Outer Powell Boulevard Conceptual Design Plan

June 2012

City of Portland Bureau of Transportation
1120 SW Fifth Avenue
Portland, Oregon 97204

CITY OF PORTLAND BUREAU OF TRANSPORTATION

Oregon Transportation and Growth Management Program

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds.

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Executive Summary

The Outer Powell Boulevard Conceptual Design Plan project was jointly undertaken by the City of Portland and ODOT to identify needed improvements to SE Powell Boulevard (US 26) between I-205 and the Gresham city limit just east of SE 174th Avenue. For transportation analysis purposes the study area will extend north to SE Division and south to SE Foster Rd. The road is an ODOT facility, and predominately consists of two travel lanes in a rural cross-section, with no curbs, drainage facilities, marked bike lanes, and few segments of sidewalk.

The overall goal of the Outer Powell Boulevard Conceptual Design Plan is to develop a conceptual design plan for improvements to SE Powell Blvd. to accommodate the 20-year needs of motor vehicles, bicycles, pedestrians and transit. Today, this section of Powell Blvd. is reminiscent of a 1950 rural highway with no provision for pedestrians, drainage or transit. It does have bike lanes. The 2003 Powell/Foster Corridor Transportation Plan led by Metro established the base case for Powell Blvd. improvements. This 2003 plan also called for a second planning effort study to determine specific design elements for future Powell Blvd. improvements. It is intended that this conceptual design plan will produce that level of design specificity.

The project was completed with input from technical and community stakeholders at each step in the planning process, and at three community open houses. Prior to developing and evaluating alternatives to arrive at a recommended solution, the project considered needs (e.g. project goals and objectives, future-year traffic forecasts and community desires, for example for improved bus stop access), constraints (e.g. extensive roadside development with little room for widening, numerous driveways), and opportunities (e.g. the potential to manage driveway accesses to enhance roadway capacity and safety for all modes).

The alternatives considered consisted of three vehicle lanes (one travel lane in each direction and one center raised median/turn lane), four lanes (two lanes in each direction with a narrow raised median), and five lanes (with a center raised median/turn lane). The design for pedestrian and bicycle accommodations next to travel lanes is comprised of an 8-foot-wide bike facility and a 12-foot-wide sidewalk corridor consisting of a 7 ½ -foot sidewalk zone and a 4 ½ -foot furnishing zone to accommodate street trees, stormwater planters and other amenities. The alternatives included a design option with narrower bike and sidewalk facilities to be used only in constrained segments, for example to avoid removing large trees or major buildings during roadway widening.

The evaluation of alternatives applied criteria that considered operations and safety for motor vehicles and transit, the environment and safety for bicyclists and pedestrians, support for existing and planned land uses, property impacts (e.g. amount of additional property needed to accommodate widening, and whether existing buildings would be impacted) and planning-level estimated cost.

The three-lane alternative was selected as the recommended plan. For the segment of Powell between SE 162nd and SE 174th Avenues, the three-lane alternative is a "near-term" recommendation that analysis indicates will sufficiently accommodate forecasted traffic for up to 15 years. This plan document establishes benchmarks that when met will lead to further analysis to determine long-range needs on that segment. In addition to a transportation needs analysis, the conceptual design will respond to a number of other important issues. These issues are stormwater management, right-of-way preservation and acquisition, urban design, local street connectivity, access management and transit.

The conceptual design plan will inform both future preliminary engineering phases for future public capital improvements and private development requirements for dedication and frontage improvements. The near term recommendation (2025) calls for a three-lane cross-section from 1-205 to 174th Ave. Long term capacity improvements beyond the three-lane cross-section may be needed from 162nd to 174th Ave. Also, intersection capacity improvements to some of the some north/south cross streets within the immediate vicinity of SE Powell Blvd. may also be needed.

Introduction

The plan being presented for Outer Powell Boulevard is a conceptual design plan. It was developed in a broad, inclusive planning process aimed to achieve consensus on a conceptual future Powell Boulevard design considering numerous policy issues, opportunities and constraints, and with input from many diverse groups, including community members, freight haulers, neighboring businesses, and technical partners such as City and ODOT engineering and planning staff. A conceptual design plan establishes general parameters such as the number of vehicle travel lanes, the type of bicycle and pedestrian facilities and type of landscape buffers. A streetscape plan may also include more specific details, such as the planned width of the vehicle and bicycle lanes and sidewalks, and the right-of-way width needed to accommodate all those elements. The Outer Powell Boulevard Conceptual Design Plan recommendations, including some streetscape plan elements, are intended to be incorporated into the City's Transportation System Plan.

Concept Plan vs. Project Development

Much of the information in this plan is general, because this is a conceptual plan. Plans establish which travel modes (automobile, truck, transit, bicycle, pedestrian) will be accommodated, the functions of the road, the planned capacity or number of through lanes, and the general locations where improvements are needed. Construction of a project will not occur until some time in the future. First, funding must be secured, and then the project goes into the project development phase. As part of project development, more detailed, site-specific survey, engineering design, safety, environmental and traffic analysis are conducted to arrive at a specific alignment, design and cost estimate for the project. Both the near-term and long-term conceptual plans will have to go through this project development phase.

When developing a project, ODOT applies its engineering requirements or "standards," which are based on nationally-accepted research relating to safety and congestion along roadways. Some elements of the conceptual plan are not consistent with current ODOT engineering standards for safety and operations and will require design exceptions from the State Traffic Engineer and State Roadway Engineer at the time of project development. While ODOT roadway and traffic engineers participated in the planning process and have no significant objections to the proposed design concepts, this is not the same as formal acceptance of the design, which occurs closer to construction. Non-standard design elements will be analyzed in more detail as part of the design exceptions process during project development, and have the potential to be revised in consideration of details not addressed at the planning level. These design elements include:

- the width of vehicle travel lanes, which as proposed are slightly narrower than ODOT standards;
- the design of future intersection improvements, including the number, width, and length of turn-lanes at intersections;
- non-standard bike facilities, such as wide or raised bike lanes (if design exceptions are not granted, bike lanes would be redesigned, not removed);
- proposed crosswalks at unsignalized locations, which need to undergo a detailed safety analysis and must be approved by the State Traffic Engineer; and,
- the location and design of future raised medians and pedestrian islands.

Project Segments

For study organization purposes, the length of SE boulevard from east of I-205 to the City limits was divided into four project segments, as displayed on the following pages.

Segment 1: Includes improvement recommendations from approximately 400 feet west of SE 99th Avenue to SE 116th Avenue. SE Powell Boulevard west of this location was not part of the scope of the scope of this plan.

Segment 2: Includes improvement recommendations from SE 116th Avenue to SE 136 Avenue.

Segment 3: Includes improvement recommendations from SE 136th Avenue to SE 162nd Avenue.

Segment 4: Includes improvement recommendations from SE 162nd Avenue to approximately 600 feet east of SE 174th Avenue.

