

## Opportunities and Challenges



FIGURE 30: Rhine Street station area—Opportunities and Challenges

### RHINE STREET STATION AREA

#### Neighborhood Context:

This station area is characterized by the Brooklyn neighborhood's residential and commercial properties to the west of the alignment and regionally significant industrial lands to the east, with properties immediately adjacent to the light rail trackway dedicated to commercial and industrial uses. The surrounding employment base includes Fred Meyer, Portland General Electric, Union Pacific Railroad's Brooklyn Yard and TriMet.

#### Opportunities

- 1 Reinforce connection between Brooklyn neighborhood, Powell Park and Fred Meyer corporate headquarters
- 2 Reconstruct and realign the pedestrian/bike bridge that crosses the Union Pacific's Brooklyn Yard
- 3 Improve pedestrian and bicycle crossings over and under SE Powell Blvd
- 4 Add new bike lanes and green features on SE 17th Avenue
- 5 Pursue the few redevelopment opportunities along SE Powell Blvd

#### Challenges

- 6 Lack of east-west connections over the railroad tracks and through the industrial area
- 7 View of the pedestrian bridge from the station platform is partially obscured by adjacent development parcels
- 8 Heavy freight and bus traffic on SE 17th Avenue
- 9 Few transit-oriented development and redevelopment opportunities in area
- 10 Relatively long walking distance to neighborhood destinations

## Current Design Direction

This section of the alignment crosses SE Powell Boulevard on a new structure and then continues south in the center of a rebuilt SE 17th Avenue. The station platform is in a center island configuration between SE Haig Street and SE Rhine Street (Fig. 31).

***Powell Boulevard overcrossing:*** The reconstructed 17th Avenue crossing of Powell Boulevard will include a wide multi-use path that directly connects the Brooklyn neighborhood to the north side of Powell. This path will also provide a direct connection from the Rhine Street station to the Clinton Street station via Gideon Street (Fig. 26).

TriMet has conducted traffic and truck access studies to ensure that industrial use remains functional after light rail is introduced to SE 17th Avenue. The project improvements are designed to accommodate over-height freight routes and truck turning movements based on current industrial and fire response vehicle sizes.

Bicycle and pedestrian improvements are planned for the station area. The pedestrian/bike bridge that crosses the UPRR's Brooklyn Yard between SE Lafayette and SE Rhine Streets will be reconstructed and realigned to better connect to the station platform. It will provide station access to the Creston-Kenilworth neighborhood and the Fred Meyer corporate headquarters. The bridge presents numerous opportunities for art enhancements. On SE 17th Avenue sidewalks will be rebuilt to 12 feet in width to meet City of Portland standards and new bike lanes will be added.

## Other Design Options

***Design of Powell Boulevard overcrossing:*** The Powell Boulevard crossing proposed herein is a vast improvement over earlier plans. The Locally Preferred Alternative called for modest widening of the Powell Boulevard crossing to accommodate light rail. This provided for a single light rail track (which would impact MAX travel time), impacted bike and pedestrian crossings and did not meet a variety of ODOT standards, including lane widths for autos/trucks. After extensive consultation and evaluation with project partners and key stakeholders, a new design evolved that provided three key improvements: (1) added a 12-foot crossing that allows cyclists and pedestrians to cross over Powell Boulevard within a well lit and designed crossing, (2) added a second track that would provide for better light rail service through this corridor, and (3) provided better sightlines for westbound pedestrians and cyclists using the Powell Boulevard undercrossing.

***Station configuration and consolidation:*** Both the Rhine Street and Holgate Boulevard stations were originally configured with split platforms located on either side of the intersection (e.g., a northbound platform on the north side of Rhine Street and a southbound platform on the south side), which created significant right-of-way impacts and conflicts with truck turns. To mitigate these impacts, the project team then proposed consolidating the Rhine Street and Holgate Boulevard stations to one station north of SE Holgate, but both the community and the City of Portland expressed strong concerns with this option. By changing from split platforms to island configurations at both stations, TriMet was able to optimize the design to mitigate the right-of-way and truck impacts and create better station environments.



### Outstanding Issues

- Use of the remainder of parcels obtained through right-of-way acquisitions (on west side of the alignment)—possible redevelopment or reuse opportunities
- Appropriate track treatment that balances noise and vibration, addresses water quality and is responsive to the character of the area
- Design of pedestrian bridge and detail of the Powell Boulevard overpass will be the subject of design workshops during Final Design

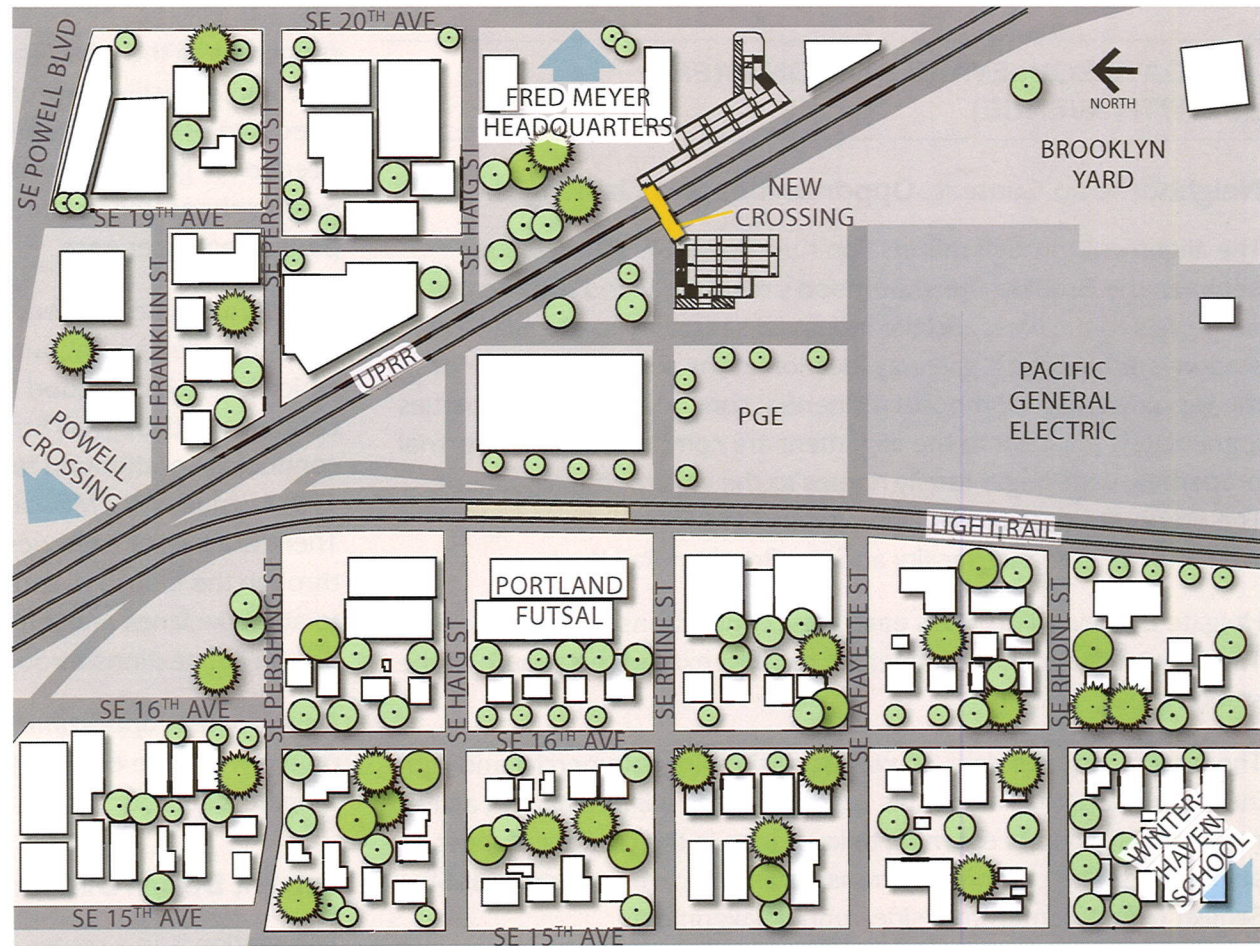


FIGURE 31: Rhine Street station area plan

## STATION AREA DESIGN CONCEPTS: NEIGHBORHOODS/EMPLOYMENT SEGMENT

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### HOLGATE BOULEVARD STATION AREA (SE 17TH AVENUE)

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#### Neighborhood Context, Opportunities and Challenges

The alignment through this section runs down SE 17th Avenue between the Brooklyn neighborhood's residential and commercial properties to the west and the industrial sanctuary to the east. This station is situated at a gateway location at the southeast corner of the Brooklyn neighborhood's residential core. Most of the properties immediately adjacent to the alignment are commercial and industrial properties, with single-family homes to the west of the alignment. The properties east of the alignment include TriMet's bus staging area and maintenance facility and the Brooklyn Rail Yard.

Holgate Boulevard provides east/west connections through this area. The Milwaukie Avenue commercial corridor extends just south of the station area (Fig. 32).

The project requires right-of-way acquisition of commercial and light industrial properties along this segment of the alignment, and active relocation support is essential to keep jobs in the corridor. It must also address the challenge of transitioning the light rail tracks at SE Schiller from a center- to a side-running alignment.

The project must be designed to accommodate heavy truck traffic in the area, and ensure light rail fits into the neighborhood character and retains an effective buffer for the single-family residential

properties to the west. The project is also challenged to create a safe and attractive environment for pedestrians and bus transfers; adequate pedestrian facilities on SE Holgate and SE 17th are needed for good station access. There are opportunities to make green enhancements on SE 17th Avenue that can help improve the pedestrian experience.

The city's bicycle network is currently fragmented in this area. The recommended southbound bike route runs down SE 16th Avenue, which is a neighborhood street with many stop signs, from SE Lafayette until SE Mall Street (one block north of Holgate). Cyclists continuing southbound face difficult connections down either SE 17th Avenue or SE Milwaukie Avenue all the way to SE Reedway. There is a lack of east-west connections over the railroad tracks and through the industrial sanctuary. This project offers opportunities to add bike lanes and make other improvements to strengthen the bicycle connections through this area.

**Development opportunities:** There are redevelopment opportunities on the west side of SE 17th Avenue at Holgate and south of SE Holgate Boulevard.

#### Current Design Direction

This station is in a center island configuration on SE 17th Avenue, north of the intersection with SE Holgate Boulevard (Figs. 33 and 34).



## Opportunities and Challenges



FIGURE 32: Holgate Boulevard station area—Opportunities and Challenges

### HOLGATE BOULEVARD STATION AREA

#### Neighborhood Context:

This station area lies between the Brooklyn neighborhood's residential and commercial properties to the west and the industrial sanctuary to the east, with Holgate Boulevard providing east/west connections through the area and the Milwaukie Avenue commercial corridor extending just to the south.

