



Metro | Memo

Date: Monday, March 31, 2014
To: SW Corridor Plan Steering Committee
From: Matt Bihn, Metro
Subject: PTL recommendation for early removal of HCT design options

Recommendation

The Project Team Leaders group (PTL) recommends the removal of 14 HCT design options from further consideration based on design considerations and public comment.

The attached map and matrix illustrate all options and identify those recommended for removal, and descriptions follow in this memo.

Background

Much of the refinement phase preliminary conceptual design for potential HCT options has been completed. While the design serves as the foundation for additional analysis such as modeling and impacts analysis, the initial design process itself has identified some options to be clearly less viable than competing alternative options. Several Steering Committee representatives recommended that the project team identify options for early removal which appear unlikely to be forwarded into the DEIS based on the design progress.

Public Input

Please refer to *March 2014 Southwest corridor design workshops report* for a summary of public comments regarding this recommendation.

Next Steps

The remaining design options will receive more comprehensive analysis that addresses the following:

- **capital cost magnitudes** – relative cost of construction including design elements such as tunnels, structure, length, and built environment;
- **impacts to the natural environment** – impacts to natural resources including trees, parks, watersheds, including considerations of potential opportunities for improvements;
- **impacts to the built environment** – impacts to existing infrastructure such as bridges and tracks, and assessment of fit with the character of surrounding existing area;
- **development/redevelopment potential** – potential to support the SW Corridor land use vision;
- **property impacts** - effects on buildings and private property;
- **traffic/bike/pedestrian impacts** – effects on roadway operations, bikeways, and sidewalks;
- **transit performance** – assessment of ridership potential and operating costs based on design characteristics such as distance and speed, and household and employment access.

This assessment will inform the May PTL recommendation to the Steering Committee for options to be carried into the Draft Environmental Impact Statement.

Reasons for Proposed Early Removal by Design Option

Tie-In to Existing Service-Downtown: Fourth & Fifth Avenue Couplet (light rail only)

Reasons for proposed removal:

- **impacts to the built environment**
- **high capital costs**

In order for a light rail transit (LRT) option to align with the transit mall the SW 5th Avenue bridge over I-405 would require reconstruction to lower the north abutment by at least five feet, impacting required vehicle clearance on the freeway and ramps below. In addition, a significant portion of the newly constructed Portland-Milwaukie LRT (PMLR) alignment would need to be rebuilt.

Alternative options: Options on Fourth Avenue, First Avenue, and Naito Parkway would require much less extensive modifications to existing infrastructure. For BRT, this option would not require bridge or PMLR reconstruction.

Tie-In to Existing Service - South Waterfront: Long (Bridge)

Reasons for proposed removal:

- **high capital costs, impacts to the built environment**
- **traffic/bike/ped impacts**
- **low development/redevelopment potential**

Extensive structures would be required to connect South Waterfront to SW Barbur Boulevard, including construction of bridges adjacent to and crossing over I-5 and of tunnels to reach grade at SW Barbur Boulevard. An HCT alignment would be squeezed between I-5 and SW Macadam Avenue, potentially constraining future I-5 lane expansion or modifications. Traffic impacts would occur at the southern portal of the tunnel on SW Hamilton Street. The option would provide out-of-direction routing between most of the corridor and the transit mall. Finally, service through already well-served South Waterfront (streetcar, PMLR), would not support redevelopment on SW Naito Parkway or on SW Barbur Boulevard.

Alternative options:

Options using SW Barbur Boulevard or SW Naito Parkway would require much less structure, would provide a more direct path to tie into the transit mall, and would provide more redevelopment opportunities.

PCC Area: Circumferential around south end (Upper Haines)

Reasons for proposed removal:

- **property impacts**
- **impacts to the natural environment**

BRT routing along upper Haines Road would result in significant property impacts and natural environment impacts, affecting private landscaping and old-growth trees along the very narrow roadway, as well as Lesser City Park. LRT routing in this section was removed from consideration previously due to steep grade changes between PCC and the Tigard Triangle, but would also impact the properties, trees, and the park.

Alternative options:

Options with BRT routed to the north of the campus would provide comparable travel times and access, without affecting the upper Haines Road area and with far fewer natural and property impacts.