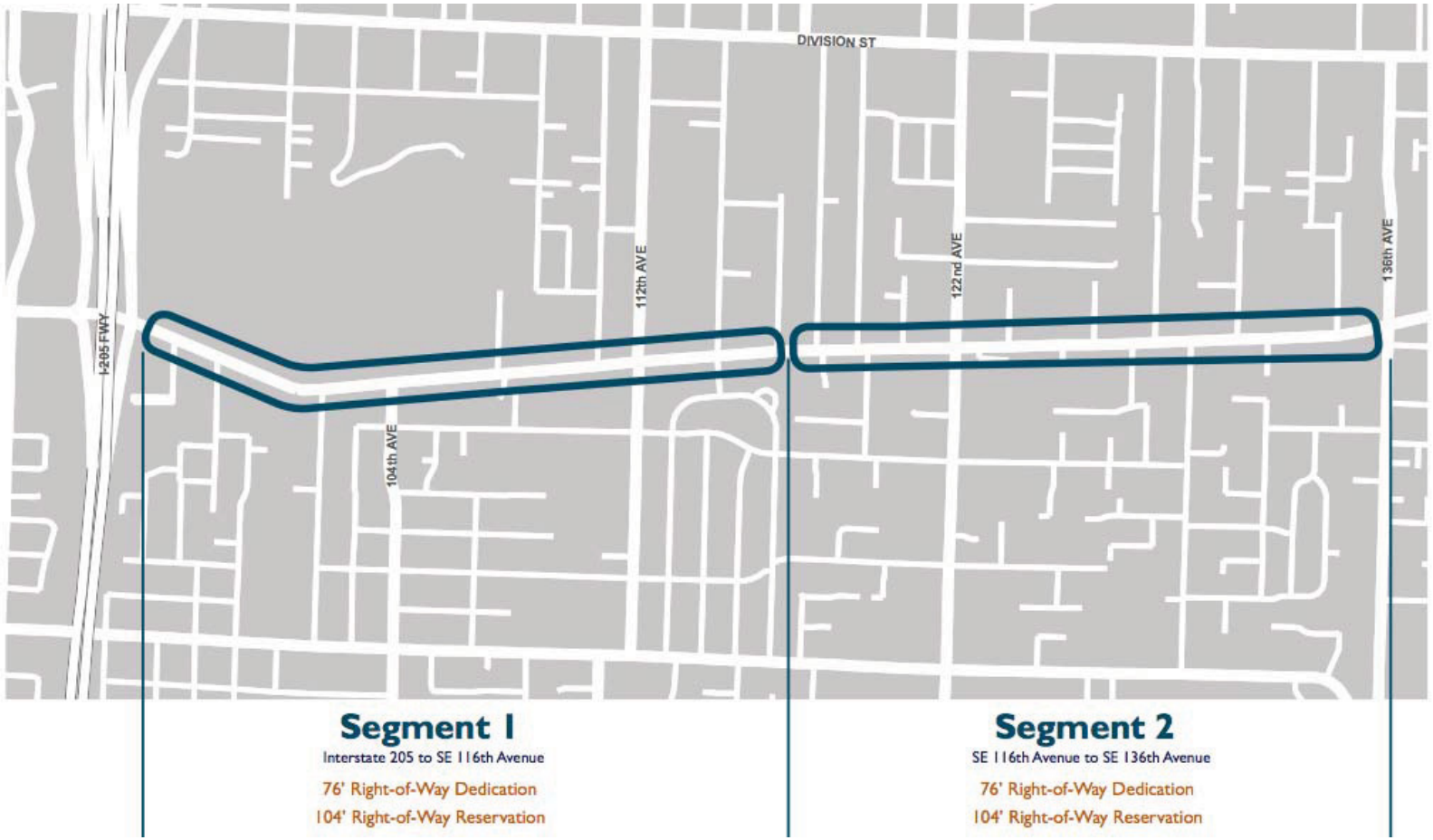


Figure 1. Segment boundaries for Project Segments 1 and 2

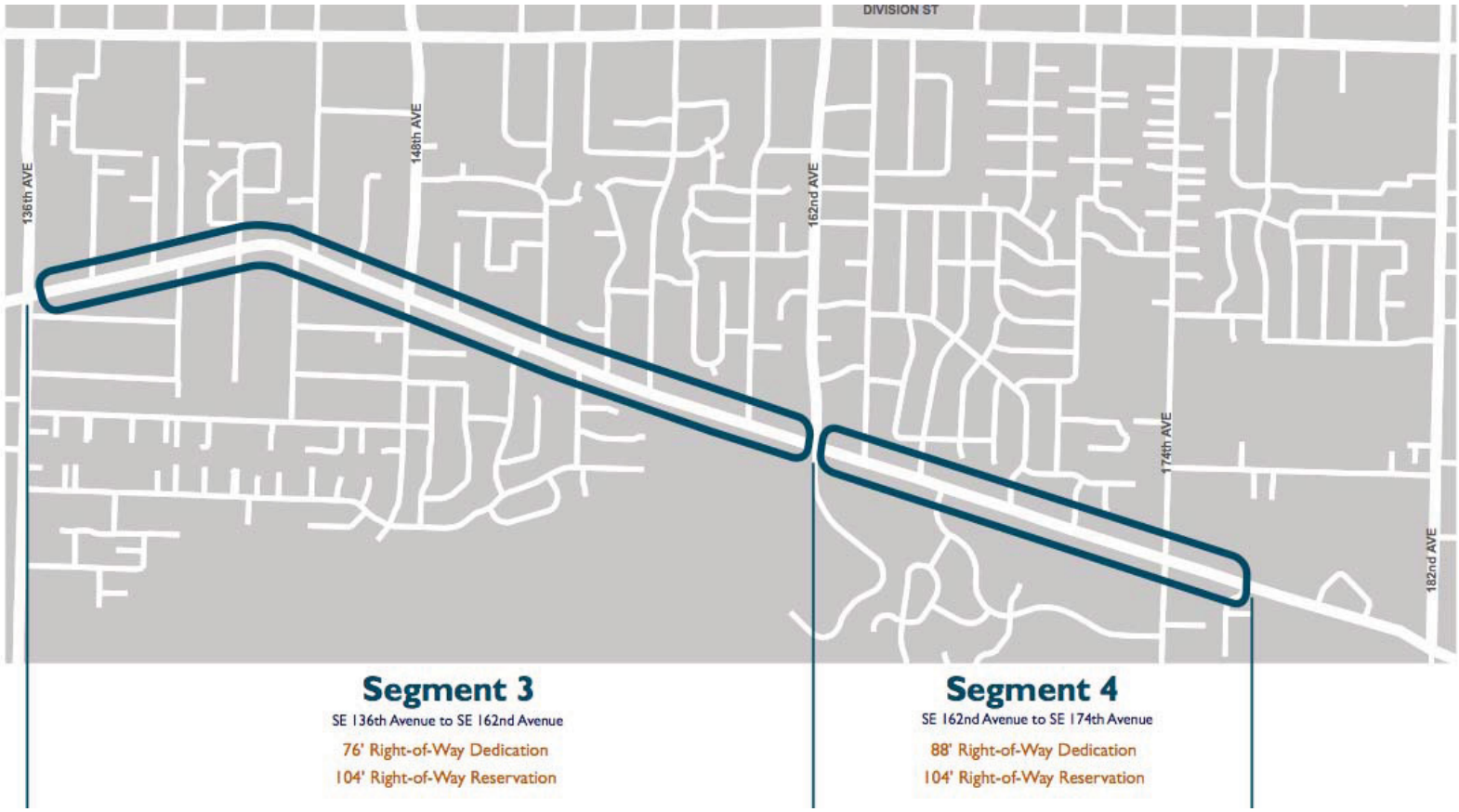


Figure 2. Boundaries for Project Segments 3 and 4

Developing the Recommendation

For the purposes of developing the Outer Powell Boulevard Conceptual Design Plan, the roadway was treated as two components: the "middle" of the road, consisting of motor vehicle travel lanes, turn lanes and medians, and the edge of the road, or "buffer", containing bike, pedestrian and stormwater facilities and streetscape amenities. The Conceptual Design Plan consists of a 12-foot sidewalk corridor with related stormwater facilities and an 8-foot buffered bicycle lane. The configuration for the travel lanes and medians consists of one travel lane in each direction and a 14-ft center turn-lane or raised median, except for the fourth project segment where a long-term design will be refined in the future through analysis based on the most current growth projections. Long-range solutions for Segment 4 are anticipated to include two eastbound travel lanes, one westbound lane, plus an additional westbound lane that could range from a relatively short right-turn lane at SE 162nd Ave. to a full lane extending back to SE 174th Ave. In the near-term (i.e. up to 15 years) the recommended plan for Segment 4 is the same as for Segments 1 through 3.

Updated Forecasts and Modeling

Preliminary cross-section alternatives were developed using Metro's 2035 Base Case (Financially Constrained, or FC) Regional Transportation Plan (RTP) forecasts which serve as the Portland metropolitan regions adopted population and employment forecasts. In general, the 2035 RTP model forecasted high counts for population and employment suggesting potentially wider rights-of-way with more lanes of traffic. For specific information on the preliminary analysis utilizing the 2035 RTP model, see the report titled, "Future No Build Traffic Operations Memorandum" prepared by DKS, the transportation planning consultant for this project.

In early 2011, Metro initiated the East Metro Connections Plan (EMCP) which aimed to refine transportation recommendations for areas south and east of Portland based on updated employment and population growth forecasts for the area. The first run of new forecasts produced by EMCP show a substantial reduction in growth compared to the 2035 RTP forecasts for portions of east Multnomah and Clackamas Counties. When the EMCP forecasts were utilized in the City of Portland's transportation demand model, a resulting drop in

travel demand was indicated. Based on these EMCP forecasts, the project team recommended alternative cross-sections different from the originally developed alternatives. For more information on this revised transportation analysis see the report titled, "Adjusted Future Demand Modeling Summary" prepared by PBOT. The EMCP forecasts have been updated again since the preparation of this analysis which show some increased traffic volumes on SE Powell Blvd. compared to the first run. However, the project team recommendations for this plan remain unchanged.

Street Design Concept Recommendation

The Conceptual Design Plan is based on the preferred alternative identified in the technical memo Alternatives Evaluation and Selection of a Recommended Alternative. The typical cross-section illustrations below identify near and long term improvements for all four project segments along outer SE Powell Boulevard.

In sum, the near term recommendation through at least the year 2025 calls for a three lane cross-section from I-205 (SE 99th Ave) to SE 174th Ave. In the long term some capacity enhancements may be needed from 162nd Ave. to 174th Ave. (through year 2035). These enhancements could be to the intersecting north/south streets as well as on Powell itself.

The Implementation Strategy presented later in this report describes the influence of the updated modeling and projections on the City's recommendation. Additionally, the Implementation Strategy highlights the conditions for which further refinement and analysis of Segment 4 is needed to consider long term improvements based on observed traffic counts at a later time.

For the following cross-sections, and in all other references in this plan, the term reservation is used to refer to the area dedicated for right-of-way plus building setbacks, as discussed in the Urban Design Recommendations of this plan. Use of the reservation area will be based on long term street use options: Extra right-of-way for transit – high capacity transit, or for traffic capacity – additional lanes, or for land uses

– on-street parking. On-street parking will not be part of a construction of a construction project under State jurisdiction of the roadway but may be considered if jurisdiction is transferred to the City pending an evaluation of needs and impacts.

Street Concept Recommendation for Segments 1, 2, and 3 (SE 99th to SE 162nd)

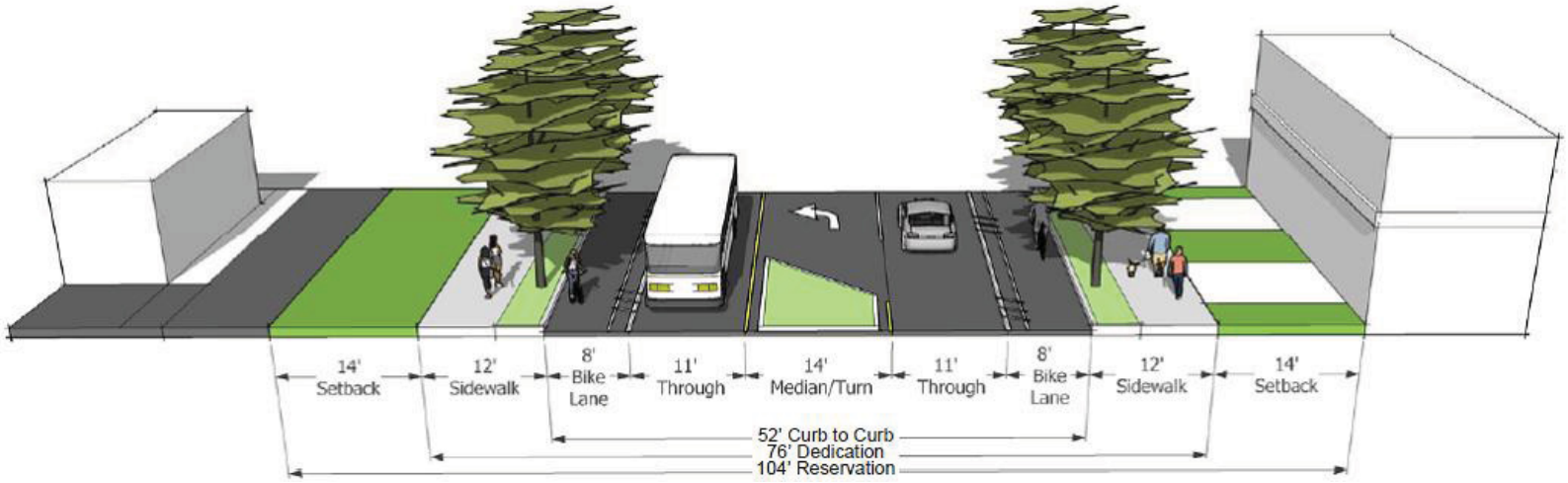


Figure 3. 3-lane cross section recommendation for Segments 1, 2, and 3

- 52' roadway improvement section with 3 traffic lanes
- 1 traffic lane each direction plus center turn lane and/or median
- 76' right-of-way dedication
- 104' reservation with a 14' building setback on each side
- Includes sidewalks and bike lanes

Near-Term Street Concept Recommendation for Segment 4 (SE 162nd – SE 174th)

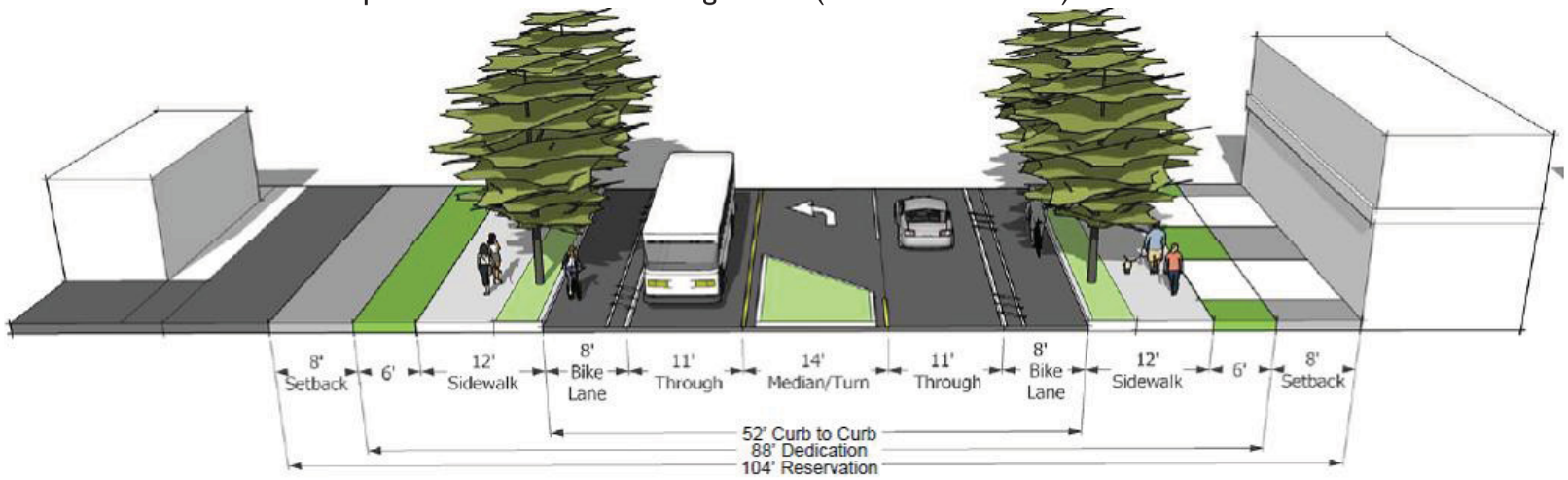


Figure 4. 3-lane cross-section for near-term recommendation for Segment 4

- 52' roadway improvement section with 3 traffic lanes
- 1 traffic lane each direction plus center turn lane and/or median
- Current 4-lane segments will be retained
- 88' right-of-way dedication
- 104' reservation with an 8' building setback on each side
- Includes sidewalks and bike lanes

Potential Long-Term Street Concept Recommendation for Segment 4 (SE 162nd – SE 174th)