#### Opportunities

- 1 Connect to the Milwaukie Avenue commercial corridor
- 2 Locate station at a visible and accessible street (SE Holgate Boulevard) that provides good east/west connections
- 3 Optimize bus facility to improve transit-oriented development compatibility
- 4 Create transit-oriented development on project-owned, underutilized sites
- 5 Convert remnant 40-50' deep parcels to community use (e.g. community gardens)
- 6 Add new bike lanes and green features on SE 17th Avenue

#### Challenges

- 7 Narrow sidewalks on Holgate
- 8 High traffic volumes and speeds
- 9 Truck circulation and access must be accommodated
- 10 Proximity of residential neighborhoods; potential impacts to be mitigated
- 11 At SE Schiller Street, the transition of light rail tracks from center- to side-running
- 12 Heavy bus and freight traffic at Schiller



## URBAN DESIGN VISION

*The Holgate Boulevard station is a gateway to the Brooklyn neighborhood. It is a place that reflects the historic character of the neighborhood and supports existing industrial businesses while encouraging new neighborhood-oriented uses. It is accessible to pedestrians, cyclists and bus riders. The station has stimulated significant transit-oriented development in the area and has good connections to Milwaukie Avenue via a comfortable pedestrian environment. It is linked to new commercial development on McLoughlin Boulevard and along Holgate. Bicyclists are able to either use the new bike lanes on SE 17th Avenue or transfer to the light rail. Employees of the surrounding businesses use the light rail to access jobs, thereby diminishing parking impacts on the nearby residential neighborhoods.*

TriMet has conducted traffic and truck access studies to ensure that industrial use remains functional after light rail is introduced to SE 17th Avenue. The project improvements are designed to accommodate over-height freight routes and freight truck turning movements. A dedicated left turn lane will be added on eastbound Holgate Boulevard for access to northbound 17th Avenue.

New bike lanes will be added to SE 17th Avenue to create a safe north-south connection through this area. Green enhancements, such as storm water treatments, street trees, planters and pervious trackway (tie and ballast) will also be created along SE 17th Avenue, which is also a possible site for artwork. These improvements reinforce SE 17th as an enhanced transportation corridor that complements Milwaukie Avenue as the commercial “Main Street”.

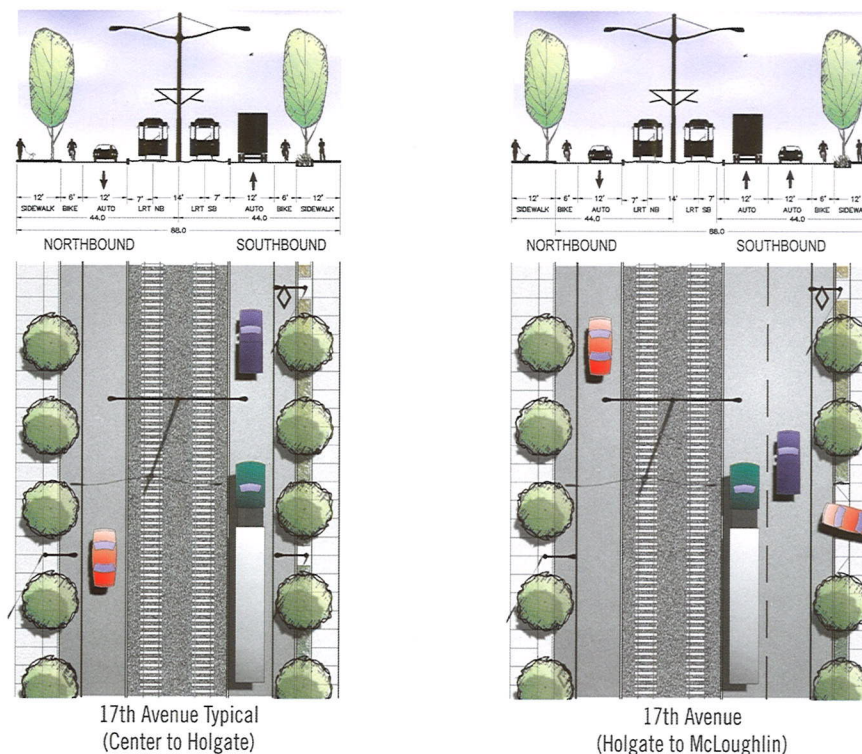


FIGURE 33: Cross sections and aerial illustrations, SE 17th Avenue

The streetscape design along 17th incorporates required truck and bus movements. The coordination of the design adjacent to TriMet's Center Street bus facility includes a driveway relocation and a signal aligned with SE Boise Street to facilitate bus turns to both northbound and southbound 17th Avenue.

Just south of this station area the light rail alignment transitions from the center of SE 17th Avenue to the east side of McLoughlin



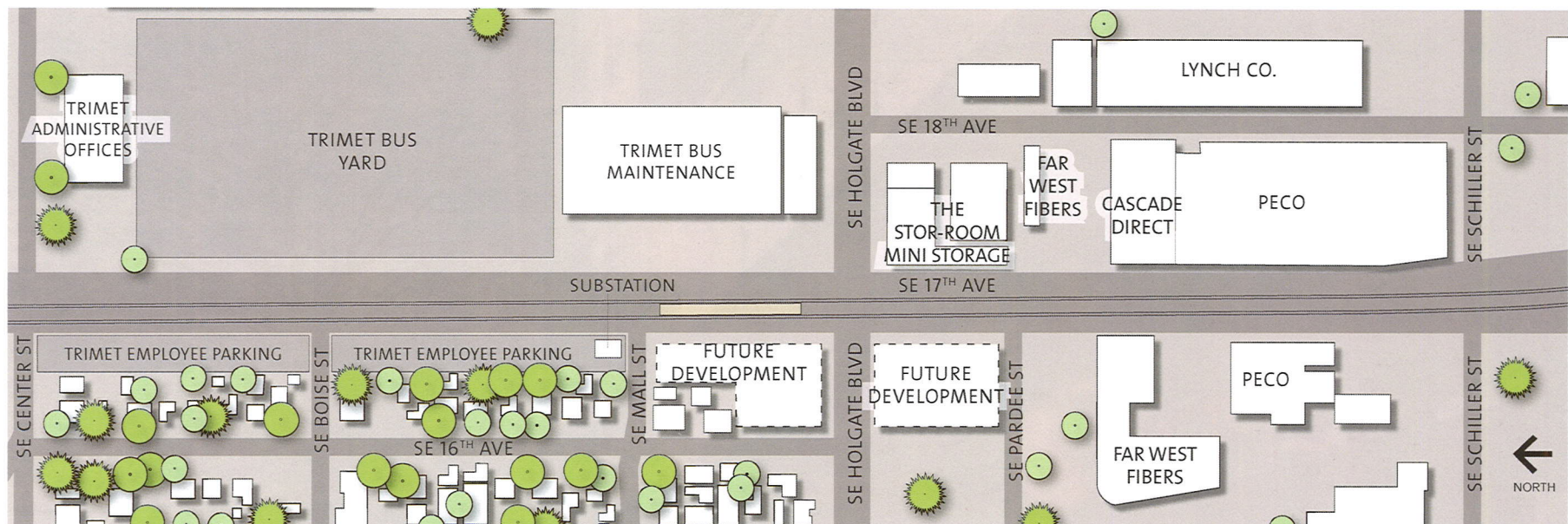


FIGURE 34: Holgate station area plan

Boulevard. The alignment will impact access to McLoughlin Boulevard from UPRR's Brooklyn Yard—a truck egress point will be improved at SE Harold Street to provide freight traffic with direct access to McLoughlin Boulevard. The UPRR requires that the light rail line be elevated over this truck egress point.

### Outstanding Issues

- Use of the remainder of parcels obtained through right-of-way acquisitions (on west side of the alignment)—possible redevelopment or reuse opportunities.
- TriMet to address employee parking needs and potentially identify off-site parking opportunities
- Impact on bus facilities
- Sidewalk widths
- Auto lane widths on Holgate Boulevard at SE 17th Avenue





MILES HOCHSTEIN



## CORRIDOR CONCEPTS: NEIGHBORHOODS/RECREATION SEGMENT

This segment extends from SE Steele Street to Highway 224 and includes the Bybee Boulevard and Tacoma Street stations as well as the Tillamook Branch alignment (Fig. 35). The segment is largely characterized by the open green space of the Eastmoreland Golf Course, Westmoreland Park and Reed College campus, the majestic trees that line a significant portion of McLoughlin Boulevard and the Springwater Corridor. There are wetlands and floodplains that will be impacted by the project and will require mitigation.

There is some development potential around the Tacoma Street station, but overall there are few development opportunities in this segment. The residential neighborhoods in this segment are lower-density and in most cases are separated from the stations by either industrial lands or expansive recreation spaces.

**Note:** An overview of the future Harold Street station can be found on page 88.

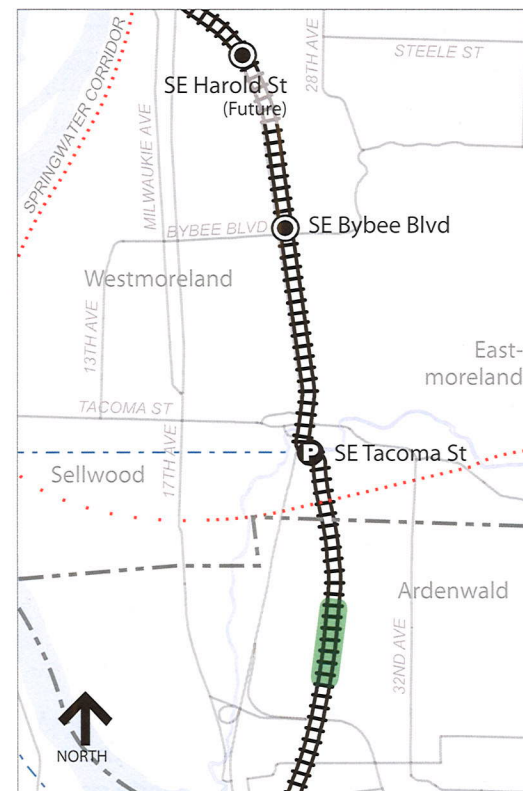


FIGURE 35: *Neighborhoods/Recreation Segment map*

## STATION AREA DESIGN CONCEPTS: NEIGHBORHOODS/RECREATION SEGMENT

### BYBEE BOULEVARD STATION AREA

#### Neighborhood Context, Opportunities and Challenges

The Bybee Boulevard station area is largely characterized by the verdant landscape created by the Westmoreland Park, Eastmoreland Golf Course, Crystal Springs Rhododendron Garden and the mature trees that line McLoughlin Boulevard through this segment.

Reed College, which enrolls approximately 1,500 students and employs more than 400 faculty and staff each year, is in the heart of the Eastmoreland and Reed neighborhoods and approximately a half-mile northeast of the station. The Willamette River, Oaks Bottom Wildlife Refuge and the Springwater Corridor are just more than half a mile due west of the station.

