Inner Powell Boulevard Streetscape Plan

Ross Island Bridgehead to 92nd Avenue

Final Report

December 2007

City of Portland

Office of Transportation

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CITY OF PORTLAND OFFICE OF TRANSPORTATION

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CITATION

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The contents of this document do not necessarily reflect views or policies of the State of Oregon.

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Amended by PDOT staff, December 2007

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

_____

Prepared by Wilton A. (Bud) Roberts, P.E.

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APPENDICES

ACRONYMS AND KEY TERMS

BES	City of Portland Bureau of Environmental Services
BOM	City of Portland Bureau of Maintenance.
Bridgehead	The end of the bridge.
CCTV	Closed Circuit Television – A proposed CCTV system not part of this Project. See "Relevant TSP System Improvement Projects" in Section 3.1.
Curb Extension	A new curb at the curb return built farther out into the intersection to reduce pedestrian crossing distances.
Curb Ramps	The sloping section of sidewalk that drops from sidewalk elevation to street elevation at street crossings.
Curb Returns	The curved curb that connects from the side street to the main street at intersections.
CWG	Citizen Working Group
Furnishing Zone	An area outside the pavement not designated for pedestrian travel, where such furnishings as garbage cans, newspaper stands, etc. can be placed.
HAWK	High-Intensity Activated WalK signal
HOV	High Occupancy Vehicle
ITS	Intelligent Transportation Systems – This is a broad category of technical enhancements to the transportation system to provide traffic control and information systems that improve safety or operations. Primarily as used in this Project, it refers to an interconnect system between the signals in the corridor to help optimize peak hour progression. It also includes the software and hardware to facilitate that enhancement. The corridor also uses bus priority, which allows an approaching bus to extend green time if it is behind schedule. It also includes Opticom Fire signal preemption. In this same category is a proposed CCTV system not part of this Project. See "Relevant TSP System Improvement Projects" in Section 3.1.
Median	The center lane or area of the roadway. These can be curbed and raised, or painted. This is the area where the left-turn lane occurs or a continuous two-way left-turn unless otherwise marked.
ODOT	Oregon Department of Transportation
PDOT	City of Portland Department of Transportation
PE	Professional Engineer
RTP	Regional Transportation Plan – The Regional Transportation Plan adopted by Metro, ODOT and the other Regional Partners.
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SOV	Single Occupant Vehicle

ACRONYMS AND KEY TERMS (CONTINUED)

TAG	Technical Advisory Group
TGM	Transportation and Growth Management Program
TSP	Transportation System Plan – The TSP is the 20-year plan for transportation improvements in the City of Portland.
v/c	Volume-to-Capacity Ratio – The ratio of the actual or predicted number of vehicles in a given period of time divided by the theoretical capacity. A v/c of 1.00 or greater means the traffic exceeds the capacity.

1. EXECUTIVE SUMMARY

The City of Portland Office of Transportation, in coordination with the Oregon Department of Transportation (ODOT) and a consultant team, developed a conceptual streetscape plan for Inner Powell Blvd. Since Powell Blvd is designated US Highway No. 26, jurisdiction is shared between PDOT and ODOT.

The primary goal of the plan:

Develop an adoption-ready streetscape plan for SE Powell Boulevard, between the Ross Island bridgehead and 92nd Avenue that identifies improvements in the right-of-way to enhance safety and the multi-modal environment, and is supported by the community, City and ODOT.

The *Inner Powell Boulevard Streetscape Plan* identifies improvements from the Ross Island Bridgehead to 92nd Avenue that will continue to allow SE Powell Blvd to serve motor vehicle traffic movement while also improving the safety, accessibility and the aesthetic environment for pedestrians, cyclists and transit riders. The plan identifies treatments, largely within the existing right-of-way, that improve the pedestrian and bicycling environments along and across SE Powell Blvd, and connections to transit service. Examples of treatments include pedestrian refuge islands in the median, pedestrian actuated signals, signal optimization, median trees, landscaping, stormwater management facilities and intersection modifications.

The impetus for the Inner Powell Boulevard streetscape project was concern expressed by neighborhood residents about the safety and accessibility of Powell Boulevard for pedestrians, transit riders, and cyclists. During the 2004-2006 Oregon Department of Transportation (ODOT) Powell Preservation Project Phase I, the community requested more improvements be made along Powell Boulevard to increase pedestrian and bicycle safety, address the barrier Powell Boulevard creates between neighborhoods, and enhance the aesthetic environment through a streetscape plan.

The major issues raised by the community include:

- It is difficult and often unsafe to cross Powell Blvd when walking or biking
- Powell Blvd creates a barrier between the neighborhoods on the north and south side of Powell Blvd
- The Powell Blvd underpass at 17th Ave and the railroad tracks create the most significant barriers for all modes of transportation.
- There is significant motor vehicle traffic congestion on Powell Blvd now and forecasted into the future. Drivers then speed and cut through neighborhoods on local streets.
- Many street trees along Powell Blvd are missing or in poor health
- There are significant maintenance issues along Powell Blvd

This plan is quite timely in that it precedes Phase II of the ODOT Powell Blvd Preservation Project from SE 50th Ave to 92nd Ave. Construction of Phase II is planned for 2008. PDOT identified priority streetscape improvements in hopes that construction of these improvements can be coordinated with the ODOT Preservation Project where feasible. This will be more cost effective and minimize impact to users of Powell Blvd as well as adjacent residents and businesses. The priority improvements are listed in Section 5.1 of this document.

The plan evolved through a planning process beginning in August 2006 with research of existing background policy and existing conditions. In September 2006, a Citizen Working Group (CWG) and Technical Advisory Group (TAG) were formed to review and advise City

staff in the development of the plan. Both groups met on a monthly basis. Three neighborhood walks and a community workshop were conducted in October 2006 to help identify issues, needs, opportunities and constraints along Powell Blvd. Three public open houses were conducted at key stages in the planning process to provide the broader public an opportunity to review project materials and provide feedback as alternatives were developed and evaluated. Following feedback collected at a final public open house and endorsement by the Powell Citizen Working Group and Technical Advisory Group, a preferred plan was identified in June 2007. The summary of the preferred plan follows below.

1.1 THE PREFERRED PLAN SUMMARY

The following is a summary of the elements comprise the Inner Powell Streetscape Plan:

- Improve safety, motor vehicle capacity and transit operations at key congested intersections. Maximize intersection capacity by implementing Intelligent Transportation System (ITS) measures throughout the corridor.
- Enhanced pedestrian and bicycle crossings at un-signalized intersections. Add six new enhanced, marked crosswalks between SE 57th Ave and 92nd Ave. New pedestrian/bicycle activated signals are proposed at two of these new marked crossings, including near SE 57th Ave and SE 79th Ave. Make improvements to existing marked crosswalks at un-signalized intersections to provide consistent treatment throughout the corridor.
- Improve pedestrian and bicycle crossings at signalized intersections.
- Implement different sidewalk treatments to improve the pedestrian environment along Powell Blvd west of 50th Ave and east of 50th Ave to reflect the unique conditions in each segment.
- Incorporate stormwater management facilities in the Furnishing Zone and curb extensions along Powell and on cross-streets, where feasible, with consideration to maintenance requirements, topography, direction of water flow, driveway locations, bus stops locations, high pedestrian travel locations, etc.
- Add trees to existing and new median islands and along the sidewalk where feasible.
- Address existing key maintenance issues along Powell Blvd, including landscaping growing over the sidewalk, tall weeds, overgrown landscaped buffers areas between the sidewalks and sound walls, spaces between the sound walls, berms and abutting private property.
- Improvements at Focused Opportunity Areas
    - SE 7th Ave. to 10th Ave
    - SE Milwaukie and Powell
    - SE 22nd Ave. to 26th Ave
    - SE 71st Ave. to 72nd Ave
- Recommendations for further study of several elements, including:
    - Railroad Underpass at SE 17th Ave
    - Median islands with trees between SE 22nd Ave. to 26th Ave
    - Enhanced, marked pedestrian and bicycle crossing at SE 61st or 62nd Ave
    - Bikeway facility between SE 72nd Ave and 92nd Ave
    - Public parking lots along Powell Blvd and potential for redevelopment

2. PLAN GOAL AND OBJECTIVES

The primary goal of the Inner Powell Boulevard Streetscape Plan is:

> ***Develop an adoption-ready streetscape plan for SE Powell Boulevard, between the Ross Island bridgehead and 92nd Avenue that identifies improvements in the right-of-way to enhance safety and the multi-modal environment, and is supported by the community, City and ODOT.***

To achieve this goal, Portland Office of Transportation (PDOT) has conducted a collaborative planning process that includes City-recognized neighborhood associations, area business associations, residents, business owners, property owners abutting SE Powell Boulevard and adjacent communities, as well as, relevant City Bureaus and ODOT. The specific project objectives are as follows:

- Balance the transportation demands competing for SE Powell Boulevard, including local and through automobile traffic, trucks, transit, pedestrians and cyclists.
- Improve safety for travelers by all modes on Powell Boulevard.
- Enhance opportunities for use of bicycles, walking and transit.
- Preserve motor vehicle capacity to continue serving local and through traffic.
- Maintain the same number of motor vehicle through travel lanes.
- Ensure consistency with existing plans, policies and standards.
- Implement recommendations from the Powell/Foster Corridor Transportation Plan.
- Improve the pedestrian environment along Powell Boulevard.
- Improve pedestrian and bicycle crossings of Powell Boulevard.
- Improve connections to transit.
- Manage access to properties abutting Powell Boulevard.
- Improve intersection control and capacity.
- Mitigate the negative impacts of high traffic volumes along Powell on adjacent neighborhoods.
- Improve the aesthetic environment along Powell Boulevard.
- Explore methods to mitigate the broad width of Powell Boulevard through the use of vertical elements and other aesthetic means.
- Incorporate stormwater management practices.
- Coordinate implementation with ODOT and identity funding sources to construct the streetscape plan.

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3. PREFERRED PLAN

3.1 PREAMBLE

This plan contains some elements requiring further discussion and/or approvals not yet obtained. These items must be completed before the affected Plan elements can be pursued. Examples:

- This is a conceptual plan. The proposed improvements have not been fully analyzed to determine if they meet all standards of the ODOT Highway Design Manual. The plans have not been reviewed nor approved by the City Traffic Engineer or the State Traffic Engineer. Changes to Powell Blvd must meet the standards of the ODOT Highway Design Manual or received a Design Exception from the State Traffic Engineer. Additional survey, engineering design and analysis will be required to determine the feasibility and approval of the proposed improvements.
- Some elements of this plan may require Design Exceptions from the State Traffic Engineer at the time of project design. No formal applications have been made for design exceptions. Informal conversations were held with ODOT to get an initial reaction about the potential feasibility of State approval. A partial record of the conversation appears in Appendix A. Elements likely to require design exception include, but are not limited to the following:
    - The taper lengths shown at transition points where median islands terminate at left turn pockets is less than standard. How much less has not yet been clarified.
    - Current ODOT standards also require shoulders and "shy" distances that are not met either on the existing roadway or in the Plan. As the project moves forward, these will require either new ODOT Policies (now being drafted) or Design Exceptions, or both. This process would not be undertaken until the project moves toward design.
    - The preferred plan does not include capacity improvements at two of the intersections that are expected not to meet Regional standards. It is not know whether an exception is needed to cover this matter since no improvements are planned at these two locations (39th and 82nd).
- All proposed locations for new enhanced, marked crosswalks must be approved by the State Traffic Engineer. This also applies to the proposed crosswalk along the east leg of the signalized intersection with Milwaukie Ave. Applications must be submitted by the City of Portland for approval of each proposed marked crosswalk.
- While the plan is conceptual, the improvements were designed to address freight movement needs along Powell Blvd and connecting to other freight routes. This plan does not result in the removal of travel lanes or narrowing of existing travel lanes on Powell Blvd. All intersection improvements, particularly local streets, were designed for an SU-30 Single Unit Truck to make all legal turns. At major intersections, including Milwaukie, 39th, 82nd and 92nd, improvements were designed to allow a WB-67 Interstate Semi-Trailer Truck to continue making turns as they do now. No additional impediments have been added to large truck maneuvering areas at major intersections.

- Specific placement and number of new trees in the Powell Blvd Right-of-Way is subject to site specific review by the State Traffic Engineer to determine if they meet the ODOT design guidelines for locating trees. In some cases, the trees may require Design Exceptions. The tree locations shown in the plan attempt to show a realistic tree placement based on preliminary analysis and application of the State design guidelines, but have not been reviewed or approved by ODOT.
- At the Milwaukie Intersection, additional Right-of-Way is needed north of Powell, probably from the Fire Bureau on the east side. There has not been any discussion with the Fire Bureau about this.
- The Plan does not propose intersection improvements at 39th Ave or 82nd Ave. The project investigated what would be required at these intersections to achieve the Regional volume to capacity ratio requirement of .99 or less in the 20-year planning horizon. It would be necessary to widen the intersection and add turn lanes at these intersections to achieve less than a 0.99 v/c at these intersections. These changes would require significant cost and private property impacts. Both intersections are high crash locations. There is a high level of pedestrian activity and transit transfers at these locations. Widening the roadway to add lanes could exacerbate existing safety issues. The City is not recommending pursuit of these motor vehicle capacity changes. Both of these intersections are high on the City's safety improvement list, so it is hoped that such changes will not be necessary in the future.
- No formal applications have been made for design exceptions. Informal conversations were held with ODOT to get an initial reaction, and therefore make an educated guess as to what may or may not be approved. A partial record of the conversation appears in Appendix A. The Plan and design concepts at Focused Opportunity Areas for Inner Powell Blvd were generated by the project team during a series of work sessions. The Plan and alternatives was revised and expanded through an iterative process of review with input by members of the Technical Advisory Group (TAG), Citizen Working Group (CWG) and the general public during open house events.
- Some of the storm water treatment facilities in this plan are located on Powell Blvd. As such, these are non-standard with respect to ODOT standards. The conversation is not complete on the issue as to whether these improvements require a Design Exception to Proceed. With or without the need for exceptions, the actual design needs ODOT approval when it is located in the highway right-of-way.

3.2 DESCRIPTION OF IMPROVEMENTS

The preferred plan improvements are graphically illustrated and described in Corridor Maps 1-8 at the end of Chapter 3. Elements of the plan are also categorized and further described below.

Improve Safety, Motor Vehicle Capacity and Transit Operations at Key Congested Intersections

Most traffic delays occur as traffic queues extend back from congested intersections. Improving intersection capacity at congested intersections can significantly reduce delays and increase overall travel times at relatively small expense. This is the most efficient way to increase Level Of Service (LOS) and intersection Volume-to-Capacity ratios while avoiding expensive acquisition of private property, negative impacts to adjacent properties and widening roadways.

- Maximize intersection capacity by implementing Intelligent Transportation System (ITS) measures throughout the corridor.
- Construct TSP Project #70066: ITS on SE Powell Blvd. Project includes installing closed circuit television (CCTV) at 39th, 50th, 82nd, I-205 ramp, 122nd; variable signs at Milwaukie; changeable signs at 39th, 50th, 82nd, I-205 ramps.
- Upgrade signal hardware by replacing antiquated inter-connect hardware and running underground wiring at the following locations:
  - SE 52nd and Foster
  - SE 65th Ave
  - SE 69th Ave
  - SE 71st Ave
  - SE 72nd Ave
- Coordinate signals according to the following segments:
  - Milwaukie to 72nd (including 52nd & Foster).
  - 82nd Ave.
  - 86th through I-205.
- Specific Intersection Improvements that could be implemented to reach the regional <1.00 v/c standard:
  - SE Milwaukie – See Appendix B, Figures 1 and 2.
  - SE 26th Ave. – Permitted/protected left turn phasing north/south.
  - SE 52nd Ave. – WB left permitted/protected phasing.
  - SE 52nd Ave./Foster – Signal Coordination with Powell/52nd Improvements.
  - SE 92nd Ave. – E-W permitted/protected phasing.

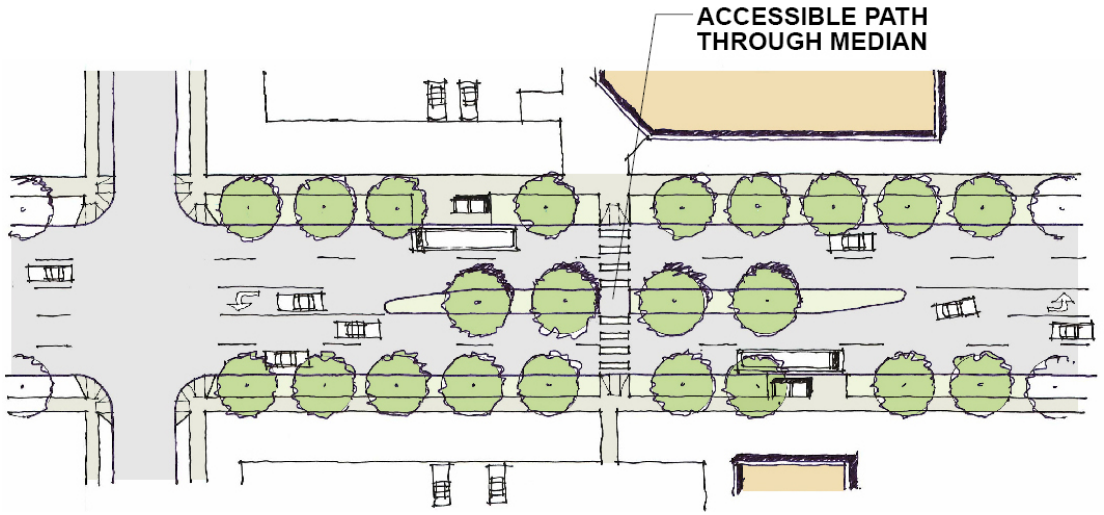
See Appendix B for intersection improvements proposed for mitigation of service levels at critical intersections and peak operation tables for various conditions.

Enhanced Pedestrian and Bicycle Crossings at Unsignalized Intersections

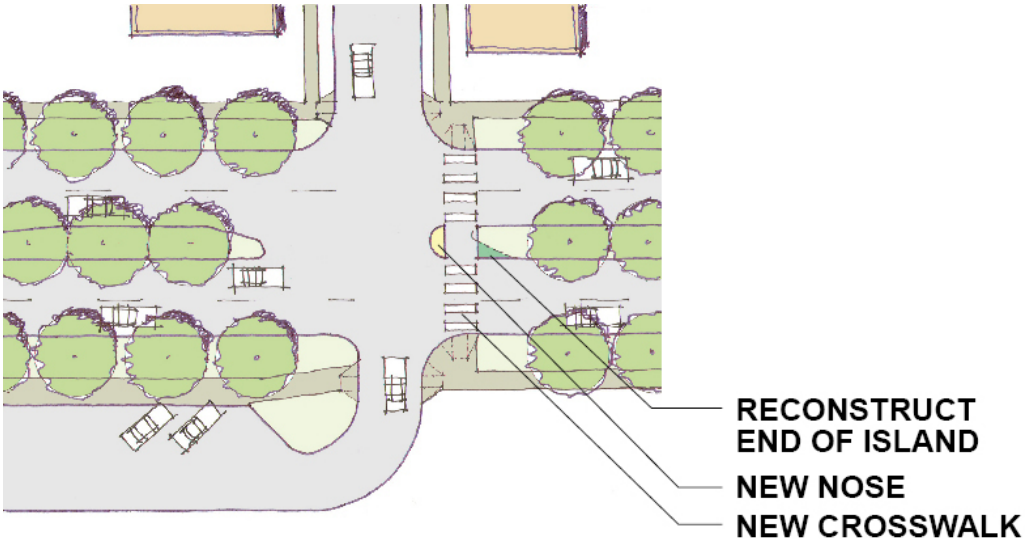
- East of SE 50th Avenue, along Powell Blvd, extend sidewalks through the planting strip to the curb at intersections where not currently provided, so pedestrians can cross Powell Blvd.
- Install dual curbs at all intersections where dual ramps do not currently exist, unless unfeasible due to narrow sidewalk width. (An inventory of curb ramps is located in Appendix C.)
- Provide consistent treatment at enhanced, marked crosswalks by installing advanced stop bar markings and signage, overhead signage, curb ramps and pedestrian scale lighting.
- Add six new enhanced, marked crosswalks at the following locations:
  - Between 57th Ave and 58th Ave, cut through existing median mid-block
  - SE 67th Ave, rebuild nose of existing median at west leg of intersection
  - SE 75th Ave, rebuild nose of existing median at east leg of intersection
  - Between SE 79th Ave and SE 80th Ave, cut through existing median mid-block between 79th Ave and 80th Ave or rebuild nose of existing median at east leg of 79th Ave intersection
  - SE 84th Ave, cut through existing median mid-block or build new median refuge island west of intersection.
  - Between 90th Ave and 92nd Ave, cut through existing median mid-block

Existing Conditions

Example of cut through existing median mid-block



Example of rebuilding nose of existing median

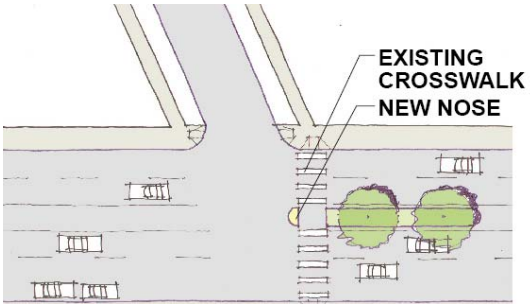


- In addition to the above improvements, install pedestrian and bicycle activated signals, preferably the High-Intensity Activated WalK (HAWK) signal, at the following locations:
  - Between 57th Ave and 58th Ave.
  - Between SE 79th Ave and SE 80th Ave, cut through existing median mid-block between 79th Ave and 80th Ave or rebuild nose of existing median at east leg of 79th Ave intersection.

Example of HAWK Signal at E Burnside and 41st Ave.

- Add the following to existing marked crosswalks: new median refuge islands with nose, street trees and other enhancements, including consistent signage, striping and pedestrian-scale lighting treatments, at the following locations:
  - SE 31st Ave
  - SE 34th Ave
  - SE 36th Ave
  - SE 45th Ave
  - SE 47th Ave

Example of new median island with nose and trees



Improve pedestrian and bicycle crossings at signalized intersections

Intersection improvements are proposed at the following locations (see Corridor Maps for details):

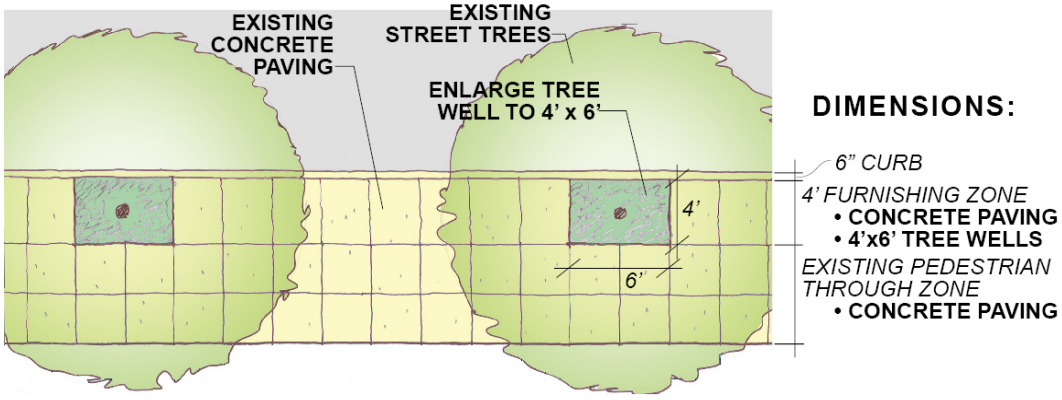
- SE Milwaukie
- SE 26th Ave
- SE 33rd Ave
- SE 42nd Ave
- SE 52nd Ave
- SE 71st Ave and 72nd Ave
- SE 82nd Ave

Sidewalk Improvements

- Implement different sidewalk treatments to improve the pedestrian environment along Powell Blvd west of 50th Ave and east of 50th Ave to reflect the unique conditions in each segment, either as private frontage improvements in the permitting process or through a public capital improvement project.
- Implement interim sidewalk improvements while waiting for opportunities to implement the full long-term sidewalk treatment.
- Incorporate stormwater management facilities in the Furnishing Zone, where feasible, with consideration to maintenance requirements, topography, direction of water flow, driveway locations, bus stops locations, high pedestrian travel locations, etc.
- New sidewalk improvements and stormwater facilities can be achieved through public capital improvement projects or private frontage improvements through the permit process.
- Encourage residents and businesses to form volunteer groups and/or adopt landscape areas to help maintain landscape areas.

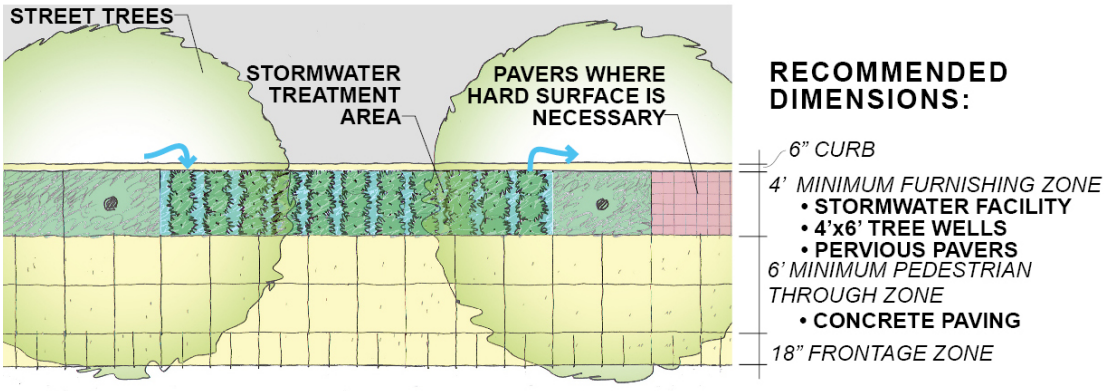
Existing Conditions West of SE 50th Ave

Interim Sidewalk Improvements West of 50th Ave



- Interim sidewalk improvements between Ross Island Bridge and SE 50th Ave:
  - Where the sidewalk zone is at least 10 feet wide, increase the size of tree wells to 4 feet wide and 6 feet long (parallel to the curb) to improve the health of exiting trees.
  - Maintain existing trees and fill in missing trees with new species.

Long-term Sidewalk Improvements West of 50th Ave



- Long-term Sidewalk Improvements between Ross Island Bridge and SE 50th Ave:
  - Acquire a minimum of 2 feet private property to widen sidewalk realm to 12 feet minimum.
  - Maintain a minimum 6-foot-wide Through Pedestrian Zone and 18-inch Frontage Zone.
  - Increase the size of tree wells to 4 feet wide and 6 feet long (parallel to the curb).
  - Install concrete pads at bus stops at both the front and back door locations.
  - Install pervious pavers in the furnishing zone to accommodate street furniture.
  - Install stormwater management facilities in the 4 foot furnishing zone where feasible. Stormwater treatment areas may be wider than 4 feet if the adjacent property owner dedicates a wider paved frontage zone. (See example below.)

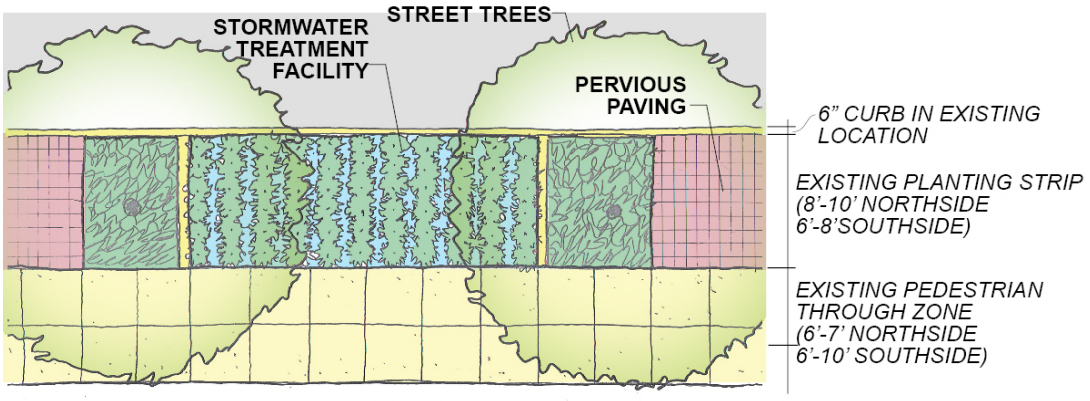
Street Planter Example
SE Division & 20th Ave

Existing Conditions East of SE 50th Ave




- Interim Sidewalk Improvements east of SE 50th Ave:
  - Maintain existing trees and fill in missing trees with new species.
  - Trim tree low hanging branches and new shoots around the base of trees.
  - Address maintenance issues, including landscaping growing over the sidewalk, tall weeds, overgrown landscaped buffers areas between the sidewalks and sound walls, spaces between the sound walls, berms and abutting private property. Explore options fencing and gating the area or vacating the property.