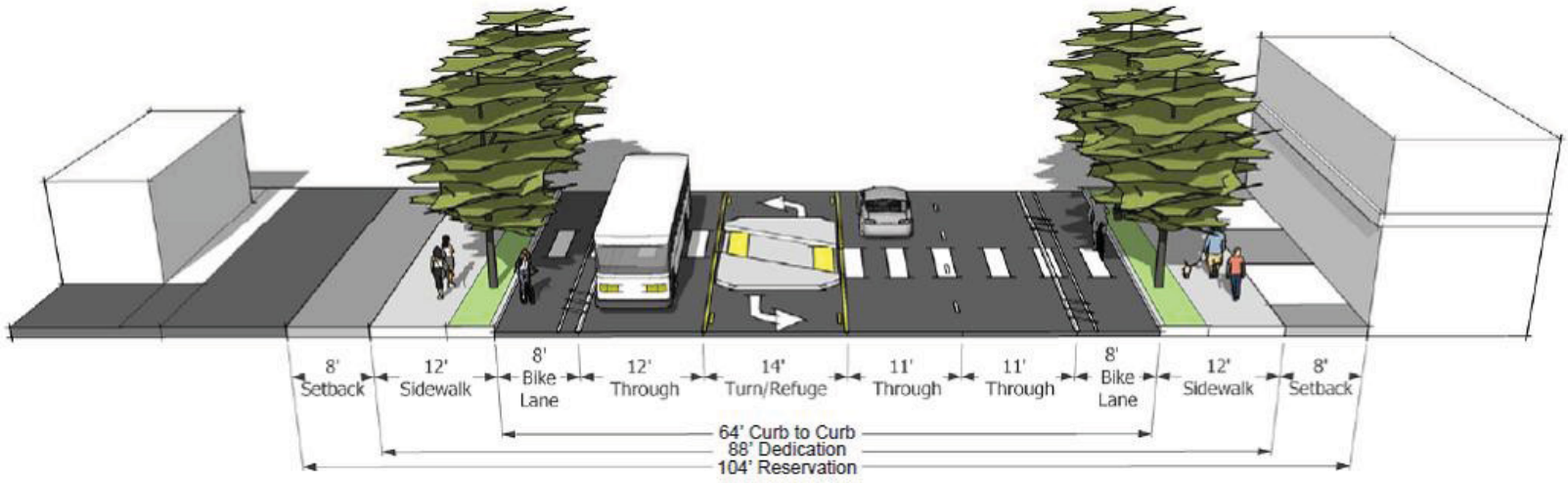


Figure 5. Example of how to use a future 4-lane cross-section for the long-term Segment 4 recommendation

The above cross-section is a working illustration for a long-term option that will be further refined during the project development phase in the future. The intent is to establish setbacks and right-of-way reservation based on information available at the time of this plan.

- 64' roadway improvement section with 4 lanes
- 2 travel lanes of eastbound traffic, 1 travel lane of westbound traffic, and 1 center turn and/or median lane, plus a right turn lane for the westbound approach to SE 162nd Ave.
- 88' right-of-way dedication
- 104' reservation which includes an 8' building setback on each side
- Includes sidewalk and bike lanes

Implementation Strategy

Benchmarks for Transitions from Near Term to Long Term

Project benchmarks have been identified that will be used to determine the timing of transition from near-term to long-term improvements, or potential modifications for all corridor segments and other recommendations of this plan. References to "this plan" are to be interpreted as the Outer Powell Boulevard Conceptual Design Plan. The project benchmarks are listed below.

- New information will be considered as it becomes available from future RTP model updates, including households and employment projections and traffic projections, if found to have significant increases in forecasted growth than the forecasts now available and used for this plan.
- Traffic congestion will be monitored annually at the intersections of SE 122nd, SE 136th, SE 162nd and SE 174th. ODOT, PBOT and community stakeholders will review the data and determine if trends are likely to lead to future traffic volumes that have significant increases than the forecasts used for this plan.
- As a result of recommendations and a public involvement process for a Regional High Capacity Transit Plan for the Powell-Division corridor, a consensus determination is made by Metro, TriMet, ODOT and the City of Portland that the streetscape or right-of-way needs for SE Powell Boulevard is significantly different than the recommendations of this plan.
- As a result of the East Metro Connections Plan recommendations, or other planning processes, funding commitments are established for a major north-south arterial project southeast of Portland that significantly changes traffic patterns in the concept plan area and affects SE Powell Boulevard.
- Any new streetscape or capacity alternatives that are developed as a result of new information as outlined above shall address the same project evaluation criteria as used for this plan. It is also recognized that any improvements proposed for funding through safety or preservation programs will have to meet the eligibility and criteria of those programs.
- The recommendations of this plan shall remain in effect and be supported by ODOT and the City of Portland for a period of 10-15 years.

Assumptions

The Concept Plan identifies cross-sections and streetscape concepts for all the project segments and includes a phasing plan for implementing near-term and long-term plan elements. As previously mentioned, the planning period for considering near term improvements in Segment 4 is 10-15 years, where as long term improvements, which have yet to be refined, will be 15-25 years. For Segments 1 through 3 and for the near-term travel needs analysis in Segment 4, the reduced demand model derived from preliminary data from the East Metro Connections Plan (EMCP) is the basis for determining improvement needs. For determining the long term travel needs analysis, the RTP Financially Constrained 2035 Model is used.

Figures 3 through 5 demonstrate the right-of-way dedication and reservation requirements resulting from the Outer Powell Blvd Concept Plan recommendations. The right-of-way dedication requirements proposed by the recommended concepts are based on transportation needs identified in the City report on the adjusted demand modeling from the EMCP and will provide sufficient right-of-way for various long-term needs as recommended in this plan. The right-of-way reservation areas will result in property setbacks through an update in the zoning code and will be based on the following long-term transportation options: Extra right-of-way for transit, such as high capacity transit; extra right-of-way for additional traffic capacity, such as additional lanes; or extra right-of-way for land uses, such as on-street parking.

Near-Term Project Priority Improvements

Near-term project priority improvement elements include:

- safety projects for all modes including left turn lane access;
- pedestrian and bicycle system gaps along SE Powell Blvd.;
- pedestrian crossing improvements including good transit access for pedestrians;
- improvements resulting in faster and more reliable transit travel times; and,
- Transportation System Management (TSM) improvements such as upgraded signal systems.

Street Segment Priorities for Improvements

The following street segments are listed in order of priority for proposed improvements.

- Segment 2
- Segment 1
- Segment 3
- Segment 4

If ODOT Safety Program funds become available for improvements along certain street segments or intersections these specialized locations will be considered a top priority. Segment 2 has been identified as the highest priority segment due to safety needs. Segment 1 is the second priority due to proximity to the I-205 ramps and needed pedestrian frontage improvements along Ed Benedict Park. Segment 4 is the last priority because it is uncertain when the long-term cross-section option may be needed. Segment 3 is recommended to follow Segments 2 and 1 in priority, and ahead of Segment 4.

Additional Right-of-Way Needs Requiring Further Study

- The segment of SE Powell Boulevard between 99th Avenue and the I-205 interchange area will be subject to additional analysis based on long term needs.
- The intersecting side streets of SE 136th Ave., SE 162nd Ave., and SE 174th Ave. may require additional right-of-way for improvements in the intersection area. In addition, right-turn lanes along Powell Boulevard may be needed which will be determined during project development.
- A median plan will be developed to serve various uses depending on location. These medians may include turn lanes for safe vehicular access to properties and streets fronting SE Powell Blvd. Raised medians provide access management functions for traffic safety and safe crossing refuges for pedestrians. Where possible, at-grade pedestrian crossings will be provided through raised median sections.
- On-street parking will not be allowed as part of a construction project under State jurisdiction but may be considered if the roadway is transferred to City jurisdiction and pending a needs/impacts evaluation.

Additional Considerations for Project Development

In addition to the recommended plan elements described above, other key decisions to be made during the project development process are:

- reduction of the design speed east of SE 136th Avenue to 35 mph, consistent with the speed to the west of SE 136th Ave.;
- modifications to corner radii, medians and pole locations that would be needed at the SE Powell/SE 174th intersection to address difficult turning movements for school buses;
- avoidance of impacts to major features and community facilities such as large trees and significant buildings;
- avoidance of impacts to Ed Benedict Park and amenities; and,
- minimize impacts to commercial businesses across from Ed Benedict Park

Options available for avoiding or minimizing impacts to sensitive locations along the corridor, especially for those indicated above include:

- employing short segments of constrained corridor designs as described in this plan;
- shifting the centerline alignment, or equal width expansion of each side of the street, where practical, but the dedication requirement shall remain as 38 feet from the current centerline;
- reduce the length and width of center median sections, or replace standard width medians with narrow raised medians where left turn access is not required;
- explore alternative driveway locations east or west of constrained roadway sections where left turn access is required;
- explore alternative locations for bus stops and pedestrian crossings; and;
- explore the potential to combine in a common facility the pedestrian facility that serves the corridor with a pedestrian facility that serves the north edge of the park.

It is recognized that the USDOT Section 4(f) statute will apply when considering right-of-way options and impacts involving public parks. The intent of Section 4(f) is to avoid any roadway use of a park unless there is no feasible and prudent alternative or unless the impact is found to have minor impacts. [Section 4(f) of Department of transportation Act (49 USC 303)

Corridor Improvement Maps

The following illustrations depict the multi-modal transportation improvements planned for each of the project segments.

Figure 6. Recommended transportation improvements from I-205 interchange to SE 102nd Ave