OR-217 Crossing: Parallel to 72nd**Reasons for proposed removal:**

- **traffic/bike/ped impacts**
- **transit performance**
- **high capital costs**

Significant traffic impacts would occur with HCT traveling through or near three currently congested intersections: SW 72nd Avenue & SW Hampton Street, SW 72nd Avenue & OR-217 northbound ramps, and SW 72nd Avenue & SW Hunziker Street. Significant capital costs would result from structure needed to operate on the sharp curve between SW 72nd Avenue and SW Hunziker Street. Transit performance would suffer relative to other options due to slow speeds required to travel through two sharp curves, without providing access to additional riders.

Alternative options:

Any of the four OR-217 crossing options to the north would avoid these intersections completely and would provide faster travel times without compromising access to HCT.

OR-217 Crossing: Irving to Hunziker**Reasons for proposed removal:**

- **property impacts**
- **traffic/bike/ped impacts, transit performance**

Property impacts would be significant on the east side of OR-217 due to lack of right-of-way. Traffic impacts would be significant as the HCT bridge would land in or near the currently congested intersection of SW 72nd Avenue & OR-217 ramps and would require an additional traffic signal, further disrupting traffic and violating ODOT standards. Alternative options in this segment could create a new auto connection between downtown Tigard and the Triangle, improving access where this option would impair existing access. Transit performance would be worse relative to alternative HCT options in the Tigard Triangle as this longest option, resulting in out-of-direction travel with longer travel times but without attracting additional riders.

Alternative options:

Any of the four OR-217 crossing options to the north of the SW Hunziker Street bridge would avoid these intersections completely and would provide faster travel times without compromising access to HCT.

Downtown Tigard – Hunziker (LRT only)**Reasons for proposed removal:**

- **property impacts**
- **traffic/bike/ped impacts**

Multiple industrial businesses along SW Hunziker Street would be impacted by elimination of access by left turning vehicles due to LRT tracks on SW Hunziker Street. Lack of parallel or crossing streets in this area prevents alternative access to these businesses. The inability to accommodate left turns or to provide reasonable locations for U-turns for larger vehicles would result in trucks circulating through the OR-217 interchange and the SW Hall Boulevard & SW Hunziker Street intersection in order to reach these businesses, causing traffic impacts. BRT could be considered in this segment if operating in mixed traffic, though this option would provide slower service compared to options with BRT in exclusive right of way.

Alternative options:

All other options accessing the Tigard Transit Center would avoid impacts along SW Hunziker Street.

Tigard to Durham: 72nd (out and back on Hunziker)**Reasons for proposed removal:**

- **property impacts**
- **traffic/bike/ped impacts**
- **transit performance**

HCT would cross the intersections of SW Hunziker Street & SW 72nd Avenue and SW Varns Street & SW 72nd Avenue, resulting in traffic impacts to an already very congested area including OR-217 ramps. The out-and-back design of this alignment would negatively impact transit performance relative to other options, as travel times would be slower and fewer locations would be served. Property impacts would be incurred by industrial businesses along SW 72nd Avenue, as HCT in exclusive right-of-way would eliminate access by left-turning vehicles. The inability to accommodate left turns or to provide reasonable locations for U-turns for larger vehicles would result in trucks circulating through the area to enter and leave their bases using right turns, exacerbating current congestion. While BRT would theoretically be able to operate in mixed traffic here to avoid those impacts, transit performance would suffer with buses trapped in congestion, and so only BRT in exclusive right-of-way is considered reasonable for this option. Finally, this portion of SW 72nd Avenue was not identified as a key station location.

Alternative options:

Options using the WES alignment or SW Hall Boulevard (to SW Durham Road) would provide faster service without duplicating service area, would avoid the OR-217 ramps, and would avoid SW 72nd Avenue near downtown Tigard.

Tigard to Durham: WES alignment to 85th**Reasons for proposed removal:**

- **low development/redevelopment potential**
- **impacts to the natural environment**

HCT operating on an extension of SW 85th Avenue over the Tualatin River and into Tualatin would not serve Bridgeport Village, identified as a key HCT station location in the Southwest Corridor Plan. An extension of SW 85th Avenue as a roadway crossing the Tualatin River was strongly opposed by the community of Tualatin, and the project was removed from the Tualatin Transportation System Plan (TSP). There would be potential impacts to the natural environment including portions of Cook Park, Durham City Park and Tualatin Community Park.