Long-term Sidewalk Improvements East of 50th Ave



- Long-term Sidewalk Improvements east of SE 50th Ave:
  - Maintain a minimum 6-foot-wide Through Pedestrian Zone and 18-inch Frontage Zone.
  - Install stormwater management facilities in the existing furnishing zone where feasible.
  - Install pervious pavers in the furnishing zone to accommodate bus stop waiting areas and street furniture.
  - Coordinate sidewalk improvements with future bikeway facility between SE 72nd and 92nd Ave.

Stormwater Management

- Incorporate stormwater management facilities in the Furnishing Zone (or "planter strip") and curb extensions along Powell and on cross-streets, where feasible, with consideration to maintenance requirements, topography, direction of water flow, driveway locations, bus stops locations, high pedestrian travel locations, etc.
- BES has identified four sets of stormwater/green street facilities along SE Powell Boulevard to address sewer capacity problems in the area. Two sets originate from the Taggart D Pre-design Project (construction packages TGD-01 and TGD-11), while the remaining two are from the Lents 1&2 Pre-design Project (construction packages L-1 and L-2). These sets contain a total of 37 stormwater facilities located primarily on the following cross streets: 7th to 13th, SE 24th to 25th, SE 66th to 76th, and SE 82nd Avenues.
- Stormwater management facilities are incorporated into several elements of this plan. A few of these locations are highlighted below:
  - In the Furnishing Zone (or "planter strip") along Powell Blvd as a part of the sidewalk treatments both west of SE 50th Ave. and east of SE 50th Ave.
  - In the Furnishing Zone (or "planter strip") on cross-streets north and south of Powell Blvd
  - In Curb extensions on cross-streets north and south of Powell

- In Curb extension across Powell Blvd at SE 24th Ave.

  Construct a curb extension on the south side of Powell at SE 24th Ave to shorten the crossing distance and provide stormwater management for runoff from Powell Blvd. Curb extensions provide an excellent opportunity to incorporate a stormwater facility. Street runoff from the eastbound lanes can be managed on the east side of the extension. As much as 20,000 square feet can be managed. Coordinate with TriMet to accommodate the eastbound bus stop.

- Where bus pull-outs are closed, the newly created Furnishing Zone (or "planter strip") creates an opportunity to integrate stormwater facilities.

  To enhance the pedestrian crossing at SE 67th Ave, existing bus pull outs will be closed. This provides an opportunity to integrate stormwater facilities into the former pull out areas. Facilities at the east end of each block will manage up to 12,500 square feet (6,500 square feet on the north side and 6,000 square feet south side). Coordinate with TriMet to best integrate stormwater facilities and bus stops.

- At other key locations, including for example:
  - Milwaukie intersection in the existing islands adjacent to the slip lanes.
  - SE 28th Ave and Waverleigh St in the bus stop plaza.
  - SE 92nd Ave intersection, northeast corner adjacent to the bus stop in the 10 ft of reserve right-of-way.

Examples of Stormwater Management Facilities

Curb Extension
NE Fremont & 131st Ave

Street Planter
SE Division & 20th Ave

Rain Garden
SE Morrison & 51st Ave

Street Trees and Landscaping

- Balance the following considerations when locating new trees along Powell Blvd:
  - There is desire among community members to add trees in median islands to provide canopy over Powell Blvd.
  - A variety of street tree species is desired along Powell Blvd in increase the diversity of the urban canopy.
  - New ODOT design guidelines for locating street trees to maintain safety and driver sightlines.
  - The freight community has concerns about trees conflicting with trucks traveling on Powell Blvd. Low hanging branches hitting trucks is the greatest concern. They prefer that branches be no lower than 16 feet.
  - The City is responsible for maintaining landscaped medians. There is very limited BOM budget for maintaining landscaping, including trimming trees.
- Proposed street tree locations in the medians and along the furnishing zone of the sidewalk must meet the ODOT guidelines for street trees issued September 2006.
  - Locations must have final engineering analysis to accommodate horizontal curvature of the street or the vertical differences in elevation.
  - Locations do not into account conflicts with existing driveway locations.
  - Locations must be adjusted to accommodate surrounding conditions such as overhead and underground utilities, driveways, building signage, street lighting, bus stops, street furnishings and other issues that may affect their placement.
- Add trees to existing and new median islands and along the sidewalk where feasible. (See Corridor Maps for proposed new median islands, median islands to be rebuilt with trees and potential locations for street trees along in the sidewalks along Powell)
  - Enlarge existing and create new planters in accordance with the Corridor Plan
  - Replace missing trees in existing tree well and planting strips.
- Build all new islands with pervious pavers and street trees with open wells.
- Evaluate the following options in existing medians:
  - Install pervious pavers on median islands adjacent to marked crosswalks and retain remaining existing landscaping in medians.
  - Remove all existing landscaping in medians and replace with pervious pavers.
- Consider introducing the following trees recommended by the City Urban Forester.
  - Crimean Linden (*Tilia x euchlora*) is the original tree selection planted throughout the inner Powell corridor. It is still a viable tree selection as long as the planter is at least 4-foot by 6-foot and the tree is planted with root barriers.
  - A variety of trees are included on the list as alternatives to the Crimean Linden in Appendix D. In many situations, a different tree from the list may fit the conditions better than the Crimean Linden. Other trees on the list offer other qualities such as a colorful blooming period or special fall color. A more recent strategy in other street tree plans incorporates more diversity in tree species.
  - Availability of street trees may be a problem depending on when they need to be planted. Having a list with many choices insures that if the first choice is not available, another tree may be substituted with approval of Urban Forestry.
  - A list of trees for use in stormwater treatment facilities with or without overhead wires is also included in Appendix D. Some trees are also on the standard list.

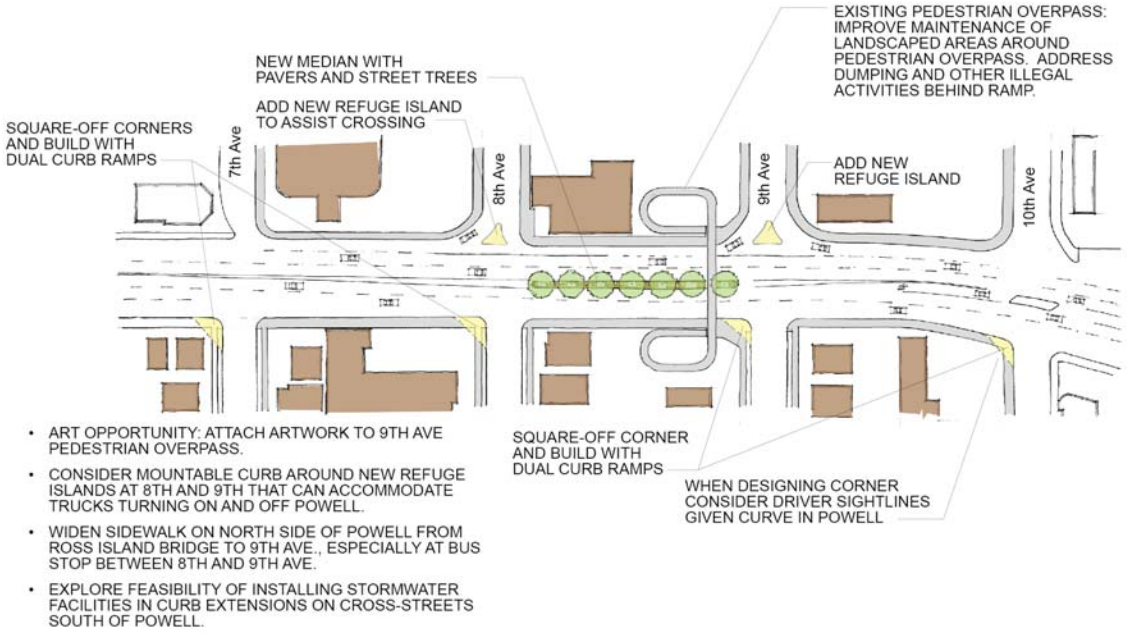
Maintenance

- Address existing key maintenance issues along Powell Blvd, including landscaping growing over the sidewalk, tall weeds, overgrown landscaped buffers areas between the sidewalks and sound walls, spaces between the sound walls, berms and abutting private property. Explore options for fencing and gating the areas or vacating the property to the adjacent property owners.
  - Behind the pedestrian overpass at SE 9th Ave.
  - Along the pedestrian path on the 17th Ave railroad underpass structure.
  - Behind sound walls east of SE 50th Ave.
  - On the landscaped berm between SE 79th and 80th Ave.
- Form Community volunteer clean-up and maintenance group for Powell Blvd.
- Notify property owners of their responsibility for maintaining the sidewalk and landscaping out to the curb abutting their property. Encourage them to help improve the appearance of Powell Blvd.
- Pursue the feasibility of a community group and Bureau of Maintenance Adopt-A-Landscaped Area Maintenance Agreement for portions of the landscaped areas along Powell Blvd.

Improvements at Focused Opportunity Areas

Gateway to Powell Blvd: SE 7th Ave. to 10th Ave

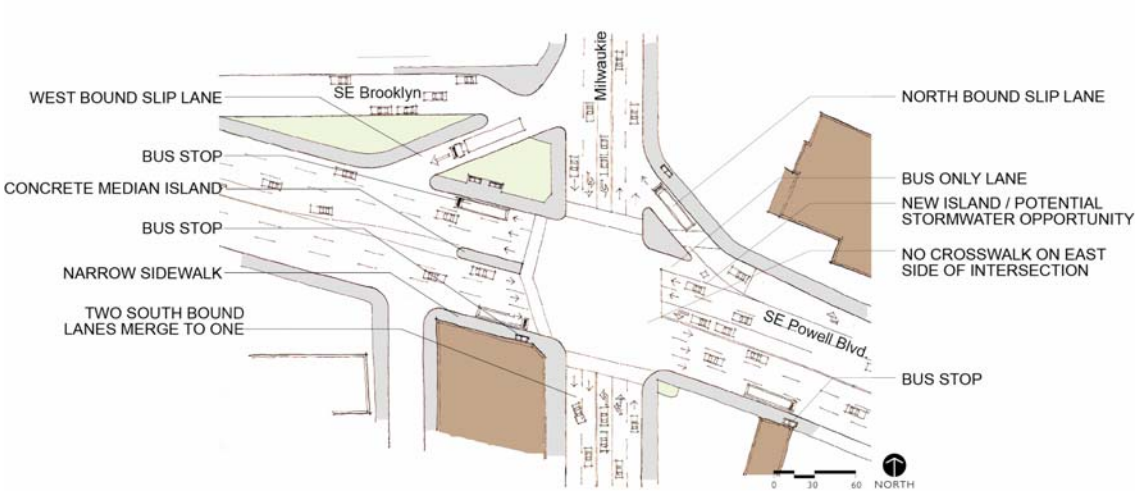
Create a gateway to Powell Blvd and southeast Portland. Add a median island with trees between SE 8th and 9th Ave. Incorporate art into the existing pedestrian overpass at 9th Ave. Improve maintenance of the landscaped areas around the pedestrian overpass. Along the south side of Powell, square off currently rounded corner curb returns and build with dual curb ramps. On the north side of Powell, at SE 8th Ave and 9th Ave, add triangle shaped refuge islands adjacent to bus-only lane to assist pedestrians crossing the cross-streets. Widen sidewalk on the north side of Powell from the Ross Island Bridge to 9th Ave.



SE Milwaukie and Powell

Modify the intersection of Milwaukie and Powell Blvd to improve pedestrian and bicycle movement while also maintaining motor vehicle and transit intersection capacity and truck turning movements. The proposed intersection lane configuration and signal phasing allows for a pedestrian crosswalk to be added on the east leg of the intersection. Slip lanes maintained to and from the north. The island configuration in the northeast corner of the intersection is reconfigured to provide a pedestrian refuge island and maintain the existing bus queue bypass lane. The median refuge island on the west leg is enlarged to add trees and a nose is added to protect pedestrians. Substantial additional plantings (especially trees) are proposed. Bike lanes are added to Milwaukie. On the southern leg of the intersection, the southbound merging travel lane is eliminated from Milwaukie. Stormwater management will be required as a part of the reconfiguration of this intersection. The triangular islands create opportunities for stormwater facilities, and sidewalk planters may be possible in the Furnishing Zone along both Powell and Milwaukie.

Existing Conditions

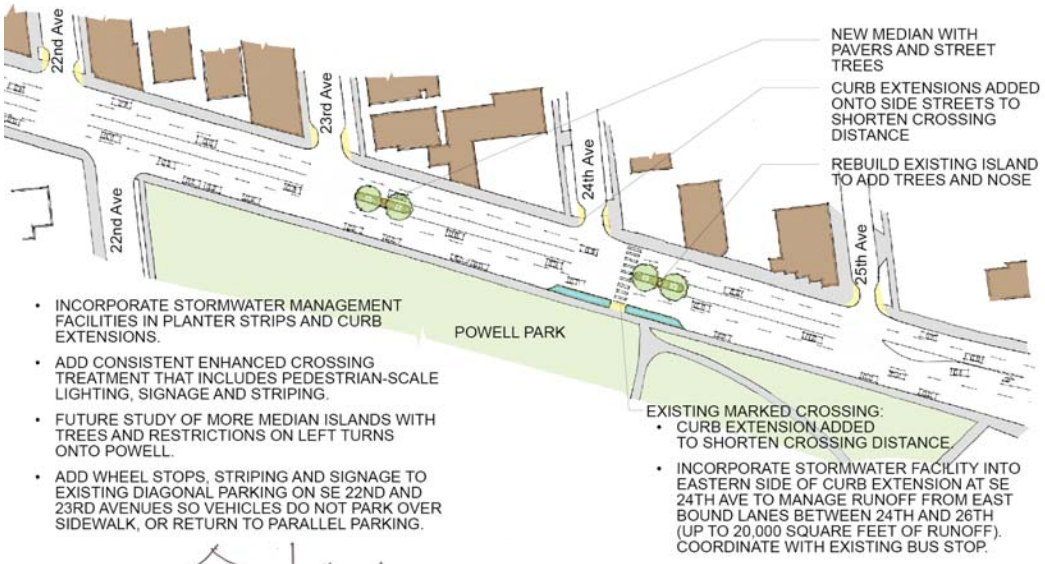


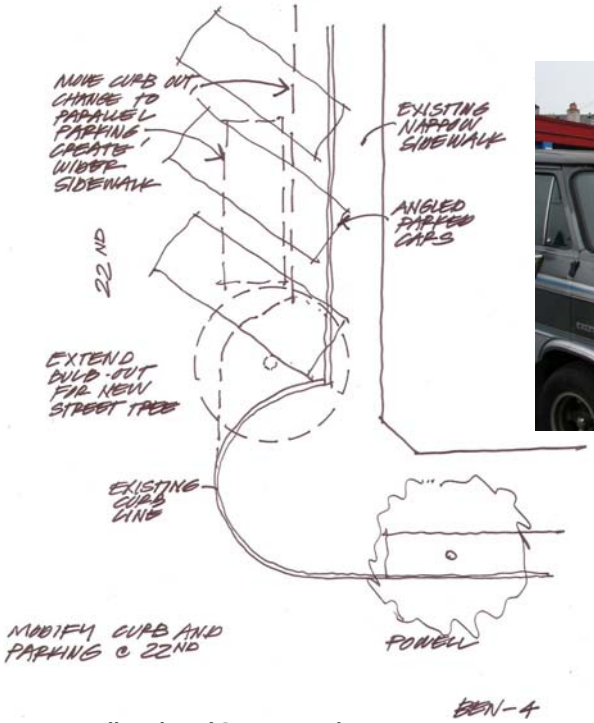
Preferred Plan

Powell Park: SE 22nd Ave. to 26th Ave

Provide improvements to connect the neighborhood on the north side of Powell Blvd to the bus stop, Powell Park and businesses on the south side of Powell Blvd. Provide median refuge islands with trees at SE 23rd Ave and SE 24th Ave. Provide a curb extension with a stormwater facility on the south side of Powell at SE 24th Ave and coordinate it with the bus stop. Provide a curb extension with stormwater facilities on cross-streets at Powell Blvd to shorten crossing distances for pedestrians and calm motor vehicle traffic turning into the neighborhood. Though it is not illustrated in the plan view below, the recommendation is to square off the southwest corner of intersection at SE 20th and Powell to improve the pedestrian crossings.

Address the issues associated with drivers parking over the already narrow sidewalk on SE 22nd Ave, north of Powell Blvd. Consider re-orienting the existing angled on-street parking to parallel parking, widening the sidewalk and/or adding striping and signage indicating how to park.





SE 71st Ave. to 72nd Ave

Lengthen the crossing time for pedestrians. Provide (and sign) a route for bikes through the gap in the sound wall. Add curb ramps at the cul-de-sac on 71st to Powell. Stripe the centerline and prohibit parking near intersection on the south leg of 72nd Ave. Add bike detection and lighting at both 71st Ave and 72nd Ave.

Enhanced Pedestrian and Bicycle Crossing at SE 71st and 72nd Avenues

At 71st

- Lengthen pedestrian crossing time on signal.
- Add wayfinding signage for bicycles directing to alternate route through soundwall to 71st Ave.
- Add curb ramps at cul-de-sac south of Powell.
- Explore feasibility of stormwater facility in planter strips on 71st north of Powell.
- Add pedestrian-scale lighting.
- Consider wider cuts in soundwall.
- Provide signal priority for buses.

At 72nd

- Prohibit parking near intersection at Powell.
- Add centerline striping near intersection.
- Provide loop detector for bikes - provide bicycle accessible push button.
- Add pedestrian-scale lighting - north side under trees.
- Improve signal coordination w/ other signalized intersections.
- Provide signal priority for buses.

Transportation Demand Management

The City of Portland recognizes that providing adequate capacity for local trips as well as the important regional freight trips on major corridors like Powell will mean implementing aggressive transportation demand management (TDM) measures. Reducing travel demand on Powell Blvd by increasing the number of trips taken by other modes will help maximize existing roadway capacity. Policy 6.38 of the city's Transportation System Plan provides guidance for managing congestion in Southeast Portland, stating: "Reduce travel demand and reliance on the automobile in Southeast Portland to protect residential areas and industrial sanctuaries from non-local traffic, while maintaining access to established commercial areas." PDOT has implemented several successful demand management programs over the years; perhaps the most effective tool for reducing drive- alone trips and increasing corridor capacity has been the award winning SmartTrips Portland program.

SmartTrips Portland

SmartTrips Portland is a comprehensive approach to reduce drive-alone trips and increase biking, walking and public transit in targeted geographic areas or transportation corridors of the city. It incorporates the innovative and highly effective "individualized marketing" methodology, which hand delivers packets of information to residents who wish to learn more about transportation options. Key components feature biking and walking maps and organized activities which get people out in their neighborhoods or places of employment to shop, work, and discover how many trips they can easily, conveniently, and safely make without using a car. Success is tracked by evaluating qualitative and quantitative results from surveys and other performance measures.

Past SmartTrips projects have shown a reduction in drive-alone trips in the 8-12% range. SmartTrips Northeast (2006) showed a 12.8% decrease in drive-alone trips accompanied by an increase in walking, biking, transit, and carpool trips. The key to SmartTrips' success is its ability to encourage people to use alternate modes for the trips that work best for them; for many people it's easier to bike to the store or library than it is to bike to work, for example.

Past SmartTrips projects have reached thousands of residents in the neighborhoods adjacent to Powell Blvd including Creston Kenilworth, Foster/Powell and Brooklyn neighborhoods. A SmartTrips project planned for 2010, coinciding with the opening of the Green Line MAX, will reach thousands more residents in Lents and South Tabor.

SmartTrips – Powell

While most residents adjacent to Powell have, or will soon benefit from the SmartTrips program, a more comprehensive project encompassing the entire Powell Corridor is planned for implementation as part of a ten year strategy to reach every resident in Portland.

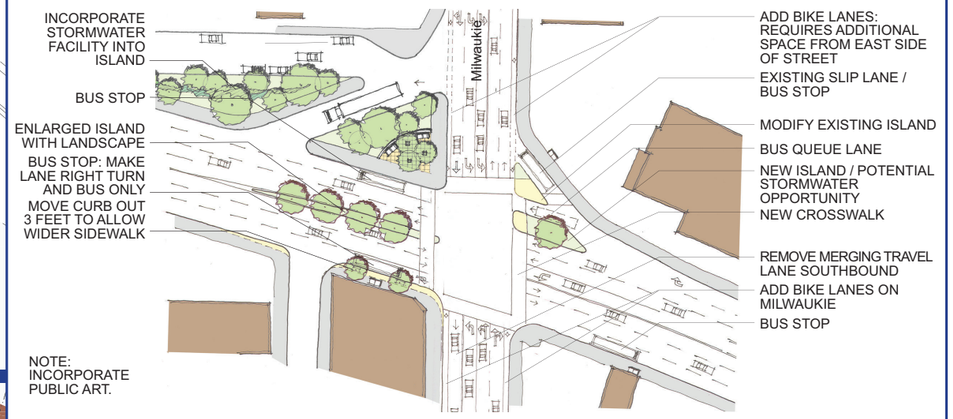
SmartTrips Powell is a large scale individualized marketing project that will target behavior change programs and strategies to all 35,000 residents who live within ½ mile of Powell Blvd. The timing of the project depends largely on funding availability and coordination with other capital projects in the corridor. Demand management programs like SmartTrips work best when they are able to leverage behavior change with major capital investments like light rail, trail openings, or streetscape projects after construction is completed.

INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 1

Landscape Architecture

DETAIL 2: SE Powell and Milwaukie Avenue Intersection



DETAIL 1: Gateway to Powell Blvd: 7th - 10th Avenues

- ART OPPORTUNITY: ATTACH ARTWORK TO 9TH AVE PEDESTRIAN OVERPASS.
- CONSIDER MOUNTABLE CURB AROUND NEW REFUGE ISLANDS AT 8TH AND 9TH THAT CAN ACCOMMODATE TRUCKS TURNING ON AND OFF POWELL.
- WIDEN SIDEWALK ON NORTH SIDE OF POWELL FROM ROSS ISLAND BRIDGE TO 9TH AVE, ESPECIALLY AT BUS STOP BETWEEN 8TH AND 9TH AVE.
- EXPLORE FEASIBILITY OF INSTALLING STORMWATER FACILITIES IN CURB EXTENSIONS ON CROSS-STREETS SOUTH OF POWELL.

DETAIL 3: 13th - 14th Avenue: Rebuild Median to Add Trees

- EXPLORE FEASIBILITY OF INSTALLING STORMWATER FACILITIES IN CURB EXTENSIONS ON CROSS-STREETS SOUTH OF POWELL.

MLK VIADUCT REPLACEMENT PROJECT (under construction)

LEGEND

- Signalized Intersection
- Existing Street Light
- Existing Bus Stop
- Close Existing Bus Stop
- Existing Street Tree
- Proposed Street Tree
- Potential for Street Trees
- Stormwater Draining Towards Powell
- Potential for Stormwater Facility
- Proposed Changes to Existing Median
- Proposed New Median
- Enhanced Crossing
- Improved Bicycle Connection Across Powell

0 50 100 NORTH

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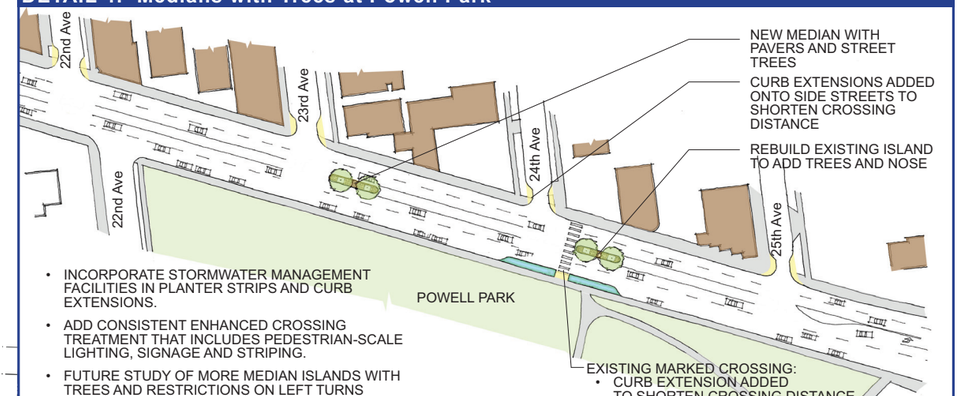
INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 2

Landscape Architecture [nev-ŭ-non] Nevue | Ngan Associates

DETAIL 4: Medians with Trees at Powell Park



- INCORPORATE STORMWATER MANAGEMENT FACILITIES IN PLANTER STRIPS AND CURB EXTENSIONS.
- ADD CONSISTENT ENHANCED CROSSING TREATMENT THAT INCLUDES PEDESTRIAN-SCALE LIGHTING, SIGNAGE AND STRIPING.
- FUTURE STUDY OF MORE MEDIAN ISLANDS WITH TREES AND RESTRICTIONS ON LEFT TURNS ONTO POWELL.
- ADD WHEEL STOPS, STRIPING AND SIGNAGE TO EXISTING DIAGONAL PARKING ON SE 22ND AND 23RD AVENUES SO VEHICLES DO NOT PARK OVER SIDEWALK, OR RETURN TO PARALLEL PARKING.

Future Study: SE 17th Avenue Railroad and Underpass
SE 17th and Powell is a barrier for pedestrians and bike movements. In future study, address the barrier that is created by the railroad underpass (north - south barrier) and railroad tracks (east - west barrier).

Recommendations:

1) Improve existing underpass:
- Increased maintenance
- Murals
- Lighting
- Police patrol

2) New pedestrian / bike bridge (N-S) to facilitate N-S movement and E-W pedestrian and bicycle movement.

3) At-Grade Crossing
Community preference is for an at-grade crossing of the railroad tracks and minimal change of grade when crossing Powell Blvd.

LEGEND

0 50 100 NORTH

- Signalized Intersection
- Existing Street Light
- Existing Bus Stop
- Close Existing Bus Stop
- Existing Street Tree
- Proposed Street Tree
- Potential for Street Trees
- Stormwater Draining Towards Powell
- Potential for Stormwater Facility
- Proposed Changes to Existing Median
- Proposed New Median
- Enhanced Crossing
- Improved Bicycle Connection Across Powell

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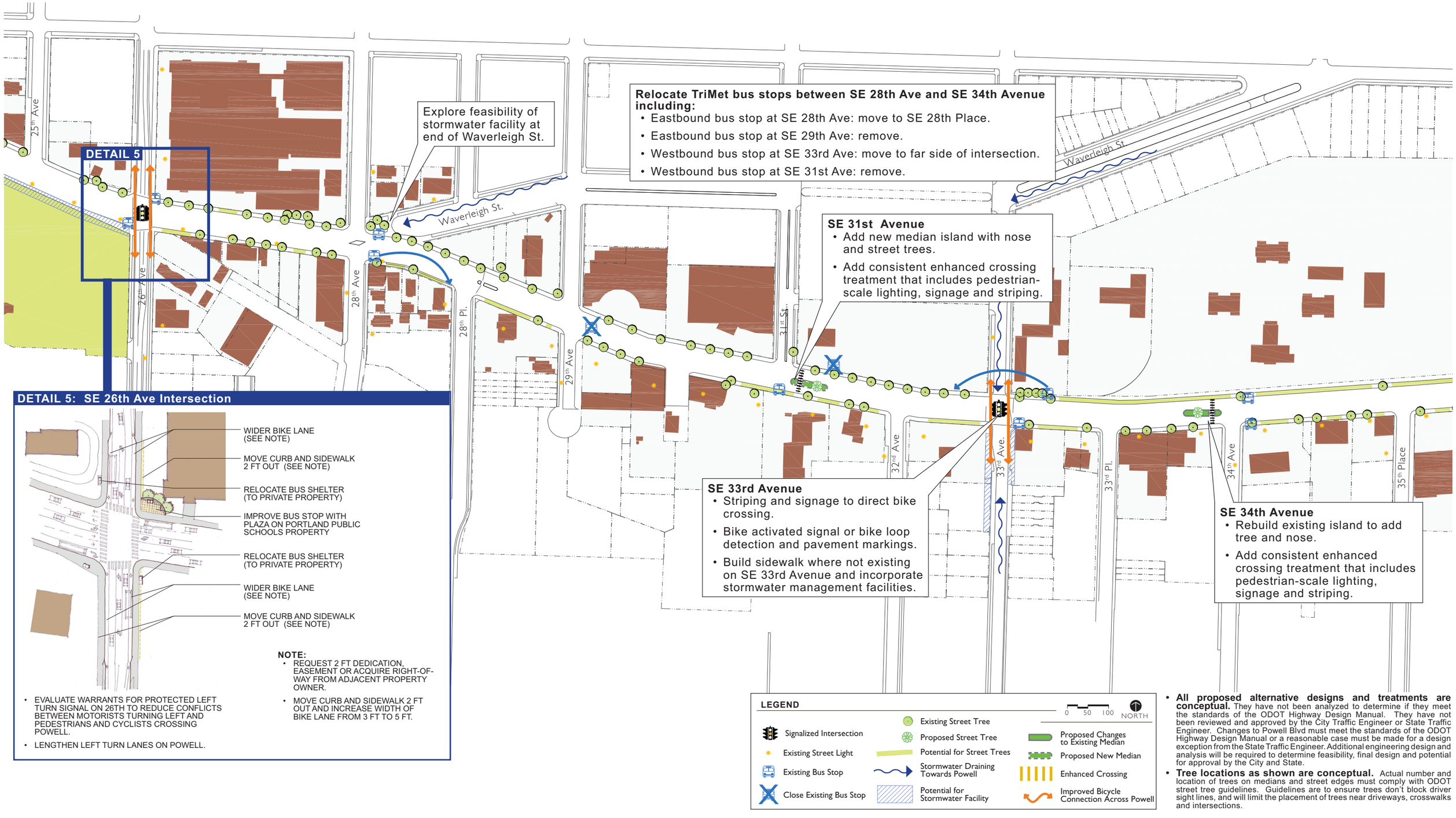
INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 3

Landscape Architecture



DETAIL 5: SE 26th Ave Intersection

- EVALUATE WARRANTS FOR PROTECTED LEFT TURN SIGNAL ON 26TH TO REDUCE CONFLICTS BETWEEN MOTORISTS TURNING LEFT AND PEDESTRIANS AND CYCLISTS CROSSING POWELL.
- LENGTHEN LEFT TURN LANES ON POWELL.