Segment 1

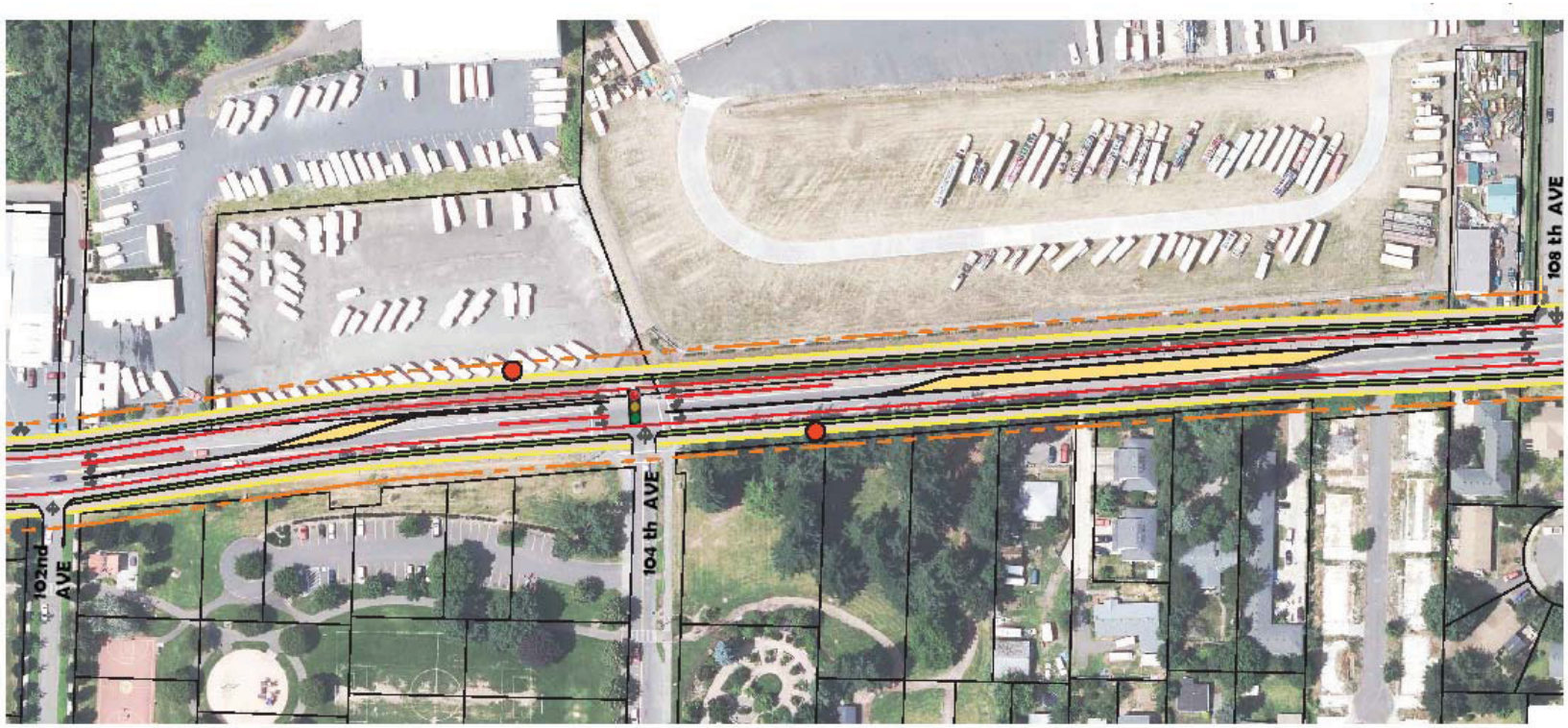


Figure 7. Recommended transportation improvements from SE 102nd to SE 108th Ave

Segment 1

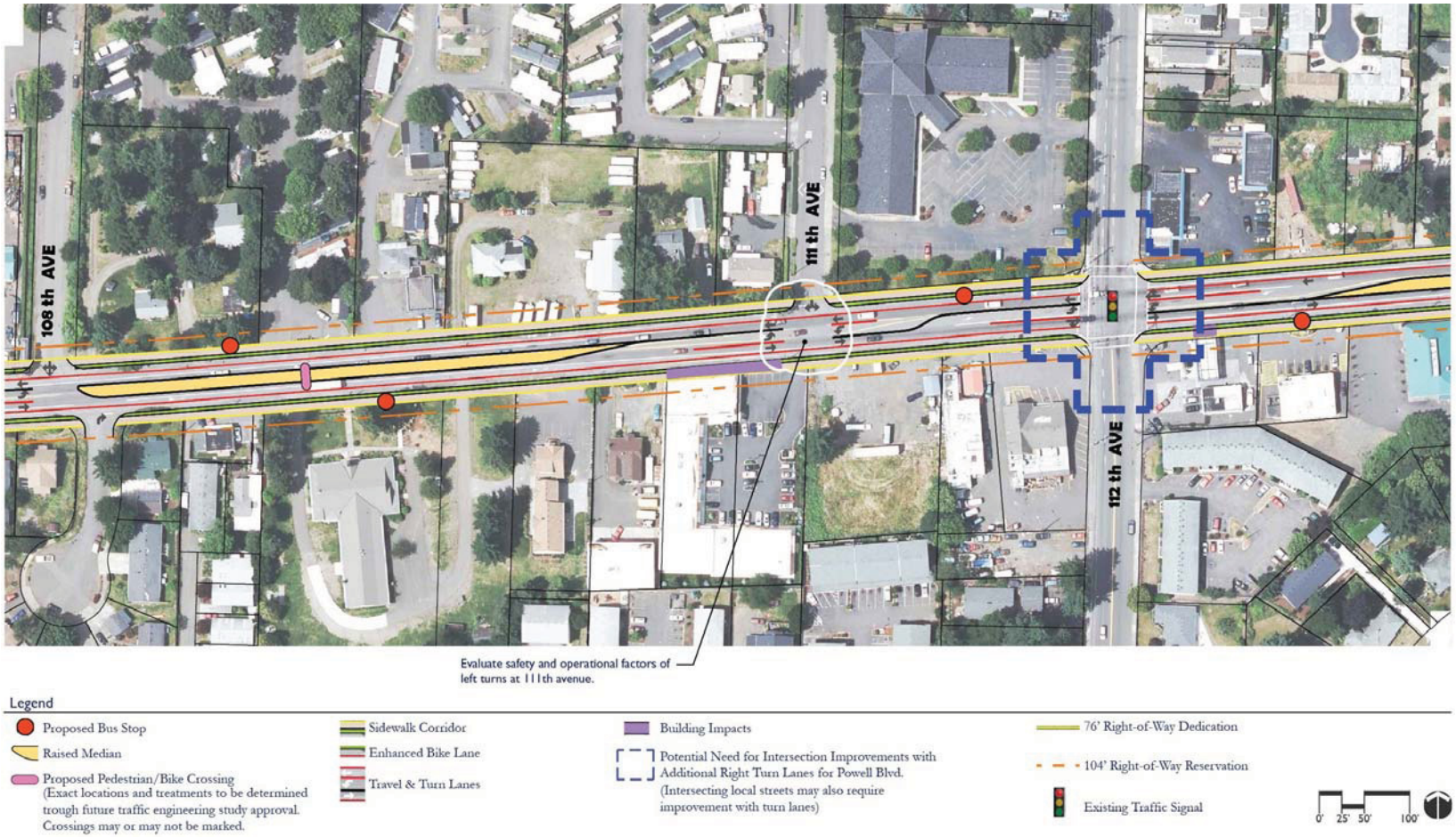


Figure 8. Recommended transportation improvements from SE 108th Ave to approximately SE 113th

Segments 1 & 2

Figure 9. Recommended transportation improvements from approximately SE 112th and SE 119th Ave

Segment 2

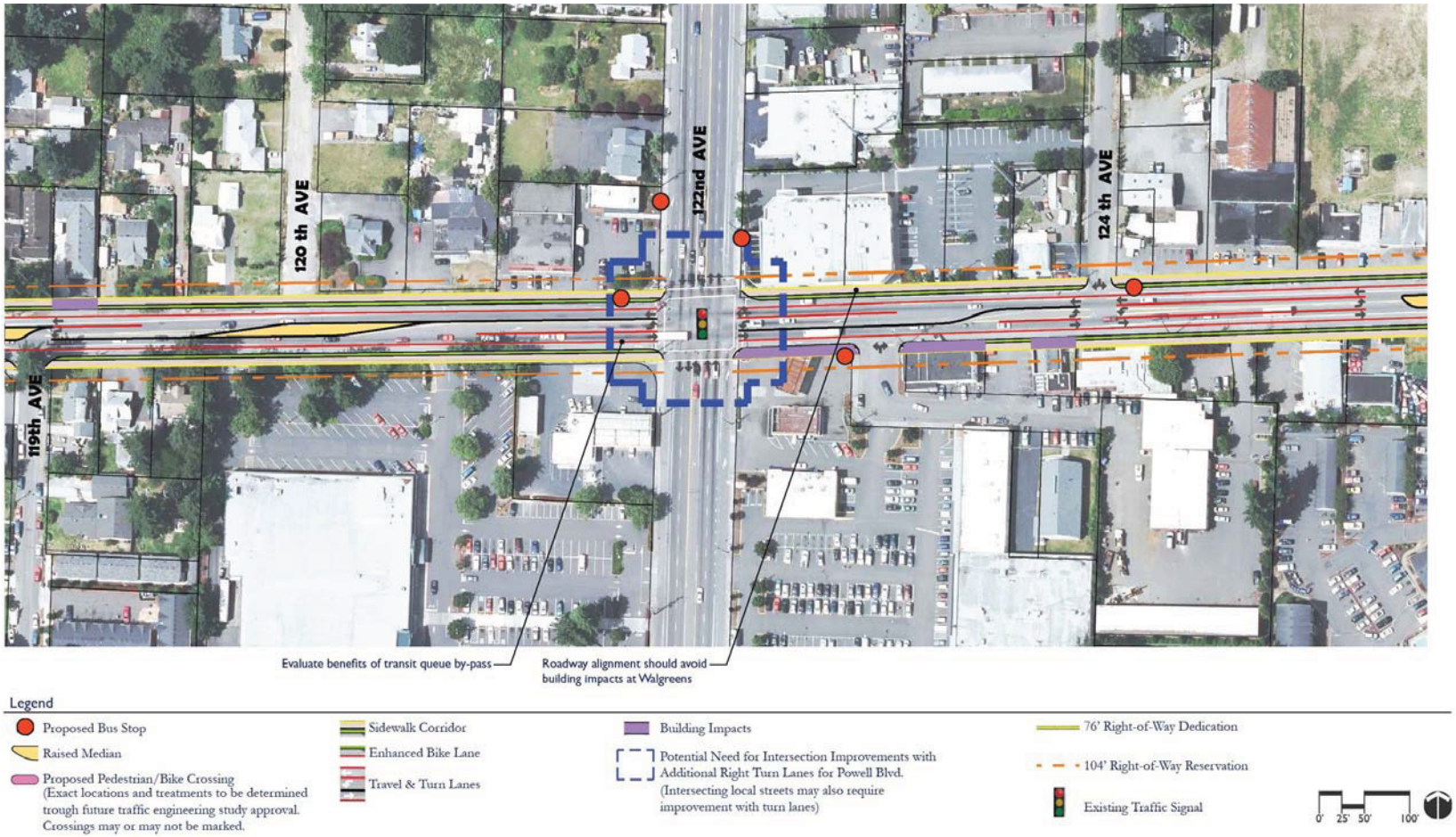


Figure 10. Recommended transportation improvements from SE 119th Ave to SE 125th Pl

Segment 2

Figure 11. Recommended transportation improvements from SE 125th Pl to SE 131st Ave

Segments 2 & 3

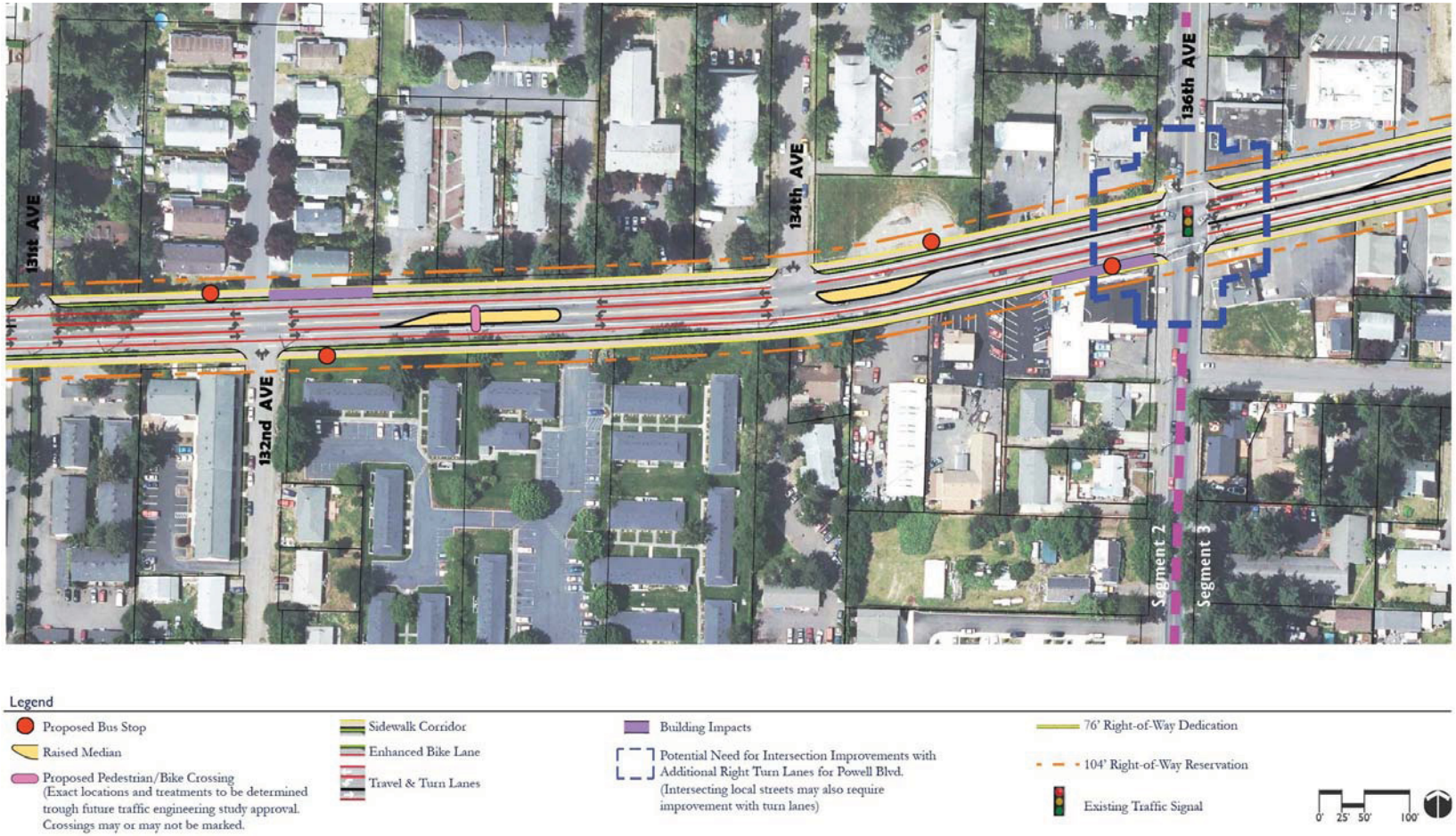


Figure 12. Recommended transportation improvements from SE 131st Ave to approximately SE 137th

