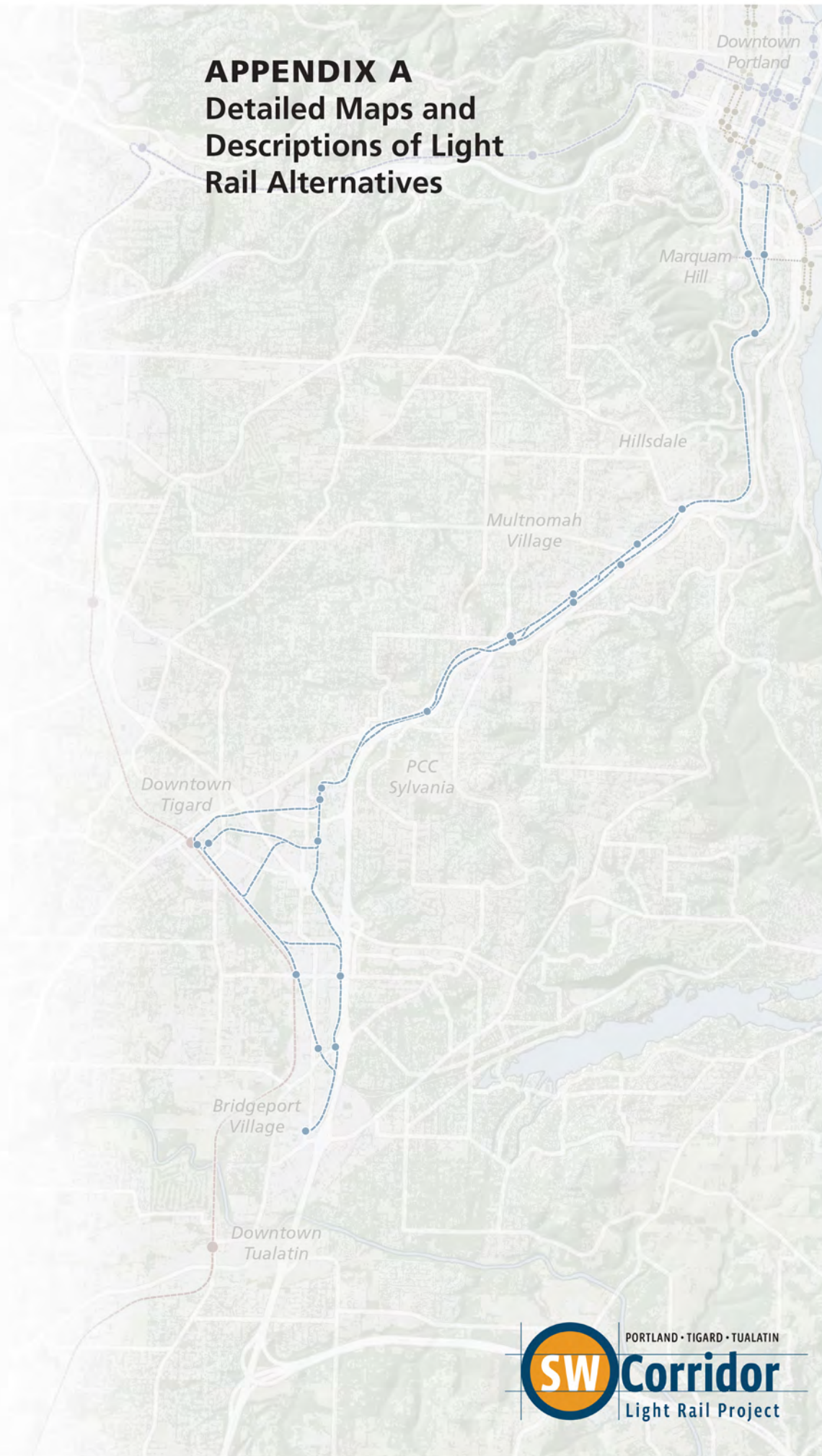


APPENDIX A Detailed Maps and Descriptions of Light Rail Alternatives



APPENDIX A – DETAILED MAPS AND DESCRIPTIONS OF LIGHT RAIL ALTERNATIVES

This appendix provides detailed information to supplement Chapter 2 – Alternatives Considered of the Southwest Corridor Light Rail Project Draft Environmental Impact Statement (EIS).

Transit Network Assumptions

With the opening of a new light rail line, the Tri-County Metropolitan Transportation District of Oregon (TriMet) typically makes adjustments to the surrounding bus network to optimize ridership and service efficiency. Adjustments to local bus service assumed for the purpose of the analysis in this Draft EIS are described below. TriMet would make final decisions on bus service and routing changes for the Southwest Corridor Light Rail Project shortly before the opening of service.

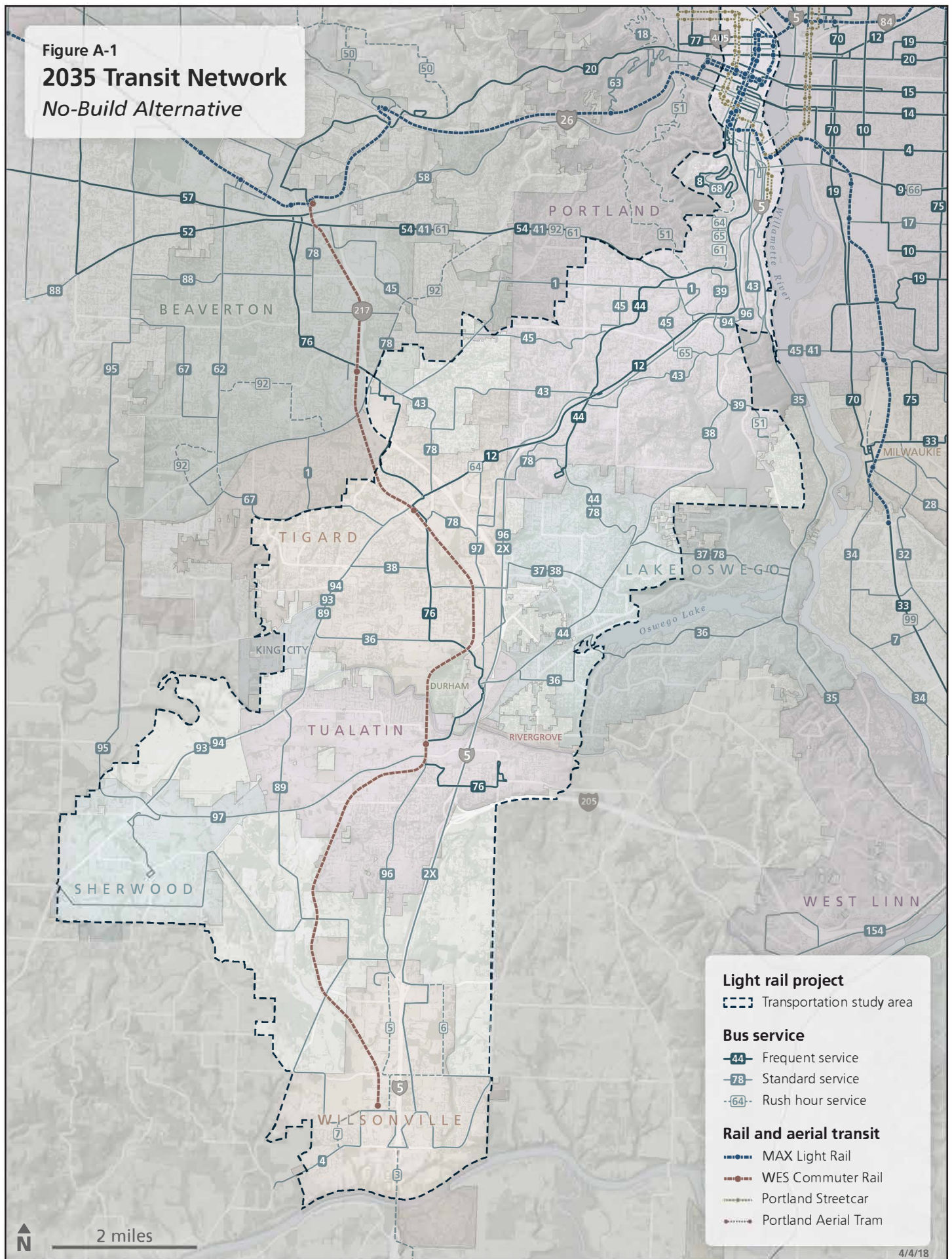
Two lines operating on SW Barbur Boulevard in the No-Build, the line 12 from Tigard to downtown Portland and the line 94 express from Sherwood to downtown Portland, would be removed. The line 93 from Sherwood to Tigard would be extended to the Barbur Transit Center with service added to maintain frequency lost with the line 94 removal. The line 44 from downtown Portland would be shortened to terminate at PCC-Sylvania, removing its No-Build routing between the campus and Bridgeport Village along SW Kerr Parkway and SW Boones Ferry Road. Instead, the line 96, an express route between Wilsonville and downtown Portland in the No-Build, would be re-routed north of Bridgeport to travel along the roads from which the 44 would be removed. The line 96 would serve PCC-Sylvania and continue along SW Capitol Highway to terminate at the Barbur Transit Center.

With light rail serving the Marquam Hill connection, lines 64 and 65 to Marquam Hill, from Tigard and Burlingame, respectively, would be removed. Line 8, serving between NE Portland and Marquam Hill, would have peak service reduce by three vehicles per hour because its loads would be reduced by light rail service. Lines 1 and 38 would be shortened to terminate at Burlingame near the Custer station instead of continuing into downtown Portland. The line 54 from Beaverton would utilize a shared transitway with the light rail between SW Capitol Highway and SW Lincoln Street, allowing it to avoid congestion and improve reliability.

Figures A-1 and A-2 show the assumed transit network for the No-Build Alternative and light rail alternatives, respectively.

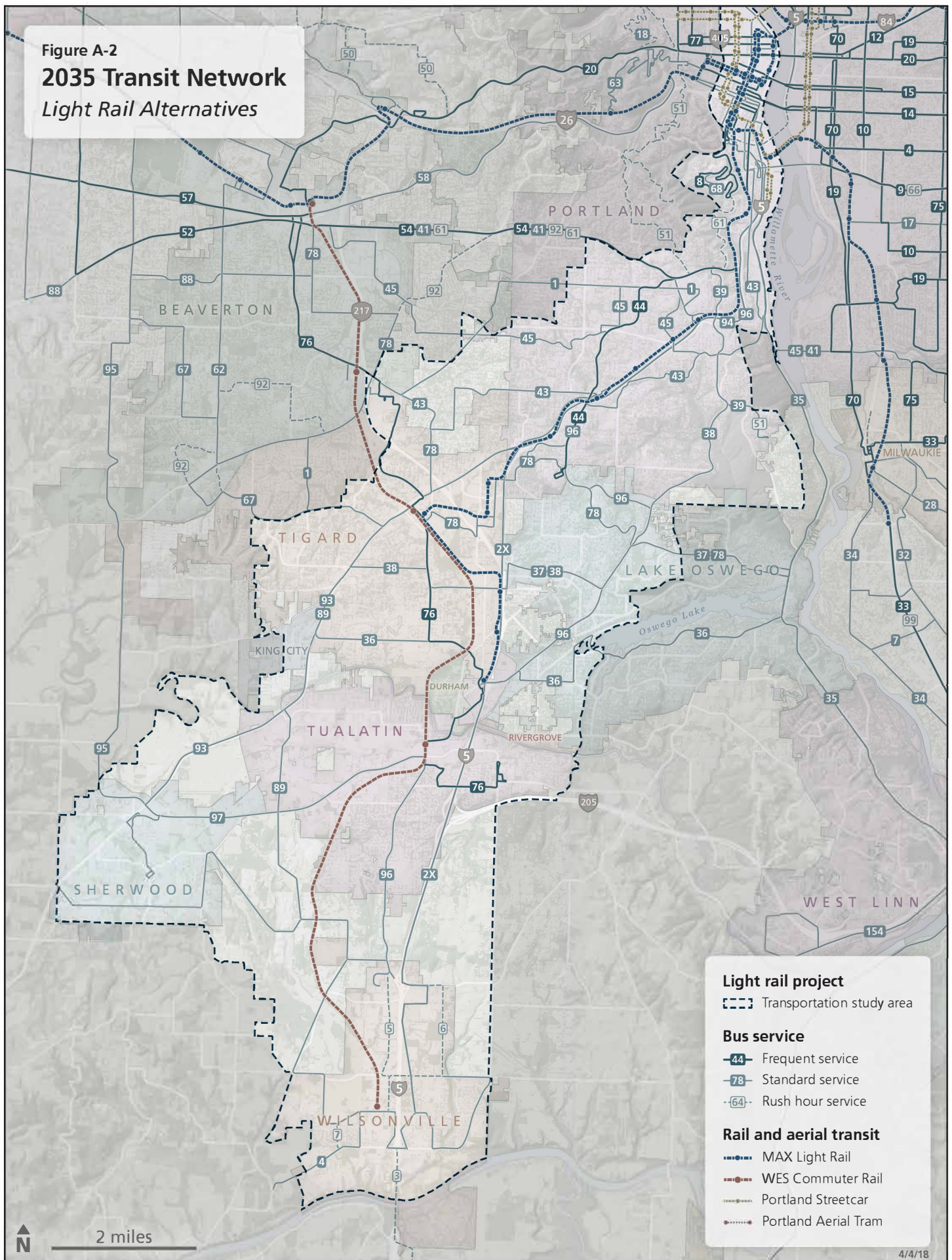
Section	Page
Transit Network Assumptions	A-1
Alignment Alternatives	A-4
Stations and Park and Rides	A-18
Marquam Hill Connection Options.....	A-26
Operations and Maintenance (O&M) Facility Options	A-31
Station Access Improvement Options.....	A-34
Construction Activities.....	A-42

Figure A-1
2035 Transit Network
No-Build Alternative



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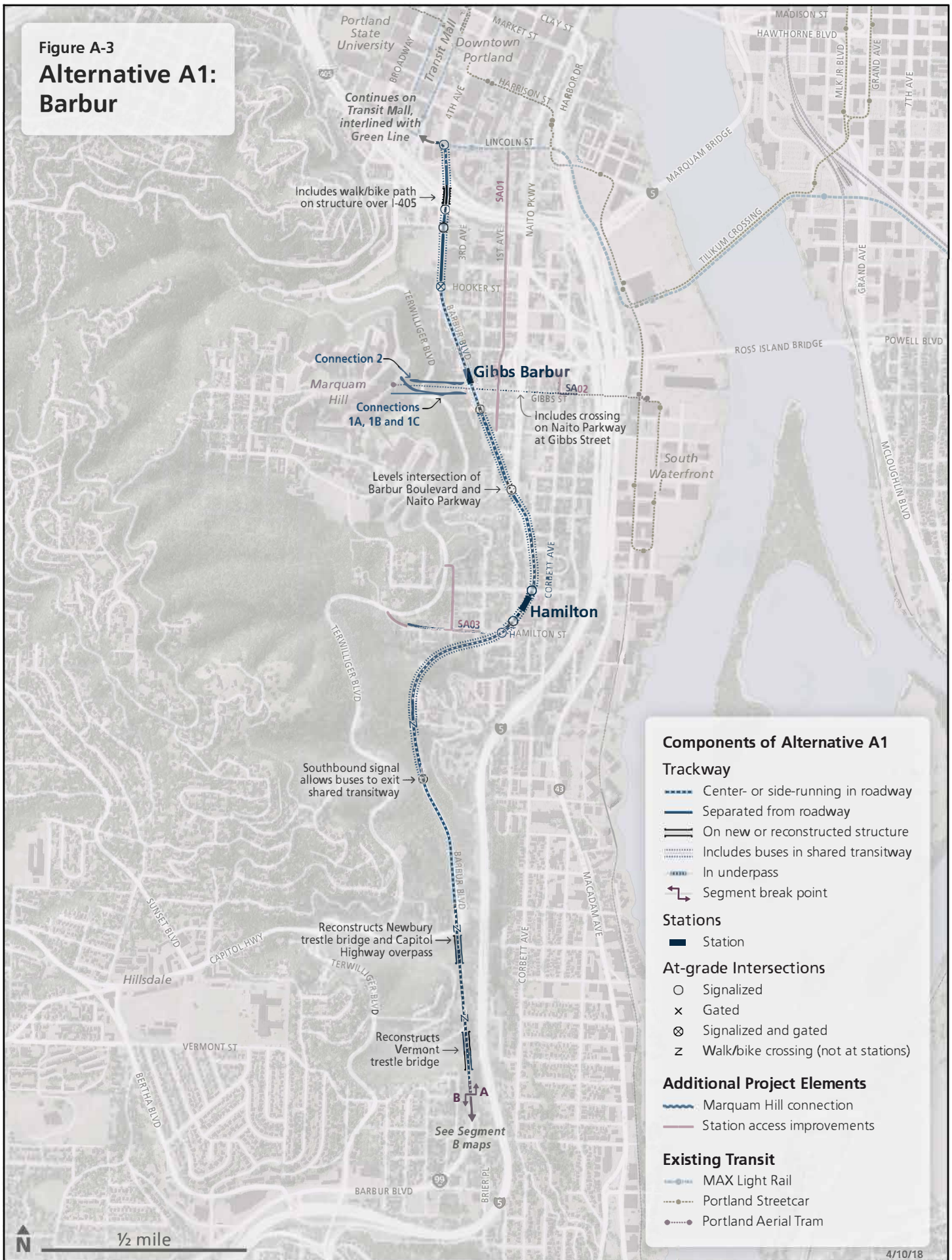
Figure A-2
2035 Transit Network
Light Rail Alternatives



Alignment Alternatives

Figures A-3 through A-15 provide maps of the individual alignment alternatives by segment. The maps illustrate the location of the alignment, stations and park and rides. Park and rides are labeled with their assumed maximum capacity. Along the alignment, the maps show whether the alignment would run in a roadway or separated from roads, and whether it would be at grade, structured, or in an underpass. At-grade intersections along the alignment are identified as signalized, gated or both. Additional protected walk/bike crossings away from stations or intersections are also labeled.