NOTE:

- REQUEST 2 FT DEDICATION, EASEMENT OR ACQUIRE RIGHT-OF-WAY FROM ADJACENT PROPERTY OWNER.
- MOVE CURB AND SIDEWALK 2 FT OUT AND INCREASE WIDTH OF BIKE LANE FROM 3 FT TO 5 FT.

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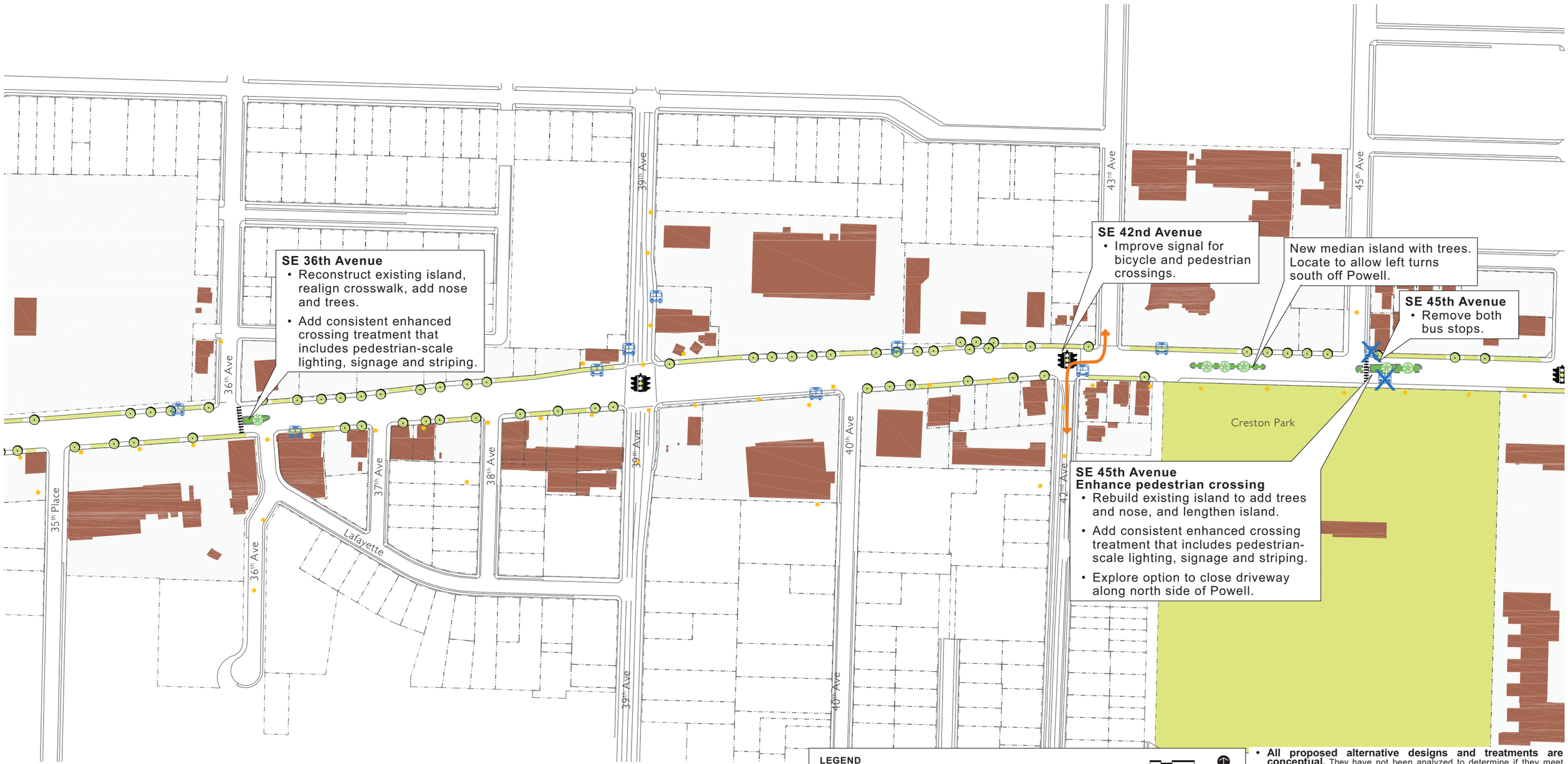
INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 4



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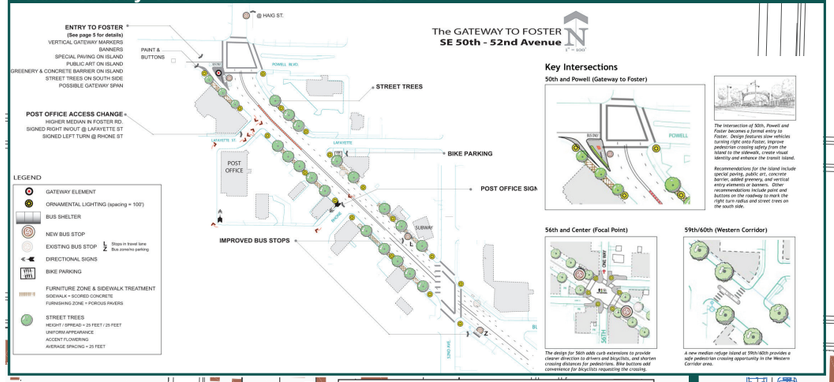
INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 5

Landscape Architecture
Parametrix [nev-ū-non] Nevue|Ngan Associates
alta PLANNING + DESIGN

FOSTER ROAD STREETSCAPE AND TRANSPORTATION PLAN (adopted)
The Gateway To Foster - 50th To 52nd



Future Study:
SE 52nd Avenue
Enhanced bikeway

- Remove center left turn-pockets on 52nd to Lafayette and Rhone.
- Create one travel lane in each direction on 52nd.
- Add bike lanes on 52nd.
- Explore options for retaining left turn pocket and bike lanes where 52nd crosses Powell and Foster.
- Consider sharrows for bikes.

SE 54th Avenue
Enhance existing marked mid-block pedestrian crosswalk

- Add consistent enhanced crossing treatment that includes pedestrian-scale lighting, signage and striping.

SE 57th or SE 58th Avenue
Enhanced pedestrian crossing

- Add pedestrian activated signal (H.A.W.K. signal).
- Add mid-block crosswalk cut through median island.
- Add pedestrian-scale lighting.
- Add pole signage, overhead signage, marked crosswalk and advanced stop bar.

SE 47th Avenue

- Relocate TriMet bus stops to far side of crosswalks.

SE 47th Avenue and school
Enhance pedestrian crossing:

- Add consistent enhanced crossing treatment that includes pedestrian-scale lighting, signage and striping.

OPTION #1 • Improve existing pedestrian activated signal.
OPTION #2 • Install H.A.W.K. signal.
OPTION #3 • Build refuge island.

Signal Optimization at: SE 50th - Foster - Powell Blvd.
SE 52nd - Powell Blvd.
SE 52nd - Foster Blvd.

- Explore changes to signal coordination and phasing to improve capacity and flow.
- Install signal technology and equipment to improve signal coordination.
- Provide bus priority at signals.

Address illegal dumping and activities behind soundwall in public parking lots.

- Consider vacating Right of Way to adjacent owner.
- Consider fencing and gate.

LEGEND

0 50 100 NORTH

- Signalized Intersection
- Existing Street Light
- Existing Bus Stop
- Close Existing Bus Stop
- Existing Street Tree
- Proposed Street Tree
- Potential for Street Trees
- Stormwater Draining Towards Powell
- Potential for Stormwater Facility
- Proposed Changes to Existing Median
- Proposed New Median
- Enhanced Crossing
- Improved Bicycle Connection Across Powell

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INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 6

Landscape Architecture

SE 67th Avenue
Enhanced pedestrian crossing

- Reconstruct nose of median island to provide crosswalk.
- Add pedestrian-scale lighting.
- Add pole signage, overhead signage, marked crosswalk and advanced stop bar.
- Close both existing bus pull-outs.
- Incorporate stormwater facilities into furnishing zone along Powell to manage runoff from Powell between 66th and 67th (up to 6500 square feet of runoff from westbound lanes and 6000 square feet of runoff from eastbound lanes). Work with TriMet to best integrate stormwater facilities and bus stops.

North side of Powell between SE 67th and SE 69th Ave
Stormwater management facilities

- Install stormwater management facilities in the planter strips on cross-streets.
- Explore feasibility of stormwater management facilities in curb extensions on cross-streets to decrease stormwater runoff onto Powell.

SE 70th Avenue

- Close driveway: Confirm w/ school if driveway leading to field at Kellogg Middle School is needed.
- Install (2) sidewalk curb ramps.

SE 69th Avenue

- Improve existing signal.
- Add bike loop detectors and striping.

58th Ave, 59th Ave, 60th Ave, 61st Ave, 62nd Ave, 63rd Ave, 64th Ave, 65th Ave, 66th Ave, 67th Ave, 68th Ave, 69th Ave, 70th Ave, 71st Ave

Lafayette St.

Rhone St.

DETAIL 6

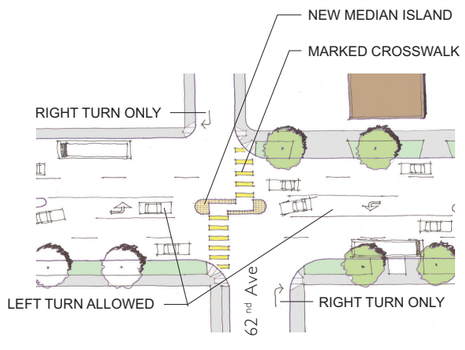
DETAIL 6: Future Study: Enhanced Pedestrian Crossing at 62nd Avenue

ALTERNATIVE #1

- ADD MEDIAN ISLAND AT 62ND.
- ADD MARKED CROSSWALK.
- ADD POLE SIGNAGE, OVERHEAD SIGNAGE, AND ADVANCED STOP BAR.
- ADD PEDESTRIAN-SCALE LIGHTING.
- PROHIBIT MOTOR VEHICLE THROUGH TRAVEL ON 62ND ACROSS POWELL.
- PROHIBIT LEFT TURN FROM 62ND ONTO POWELL BLVD EAST AND WEST BOUND.

ALTERNATIVE #2

- ENHANCED, MARKED CROSSING AT 61ST THROUGH EXISTING CUT IN MEDIAN ISLAND.



LEGEND

- Signalized Intersection
- Existing Street Light
- Existing Bus Stop
- Close Existing Bus Stop
- Existing Street Tree
- Proposed Street Tree
- Potential for Street Trees
- Stormwater Draining Towards Powell
- Potential for Stormwater Facility
- Proposed Changes to Existing Median
- Proposed New Median
- Enhanced Crossing
- Improved Bicycle Connection Across Powell

0 50 100 NORTH

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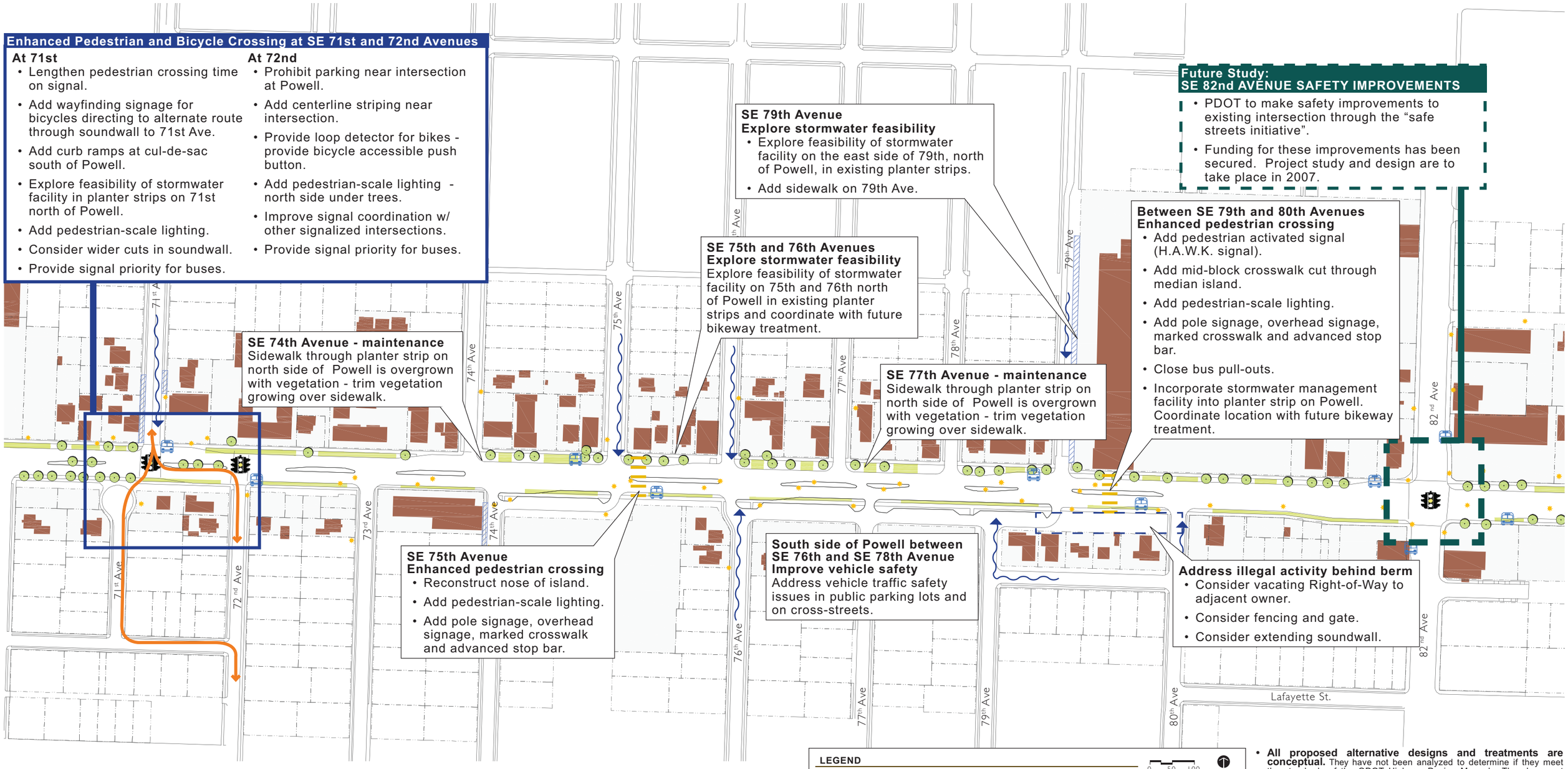
INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 7

Landscape Architecture [nev-ū-non] Nevue | Ngan Associates



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INNER POWELL BOULEVARD STREETSCAPE PLAN

MAP 8

Landscape Architecture
[nev-ŭ-non] Nevue | Ngan | Associates

84th Avenue
Enhanced pedestrian crossing
- Either cut through existing island or build new island west of 84th.
- Add pedestrian-scale lighting.
- Add pole signage, overhead signage, marked crosswalk and advanced stop bar.
- Consider closing bus pullouts on both sides and adjusting bus stop locations to coordinate with crosswalk.

92nd Avenue
Westbound bus stop improvement
- Utilize 10 ft of reserve right-of-way to widen the sidewalk adjacent to the westbound far side bus stop with pullout.
- Add street trees.
- Add pedestrian-scale lighting.
- Locate shelter outside the pedestrian through zone.
- Consider stormwater facility for sidewalk runoff and/or adjacent property owner parking lot.

Between 90th Place and 92nd Avenue
Enhanced pedestrian crossing
- Locate crossing in alignment with Goodwill entrance and pedestrian connection to McDonalds.
- Add pedestrian-scale lighting.
- Add pole signage, overhead signage, marked crosswalk and advanced stop bar.
- Consider shortening east end of median island to accommodate left turns.

92nd Avenue
TRIMET LIGHTRAIL PROJECT (under construction)

TriMet and the City of Portland are building lightrail along I-205 from Gateway to Clackamas Town Center (project completion 2009). A lightrail station and park and ride will be located just south of Powell Blvd. As a part of this project, TrMet will:
- Lengthen right turn lane on 92nd in front of bowling alley.
- Improve the eastbound bus stop with shelter, next to Burgerville.
- Maintain bike lanes.

90th Avenue
- Close bus pullout.
- Keep bus stop.

86th Avenue
- **Driveway closure:** pursue closure of driveway on north side of Powell at 86th Ave. It appears to be no longer used.
- Close bus pullout on south side of Powell.
- Lengthen left turn storage on Powell.

84th Ave, 85th Ave, 86th Ave, 87th Ave, 88th Ave, 89th Ave, 90th Ave, 90th Ave, 92nd Ave, 92nd Ave, I-205

LEGEND

0 50 100 NORTH

- Signalized Intersection
- Existing Street Light
- Existing Bus Stop
- Close Existing Bus Stop
- Existing Street Tree
- Proposed Street Tree
- Potential for Street Trees
- Stormwater Draining Towards Powell
- Potential for Stormwater Facility
- Proposed Changes to Existing Median
- Proposed New Median
- Enhanced Crossing
- Improved Bicycle Connection Across Powell

- **All proposed alternative designs and treatments are conceptual.** They have not been analyzed to determine if they meet the standards of the ODOT Highway Design Manual. They have not been reviewed and approved by the City Traffic Engineer or State Traffic Engineer. Changes to Powell Blvd must meet the standards of the ODOT Highway Design Manual or a reasonable case must be made for a design exception from the State Traffic Engineer. Additional engineering design and analysis will be required to determine feasibility, final design and potential for approval by the City and State.
- **Tree locations as shown are conceptual.** Actual number and location of trees on medians and street edges must comply with ODOT street tree guidelines. Guidelines are to ensure trees don't block driver sight lines, and will limit the placement of trees near driveways, crosswalks and intersections.

4. RECOMMENDATION FOR FUTURE STUDY

Railroad Underpass at SE 17th Ave

In a future study or project, address the barrier between neighborhoods to pedestrians and bicycles created by the railroad (east-west barrier) and railroad underpass of Powell at 17th Ave. (north-south barrier). In the short-term, improve the existing underpass with increased maintenance, lighting, murals, working with the homeless and police patrol.

Median islands with trees between SE 22nd Ave to 26th Ave

- There is community desire for more medians with trees along Powell with enhanced pedestrian crossings to improve connections to the park.
- There is a desire among residents to reduce cut-through traffic on local streets north of Powell between 21st Ave and 26th Ave by restricting left turns from Powell and from the local cross streets.
- Additional traffic analysis necessary to determine traffic impact.
    - Collect left turning movement counts from Powell and from the cross streets.
    - Conduct diversion analysis to determine impact to other local streets and existing signalized intersections a SE 21st Ave and 26th Ave.
- Conduct more focused public involvement process with immediate residents and businesses within the impacted area to determine what support there is for traffic diversion.

Alternative 1

New median with pavers and street trees just east of 23rd and new trees in the existing median at 24th. Add curb extensions on the side streets (22nd, 23rd, and 24th).

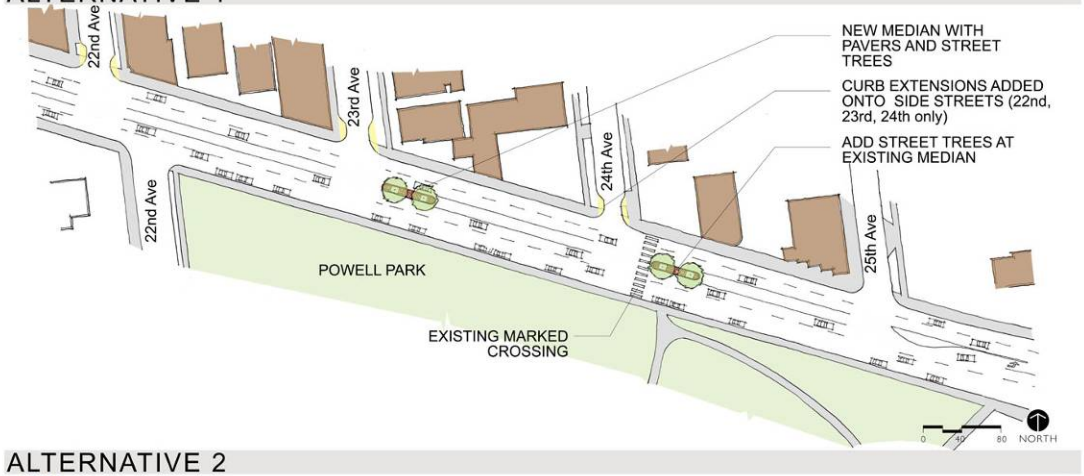
Alternative 2

New median with pavers and street trees between 22nd north and 22nd south, from just east of 23rd to the left turn pocket for 24th, from just east of 24th to the left turn pocket for 25th, and from just east of 25th to the left turn pocket for 26th. Add curb extensions on the side streets (22nd, 23rd, and 24th), and on Powell on the southeast side of all three intersections.

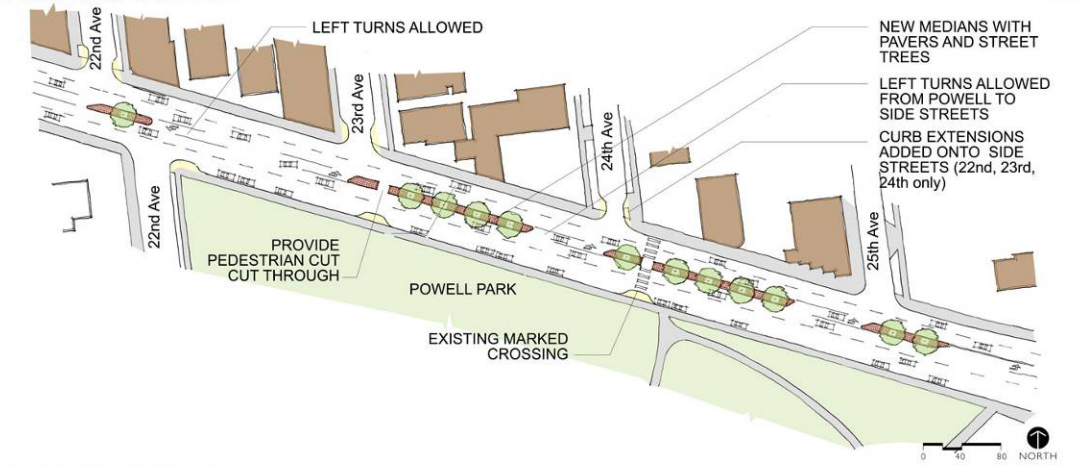
Alternative 3

Same as Alternative 2, except the median is continuous from just east of 23rd to the left turn pocket for 26th.

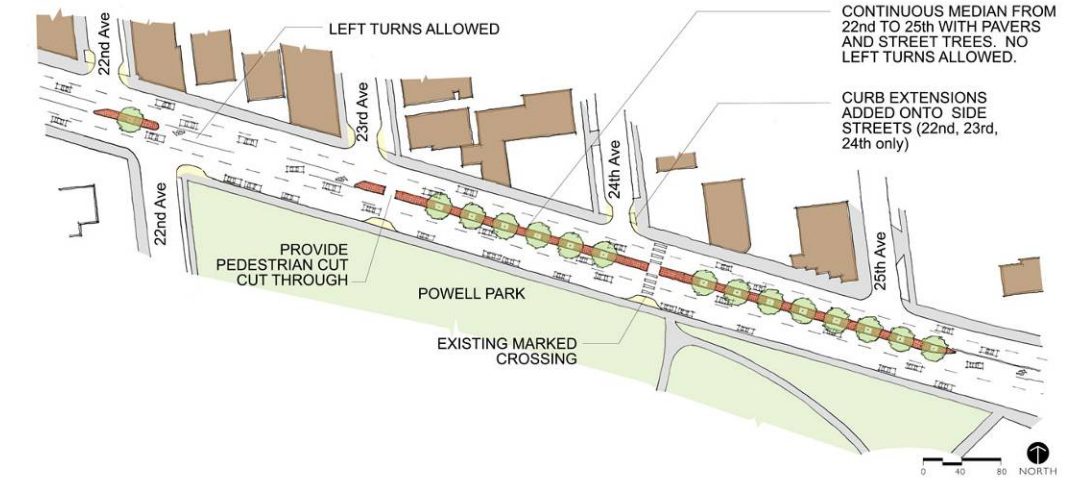
ALTERNATIVE 1



ALTERNATIVE 2



ALTERNATIVE 3



Enhanced, marked pedestrian and bicycle crossing at SE 61st Ave or 62nd Ave

Requires further analysis of the potential impacts and public outreach to residents on and near SE 62nd Ave, north and south of Powell, to determine if there is support for traffic diversion associated with Alternative 1. Otherwise, consider locating enhanced crossing at 61st T-intersection through the existing median.

Alternative 1

Construct a new median refuge island in the middle of the intersection at SE 62nd Ave. This alternative includes traffic diversion treatments. It would allow left turns from Powell Blvd to SE 62nd Ave. It would prohibit through movements on 62nd Ave across Powell and left turns from 62nd Ave to Powell Blvd.

Alternative 2

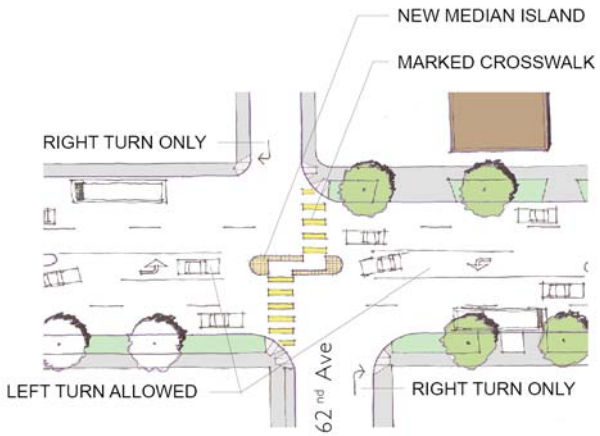
Use existing cut through median island at 61st Ave. This alternative will require closing one of the driveways along the property abutting Powell Blvd on the north side.

ALTERNATIVE #1

- ADD MEDIAN ISLAND AT 62ND.
- ADD MARKED CROSSWALK.
- ADD POLE, OVERHEAD SIGNAGE, AND ADVANCED STOP BAR.
- ADD PEDESTRIAN-SCALE LIGHTING.
- PROHIBIT MOTOR VEHICLE THROUGH TRAVEL ON 62ND ACROSS POWELL.
- PROHIBIT LEFT TURN FROM 62ND ONTO POWELL BLVD EAST AND WEST BOUND.

