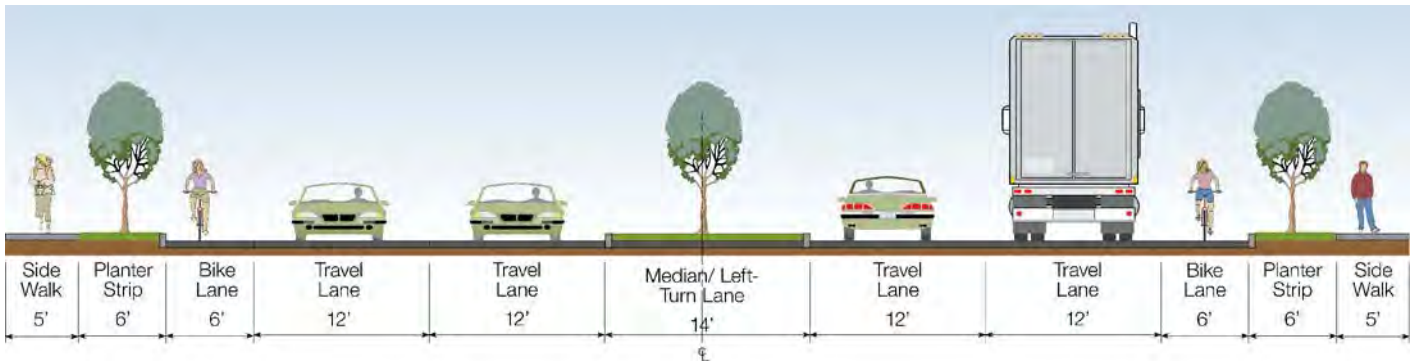


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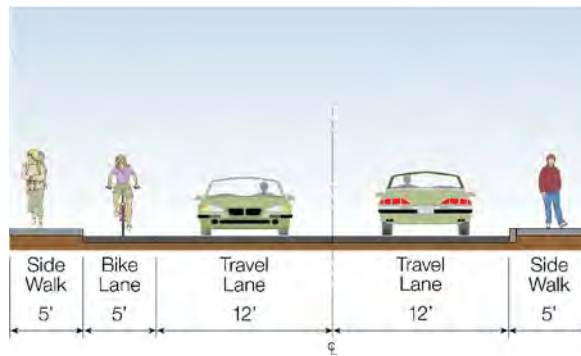
OPTION 3
NE 242ND DRIVE EXTENSION

FIGURE
3

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CROSS SECTION C-C
N.E.242ND DRIVE EXTENSION