McLoughlin Boulevard is a heavy arterial that runs parallel to the UPRR trackway and creates a hard edge to the neighborhoods that limits connectivity. However, Bybee Boulevard provides an important east-west link between the neighborhoods, institutions and surrounding recreational amenities. Existing bike lanes on Bybee Boulevard, SE 28th Avenue and SE Woodstock Avenue provide good bike connections between the station and the Eastmoreland and Reed neighborhoods. Furthermore, this station provides good light rail-bus transfer opportunities (Fig. 36).

Design considerations that enhance the safety of transit patrons at this station are essential given that the platform is below the Bybee Boulevard overpass and in the UPRR right-of-way. Station

### URBAN DESIGN VISION

*The Bybee Boulevard station is integrated into and serves the surrounding neighborhoods. It provides access to Westmoreland Park and is surrounded by greenery and parkland, providing an easy escape from the urban landscape. The station is visible from both Bybee and McLoughlin boulevards, and station amenities provided on both the overpass and the station platform enhance safety and provide convenience. Exemplary bicycle parking facilities encourage transfers between modes, and quality lighting of the elevators and upper platforms provides a nighttime character and a visible presence in the neighborhood. The alignment has preserved the majestic rows of trees that line McLoughlin Boulevard.*

visibility, the provision of amenities like bike storage and lighting, and connections to the bridge above are all critical to making the station a success.

#### Current Design Direction

The light rail alignment through this area runs between McLoughlin Boulevard and the active freight rail line (UPRR) (Fig. 40). The station platform will be in a center island configuration immediately north of the Bybee Boulevard overpass, which will have stair and elevator access down to the station (Figs. 37, 38 and 39).

The station design will provide strong lighting and open sightlines, and clearly delineate areas where passengers need valid fares to enhance the safety of the station. At the platform level there are clear



## Opportunities and Challenges

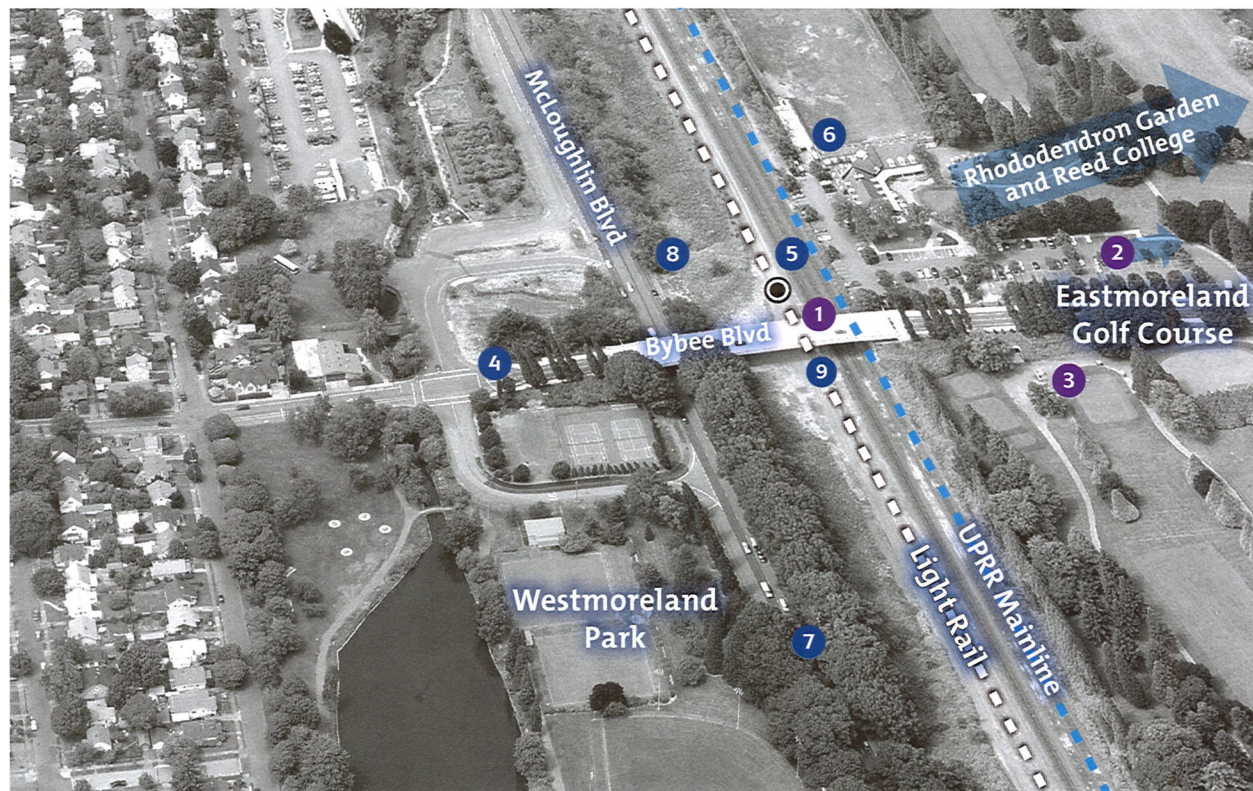


FIGURE 36: Bybee station area—Opportunities and Challenges

### BYBEE BOULEVARD STATION AREA

#### Neighborhood Context:

The Bybee Boulevard station area is largely characterized by the verdant landscape created by Westmoreland Park, Eastmoreland Golf Course, Crystal Springs Rhododendron Garden and the rows of mature trees that align McLoughlin Boulevard, with Reed College approximately a half-mile northeast of the station in the heart of the Eastmoreland and neighborhoods.

#### Opportunities

- 1 Provide convenient westbound bus transfers
- 2 Connect station to Reed College campus/ Eastmoreland neighborhood using existing bicycle network and accommodate bike transfers at station
- 3 Provide access to Westmoreland Park/golf course

#### Challenges

- 4 Accommodate distance between station and eastbound bus transfers
- 5 Provide safe and secure station despite relatively isolated location
- 6 Mitigate floodplain and wetland impacts and coordinate with the City of Portland and other regulatory agencies
- 7 Must preserve mature trees along McLoughlin Blvd
- 8 Station area has little transit-oriented development potential
- 9 Provide enough bike parking facilities to meet demand



sightlines underneath Bybee Boulevard to the south side elevator and stairway. Operator line of sight has also been incorporated into the layout. And train arrival information will be available on a TransitTracker at the Bybee Boulevard overpass so that patrons have the option of waiting for trains where they will be more visible to pedestrians and drivers.

The project includes a bridge span over Crystal Springs Creek to accommodate restoration efforts in the watershed. Floodplain mitigation for the project's fill within the 100-year floodplain of Crystal Springs Creek will establish an equal amount of floodplain capacity south of the bridge at SE Bybee. Impacts to wetlands near Crystal Springs Creek will be mitigated through partial funding of the City of Portland's Westmoreland Park Restoration Project.

A gated enclosure for long-term bicycle parking along with stair and elevator access to the platform will support connections by bicycle. Bus planning efforts are currently underway to provide convenient transfers to bus lines serving this station.

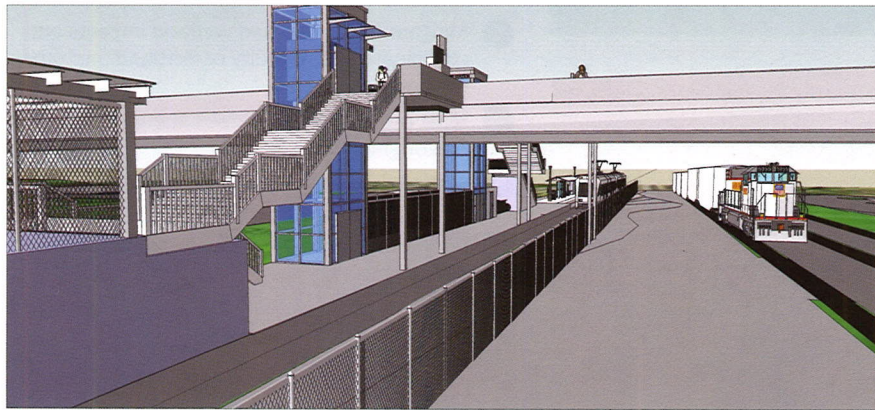


FIGURE 37: Bybee Boulevard station illustration view from the south

A substation will be located within the Oregon Department of Transportation property on the west side of McLoughlin Boulevard.

The elevator glass presents an opportunity for a decorative etched or fritted design, and an illuminated wayfinding sculpture is planned for the bus loading area on the bridge deck. Artwork in this location may reflect habitat restoration efforts along Crystal Springs Creek.

The light rail project's floodplain and wetland mitigation efforts will coordinate with the Westmoreland Park Restoration Project

### Outstanding Issues

- Final bus stop locations and configurations, including possible bus pullouts or in-street stop at station landing
- Potential auto pullout to support transit drop-off and pick-up
- Maintenance access location
- Strategies to maximize station visibility and rider safety
- Location of bike storage facilities