ALTERNATIVE #2

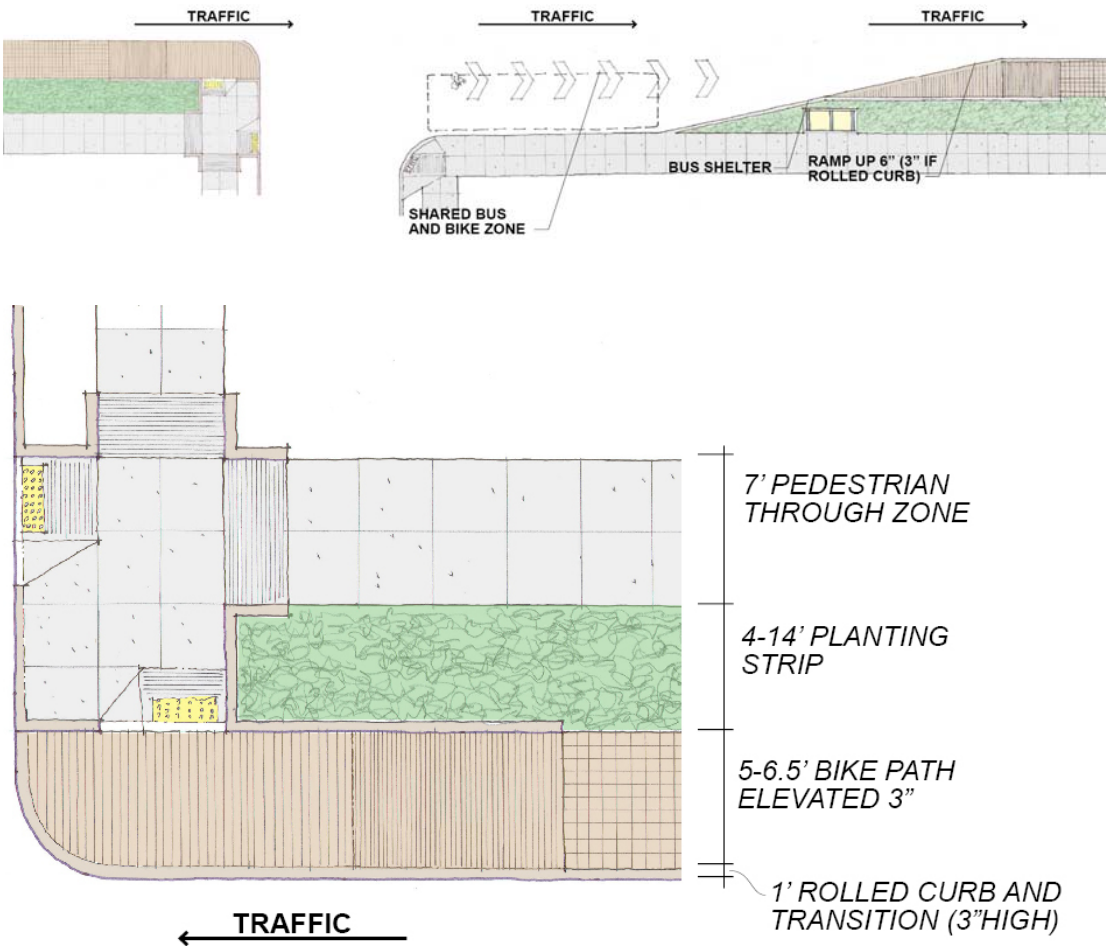
- ENHANCED, MARKED CROSSING AT 61ST THROUGH EXISTING CUT IN MEDIAN ISLAND.



Bikeway facility between SE 72nd Ave and 92nd Ave

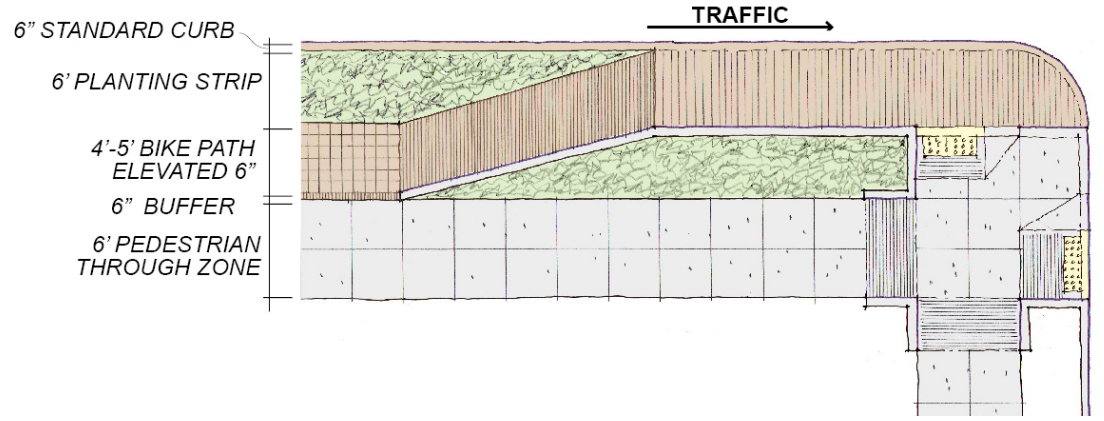
Pursue further study of innovative bikeway treatment, considering the following

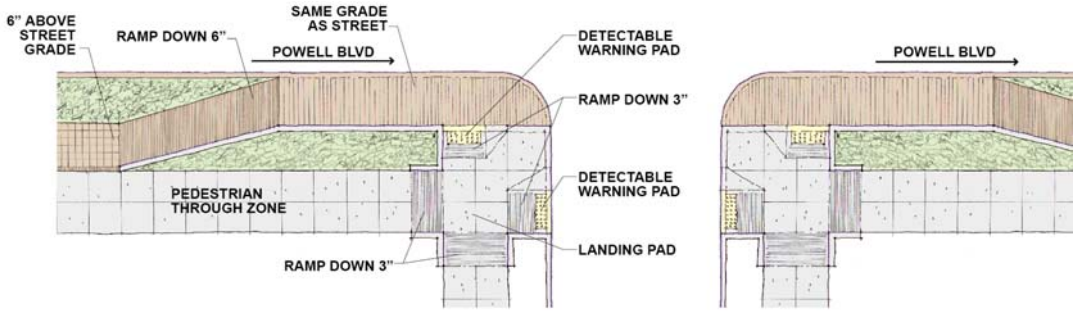
- **North side of Powell.** Community preference is for Bikeway Alternative 2, a mountable raised concrete bike lane, on the north side of Powell between 72nd Ave and 92nd Ave. Considerations for an elevated bikeway adjacent to the sidewalk:
  - Maintain the same roadway and lanes widths. Provide bike lane by moving back the curb and narrowing the landscaped strip.
  - Provide a 5 ft – 6.5 bike lane elevated 3 inches to 4 inches above the roadway
  - Provide an additional 1-foot rolled curb transition zone.

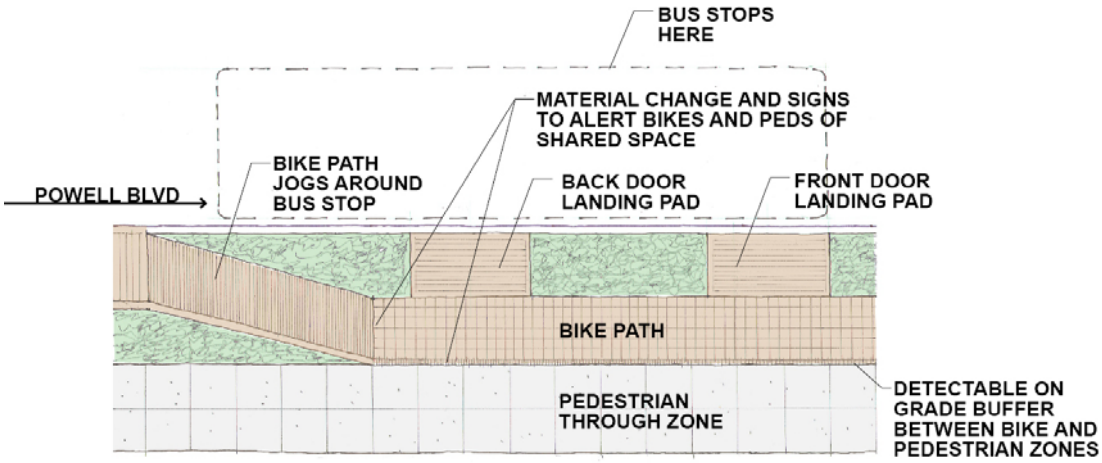


- **South side of Powell.** Community preference is for Bikeway treatment Alternative 3, an elevated one-way bikeway adjacent to the sidewalk except at corners, on the south side of Powell between 72nd Ave and 92nd Ave. Considerations for an elevated bikeway adjacent to the sidewalk:
  - Maintain the same roadway and lanes widths.
  - Bring the bikeway facility back to street level adjacent to the motor vehicle travel lanes at intersections.
  - Preserve and protect existing healthy mature trees in the landscaped area of the furnishing zone to the greatest extent possible. Replace unhealthy trees to create a diverse tree canopy and provide an adequate bikeway and pedestrian through zone.
  - Provide a minimum of 4 ft wide bikeway facility. Preferred width is 5 feet.
  - Provide a buffer transition between the bikeway and sidewalk with tactile warning.
  - Provide a minimum of 6 ft wide concrete pedestrian through zone. Wider is preferred where right-of-way allows.
  - Reduce the frontage zone where needed to provide the bikeway and pedestrian through zone.

- Reduce the parking lot and frontage road where possible to provide the bikeway and pedestrian through zone.
- Acquire additional right-of-way through dedication or acquisition where needed to provide minimal bikeway and pedestrian through zone widths.
- Provide stormwater management facilities in landscaped furnishing zone between existing trees where feasible.



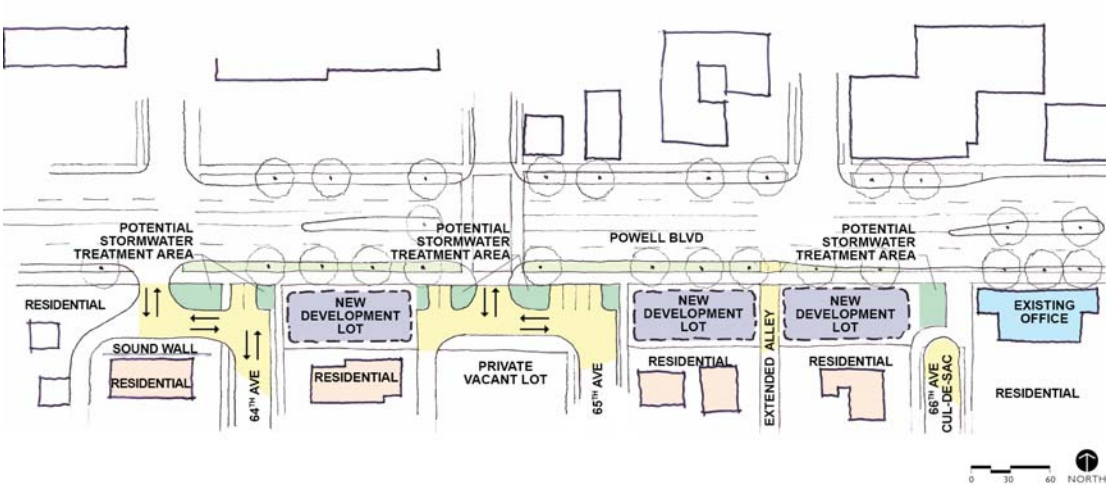




Potential Redevelopment of Public Parking Lots along Powell Blvd

- Pursue a future study, with community input, of the potential redevelopment of some or all of the existing public parking lots between along SE Powell Blvd
  - There is a public parking lot near 21st Ave north of Powell Blvd and another near 27th Ave south of Powell Blvd. There are nine public parking lots between SE 53rd Ave and 79th Ave providing 109 parking spaces.
  - Assess the success of the existing public parking lots in meeting the intended objectives from the Powell Boulevard Plan Phase II Environmental Impact Statement (1978).
  - Study the feasibility of the redevelopment of some or all of the existing public parking lots between along SE Powell Blvd.
  - Determine the feasibility of creating new parcels and selling them for redevelopment.
  - Determine preferred development type, including building form and land use.
  - Recommend amendments to the Comprehensive Plan designations, Zoning Map designations and Powell Blvd Plan District regulations accordingly.
  - Prepare a new land use, zoning, and circulation plan for these areas with careful consideration of the present design that discourages through north/south traffic across Powell.
  - In this same area, consider relinquishing ownership of property between the sound walls and the adjacent lots to the south in recognition of the safety and security issues there.

Conceptual Example of Parking Lot Redevelopment:



Intersection improvements at 39th Ave and 82nd Ave

This plan does not propose intersection improvements at 39th or 82nd. The project did investigate what would be required to improve motor vehicle capacity and achieve the Regional volume to capacity requirement of less than 0.99 in the 20-year planning horizon. The cost and property impacts of these are well beyond the scope of this project. Therefore, the intersections will not achieve the Regional volume to capacity requirement of less than 0.99. Both of these intersections are high on the City's safety list, so it is hoped that other projects will generate the needed improvements outside this project.

5. IMPLEMENTATION

5.1 TIER ONE PRIORITY IMPROVEMENTS

The top priority improvements from the Inner Powell Blvd Streetscape Plan are identified in order of priority below. To the extent possible, effort should be made to secure funding for these items in the order as they are listed before all other improvements and coordinate construction to coincide with the up-coming ODOT Phase II Powell Blvd Preservation Project between SE 50th Ave and 92nd Ave. The Preservation Project is a paving maintenance project. Construction of the preservation project is planned for 2008-2009. ODOT has identified approximately $500,000 for pedestrian and bicycle improvements in addition to the Preservation Project funds. There is not currently enough money identified to pay for all the priority improvements listed below. Therefore, additional funding will be necessary or some improvements will have to be delayed to a future date when funding is available.

Other improvements of the Inner Powell Blvd Streetscape Plan can advance ahead of the tier one priority improvements, if they are tied to specific fund sources that cannot be used for the improvements listed below, for example, stormwater management facilities.

Cost estimates for construction these projects were made with the following assumptions: construction in five years, Federal funding sources with a 32.32% overhead, and 20% contingency.

- Enhanced pedestrian and bicycle crossings at the following locations:
  - Between 57th Ave and 58th Ave, cut through existing median mid-block
  - SE 67th Ave, rebuild nose of existing median at west leg of intersection, close bus pull-out and incorporate stormwater facility into furnishing zone along Powell to manage runoff from up to 6,500 square feet of the westbound lanes (from 66th to 67th) and 6,000 square feet of the eastbound lanes (from 66th to 67th). Work with TriMet to best integrate stormwater facilities and bus stops.
  - SE 75th Ave, rebuild nose of existing median at east leg of intersection
  - Between SE 79th Ave and 80th Ave, cut through existing median mid-block between 79th Ave and 80th Ave or rebuild nose of existing median at east leg of 79th Ave intersection
  - SE 84th Ave, cut through existing median mid-block or build new median refuge island west of intersection.
  - Between 90th Ave and 92nd Ave, cut through existing median mid-block

  Cost Estimate: $480,000

- Install dual curbs at all intersections where dual ramps do not currently exist, unless unfeasible due to narrow sidewalk width, and add single ramps at T-intersections on the non-corner side of the street.
  - An estimated 103 new ramps or upgraded ramps are needed between SE 50th Ave and 92nd Ave. An inventory of existing curb ramps conditions and proposed new ramps is located in Appendix C.

  Cost Estimate: $206,000

- Modify existing signals, coordinate and optimize signal timing to improve traffic operations and intersection capacity, and install new pedestrian activated signals
  - Signal Inter-tie and Hardware Upgrade:
    - Upgrade signal hardware by replacing antiquated inter-connect hardware and running underground wiring at the following locations:
      - SE 52nd and Foster
      - SE 65th Ave
      - SE 69th Ave
      - SE 71st Ave
      - SE 72nd Ave
    - Coordinate signals according to the following segments:
      - Milwaukie to 72nd (including 52nd & Foster).
      - 82nd Ave.
      - 86th through I-205
  - Install pedestrian and bicycle activated signals at the following locations.
    - Between 57th Ave and 58th Ave
    - Between 79th Ave and 80th Ave

Cost Estimate: $420,000

- Plant trees.
  - Enlarge existing and create new planters in accordance with the Corridor Plan
  - Replace missing trees in existing tree wells and planters.
  - Add trees along the sidewalk where feasible in areas as shown on the Corridor Plan.
  - Add trees in medians where feasible in areas as shown on the Corridor Plan.

Cost Estimate: Unknown

- Install Stormwater Management Facilities.
  - **SE 24th Ave Curb Extension.** Incorporate stormwater facility into eastern side of curb extension across Powell at SE 24th Ave to manage runoff from up to 20,000 square feet of the eastbound lanes (from 26th to 24th). Coordinate with TriMet to accommodate the eastbound bus stop in the curb extension design.

Cost Estimate: $48,000

Tier One Top Priority Improvements Total Cost: $1,154,000

5.2 POTENTIAL FUNDING SOURCES

There are several potential funding sources for various improvements in the Inner Powell Blvd Streetscape Plan. These potential sources are listed and described below. Since Powell is designated a State Highway (State Hwy No. 26) and identified as a regional facility in the Regional Transportation Plan, it is eligible for State and regional transportation funds. However, improvement project on Powell Blvd will have to compete with many other State and regional projects.

Powell is also a high crash corridor. Two of the twenty-nine Strategic And Focused Enforcement Traffic Safety Corridors designated in the City of Portland are along SE Powell Boulevard. One is between McLoughlin Boulevard and 13th Avenue, and the other is between SE 21st and 52nd Avenues. The safety concerns along Powell Blvd will likely make it more eligible for transportation funding sources tied to improving safety.

State Level

State Transportation Improvement Plan (STIP)

The Statewide Transportation Improvement Program, known as the STIP, is Oregon's four-year transportation capital improvement program. It is the document that identifies the funding for, and scheduling of, transportation projects and programs. It includes projects on the federal, state, city, and county transportation systems, multimodal projects (highway, passenger rail, freight, public transit, bicycle and pedestrian), and projects in the National Parks, National Forests, and Indian tribal lands.

Most projects in the STIP can be separated into two categories: (1) Preservation projects, and (2) Modernization projects. Preservation projects protect the state's investment in the transportation infrastructure by systematically preserving all elements of the existing system, while Modernization projects primarily add new capacity to the system. Under these two broad categories are many Work Types (e.g., Safety, Pavement, Bridge, Operations, Public Transportation, Special Programs). All of the projects in the STIP have elements of safety, preservation, and operations in them.

Oregon's STIP covers a four-year construction period, but is updated every two years in accordance with federal requirements. The currently approved program is the *2006-2009 STIP*. The *Draft 2008-2011 STIP* is currently under final review. Federal approval is anticipated in Fall of 2007. The next *STIP* is for year 2012-2015. The current approved STIP and draft future STIP may be viewed at www.oregon.gov/ODOT/HWY/STIP/0609stip.shtml.

State Bicycle & Pedestrian Program Fund

ODOT established a Bicycle & Pedestrian Program fund in the STIP to meet the minimum of 1% requirement of the 1971 Statewide "Bicycle and Pedestrian Bill." The statute requires ODOT to spend at least one percent of its share of state highway funds on pedestrian and bicycle facilities. The 06-09 STIP programs $22.3 million for the Bicycle and Pedestrian Program, allocated to three programs:

- **Grants**: $2.5 million per year for pedestrian/bicycle projects on local streets & state highways. Projects are selected using a statewide competitive process, distributed to mostly cities and counties. Grants are awarded for the first biennium of the new STIP.

- **Sidewalks Improvement Program (SWIP)**: $2.0 million per year in FY 06 and $2.1 million per year in FY 07-09 for pedestrian improvements on State Highways. A regional allocation is calculated based on sidewalk needs.
- **Quick Fixes**: $1 million per year for minor sidewalk improvements on state highways, up to $100,000 per project. Funds are distributed to ODOT Maintenance Districts with no regional allocation; first come first serve basis.

The Pedestrian and Bicycle Grant Program is a competitive grant program that provides approximately $5 million dollars every two years to Oregon cities, counties and ODOT regional and district offices for design and construction of pedestrian and bicycle facilities. Proposed facilities must be within public rights-of-way. Grants are awarded by the Oregon Bicycle and Pedestrian Advisory Committee. The '08-'09 Program Grants were awarded by the Oregon Pedestrian and Bicycle Advisory Committee in October 2006. The next grant cycle ('10-'11) will begin in Spring 2008.

Due to a reduction in the modernization program and the additional highway funds ODOT will receive from OTIA I, II & III, the Pedestrian and Bicycle Program funds were increased to a total of $5.5 million starting in FY 06, then $5.6 million per year in FY 07-09 to ensure ODOT meets its 1% obligation.

State Pedestrian and Bicycle Transportation Enhancement Grants

The Transportation Enhancement program provides federal highway funds for projects that strengthen the cultural, aesthetic, or environmental value of our transportation system. The intent of the program is to fund special or additional activities not normally required on a highway or transportation project. So far, Oregon has funded more than 150 projects for a total of $63 million. The funds are available for twelve "transportation enhancement activities" specifically identified in the Transportation Equity Act for the 21st Century (TEA-21). These activities fall into four main groups:

- Pedestrian and Bicycle Projects
- Historic Preservation related to surface transportation
- Landscaping and Scenic Beautification
- Environmental Mitigation (highway runoff and wildlife protection only)

Transportation Enhancement or "TE" projects are selected through a competitive process. The funds are provided through reimbursement, not grants. Participation requires matching funds from the project sponsor, at a minimum of 10.27%. Applications are accepted only from public agencies. Private organizations may apply in partnership with a local, state or federal agency, or Indian tribe. All projects must have a direct relationship to surface transportation.

For FY 2008-2011 the program will have $6.5 million per year for competitive selection and $2 million per year for the Discretionary Account. Fourteen projects were approved on February 21, 2007 for construction in 2009-2011. The next Application deadline is in Spring 2008 for construction of projects in 2011.

Regional Level

Metropolitan Transportation Improvement Plan (MTIP)

Metro is required to prepare the Metropolitan Transportation Improvement Program (MTIP) document every two years to identify how all federal transportation money is scheduled to be spent in the Portland metropolitan region—including funds the Oregon Department of Transportation allocates through the State Transportation Improvement Program (STIP), public transportation funds administered by the transit agencies TriMet and SMART, and regional "flexible funds" that Metro allocates through its "Transportation Priorities" process. Regional flexible funds come from two different federal grant programs allocated to the Metro area: the Surface Transportation Program and the Congestion Mitigation/Air Quality Program.

Projects to be funded and programmed into the 2008-11 MTIP have been selected. The projects total approximately $45 million. The MTIP is currently in the programming phase. Programming is the process whereby available fund revenues from the many federal grant programs are matched to the funding needs and schedules of the selected projects. Assuming final approval of the MTIP, projects programmed for funding in the first year of the program may begin incurring project costs on October 1, 2008. The next round of Transportation Priorities will be for the 2010-2013 MTIP.

TriMet

TriMet has $50,000 to 70,000 available to contribute to 'streamline improvements' at TriMet bus stops along Powell Blvd. These improvements may include closing a couple targeted bus pullouts and creating new upgraded bus stops adjacent to the travel lane.

City Level

Community and School Transportation Safety Partnership Funds

In 2003, the City of Portland Office of Transportation launched the Community and School Traffic Safety Partnership (CSTSP) in response to strong public demand for services that protect neighborhoods from the negative impacts of traffic and to provide a safe environment for all modes of travel. Funding to support Community and School Traffic Safety Partnership programs and services are provided with the annual increase in traffic fine revenue from House Bill 2759. The Community and School Traffic Safety Partnership programs and services are structured around three primary areas of emphasis:

- Reducing Driver Error
- Pedestrian and Bicycle Safety
- Safe Routes to School

Pedestrian and bicycle safety improvements along Powell Blvd may be eligible for CSTSP project funding.

Bureau of Environmental Services Capital Improvement Program (CIP) Budget

BES identified four sets of stormwater/green street facilities along SE Powell Boulevard to address sewer capacity problems in these areas. Two sets originate from the Taggart D Pre-design Project (construction packages TGD-01 and TGD-11), while the remaining two are from the Lents 1&2 Pre-design Project (construction packages L-1 and L-2). These sets

contain a total of 37 stormwater facilities located primarily on the following cross streets: 7th to 13th, SE 24th to 25th, SE 66th to 76th, and SE 82nd Avenues.

These green street facilities are elements of larger construction packages funded with CIP dollars to address sewer maintenance and reliability (M&R) issues. The BES' FY2008-2012 CIP Requested Budget describes the maintenance and reliability program as "a strategic investment by the bureau to preserved and protect our infrastructure and to increase the reliability of our systems." This document notes that this program will be funded at $18.5 million per year for that five-year budget horizon.

This FY2008-2012 Requested Budget does not include these four Taggart D and Lents 1&2 construction packages. However, future 5-year budget requests will include these. Once submitted, the timing to begin final design and construction of these construction packages will depend on the severity of sewer capacity problems in these areas relative to others across the City.

Lents Town Center Urban Renewal Area Tax Increment Finance Funds

Powell Blvd, from SE 78th Ave to 122nd Ave, falls within the Lents Town Center Urban Renewal Area URA. Tax Increment Finance (TIF) funds generated within the URA are re-invested back into the URA as a revitalization effort. TIF funds are currently allocated to many projects and programs by the Lents Town Center Urban Renewal Advisory Committee (URAC) and Portland Development Commission (PDC). Streetscape improvements within the URA are eligible for TIF funds. For elements of the Powell Blvd Streetscape Plan within the Lents Town Center URA to receive TIF funds, it would be necessary to get the support and approval of the Lents Town Center URAC and PDC.

Transportation Demand Management Funds

Current SmartTrips projects are financed through a variety of funding sources including PDOT's general transportation revenues, State of Oregon Business Energy Tax Credits, major sponsorships, and through Metro's Regional Travel Options (RTO) program budget. Past projects have been implemented using MTIP (Metropolitan Transportation Improvement Program) funds as well.

SmartTrips Powell is a $350,000 project which will likely require a blend of funds to implement in a timely fashion. PDOT currently budgets for one large scale individualized marketing campaign per year (including grants, tax credits, and sponsorships). Additionally, Metro's RTO program budget includes $1 million of MTIP funds identified for individualized marketing projects in corridors and town centers through 2012. SmartTrips Powell is an excellent candidate for either or both funding sources as it is a key mobility corridor serving thousands of residents and several regional centers.

5.3 ACTION CHART

The following action chart identifies specific elements of the Inner Powell Blvd Streetscape Plan and organizes them into priority tiers. ODOT and PDOT are currently working to secure funding for the Tier One improvements and coordinate construction with the up-coming ODOT Phase II Powell Blvd Preservation Project between SE 50th Ave and 92nd Ave. The timing of future construction for Tier Two through Tier Four will depend upon securing additional funds. The lead agency and partners that should be involved in implementing each item are also listed in the chart.

Cost estimates are included for action items where available. The total estimated cost of the plan improvements is $5,700,000, excluding long-term sidewalk improvements. It is assumed that long-term sidewalk improvements will be built primarily by private development through the permitting process. All cost estimates are planning level cost estimates based on conceptual plans. There is a low level of confidence in the accuracy of the cost estimates. Cost estimates for construction projects were made with the following assumptions: construction in five years, Federal funding sources with a 32.32% overhead, and 20% contingency.

Action Item	Lead Agency	Partners	Cost Estimate
On-going			
Implement Long-term Sidewalk Improvements through the permitting process as private redevelopment occurs.	PDOT	Private Property Owners and Developers	On-going, to be paid by private property owner
Tier One	**Time Frame: 1-2 Years**		
Amend Portland Transportation System Plan to add Inner Powell Blvd Streetscape Plan as a TSP Project.	PDOT		
Fund and Construct Tier 1 Priority Improvements described at the beginning of the chapter to coincide with construction of the up-coming ODOT Phase II Powell Blvd Preservation Project between SE 50th Ave and 92nd Ave. Some improvements may take longer to implement if adequate funding is not secured,	ODOT	PDOT	$1,154,000
Implement bus stop closures and relocations.	TriMet	PDOT, ODOT	
Address maintenance issues, dumping of trash, camping and illegal activities occurring behind sound walls and berm.	PDOT and Community Groups	SOLV	
Form community volunteer clean-up and maintenance group for Powell Blvd	Neighborhoods and Businesses	PDOT	
Conduct community volunteer tree planting effort with Friends of Trees.	Neighborhoods and Businesses	Friends of Trees, PDOT and Parks	
Further study and implementation of 82nd Ave Improvements.	PDOT	ODOT	
Tier Two	**Time Frame: 2-4 Years**		
Fund and Construct safety improvements at SE 47th, existing pedestrian activated signal and access route to school	ODOT	PDOT	

Action Item	Lead Agency	Partners	Cost Estimate
Fund and construct short-term sidewalk improvements west of SE 50th Ave.	PDOT/BOM		
Further study of SE 26th Ave intersection improvements and median islands with trees and reduction of left turn movements at the following locations: • Between SE 22nd and 25th Ave • SE 62nd Ave	PDOT	ODOT	
Further study of improvements to address the barriers to pedestrian and bicycle travel at the 17th Ave railroad tracks and underpass. Incorporate study into the Milwaukie Light Rail Environmental Impact Statement study.	Metro	PDOT, TriMet, ODOT Rail Division and Railroad Company	
Tier Three	**Time Frame: 4-10 Years**		
Fund and construct priority stormwater management facilities along Powell and on cross-streets.	BES	PDOT, ODOT	
Fund and Construct SE Milwaukie and Powell Multi-modal Intersection Improvements.	ODOT/PDOT		$1,380,000
Fund and Construct Improvements between SE 7th Ave and SE 10th Ave	ODOT	PDOT	$520,000
Further study of SE 52nd Ave Enhanced Bikeway and Intersection Improvements	PDOT	ODOT	
Further study of Bikeway facility alternatives between SE 72nd Ave and 92nd Ave.	PDOT	ODOT	
Fund and Construct SE 71st and 72nd intersection improvements.			
Add new median refuge islands with street trees and other enhancements, including consistent signage, striping and lighting treatments, to existing marked crosswalks, at the following locations: • SE 31st Ave • SE 34th Ave • SE 36th Ave • SE 45th Ave • SE 47th Ave	ODOT	PDOT	
Fund and Construct all remaining improvements in the plan.			
Implement *SmartTrips Powell* Transportation Demand Management Project	PDOT	Metro, TriMet and Neighborhood Associations	$350,000
Further study of SE 39th Ave intersection capacity improvements.	PDOT	ODOT	
Further study of Public Parking Lot Redevelopment	PDOT/Bureau of Planning	ODOT	$80,000

6. PLANNING PROCESS

The Inner Powell Blvd Streetscape planning process and public outreach was conducted by the Transportation Planning Division of the City of Portland Office of Transportation (PDOT), in coordination with the Oregon Department of Transportation (ODOT). Since Powell Blvd is designated State highway No. 26, jurisdiction is shared between PDOT and ODOT. ODOT was a project partner and the Transportation and Growth Management (TGM) grant administrator. The project team consisted of PDOT, ODOT and consultants, including Parametrix, Nevue-Ngan and Alta Consulting.