Segment 3

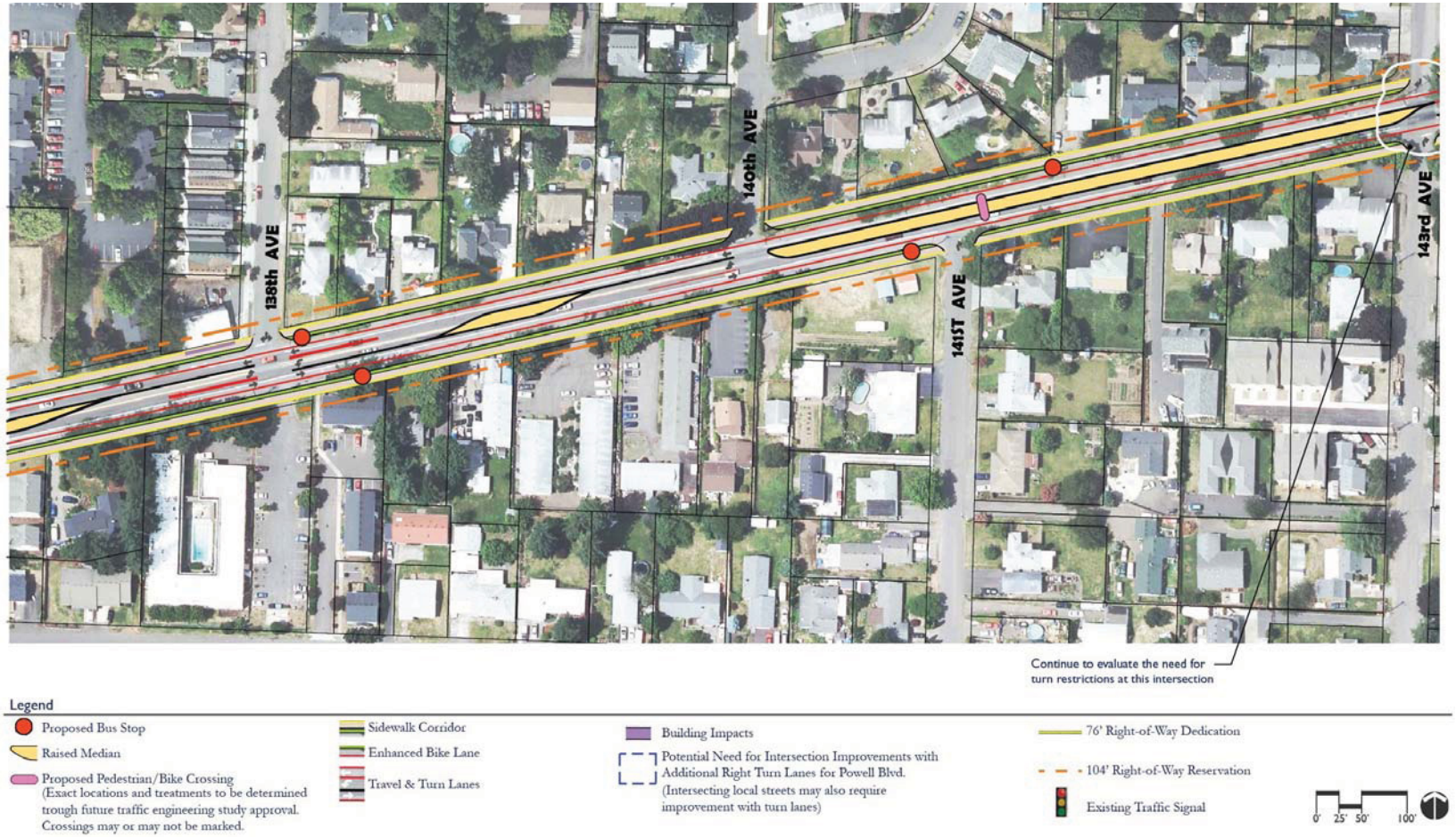


Figure 13. Recommended transportation improvements from approximately SE 137th to SE 143rd Ave

Segment 3

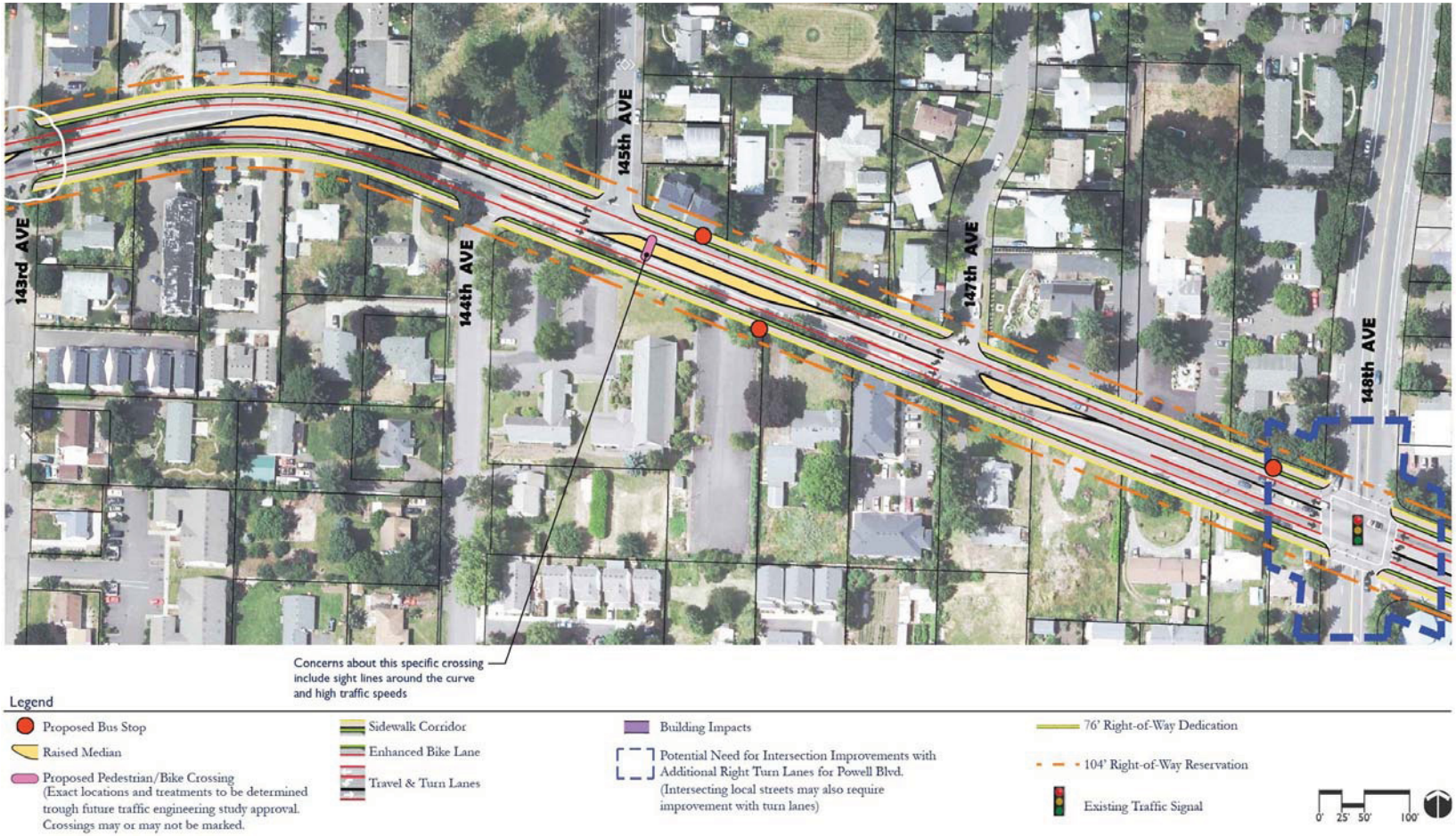


Figure 14. Recommended transportation improvements from SE 143rd to SE 148th Ave

Segment 3

Figure 15. Recommended transportation improvements from SE 148th to SE 154th Ave

Segment 3

Figure 16. Recommended transportation improvements from SE 154th to approximately SE 161st

Segments 3 & 4

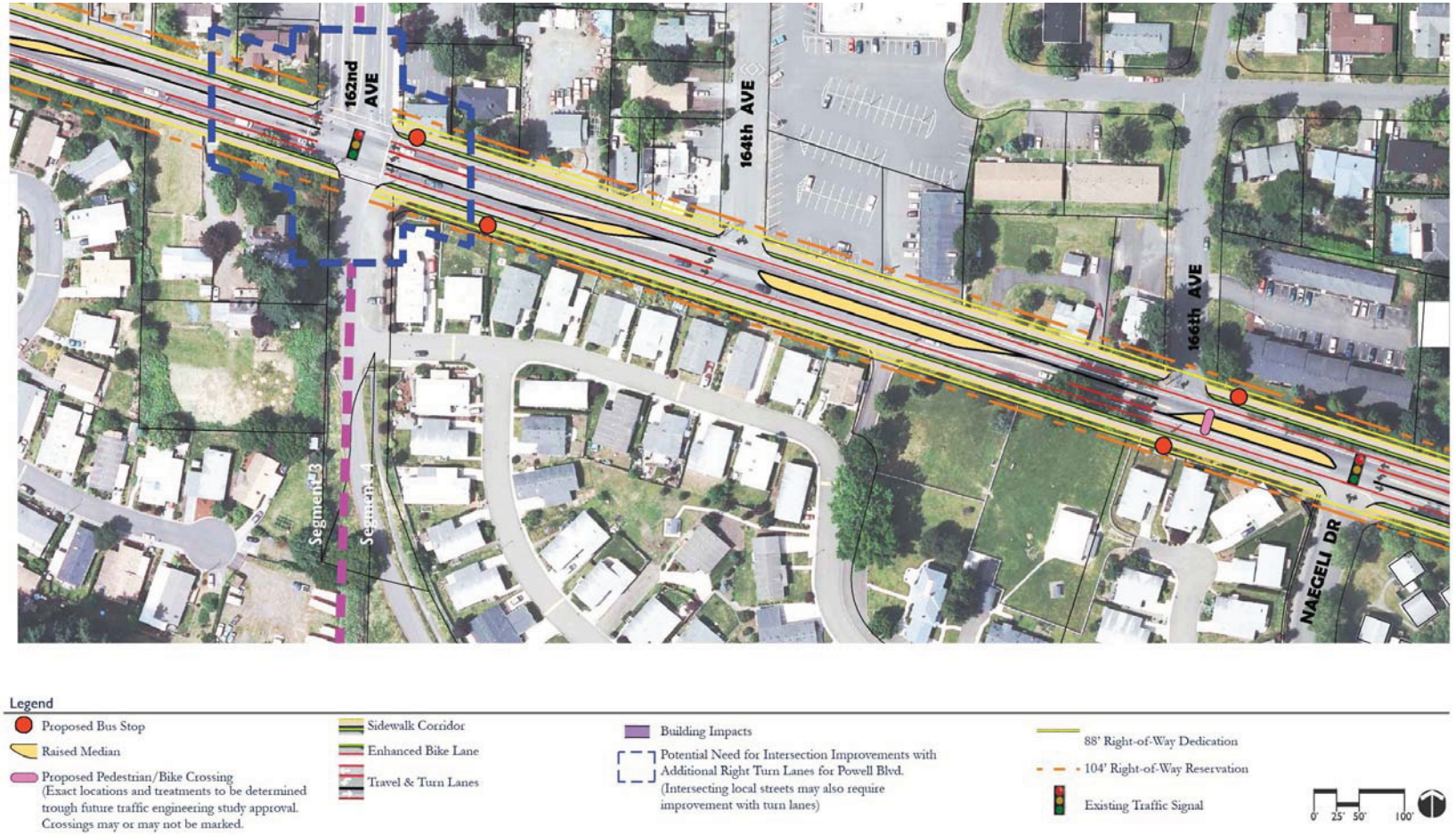


Figure 17. Recommended transportation improvements from approximately SE 161st to SE Naegeli Dr

Segment 4

Figure 18. Recommended transportation improvements from SE Naegeli Dr to approximately SE 172nd

Segment 4

Figure 19. Recommended transportation improvements from approximately SE 172nd to City Limits

Corridor Improvement Components

Location of proposed pedestrian and bicycle improvements

Both bicycle and pedestrian facilities are considered enhanced as opposed to standard. The enhanced sidewalk corridor is 12-ft. consisting of a 4.5-ft. furnishing zone, 6-ft. through zone and a 1.5-ft. frontage zone. The enhanced bicycle facility is a buffered bike lane which consists of a 6-ft. bike lane and a 2-ft. buffer from traffic for a total of 8-ft. These configurations are in conformance with the City of Portland Pedestrian Design Guidelines which calls for a 12- to 15-ft. sidewalk corridor bordering major travel corridors.