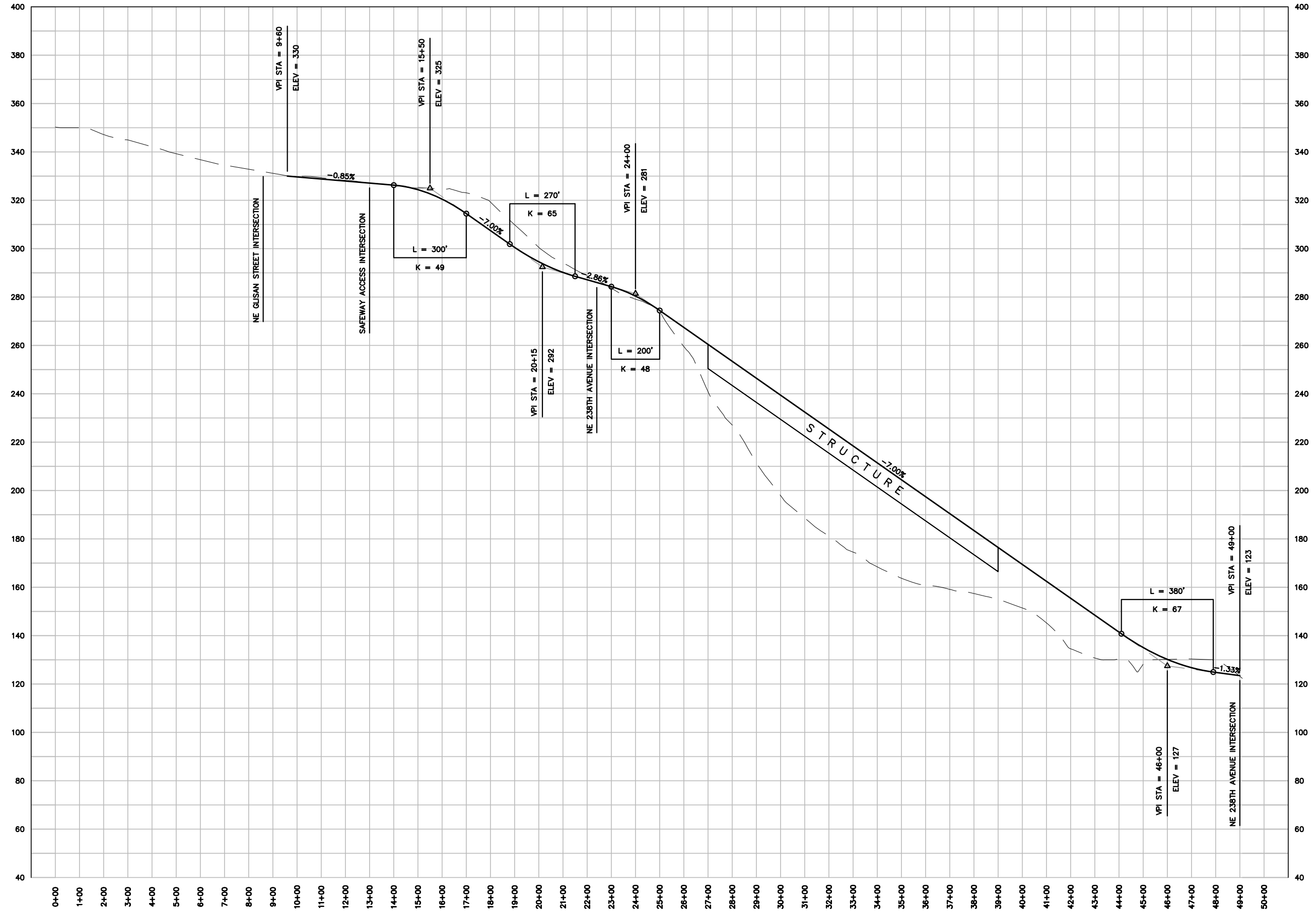


CROSS SECTION B-B
N.E. 238TH DRIVE

OPTION 3
TYPICAL SECTIONS

FIGURE
3A

Alignment - (3) PROFILE



Design Assumptions

These design assumptions were provided to the design team to develop the concept designs. The following list reflects the review and comments by the technical advisory committee on 1/10/2012.

Design considerations with TAC comments (1/17/12):

- The new 242nd extension concept design will be studied as a 4 to 5 lane arterial
- The current 238th/242nd connection will be designed as a local/collector street – i.e. design changes to discourage this as a route and encourage use of the new 242nd extension
- Keep grade of new 242nd extension at 7% or less.
- Bicycle and pedestrian facilities should be ADA compliant.
- Efficient signalization at Halsey
 - Consider the relationship of the existing 244th and Halsey intersection
 - Consider improved connectivity to properties north of Halsey. The properties north of Halsey and east of 244th are in Troutdale town center and are anticipated to be redeveloped in the future for mixed use commercial and residential. The new facility should take into account mobility as well as future access and connections to 244th.
- Consider bus operations for the existing routes, particularly at the intersection of 238th and Halsey
- Minimize visual and noise impacts of the new facility
- The new facility should have no access points (no driveways, turns to local properties). Access to adjacent properties should not come off arterial that prioritizes mobility, access should come off of lower classified facility (i.e. Halsey)
- Minimize right-of-way acquisition and property impacts:
 - Use existing public right-of-way as much as possible
 - Minimize effects to Donald L. Robertson Park. The park is the only city park for Wood Village, and in addition to recreational activities such as picnicking, baseball, soccer and basketball, there is an important wetland and habitat area
 - Minimize effects to Edgefield property and opportunities for further development
 - Minimize effects to schools – both Arata Creek (MESD) and the Reynolds School District property and building
 - Avoid Safeway commercial area and residences south of Edgefield