The planning process commenced in August 2006 with research of existing background policy and existing conditions. A Citizen Working Group and Technical Advisory Group were formed to review and advise City staff in the development of the plan. Both groups met on a monthly basis. Three neighborhood walks and a community workshop were conducted in October 2006 to help identify issues, needs, opportunities and constraints along Powell Blvd. Three public open houses were conducted at key stages in the planning process to provide the broader public an opportunity to review project materials and provide feedback as alternatives were developed and evaluated. Following feedback collected at a final public open house and endorsement by the Powell Citizen Working Group and Technical Advisory Group, a recommended plan was identified in June 2007.

The planning process is displayed in the process flow chart on page 6-3. The remainder of this document further elaborates on each of the above groups, public events and phases of the planning process.

6.1 ADVISORY GROUPS

Powell Citizen Working Group

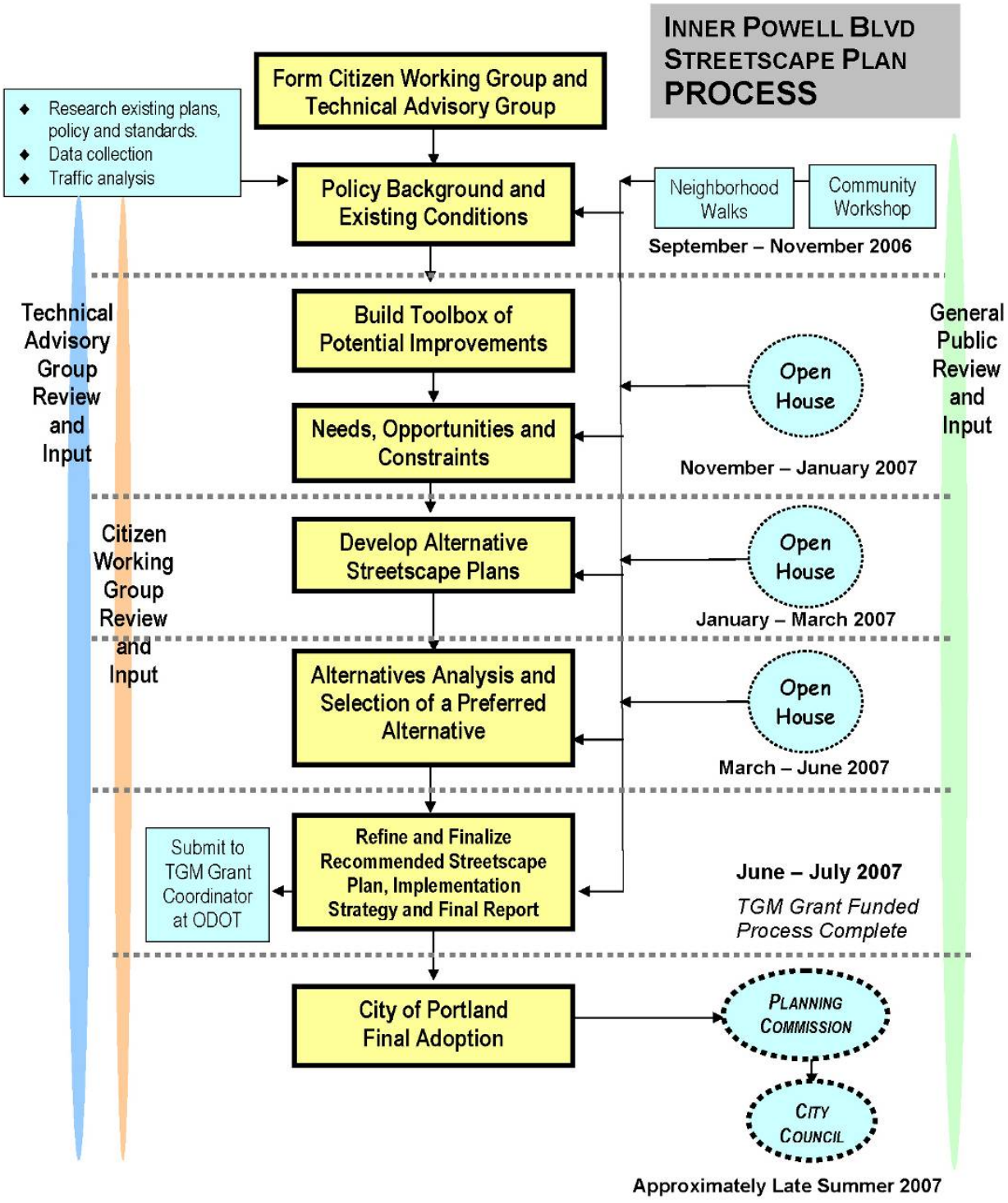
Leading up to this project, representatives from various neighborhood associations along Powell Blvd have been active through a community-formed Powell Citizen Working Group. To help guide the City in development of the plan, the City formed a broader Citizen Working Group (CWG) for the Inner Powell Boulevard Streetscape Plan. City staff integrated feedback from Powell CWG into project materials, development of alternatives, selection of preferred streetscape plan and recommendations to City Council. The Powell CWG monthly during the planning process. The Powell CWG assisted with the neighborhood walks and public open houses. The Powell CWG was comprised of representatives from adjacent neighborhoods and local businesses, as well as individuals representing pedestrians, bicyclists and freight from the City's modal advisory committees. Representatives from the following organizations were invited to participate on the Powell Citizen Working Group:

- Southeast Uplift Neighborhood Coalition (SEUL)
- Hosford-Abernathy Neighborhood Development Association (HAND)
- Brooklyn Action Corps Nei. Assoc.
- Creston-Kenilworth Nei. Assoc.
- Richmond Nei. Assoc.
- Foster-Powell Nei. Assoc.
- South Tabor Nei. Assoc.
- Lents Neighborhood Association
- Powellhurst-Gilbert Nei. Assoc.
- Greater Brooklyn Business Association (GBBA)
- Foster Area Business Association (FABA)
- 82nd Avenue Business Association
- Pedestrian Advisory Committee
- Bicycle Advisory Committee
- Freight Advisory Committee
- Portland Public Schools

Powell Technical Advisory Group

City staff formed a Powell Technical Advisory Group (TAG) to advise the City during each phase of the project leading up to a recommended streetscape plan. The TAG met almost monthly to discuss policy issues, coordinate and review and comment on project materials prior to the Powell CWG. The TAG included representatives from the various Divisions within PDOT, modal coordinators, City bureaus and partnering agencies. Representatives from the following organizations were invited to participate on the Powell Technical Advisory Group:

- Bicycle Coordinator, PDOT
- Freight Coordinator, PDOT
- Pedestrian Coordinator, PDOT
- Traffic Engineering, PDOT Bureau of Transportation Engineering and Development
- Project Management, PDOT BTED
- Traffic Investigations, PDOT Bureau of Transportation System Management
- Transportation Options, PDOT BTSM
- Bureau of Maintenance
- Bureau of Environmental Services
- Bureau of Parks and Recreation, Urban Forestry
- Bureau of Planning
- Lents Urban Renewal Area, Portland Development Commission (PDC)
- Metro Regional Government
- Oregon Department of Transportation (ODOT)
- TriMet


INNER POWELL BLVD STREETSCAPE PLAN PROCESS
Form Citizen Working Group and Technical Advisory Group
Research existing plans, policy and standards.
Data collection
Traffic analysis
Policy Background and Existing Conditions
Neighborhood Walks
Community Workshop
September – November 2006
Technical Advisory Group Review and Input
Build Toolbox of Potential Improvements
Open House
General Public Review and Input
Needs, Opportunities and Constraints
November – January 2007
Citizen Working Group Review and Input
Develop Alternative Streetscape Plans
Open House
January – March 2007
Alternatives Analysis and Selection of a Preferred Alternative
Open House
March – June 2007
Submit to TGM Grant Coordinator at ODOT
Refine and Finalize Recommended Streetscape Plan, Implementation Strategy and Final Report
June – July 2007
TGM Grant Funded Process Complete
City of Portland Final Adoption
PLANNING COMMISSION
CITY COUNCIL
Approximately Late Summer 2007

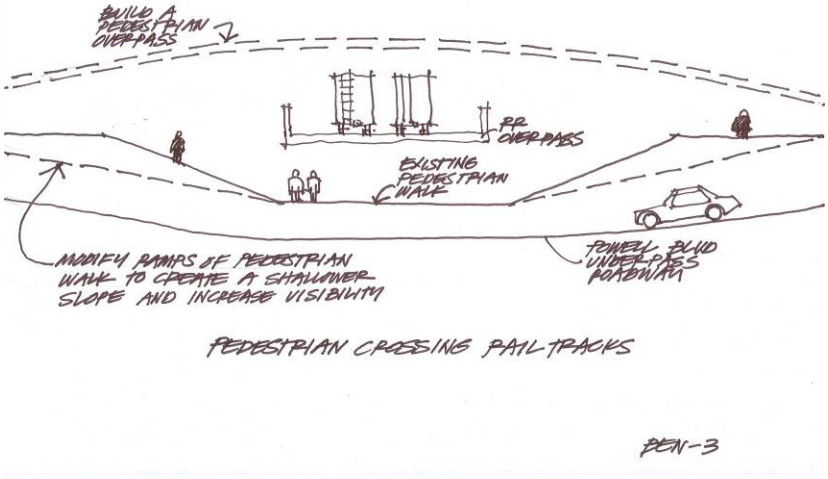
6.2 NEIGHBORHOOD WALKS AND WORKSHOP

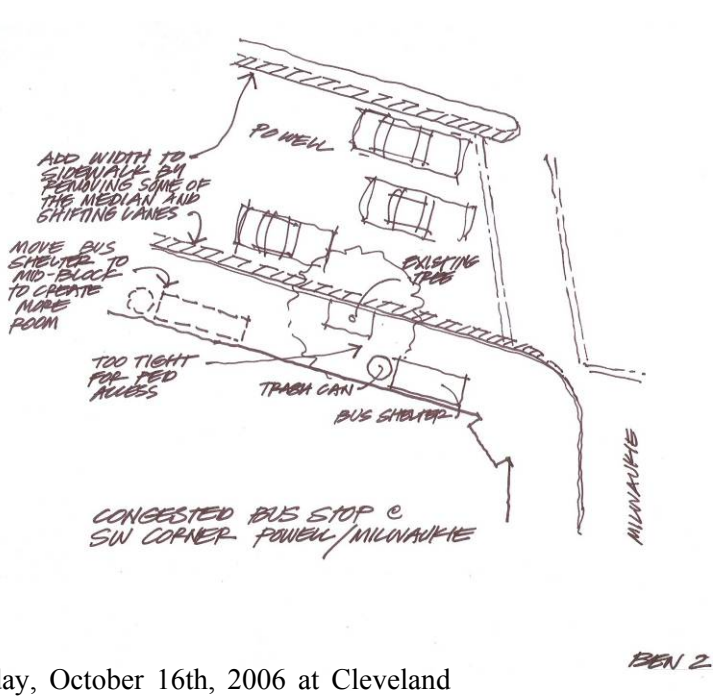
In October 2006, the Portland Office of Transportation (PDOT) hosted three Neighborhood Walks along Powell Blvd and a Community Workshop to help identify issues, needs, opportunities and constraints along Powell Blvd.

The purpose of the neighborhood walks and community workshop was to gather information from community members to help City staff identify and locate proposed improvements and develop streetscape alternatives. These events were opportunities for community members to identify the following:

- How they currently use Powell Blvd
- How they would like to use Powell Blvd
- What concerns they have about Powell Blvd
- Ideas they have about making Powell Blvd better

The neighborhood walks were held on Saturday, October 14th, 2006. A total of twenty-six citizens attended the neighborhood walks. Seven of the citizens attended two of the walks. Staff from the City and State and the consultant team walked the corridor with community members and recorded comments, concerns and ideas on 11x17 maps of the corridor and took notes. Nevue-Ngan provided illustrators to help visually communicate ideas shared by attendees.





The City hosted the Community Workshop on Monday, October 16th, 2006 at Cleveland High School. A total of forty-eight citizens attended the workshop. Several citizens attended both the neighborhood walks and the community workshop. Two sets of large maps of the Powell Blvd corridor were placed on long tables for community members to gather around and write on the maps. The maps displayed Powell blvd and several blocks to the north and south of Powell Blvd. Attendees were invited to draw on the maps and provide additional description on stickie notes placed on the maps. A couple maps were placed on the floor for children to draw on the maps as well. Some comments were recorded on large chart pack notepads. Attendees could also fill out comment cards provided at the front door. Sixteen comment cards were submitted, including two letters written in advance of the meeting.

6.3 PUBLIC OPEN HOUSES

Three public open houses were conducted at key stages in the planning process to provide the broader public an opportunity to review project materials and provide feedback as alternatives were developed and evaluated. The open houses were "self-guided" tours with opportunities to provide input. Staff from the City and State and the consultant team were available to discuss the materials at stations. No formal presentations were given. Adults and children were encouraged to converse with staff, vote by dots and write comments. A summary document for each open house contains the findings and comments collected at each event.

Public Open House #1

A Public Open House was held on January 31, 2007 at Kellogg Middle School to collect community input and provide an opportunity to review the following:

- A summary of existing conditions and background policy information
- Comments received during the October community Workshop and Neighborhood Walks
- Toolbox of potential improvements that may be considered when developing streetscape plans for Powell Blvd.
- Project Needs, Opportunities and Constraints

There were 73 attendees at the open house. Twenty-three written comments were submitted on comments sheets (located at the end of the memo). Many additional comments were written on “stickie-notes” and placed on corridor maps and various presentation boards. Comments that were location specific were captured and displayed on a series of corridor maps.

Participants were given four dots and asked to vote for the most important needs along Powell Blvd. to help prioritize the Project Needs. The top four priority needs were bicycle environment, pedestrian environment, motor vehicle travel & congestion and sustainability.

Participants were given another three dots and asked to vote on corridor maps for the locations where they most need or want to cross Powell Blvd by foot or bike. This information helped inform where enhanced crossing were most desired, along with bus stop locations, pedestrian and bicycle crash locations, desire paths through landscaped areas and nearby destinations, such as schools, parks, services, shopping and high density housing.

Public Open House #2

A Public Open House was held on March 17, 2007 at Cleveland High School to review the proposed alternative streetscape improvements and collect community input on the proposed plan and alternative design concepts.

There were an estimated 80 attendees at the open house. Many comments were written on "stickie-notes" and placed on proposed streetscape plan corridor maps. Twelve additional written comments were submitted on comments sheets. Participants were given seven dots and asked to vote for their preferred streetscape treatment alternative for the elements. The community preference voting results were incorporated into the alternatives evaluation report.

Public Open House #3

A Public Open House was held on May 23, 2007 at Cleveland High School to collect community input and provide an opportunity to review the following:

- Evaluation of the proposed alternative improvements
- Staff Recommended Streetscape Plan
- Help prioritize phasing of improvements

There were an estimated 66 attendees at the open house. Five general written comments were submitted on comments sheets and additional comments were received by email. Many additional comments were written on "stickie-notes" and placed on proposed streetscape plan corridor maps and presentation boards. Participants were given five dots and asked to vote with one dot regarding their support for the plan in general and use the remaining four dots to vote for their top priority improvements. The comments and voting results helped City staff and the advisory groups select and refine a recommended streetscape plan and develop a phasing strategy for Powell Blvd between the Ross Island Bridgehead and 92nd Avenue.

6.4 BACKGROUND POLICY AND EXISTING CONDITIONS

The following section provides a brief summary of the existing background policy and existing conditions along Powell Blvd. For a full review, refer to the *Inner Powell Blvd Streetscape Plan Background Policy and Existing Conditions Tech Memo*.

Powell Blvd & 82nd Ave looking south, 1937
City of Portland Archives

Powell Blvd looking east, 1965
City of Portland Archives

History of Powell Boulevard

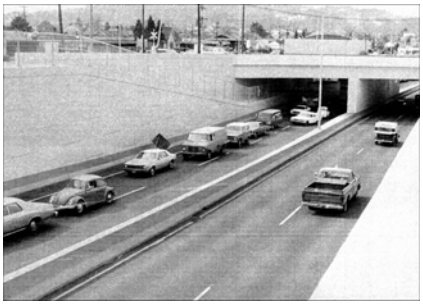
From Portland's earliest days, SE Powell Boulevard, designated the Mt. Hood Highway No. 26, has connected downtown Portland with eastern Multnomah County and eastern Oregon as well as the southeast part of the City of Portland. Powell Blvd was originally a farm to market road connecting Portland with early farm communities. Prior to the early 1980s, Powell Boulevard was generally a four-lane roadway with sidewalks and parking allowed during off-peak hours.

In 1971, the State of Oregon, by and through its State Highway Commission, undertook the Powell Boulevard Undercrossing of SE 17th Ave and Southern Pacific Rail Road Project. The project was built in approximately 1974. The project was coordinated in partnership with the Southern Pacific Transportation Company and the City of Portland. PUC Order 71-445-83 authorized the construction and states the construction and maintenance responsibilities of each party.

The concept of an improved trafficway leading from downtown Portland through the southeast residential areas and into east Multnomah County began with the 1955 basic freeway and expressway system plan recommended by the Oregon State Highway Department, now the Oregon Department of Transportation (ODOT). This proposal became known as the Mt. Hood Freeway. In 1969 a corridor following Division Street and Powell Boulevard was adopted and made part of the Federal Interstate Highway System. It was then included in the *Portland-Vancouver Metropolitan Area Transportation Study* plan adopted in 1971.

Aerial of Powell & 17th Ave with railroad crossing at-grade, 1965. *City of Portland Archives*

Construction of Powell under crossing at 17th Ave, 1974. *City of Portland Archives*



Powell under crossing at 17th Ave, 1979.
City of Portland Archives

Following community opposition, plans for the Mt. Hood Freeway were later dropped and replaced by an alternative approach to handling east-west regional through traffic in the east metropolitan area. The freeway would have significantly impacted the existing neighborhoods and displaced residents and businesses. The City of Portland, Multnomah County, and the Columbia Region Association of Governments (CRAG), now Metro, acted to withdraw the freeway from the interstate system in 1974. This was completed in 1976.

Proposed alignment of the Mt Hood Freeway, looking east with Mt Hood in background, 1973.

In the meantime, the through-traffic carrying role of Powell was de-emphasized in the mid-1970s to enhance its capability of serving the local traffic needs of southeast Portland. CRAG adopted the *Interim Regional Transportation Plan* in 1975. This plan did not include a freeway through southeast Portland and designated Powell Blvd a principle arterial. This reflected the objective of routing regional through trips around rather than through southeast Portland and improving southeast arterials in the *Portland Arterial Street Classification Policy* adopted in 1977, which viewed the role of Powell Boulevard as carrying moderate volumes of mainly local traffic.

Planning for improvements to Powell Boulevard began in 1975 when it became evident that the Mt. Hood Freeway would not be built. The purpose of the project was to a) improve the efficiency of Powell Blvd as a Major City Traffic Street serving Southeast Portland by improving traffic service, removing traffic movement conflicts, and reducing safety hazards by widening the roadway to standard widths and incorporating design features to control traffic movements, and b) improve the efficiency of Powell Boulevard in a way that preserves neighborhood quality. The project was built in coordination with other key transportation projects in east Portland, including the I-205 Freeway and Banfield Light Rail.

The Powell Boulevard Project was built in two phases. Phase I of the Powell Boulevard Project upgraded Powell from the Ross Island Bridge to 50th Avenue. In general, an improved four-lane facility was built with a continuous left-turn refuge, traffic signal synchronization, and left-turn signal phases at major intersections. All on-street parking was removed. Pedestrian crossing improvements, including a pedestrian overpass at SE 9th Avenue, and a ramp from McLoughlin Boulevard northbound to Powell Boulevard westbound were built.

Phase II of the project upgraded Powell from 50th Avenue to 92nd Avenue with a four-lane boulevard treatment, that included planted medians with left-turn refuges in the center, generally fifteen feet on both sides of the roadway for sidewalks, street trees, landscaped buffers and bus turn-outs. No parking was allowed on the roadway. Parking was provided in parking pockets on the south side of Powell. Frontage roads on the south side were designed to: a) line up and control access to streets crossing Powell Boulevard; b) provide access to

parking areas; and c) provide for u-turn movements. Barriers were provided on the south side to buffer residential properties from the street. Redevelopment of commercial land uses on the south side was restricted to specific areas. The right-of-way ranged from 90 feet to 160 feet where parking was installed.

In preparation for constructing the proposed Mt. Hood Freeway, ODOT had advanced acquisition of property in and near the project corridor. Properties within the freeway's proposed right-of-way, including many homes, were purchased before plans for the freeway were dropped from owners. Following the decision to not build the freeway, ODOT undertook a program of disposing of many of these properties. Some of the property was kept and used to widen Powell Blvd and provide amenities including the public parking lots.

In 1979, the City of Portland adopted the Powell Boulevard Special Setback. It is a special setback for development along Powell Blvd from Ross Island Bridge to SE 50th Ave. The special setback requires a setback of ten feet from the property line for all new construction along Powell Blvd for the purpose of providing light, air, driver sight distance, pedestrian safety and space for street tree growth. The special setback remains in effect.

In 1984, the City of Portland adopted a special zone, previously known as the "Y Powell Boulevard, Phase II Land Use Control Zone" as a part of Phase II of the Powell Blvd Project. The "Y-zone" was only applied to certain properties along Powell Blvd. The purpose of the zone was to assure that redevelopment within the project area preserves the quality of the neighborhood. The land use controls established specific criteria in addition to the regulations of regular zones, to maximize the opportunity for commercial redevelopment and to provide buffering of all residential development within the project area.

In 1991, the "Y-zone" was replaced by the "Powell Boulevard Plan District," Chapter 33.567 of the Portland Zoning Code. The Chapter is located in Appendix A. The regulations of the Powell Boulevard plan district are intended to buffer residences from the noise and traffic of Powell Boulevard, to promote commercial redevelopment opportunities, and to ensure the smooth flow of traffic on Powell Boulevard. The regulations of this chapter support the intent of the highway improvements which widened Powell Boulevard and created public off-street parking. The Powell Boulevard Environmental Impact Statement required noise protection for the adjacent residential neighborhood, the encouragement of commercial opportunities and the preservation of highway traffic flows.

Jurisdiction and Maintenance

Ownership and control of the right-of-way varies along Powell Blvd. From SE 86th Ave to 174th Ave, Powell Blvd is a State Fee Simple Right-of-Way, meaning control and ownership of the right-of-way belongs to the State. Excess right-of-way can be leased or sold by the State. The State has full maintenance responsibility for the entire right-of-way width on State Fee Simple Routes. From the Ross Island Bridge to 86th Ave, Powell Blvd is a City Public Right-of-Way. This is different than the State Fee Simple Right-of-Way in that the City controls the ROW, but the abutting property owners retain ownership of the right-of-way to the center line. Excess Public right-of-way cannot be sold by the City, but can be vacated with City approval, with the vacated right-of-way going to the abutting property owners. Along these routes the State maintains the facility from "curb to curb." On a facility with no curbs, the State maintains the ditches and slopes within the right-of-way. The term "curb to curb" is important to remember when the maintenance of medians is discussed.

Maintenance of individual facilities is further defined in detail by individual miscellaneous contracts and agreements between the State of Oregon and City of Portland. The first agreement was adopted in 1944 (Misc. Contract and Agreement No. 804). The purpose of the agreement was to fix and define the respective duties, controls and responsibilities of the City and the State concerning City streets over which State highways are routed. The agreement pertains to Powell Blvd, which was designated Mt. Hood Highway (Oregon 50) from the east end of the Ross Island Bridge easterly to the east city limit at 82nd Ave at the time of this agreement. Subsequent agreements have amended or supplemented the 1944 agreement.

Portland Transportation System Plan Policy

The Transportation System Plan (TSP) is the 20-year plan for transportation improvements in the City of Portland. The goal of the TSP is to provide transportation choices for residents, employees, visitors and firms doing business in Portland. The TSP describes what the system should look like and what purpose it fulfills. The street classification maps and street plan maps in the TSP are adopted as part of the Comprehensive Plan, as are the policies. Most comprehensive Plan policies are 'balancing' policies that should be looked at together to determine whether an activity achieves the optimal balance.

Street classification descriptions and designations in the TSP describe the types of motor vehicle, transit, bicycle, pedestrian, truck and emergency response movement that should be emphasized on each street. They are used to determine the appropriateness of street improvements and to make recommendations on new and expanding land uses through the land use review process. Classification descriptions are used to describe how streets should function for each modes of travel, not necessarily how they are functioning at present.

The street classifications from Chapter 2 of the TSP for SE Powell Blvd are listed in the table below. Local policy must also be consistent with regional policy in the Regional Transportation Plan (RTP).

Transportation System Plan Street Classifications

Mode	Segment	Classification
Traffic	Bridge – I-205	Major City Traffic Street
Transit	Bridge – 50th	Major Transit Priority Street
	50th – I-205	Transit Access Street
Bicycle	Bridge – SE 9th	City Bikeway
	SE 9th – 72nd	Local Service Bikeway
	SE 72nd – I-205	City Bikeway
Pedestrian	Bridge – I-205	City Walkway
Freight	Bridge – I-205	Major Truck Street
Emergency Response	Bridge – I-205	Major Emergency Response Street
Street Design	Bridge – I-205	Regional Corridor

Relevant TSP System Improvement Projects

There are four system improvement projects along Powell Blvd identified in the TSP. The projects are described below.

Powell, SE (Ross Island Bridge - 50th): Multi-modal Improvements [Project #70045]

Plan and develop streetscape and transportation improvements to increase opportunities to walk and enhance the pedestrian character of the corridor including intersection improvements at 8th, 26th, and Milwaukie.

ODOT/Portland

$1,000,000 (Years 1 - 5)

Powell, SE (71st - I-205): Bikeway [Project #70046]

Retrofit bike lanes to existing street.

ODOT

$4,500,000 (Years 11 - 20)

Powell - Foster Rapid Bus, SE [Project #70047]

Construct improvements that enhance Rapid Bus service along the Powell-Foster corridor between downtown Portland and Damascus.

Tri Met

$N/A (Years 11 – 20)

Powell Blvd SE: ITS [Project #70066]

CCTV at 39th, 50th, 82nd, I-205 ramp, and 122nd; Variable signs at Milwaukie. Changeable signs at 39th, 50th, 82nd, and I-205 ramps.

Portland

$395,000 (Years 6 – 10)

Portland Green Street Policy

The Green Street Policy was adopted by City Council in April 2007. The goal is to promote and incorporate the use of green street facilities in public and private development. Specifically the policy states that green street facilities are to be incorporated into all City of Portland funded development, redevelopment or enhancement projects as required by the City's Stormwater Management Manual.

Green Streets:

- Handle stormwater on site through the use of vegetated facilities;
- Provide water quality benefits and replenish groundwater (if an infiltration facility);
- Create attractive streetscapes that enhance neighborhood livability by enhancing the pedestrian environment and introducing park-lie elements into neighborhoods;
- Serve as urban greenway segments that connect neighborhoods, parks, recreation facilities, schools, main streets, and wildlife habitats; and
- Meet broader community goals by providing pedestrian and where appropriate bicycle access.

Implementation of the Green Street Policy will reduce impervious surfaces, treat and filter stormwater at its source, reduce demands on the city's collection system, support regulatory compliance and enhance watershed health and community livability.