The bicycle facility may be at roadway grade or grade-separated from the travel lanes which would be determined during project development. The enhanced pedestrian and bicycle facility treatment would be carried throughout the corridor. Refer to Figure 20 for cross-section details.

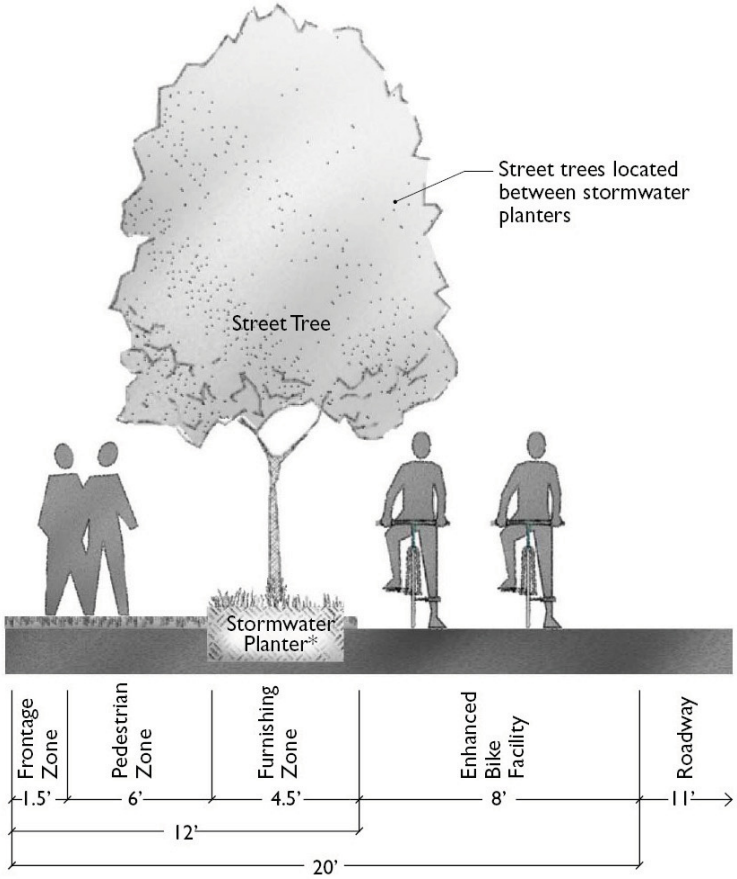


Figure 20. Cross-section of enhanced pedestrian and bicycle facilities

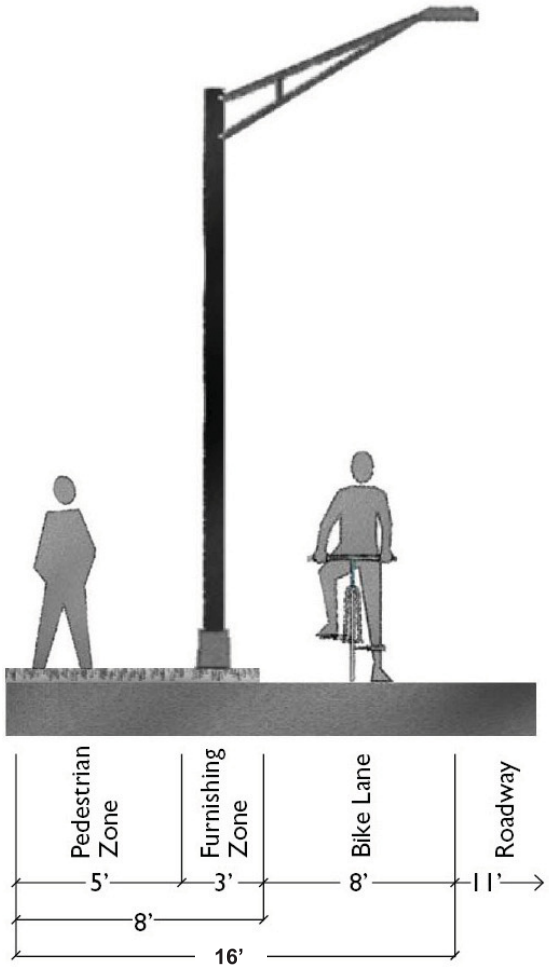


Figure 21. Cross-section of pedestrian and bicycle facilities in a constrained corridor

Standard sidewalk and bicycle corridors along streets with a speed limit of 35 mph are the same as the enhanced with the exception of a 6-ft. bike lane only (no buffer). However, the standard bicycle and pedestrian corridor facilities for streets with speed limits of 40 mph often include larger sidewalk corridor consisting of a 1-ft frontage zone, a 6-ft. pedestrian zone, and a 9-10-ft. furnishing zone for a total sidewalk corridor of 16-17-ft. This standard sidewalk corridor also requires a 6-ft. setback from the curb for street trees.

In constrained sidewalk corridors, this plan recommends a curb-tight configuration in which the pedestrian-through-zone is reduced to 5-ft. wide and no frontage zone is provided. Unfortunately this minimal dimension will not support street trees, bus shelters, or stormwater planters. Depending on location, stormwater management along these constrained sidewalk corridors may require the use of proprietary treatment devices and/or detention vaults that discharge to either a new or existing sump (UIC) or storm sewer line. If structural solutions are not feasible, improvements may be subject to the stormwater off site stormwater management fee. As for bicycle facilities, a standard 6-ft. bike lane remains an option in constrained corridors. Any further reductions in dimensions are not functionally viable except for very short distances. Refer to Figure 21 for cross-section details for bicycle and pedestrian facilities within a constrained corridor.

Medians, Street-crossings, and Access Management

Medians depicted in the plan view illustration are conceptual only. The actual location of raised medians will be determined during project development based on the need for access management, property access and safety. Raised medians primarily serve to improve traffic flow by managing access of vehicle traffic to side streets and driveways; however medians also serve other critical functions. In a three-lane cross-section medians reduce the likelihood of head on accidents. They also provide a crucial opportunity for pedestrian and bicycle refuges in the middle of the street at marked or unmarked crossing locations.

In order to be marked, an unsignalized pedestrian crossing on an ODOT facility such as SE Powell Blvd must be subject to a safety analysis around the time of project development, and approved by the State Traffic Engineer. Unmarked pedestrian crossings on the other hand, which include only a pedestrian refuge in the middle of the street but not pavement striping, do not need state approval and are relatively simpler to locate and install. Informal crossings are merely a cut in the median to allow a refuge for pedestrians or cyclists to cross the street.

To minimize conflicts between all modes of travel, consolidation of driveways between two properties should also be encouraged on Powell Blvd. where allowed.

Stormwater Management

All improvements in the Outer Powell corridor are subject to Portland's Stormwater Management Manual requirements. Runoff from new or redeveloped impervious areas must be managed to the maximum extent feasible and an approved discharge point must be identified. Green streets are the preferred method of managing stormwater runoff from the public right-of-way. These facilities not only manage stormwater, but can enhance neighborhood livability, improve the function of the right-of-way, provide habitat corridors, and promote connectivity between Portland neighborhoods.

With limited space, an inadequate storm sewer system and much of the corridor in a well field protection area, stormwater management options are likely to be limited to lined, flow through planters that discharge to either a new or existing stormwater sump (UIC) or a new storm sewer line. Existing UIC's can be used only if they have capacity. New UIC's must comply with the permit requirements that include minimum separation distance to seasonal high ground water, minimum distance to drinking water wells, and pretreatment of stormwater as primary considerations. Stormwater facility design is highly dependent on site conditions with the actual size and location to be determined during the design phase.

Streetscape Amenities

One of the first goals of the project will be to preserve as many of existing large fir trees that border Powell Blvd. today. The preferred alternative, an enhanced three lane cross-section, will have a planted median a 12 ft. wide sidewalk with street trees and green stormwater retention facilities and an 8 ft. wide buffered bike lane. The overall effect will be to create a leafy, green transportation corridor that fits in with the existing neighborhood. See drawings above of the bicycle and pedestrian corridor.

Transit Stops and Rider Amenities

Transit stops are show on Streetscape Graphics on page 13 through 26. There will be a generous 12-ft. sidewalk corridor along the entire corridor with shelters at locations that meet TriMet's criteria for shelter location.

The Outer Powell Conceptual Design Plan recommends an eastbound queue bypass lane for buses at SE 122nd Ave. This would be a right-turn lane allowing only buses to travel straight through the intersection. A queue bypass lane would have a receiving lane on the opposite side of the intersection, or if not, the design would need to be approved by the State Traffic Engineer. These upgrades will be addressed as part of project development.

Connectivity Improvements

A major thread that runs through the Urban Design Process and Recommendations is the need for greater connectivity along and near Powell Blvd. Connectivity needs to be a major component of development review process for new development along the corridor.

Special Attention needs to be given to establishing following types of connections:

- Separated In-Roadway Bicycle Facilities: Facilities that separate the bicycle ravel lane from the motor vehicle lane with striping or a physical barrier. Examples are a standard bike lane, buffered bike lane, and cycle track.
- Bicycle Boulevard/Advisory Bike Lanes: Facilities on low traffic volume streets were through movements of bicycles is given priority over motor vehicles. Advisory bike lanes include dashed bike lane striping and single motor vehicle lane. Vehicles are allowed to enter bike lanes to pass each other.
- Pedestrian and Bicycle Pathway: These facilities are outside of the roadway right-of-way and full separated from the roadway.
- Street Connections: New local streets built to City standards. Sidewalks accommodate pedestrian travel and bike travel share the roadway with vehicles.
- Pedestrian and Bicycle Crossings: Two types of crossings are illustrated. The first type is provided by the existing traffic signals. New signals have no been recommended. The second crossing type is shown at generally desired locations between signalized intersections. Specific design treatments have not been determined (e.g., pedestrian refuge island, HAWK signal, etc.)
- Potential Street Realignment: Opportunities to realign existing streets through future redevelopment. The objective is to align intersections on opposite sides of SE Powell Blvd. to improve pedestrian crossings or access to transit stops.

Urban Design

The Urban Design Concept Plan

The Urban Design Concept Diagram and recommendations establish the urban context for a future improvement to Outer Powell Blvd. This diagram shows how the changes that project stakeholders foresee will fit into the neighborhood and become part of the fabric of the City. More specifically, the Urban Design Concept Plan and Diagram helps Outer Powell Blvd. realize the character statement below:

> "In the future, Outer Powell Blvd will become more pedestrian-friendly, human scaled, neighborhood centered place. While serving local and regional needs, it operates efficiently to move pedestrians, bicycles, transit and automobiles. The street's experiential qualities, such as bends in the road and vegetation that frames views of natural features are unique. Building upon these and other assets such as tall Doug Firs, vegetative buffers and clusters of small locally owned businesses, parks, churches and other amenities will direct the character of future growth"

As a result of the Urban Design Concept Plan, property frontages will respond better to the streetscape and other buildings, with stronger physical and visual connections between neighborhood anchors. The street will be a safe and pleasant place to walk and cross with the addition of sidewalks, enhanced crossings and stormwater treatment facilities. Iconic elements such as signs and sculpture will highlight points of interest along Powell.