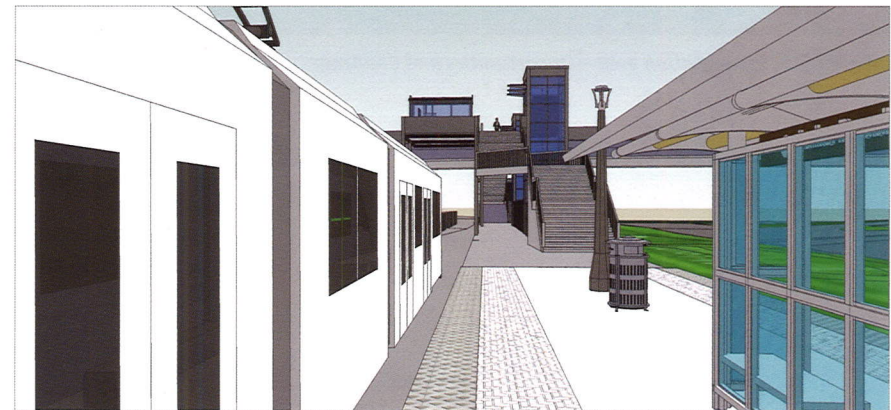


FIGURE 38: Bybee Boulevard station illustration view from the north



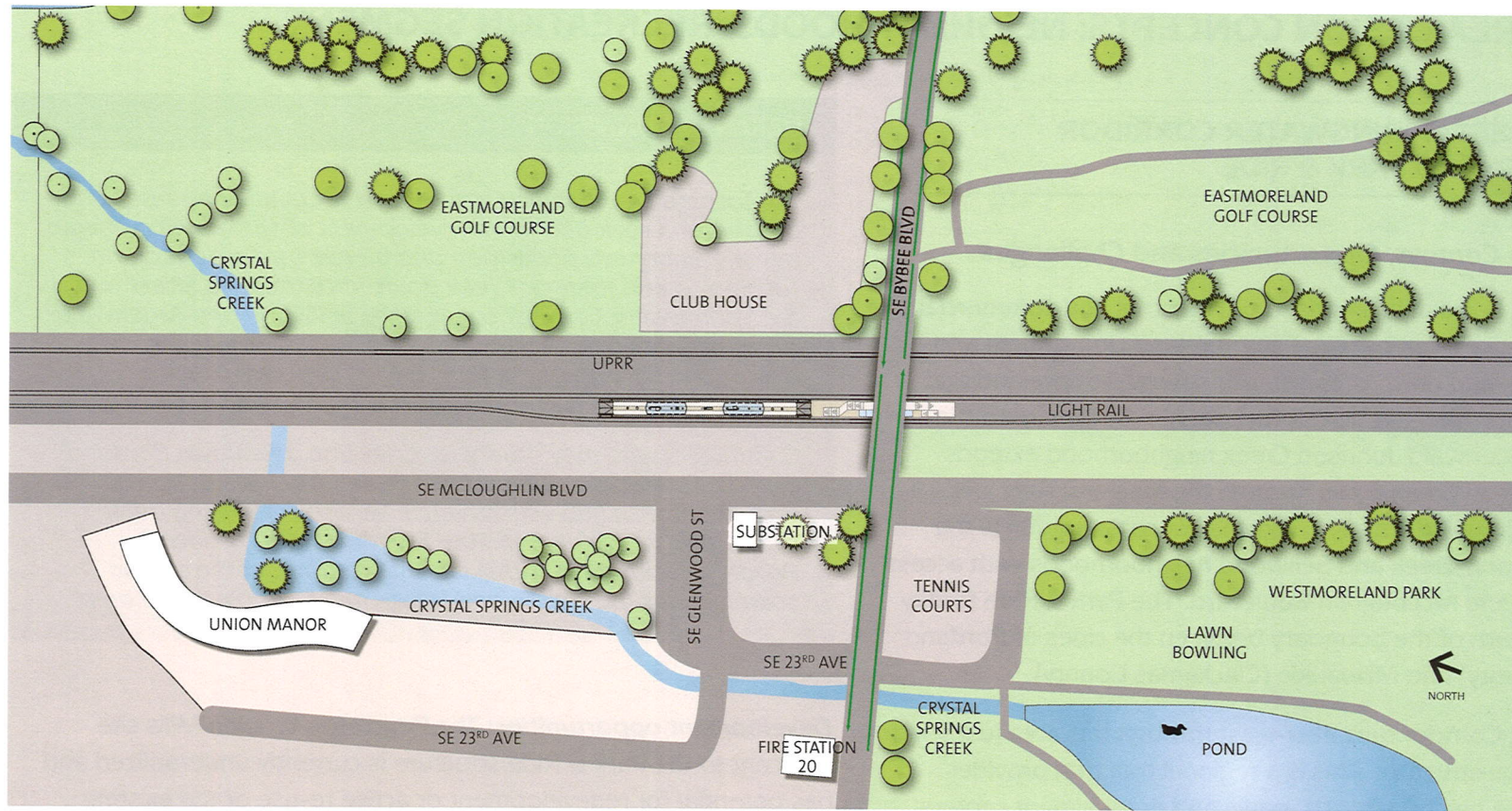


FIGURE 39: Bybee Boulevard station area plan

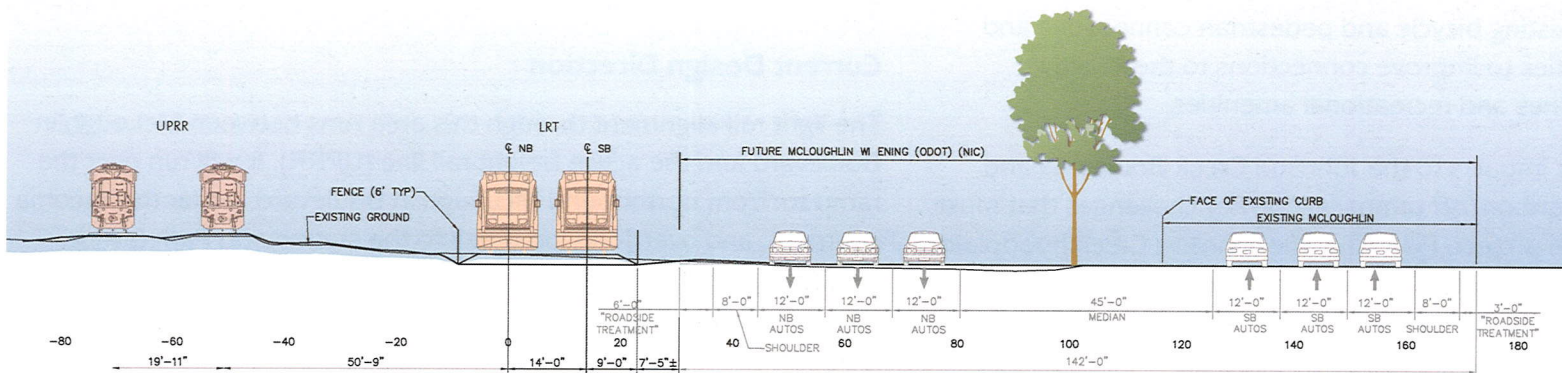


FIGURE 40: Cross section of light rail alignment and future proposed widening of SE McLoughlin Boulevard



## STATION AREA DESIGN CONCEPTS: NEIGHBORHOODS/RECREATION SEGMENT

### TACOMA STREET/SPRINGWATER CORRIDOR STATION AREA AND PARK & RIDE

#### Neighborhood Context, Opportunities and Challenges

This station area is mostly comprised of industrial and commercial uses, with residences nearby. The Eastmoreland Golf Course and neighborhood extend north of the station, the Westmoreland and Sellwood neighborhoods sit across McLoughlin Boulevard to the west, and the Ardenwald-Johnson Creek neighborhood extends to the east. Johnson Creek flows through the area and runs just north of the station platform. The Tacoma overpass connects the Ardenwald-Johnson Creek and Sellwood neighborhoods with access over the railway and McLoughlin Boulevard. The Park & Ride facility is located just north of the boundary between the cities of Portland (Multnomah County) and Milwaukie (Clackamas County).

The Springwater Corridor runs east-west through this area just south of the Park & Ride structure. This is a regional trail that provides access to multiple neighborhoods, parks and employment centers within an easy 3-mile ride from the station in both directions. This project leverages existing bicycle and pedestrian connections and presents opportunities to improve connections to these active transportation facilities and recreational amenities.

Mitigation for traffic impacts to the Johnson Creek Boulevard and McLoughlin Boulevard on/off ramps will be key challenges that must be addressed by the project. Fill within the Johnson Creek floodplain will be mitigated for through removal of an equal volume within the floodplain (Fig. 41).

#### URBAN DESIGN VISION

*The Tacoma Street station is a catalyst for continuing restoration of Johnson Creek and for redevelopment of surrounding private parcels. Enhanced pedestrian and bicycle connections along Tacoma Street, Johnson Creek Boulevard, Umatilla Street and the Springwater Corridor connect the Sellwood and Ardenwald-Johnson Creek neighborhoods to the station. The high quality design and lighting of the Park & Ride structure provide a lantern-like effect and visual interest in the area.*

*Commuters who may otherwise drive into downtown Portland instead park at the station and ride light rail. The station is part of a transit hub with streetcar service connecting back to Southwest Portland and the SW Macadam corridor. Private development within walking distance of the station complements the station and brings more people to the area.*

**Development opportunities:** The Pendleton Woolen Mills site adjacent to the Park & Ride structure is currently underutilized and has potential for redevelopment or active re-use of the existing building.

#### Current Design Direction

The light rail alignment through this area runs between McLoughlin Boulevard and the active freight rail line (UPRR). It will run over the ramp to/from northbound McLoughlin Boulevard, under the Tacoma overpass, and over Johnson Creek to the station and Park & Ride facility (Fig. 42).



## Opportunities and Challenges



FIGURE 41: Tacoma station area—Opportunities and Challenges

### TACOMA STREET/SPRINGWATER CORRIDOR STATION AREA

#### Neighborhood Context:

This station area is mostly comprised of industrial/commercial uses, although Johnson Creek runs just north of the station platform, while the Eastmoreland Golf Course and residential neighborhood extend north of the station area, the Ardenwald-Johnson Creek residential neighborhood extends to the east and the Sellwood and Westmoreland neighborhoods lie to the west across McLoughlin Boulevard.

#### Opportunities

- 1 Connect to the Springwater Corridor trail
- 2 Stimulate investment and redevelopment of property west of McLoughlin Blvd
- 3 Link to future streetcar on Tacoma Blvd
- 4 Support the redevelopment of the adjacent Pendleton site
- 5 Design an architecturally distinct parking structure
- 6 Restore and celebrate Johnson Creek

#### Challenges

- 7 Isolated station location between Union Pacific Railroad and McLoughlin Blvd.
- 8 Mitigation of traffic impacts on Johnson Creek Boulevard and for McLoughlin Boulevard on/off ramps
- 9 Scale and aesthetics of a large parking structure
- 10 Site is partially located within the Johnson Creek floodplain



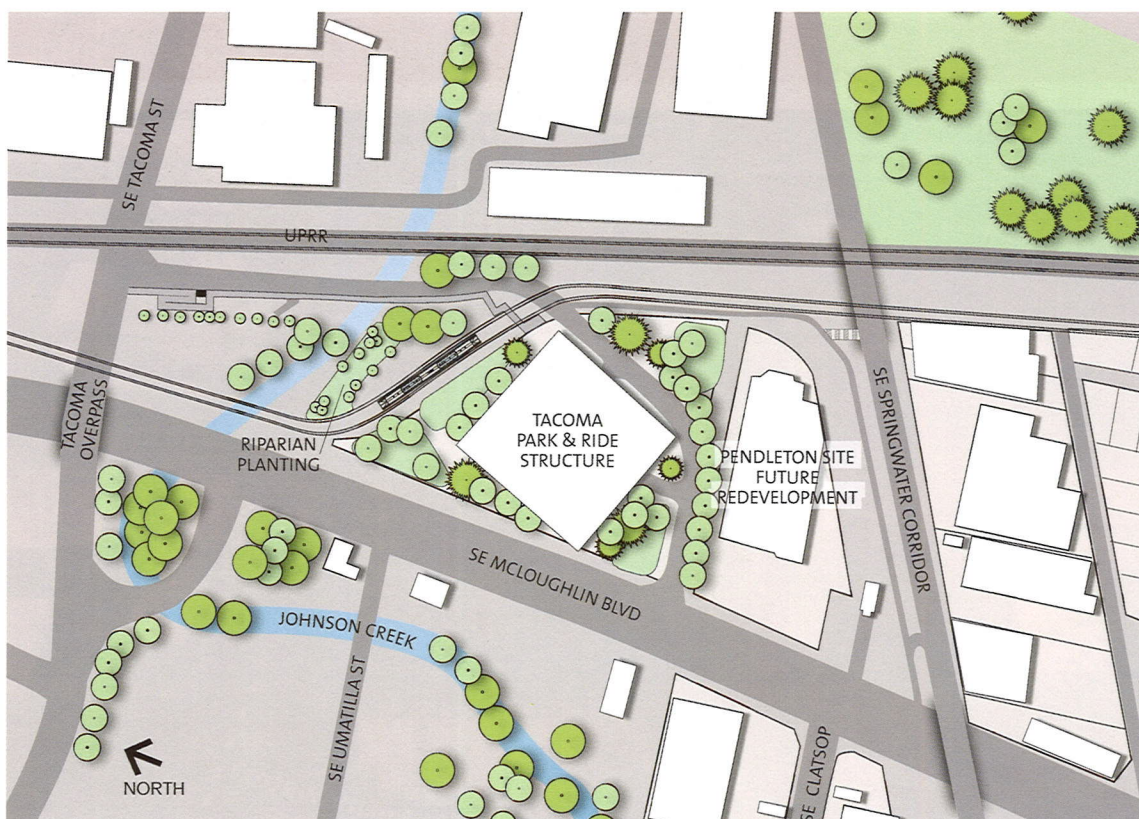


FIGURE 42: Tacoma Street station area plan

The design and feel of this station is about protecting and appreciating Johnson Creek (Fig. 43). Water quality impacts of the creek crossing will be assessed and minimized through storm water management design. The creek area will be enhanced with riparian vegetation that can be viewed from the station platform, which is angled parallel to the creek. This station presents an art opportunity to celebrate and strengthen the connection to the creek.