Figure A-3
Alternative A1:
Barbur



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Figure A-4
Alternative A2-BH:
Naito with Bridgehead
Reconfiguration

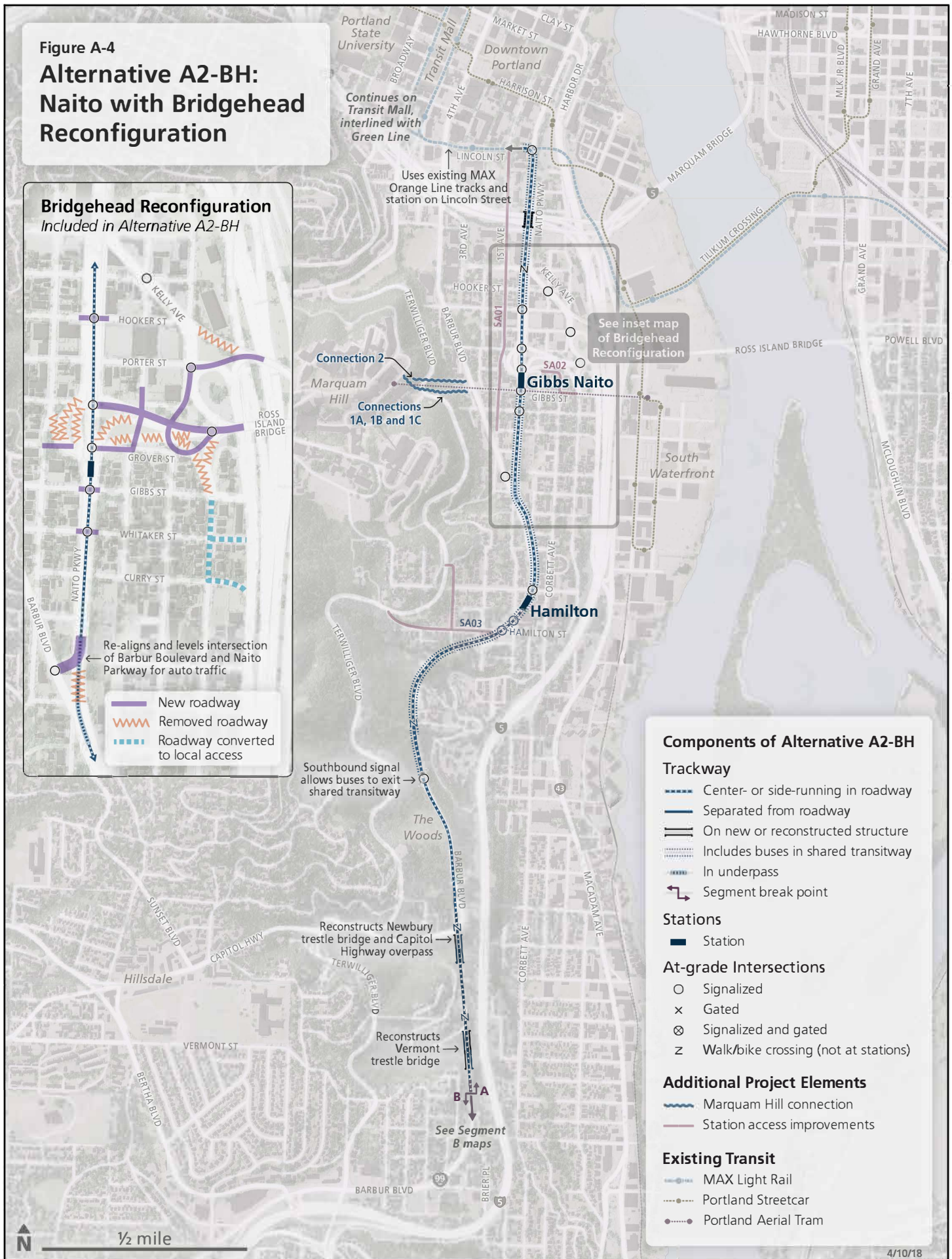


Figure A-5
Alternative A2-LA:
Naito with
Limited Access

Roadway changes
 Included in Alternative A2-LA

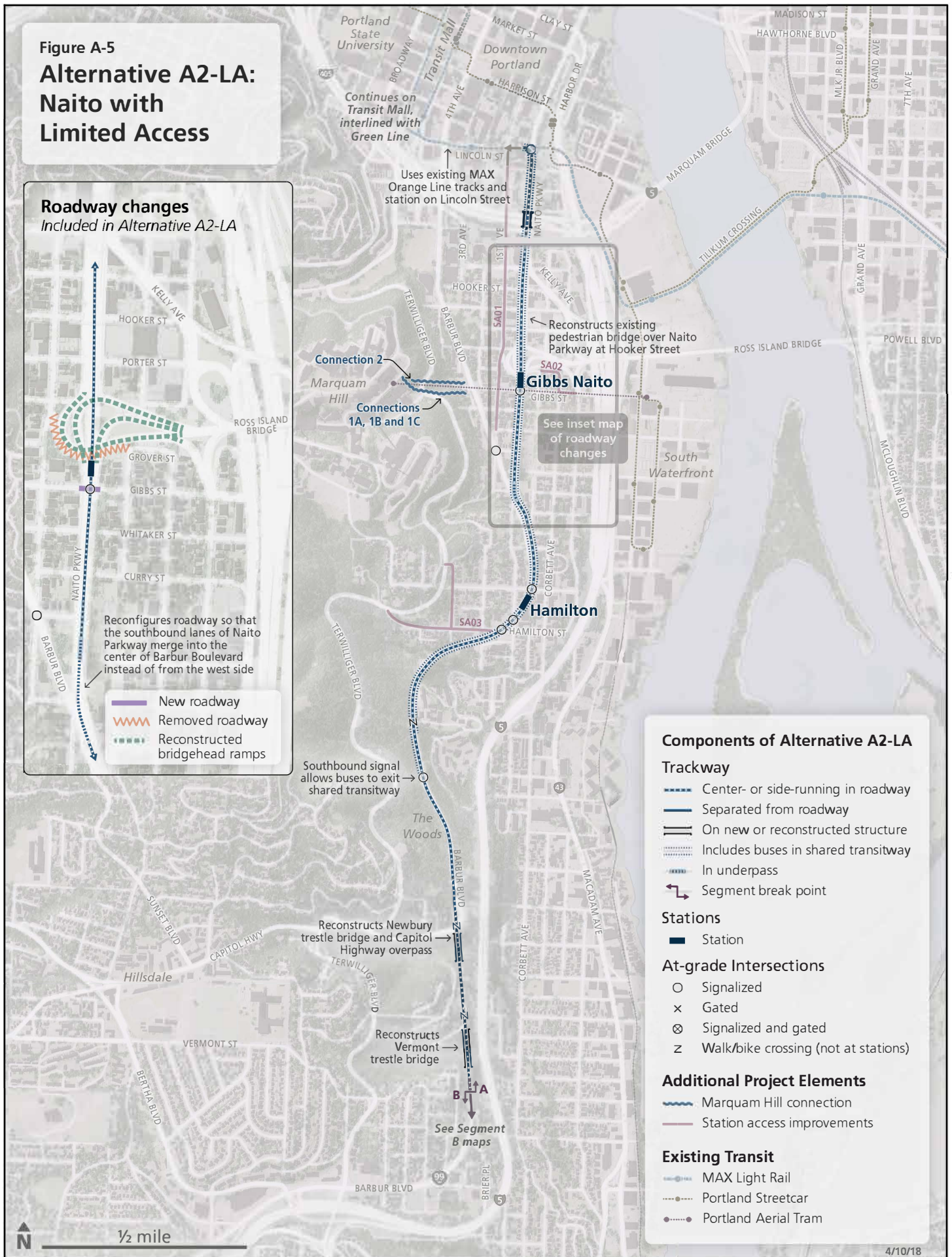
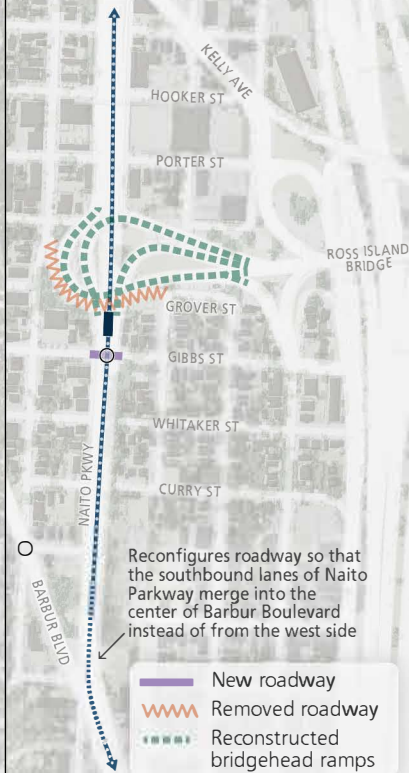


Figure A-6
Alternative B1:
Barbur

Components of Alternative B1

Trackway

- Center- or side-running in roadway
- Separated from roadway
- On new or reconstructed structure
- In underpass
- Segment break point

Stations

- Station
- Split platform station
- Park and ride (labeled with assumed maximum capacity)

At-grade Intersections

- Signalized
- Gated
- Signalized and gated
- Walk/bike crossing (not at stations)

Additional Project Elements

- PCC-Sylvania shuttle
- Station access improvements

Figure A-7
Alternative B2:
I-5 Barbur Transit Center to 60th

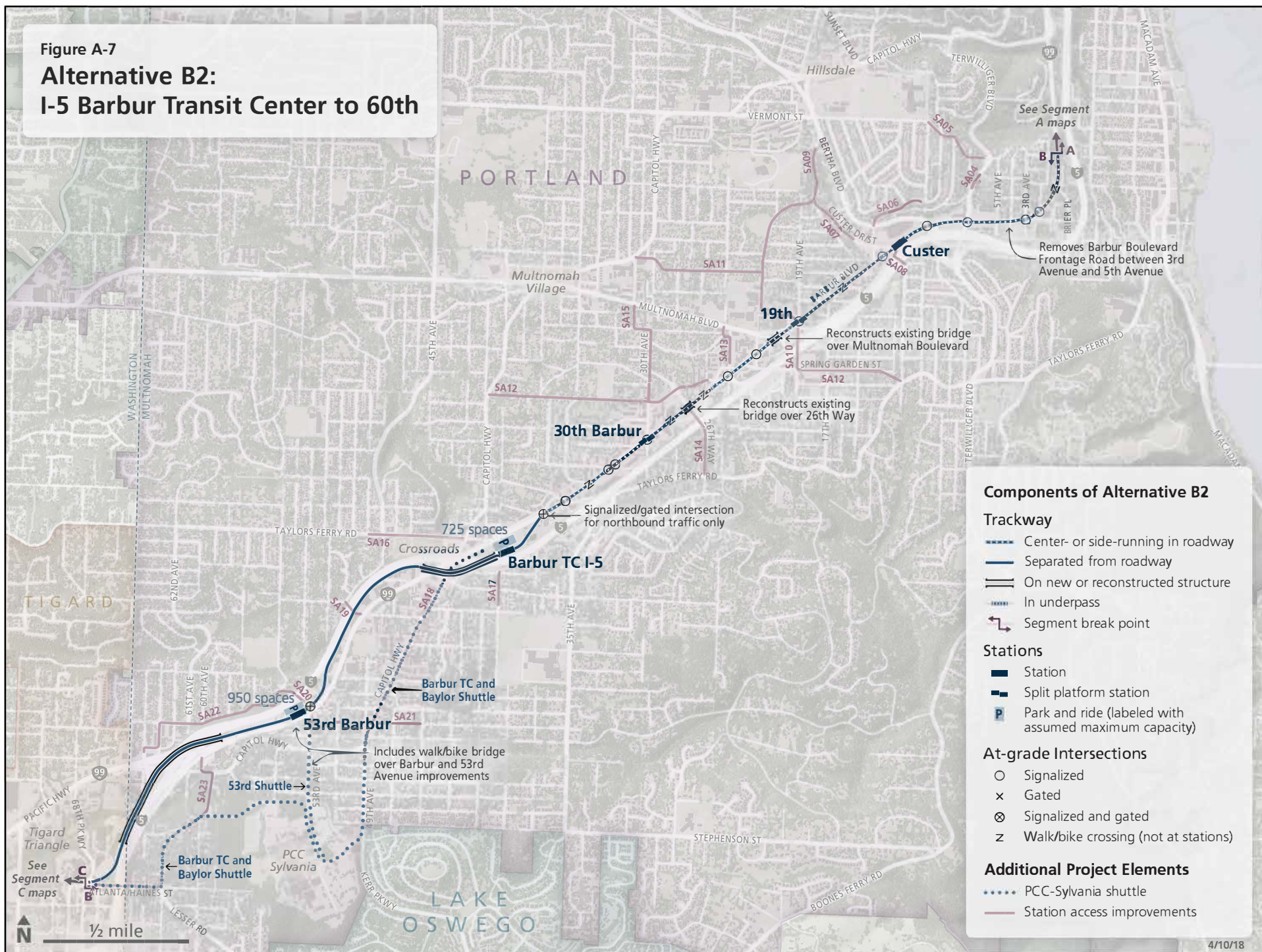


Figure A-8
Alternative B3:
I-5 26th to 60th

Components of Alternative B3

Trackway

- Center- or side-running in roadway
- Separated from roadway
- On new or reconstructed structure
- In underpass
- Segment break point

Stations

- Station
- Split platform station
- Park and ride (labeled with assumed maximum capacity)

At-grade Intersections

- Signalized
- Gated
- Signalized and gated
- Walk/bike crossing (not at stations)