Alternative options:

Options using the WES alignment or SW Hall Boulevard (to SW Durham Road) would serve Bridgeport Village and would not include a Tualatin River crossing near the three parks.

Tigard to Durham: Hall to Bonita to 74th**Reasons for proposed removal:**

- **impacts to the built environment (LRT)**
- **high capital costs**
- **low development/redevelopment potential**
- **property impacts**

With LRT, crossing of heavy rail just south of downtown Tigard would require grade separation either by a long tunnel or bridge, as well as changes to the elevation of the SW Hall Boulevard & SW Commercial Street intersection, resulting in very high capital costs. SW Hall Boulevard and SW Bonita Road are mainly low density residential neighborhoods with little or no development/redevelopment opportunities with LRT or BRT. LRT or BRT on SW Bonita would result in property impacts several buildings, and to

landscaping of most properties, along with some impacts to Bonita Park. Additional significant property impacts and constraints to access would occur on SW 74th Avenue due to narrow rights of way.

Alternative options:

Options using the WES alignment would avoid SW Hall Boulevard and SW Bonita Road. BRT on SW Hall Boulevard would not require grade separation crossing heavy rail tracks, and options using SW Durham Road instead of SW Bonita Road would reduce property impacts.

Tigard to Durham: Hall to 85th

Reasons for proposed removal:

- **impacts to the built environment (LRT)**
- **high capital costs**
- **low development/redevelopment potential**
- **impacts to the natural environment**

For LRT, crossing of heavy rail just south of downtown Tigard would require grade separation either by a long tunnel or bridge, as well as changes to the elevation of the SW Hall Boulevard & SW Commercial Street intersection, resulting in very high capital costs. SW Hall Boulevard travels through mainly low density residential neighborhoods with little or no development/redevelopment opportunities with LRT or BRT. HCT LRT or BRT operating on an extension of SW 85th Avenue over the Tualatin River and into Tualatin would not serve Bridgeport Village, identified as a key HCT station location in the Southwest Corridor Plan. An extension of SW 85th Avenue as a roadway crossing the Tualatin River was strongly opposed by the community of Tualatin, and the project was removed from the Tualatin TSP. There would be potential impacts to the natural environment including portions of Cook Park, Durham City Park and Tualatin Community Park.

Alternative options:

Options utilizing the WES right-of-way would not cross the heavy rail line, would avoid SW Hall Boulevard, and would serve Bridgeport Village. These options would not include a Tualatin River crossing near the three parks.

Bridgeport Village: Bridgeport Road via 72nd

Reasons for proposed removal:

- **property impacts, high capital costs**
- **impacts to the natural environment**

With HCT, extensive property impacts would be required to maintain the existing number of lanes on SW Bridgeport Road, with all buildings on one side of the street removed. If the alternative were to include structure to avoid property impacts, high capital costs relative to competing at-grade options would result. This option would continue onto Upper Boones Ferry Road, which would result in natural environment impacts with the removal of many large trees.

Alternative options:

All other options in this segment would avoid Bridgeport Road and associated property impacts. The options on SW 72nd Avenue would also avoid Upper Boones Ferry Road and the impacts to trees.

Tualatin: Adjacent to I-5 and behind Nyberg Rivers

Reasons for proposed removal:

- **impacts to the built environment**
- **high capital costs**

This option requires substantial amounts of structure to tunnel under the heavy rail north of the Tualatin River, as well as a bridge over the river and over the circulation and loading areas located behind the proposed future development at Nyberg Rivers. Additionally, to site a station in downtown Tualatin, the alignment must tunnel under Boones Ferry Road. The option also potentially impacts a planned bike/pedestrian path behind the future development and precludes a potential station location to serve the southern edge of the Bridgeport Village area near Upper and Lower Boones Ferry Roads.

Alternative options:

The options crossing the Tualatin River adjacent to the Lower Boones Ferry Road bridge and turning west would require far less structure and would result in lower costs and fewer visual impacts to the built environment.