The Park & Ride is currently planned to accommodate 800 vehicles. In response to community feedback, the initial capacity of the garage has been reduced from the original 1,000 spaces for the opening

year. However, the facility will include structural improvements that would allow up to 200 additional spaces to be added in future years, if necessary. After the PMLR line opens, TriMet will monitor use of the facility, and consult community stakeholders if an expansion is needed. Should additional spaces be needed, all federal and local environmental, traffic and other regulations would be addressed.

The Park & Ride will be oriented to face the creek and maximize sight lines from the station platform to McLoughlin Boulevard and will include water quality features that meet the City of Portland's storm water management and Johnson Creek Basin Plan District



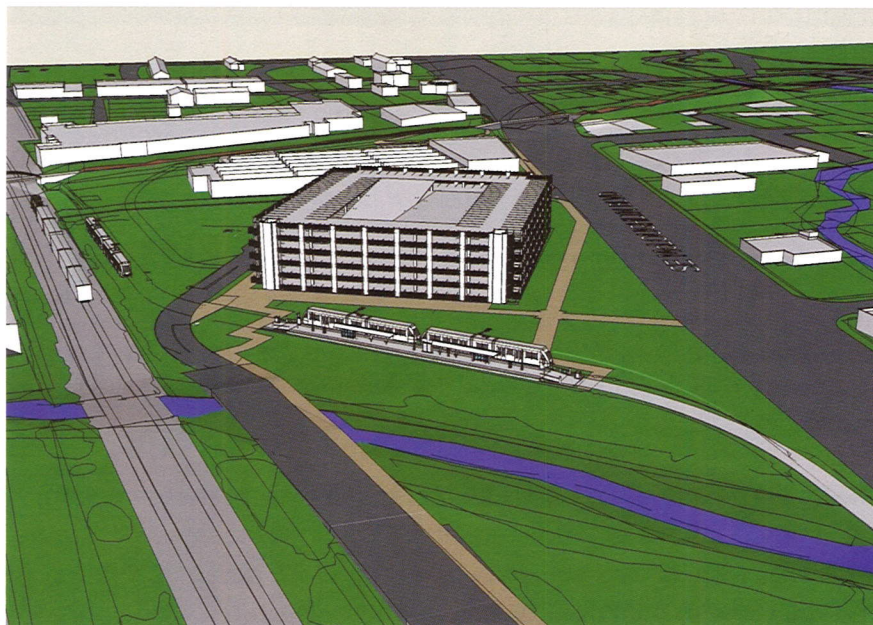


FIGURE 43: Illustration of the Tacoma Street station and Park & Ride garage, as viewed from the northeast

requirements. The light rail project is also being coordinated with the Johnson Creek Restoration Plan

The station is designed to encourage bicycle use. The project will include a new multi-use path connection to the Springwater Corridor, including a new stairway with a bike gutter to facilitate bicycle access. A sculptural storm water feature is planned to help activate the connection. TriMet is committed to placing more bicycle parking than required by code and is considering concepts that could add more than 100 bicycle parking spaces at the Park & Ride and Tacoma Street station.

A traffic analysis of the Tacoma/Johnson Creek Boulevard corridor between SE 17th and SE 45th avenues studied the impacts of the Park & Ride facility. The analysis indicates that based on the current

level of service, a traffic signal is already needed at SE 32nd Avenue; a new Park & Ride will heighten that need. Neighborhood groups have expressed a desire for traffic calming measures but not the traffic signal. Many standard traffic calming tools are difficult to implement here, in part because Johnson Creek Boulevard is an emergency response route. Traffic mitigation options are being evaluated through a public process that includes consultation with the Ardenwald-Johnson Creek Neighborhood Association, the Sellwood-Moreland Improvement League and the Oregon Department of Transportation. Results of the traffic study will be published in the Final Environmental Impact Statement.

During Preliminary Engineering, the project explored the potential to incorporate other uses in the Park & Ride facility, and redevelop the adjacent Pendleton Woolen Mills property. The analysis discouraged including retail space in the Park & Ride, but identified redevelopment potential for the Pendleton site. The Park & Ride is being designed and situated to support the redevelopment potential of the Pendleton property.

Currently the project design does not anticipate direct impact to the combined sewer overflow line that runs underneath the Tacoma site. TriMet and the City of Portland's Bureau of Environmental Services are coordinating the project scope.

### Outstanding Issues

- Final size, design and character of Park & Ride facility, particularly with respect to height, lighting, pedestrian access, personal safety, visibility, art and green building techniques and best practices
- Traffic mitigations to be completed by the project
- Discouragement of illegal pedestrian crossing of McLoughlin Boulevard



## TILLAMOOK BRANCH ALIGNMENT (SPRINGWATER CORRIDOR TO HWY 224)

### Neighborhood Context, Opportunities and Challenges

This segment of the alignment runs adjacent to the UPRR through an industrial area from the Springwater Corridor to Highway 224. The Ardenwald-Johnson Creek residential neighborhood extends to the east and has views of the alignment—in particular, the elevated portion of the alignment.

The project requires right-of-way acquisitions of industrial properties along this segment of the alignment, and active relocation support is essential to keep jobs in the corridor. Rail access to industrial uses must also be maintained.

### Current Design Direction

This segment of the alignment does not include a station. The trackway runs on an elevated structure that begins south of the Springwater Corridor and crosses over the railroad tracks and lands north of Mailwell Drive (Fig. 44). The elevated structure is necessary to transition the light rail tracks from the west side of the UPRR main line tracks to the east side of the Tillamook Branch alignment in order to minimize property impacts in downtown Milwaukie and serve the Milwaukie station. Lighting is not needed and will not be included on the structure. The project will maintain existing freight access for properties within the industrial area.

During Preliminary Engineering, project staff worked closely with the project partners and area residents to discuss the impacts of the elevated structure on the surrounding neighborhoods. Ardenwald residents expressed a desire to minimize the visual, noise and vibration impacts of the structure. As a result, the project team redesigned the structure to shorten the portion that will be elevated.

### URBAN DESIGN VISION

*The trackway and structures in this area run through the seam that separates Milwaukie's North Industrial area from the western edge of the Ardenwald neighborhood. This portion of the alignment is elevated and is designed to respect the views and privacy of adjacent neighbors. It is as minimal as possible in scale, especially at the track level and above, with slender and clean lines that largely preserve views of the hills west of the Willamette River. Below the trackway level, graffiti-proofing measures ensure that the walls and columns of the structure will not become surfaces that visually blight the area. Access to industrial properties is maintained, with automobile and track crossings made safer by the project.*

The structure was also shifted 25 feet to the west to accommodate the Union Pacific safety requirements. The project team will continue to consult with the Ardenwald community as the design is refined and will strive to minimize the profile of the structure.

### Outstanding Issues

- Final design of the structure and visual impacts to neighbors in the Ardenwald neighborhood
- Bell noise from the new SE Mailwell Street light rail crossing
- Mitigation of visual impacts to Rockvorst Street residents in regards to the retaining walls of the structure



FIGURE 44: Tillamook Branch overcrossing photo simulation, as viewed looking west from SE Roswell Street



## CORRIDOR CONCEPTS: DOWNTOWN MILWAUKIE SEGMENT

The Downtown Milwaukie segment extends from Highway 224 south to the bridge structure that spans Kellogg Creek and McLoughlin Boulevard (Fig. 45). Milwaukie, a city of 20,000 with a rich history, is located on the banks of the Willamette River. This segment is characterized by the city's traditional, small town Main Street, which extends for the entire length of the segment. More than 1,200 people work in downtown Milwaukie, and thousands more use the various TriMet bus lines that connect in downtown. Main Street has long been home to small businesses and professional service providers, with restaurants, coffee shops and home design companies recently gaining presence. Dark Horse Comics, the largest employer downtown, has been a Main Street fixture for more than 20 years. The Milwaukie High School, St. John the Baptist Catholic School and Portland Waldorf School are both within a short walk of Main Street, and the City's historic City Hall sits across the street from a block that hosts the Milwaukie Farmers Market eight months a year.

The Tillamook Branch freight rail line runs through downtown Milwaukie, as does McLoughlin Boulevard. Both transportation corridors have seen plans and improvements to better integrate

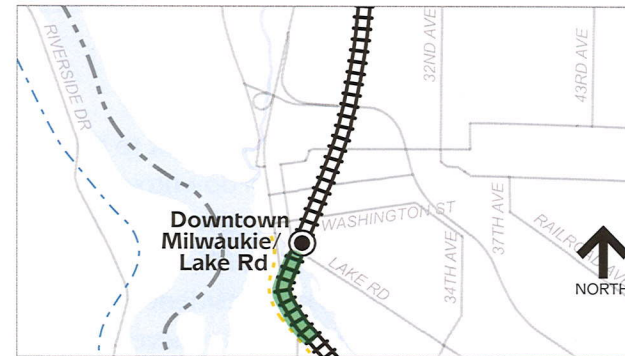


FIGURE 45: *Downtown Milwaukie Segment map*

them with the downtown area, including those underway with the PMLR project. Milwaukie's Riverfront Park, just across McLoughlin Boulevard, will soon be improved and expanded, and plans are in the works to better connect downtown with the Willamette River. Several other transportation and revitalization projects are on the boards. The PMLR project, combined with these other local initiatives, will improve neighborhood connections to the downtown and help create a vibrant streetscape, while retaining the area's historic, small-town charm.



## STATION AREA DESIGN CONCEPTS: DOWNTOWN MILWAUKIE SEGMENT

### DOWNTOWN MILWAUKIE STATION AREA

#### Neighborhood Context, Opportunities and Challenges

The light rail alignment through this segment runs adjacent to the east side of the freight railroad, which sits between downtown Milwaukie and the Historic Milwaukie and Lake Road neighborhoods. Since the City adopted its Downtown Plan in 2000, Milwaukie's downtown area has begun revitalization with new residences and retail spaces and near-term plans to expand and redevelop Riverfront Park. Downtown Milwaukie has the good bones of a classic small-town downtown. Existing attractions include views of the Willamette River, historic buildings, a Sunday farmers' market, restaurants, coffee shops and stores. More than 1,200 people work at the many downtown businesses, including the corporate offices for Dark Horse Comics, ODS, Advantis Credit Union and Reliable Credit.