Additional Project Elements

- PCC-Sylvania shuttle
- Station access improvements

Figure A-9
Alternative B4:
I-5 Custer to 60th

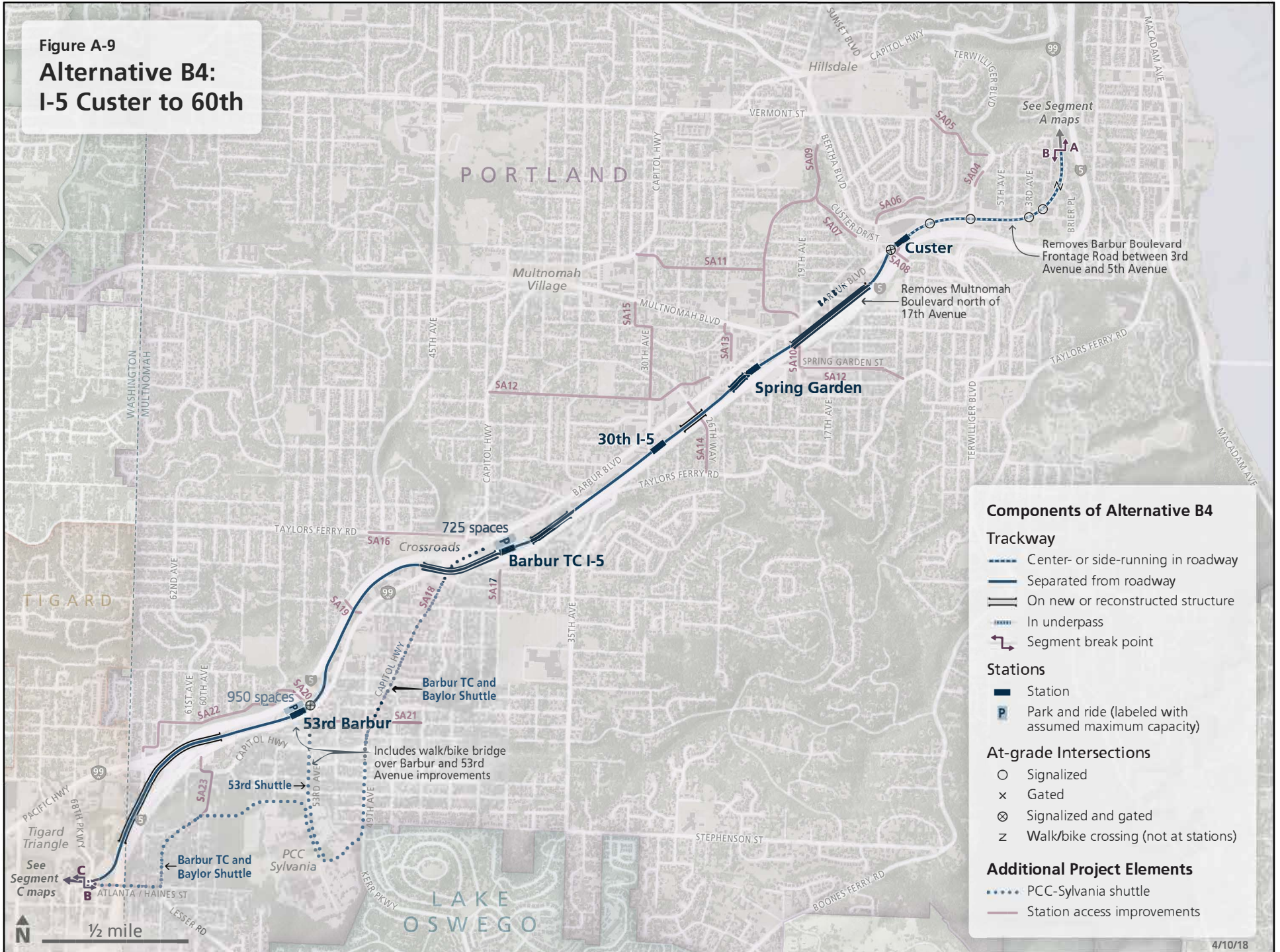


Figure A-10
Alternative C1:
Ash to I-5

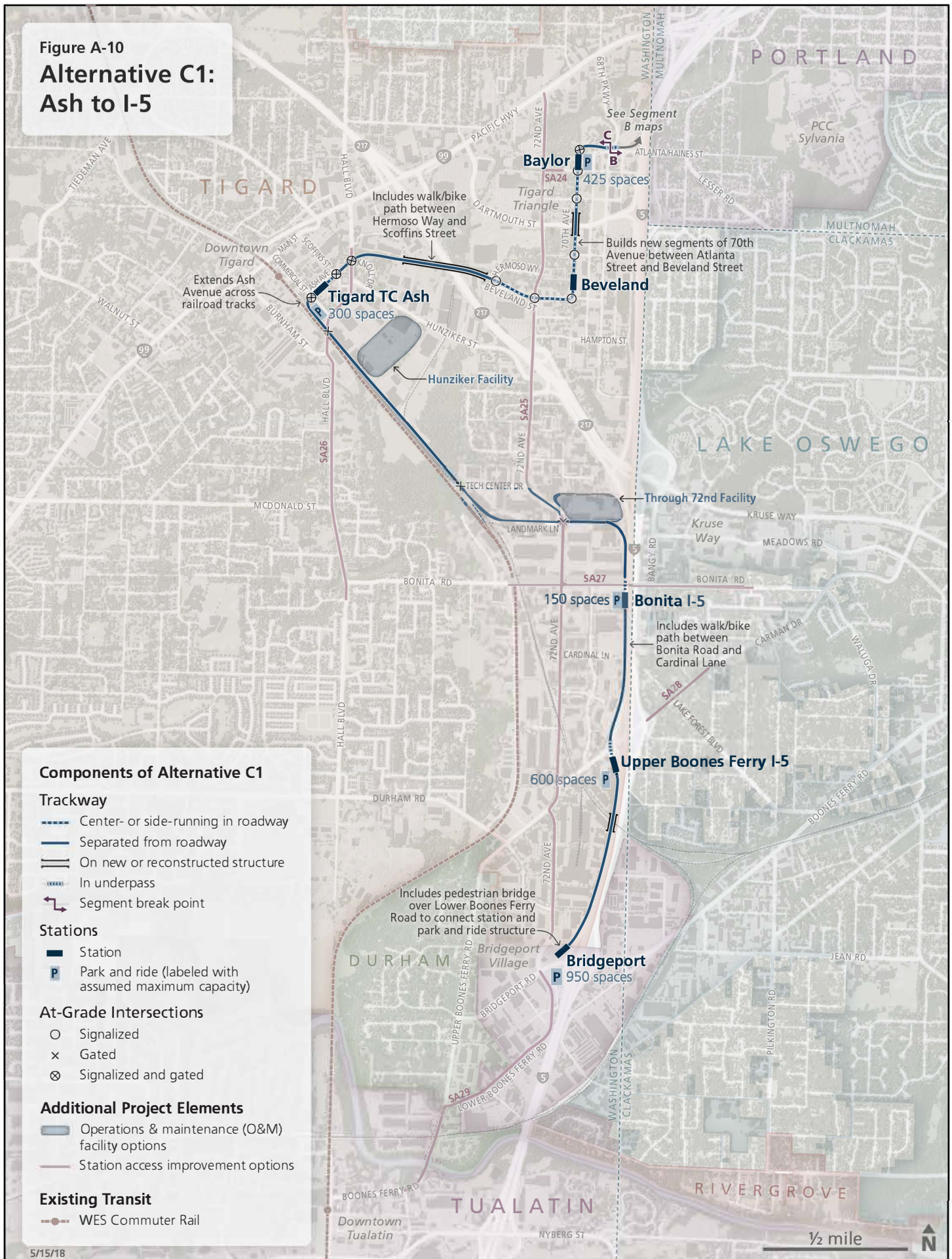


Figure A-11
Alternative C2:
Ash to Railroad

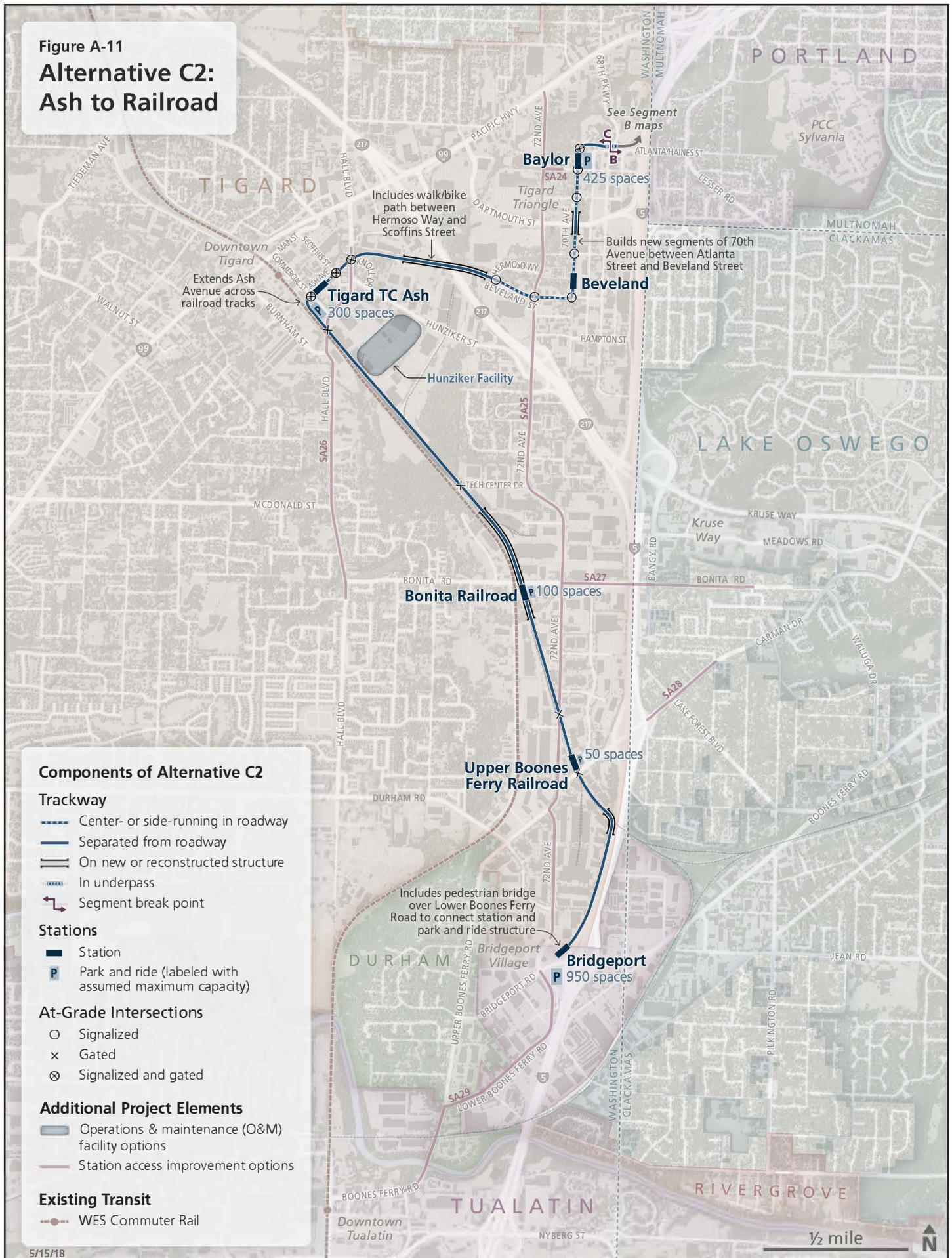


Figure A-12
Alternative C3:
Clinton to I-5

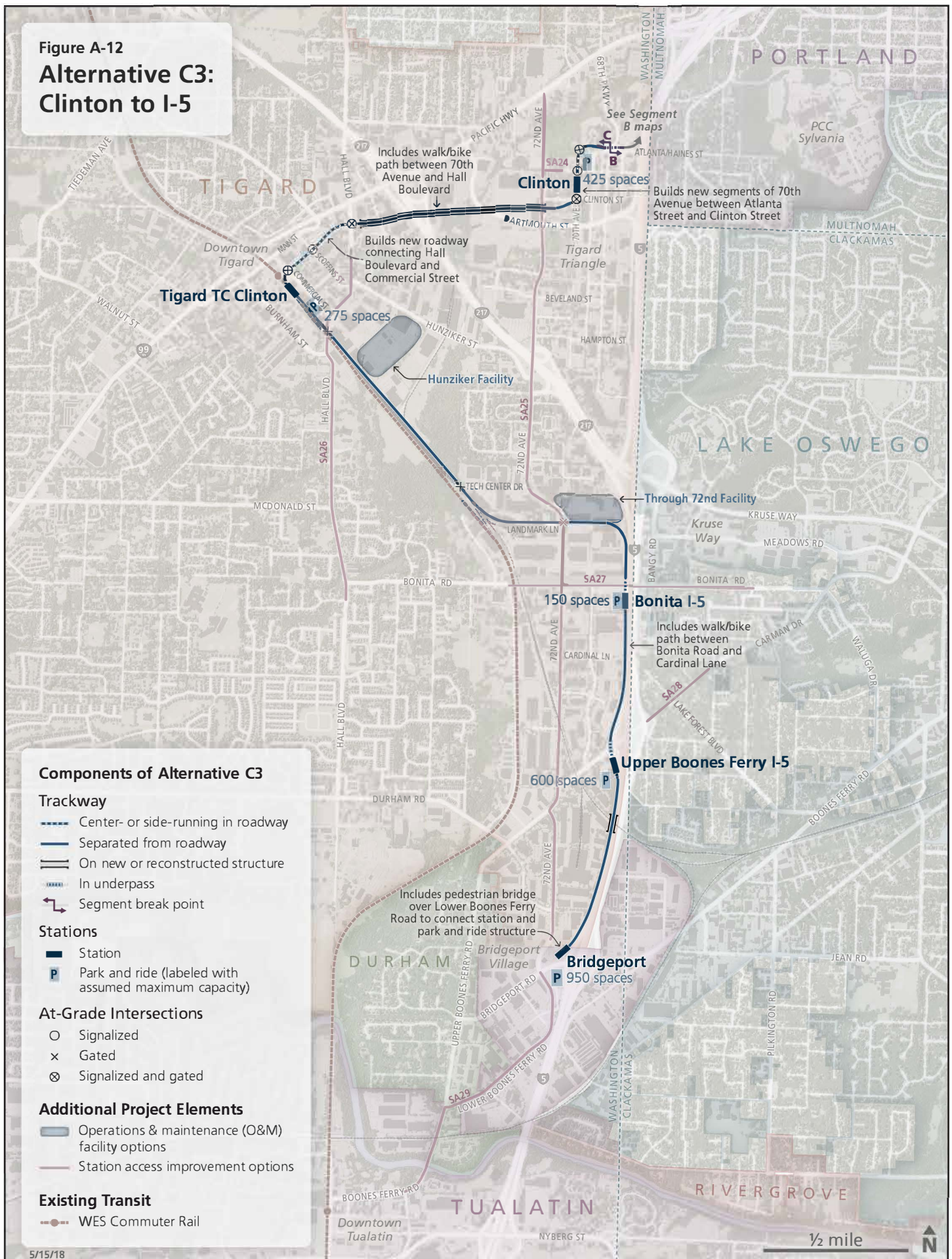


Figure A-13

Alternative C4: Clinton to Railroad



Figure A-14

Alternative C5: Ash and I-5 Branched