Oregon Highway Plan

The *1999 Oregon Highway Plan* (OHP) contains goals and policies to guide management and investment decisions on Oregon's highway system. The OHP classifies highways according to their transportation function as part of the state system. The segment of Powell Boulevard (US Highway 26) that is the subject of the Inner Powell Boulevard Streetscape Plan project is classified as a **District Highway**.

As adopted in the OHP, ODOT uses volume-to-capacity (v/c) ratios to measure state highway performance rather than intersection or roadway levels of service. Various v/c thresholds are applied to all state highways based on functional classification of these facilities. The OHP's mobility standard on inner Powell Boulevard is a volume-to-capacity ratio of 0.99 for the two-hour traffic peak.

6.5 EXISTING CONDITIONS

From the Ross Island Bridge to I-205, Powell Blvd is typically a four-lane roadway with two lanes in each direction. There is either a continuous center turn-lane or center turn-lane refuges between landscaped medians. There are no bike lanes along Powell Blvd. The right-of-way width greatly varies throughout the corridor.

Parking

There is typically no on-street parking along Powell. The only on-street parallel parking along Powell Blvd is between SE 22nd Ave and 25th Ave. There is a public parking lot near 21st Ave north of Powell Blvd and another near 27th Ave south of Powell Blvd. There are nine public parking lots between SE 53rd Ave and 79th Ave providing 109 parking spaces.

Sidewalks

Sidewalks along Powell vary in width. Between the Ross Island Bridge and 50th Ave. the sidewalks are typically 10 feet wide, though in some instances they narrow to 6 feet wide. The streets are lined with street trees, but do not have planter strips and some trees are missing from tree wells. West of 50th Ave, there are no street trees in the median refuge islands. East of 50th Ave, the sidewalks vary in width from 6 to 10 feet. Additionally, east of 50th Ave, the sidewalks are buffered from the roadway with planter strips that range in width from 6 to 21 feet, and the center medians are landscaped and lined with trees.

Transit

TriMet provides frequent transit service along Powell Blvd with Busline 9 between downtown Portland and Gresham Transit Center. The Busline 9 is a Frequent Service Bus, which run buses every fifteen minutes or better during the day, every day. Additionally, TriMet provides rush-hour service with Busline 66 between Hollywood Transit Center and Marquam Hill, which travels on Powell Blvd from SE 39th Ave. across the Ross Island Bridge. Busline 17 and Busline 19 travel briefly along Powell Blvd to access the Ross Island Bridge. Busline 70 intersects Powell Blvd and briefly travels on Powell Blvd between SE 17th Ave. and SE Milwaukie Ave.

There are several bus lines that cross Powell Blvd, including the following:

- Busline 10 at SE 26th Ave
- Busline 74 and Busline 75 at SE 39th Ave
- Busline 14 at SE 50th Ave/Foster Rd
- Busline 71 at SE 52nd Ave
- Busline 72 at SE 82nd Ave

The future MAX Light Rail Green Line will run along I-205 with a station and Park and Ride at Powell Blvd. Service is expected to begin in fall 2009.

During the recent TriMet Bus streamlining project for Busline 9, TriMet relocated several bus stops. These bus stops were typically relocated to blocks were the bus now stops in the travel lane. TriMet provided some transit stop amenities including paved waiting areas beyond the sidewalk and shelters. Where some of the bus stops were removed, the curb was realigned and a landscaped planter strip replaced the bus pull-out lanes.

Traffic Signals

Traffic signals are located at:

- SE Milwaukie
- SE 21st Ave
- SE 26th Ave
- SE 33rd Ave
- SE 39th Ave
- SE 42nd Ave
- SE 50th Ave/ Foster Rd
- SE 52nd Ave
- SE 65th Ave
- SE 69th Ave
- SE 71st Ave
- SE 72nd Ave
- SE 82nd Ave
- SE 86th Ave
- SE 92nd Ave
- I-205 Ramp

Additional intersections have pedestrian activated signals:

- SE 13th Place
- SE 47th Ave

The following intersection has a fire station signals:

- SE 13th Place

Lighting

The illumination on Inner Powell Blvd is of the cobra head style typically used on city streets outside of downtown.

Trees

There are numerous trees in the corridor, both in the planting strip, and in the median (See Typical Sections). Several new islands were built without trees.

Current and Future Year 2025 Traffic Conditions

On average, Powell Boulevard currently carries between 25,100 and 59,300 vehicles per day in both directions. Traffic volumes are highest on the Ross Island Bridge and near the I-205 ramps. The lowest volumes are west of 52nd Ave. (3.6 to 4.9% of traffic on Powell Blvd is trucks). In the year 2025, those numbers are forecasted to increase to between approximately 31,000 and 74,000 vehicles per day in both directions. Current and Future Year 2025 traffic conditions are further described in Section 6.8: Plan Evaluation of this report. For a full review, refer to the *Inner Powell Blvd Streetscape Plan Future Year 2025 Traffic Conditions Technical Memorandum*.

Speeds

The speed on SE Powell Blvd. is posted at 35 mph. By ODOT standards, this translates to a design speed of 40 mph.

Safety

Traffic safety for all modes of travel is a major concern on inner SE Powell Boulevard. Two of the twenty-nine Strategic and Focused Enforcement Traffic Safety Corridors designated in City are along SE Powell Boulevard. One is between 7th Ave and 13th Avenue, and the other is between SE 21st and 52nd Avenues.

High crash locations along SE Powell Blvd between 7th Ave and I-205 are listed in Table 3. The list includes all locations where there were either 20 or more crashes, or one or more fatalities from 2001 and 2004. The City Ranking system is based on the rate of crashes at an intersection. It is adjusted for traffic volume. For example, SE Powell and 82nd Ave is ranked the 4th highest crash location in the City of Portland. The crash rate at SE Powell and 82nd Ave is 2.53. Therefore, there is a greater likelihood of crashes at this intersection.

There have been two fatalities in the corridor since 2001, one at 82nd Ave., and a more recent one near 29th Ave on April 28, 2007.

Table 3. High Crash Locations along SE Powell Blvd, 7th Ave to I-205 (Locations with 20 or more crashes or 1 or more fatalities from 2001-2004)

Location	City Ranking	Total Crashes	ADT	Crash Rate	Fatality	Pedestrian	Bike
7th Avenue	96	92	62,357	1.08	0	0	1
12th/13th Place	347	20	54,151	0.27	0	1	0
13th Avenue	348	20	55,252	0.27	0	2	0
21st Avenue	300	34	49,603	0.50	0	2	1
26th Avenue	255	41	48,527	0.62	0	1	5
28th Avenue	266	36	45,341	0.58	0	1	3
29th Avenue	331	25	44,133	0.42	0	0	0
33rd Avenue	312	28	44,000	0.47	0	0	1
34th Avenue	339	22	47,312	0.34	0	0	0
36th Avenue	338	22	45,252	0.36	0	1	0
39th Avenue	46	140	68,081	1.51	0	2	1
50th Avenue/Foster	212	61	62,080	0.72	0	0	0
52nd Avenue	263	34	42,111	0.59	0	0	0
71st Avenue	325	20	33,910	0.43	0	0	0
72nd Avenue	310	22	34,041	0.48	0	1	0
82nd Avenue	4	225	65,500	2.53	1	2	2
90th Place	337	21	39,600	0.39	0	0	0
92nd Avenue	16	138	50,208	2.02	0	0	3
Milwaukie Avenue	244	62	69,777	0.65	0	0	0
I-205 NB Exit to Powell	115	47	33,760	1.02	0	0	1
I-205 SB Exit to Powell	340	23	49,700	0.34	0	0	1

6.6 NEEDS AND CONSTRAINTS

The following is a brief summary of the project needs and constraints. For a full review, refer to the Needs, Opportunities, and Constraints Technical Memorandum.

Project Needs

Based on existing policy, project goal and objectives and community input, the Powell Blvd Streetscape planning project will strive to meet the following project needs.

- Improve safety for travelers by all modes.
- Design a streetscape plan in accordance with the Regional Corridor designation of Powell Blvd to include special amenities to balance vehicle traffic with public transportation, bicycle travel and pedestrian travel. Consider the following design elements:
    - Moderate vehicle speeds
    - Medians and curb extensions to enhance pedestrian crossings where wide street made crossing difficult or to manage vehicle access
    - Combined driveways
    - On-street parking when feasible
    - Buffered sidewalks with pedestrian amenities such as special lighting and special crossing amenities tied to major transit stops
    - Landscaped strips, street trees or other design features that create a pedestrian buffer between curb and sidewalk
    - Improved pedestrian crossings at signalized intersections
    - Striped bikeways or wide outside lanes
    - Motor vehicle lane widths that consider the above improvements
- Strive to enhance mobility for emergency response vehicles by employing preferential or priority treatments.
- Design for trucks while balancing this with other street design considerations since Powell Blvd is a Major Truck Street and City Walkway.
- Strive to meet the Pedestrian Design Guide standards for a City Walkway along Powell Blvd.
- Strive to provide a safer bicycling environment along Powell Blvd, by considering wider travel lanes, bike lanes, signage and other treatments. Minimize conflicts where City Bikeways cross Powell Blvd.
- Strive to provide safe and convenient access to transit for pedestrians and bicyclists to, across and along Powell Blvd. Improve transit service by employing transit-preferential measures, such as signal priority and bypass lanes.
- Plan and build what the City, State and abutting property owners can maintain.
- Strive to meet the Standards of the ODOT Highway Design Manual or make a reasonable case for a design exception.

- Enable Powell Blvd, as a Major City Traffic Street, to serve as the primary connection to Regional Trafficways and serve major activity centers in the Southeast Transportation District. Traffic with no trip end within the Southeast Transportation District should be discouraged from using Powell Blvd.
- Strive to meet the peak two-hour volume-to-capacity ratio (v/c) standards for motor vehicle operations through the 20-year planning horizon, while balancing motor vehicle mobility with other modes. The peak two-hour v/c standard is 0.99 in the first and second hour. Traffic congestion often results in long queues approaching intersections, extensive delays, dangerous intersections and aggressive driving behavior. Avoiding excessive traffic congestion and delays is in the interest of increasing safety and traffic conditions on Powell Blvd, improving transit operations and protecting our main streets and local neighborhood streets from cut-through traffic. This is particularly needed at the most congested locations, including:
    - SE 26th Ave.
    - SE 39th Ave.
    - SE 50th Ave.
    - SE 82nd Ave.

The role Powell Blvd plays in the regional transportation system is not fully consistent with the functional goals for Powell Blvd in the Portland Transportation System Plan (TSP). According to City policy in the TSP, Powell Blvd is intended to serve as the primary connection to Regional Trafficways and serve major activity centers in the Southeast Transportation District. Traffic with no trip end within the Southeast Transportation District should be discouraged from using Powell Blvd.

However, currently Powell Blvd carries many regional trips without a beginning or end in the Southeast Transportation District. This is in part due to the lack of regional trafficways through Southeast Portland. Existing regional trafficways around southeast Portland, including I-84 (Banfield), Hwy 224 and 99E (McLoughlin) are already congested. The travel demand from the outer southeast side of the region to the Central City and westside of the region is anticipated to increase within the 20-year planning horizon. As a State designated highway, this travel pattern is consistent with State policy in the Oregon Highway Plan. However, it is not consistent with City policy. This conflict is acknowledged in the Inner Powell Blvd Streetscape Plan.

The Regional Transportation Plan (RTP) forecasts that the east-west arterials in southeast Portland between the Central City and I-205 will experience some future congestion below the acceptable operating standards in the RTP. The RTP states that additional measures are needed to address this congestion, beyond those identified in the RTP. The City of Portland intends to help address this travel demand through various forms of mitigation that support transportation by modes other than the Single Occupant Vehicle (SOV).

Along the many main streets in Southeast, the City supports a mix of residential, retail and commercial uses that together supply many of the daily needs of the area residents. By having a mix of uses in close proximity, many daily trips – working, shopping, and education – can be made by walking, bicycling or transit, thereby reducing congestion. This mix of uses is facilitated by the City Comprehensive Plan and Zoning Map designations and Zoning Code use and development regulations. Maximum parking ratios have been adopted for all non-residential uses. Some commercial areas (usually along main streets and transit corridors), including Powell Blvd, do not require any off-street parking

Southeast Portland has existing high-quality transit service on most arterials, resulting in a high mode split for non-SOV travel. The RTP includes improvements to increase transit frequency on Belmont, Hawthorne, Division and Powell/Foster. In addition to the many traffic calming projects that have been installed in southeast Portland over the last decade, new project are targeted for areas where high traffic volumes and speeds affect safety and livability.

In addition to increased transit frequency and traffic claming, a number of transportation projects are proposed for southeast Portland to encourage more non-SOV travel and alleviate congestion. These projects are listed in the RTP and/or TSP, including on Page 5-39 of the TSP. Powell Blvd pedestrian and intersection improvements (TSP Project 70045) is one of these projects. These improvements are intended to be included in the Inner Powell Blvd Streetscape Plan.

The Inner Powell Blvd Streetscape Plan will identify improvements that bring Powell Blvd more in line with City policy designations while recognizing the regional travel demand and congestion on Powell Blvd. The project will strive to relieve motor vehicle congestion and meet City, regional and State standards for motor vehicle operations through the 20-year planning horizon. However, this will be in balance with other modal needs. The project will not make system improvements that degrade the pedestrian, bicycling or transit environment. The project will also not decrease motor vehicle operations. To help alleviate congestion, the project will seek to make improvements that increase system capacity through improved transit operations and support more trips by walking and biking.

Project Constraints

The following constraints and challenges were considered during the streetscape planning process.

Project Cost

Project cost is an important factor when considering the feasibility of funding and building improvements. The more an improvement costs, the more difficult it will be to identify and compete for funding. Expensive and complex projects may take many more years to build, thus delaying the benefits. The greater degree to which project cost can be minimized and the improvements broken into phases, the greater likelihood improvements can be built, even if incrementally.

Maintenance

As stewards of the public infrastructure, it is incumbent upon the City of Portland to consider how the public realm will be maintained. As our infrastructure ages and our maintenance budget is further stretched and strained, maintenance has become a greater challenge. We must be aware of the total cost of improvements to the public realm, not just the capital cost to build them. The total cost includes on-going maintenance costs and the long-term costs to repair, rebuild and replace facilities as they age. ODOT typically tries to minimize its landscaping maintenance burden. The City's current maintenance budget is very constrained. The city is not able to adequately maintain what exists today with the current budget. The City needs to build only what it can maintain or identify partnerships to help maintain improvements.

Right-of-Way Acquisition and Dedication

Additional right-of-way can be acquired through two means, acquisition through purchase or dedication through the development process. Right-of-way that is purchased from property owners during implementation of a project can be very costly. Acquiring right-of-way through dedication in the development process is uncertain, incremental and slow to happen. In addition, right-of-way acquisition can have negative impacts to the property owner so it is often not supported. For example, acquiring right-of-way reduces the size of a private property, thus reducing the development potential. It can also constrain private site layout and design opportunities, particularly if a lot becomes very shallow in depth. This can make a site less attractive for redevelopment, often an undesired and unintended outcome. A project may gain more support and be more likely to gain adequate funding if additional right-of-way is not required or the requirement is minimal.

Property Owner Support

It is important to have adjacent property owner buy-in and support for streetscape changes, particularly driveway closures, right-of-way dedication and any associated increased maintenance responsibility for improvements in the sidewalk, such as street trees, landscaping and stormwater facilities.

Sight Distance

Sight distance requirements for locating street trees may limit the location where trees may be placed along the sidewalk and in medians.

ODOT Rail Division Policy on At-Grade Crossings

The Rail Division of ODOT must approve any new at-grade railroad crossings. Their general policy is to reduce the number of at-grade crossing not increase them.

Motor Vehicle Roadway Capacity

As we try to identify streetscape improvements to benefit pedestrians, cyclist and transit, Powell Blvd needs to continue serving its function as a State highway, Major City Traffic Street, Major Truck Street, Major Transit Priority Street/Transit Access Street and Major Emergency Response Route. The Powell Blvd streetscape plan must maintain the same number of motor vehicle through lanes. Streetscape improvements must be supported by existing policy. Changes to the streetscape that significantly decrease motor vehicle capacity will increase congestion. This may result in increased neighborhood cut-through traffic, considered a negative impact on safety and livability. All streetscape alternatives were analyzed for traffic impacts for a 20-year future timeframe. They were compared to the baseline future traffic conditions described in the Future Year 2025 Traffic Conditions Technical Memorandum.

School Zones

School Zone designations are under State jurisdiction along Powell Blvd. The decision to locate a school zone along Powell Blvd is processed through ODOT. The State Speed Control Board is the decision making body regarding speed zones. There was previously a School Zone in the vicinity of 47th Ave. and it was removed a couple years ago by ODOT with support by PDOT. Reconsideration of this decision must be proposed to ODOT by the principal of an individual school. The City advises first pursuing treatments on Powell Blvd that increase the safety of pedestrians crossings and increase driver expectations for the presence of pedestrians, including children.

6.7 PLAN DEVELOPMENT

Information gathered from background policy, existing conditions, neighborhood walks, community work shop and other stakeholder input was distilled and synthesized to identify the project needs, opportunities and constraints. Focused opportunity areas evolved from this process as well. All of these materials helped inform development of the draft plan and alternative design concepts along inner Powell Blvd. A draft plan and alternative design concepts at Focused Opportunity Areas and for sidewalk treatments, bikeway treatments were generated by the project team during a series of work sessions. The Plan and alternatives was revised and expanded through an iterative process of review with input by members of the project team, Technical Advisory Group, Citizen Working Group and the general public during open house events.

During the neighborhood walks, community workshop and open houses, participants were given opportunities to identify problem spots, recommend solutions, and indicate how they currently move along and across Powell as well as how they would prefer to do so. This information was gathered on maps with "stickie-notes" and comment cards. It was then electronically catalogued on maps and referenced during the plan development work sessions and rounds of revisions.

The enhanced crossing locations were identified and selected with consideration of several factors. These factors included the following:

- Location of pedestrian and bicycle fatalities
- Location of crashed involving pedestrian and bicycle fatalities
- Bus stop locations
- Sight lines and safety
- Nearby key destinations, including schools, parks, high density senior housing, commercial nodes and services
- Design lines, or paths through the landscaped medians and planter stip
- Priority pedestrian and bicycle crossing locations resulting from the community voting exercise at the first open house
- Proximity to existing signalized intersections
- An intent to space enhanced crossings at a regular interval

Plan development proceeded simultaneously with the analysis and evaluation of alternatives. Results from the first round of future traffic analysis of the proposed plan and alternative design concepts revealed that some of the proposed alternatives resulted in unacceptable failing traffic conditions. Therefore, it became evident that the need to meet the regional v/c ratio of 0.99 or less had to be addressed. This resulted in the .99 v/c Plan Scenario and mitigation measures to improve motor vehicle capacity along with the proposed multi-modal improvements. More discussion of the results of that effort appears in Appendix B. As information came together regarding expected highway service levels and potential mitigation measures for failing intersections, an hybrid version of the Milwaukie intersection was developed that accomplished both the wishes of the community and the need for capacity. Other areas were moved from specific action to areas for further study as it became evident that more specific local resident and business input would be critical to making final decisions, and that such dialogue could not be fit into the schedule of this planning process.

Prioritization of the various elements of the plan was developed based on consensus of the Citizen Working Group and Technical Advisory Group.

6.8 ALTERNATIVES EVALUATION

Evaluation Criteria

The following discussion presents a summary of the evaluation of alternatives for the Inner Powell Boulevard Streetscape Plan. See *Inner Powell Boulevard Streetscape Plan – Alternatives Evaluation Report* dated May 2007.

The following criteria were used to evaluate the alternative streetscape plans proposed for Inner Powell Blvd. Each alternative was evaluated based on the extent to which it achieves each criterion. The Evaluation Summary matrix on page 6-27 displays how each alternative performed for each criterion. (Note: plan elements still require approval by the City and State Traffic Engineers.)

a. Improve the pedestrian environment along Powell Blvd.
b. Improve the bicycling environment along Powell Blvd.
c. Improve pedestrian and bicycle crossings of Powell Blvd.
d. Improve connections to transit and transit operations along Powell Blvd.
e. Improve freight mobility and access.
f. Improve traffic flow and roadway capacity for all modes.
g. Improve on-site management of stormwater runoff.
h. Improve access management on Powell Blvd.
i. Minimize the negative impacts of high traffic volumes along Powell Blvd on adjacent neighborhoods, including cut-through traffic.
j. Minimize capital and maintenance costs as feasible.
k. Do not adversely impact/affect businesses along Powell.
l. Resolve or minimize design issues that require approval by PDOT and ODOT.

ODOT Considerations for Locating New Unsignalized, Marked Crosswalks

New unsignalized, marked crosswalks must be approved by the State Traffic Engineer. An engineering study must be submitted to ODOT for review. The following considerations should be addressed in an engineering study for all proposed new unsignalized, marked crosswalks:

1. Marked crosswalks at other than signalized intersections or stop-controlled approaches should be used selectively. Allowing a proliferation of marked crosswalks may reduce the overall effectiveness of marking crosswalks.
2. Consideration must be given to concerned citizens, civic groups, and neighborhood organizations; balancing engineering judgment with perceived public need.
3. The roadway design features that influence the pedestrians' ability to cross the street, e.g., street width, presence of a median, one-way versus two-way operation, and geometrics of the highway or intersection being crossed, all need to be included in the planning of the crosswalk. Other pedestrian design improvements such as curb extensions and pedestrian refuges should be encouraged to increase the safety of the crossing.
4. A 3 to 5-year pedestrian crash history should be obtained.
5. The walking path of the pedestrian. Will marking crosswalks encourage pedestrians to use a single point of crossing rather than choosing random crossing points?
6. There should be opportunities for crossing (sufficient gaps in traffic).

7. Uncontrolled marked crosswalks may be continental crosswalk marking and should be accompanied by other enhancements such as pedestrian refuge islands, bulb-outs, pedestrian signs etc.
8. There should be adequate sight distance for the motorist and the pedestrian, or it can be obtained. This includes examination of on-street parking, street furniture (e.g., mailboxes, utility poles, newspaper stands), and landscaping. Corrective measures should be taken wherever possible.
9. Mid-block and school crossings must be supplemented with crosswalk signs.
10. Mid-block crosswalks should not be located immediately down-stream from bus stops.
11. Mid-block crosswalk locations should be investigated for street lighting.
12. For mid-block crosswalks: are there more reasonable locations pedestrians could cross, i.e., no more than a block (300 feet) from a location being considered.

Community Preferences

Project staff proposed design concepts and alternatives at a public Open House on March 17, 2007. Open House participants were given seven dots and asked to vote for their preferred streetscape treatment alternative for the elements listed below. The complete voting tally for each element with comments is included in the Open House Summary.

Milwaukie and Powell Blvd Intersection Alternatives

Most Popular Alternative	Second Most Popular Alternative
Alternative 3 (30 votes)	Alternative 2 (17 votes)

Powell Park from SE 22nd to 25th Ave. Median Alternatives

Most Popular Alternative	Second Most Popular Alternative
Alternative 2 (43 votes)	Alternative 3 (17 votes)

Sidewalk Treatment (Ross Island Bridge to 50th Ave.)

Most Popular Alternative	Second Most Popular Alternative
12 ft sidewalk with stormwater management treatment areas mixed with pavers (40 votes)	12 ft sidewalk with pervious pavers and enlarged tree wells (15 votes)

Sidewalk Treatment (50th Ave. to 92nd Ave.)

Most Popular Alternative	Second Most Popular Alternative
Stormwater 1: stormwater management treatment areas mixed with pavers (35 votes)	Stormwater 2: curved stormwater management treatment areas (9 votes)

Bikeway Alternatives North Side of Powell (72nd and 92nd)

Most Popular Alternative	Second Most Popular Alternative
Raised bike lane with rolled curb (55 votes)	Traditional bike lane (4 votes)

Bikeway Alternatives South Side of Powell (72nd and 92nd)

Most Popular Alternative	Second Most Popular Alternative
Elevated bike path next to sidewalk (31 votes)	Raised bike lane with rolled curb (23 votes)

Public Parking Lot Conceptual Makeover Future Study

Retain public parking lots	Pursue future study of public parking lot redevelopment
(1 vote)	(44 votes)

Future Year 2025 Traffic Operations Analysis

Parametrix conducted an analysis of morning and afternoon peak hourly traffic conditions along Powell Boulevard within the study area for current year 2006 and future year 2025. The purpose of the analysis was to:

- Identify the long-term transportation system operational needs and deficiencies
- Establish a baseline condition against which improvement alternatives were evaluated
- Analyze alternative improvements that affect traffic operations to determine their relative traffic impacts.

For a full review, refer to the *Inner Powell Blvd Streetscape Plan Future Year 2025 Traffic Conditions Technical Memorandum* and *Alternatives Evaluation Report*.

The analysis considered the effects of growth in through traffic volumes along the corridor, as well as localized land development/redevelopment consistent with the Comprehensive Land Use Plan for this portion of the city. It was based on vehicle turning movement forecasts for 2025 prepared by City of Portland Office of Transportation (PDOT). The macro models used by PDOT to forecast travel demand were the Central City Transportation Management Plan (CCTMP) 2000 and 2025 Emme/2 models. These models were extrapolated from the Metro 2000 Regional Transportation Plan (RTP) model and the Metro 2025 South Corridor model (with Milwaukie Light Rail included). These forecasts were calibrated based on the turning movement traffic counts collected at thirteen signalized intersections by Parametrix in September 2006 and three additional intersections in January 2007.

Signalized Intersections included in Traffic Analysis

- SE Milwaukie
- SE 21st Ave
- SE 26th Ave
- SE 33rd Ave
- SE 39th Ave
- SE 50th Ave/ Foster Rd
- SE 52nd Ave
- SE 65th Ave
- SE 71st Ave
- SE 72nd Ave
- SE 82nd Ave
- SE 86th Ave
- SE 92nd Ave
- I-205 Ramp

The analysis focused on intersection delays and/or volume-to-capacity results, and 95th percentile traffic queuing. The morning peak hour represents a single, consecutive 60 minute period between 7 and 9 AM with the highest overall traffic volumes at each intersection, while the evening peak hour falls between 4 and 6 PM.

For purposes of this analysis, it was assumed that the existing cycle length, phase order and split times would remain constant into the 2025 horizon year. Signal timing information was incorporated into the Synchro model by following the analysis procedures used to assess existing conditions as outlined in the ODOT Transportation Planning and Analysis Unit's (TPAU) guidelines. By incorporating existing signal timing plans into the analysis of future traffic operations, the results can serve as a baseline against which future improvement alternatives can be evaluated. The baseline existing and 2025 cases are represented in the first two columns of the attached tables for AM and PM operations.

The Tables summarize traffic operations for the morning (AM) and afternoon (PM) peak hours, along Powell Boulevard for the following scenarios

- 2006 Existing Conditions (actual measured conditions placed in the model to calibrate it for other conditions)
- 2025 with Existing Signal Timing (current conditions extrapolated based on the Regional model forecast traffic growth)
- 2025 with Optimized Signal Timing (current conditions, but with signal timing and progression improvements)
- 2025 Multi-Modal Improvements (comparisons of the various Alternatives considered with optimized signal timing and proposed improvements – some intersections do not meet regional v/c requirements)
- 2025 Mitigated Alternative (all proposed improvements plus theoretical additional improvements needed to reach the regional v/c requirements)

Data in these tables includes average intersection delay, the overall intersection volume-to-capacity (v/c) ratios, and intersection levels of service. In addition to average delay, the v/c ratio is another intersection measure of effectiveness that relates the magnitude of traffic traveling through an intersection with its theoretical capacity. Ratios above 1.0 often accompany LOS E and LOS F conditions indicating inadequate capacity for one or more major movements. At intersections operating at LOS D or better, v/c ratios above 1.0 are useful indicators of potential concerns such as sub-optimal signal timing or inadequate turn lane storage.

Bold font highlights the intersections along the study corridor that are operating in excess of the identified regional operational standards (Table 2) or where state volume-to-capacity thresholds in the Oregon Highway Plan are exceeded. Intersection analysis worksheets for the AM and PM peak hours for the future alternatives follow.

As indicated in column 3 of the Tables, in 2025 with existing geometry, improved signal timing and coordination can improve operations at some of the intersections, however many more still fail. In column 4 of the Tables, for the each of the Alternatives 1, 2 and 3, the study area intersections are projected to exceed ODOT's volume-to-capacity (v/c) standard of 0.99 during both the AM and PM time period.

The 2025 Capacity Modified Alternative in the last column of the Table summarizes the traffic operations analysis results with improvements aimed at meeting operational standards, including signal timing optimization and coordination.

Appendix B Shows the analysis that was made to determine whether the Regional capacity standards could be reached at every intersection in the Corridor with the improvements proposed on the Plan. These show all of the improvements that would be needed to meet the v/c of 0.99 or less at every intersection in the corridor. It may be seen that the required standards can be met at every intersection. However, the Plan does not include improvements at SE 39th or at SE 82nd as the scale of these improvements require substantial right-of-way acquisition, and cost.