To the east of the alignment sit two residential neighborhoods, Historic Milwaukie and Lake Road. The areas near the tracks contain a mix of single family and multifamily residences, and several local cultural landmarks such as Milwaukie High School, St. John the Baptist Church and School, and the Portland Waldorf School.

The Milwaukie station presents some unusual opportunities and challenges because the light rail platforms will be adjacent to freight tracks on one side and to developable land (the "Triangle Site") on the other (Fig. 46). In downtown Milwaukie, the freight tracks are a challenge since they create a barrier between the platform area and the adjacent land and activity to the west (the South Downtown development area).

### URBAN DESIGN VISION

*The Downtown Milwaukie station honors the historic character of downtown and is safely and easily accessible by pedestrians, cyclists and bus riders. The project greatly improves the streetscape of downtown by reconstructing sidewalks to provide access to the station, providing both new and improved rail crossings, and by adding pedestrian amenities such as trees and streetlights. The station helps activate the downtown core by supporting a place where people want to be. A transit-oriented development adjacent to the eastern platform is a new local landmark, providing a place for neighbors to meet up and small stores to support bike commuters. Surrounding neighborhoods are better connected to downtown due to bike and pedestrian access improvements made by the project. The bridge over Kellogg Creek allows for a future multi-modal connection between the light rail station and the Island Station neighborhood to the south.*

The Kellogg Creek Bridge provides an opportunity to create a new, attractive portal into downtown from Lake Road, and a challenge to create a safe bicycle and pedestrian environment under the bridge. It is critical in Milwaukie's small scale downtown that every project element be designed to be as slender and small as possible, to best fit into Milwaukie's landscape.

**Development opportunities:** The station will provide a southern anchor to Milwaukie's downtown, and generate activity to support revitalization along the Main Street retail spine. The station area is planned to be an active node that provides access to downtown, is a destination in its own right, and complements activities and development to the north. Many lots throughout downtown, including properties immediately adjacent to the station platform, offer opportunities for future redevelopment with a mix of housing,



## Opportunities and Challenges

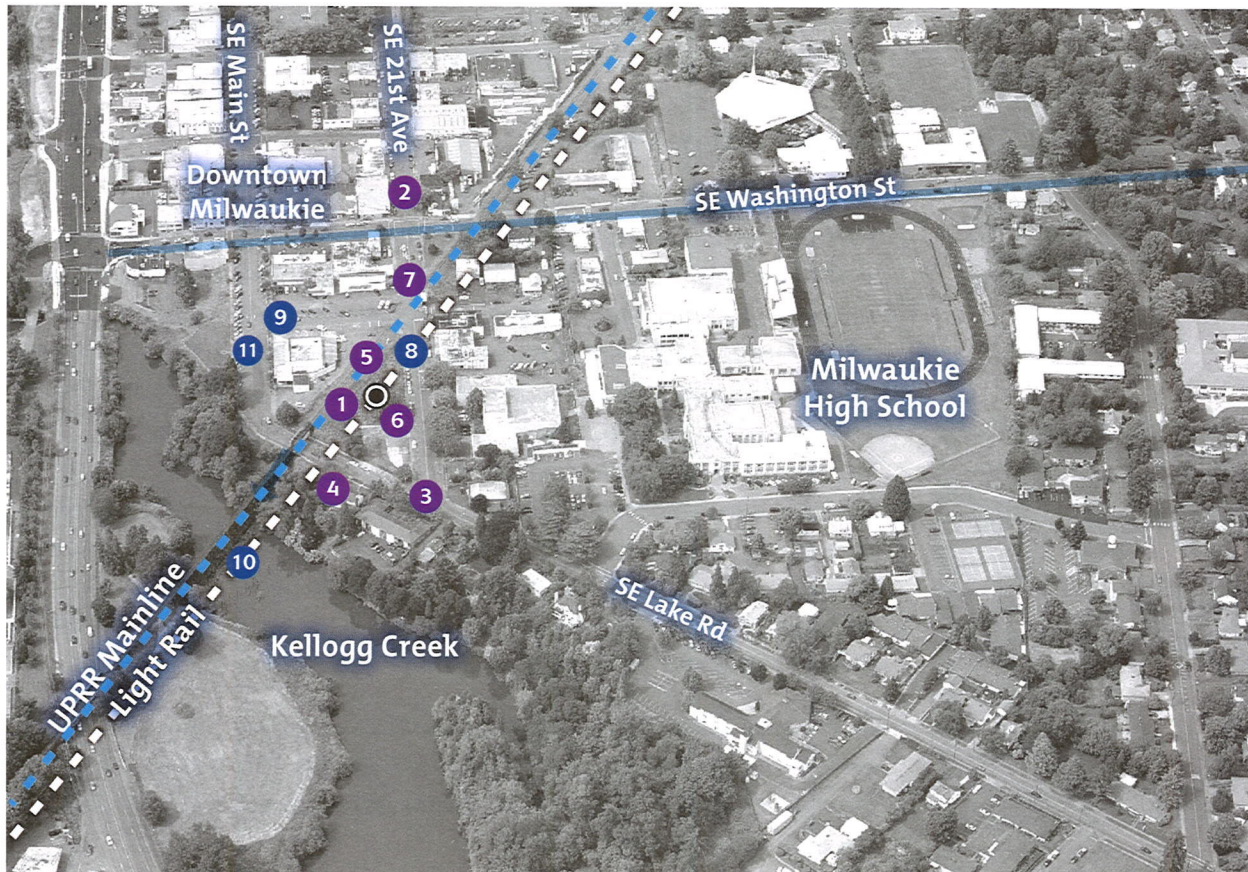


FIGURE 46: Downtown Milwaukie station area—Opportunities and Challenges

### DOWNTOWN MILWAUKIE STATION AREA

#### Neighborhood Context:

This station will be the southern anchor to Main Street in Milwaukie's downtown, a classic small town environment that includes historic buildings, active businesses and a growing number of residents. The station area is surrounded by established residential neighborhoods, Kellogg Creek and Riverfront Park on the Willamette River.

#### Opportunities

- 1 Create a high quality station that generates activity to support the new neighborhood described in the South Downtown concept
- 2 Support ongoing revitalization throughout downtown Milwaukie
- 3 Create a new, attractive portal into downtown from Lake Road
- 4 Facilitate a future multi-use connection from downtown to Kronberg Park and Island Station
- 5 Commemorate Milwaukie's history through the design of the light rail station
- 6 Develop site adjacent to station to provide a local landmark that generates activity and reinforces the "sense of place" at the station
- 7 Improve bus, bicycle and pedestrian facilities through streetscape enhancements

#### Challenges

- 8 Maximize opportunities for bicycle and pedestrian safety, as well as for access to Adams Street businesses, when 21st Avenue is regraded
- 9 Minimize auto connectivity reduction due to planned closures of parts of Adams and Main streets
- 10 Design new bridge over Lake Road and Kellogg Creek to minimize scale and create a safe environment under the bridge
- 11 Coordinate with future development of a new public plaza on Main Street



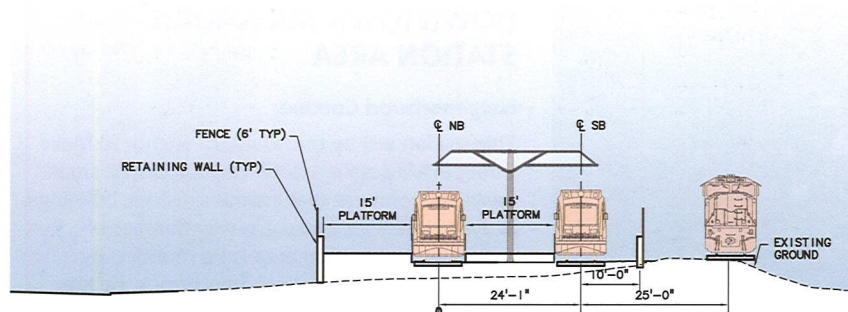


FIGURE 47: *Downtown Milwaukie station cross section*

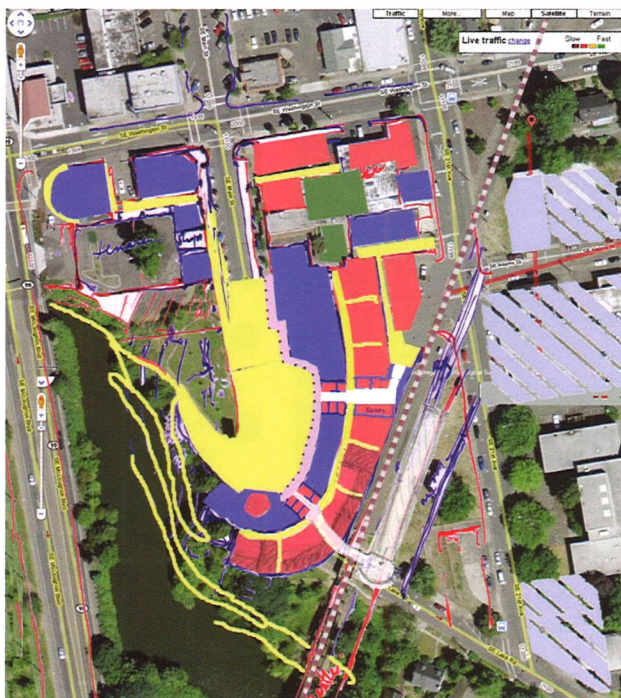


FIGURE 48: *South Downtown Milwaukie Armature illustration*

employment and retail uses. The city's current zoning code supports mixed use redevelopment at densities described in the Downtown and Riverfront Land Use Framework Plan.

### Current Design Direction

The station is located at the south end of downtown on a block bounded by Lake Road (south), 21st Avenue (east), Adams Street (north) and the UPRR tracks (west) (Fig. 49). The station platforms will be in a side/center configuration that reflects the City of Milwaukie's recommendation to provide direct access to the adjacent Triangle Site and minimizes the size of the structure over Lake Road, Kellogg Creek and McLoughlin Boulevard (Figs. 47, 50 and 51). The platform configuration is driven in part by the requirement to maintain a buffer from the UPRR tracks; there is not enough room for a platform between the southbound light rail trackway and the UPRR tracks, so it is located between the two light rail tracks. A side platform for northbound service will help support the transit-oriented development opportunity on the adjacent Triangle Site.

To improve the safety of the intersection, the project will close the west leg of the intersection of Adams Street at 21st Avenue. It will also implement the City's plans to limit vehicular access on Main Street south of Adams Street.