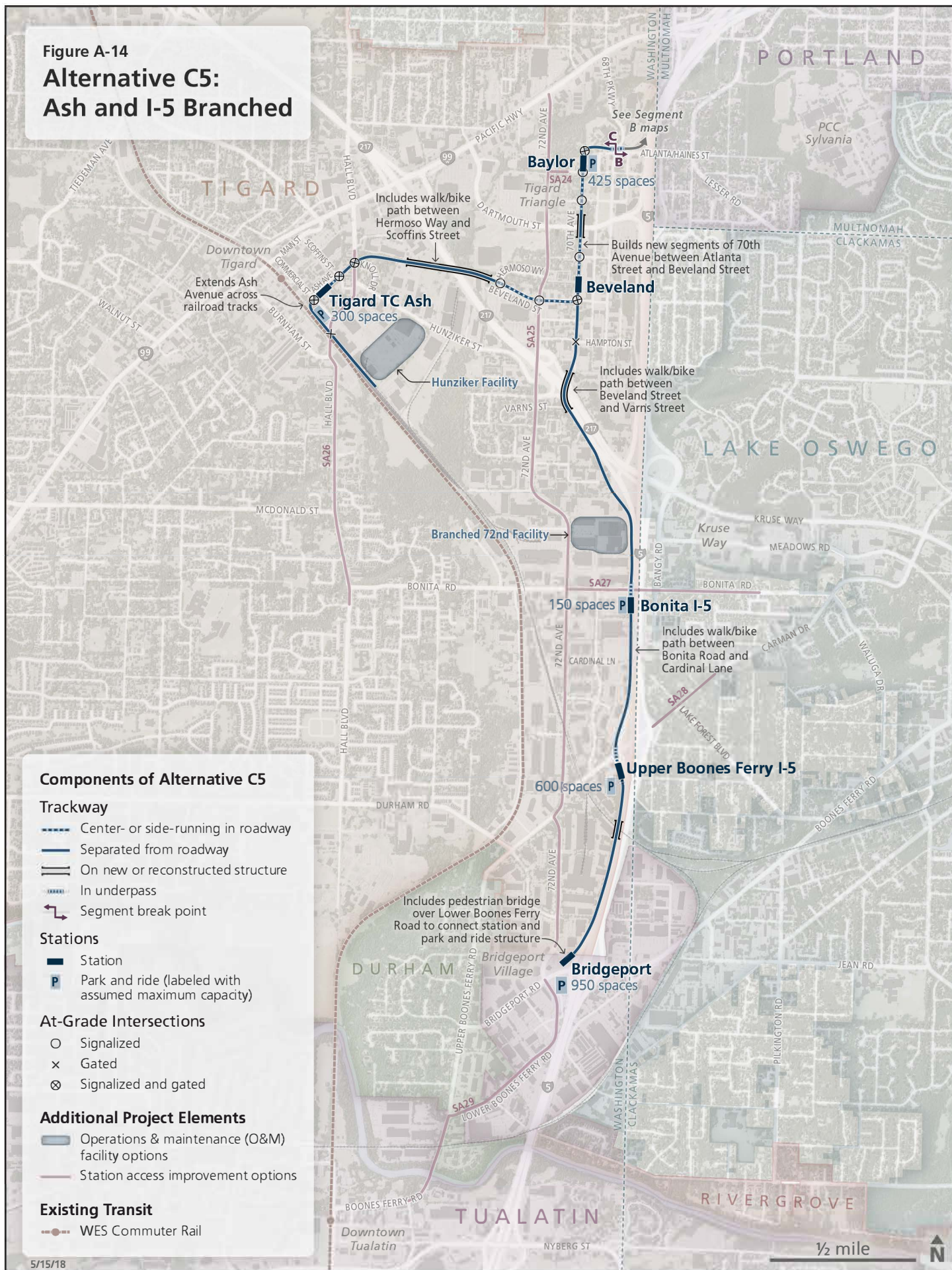
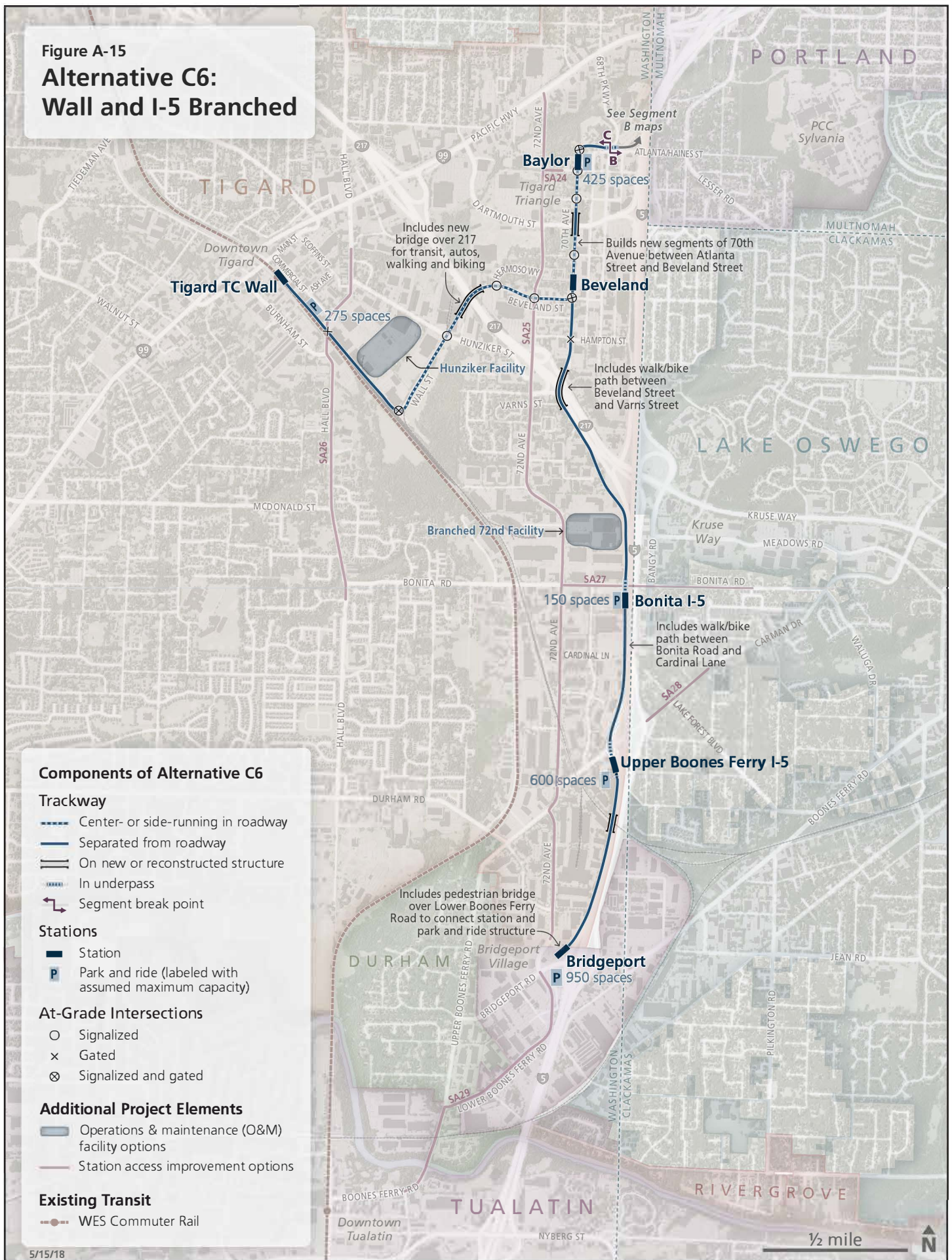


Figure A-15
Alternative C6:
Wall and I-5 Branched



Stations and Park and Rides

Figure A-16 illustrates typical elements of light rail stations used by TriMet. Figures A-17 through A-23 show the location of park and rides included in the alignment alternatives.

Figure A-16

Typical Light Rail Station Elements

TriMet Standards

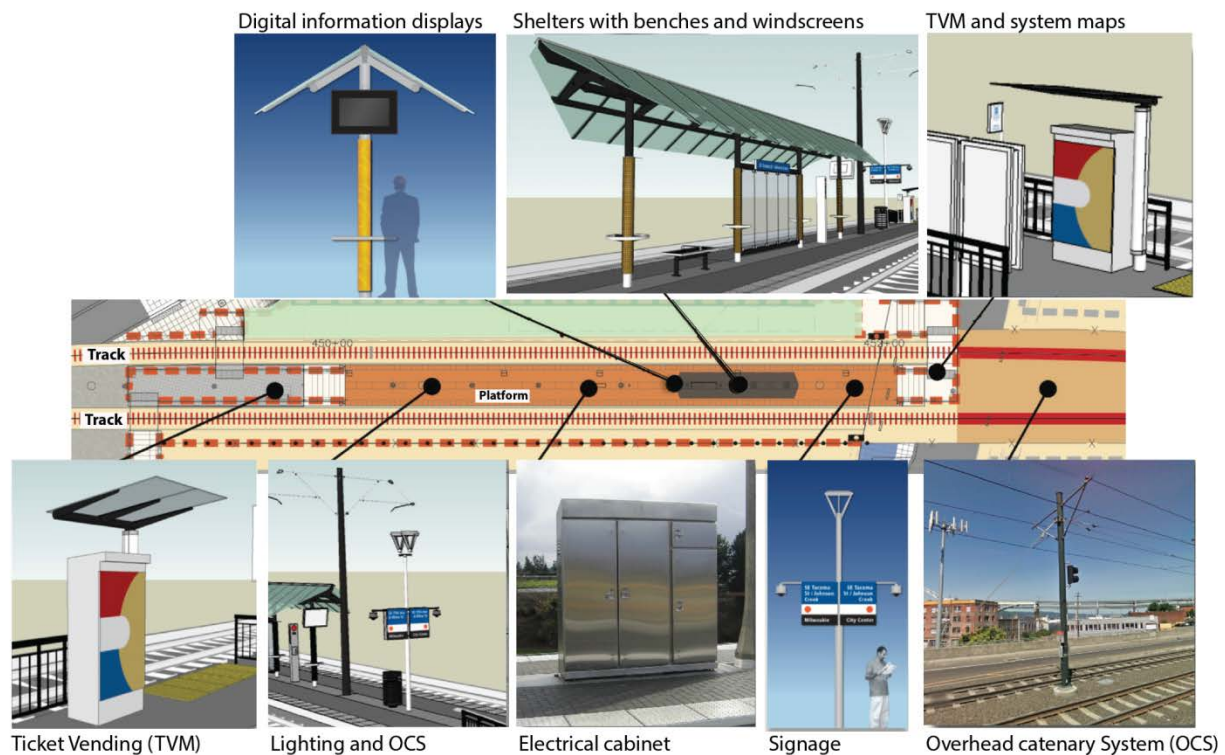
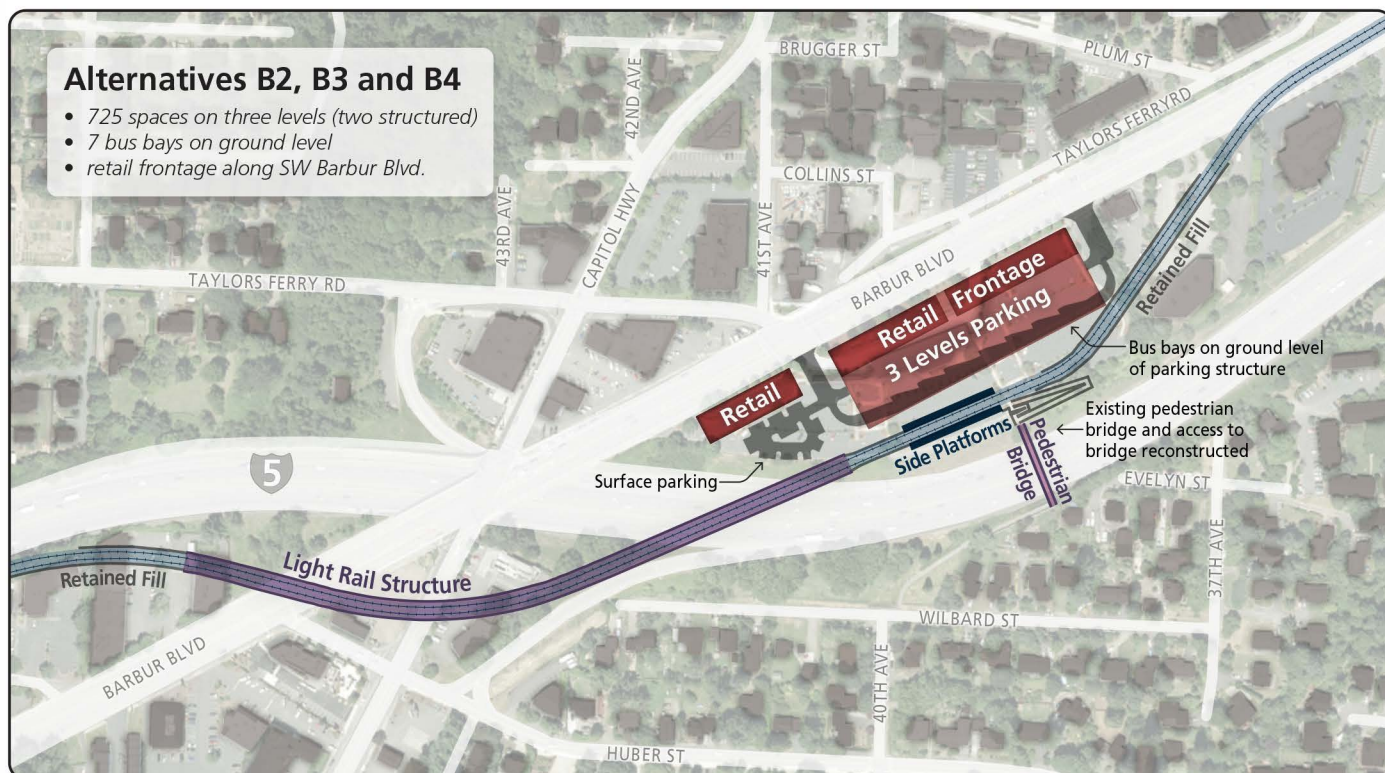
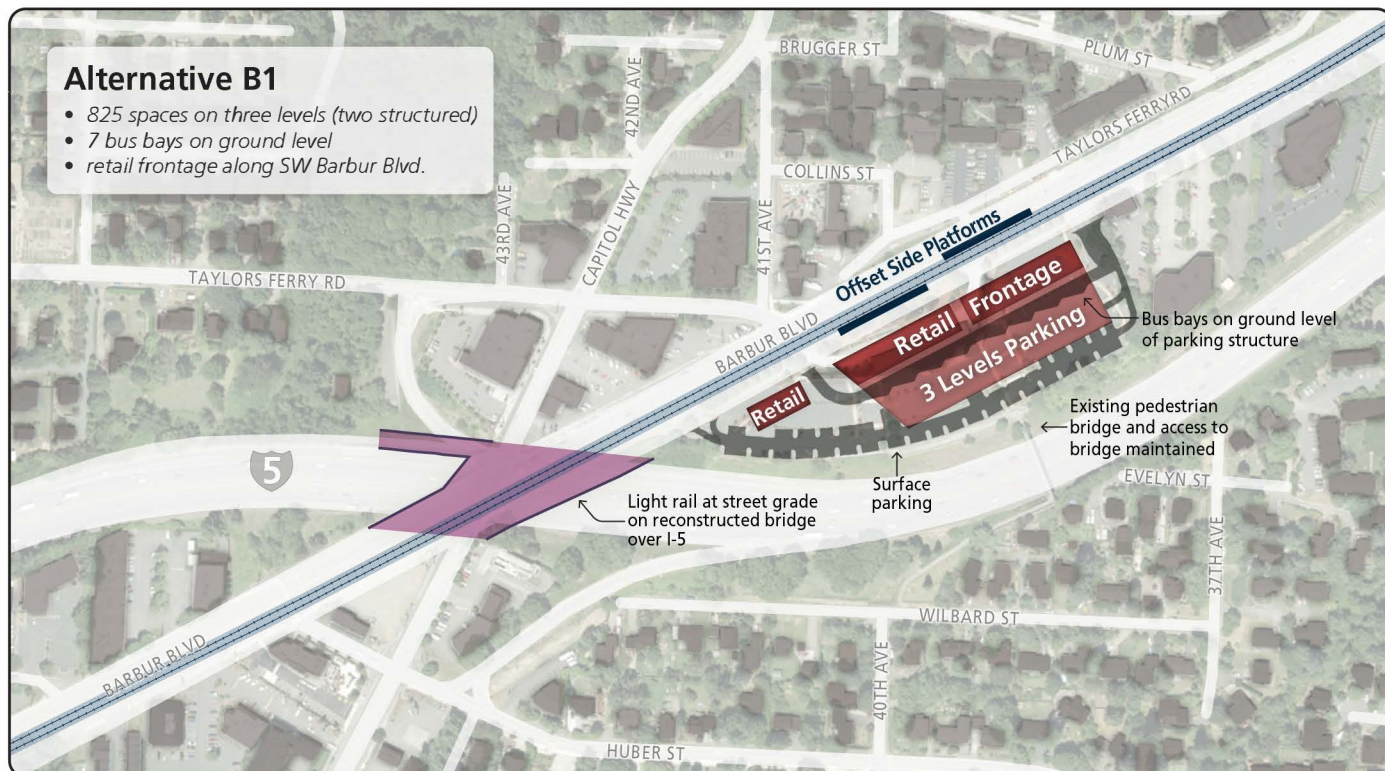