The following factors will lead to a stronger sense of place and community with gravitational pull beyond the corridor:

- The addition of sidewalks, covered transit stops, stormwater facilities and vegetative buffers between industrial uses and the street edge create a more harmonious and inviting space for pedestrians.
- More flexibility in residential zoning helps small home based businesses thrive, furthering job creation. Increased amenities on Powell Blvd. strengthen the cohesiveness of the neighborhood.

- Infill development and stronger physical and visual linkages between adjacent businesses creates a more vibrant and complete community.

The Urban Design Concept Diagram

Figure 22 Urban Design Concept Diagram

Urban Design Recommendations

1. Setbacks along SE Powell Boulevard

The recommendation of this plan is to establish the following Special Building Setbacks along SE Powell Blvd. and pursue amendments to the Portland Zoning Code, Title 33, if deemed necessary to comply with the Powell Boulevard Special Building Setbacks.

(a) Establish Powell Boulevard Special Building Setbacks in all zones to maintain a 104 foot right-of-way reservation as recommended in this plan. This applies to the front, side, rear, street setbacks and the Minimum Transit Street Setback. These special setbacks only apply to buildings but do not apply to temporary structures such as food carts, fences, landscaping, surface parking lots, etc. The setbacks reflect the dimensions needed in addition to the dedication requirements. The dimension of the dedication requirement varies from site to site depending on what is needed in addition to the existing right-of-way, in accordance with the plan. The setback is to be measured from the new property line after dedication. The minimum SE Powell Boulevard Special Building Setbacks shall be as follows:

- 14 feet from I-205 to SE 162nd Ave.
- 8 feet from SE 162nd to SE 174th Ave.

The setback for the street segment from SE 162nd to SE 174th Avenues is less then west of this segment. This is due to wider long-term curb-to-curb dimension and dedication requirements east of SE 162nd Ave. to allow for four travel lanes. Because of the wider dedication area the setbacks required to attain the 104 ft. reservation area is less (see Figs. 3 through 5 in this document).

(b) Make a minimal increase to the Maximum Transit Street Setback in zones with an existing 10 ft maximum setback, so as to not conflict with the Powell Boulevard Special Building Setbacks, yet not dilute its purpose. No changes are recommended in zones with a 20 ft maximum setback. A slight increase to the maximum setback in some zones would provide modest flexibility and range between the minimum and maximum setbacks. The Powell Blvd Special Building Setbacks will result in a considerable setback of

buildings from the street for the foreseen future. The following recommended maximum setbacks balance this consideration along with providing site design flexibility. The recommended new maximum special building setbacks along SE Powell Blvd are as follows:

- 16 feet from I-205 to SE 162nd Ave.
- 12 feet from SE 162nd to SE 174th Ave.

Another approach would be to increase the maximum setback to maintain the current setback range between the minimum and maximum transit street setback of 0 to 20 feet in some zones. This approach is not recommended. Such an approach would result in a maximum setback that allowed buildings to be located up to 34 feet from the back of sidewalk/edge of the right-of-way. This would run counter to the purpose of the Maximum Transit Street and Pedestrian District Setback. It is not conducive to creating an environment that is inviting to pedestrians and transit users.

2. Landscape Buffers

For any improvement to Powell Blvd. the public and private realm should be enhance with wider landscape buffers. A consistent vegetative buffer can act as a screen against motorized traffic for pedestrians, help with stormwater runoff and help calm traffic. Additionally, vacant lots and similar situations can be treated with buffers-mainly within the right of way to create a more unified feel to the streetscape.

3. Driveway Consolidation

The City of Portland encourages and allows consolidation of driveways on major streets whenever possible and legal. At the very least, each multi-family development site should be limited to a maximum of one driveway at the time of development, and commercial sites should be provided assistance to reconfigure and combine driveway access where possible. To minimize conflicts between all modes of travel, consolidation of driveways between two properties should also be encouraged on Powell Blvd. where allowed.

4. Architectural Detailing

The colors and textures of structures along Powell Blvd. are what make the streetscape unique and memorable. Architectural detailing is one component of this experience. Building articulation in the form of color and other nuances may be more important for commercial development because setbacks for commercial uses and their interface with the public realm are more constant.

5. Neighborhood Commercial Uses

Existing commercial uses in residential or industrial/employment zones should be rezoned to be consistent with their use. Future zoning actions should be considered that would support main street style development in key locations and more commercial zoning generally, as discussed in the Next Steps section of this plan.

6. Transit Service

Currently, west of SE 92nd Powell experiences frequent transit service. East of SE 92nd this is not the case. Increasing transit service along Powell Blvd. might assist with fewer automobiles on the road and a decrease of traffic on the street. Additionally, if all of Powell Blvd. becomes a frequent service street, property owners will not have to meet Zoning Code parking Standard.

7. Douglas Fir and other large, older tree retention

Make all out effort to retain existing Douglas fir trees when widening the roadway to accommodate additional travel lanes, bike lanes or sidewalks. When installing landscaping treatment, use Douglas fir trees as part of the landscaping elements.

High Capacity Transit

The Future of High Capacity Transit on Outer Powell Blvd.

The Outer Powell Boulevard Conceptual Design Plan acknowledges the status of a new high capacity transit (HCT) corridor in the vicinity of Powell Blvd connecting downtown Portland to Gresham as one of the three near-term regional priority corridors. Current alignment and mode options for HCT in this corridor are likely to include either Powell or Division and rail transit or bus rapid transit.

This conceptual design plan does not include specific recommendations regarding HCT, but the intent is to not preclude it. This plan does not seek to determine the impacts of HCT on Powell Boulevard or the preferred function, mode or general location of HCT in this corridor. However, any future HCT facility on Powell should attempt to be provided within the 104 feet of right-of-way envelope identified in Figures 3, 4 and 5 of this plan. In some locations, such as at stations additional right-of-way may be needed

Planning activities regarding potential HCT in this corridor would analyze the potential opportunities for improved transit service and address impacts related to vehicular mobility, freight, pedestrians and bicyclists on Powell Boulevard. Determination of the benefits and impacts of HCT in this corridor is beyond the scope of this conceptual design plan. The process conducted to address these considerations would likely be conducted under federal guidelines through a Transit Alternatives Analysis with a broader scope and study area than this plan.

For more information about HCT see the project report titled, "Outer Powell Boulevard Alternatives Package". Two examples of street cross-sections with HCT are shown in the appendix.

Next Steps

Integration into Local Plans

Recommendations made within the Outer Powell Blvd Conceptual Design Plan are intended to be incorporated in future updates of the City of Portland's guiding transportation policy document, the Transportation System Plan (TSP) as well as the City's Comprehensive Plan which is currently undergoing revision. Amendments may include changes to street classifications based on findings from this plan and changes to the major transportation improvements list recognizing the proposed cross sections and associated costs. More specifically, the City may consider recommending the following TSP amendments.

- Amend the freight classification along SE Powell Blvd. from a Major Truck Street to a Truck Access Street. Powell is not found to be performing the role of a major truck corridor although commercial destinations along the street will still require truck access.

- Amend the street design classification along SE Powell Blvd. from a Regional Corridor to a Community Corridor. The street dimensions proposed by the plan are more reflective of the scale found with the Community Corridor designation. Depending on the outcome and recommendations of the Comprehensive Plan update and accompanying zoning designations some segments of Powell Blvd. may be more appropriately designated as a Community Main Street.

- Amend the traffic classification of SE 174th between SE Division and the south city limits from a Neighborhood Collector to a District Collector. A minor traffic role change of SE 174th may allow for an improved balance of traffic circulation in the localized area of SE Powell Blvd., SE Division, SE 162nd Ave. and SE 174th Ave. thereby maintaining community scale street dimensions for all of these streets.

- Update the Master Street Plan map for the Far SE District to be consistent with the Local Streets and Accessways report prepared as part of this plan.

- Update the Major Transportation Improvements list project description and estimated costs for SE Powell Blvd. to reflect the recommendations of this plan.

In addition to the potential TSP amendment recommendations listed above that have been identified during this planning process, outreach activities also found community interest in potential land use planning actions that would reinforce the street plan benefits and respond to community development goals. These actions could include zoning amendments that would support main street style development in suitable locations, and more commercial zoning generally, replacing high-density residential zoning. These actions would require a separate planning process than was conducted for this conceptual design plan for SE Powell Boulevard.

Public Outreach

Public outreach will be continued to support future projects within the study area. For example, ODOT intends to begin planning activities for a small-scale safety project(s) along SE Powell Blvd.

Funding

At the time of this project, there is no identified funding source to complete the recommended improvements aside from funding identified for the ODOT safety project. ODOT and the City will need to continue investigating potential funding sources (see latter sections in this report on funding and costs).

Public Outreach

The Community Outreach Plan was tailored to the specific community composition in and near the Outer Powell Blvd Conceptual Design Plan project area to meet Title VI, Civil Rights goals. It was guided by and in conformance with the Transportation Title VI Civil Rights Program and Plan. The Community Outreach Plan identifies community composition, environmental justice and social equity considerations, including concentration of transportation disadvantaged communities and non-native English speaking populations and their native language. The Community Outreach Plan also identifies outreach strategies specific to these communities, including community newspapers and other media outlets, community associations, groups or congregations, meeting locations and contacts. The Outer Powell Boulevard Community Outreach Plan is available from the City of Portland, Bureau of Transportation, Transportation Planning Section.

Stakeholder Advisory Groups

The Outer Powell Citizen Working Group (CWG) included representatives from the neighborhood associations and business associations along Powell Blvd, community organizations active in East Portland, advocates for the pedestrians, bicyclists, freight and schools who are affected by the corridor. Members of CWG had opportunities to review, inform and endorse project information and work products. It was the City's expectation that representatives on the CWG would keep their individual organizations up to speed on the progress of the CWG and advise the City on the development of the plan. Responsibilities included attending CWG meetings, reviewing project materials, helping to distribute invitations to open houses and other broader public events, providing regular updates to one's organization on the project, and consulting with members of their individual organizations on how to best represent their views, concerns and recommendations at the CWG

In addition to the CWG, PBOT formed a Technical Advisory Group (TAG) which met regularly through the project prior to CWG. The TAG included representatives from the various divisions within PBOT, modal

coordinators, other City bureaus and partnering agencies. The TAG reviewed, informed and endorsed project information and work products. The TAG advised the City during each phase of the project leading up to a recommended conceptual design plan.

Broad Public Events

The Outer Powell Project Team conducted four public events at key decision points in the planning process:

Community Workshop at East Portland Exposition (EPO EXPO) at Ed Benedict Park on July 17th & 18th, 2010: Using a large booth, the public was presented with information about existing conditions along Outer Powell Blvd, including a digital slide show and animated corridor fly-through. Feedback was solicited through a survey form, a general comment card, and the use of "sticky-notes" on maps of the corridor.

Evening Public Open House, Ron Russell Middle School, November 15th, 2010: The focus was to present and receive public feedback on draft project materials during the Needs, Opportunities and Constraints phase, including the Corridor Urban Design Concept Plan, Future Traffic Conditions, Needs, Opportunities and Constraints, and a Toolkit for Street Design. The event was structured to include four presentations summarizing each topic led by City and consultant staff, and a self-guided tour of multiple display stations on these topics. City and consultant team staff solicited feedback through written comments and maps.

Evening Public Open House, Ron Russell Middle School, March 16th, 2011: The focus was to present and receive public feedback on the Alternatives Development phase, including: draft Evaluation Criteria; Proposed Streetscape Alternatives Packages in four segments to be further analyzed and evaluated; and Proposed Urban Design Alternatives to be further evaluated. The event structure included two presentations summarizing each topic, and a self-guided tour of multiple display stations on these topics. City and consultant team staff solicited feedback through written comments and maps.

Evening Public Open House, Earl Boyles Elementary School, June 20th, 2011: The focus was to present draft Alternative Evaluation and the Recommended Outer Powell Blvd Street Conceptual Design Plan Corridor Map and Implementation Strategy. The event structure included an overview presentation summarizing the recommended alternative, and a self-guided tour of multiple display stations. City and consultant team staff solicited feedback through written comments, maps, and an informal voting process.