Access to the station will be primarily via foot and bike. Bus stops near the corner of Washington Street and 21st Avenue will provide a transfer point for passengers from Milwaukie and Clackamas County neighborhoods connecting to the light rail line. Some on-street Quick Drop parking will be provided on 21st Avenue, but no long term parking will be provided. It is the city's policy not to allow park-and-ride activity in downtown zones; the city will enforce its parking policies to manage expected demand.



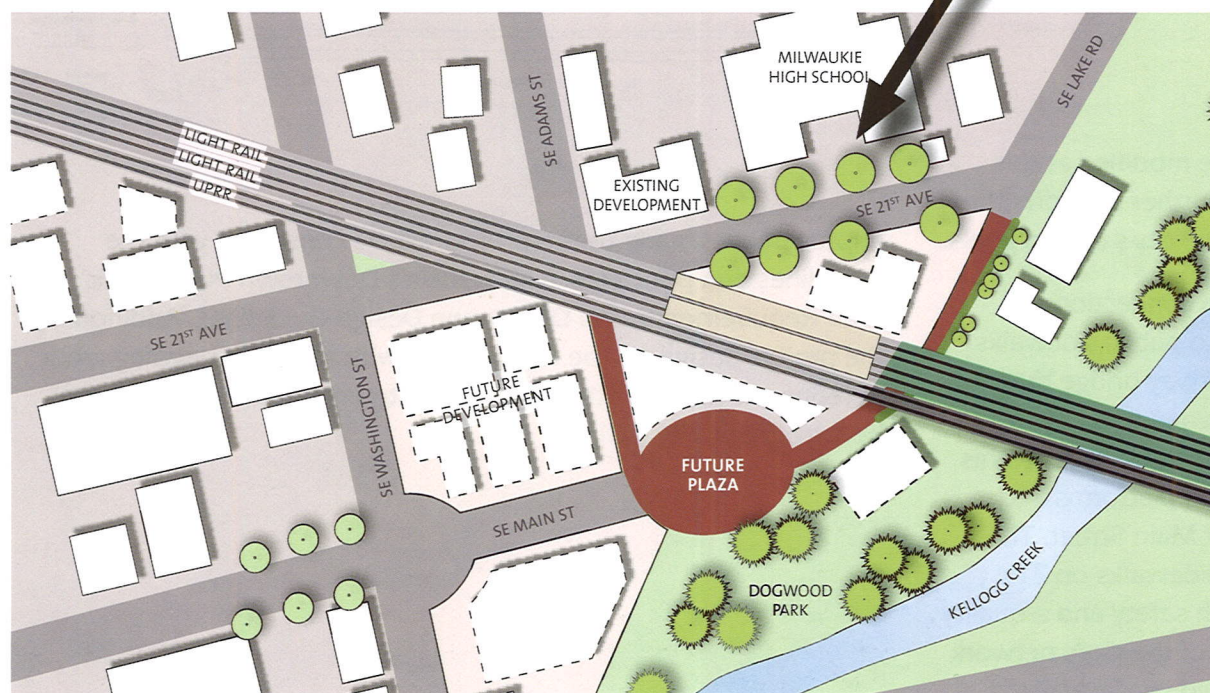
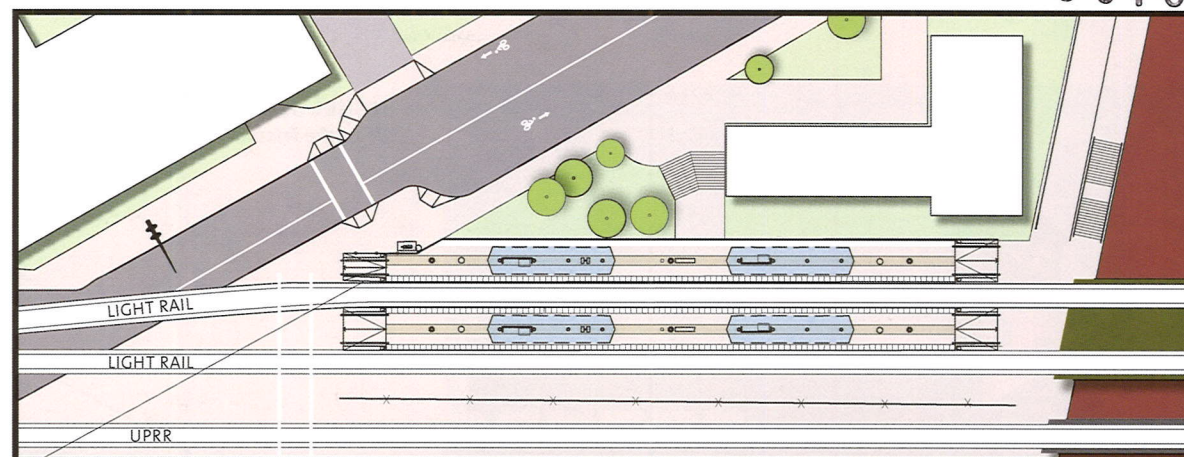


FIGURE 49: Downtown Milwaukie station area plan



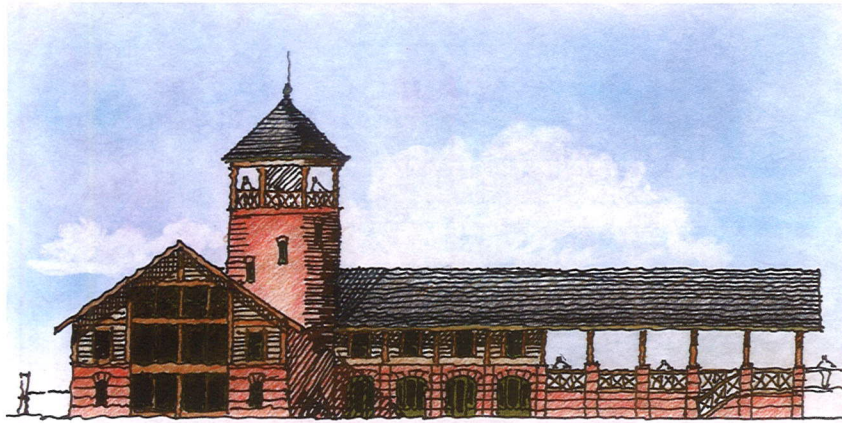
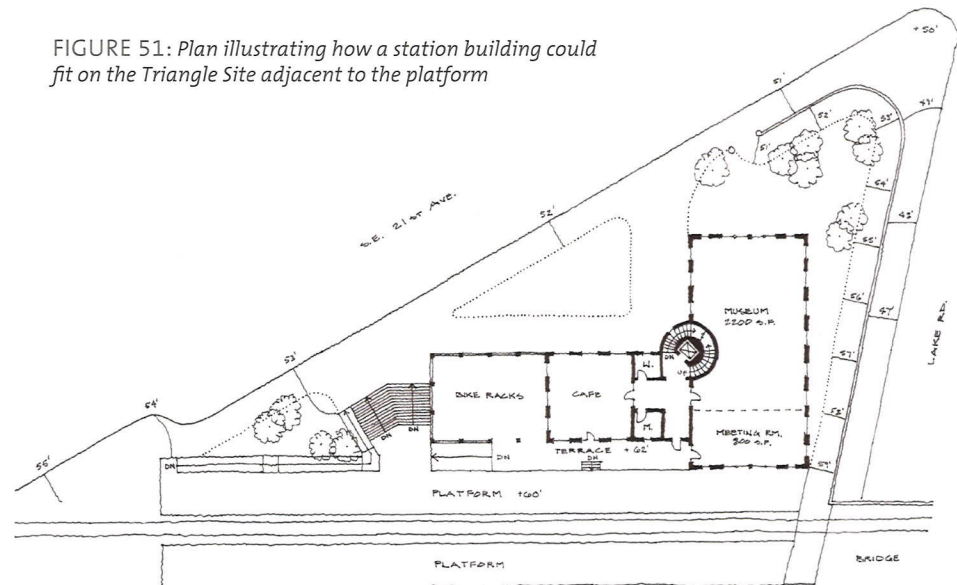


FIGURE 50: Artist's rendering of a possible "station" building, a planned transit-oriented development next to the Downtown Milwaukie station

It is likely that the standard transit shelter will be modified at this station to create an element of distinction that further supports the adjacent development opportunity and meets the city's design goals.

The project will construct bicycle and pedestrian connections from the north and south ends of the platform to public sidewalks (Fig. 52). The space created under the new trackway bridge that crosses over Lake Road will be well-lit and designed to create a safe and comfortable environment for pedestrians and cyclists; this will be an important passageway from the station platforms and Lake Road to the future plaza at the terminus of Main Street. The pedestrian route from the station platforms to sidewalks on 21st Avenue and Lake Road will be designed for both safety and a quality of experience. This station is located at the hub of the city's network of bikeways. Bicycle parking will be abundant and strategically located to minimize the need for cyclists to cross the light rail tracks.

FIGURE 51: Plan illustrating how a station building could fit on the Triangle Site adjacent to the platform



Improvements made by the project will be consistent with the guidelines and principles in Milwaukie's Downtown Plan, Public Area Requirements, and Downtown Design Guidelines. Additionally, the project design will be coordinated with the City's ongoing work to refine the plans for the South Downtown and the restoration of Kellogg Creek (Fig. 48).