Figure A-17

Park and Rides

Barbur Transit Center Station



500 feet

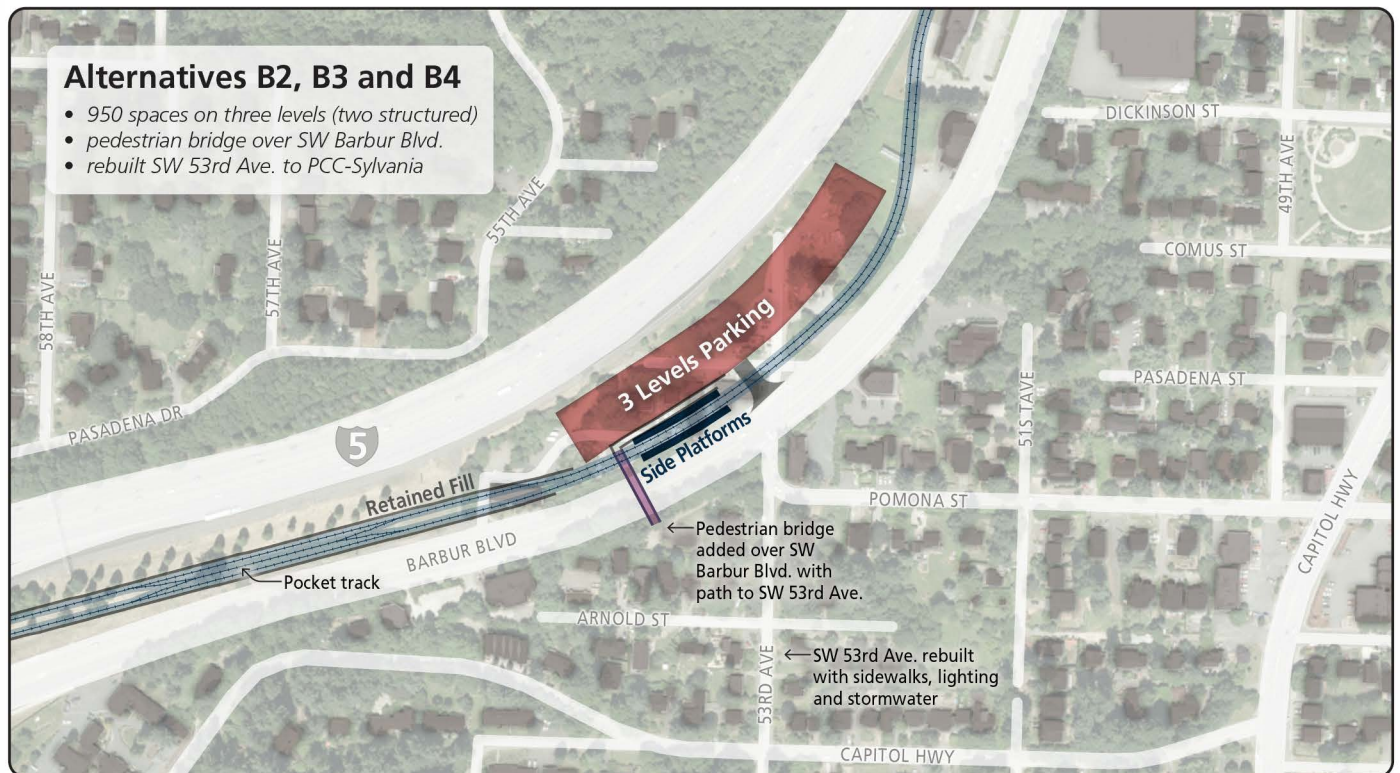
5/19/18

Light rail track centerline
Station platform
New or reconstructed bridge

Structure at park and ride
Paved area at park and ride

Figure A-18

Park and Rides 53rd Station



5/19/18

500 feet

Light rail track centerline

Station platform

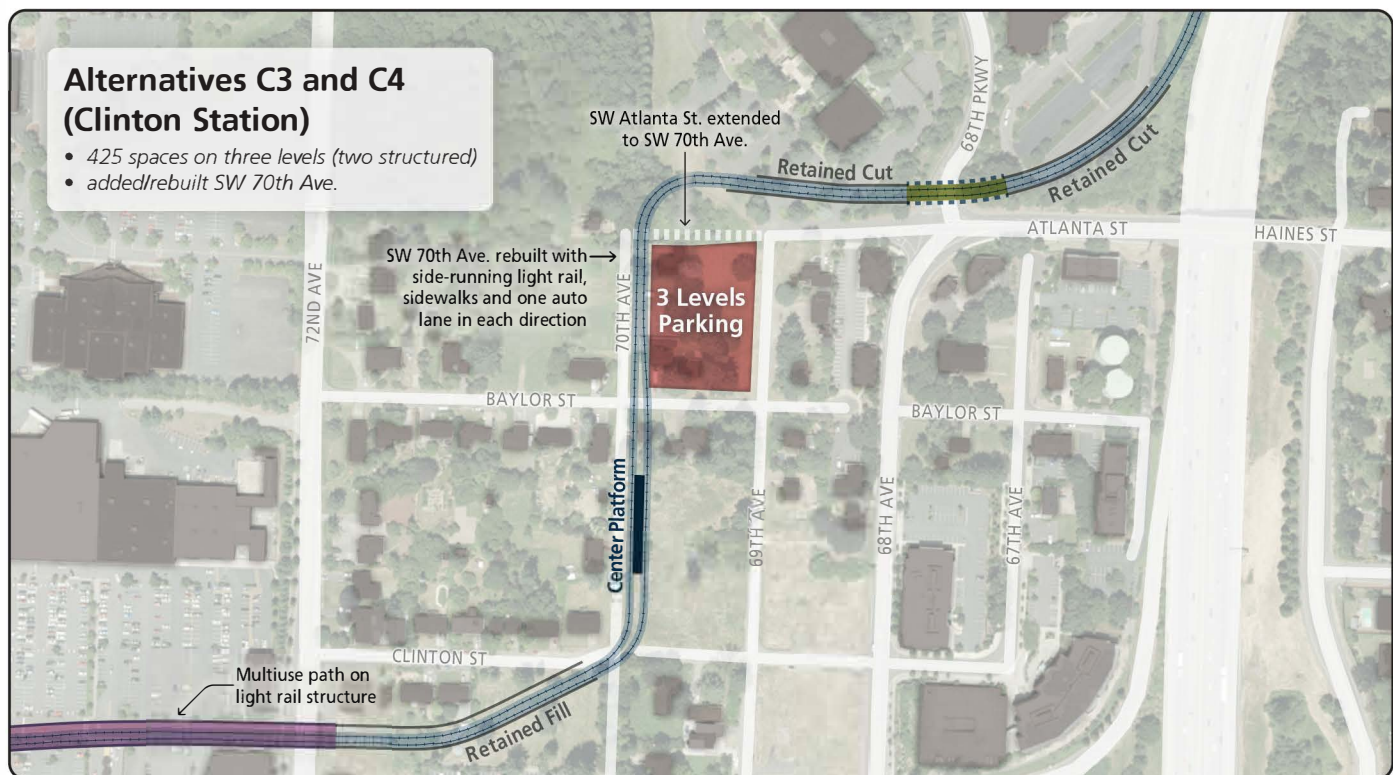
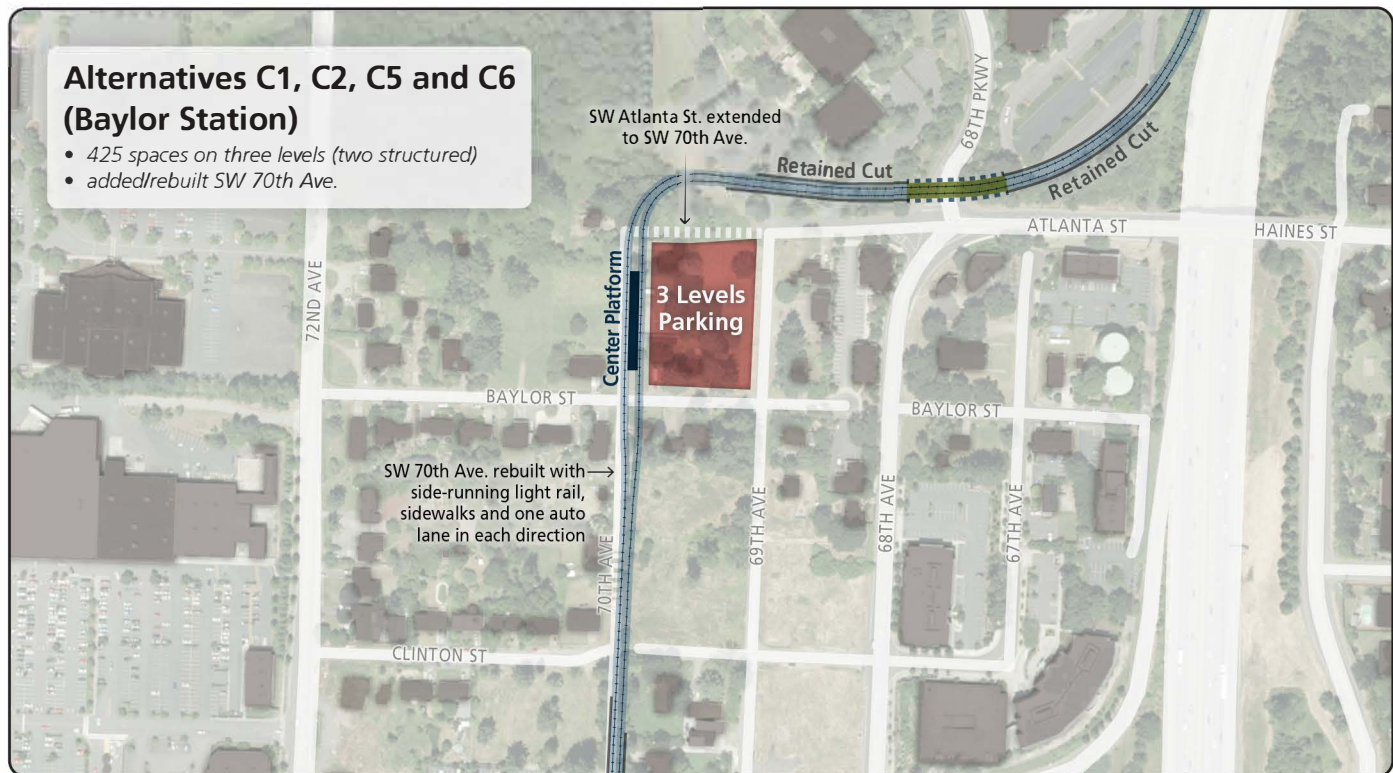
New or reconstructed bridge

Structure at park and ride

Paved area at park and ride

Figure A-19

Park and Rides Baylor/Clinton Station



500 feet

5/19/18

Light rail track centerline
Station platform
New or reconstructed bridge

Structure at park and ride
Light rail underpass

Figure A-20
Park and Rides
Tigard Transit Center Station

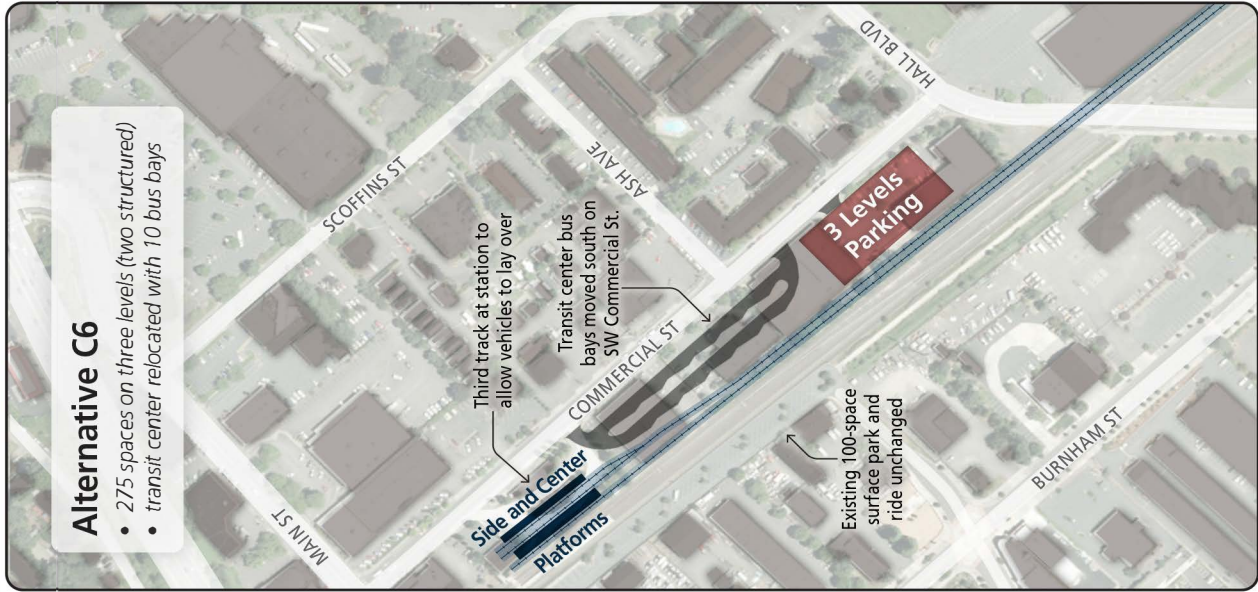
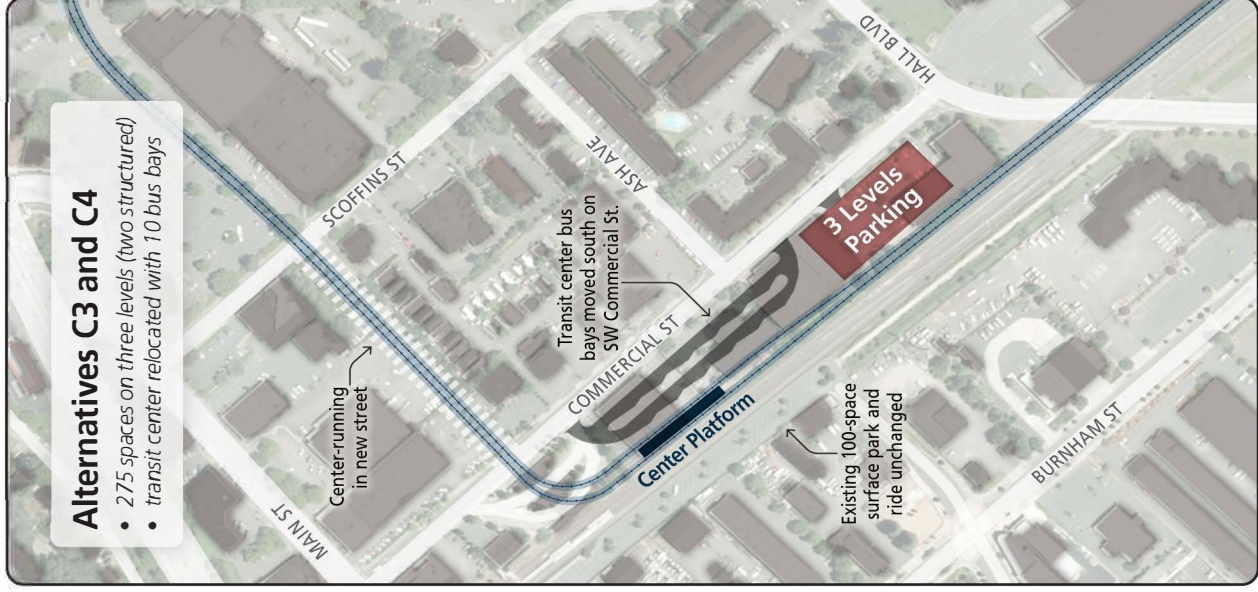
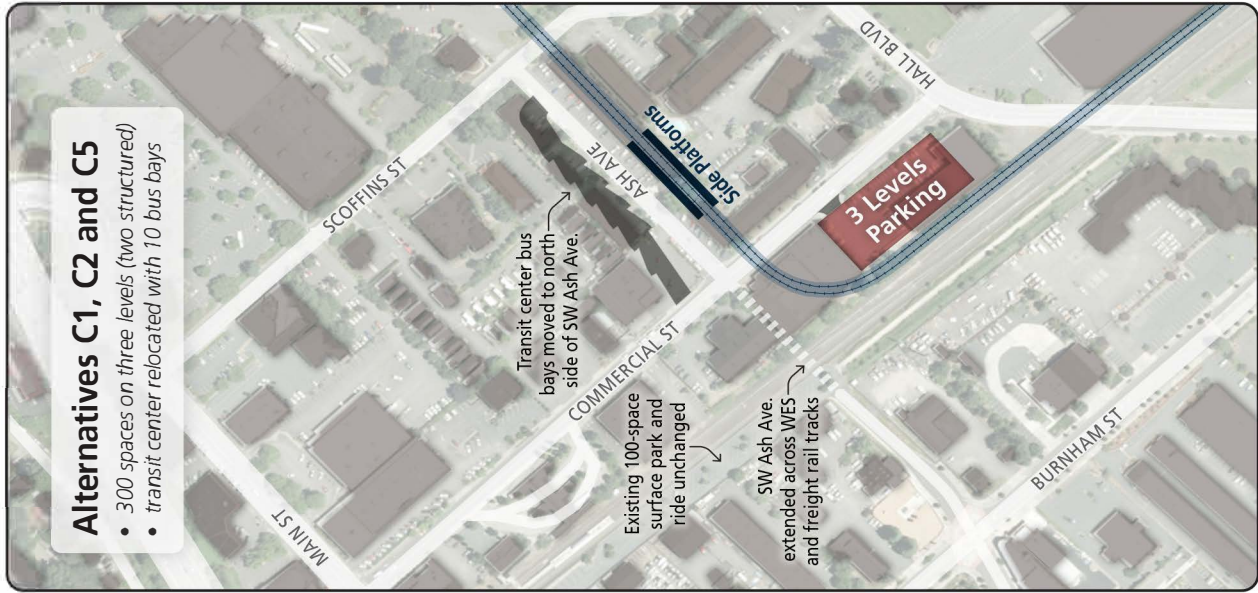
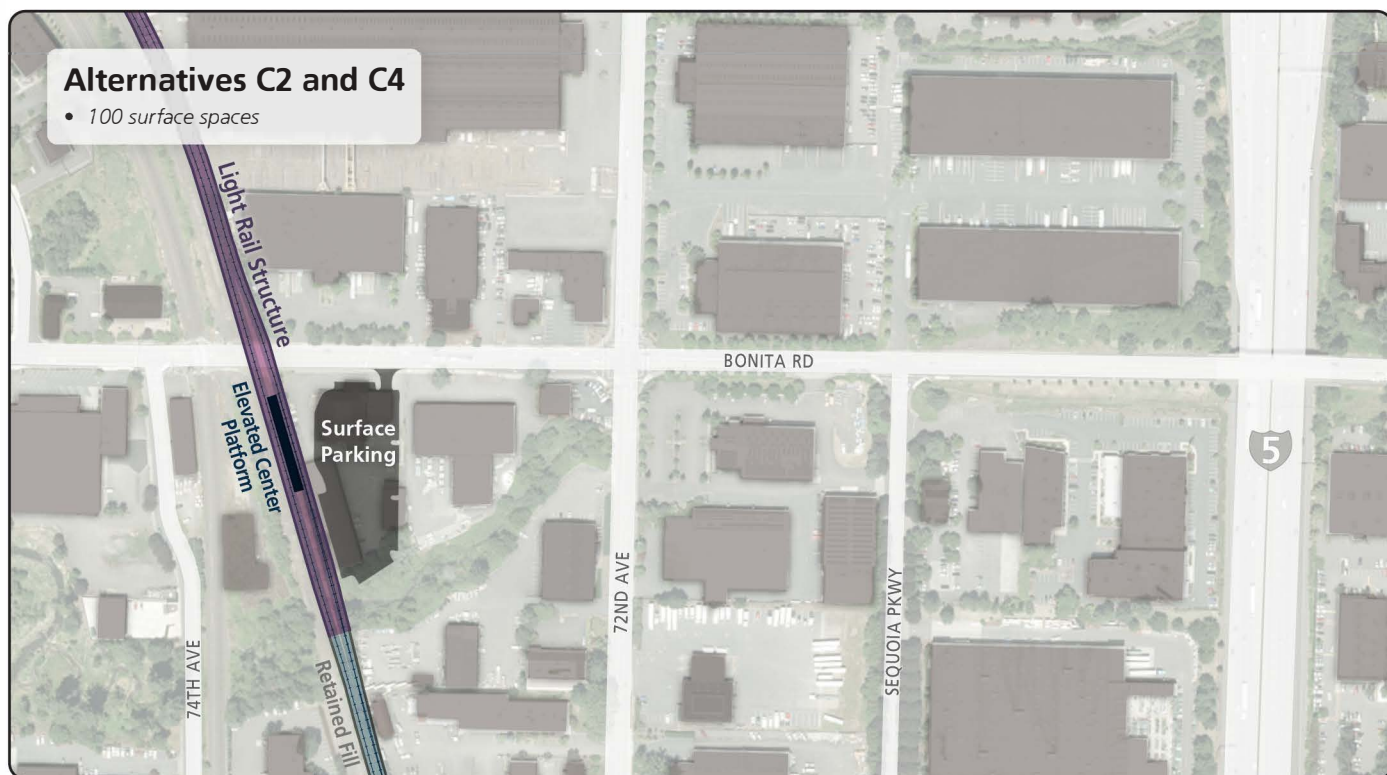