Tualatin: Mohawk Park and Ride Terminus**Reasons for proposed removal:**

- impacts to the built environment
- high capital costs

This option would require a very long structure (approximately 2/3 mile long) stretching from the intersection of Upper and Lower Boones Ferry Roads to the north to SW Martinazzi Avenue near SW Warm Springs Street to the south. Such a large structure would result in high capital costs relative to other options without commensurate benefits. A large structure would also impact the built environment as it would not fit with the character of downtown Tualatin.

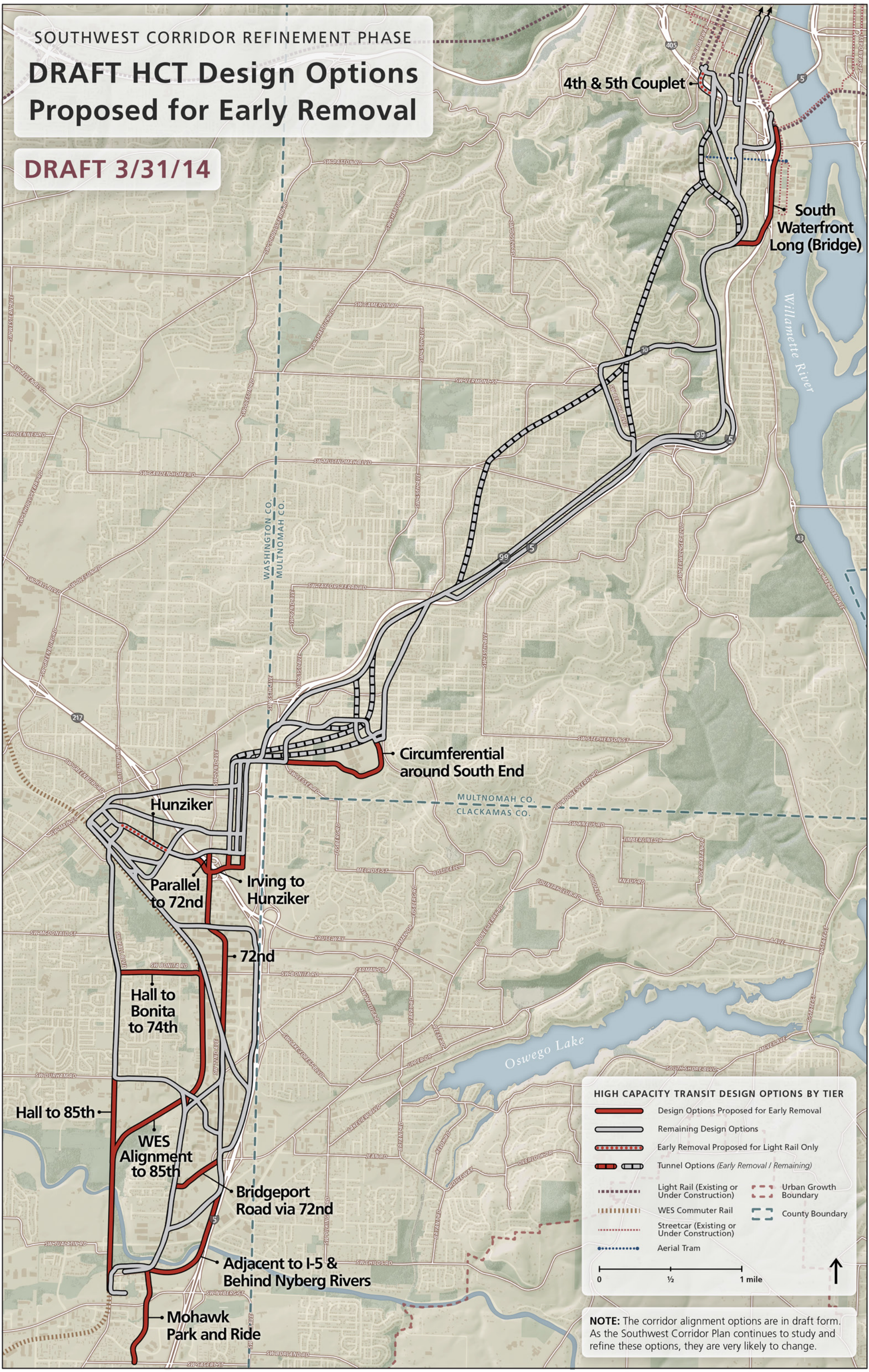
Alternative options:

The options crossing the Tualatin River adjacent to the Lower Boones Ferry Road bridge and turning west instead of continuing south would require far less structure and would result in lower costs and fewer visual impacts to the built environment.