Intersection Levels of Service (LOS) Standard

Intersection levels of service (LOS) for signalized intersections are grades of A through F that are used to rate the intersection performance within a specified time period, typically the AM or PM peak hour. Assignment of a specific LOS is based on average control delay per vehicle, which is calculated using equations that take into account turning movement

volumes, intersection lane geometry and traffic signal features, as well as characteristics of the traffic stream passing through the intersection, including time required to slow, stop, wait, and accelerate to move through the intersection. Progressively higher LOS reflect increasingly worse intersection performance, with higher levels of control delay and increased congestion and queues. Characteristics of each LOS are briefly described the table below.

Level of Service Definitions

	Average Delay/Vehicle (sec.)		
Level of Service	**Signalized**	**Unsignalized**	**Description**
A (Desirable)	<10 seconds	≤10 seconds	Very low delay; most vehicles do not stop.
B (Desirable)	>10 and ≤20 seconds	>10 and <15 seconds	Low delay resulting from good progression, short cycle lengths, or both.
C (Desirable)	>20 and ≤35 seconds	>15 and <25 seconds	Higher delays with fair progression, longer cycle lengths, or both.
D (Acceptable)	>35 and ≤55 seconds	>25 and <35 seconds	Noticeable congestion with many vehicles stopping. Individual cycle failures occur.
E (Unsatisfactory)	>55 and ≤80 seconds	>35 and <50 seconds	High delay with poor progression, long cycle lengths, high v/c ratios, and frequent cycle failures.
F (Unsatisfactory)	>80 seconds	>50 seconds	Very long delays, considered unacceptable by most drivers. Often results from over-saturated conditions or poor signal timing.

Source: 2000 Highway Capacity Manual, Transportation Research Board.

The Portland Transportation System Plan has adopted LOS standards that are intended to guide roadway design and improvement priorities by establishing a threshold for determining the level of delay that is unacceptable to the community, thus triggering a transportation improvement. The current operating standards for regionally significant corridors are established in the Metro 2004 Regional Transportation Plan. According to this plan the acceptable LOS threshold varies according to the peak hour of analysis, summarized in table below.

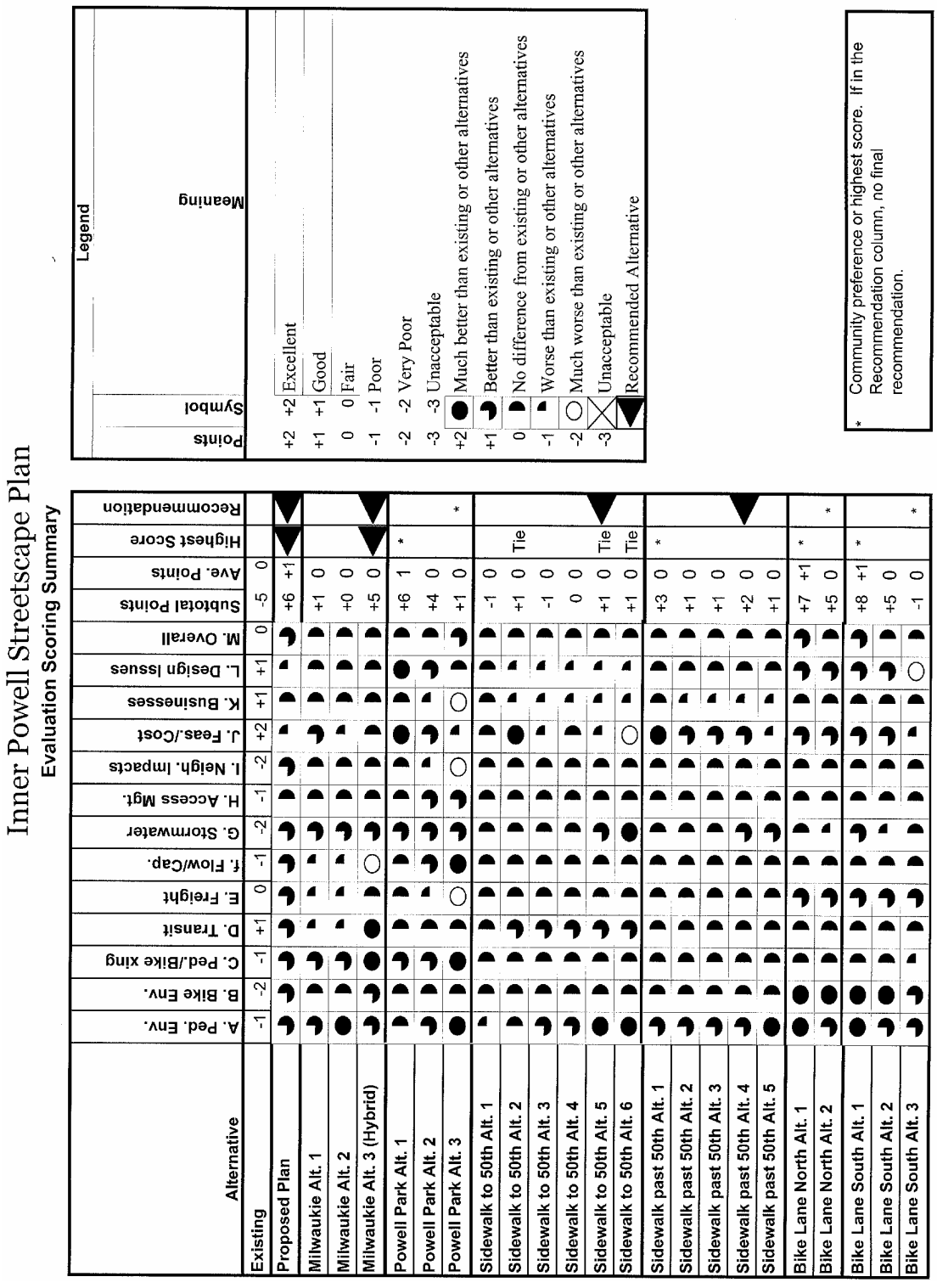
Regionally Significant Corridor–Motor Vehicle Deficiency Thresholds and Operating Standards

Mid-Day One-Hour Peak			A.M./P.M. Two-Hour Peak					
			Preferred Operating Standard		Acceptable Operating Standard		Exceeds Deficiency Threshold	
Preferred Operating Standard	**Acceptable Operating Standard**	**Exceeds Deficiency Threshold**	**1st Hour**	**2nd Hour**	**1st Hour**	**2nd Hour**	**1st Hour**	**2nd Hour**
C	D	E	E	D	E	E	F	E

Source: Metro 2004 Regional Transportation Plan

Evaluation Summary

This matrix summarizes the alternatives evaluation for this project:



Inner Powell Blvd – AM Peak Operations															
	2006 Existing Conditions			2025 Existing Signal Timing			2025 Optimized Signal Timing(1)			2025 Multi-Modal Improvements (1)			2025 Capacity Mitigation(1)		
Signalized Intersections	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**
Powell Boulevard @ Milwaukie Avenue	59.4	0.81	E	**>80**	**0.99**	**F**	39.1	0.98	D						
Corridor Model Alt 1 & 2: • Eliminate Southbound and Westbound Slip Lanes • Southbound: Dual lefts, thru-right • Westbound: Left, two thru lanes, thru-right										**64.7**	**1.07**	**E**			
Corridor Model Alt 3: • Split Phase North/South, Westbound Bus Bypass Lane • Southbound: Left, Left-Thru • Northbound: Left, Left-Thru-Right										**77.5**	**1.14**	**E**			
Capacity Mitigated Model (Alt 4) • Consider SB Right Free • Southbound: Dual lefts, and thru lane • Northbound: Left, Left-Thru, Thru-Right													39.7	0.97	D
Powell Boulevard @ 21st Avenue	17.9	0.67	B	19.8	0.74	B	7.2	0.75	A	7.2	0.75	A	14.1	0.75	B
Powell Boulevard @ 26th Avenue	**85.2**	**0.81**	**F**	**>80**	**0.93**	**F**	30.8	0.94	C	25.9	0.94	C			
Corridor Model Alt 1: • Protected Left Turn North/South										41.7	0.98	D			
Capacity Mitigated Model (Alt 4) • Permitted Left Turn Phasing North/South													37.4	0.95	D
Powell Boulevard @ 33rd Avenue	12.0	0.63	B	19.9	0.71	B	6.2	0.71	A	6.8	0.71	A	7.2	0.71	A
Powell Boulevard @ 39th Avenue	**>80**	**0.76**	**F**	**>80**	**>1.00**	**F**	**79.5**	**>1.00**	**F**						
Corridor Model Alt 1: • Eastbound and Westbound: Left, two thru lanes, right only (except buses) • Increase Left turn storage EB and WB on Powell										**79.1**	**>1.00**	**E**			
Corridor Model Alt 3: • Eastbound and Westbound: Left, two thru lanes, right only (except buses) • Southbound Left, Left-Thru, Thru-Right • Split Phase North/South										**78.0**	**>1.00**	**E**			
Capacity Mitigated Model (Alt 4) • Eastbound and Westbound: Left, two thru lanes, right only (except buses) • Widen the SB 39th approach to Powell to accommodate dual left-turn lanes with protected phasing N-S • Permitted-Protected Left Turn Phasing East/West													38.4	0.94	D
Powell Boulevard @ 50th Avenue	77.6	0.70	E	**99.0**	**0.84**	**F**	30.6	0.80	C	33.6	0.80	C	24.5	0.80	C
Powell Boulevard @ 52nd Avenue	24.9	0.61	C	28.2	0.66	C	14.1	0.63	B	13.9	0.63	B			
Corridor Model Alt 1: • Restrict NB left turns										19.1	0.63	B			
Capacity Mitigated Model (Alt 4) • Permitted-Protected Left Turn Phasing North/South • Permitted-Protected Left Turn Phasing WB Left													10.4	0.64	B
Powell Boulevard @ 65th Avenue	11.4	0.43	B	6.4	0.51	A	2.8	0.49	A	2.8	0.49	A	6.0	0.49	A
Powell Boulevard @ 71st Avenue	8.2	0.59	A	11.2	0.68	B	10.8	0.65	B	11.1	0.65	B	10.8	0.65	B
Powell Boulevard @ 72nd Avenue	9.2	0.46	A	12.3	0.66	B	15.9	0.64	B	16.1	0.64	B	16.1	0.64	B
Powell Boulevard @ 82nd Avenue	40.6	0.71	D	53.1	0.89	D	41.8	0.88	D	41.5	0.88	D			
Capacity Mitigated Model (Alt 4) • Dual WB left turn lanes with protected phasing													37.1	0.81	D
Powell Boulevard @ 86th Avenue	17.7	0.44	B	17.3	0.52	B	8.8	0.51	A	10.9	0.51	B	15.4	0.51	B
Powell Boulevard @ 92nd Avenue	35.0	0.70	D	71.6	0.94	E	43.1	0.92	D	41.3	0.90	D			
Capacity Mitigated Model (Alt 4) • Permitted-Protected Left Turn Phasing East/West													46.5	0.85	D
Powell Boulevard @ I-205 SB Ramps	25.2	0.48	C	11.1	0.53	B	8.5	0.54	A	9.9	0.53	A	9.4	0.53	A
Powell Boulevard @ I-205 NB Ramps	30.3	0.78	C	57.1	0.96	E	51.5	0.95	D	51.3	0.95	D	53.6	0.95	D
52nd Avenue @ Foster Road	61.6	0.50	E	**>80**	**0.64**	**F**	19.7	0.60	B	**>80**	**0.64**	**F**	25.2	0.57	C

(1) Signals optimized,Max 120 sec Cycle length, signal coordination for 3 zones, Milwaukie to 72nd, 82nd, 86th to I-205.
(2) Improvements suggested to reach the Regional standard of v/c<1.00.

Inner Powell Blvd – PM Peak Operations																
	2006 Existing Conditions			2025 Existing Signal Timing			2025 Optimized Signal Timing(1)			2025 Multi-Modal Improvements (1)			2025 Capacity Mitigation(1)		
Signalized Intersections	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**	**Average Delay (sec/vehicle)**	**Volume-to-Capacity Ratio**	**LOS**
Powell Boulevard @ Milwaukie Avenue	**>80**	**0.86**	**F**	**>80**	**>1.00**	**F**	46.8	0.94	D						
Corridor Model Alt 1 & 2: • Eliminate Southbound and Westbound Slip Lanes • Southbound: Dual lefts, thru-right • Westbound: Left, two thru lanes, thru-right										**79.4**	**>1.00**	**E**			
Corridor Model Alt 3: • Split Phase North/South, Westbound Bus Bypass Lane • Southbound: Left, Left-Thru • Northbound: Left, Left-Thru, Thru-Right										**>80**	**>1.00**	**F**			
Capacity Mitigated Model (Alt 4) • Consider SB Right Free • Southbound: Dual lefts, and thru lane • Northbound: Left, Left-Thru, Thru-Right													52.6	0.99	D
Powell Boulevard @ 21st Avenue	16.0	0.80	B	**22.3**	**0.91**	**C**	11.1	0.92	B	**12.1**	**0.92**	**B**	9.3	0.92	A
Powell Boulevard @ 26th Avenue	51.0	0.78	D	**68.8**	**0.99**	**E**	35.8	1.13	D	**31.4**	**>1.00**	**C**			
Corridor Plan Alt. 1 • Protected Left Turn North/South										**61.9**	**>1.00**	**C**			
Capacity Mitigated Model (Alt 4) • Permitted Left Turn Phasing North/South													44.6	0.97	D
Powell Boulevard @ 33rd Avenue	15.2	0.58	B	**17.3**	**0.68**	**B**	4.7	0.69	A	**4.8**	**0.69**	**A**	7.0	0.69	A
Powell Boulevard @ 39th Avenue	>80	0.96	F	**>80**	**>1.00**	**F**	66.4	1.06	E						
Corridor Plan Alt. 1 • Eastbound and Westbound: Left, two thru lanes, right only (except buses) • Increase Left turn storage EB and WB on Powell										**>80**	**>1.00**	**F**			
Corridor Model Alt 3: • Eastbound and Westbound: Left, two thru lanes, right only (except buses) • Southbound Left, Left-Thru, Thru-Right • Split Phase North/South										**82.9**	**>1.00**	**F**			
Capacity Mitigated Model (Alt 4) • Eastbound and Westbound: Left, two thru lanes, right only (except buses) • Widen the SB 39th approach to Powell to accommodate dual left-turn lanes with protected phasing N-S • Permitted-Protected Left Turn Phasing East/West													50.2	0.93	D
Powell Boulevard @ 50th Avenue	58.7	0.82	E	**75.2**	**>1.00**	**E**	31.2	0.94	C	**32.4**	**0.95**	**C**	44.5	0.95	D
Powell Boulevard @ 52nd Avenue	**>80**	0.90	F	**>80**	**>1.00**	**F**	63.0	>1.00	E	**67.8**	**>1.00**	**E**			
Corridor Plan Alt. 1 • Restrict NB left turns										**63.6**	**>1.00**	**E**			
Capacity Mitigated Model (Alt 4) • Permitted-Protected Left Turn Phasing North/South • Permitted-Protected Left Turn Phasing WB Left													39.2	0.97	D
Powell Boulevard @ 65th Avenue	14.4	0.56	B	**25.7**	**0.70**	**C**	8.0	0.62	A	**6.7**	**0.62**	**A**	5.8	0.62	A
Powell Boulevard @ 71st Avenue	10.0	0.59	B	**19.8**	**0.76**	**B**	11.1	0.73	B	**12.4**	**0.74**	**B**	13.8	0.73	B
Powell Boulevard @ 72nd Avenue	7.0	0.61	A	**10.7**	**0.74**	**B**	9.6	0.70	A	**9.3**	**0.71**	**A**	10.5	0.70	B
Powell Boulevard @ 82nd Avenue	53.7	0.80	D	**>80**	**>1.00**	**F**	**82.8**	**>1.00**	**F**	**>80**	**>1.00**	**F**			
Capacity Mitigated Model (Alt 4) • Dual WB left turn lanes with protected phasing													53.8	0.94	D
Powell Boulevard @ 86th Avenue	25.8	0.38	C	**37.5**	**0.85**	**D**	20.3	0.86	C	**28.9**	**0.90**	**C**	30.1	0.90	C
Powell Boulevard @ 92nd Avenue	63.9	0.98	E	**>80**	**>1.00**	**F**	**53.5**	**>1.00**	**D**	**62.1**	**>1.00**	**E**			
Capacity Mitigated Model (Alt 4) • Permitted-Protected Left Turn Phasing East/West													53.0	0.99	D
Powell Boulevard @ I-205 SB Ramps	23.9	0.59	C	**>80**	**0.49**	**B**	5.2	0.49	A	**5.3**	**0.49**	**A**	5.4	0.49	A
Powell Boulevard @ I-205 NB Ramps	50.4	0.88	D	**>80**	**>1.00**	**F**	**74.5**	**>1.00**	**E**	**74.2**	**>1.00**	**E**	41.1	0.92	D
52nd Avenue @ Foster Road	62.0	0.51	E	**>80**	**>1.00**	**F**	41.5	0.99	D	**>80**	**>1.00**	**E**	30.7	0.85	C

(1) Signals optimized, Max 120 sec Cycle length, signal coordination for 3 zones, Milwaukie to 72nd, 82nd, 86th to I-205.
(2) Improvements suggested to reach the Regional standard of v/c<1.00.

APPENDIX A

Design Standards Issues

Record of Communication

	Project No.:	274-2395-051 Phase 3		
	Project Name:	Inner Powell Streetscape		
	Date:	4/9/07 and 4/11/07	Time:	1:00 PM
Route To: File	By:	Bud Roberts		
Meeting Location:	PDOT			
Participants:	Rich Crossler-Laird, Kathy Mulder, Mike Coleman, April Bertelsen, Bud Roberts, Ross Kevlin			

Two meetings were held to discuss potential design issues related to the Project. Here are my notes from those 2 meetings:

- Design exceptions fall into 2 categories, conventional and unconventional. Shy distance of 1' vs. 2' is a conventional item, and may be possible. Unusual bike treatment is unconventional and more difficult to approve. So are trees that do not comply with stated policy.
- Examples: Barbur has 11' lanes with 2' shy. 1' shy is easier to justify if it is continuous for a whole block or island. Typically, there is not a stripe at the 1' shy distance from the curb.
- Applications will be required for new crosswalks. These go through the Regional Traffic Section to the State Traffic Engineer for approval.
- Having no shoulders in the urban area is common, and easily approved, especially in the context of existing conditions elsewhere in the corridor. AASHTO shows urban arterials with no shoulders. Christopher is working on new standards (expected in about 2 months +/-). RD's will become part of the Highway Design Manual (HDM).
- Turning maneuvers should be designed to allow a 53' trailer to make the turn. They are not required to make the turn within their lane or on the right side of the side street. See HDM 9-4.
- When we discuss trees, typical spacing is 50' to 75', and usually trees do not grow beyond 18" diameter. Discuss proposed species as part of the discussion.
- HAWK signals are non-standard. However, there is an existing signal of that type at 42nd and Burnside (not a State Highway).
- Island that taper relative to oncoming traffic from 2' shy to 1' shy can be considered. If this is done, the island winds up slightly skewed to the centerline. This is consistent with standard design of triangular islands in intersections.
- Separated bike routes do not prevent 2-way bike traffic at intersections.
- Do not mix bikes and pedestrians.
- The elevated bike lanes being discussed bring up maintenance issues. Are these parts of the roadway or not? Ross will check with Eugene and Bend on this question. The raised bike lanes would probably be constructed with colored concrete.
- Watch out for ponding on bike options 2 and 3.
- Generally, none of the proposals are DOA.

From: Rich CROSSLER-LAIRD
Sent: Monday, May 21, 2007 4:22 PM
To: Bud Roberts; Ross KEVLIN; April Bertelsen; Kathy Mulder; Mike Coleman
Cc: Canh LAM
Subject: RE: Inner Powell notes from 2 meetings

I have read through Bud's notes of the meetings. Nothing that has been proposed is "DOA", as Bud puts it. However, there are some issues to finalize as to how the design will look. Raised bike lanes, shoulder widths, lane widths, intersection layout, etc to name a few. This section of Powell Blvd. is listed as a "District" level hwy in the Oregon Highway Plan and also carries a "TR" designation, which is a "Federally Designated Truck Route" - although it is not an NHS highway in this section.

Now for an explanation as to why I bring this up. There is a slightly new twist to the Oregon Revised Statute 366.215 that deals with the reduction of "vehicle carrying capacity" of a freight route. This ORS was adopted 2 legislative sessions ago (2003) and revised in the last legislative session (2005). Nothing has been added or proposed for revision during the 2007 session. Since its' first adoption, the language has been rather ambiguous as to what constitutes a "freight route" when trying to interpret the intent of ORS 366.215. Originally, it was thought that the "freight route" term only applied to Oregon Highway Plan designated "freight routes" or highways listed with an "FR" in the appendix of the highway plan. Recently however, that interpretation has been subject to change. The freight groups in the state have interpreted "freight route" to mean all listed truck routes on state highways. This would include locally designated truck routes; state designated truck/freight routes and federally designated truck routes. In addition, the freight group's interpretation is that if a highway segment is listed on the Motor Carrier Route Maps, then it would be a freight route and ORS 366.215 could apply.

Powell Blvd. shows up on several of the Motor Carrier section's Route Maps as well as carrying a TR designation. As a result, freight mobility issues will come into play. If lanes are to be narrowed from the existing widths, then freight group buy-in will be needed at a minimum. If it is determined that ORS 366.215 applies to the section, then Oregon Transportation Commission approval may be needed as well to reduce lane widths or to incorporate other design features that are interpreted to "reduce the vehicle carrying capacity" of the highway. In general, the way we are dealing with these kinds of locations is to look at the existing conditions in relation to the design conditions. If a large vehicle can get through the section under the existing conditions, has its' ability to get through the section under the design conditions been significantly altered? Basically, if it can get through now, can it get through after construction without difficulty? This is becoming a major hurdle when trying to look at TSPs, refinement plans and other TGM type work where definitive design parameters have not been finalized and only concepts have been moved forward. Sonya is dealing with these issues on other projects located on 82nd Ave and in Molalla in relation to lane widths.

I mention this in a cautionary manner as the new interpretation that has recently been applied has potential to affect discussions that we have already had on this project. For those of you that are not familiar with ORS 366.215, I have included a link to section 366 of the Oregon Revised Statutes. Unfortunately, the link does not directly work from this e-mail. It has something to do with the fact that this is a response to an e-mail that originated outside the ODOT system. If you copy and paste the link into your browser search window, it should work. Once you get to section 366, scroll down to 366.215 for the text of the ORS. Section 1 authorizes the OTC to do specified work on state highways. Section 2 deals with the reduction of "vehicle carrying capacity" and Section 3 deals with exemptions to ORS 366.215. Depending on language interpretation, this is a small statute that carries large potential impact to urban projects, including STA designated sections. This doesn't mean the

Inner Powell concepts being discussed are dead. We just may have a few additional hoops to jump through. I'm not trying to be the bearer of bad tidings. I just want to make sure everyone is aware of the current reality with which we are dealing.

APPENDIX B

Mitigation Considered To Meet Regional Congestion Standard

IMPROVEMENTS SUGGESTED TO REACH <1.00 V/C STANDARD:

In an effort to comply with the Regional requirements to provide a level of service of 0.99 or less, an analysis was made of the improvements that would be required to maintain that level with the proposed improvements in the year 2025. What follows is a summary of those suggested improvements.

Signal Intertie and Coordination - Signal coordination and the required associated hardware and system interconnects/technology upgrades according to the following segments:

- Milwaukie to 72nd (including 52nd & Foster)
- 82nd Ave
- 86th through I-205

Intersection Improvements

SE Milwaukie

- See Figures 1 and 2

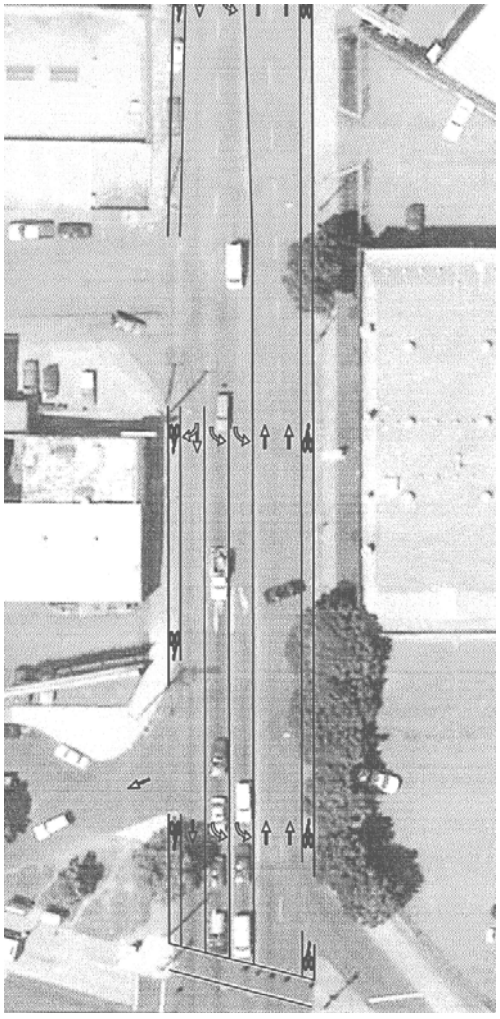


Figure 1
South Leg of Milwaukie

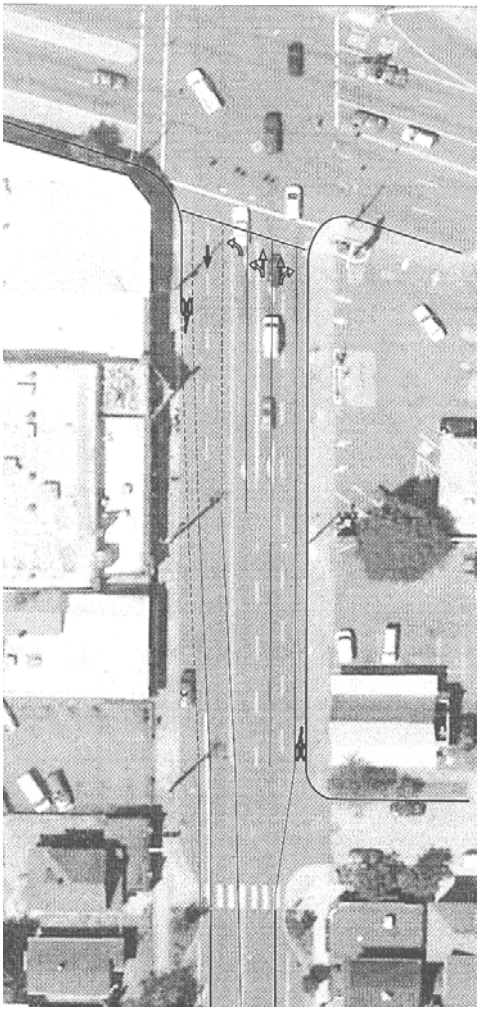


Figure 2
North Leg of Milwaukie

SE 26th Ave.

- Permitted/Protected Left Turn Phasing North/South.

SE 39th Ave.

- Restrict EB and WB left turns, or
- Add third through lane (See attached figure 3).