Figure A-21

Park and Rides

Bonita Station



500 feet

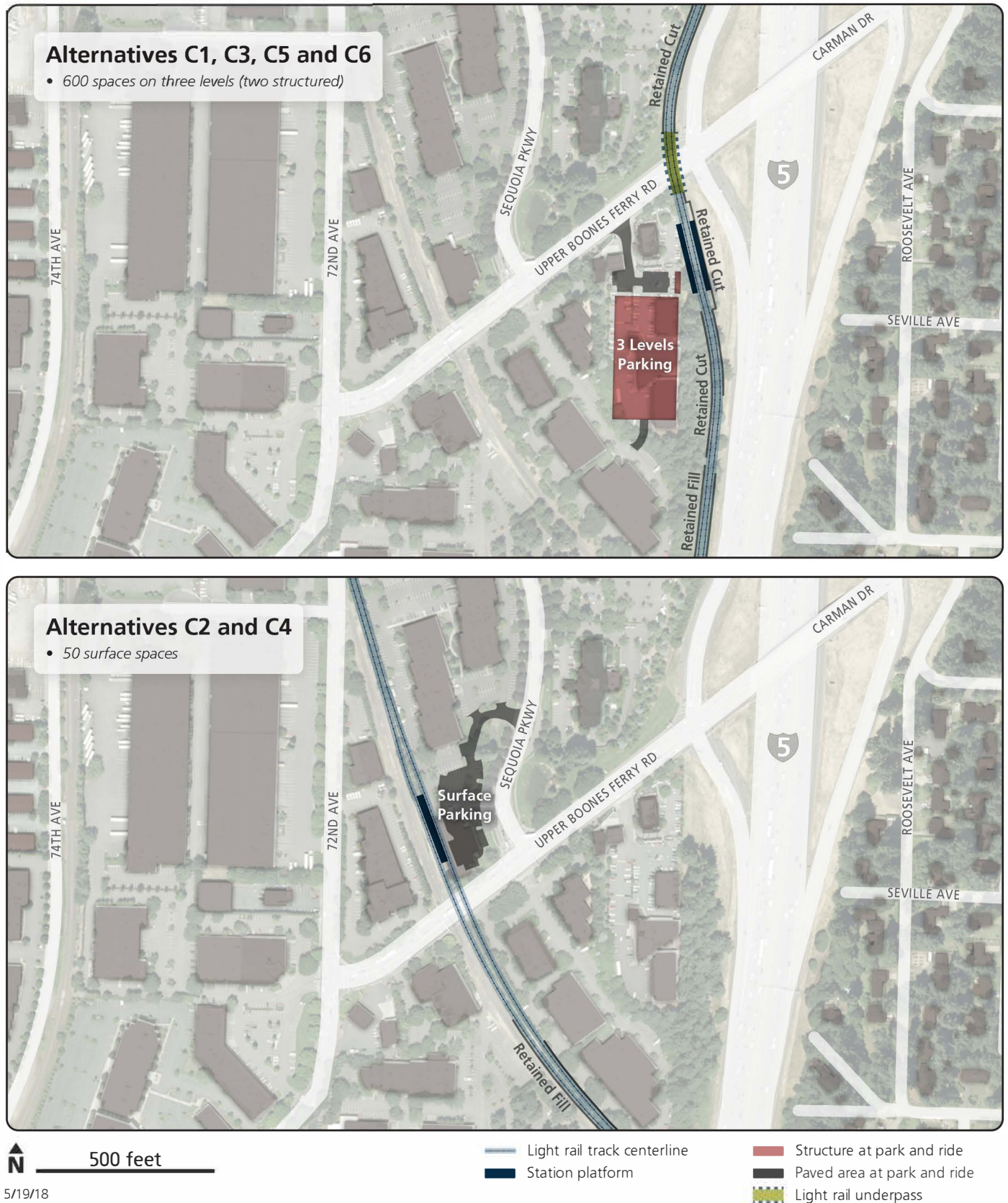
5/19/18

- | | |
|-----------------------------|-----------------------------|
| Light rail track centerline | Structure at park and ride |
| Station platform | Paved area at park and ride |
| New or reconstructed bridge | Light rail underpass |

Figure A-22

Park and Rides

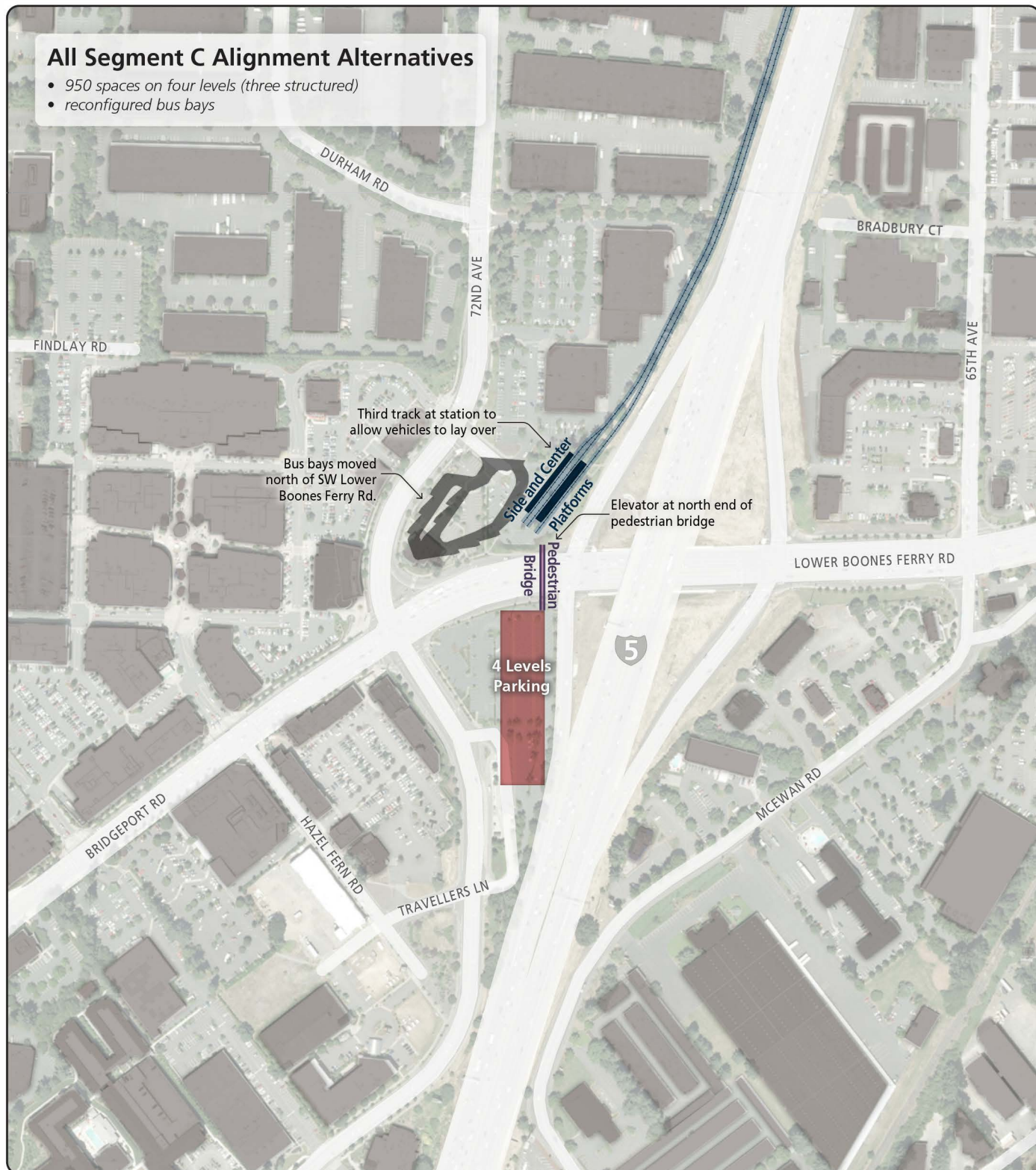
Upper Boones Ferry Station



5/19/18

Figure A-23

Park and Rides Bridgeport Station



500 feet

5/19/18

Light rail track centerline
Station platform
New or reconstructed bridge

Structure at park and ride
Paved area at park and ride

Marquam Hill Connection Options

The four options under consideration to connect to the medical and educational facilities on Marquam Hill are described below and illustrated in Figures A-24 through A-27.

- **Connection 1A: Elevator/Bridge and Path** would include two elevators, two bridges and an at-grade path. A path would connect SW Barbur Boulevard to a 100-foot-tall elevator tower west of SW Barbur Boulevard. A 140-foot-long bridge would connect the elevator tower to a path along the hillside east of SW Terwilliger Boulevard. The option would include an at-grade crossing of SW Terwilliger Boulevard with a pedestrian crossing signal. On the west side of SW Terwilliger Boulevard, stairs and ramps would lead to the second elevator tower, which would be approximately 120 feet tall. A 190-foot-long bridge would connect the upper elevator to SW Campus Drive at the third floor base of Kohler Pavilion. Because the upper elevator tower and bridge would be directly under the path of the Portland Aerial Tram, Connection 1A could not tie in directly to the seventh floor of Kohler Pavilion as the other connection options would. Instead, pedestrians would cross SW Campus Drive and walk to an entrance to Kohler Pavilion to reach a bank of elevators, or continue along SW Campus Drive to other facilities.
- **Connection 1B: Elevator/Bridge and Recessed Path** would be identical to Connection 1A for the lower elevator and bridge near SW Barbur Boulevard, but would differ at SW Terwilliger Boulevard and at the upper elevator and bridge west of SW Terwilliger Boulevard. Connection 1B would feature a below-grade crossing of SW Terwilliger Boulevard, which would include ramps and stairs on the east side of the roadway to connect to the path that runs along the east side of SW Terwilliger Boulevard. West of SW Terwilliger Boulevard, a series of stairs and ramps would connect the pedestrian underpass to a wide recessed path at the base of the upper elevator, which would be 170 feet tall, including the portion embedded below grade connecting to the path. A 150-foot-long bridge would connect the elevator to the seventh floor of Kohler Pavilion.
- **Connection 1C: Elevator/Bridge and Tunnel** would be identical to Connection 1B from SW Barbur Boulevard to the below-grade crossing of SW Terwilliger Boulevard, but it would differ west of SW Terwilliger Boulevard. The pedestrian underpass below SW Terwilliger Boulevard would emerge into an open recessed area west of the roadway, about 30 feet below the level of the surrounding ground. A series of ramps and stairs would connect this open area to the sidewalks on SW Campus Drive and the west side of SW Terwilliger Boulevard. A 180-foot-long tunnel would lead from the open area to the upper elevator tower. The upper elevator would be 200 feet tall, including the portion embedded underground. A 120-foot-long bridge would connect to the seventh floor of Kohler Pavilion.
- **Connection 2: Full Tunnel** is distinct from the other three Marquam Hill connection options and has a single tunnel, an elevator and a bridge. A path from SW Barbur Boulevard would lead to an open plaza area partially embedded into the hillside. A 450-foot-long tunnel would extend into the hillside under SW Terwilliger Boulevard and connect to an elevator, which would be 290 feet tall, including the portion embedded underground. A 130-foot-long bridge would connect the elevator to the seventh floor of Kohler Pavilion.

Figure A-24
Marquam Hill Connection 1A: Elevator/Bridge and Path



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Figure A-25
Marquam Hill Connection 1B: Elevator/Bridge and Recessed Path



5/19/18

Figure A-26
Marquam Hill Connection 1C: Elevator/Bridge and Tunnel



5/19/18

Figure A-27
Marquam Hill Connection 2: Full Tunnel



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Operations and Maintenance (O&M) Facility Options

The project would construct a new light rail O&M facility to accommodate the added 32 light rail vehicles in the TriMet system. There are two locations being considered for a light rail O&M facility in Tigard, one of which includes variations to pair with each route configuration. See Figures A-28 and A-29 for a map of each O&M facility option.

The first location, the **Hunziker Facility**, would encompass about 20 acres near downtown Tigard adjacent to the freight rail tracks and SW Hunziker Street, and could serve any of the Segment C alignment alternatives. The facility layout would be designed to provide 9,000 feet of storage track for approximately 42 light rail vehicles (storage for 10 additional vehicles than is needed for the project to allow for system growth and operations flexibility) and accommodate most maintenance functions necessary to operate the light rail system, including 10 maintenance bays, a space for wheel truing, vehicle wash area, a unit repair facility (for vehicle parts) and parts storage (both indoor and outdoor). The Hunziker Facility could accommodate additional storage tracks for up to 60 vehicles total to support additional system growth in the future. The Hunziker Facility would also include a surface parking lot for employees and fleet vehicles, administrative space to support the on-site operations, and on-site stormwater management. Up to 85 percent of the site would be improved with impervious surfaces, consistent with local zoning regulations for industrial development. Light rail vehicles would access this facility via switches on the main light rail alignment parallel to the WES and freight railroad tracks.