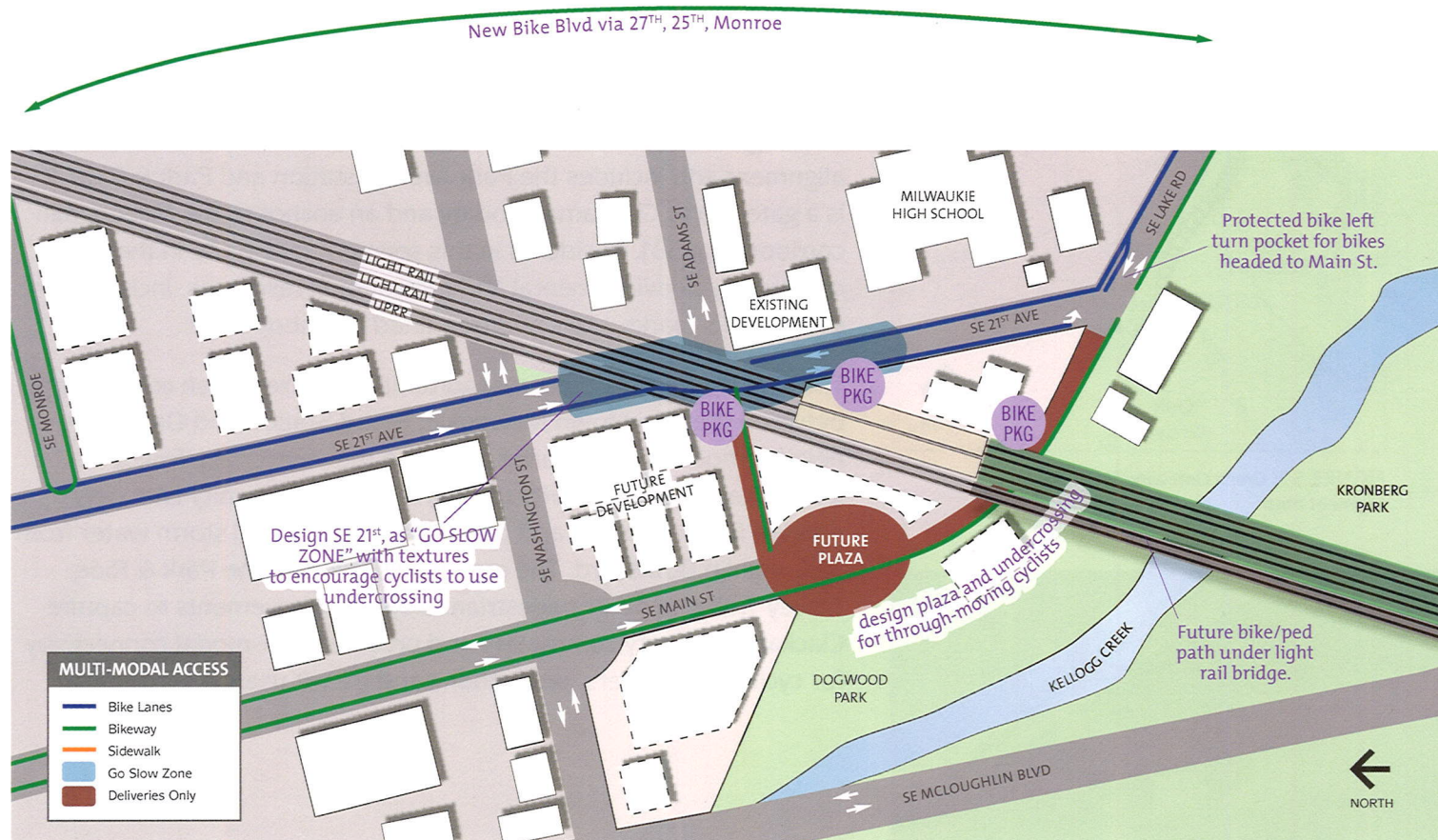


FIGURE 52: Downtown Milwaukie multi-modal diagram

## Outstanding Issues

- Urban design of the station, including integration of ramps, storm water facilities, and pedestrian amenities into the site
- Public art opportunities and the specific design treatments (e.g., furnishings such as benches and shelters) at the station
- Changes in traffic patterns and volumes, and how they will affect surrounding neighborhoods
- Design of rail crossings, crossing gates and the introduction of overhead catenary systems throughout the downtown Milwaukie alignment
- Design and programming of transit-oriented development on the Triangle Site



## CORRIDOR CONCEPT: GREEN GATEWAY/MULTI-MODAL SEGMENT

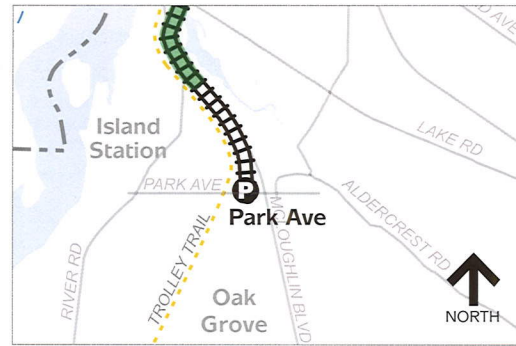
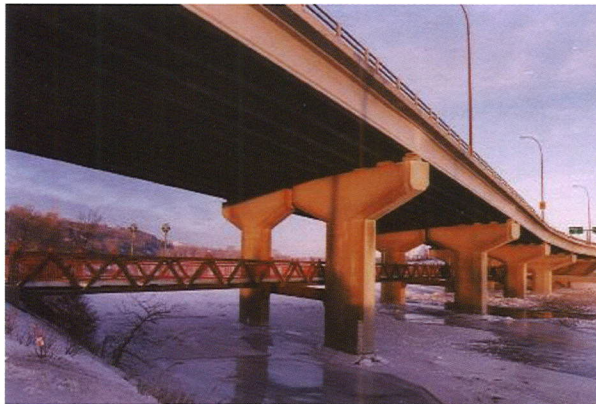


FIGURE 53: *Green Gateway/Multi-Modal Segment map*



The Crowfoot Pedestrian Bridge in Calgary, Alberta, runs beneath an expressway. It is an example of a multi-use path that the City of Milwaukie may build beneath the Kellogg Creek light rail bridge.

This segment extends from Kellogg Creek to the southern end of the alignment and includes the Park Avenue station and Park & Ride. It is a gateway to Clackamas County and an anchor to the McLoughlin corridor (Fig. 53). Residents in this segment take pride in their community's environmental and recreational resources, including the river, creeks, parks, trails and tree-lined neighborhoods.

The PMLR project presents opportunities to strengthen connections between the downtown Milwaukie, Island Station and Oak Grove neighborhoods and enhance access to the developing Trolley Trail. It will integrate with efforts to re-green the community with new riparian forest habitats and treatment of additional storm water from McLoughlin Boulevard. The station will link with the Park & Ride, Trolley Trail and other pedestrian/bicycle improvements to capture Clackamas County commuters and provide multi-modal connectivity for cyclists, bus riders, pedestrians and transit users.



## STATION AREA DESIGN CONCEPTS: GREEN GATEWAY/MULTI-MODAL SEGMENT

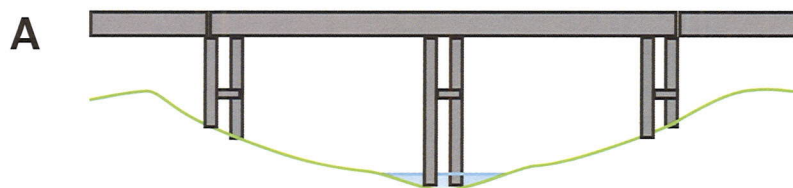
### KELLOGG CREEK BRIDGE/ISLAND STATION

#### Neighborhood Context, Opportunities and Challenges

Kellogg Creek is located between downtown Milwaukie and the Island Station neighborhood, and is included in the Willamette Greenway zone. The City of Milwaukie plans to remove the existing dam to open up seven miles of riparian habitat for Coho salmon and other endangered fish species, while supporting bicycle and pedestrian travel and revitalizing the city's South Downtown area. The bridge crossing over Kellogg Creek and SE McLoughlin Boulevard presents opportunities to strengthen connections between the Downtown Milwaukie light rail station, Kronberg Park and the Island Station neighborhood to the south. The elevated structure can also serve as a landmark where it crosses over Kronberg Park, the Trolley Trail and SE River Road.

#### Current Design Direction

The Kellogg Creek crossing will be an elevated concrete/steel structure that extends south from Lake Road, over the creek and Robert Kronberg Park, and lands south of River Road on the west side of SE McLoughlin Boulevard (Fig 54). The alignment then runs between SE McLoughlin Boulevard and the Trolley Trail through the Island Station and Oak Grove neighborhoods, where right-of-way acquisitions are required.



#### URBAN DESIGN VISION

*The light rail project and related Trolley Trail improvements tie the surrounding neighborhoods together and provide amenities that significantly enhance the community. The elevated structure is an attractive feature designed to be as unobtrusive as possible to surrounding neighbors. It is visible from some residential properties, but is designed with a minimal scale, simple elements and graffiti-proof materials that minimize impacts to surrounding properties. The area continues to be characterized by an abundance of vegetation.*

The project will construct the bridge for light rail and with the infrastructure to accommodate a future multi-use path under the track that would be built outside of the project scope. The design of the bridge is still in development but may incorporate elements of distinction that enhance the visual aesthetics of the structure. The project will maintain existing access for properties in the commercial area at River Road.

#### Outstanding Issues

- Design of the bridge over Kellogg Creek and the structure in the Island Station neighborhood
- Implementation of future multi-use path under the bridge track
- Design of the storm water facility and art at SE Bobwhite Street

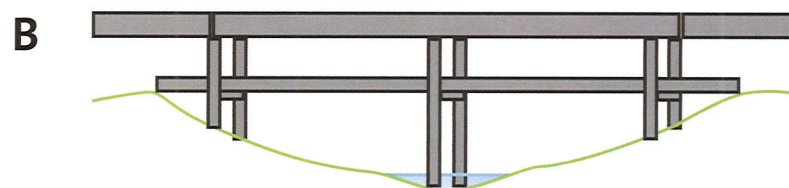


FIGURE 54: The project will: A) construct a bridge over Kellogg Creek, that allows for the City of Milwaukie to B) construct a multi-use path at a later date.



## STATION AREA DESIGN CONCEPTS: GREEN GATEWAY/MULTI-MODAL SEGMENT

### PARK AVENUE STATION AREA AND PARK & RIDE/ TROLLEY TRAIL

#### Neighborhood Context, Opportunities and Challenges

The Park Avenue station is located at the intersection of McLoughlin Boulevard (Highway 99E) and Park Avenue, at the gateway to the Oak Grove community in unincorporated Clackamas County. The station area is mostly comprised of single-family residential neighborhoods, with commercial/industrial uses increasing south of the station.

**The Trolley Trail**, a developing regional bicycle and pedestrian artery, runs along the west side of the alignment from the Kellogg Creek Bridge to the light rail station and Park & Ride. It will serve as a primary pedestrian and bicycle access to and from the station. Following an old streetcar line, the six-mile Trolley Trail will connect with the Springwater Corridor and the I-205 trails to make a 20-mile loop between Portland, Milwaukie, Gladstone, Oregon City and Gresham, and become a major component of the Oak Grove community's transportation infrastructure. Construction of the trail is scheduled to begin in 2010 (Fig. 55).

The new station and Park & Ride provide an opportunity to activate the public space, start the "greening" process for the area and create a vital multi-modal hub linking to existing transit service on SE McLoughlin Boulevard and the Trolley Trail.

#### URBAN DESIGN VISION

*The Park Avenue station and Park & Ride complement the community's vision for the revitalization of the corridor and are easily accessible by pedestrians, bicyclists and bus riders. They are a welcoming portal to the community of Oak Grove and a green gateway to Clackamas County communities further south. The ecosystem restoration along the undergrounded Courtney Springs Creek creates a connected and thriving habitat corridor that is integrated with the multi-modal transportation network to provide a unique amenity for the community. The project sets the stage for the redevelopment of properties along SE McLoughlin Boulevard to activate the station area with a vibrant mix of employment, retail, services and housing.*

The project presents opportunities to restore riparian areas over the buried Courtney Springs Creek and enhance the area surrounding the new station and Park & Ride facility. "Greening" the Park & Ride would help soften the visual impact of the large structure. With a combination of funding from TriMet and Metro's Nature in Neighborhoods program, and Clackamas County Park Avenue Station Area Planning, this neighborhood focal point could become a model for integrating ecosystem restoration with a highly enhanced built environment and multi-modal transportation network.

Traffic impacts associated with the Park & Ride are a key challenge that must be addressed by the project.

**Development opportunities:** There are redevelopment opportunities along and in neighborhoods near McLoughlin Boulevard that could help activate the station area. Clackamas County is working with