SOUTHWEST CORRIDOR REFINEMENT PHASE

DRAFT HCT Design Options
Proposed for Early Removal

DRAFT 3/31/14



DRAFT Southwest Corridor Design Options with PTL Recommendation for April Removal

ID	Mode	Option
1. Tie-In to Existing Transit		
1A	BRT	Fourth/Fifth Ave Couplet
1A	LRT	Fourth/Fifth Ave Couplet
1B	BRT, LRT	Fourth Ave
1C	LRT	Fourth Ave to Second Ave
1D	BRT, LRT	First Ave
1F	BRT, LRT	Naito
1E	LRT	First Ave (Extended Downtown)
1G	BRT	Naito Ave (Extended Downtown)
1H	BRT, LRT	South Waterfront - Short (Tunnel)
1H	BRT, LRT	South Waterfront - Long (Bridge)
2-3. South Portland to Barbur Transit Center		
2A	BRT, LRT	Short Tunnel - Exit at Hamilton
2B	BRT, LRT	Medium Tunnel - Exit at Bertha
3A	BRT, LRT	Long Tunnel - Exit at Barbur Transit Center
2C	BRT, LRT	Barbur Boulevard (Downtown to Burlingame)
2D	BRT, LRT	Capitol Hwy to Hillsdale returning Bertha/13th
3B	BRT, LRT	Barbur Boulevard (Burlingame to Barbur TC)
3C	BRT, LRT	Adjacent to I-5
4-5. PCC Area		
4A	BRT	Circumferential around North End
4B	BRT	Front Door
4C	BRT	Circumferential around South End (Upper Haines)
4D	BRT	New Bridge (from PCC)
4E	BRT	Lower Haines
5A	BRT, LRT	Barbur (with New Bridge across I-5)
5B	BRT, LRT	Short Tunnel via Barbur
5C	BRT, LRT	Tunnel via Barbur
5D	BRT, LRT	Tunnel via Capitol Hwy
6. Tigard Triangle		
6A	BRT, LRT	68th/70th Couplet
6B	BRT, LRT	68th/69th couplet
6C	BRT, LRT	68th Two-Way
7. OR-217 Crossing		
7A	BRT, LRT	Clinton to Tigard Transit Center
7B	BRT, LRT	Beveland North
7C	BRT, LRT	Beveland South
7D	BRT, LRT	Hampton
7E	BRT, LRT	Parallel to 72nd
7F	BRT, LRT	Irving to Hunziker
8. Downtown Tigard		
8A	BRT	Hunziker
8A	LRT	Hunziker
8B	BRT, LRT	Commercial (via Wall / New Street)
8C	BRT, LRT	WES Rail Alignment
8D	BRT, LRT	Utilize Ash instead of Hall for Transit Loop
9. Tigard to Durham		
9A	BRT, LRT	72nd (Out and Back on Hunziker)
9B	BRT, LRT	WES to Tech Drive to I-5
9C	BRT, LRT	WES Alignment to 72nd
9D	BRT, LRT	WES Alignment to 85th
9E	BRT, LRT	Hall to Bonita to 74th
9F	BRT, LRT	Hall to Durham
9G	BRT, LRT	Hall to 85th
10. Bridgeport Village		
10A	BRT, LRT	Upper Boones Ferry
10B	BRT, LRT	Bridgeport Road via 72nd
10C	BRT, LRT	72nd
10D	BRT, LRT	Parallel to I-5
11. Tualatin		
11A	BRT, LRT	WES Connection via 85th
11B	BRT, LRT	WES Connection via Boones Ferry
11C	BRT, LRT	Out & Back via Boones Ferry
11D	BRT, LRT	Adjacent to I-5 & behind Nyberg Rivers
11E	BRT, LRT	Mohawk Park & Ride