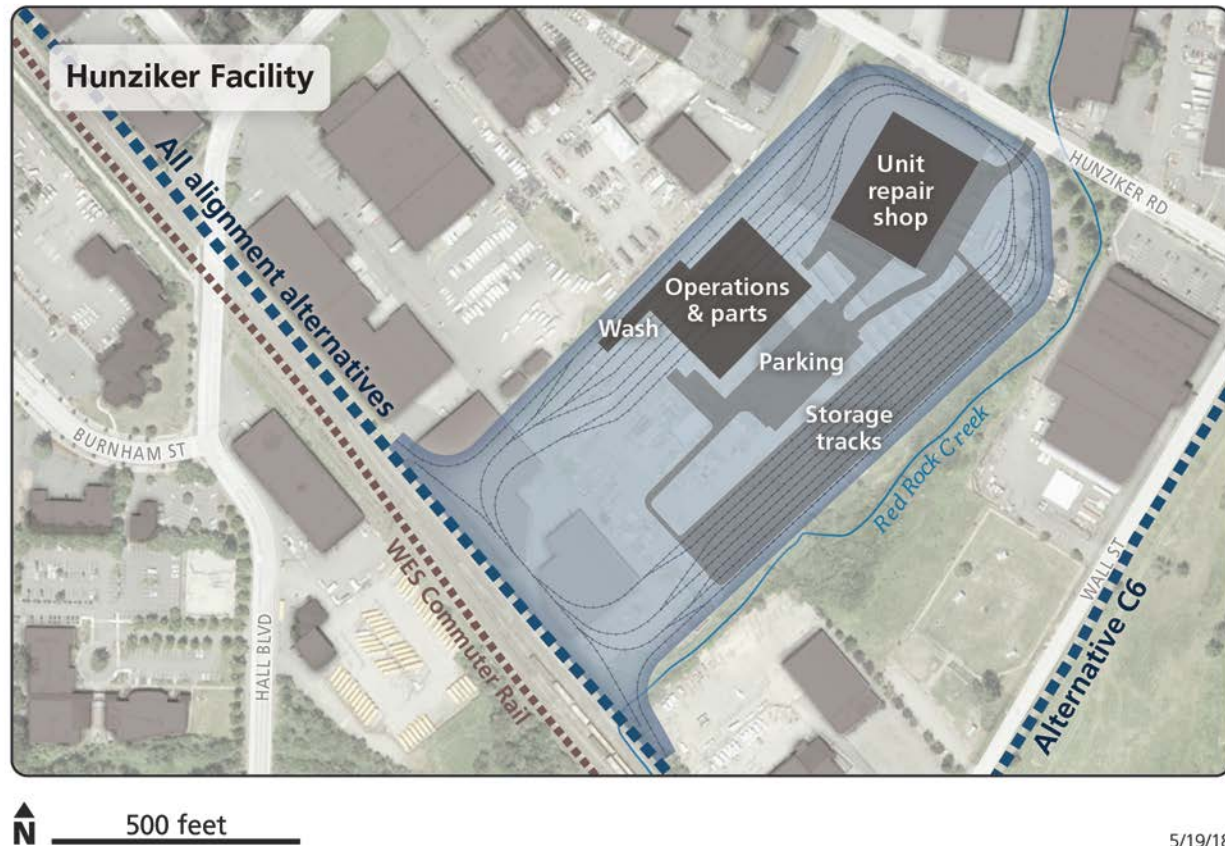
The second location, referred to as the 72nd Facility, would encompass about 17 acres southeast of the Tigard Triangle between SW 72nd Avenue and I-5. This location would provide the same facilities as the Hunziker Facility, but with slightly reduced storage and maintenance capacity. There are two options for the specific location and layout of this facility, depending on the light rail alignment:

- The **Through 72nd Facility** would be across from SW Landmark Lane and could serve the through-routed alternatives that would operate adjacent to I-5 south of Tigard (Alternatives C1 and C3). Light rail vehicles would access this facility via switches on the adjacent exclusive trackway to the south of the site (between SW 72nd Avenue and I-5).
- The **Branched 72nd Facility** would shift the facility slightly to the north to serve the branched alternatives (Alternatives C5 and C6). Light rail vehicles would access this facility via switches on the trackway adjacent to I-5.

Both 72nd Facility options would provide 7,500 feet of storage track for approximately 36 light rail vehicles, vehicle wash, parts storage (both indoor and outdoor), surface parking for employees and fleet vehicles, administrative space to support on-site operations and on-site stormwater management. Both options would improve up to 85 percent of the site with impervious surfaces, consistent with local zoning regulations for industrial development.

Figure A-28

Operations and Maintenance Facility Options Hunziker Location

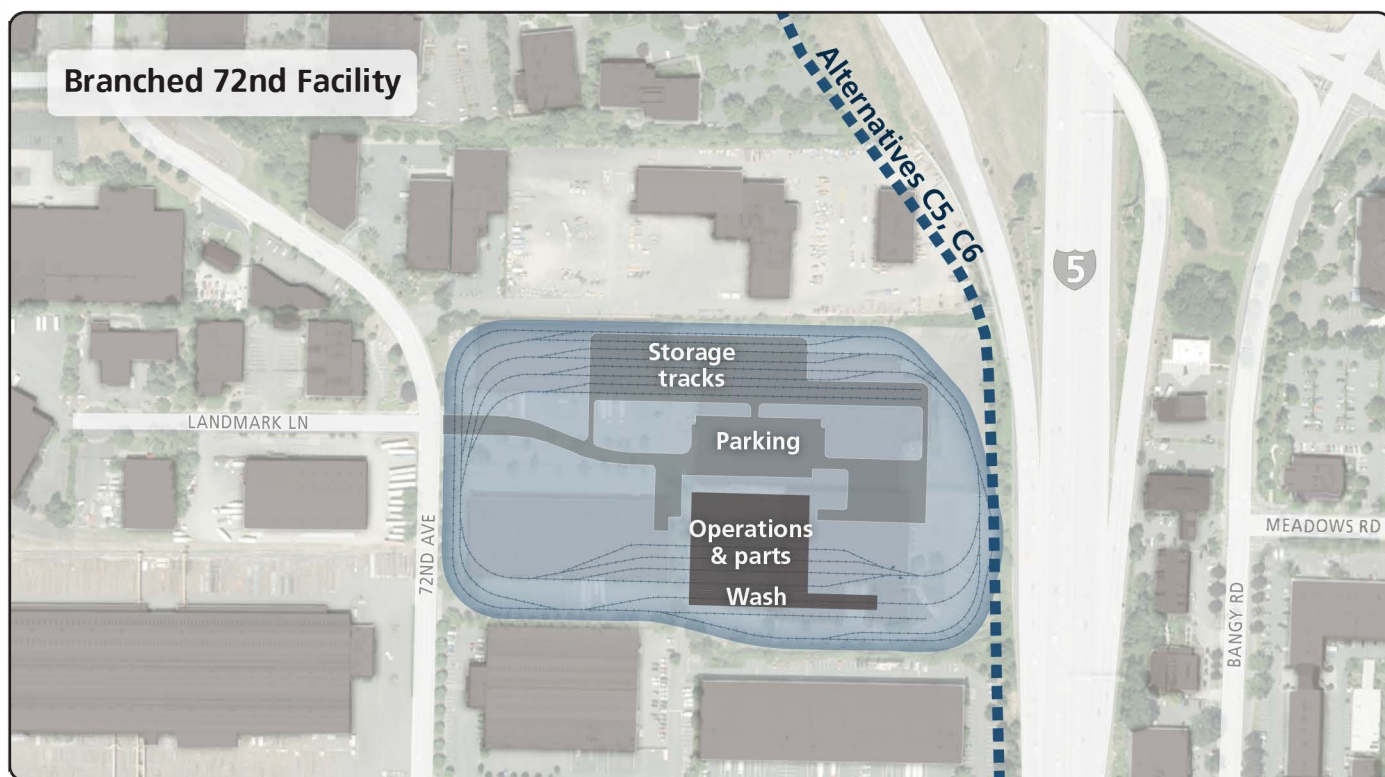
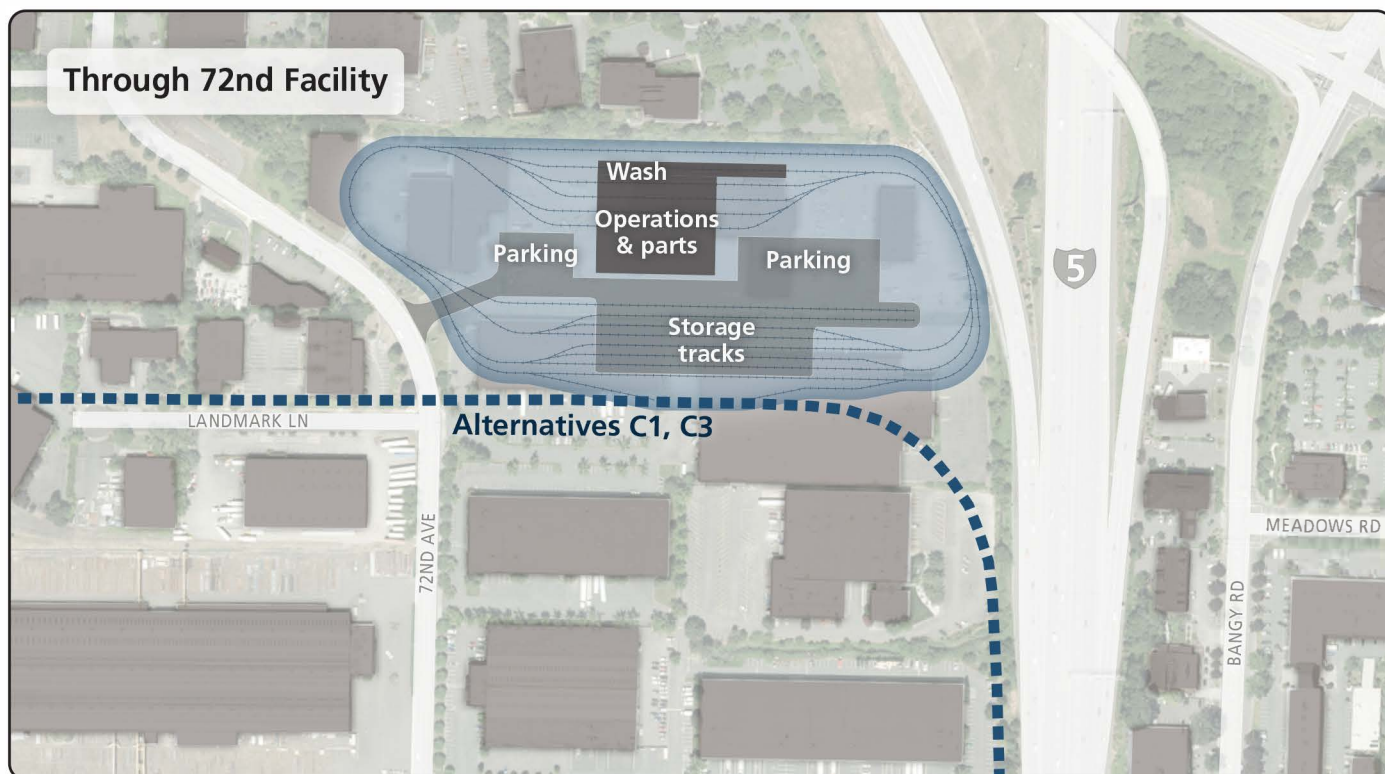


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Figure A-29

Operations and Maintenance Facility Options

72nd Location



500 feet

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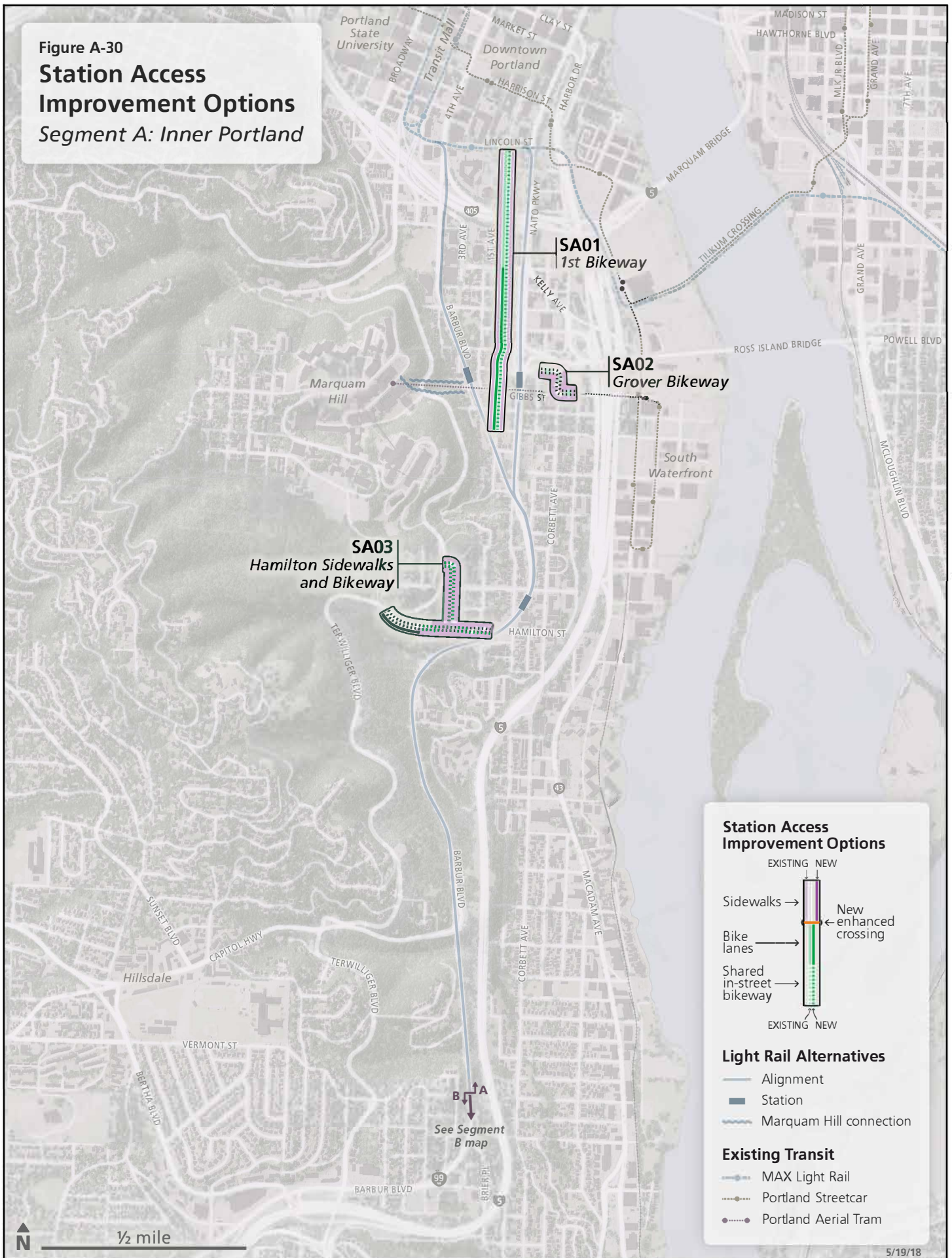
Station Access Improvement Options

Segment A: Inner Portland

The following station access improvement options are under consideration in Segment A (mapped in Figure A-30):

- **SA01: 1st Bikeway** would restripe SW 1st Avenue to provide a southbound bike lane (uphill) and a northbound shared street bikeway (downhill) from SW Lincoln Street to SW Barbur Boulevard.
- **SA02: Grover Bikeway** would create a two-way shared street bikeway on SW Grover Street, SW Corbett Avenue and SW Gibbs Street to connect a light rail station at SW Naito Parkway and SW Grover Street to the Darlene Hooley pedestrian and bicycle bridge over Interstate 5 (I-5).
- **SA03: Hamilton Sidewalks and Bikeway** would create a shared street bikeway connecting SW Barbur Boulevard to SW Terwilliger Parkway via both SW Hamilton Street and SW Hamilton Terrace. This access improvement option would also fill in a missing sidewalk on one side of SW Hamilton Street for approximately one block east of SW Terwilliger Boulevard.

Figure A-30
Station Access
Improvement Options
Segment A: Inner Portland



Segment B: Outer Portland

The following station access improvement options are under consideration in Segment B (mapped in Figure A-31):