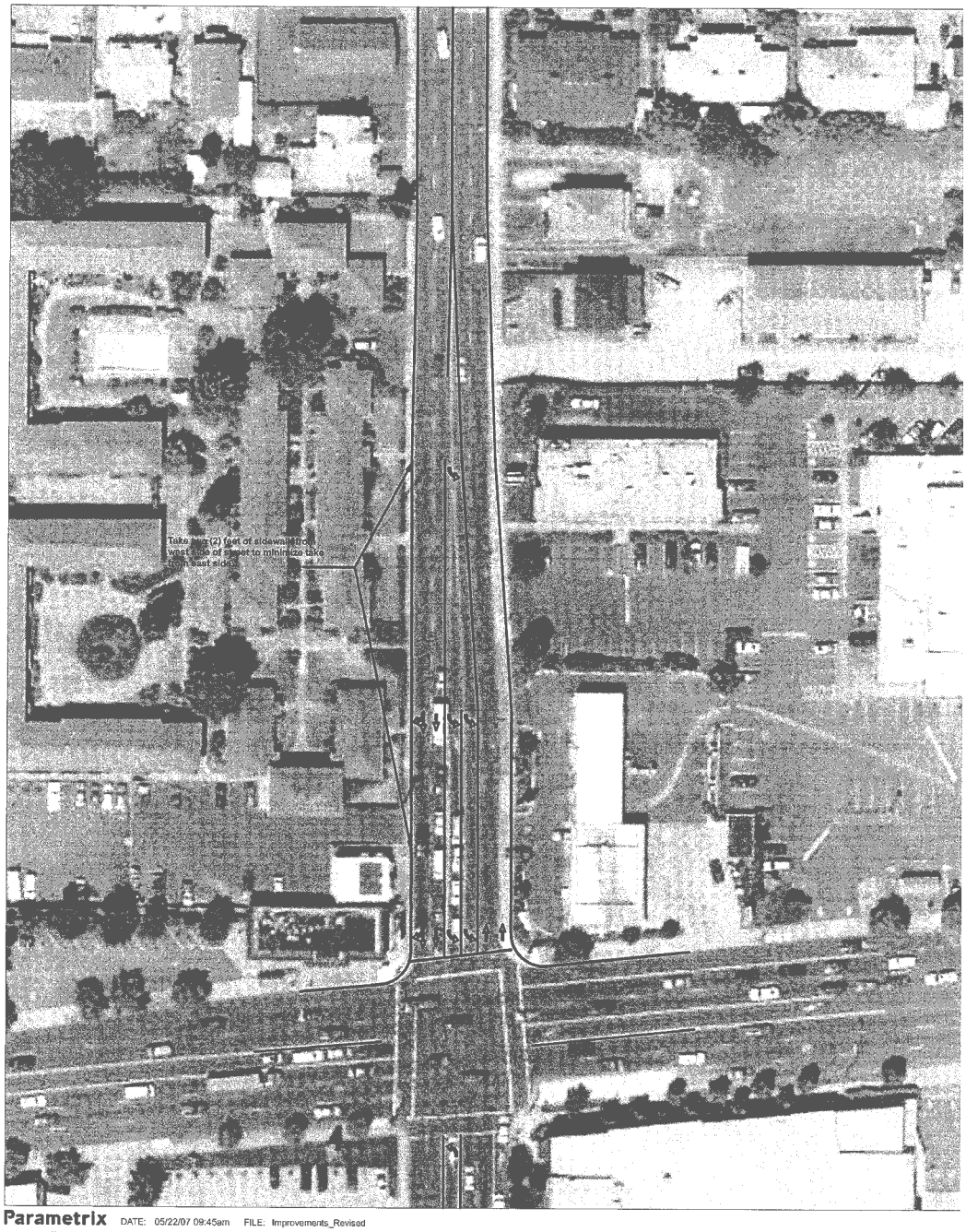


Figure 3
SB 39th Avenue - Capacity Mitigation Alternative
Alternatives Evaluation
Inner Powell Streetscape Plan

SE 52nd Ave.

- WB left permitted/protected phasing.

SE 52nd Ave./Foster

- Signal Coordination with Powell/52nd Improvements.

SE 82nd Ave.

- Dual WB left turn lanes (protected phasing) (See attached figure 4).

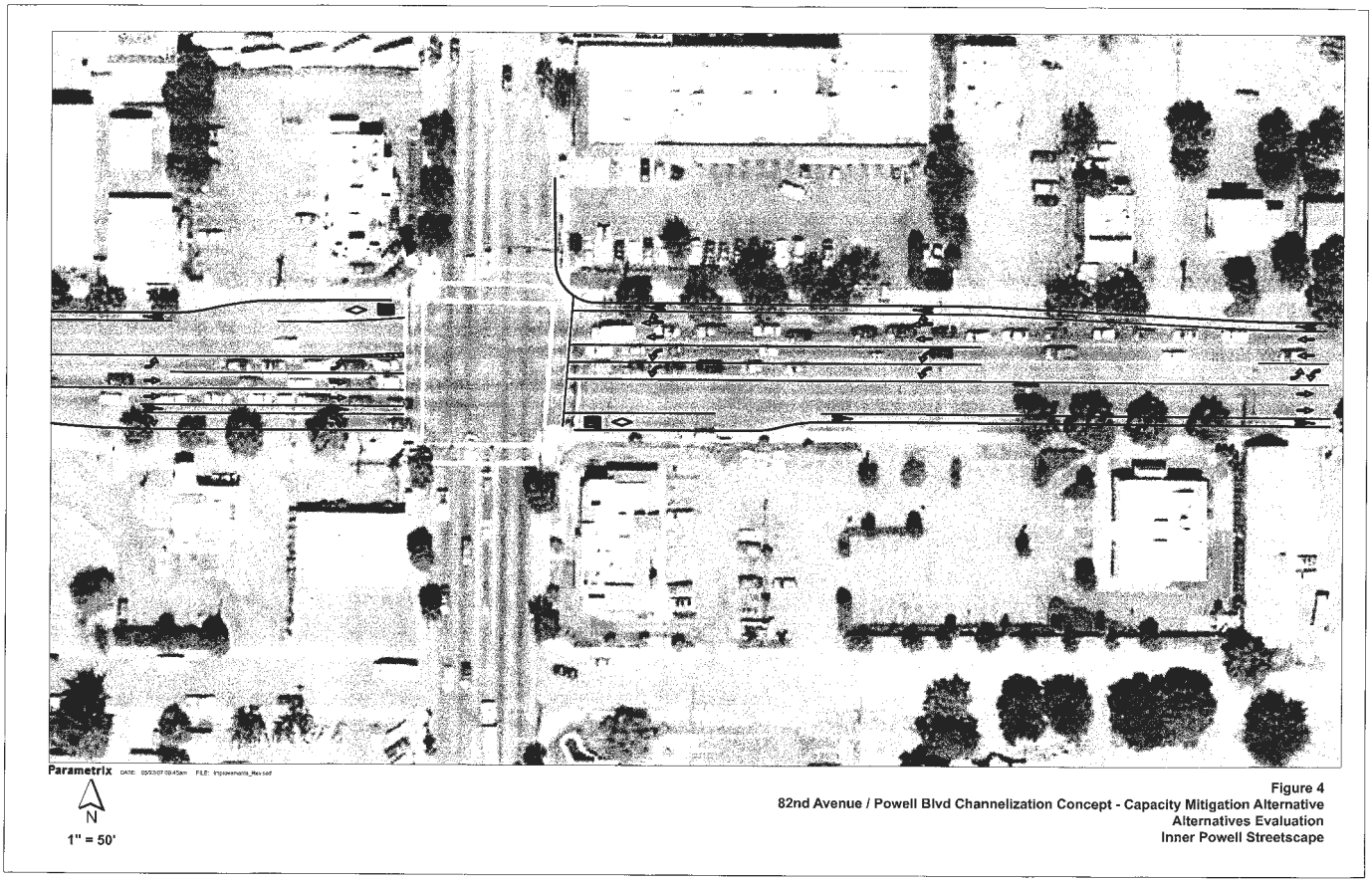


Figure 4
82nd Avenue / Powell Blvd Channelization Concept - Capacity Mitigation Alternative
Alternatives Evaluation
Inner Powell Streetscape

SE 92nd Ave.

- E-W permitted/protected phasing

I-205 NB

- Not in project.

APPENDIX C

Sidewalk Curb Ramp Inventory

Cross Street	Curb Ramp Proposal	Number of New Dual Ramps	Number of New Single Ramps	SW Corner Existing Ramp Conditions	SE Corner Existing Ramp Conditions	NW Corner Existing Ramp Conditions	NE Corner Existing Ramp Conditions	Intersection Description
7th				Diagonal, New	Diagonal, New	Diagonal, Old	Diagonal, Old	
8th				Diagonal, New	Diagonal, New	Diagonal, New	Diagonal, New	
9th				Diagonal, New	Diagonal, New	Diagonal, Old	Diagonal, New	
10th				Diagonal, New	Diagonal, New	Diagonal, Old	Diagonal, New	
Brooklyn St				None	None	Diagonal, New	Diagonal, New	T-Intersection
11th				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
Milwaukie				Double, Old	Diagonal, Old	Double, New	Diagonal, Old	
Milwaukie				None	None	Diagonal, Old	Diagonal, Old	NE Crosswalk
12th				None	Diagonal, Old	None	None	T-Intersection
13th Pl				None	None	Diagonal, New	Diagonal, New	T-Intersection
13th				Single across Powell, New	None	Single across Powell, New	None	Crosswalk
13th				Diagonal, Old	Diagonal, New	None	None	T-Intersection
14th				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
15th				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
16th				Diagonal, Old	Diagonal, Old	Single across Powell, Old	None	T-Intersection w/ Crosswalk
18th				None	None	None	None	T-Intersection
19th				None	None	Diagonal, Old	None	T-Intersection
20th				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, New	
21st				Diagonal, New	Diagonal, New	Diagonal, New	Diagonal, New	
22nd				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, New	Sidestepped Intersection
23rd				None	None	Diagonal, New	Diagonal, Old	T-Intersection
24th				None	None	Diagonal, New	Diagonal, New	T-Intersection
24th				Single across Powell, New	None	Single across Powell, New	None	Crosswalk
25th				None	None	Diagonal, New	Diagonal, New	T-Intersection
26th				Diagonal, New	Double, New	Diagonal, New	Double, New	
28th				Diagonal, Old	Diagonal, Old	Diagonal, New	Diagonal, Old	

Cross Street	Curb Ramp Proposal	Number of New Dual Ramps	Number of New Single Ramps	SW Corner Existing Ramp Conditions	SE Corner Existing Ramp Conditions	NW Corner Existing Ramp Conditions	NE Corner Existing Ramp Conditions	Intersection Description
28th Pl				Diagonal, Old	Double, New	None	Single across Powell, New	T-Intersection w/ Crosswalk
29th				Diagonal, New	Diagonal, Old	Diagonal, Old	Diagonal, Old	
30th				None	None	None	None	T-Intersection
31st				None	None	Diagonal, Old	Diagonal, Old	T-Intersection
31st				Single across Powell, New	None	Single across Powell, New	None	Crosswalk
32nd				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
33rd				Diagonal, Old	Diagonal, New	Diagonal, New	Diagonal, New	
33rd Pl				Diagonal, New	Diagonal, Old	None	None	T-Intersection
34th				Single across Powell, New	None	Single across Powell, New	None	Crosswalk
34th				Diagonal, Old	Diagonal, New	None	None	T-Intersection
35th Pl				Diagonal, Old	None	None	None	T-Intersection
36th				Diagonal, Old	Single across Powell, New	None	Double, New	T-Intersection w/ Crosswalk
36th Pl				Diagonal, Old	None	None	None	T-Intersection
37th				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
38th				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
39th				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
40th				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
42nd				Diagonal, Old	Diagonal, Old	None	None	T-Intersection
43rd				None	None	Diagonal, New	Diagonal, New	T-Intersection, North
43rd Pl				Diagonal, Old	Diagonal, Old	None	None	T-Intersection, South
45th				None	Single across Powell, Old	Diagonal, New	Diagonal, New	T-Intersection w/ Crosswalk
47th				None	None	Diagonal, New	Diagonal, New	T-Intersection
48th				Single across Powell, New	None	Single across Powell, New	None	Crosswalk

Cross Street	Curb Ramp Proposal	Number of New Dual Ramps	Number of New Single Ramps	SW Corner Existing Ramp Conditions	SE Corner Existing Ramp Conditions	NW Corner Existing Ramp Conditions	NE Corner Existing Ramp Conditions	Intersection Description
49th				Diagonal, New	Diagonal, Old	Diagonal, Old	Diagonal, Old	
Foster	Dual ramps on all 4 corners	4		Diagonal, Old	Diagonal, New	Diagonal, New	Diagonal, New	
Foster	?			Diagonal, Old	None	None	None	SW Crosswalk
51st	Dual ramps on NW and NE corners and single ramps across the street	2	2	None	None	Diagonal, Old	Diagonal, Old	T-Intersection
52nd	Dual ramps on all 4 corners	4		Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
53rd	Dual ramps on all 4 corners	4		None	None	Diagonal, Old	Diagonal, Old	
54th	no change			Single across Powell, New	None	Diagonal, New	Diagonal, Old	T-Intersection w/ Crosswalk
54th - in parking lot	no change			Diagonal, Old	Diagonal, Old	Diagonal, Old	None	In Parking Lot Pullout
55th	Dual ramps on all 4 corners	4		Single across Parking Lot, Old	Single across Parking Lot, Old	Diagonal, Old	Diagonal, Old	
56th	Dual ramps on all 4 corners	4		Diagonal, Old	Single across Parking Lot, Old	Diagonal, New	Diagonal, Old	
57th - in parking lot	no change			Single across Parking Lot, Old	None	Single across Parking Lot, Old	None	In Parking Lot Pullout
57th	Ramps at Mid-block crossing instead			Single across Parking Lot, Old	Single across Parking Lot, New	Diagonal, Old	Diagonal, Old	
58th	Ramps at Mid-block crossing instead			None	None	Diagonal, Old	Diagonal, Old	T-Intersection
59th	Dual ramps on all 4 corners	4		Single across Parking Lot, Old	Single across Parking Lot, New	Diagonal, Old	Diagonal, Old	
60th - in parking lot	no change			Single across Parking Lot, Old	None	Single across Parking Lot, Old	None	In Parking Lot Pullout

Cross Street	Curb Ramp Proposal	Number of New Dual Ramps	Number of New Single Ramps	SW Corner Existing Ramp Conditions	SE Corner Existing Ramp Conditions	NW Corner Existing Ramp Conditions	NE Corner Existing Ramp Conditions	Intersection Description
61st	single ramp on NE side		1	Single across Parking Lot, Old	Single across Parking Lot, Old	None	None	
62nd	?			Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	Sidestepped Intersection
63rd	Dual ramp on NE corner	1		Double, New	None	Diagonal, Old	Diagonal, Old	Sidestepped Intersection
64th	Dual ramps on all 4 corners	4		Single across Parking Lot, Old	Single across Parking Lot, New	Diagonal, Rebuilt	Single across 64th, Rebuilt	
64th - in parking lot	no change			Diagonal, Old	Diagonal, Old	Single across Parking Lot, Old	None	In Parking Lot Pullout
65th	Dual ramps on all 4 corners	4		Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
65th - in parking lot	no change			Diagonal, Old	Diagonal, Old	Single across Parking Lot, Old	None	In Parking Lot Pullout
66th	Dual ramps on all 4 corners	4		Single across 66th, Old	Single across 66th, Old	Single across 66th, Old	Single across 66th, Old	
67th	Dual ramps on all 4 corners	4		Diagonal, Old	Diagonal, New	Diagonal, Old	Diagonal, Old	
67th - in parking lot	no change			Diagonal, Old	Diagonal, Old	Single across Parking Lot, Old	None	In Parking Lot Pullout
Alley and parking exist	no change			Single across 68th, Old	Single across 68th, Old	None	None	T-Intersection
68th	Dual ramps on all 4 corners	4		Single across 68th, Old	Diagonal, Old	Single across 68th, Old	Single across 68th, Old	
69th	Dual ramps on all 4 corners	4		Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
70th	Dual ramps on SE and SW corners and single ramps across the street	2	2	Diagonal, Old	Diagonal, Old	None	None	T-Intersection

Cross Street	Curb Ramp Proposal	Number of New Dual Ramps	Number of New Single Ramps	SW Corner Existing Ramp Conditions	SE Corner Existing Ramp Conditions	NW Corner Existing Ramp Conditions	NE Corner Existing Ramp Conditions	Intersection Description
71st	Dual ramps on NW and NE corners single ramps across street	2	2	None	None	Diagonal, Old	Diagonal, Old	T-Intersection
72nd	Dual ramps on SE and SW corners	2		Diagonal, Old	Diagonal, Old	Single across Powell, Old	Single across Powell, Old	Crosswalk
73rd	Dual ramps on SE and SW corners and single ramps across the street	2	2	Diagonal, Old	Diagonal, Old	None	None	T-Intersection
74th	Dual ramps on NW and NE corners	2		Diagonal, New	Diagonal, New	Diagonal, New	Diagonal, Old	Sidestepped Intersection
74th	Dual Ramps on SW corners	1		None	Single across Parking Lot, New	Single across Parking Lot, New	Double, New	In Parking Lot Pullout
75th	Dual ramps on all 4 corners	4		Single across Parking Lot, Old	Single across Parking Lot, Old	Single across 75th, Old	Single across 75th, Old	
76th	Dual ramp on SW corner	1		Single across 76th, Old	Single across 76th, Old	Double, New	Single across 76th, Old	
76th - in parking lot	no change			None	Single across Parking Lot, Old	None	Single across Parking Lot, Old	In Parking Lot Pullout
77th	no change			None	None	Diagonal, Old	Diagonal, Old	T-Intersection
77th	no change			Single across Powell, New	None	Single across Powell, New	None	Crosswalk
77th - in parking lot	no change			Single across Parking Lot, Old	Single across Parking Lot, Old		None	In Parking Lot Pullout
77th - parking lot	no change			Single across Parking Lot, Old	Diagonal, Old	Single across Parking Lot, Old	None	In Parking Lot Pullout
78th	Dual ramps on NE corners	1		None	Single across Powell, Old	Single across 78th, Old	Dual ramps, Old	
79th - in parking lot	no change			Diagonal, Old	Diagonal, Old	Single across Parking Lot, Old	None	In Parking Lot Pullout

Cross Street	Curb Ramp Proposal	Number of New Dual Ramps	Number of New Single Ramps	SW Corner Existing Ramp Conditions	SE Corner Existing Ramp Conditions	NW Corner Existing Ramp Conditions	NE Corner Existing Ramp Conditions	Intersection Description
79th	Dual ramps on all 4 corners	4		Single across 79th, Old	Single across 79th, Old	Single across 79th, Old	Single across 79th, Old	
80th	no change - driveway conflict			Diagonal, Old	Diagonal, Old	None	None	T-Intersection
82nd	no change - dual existing			Double, New	Double, New	Double, New	Double, Old	
84th	Dual ramps on NW, SE and SW corners	3		Diagonal, Old	Diagonal, New	Diagonal, Old	Diagonal, Old	
85th	Dual Ramps on NW and NE corners and 2 singles across street	2	2	None	None	Diagonal, Old	Diagonal, Old	T-Intersection
86th	Single ramp at NW corner, dual ramp on SW corner	1	1	Diagonal, Old	Diagonal, Old	Single, Old	None	T-Intersection
87th	Dual ramp on NW corner, 2 singles across street	1	2	None	None	Diagonal, Old	Diagonal, Old	T-Intersection
88th	no change - driveway conflict			Diagonal, Old	Diagonal, Old	None	None	T-Intersection
89th	Dual Ramps on NW and NE corners and 2 singles across street	2	2	None	None	Diagonal, New	Diagonal, New	T-Intersection
90th Pl	Dual Ramps on NE and NW corners	2		Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
92nd	Dual Ramps at all 4 corner	4		Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
I-5 Ramp, W				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
I-5 Ramp, E				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	
98th				Diagonal, Old	Diagonal, Old	Diagonal, Old	Diagonal, Old	Crossing Median
98th				Single across Powell, New	None	Single across Powell, Old	None	Crosswalk

APPENDIX D

City of Portland Currently Approved Tree List

List for Medians and Sidewalk Planters

Medium to Large Trees		
Betula jaquemontii	Jacquemontii Birch	40'h x 30' w, whitest of all birch trees, green foliage, yellow fall
Celtis occidentalis*	Common Hackberry	40'h x 30' w, hardy in urban settings, deep roots, green foliage, yellow fall
Fagus sylvatica 'Dawyck Purple'	Dawyck Purple Beech	40'h x 12' w, columnar form, purple foliage
Fraxinus latifolia*	Oregon Ash	50'h x 30' w, light green foliage, yellow fall
Fraxinus pennsylvanica 'Urbanite'	Urbanite Ash	50'h x 40' w, formal shape, airy bronze fall
Ginkgo biloba	Maidenhair Ginkgo	45'h x 35' w. open structure, gold fall
Gleditsia triancanthos*	Honeylocust	45'h x 35' w.upright branch form, gold fall
Quercus shumardii*	Shumard Oak	50'h x 40' w. tolerates moist soil, dark green foliage, red fall color
Quercus velutina	Northern Black Oak	50'h x 40' w. tolerates poor soil, dark green foliage, rust fall color
Tilia x euchlora	Crimean Linden	45'h x 25'w. original tree planted throughout Powell Blvd. project area
Zelkova musashino	Zelkova Musashino	45'h x 20' w. upright shape for small space, green foliage, orange fall
Zelkova serrata 'Village Green'	Zelkova Village green	40'h x 40' w. vase shaped, deep green foliage, rust fall color
Small to Medium Trees		
Acer buergeranaum	Trident Maple	20' x 20' w. small stature glossy green foliage, red orange fall
Acer griseum	Paperbark Maple	25' x 20' w. upright form, cinnamon peeling bark, bright red fall
Acer truncatum x A. platanoides 'Warrenred' *	Pacific Sunset	30' x 25' w. glossy green foliage turns to yellow and bright red fall
Cornus kousa chinensis	Chinese Dogwood	25'h x 20' w. upright form, large white brachts in spring, red fall
Cornus x 'Eddie's White Wonder'	Dogwood	25'h x 20' w. upright form, large white brachts in spring, red fall
Davidia involucrata	Dove Tree	30'h x 30' w, striking 4-6" white flowers, green foliage, brown fall
Fraxinus americana 'Autumn Applause'	Autumn Applause Ash	40'h x 25' w, compact form, green to purple mahogany in fall
Magnolia denudata	Denudata Magnolia	35h x 35' w, off white saucer shaped 6" flowers in spring
Magnolia kobus 'Wada's Memory'	Wada's Memory Magnolia	30'h x 40' w. upright, fragrant white flowers
Nyssa sylvatica*****	Black Tupelo	35'h x 20' w. hardy in urban settings, glossy green foliage, copper red fall
Parrotia persica	Persian Ironwood	30'h x 20' w. upright form, showy foliage, peeling bark, yellow/red fall
Prunus virginiana 'Canada Red'*	Canada Red Chokecherry	25'h x 20' w. dynamic foliage turning green to crimson in summer, red fall
Styrax japonicus	Japanese Snowbell	25'h x 25' w. delicate form, hanging white bell flowers in June,
*** can tolerate swale conditions**		

List for Stormwater Facilities

For locations with overhead power lines		
Carpinus caroliniana	American Hornbeam	25'h x 25' w. multi-stem, yellow, orange, red fall color
Fraxinus pennsylvanica 'Johnson'	Leprechaun Ash	20'h x 20' w. yellow fall color, smaller than species
Gleditsia triacanthos 'Impcole'	Imperial Honeylocust	35'h x 25' w.upright branch form, gold fall
Koelreuteria paniculata	Goldenrain Tree	35'h x 35' w. 12" x 15" flower clusters
Prunus virginiana 'Canada Red'*	Canada Red Chokecherry	25'h x 20' w. dynamic foliage turning green to crimson in summer, red fall

For locations without overhead power lines		
Acer campestre 'Evelyn'	Queen Elizabeth Hedge Maple	30'h x 30' w, densely branched
Betula jaquemontii	Jacquemontii Birch	40'h x 30' w, whitest of all birch trees, green foliage, yellow fall
Celtis occidentalis*	Common Hackberry	40'h x 30' w, hardy in urban settings, deep roots, green foliage, yellow fall
Gleditsia triancanthos*	Honeylocust	45'h x 35' w.upright branch form, gold fall
Nyssa sylvatica*****	Black Tupelo	35'h x 20' w. hardy in urban settings, glossy green foliage, copper red fall
Quercus shumardii*	Shumard Oak	50'h x 40' w. tolerates moist soil,dark green foliage, red fall color

APPENDIX E

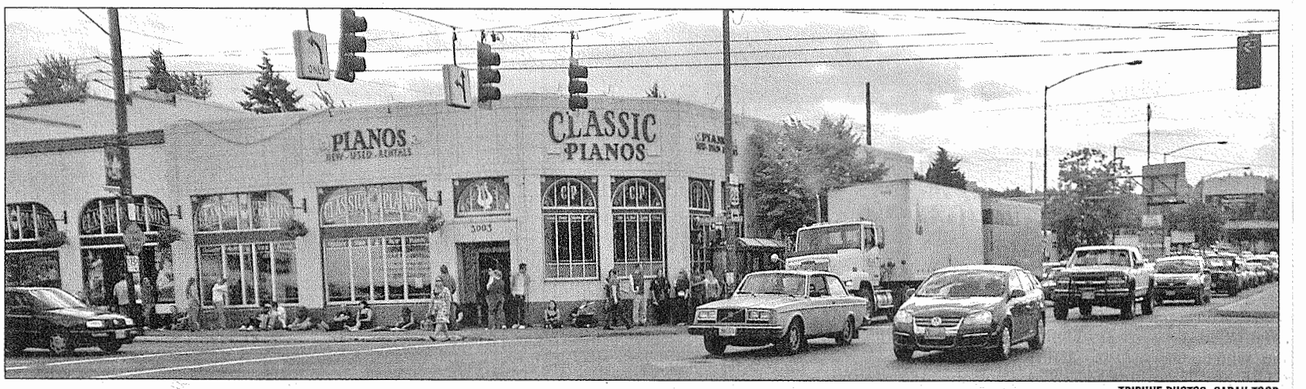
Tribune Article – July 24, 2007

TRIBTOWN *The Portland neighborhood beat*

A family waits for a lull in traffic to cross Southeast Powell Boulevard between 57th and 58th avenues. Under the recently released Inner Powell Boulevard Streetscape Plan, an enhanced crosswalk will go in at that location — and five others along Powell — when the thoroughfare is repaved next year or in 2009.

Repaving project spurs activists to move safety fixes forward

It's Powell to the people



TRIBUNE PHOTOS: SARAH TOOR

At rush hour, the intersection of Southeast Powell Boulevard and Milwaukie Avenue sees a lot of vehicular traffic. With intersection improvements recommended by the city's Office of Transportation and a citizens working group, pedestrians would be made more welcome.

By ANNA JOHNS
for The Tribune

Southeast Portland residents who have worked for years to make Powell Boulevard safer for pedestrians and bicyclists are pleased with the Portland Office of Transportation's recommendations for improving the streetscape of the busy thoroughfare.

"It went really well," said Doug Klotz, a member of the citizens working group that helped shape the Powell plan. "The (PDOT) staff and consultants certainly tried to fix as many concerns as they could, given constraints of it being a state highway."

SOUTHEAST

The Inner Powell Boulevard Streetscape Plan was released this month after more than a year of meetings with the group. The plan was complicated by the fact that Powell is part of U.S. Highway 26.

The effort came about after neighbors realized an Oregon Department of Transportation repaving project on Powell from the Willamette River to Southeast 52nd Avenue did not include any pedestrian improvements for the busy roadway.

"We raised a big fuss and got a few changes in what they'd already planned, but it was too late to do anything major," Klotz said.

Neighbors such as Klotz, who lives in the Richmond neighborhood, which borders Powell on the north from Southeast 29th to 52nd avenues, say that Powell is a barrier that prevents them from easily visiting other neighborhoods and businesses.

Better crosswalks plotted

The final report prioritizes changes to Powell from Southeast 52nd to 92nd avenues, which ODOT will repave in 2008 or 2009.

There is $500,000 in the repaving budget for safety improvements in the next repaving project.

The money already is earmarked for enhanced crosswalks — including street paint, stop bars, overhead signs, ornamental lighting and refuge medians — at the following locations: between Southeast 57th and 58th avenues; between 79th and 80th avenues; between 90th and 92nd avenues; and at 67th, 75th and 84th avenues.

"That will get us started," said April Bertelsen, PDOT project manager. "The city and state are both looking for more funding for other priorities listed in the streetscape plan."

The other priorities include installing pedestrian- and bicycle-activated signals at crosswalks and adding a bicycle lane on Powell at Southeast 76th Avenue.

One bone of contention between ODOT and Portland neighbors is the addition of trees to existing medians and parking strips. Aesthetics aside, trees provide shade for pedestrians and assist in managing storm-water runoff.

However, city and state rules on roadside trees are different. Because Powell is a state highway, it falls under rules that require trees to be at least 300 feet from an intersection. Many intersections on Powell are only 200 feet apart.

"My hope is that the state will work with the city on allowing more trees and recognize this is an urban environment," Bertelsen said.

Close-in fixes also proposed

The final plan also calls for larger-scale projects, such as fixing the close-in intersection of Southeast Milwaukie Avenue and Powell. Klotz says there isn't enough time for pedestrians to cross Powell before the light changes.

"Locals know they need to cross to the median while the Milwaukie traffic turns onto Powell," Klotz said. "Then they can finish crossing the intersection when the walk signal comes on."

The streetscape plan recommends adding a crosswalk on the east side of the intersection and a bike lane on Milwaukie so people in Brooklyn can more easily access the Clinton neighborhood, and vice versa.

PDOT estimates that the fixes at the Milwaukie-Powell intersection will cost $1 million, including such additional work as modifying existing traffic lanes and islands, and adding a storm-water treatment facility.

There is no funding source for the project, but it is listed as a priority in the final plan.

"Long-term implementation is likely to be incremental and take a long time to fund," Bertelsen said.

Klotz says that he's happy with the final plan and patiently awaits future construction projects. When Powell does get more pedestrian- and bicycle-friendly, he expects the business atmosphere to transform to serve all the nearby neighborhoods.

"These small changes will trigger some other changes in the private sector," Klotz said.

The Inner Powell Boulevard Streetscape Plan is on PDOT's Web site, www.portlandonline.com/transportation, under Projects & Planning.

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