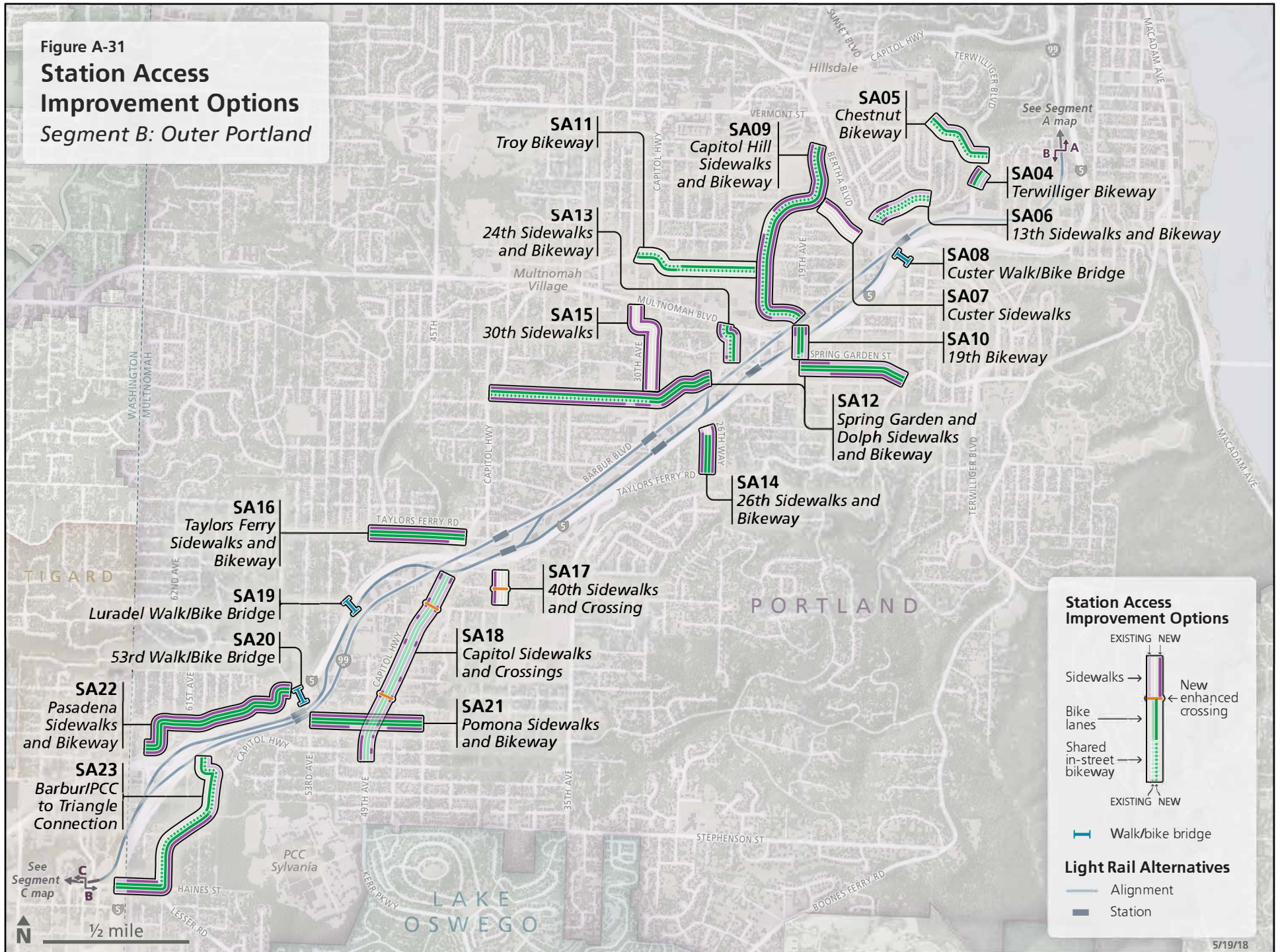
- **SA04: Terwilliger Bikeway** would complete a short gap in the southbound bike lane on SW Terwilliger Parkway north of SW 7th Avenue, including reconstruction of the adjacent sidewalk and a short section of retaining wall.
- **SA05: Chestnut Bikeway** would restripe SW Chestnut Street to create a westbound bike lane (uphill) and an eastbound shared street bikeway (downhill) between SW Vermont Street and SW Terwilliger Boulevard.
- **SA06: 13th Sidewalks and Bikeway** would fill sidewalk gaps along SW 13th Avenue near SW Bertha Boulevard, and add a shared street bikeway on SW 13th Avenue between SW Bertha Boulevard and SW 10th Avenue.
- **SA07: Custer Sidewalks** would construct sidewalks on the north side of SW Custer Drive between SW Capitol Hill Road and SW 13th Avenue.
- **SA08: Custer Walk/Bike Bridge** would construct a new crossing over I-5 for pedestrians and bicyclists near the proposed light rail station on SW Barbur Boulevard between SW Custer Street and SW 13th Avenue. The bridge would connect to SW 11th Avenue and SW Canby Street at the north end of Burlingame Park, and provide a street light in this location. The need to construct water quality facilities is anticipated.
- **SA09: Capitol Hill Sidewalks and Bikeway** would construct sidewalks and a bikeway on SW Capitol Hill Road between SW Barbur Boulevard and SW Bertha Boulevard. Current designs assume infill sidewalks between the Safeway grocery store and Custer Park, new sidewalks between Custer Park and SW Bertha Boulevard, uphill bike lanes and a downhill shared street bikeway. Retaining walls would be needed to address grades and provide the necessary width for these improvements. The need to construct water quality facilities is anticipated.
- **SA10: 19th Bikeway** would add a bikeway on SW 19th Avenue between SW Barbur Boulevard and SW Spring Garden Street. Current assumptions include a bike lane northbound along the full length of this access improvement option (part of which exists today) and a combination of a bike lane and shared street bikeway markings southbound. The southbound bike lane would merge into the shared street bikeway at the southern edge of the bridge over I-5 to fit into the narrower roadway width.
- **SA11: Troy Bikeway** would restripe SW Troy Street to provide an uphill bike lane and downhill shared street bikeway between SW Capitol Hill Road and SW Capitol Highway.
- **SA12: Spring Garden and Dolph Sidewalks and Bikeway** would construct sidewalks and bike lanes on SW Spring Garden Street between SW 19th Avenue and SW Taylors Ferry Road on the southeast side of I-5. On the northwest side of I-5, this project would construct sidewalks and a bikeway on SW Spring Garden Street between SW Barbur Boulevard and SW 26th Way, and on SW Dolph Court between SW 26th Way and SW Capitol Highway. Current assumptions include an

uphill bike lane and downhill shared street bikeway on SW Dolph Court between SW Capitol Highway and SW 30th Avenue. Retaining walls would be needed to address grades, maintain access to properties and provide the necessary width for these improvements. The need to construct water quality facilities is anticipated.

- **SA13: 24th Sidewalks and Bikeway** would construct infill sidewalks and a bikeway on SW 24th Avenue, SW Hume Court and SW 25th Avenue between SW Barbur Boulevard and SW Multnomah Boulevard, and include a signalized pedestrian crossing across SW Multnomah Boulevard at SW 25th Avenue. Current assumptions include northbound bike lanes and a southbound shared street bikeway.
- **SA14: 26th Sidewalks and Bikeway** would construct sidewalks and bike lanes on SW 26th Avenue between the I-5 underpass and SW Taylors Ferry Road, and would add lighting under the I-5 structure. Retaining walls would be needed to address grades, maintain access to properties and provide the necessary width for these improvements. The need to construct water quality facilities is anticipated.
- **SA15: 30th Sidewalks** would construct sidewalks on SW 30th Avenue, SW Hume Street and SW 31st Avenue between SW Dolph Court and SW Multnomah Boulevard. Construction of some water quality facilities is anticipated.
- **SA16: Taylors Ferry Sidewalks and Bikeway** would construct sidewalks and bike lanes on SW Taylors Ferry Road between SW Capitol Highway and SW 49th Avenue. Retaining walls would be needed to address grades, maintain access to properties, accommodate a culvert extension at Woods Creek and provide necessary width for these improvements. The need to construct water quality facilities is anticipated.
- **SA17: 40th Sidewalks and Crossing** would construct sidewalks on the west side of SW 40th Avenue between SW Wilbard Street and SW Alfred Street, and would include a rapid flashing beacon crosswalk at SW Huber Street.
- **SA18: Capitol Sidewalks and Crossings** would provide pedestrian improvements on SW Capitol Highway and SW 49th Avenue between SW Barbur Boulevard and SW Palatine Street, including new sidewalks, ramps, crosswalks, signals, bus shelters and medians.
- **SA19: Luradel Walk/Bike Bridge** would construct a new walking and biking crossing over I-5 between SW Alfred Street/SW 48th Drive and SW Barbur Boulevard/SW Luradel Street. Retaining walls would be required. The need to construct water quality facilities is anticipated.
- **SA20: 53rd Walk/Bike Bridge** would construct a new walking and biking crossing over I-5 between SW Comus Street/SW 55th Avenue and SW Barbur Boulevard/SW 53rd Avenue. Retaining walls would be required. The need to construct water quality facilities is anticipated.
- **SA21: Pomona Sidewalks and Bikeway** would construct sidewalks and bike lanes on SW Pomona Street between SW 53rd Avenue and SW 45th Avenue. Retaining walls would be required. The need to construct water quality facilities is anticipated.

- **SA22: Pasadena Sidewalks and Bikeway** would construct sidewalks and bike lanes connecting SW Barbur Boulevard/SW 64th Avenue with the pedestrian/bicycle bridge over I-5 near SW 53rd Avenue. Current assumptions include sidewalks on both sides of the street and bike lanes in both directions on SW Palatine Street, SW 63rd Avenue, SW Pomona Street, SW Pasadena Street, and SW Pasadena Drive to SW Comus Street, as well as street improvements on the dead-end segment of SW Comus Street between SW Pasadena Drive and I-5. Retaining walls would be required. The need to construct water quality facilities is anticipated.
- **SA23: Barbur/PCC to Triangle Connection** would create a bicycle and pedestrian route via SW 60th Avenue, SW Capitol Highway, SW Lesser Road, SW Haines Street and SW Atlanta Street. Current assumptions include: constructing sidewalks and bike lanes on SW Atlanta Street/ SW Haines Street between SW 68th Avenue and SW Lesser Road; constructing sidewalks on the east side of SW Lesser Road between SW Haines Street and G Street; and restriping portions of SW Lesser Road, SW Capitol Highway and SW 60th Avenue to provide bike lanes uphill (toward G Street) and shared street bikeway markings downhill (away from G Street).

Figure A-31
Station Access
Improvement Options
Segment B: Outer Portland

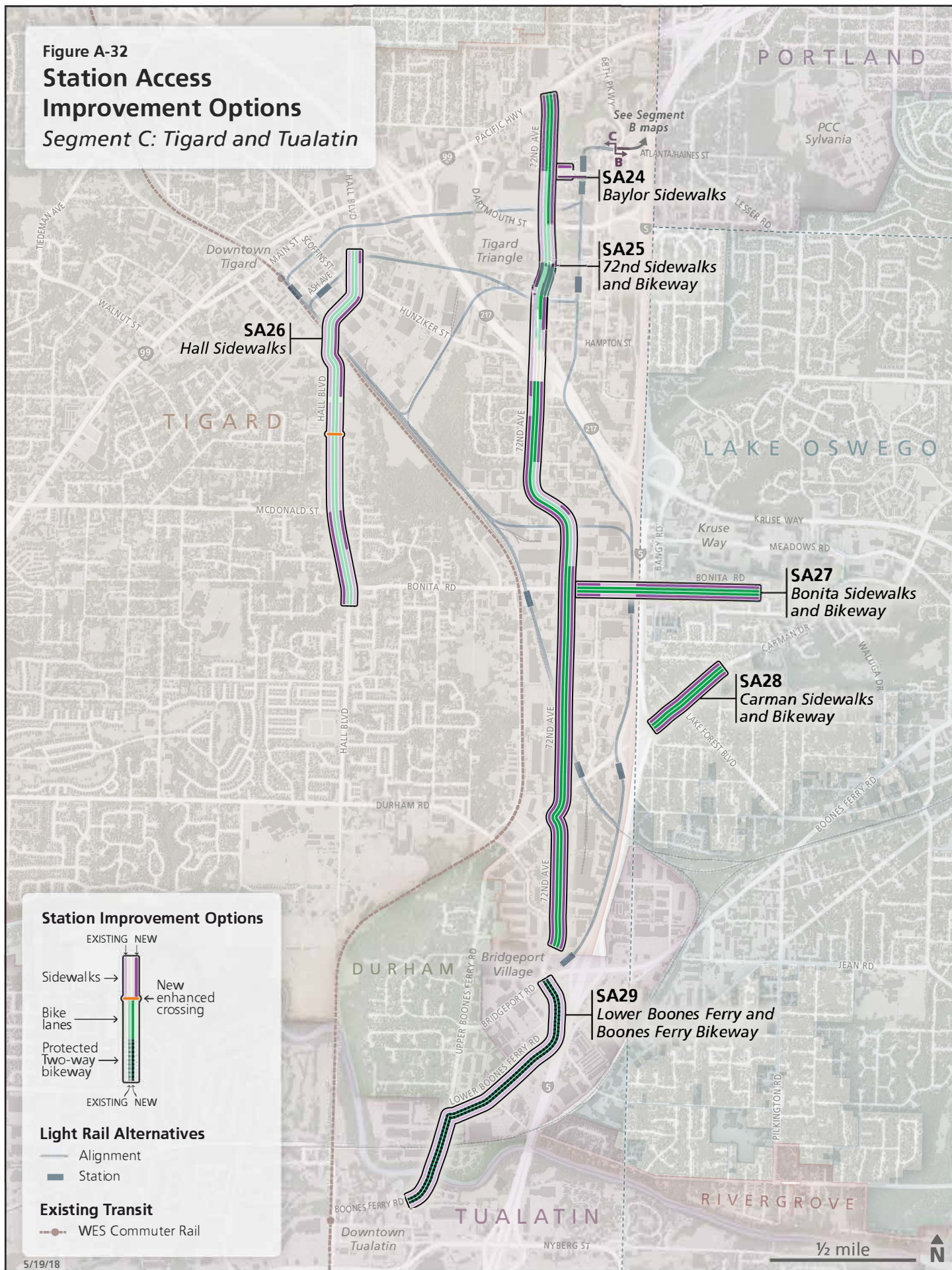


Segment C: Tigard and Tualatin

The following station access improvement options are under consideration in Segment C (mapped in Figure A-32):

- **SA24: Baylor Sidewalks** would construct infill sidewalks on SW Baylor Street between SW 70th Avenue and SW 72nd Avenue.
- **SA25: 72nd Sidewalks and Bikeway** would construct infill sidewalks and bike lanes on SW 72nd Avenue between Pacific Highway (99W) and SW Lower Boones Ferry Road. Retaining walls would be required in some locations. The need to construct water quality facilities is anticipated. Signal upgrades may be required at the existing railroad crossing.
- **SA26: Hall Sidewalks** would construct missing sidewalks on SW Hall Boulevard between Pacific Highway and SW Durham Road. Retaining walls would be required to address grades and maintain existing access to properties.
- **SA27: Bonita Sidewalks and Bikeway** would restripe SW Bonita Road to provide bike lanes between SW 72nd Avenue and I-5, and would construct sidewalks and bike lanes on SW Bonita Road between I-5 and SW Windfield Way. East of I-5, retaining walls would be required to address grades of adjacent properties.
- **SA28: Carman Sidewalks and Bikeway** would construct sidewalks and bike lanes on SW Carman Drive between I-5 and SW Parker Road.
- **SA29: Lower Boones Ferry and Boones Ferry Bikeway** would construct a protected two-way bikeway along the southern/eastern side of SW Lower Boones Ferry Road, and SW Boones Ferry Road between the Bridgeport Station and downtown Tualatin.

Figure A-32
Station Access
Improvement Options
Segment C: Tigard and Tualatin



Construction Activities

This section discusses general activities that would be associated with construction of the light rail alternatives. This description of construction activities is based on conceptual design and typical assumptions about construction approaches. Construction practices and approaches will continue to be refined during the preliminary and final design stages.

The major construction activities would include:

- delivery of materials and equipment
- demolition (buildings, pavement and other obstructions)
- utility relocations (public and private utilities)
- regrading, including fill and/or excavation
- elevated structure construction, including pile driving or drilling
- elevated station construction
- retaining wall construction
- roadway construction, including at-grade railroad crossings
- trackway construction
- at-grade station construction
- construction of surface and/or structured parking
- construction of systems, signal, communication and operator break buildings
- O&M facility construction
- stormwater treatments and landscaping
- construction activity in or near a water body or sensitive area.

Construction Sequence and Activities

Linear projects such as the Southwest Corridor Light Rail Project are typically divided into various segments or line sections for construction. The construction sequence would vary depending upon existing conditions, the characteristics of the light rail facilities, temporary traffic control requirements and the sensitivity of the locations within the segments (in-street versus off-street construction, for example).

Project development would further define the design and requirements for the facilities to be constructed. This refinement informs the selection of contracting methods and the development of work-specific construction planning. Work-specific construction plans would be developed during the final design effort to establish the limits for the various construction phases and construction contracts, the estimated schedule and duration of each, the appropriate sequencing and the minimum necessary level of restrictions to be placed on construction work to address the mitigation of impacts. Final refinement of construction plans would continue into the construction procurement selection and negotiations, and early contractor-provided plans would finalize the requirements to ensure that there would be appropriate mitigation of construction impacts. Where possible, construction activities would

be coordinated with other capital improvement projects, including projects carried out by the local jurisdictions, to help minimize construction impacts. In addition, TriMet will actively engage with local jurisdictions as the project nears construction to develop a Conduct of Construction plan that would guide coordination throughout construction.

Construction Timing and Duration

Following a Record of Decision, final design and funding agreements, construction is projected to begin as early as 2021. The duration of construction for the overall project would span approximately three years. The specific activities and actual duration would depend on the design of each segment. Typically, construction in any segment includes multiple phases, including demolition, utility relocation, major structures, civil and track construction, systems installation and station amenities.

Although construction activity would occur over the length of the project during this time, the impact would not be continuous along the corridor for the full duration. An integrated project schedule would be used to manage the implementation of multiple construction contracts.

Construction Staging Areas

Contractor mobilization is part of the initial construction work and typically requires the development of staging areas. Staging areas are needed before any construction work begins, but the need and the proximity of the staging areas to the construction site vary depending on the features being constructed, availability of space, presence of sensitive areas, schedule restrictions and the contractor's desires. Bridges and aerial structures are most practically staged adjacent to or very near the construction site. Other types of staging and materials storage are more flexible in location. Specific staging area locations will be identified when the project is in final design. To minimize impacts to properties, parcels that would be needed for the project footprint could be used for staging areas before the construction of project elements on those parcels.

Project staging areas are typically used to accomplish or accommodate one or more of the following:

- stockpiling, loading and hauling of excavations and demolished materials
- receipt and stockpiling of materials and equipment
- assembly and, in limited cases, fabrication of project elements
- laydown of major prefabricated elements before their erection or assembly
- construction field administration offices
- construction worker parking