Notification for Public Events

All four public events were announced through a variety of channels to provide broad as well as focused and targeted notification and announcement of public meeting events. A flyer was sent by postal mail prior to each event. Key information on the flyer was translated into Spanish, Russian and Vietnamese, including a number to call to request

interpreters. The flyers were sent to a project mailing list. Additionally, an email announcement with a PDF of the flyer was sent the members of the Citizen Working Group, Technical Advisory Group, Office of Neighborhood Involvement and a host of interested individuals, organizations and media outlets.

The project mailing list included individuals who requested to be added to the mailing list via the sign-in sheets at each event. In addition, over 14,000 residents, businesses and tenants were contacted via postal carrier routes near Outer Powell Blvd. The U.S. Postal Service Carrier Routes map is located in Community and Stakeholder Outreach Summary for Final Report in the Appendix and additional property owner addresses, where the property owner mailing address was different from the site address to ensure that property owners located outside the project mailing area also receive notice of the project public meetings and project updates.

Additional Public Meetings Attended

- Booth at the Annual Transportation Safety Summit held in East Portland at Marshall High School on the evening of February 8, 2011
- Powellhurst-Gilbert Neighborhood Association meeting on March 14, 2011
- OPAL (Organizing People Activating Leaders) meeting on June 17, 2011
- City of Portland Pedestrian Advisory Committee meeting on June 21, 2011
- City of Portland Bicycle Advisory Committee meeting on July 12, 2011

Costs

The table below provides estimated total costs provided by ODOT for the 3-lane, 4-lane, and 5 lane alternatives using the "enhanced" design features for each of the project segments. These costs were prepared for the purpose of developing rough estimates to compare full build alternatives considered during this plan process. These costs estimates are based on general unit costs for both roadway improvements and right-of-way. These costs and the alternative cross-section may be used as the basis for estimated project cost for future addition to Portland's Transportation System Plan (TSP).

Estimated Total Costs for Improvements			
Project Segment	*3-Lane*	*4-Lane*	*5-Lane*
Segment 1: I-205 to SE 116th Ave	$16,802,789	$ 25,626,035	$36,943,711
Segment 2: SE 116th Ave to SE 136th Ave	$19,768,416	$25,626,035	$36,943,711
Segment 3a: SE 136th Ave to SE 148th Ave	$8,847,302	$15,659,861	$20,385,050
Segment 3b: SE 148th Ave to SE 162nd Ave	$11,539,615	$17,279,437	$23,766,094
Segment 4: SE 162nd Ave to SE 174th Ave	$9,553,453	$14,111,626	$20,605,671
Total	**$66,551,572**	**$98,302,993**	**$138,644,238**

Figure 23. Table of estimated total cost of improvements by each of the project segments

Funding

Powell Boulevard (US 26) is an ODOT facility. ODOT was a partner in the development of the Outer Powell Conceptual Design Plan. As for funding of improvements identified in the Conceptual Design Plan, ODOT and other potential funding partners face exceedingly tight budgets. ODOT can make no funding commitment for Outer Powell Boulevard improvements except for funds already allocated to address safety concerns between SE 122nd and SE 136th Avenues. In that safety project, ODOT will seek to include design elements from the recommended Outer Powell Conceptual Design Plan, subject to limitations of funding sources, budget, existing right-of-way, and upcoming regional decisions on high-capacity transit that may affect Powell. Where it is not possible to include certain design elements, ODOT will try to ensure the safety project design can transition efficiently and economically in some future construction project to fully reflect the recommended Outer Powell plan.

Because potential funding sources are extremely limited, improvements to SE Powell between I-205 and Gresham are likely to be build incrementally over time in segments, and not as a single large project. Because transportation needs across Portland and the metropolitan region are many and competition for limited funds is intense, funding for future improvements on Powell will require city and regional consensus that addressing needs on Outer Powell is a priority that takes precedence over transportation needs elsewhere.

It may be necessary to tap multiple funding sources so dollars can be combined for a single construction project (e.g. combining state, regional or city bicycle/pedestrian funds to pay for new bike lanes and sidewalks, with roadway funds to pay for new vehicle lanes). It is unlikely, however, that bike/pedestrian funds could be used to build stand-alone bike lanes or sidewalks, because it would be technically difficult or impossible to build sidewalks and bike lanes at the appropriate location along Outer Powell prior to widening or rebuilding of the adjacent roadway and prior to acquiring additional right-of-way.

Potential ODOT Funding Sources

ODOT's Modernization Program is the traditional funding source for roadway expansion projects that include new vehicle lanes, bike lanes and sidewalks. However, due to declining revenues and bonding commitments, modernization funds for new projects will not be available for the foreseeable future.

ODOT's Highway Safety Program can fund projects that respond to safety issues such as high vehicle, bicycle or pedestrian crash locations as identified in ODOT's Safety Priority Index System. Projects must improve safety and provide a positive benefit/cost ratio.

The following grant opportunities could be combined with other funding to build elements of this plan.

ODOT Bicycle and Pedestrian Program funding is directed into the following three programs:

- Sidewalks Improvement Program (SWIP): $2.3 - $3.9 million per year for pedestrian improvements on state highways. Funds are available to incorporate pedestrian features to a State Highway "pavement preservation" (i.e. asphalt replacement) project. Funds are used to fill sidewalk gaps, intersection improvements, pedestrian crossings and ADA upgrades. ODOT selects projects and administers the funds. Regional spending targets are calculated based on sidewalk needs in each region.
- Quick Fix: $1 million per year for minor sidewalk and bikeway improvements on state highways, up to $100,000 per project. Funds are distributed to ODOT Maintenance Districts and Regional Offices with no regional spending targets.
- ODOT Pedestrian and Bicycle grants: ODOT distributes approximately $5 million of State funds every two years for ped/bike projects on local jurisdiction streets and state highways. Funds are administered through a competitive application process. The majority of awards are in the $25,000 to $500,000 range. However, the Oregon Bicycle and Pedestrian Advisory Committee will consider awarding a limited number of large projects – up to $1 Million each. These signature projects must meet the program

The ODOT State Flexible Fund grant program was created by the Oregon Transportation Commission in 2010 with a portion of the flexible federal funds available through the FHWA STP Program. Funds are used to support sustainable non-highway transportation projects, programs and services that positively impact modal connectivity, the environment, mobility and access, livability, energy use and the overall operation of the transportation system. The program funds multimodal and non-highway transportation projects, programs and services for transit, bicycle, pedestrian and TDM, as well as for the planning, research and project development of these projects and activities. The program had approximately $21 million available for the 2011 application cycle. The minimum eligible project size is $50,000 (federal share excluding match) and the maximum size is 10% of the available program funding, or approximately $2.1 million. A minimum 10.27% local match is required. (see: www.oregon.gov/ODOT/TD/TP/FlexFunds.shtml)

Transportation Enhancement (TE) is a competitive federal aid program administered by ODOT. The TE program provides federal highway funds for projects that strengthen the cultural, aesthetic, or environmental value of our transportation system. The funds are available for twelve "transportation enhancement activities" specifically identified by Congress including bike and pedestrian facilities. For fiscal years 2010 - 2013, the Program will have $6.5 million per year for completive selection, and $2 million per year for the TE Discretionary Account. The typical maximum TE award amount is $1 million per project. A minimum 10.27% local match is required. (see: www.oregon.gov/ODOT/HWY/LGS/enhancement.shtml)

Other Funding Partners

The City may seek Regional Flexible funds that could be applied to cross streets as well as along short segments of SE Powell Blvd. where expansion of the cross streets is necessary for proper functioning of the intersection.

TriMet may use their funds to install bus stop improvements such as shelters, queue jump lanes and other transit related improvements

The Water Bureau has indicated they have no plans to replace the conduit under Powell for at least the next 20 to 25 years. The conduit is a metal pipe and shows no need for upgrade or replacement. The bureau may be amenable to an earlier replacement and upgrade depending on the cost sharing agreement that could be negotiated with ODOT.

The City and ODOT may also partner to seek funding opportunities through joint agency grant applications. There may be a future opportunity to consider jurisdiction transfer of SE Powell Blvd. within the city limits from ODOT to the City.

Private Development

Private development will share a portion of the cost for future improvements along outer SE Powell Blvd. by dedicating right-of-way (ROW) for the future improvements and where practical, constructing frontage improvements consistent with the plan. The recommended alternative presented in the Outer Powell Blvd Conceptual Design Plan addresses the ROW needs and strategies by documenting the ROW preservation, acquisition, and dedication needs for each of the project segments along the corridor (see the Street Design Concept Recommendations section of this document). The Implementation Strategy presented earlier in this document clearly shows how the dedication and reservation setbacks can be used to preserve ROW in the future.

Right of way dedication and setbacks provide a clear legal mechanism for reserving and acquiring right-of-way prior to construction. These tools are employed for SE Powell Blvd. today. The setback requirements in effect today are based on the Powell/Foster Corridor Transportation Plan recommendations adopted in the Regional Transportation Plan by Metro (December 2003). These street cross sections are derived from ODOT Roadway Design Standards and City of Portland Pedestrian/Transit Standards. This concept plan will provide guidance for updated right-of-way dedications to be applied during the land development process. The cross-sections presented in the Street Design Concept Recommendations section of this document display a line for dedications and setbacks. To accommodate the streetscape improvements envisioned by this plan including potential long-term street needs, such as high capacity transit, setbacks with a width of 104 ft. will be required.

Appendices

Appendix A: Outer Powell Streetscape Alternatives Evaluation Criteria (PBOT)
Appendix B: MCTD Freight Mobility Meeting Notes (ODOT)
Appendix C: TriMet High Capacity Transit Cross-Sections (Metro)
Appendix D: Implementation Strategy Illustration (PBOT)
Appendix E: Authorizing Resolution (City Council)

Project Reports

- Community Outreach Plan
- Technical Advisory Group Roster
- Community Working Group Roster
- Background Policy and Existing Conditions Technical Memo
- Design Matrix
- Stormwater Management Facilities Technical Memo
- Right-of-Way Preservation/Acquisition Tools Memo
- Existing Conditions Traffic Analysis and Technical Memo
- Needs, Opportunities and Constraints Technical Memo
- Corridor Urban Design Concept Plan Map
- Future Traffic Conditions Technical Memo
- Toolkit Technical Memo
- Urban Design Alternatives
- Streetscape Design Alternatives and Options
- Alternatives Package
- Urban Design Alternatives Evaluation Memo
- Alternatives Traffic Analysis
- Alternatives Package Evaluation Technical Memo
- Local Street and Accessway Report
- Recommended Alternative Streetscape Plan Graphics
- Refinement Traffic Engineering
- Updated Recommended Alternative
- Project Descriptions and Cost Estimates

Supplemental Materials

- Adjusted Future Demand Modeling Summary (PBOT)
- Implementation Strategy illustration (PBOT)

This report and those shown above are available by request from the Oregon Department of Transportation, Transportation Growth Management Office and the Portland Bureau of Transportation.

Appendix A: Outer Powell Streetscape Alternatives Evaluation Criteria (PBOT)

Outer Powell Blvd Streetscape Alternatives Evaluation Criteria:

The following criteria will be used to evaluate the alternative concept plans proposed for Outer Powell Blvd. Evaluation criteria are derived from the project goal, objectives and project needs. Each alternative will be analyzed and evaluated based on the extent to which it achieves each criterion. The evaluation criteria are intended to help distinguish among the alternatives and determine, which alternative best meet the criteria.

- **Provide safe, comfortable, convenient, and reasonably direct access along and across Powell Blvd for all modes. Achieve a balance among the modes sharing the street.**
  Measures:
  - Achieves acceptable Regional Level of Service (LOS) and State Volume-to-Capacity (v/c) mobility for motor vehicles without compromising other modes. Regional Standard: .99 v/c ratio or below.
  - Improves the multi-modal Level of Service (LOS) for transit, pedestrians and bicycles, including for crossing Powell Blvd, using the new 2010 Highway Capacity Manual multi-modal LOS measures.

- **Improve safety for all modes traveling along and across Powell Blvd**
  Measures:
  - Minimizes number of conflict points among all modes, including motor vehicle-to-motor vehicle conflicts.
  - Increases access management by meeting or moving towards access spacing standards in the Oregon Highway Plan.
  - Provides safe and effective separation of modes

- **Maintain acceptable levels of congestion on other arterials within in the regional mobility corridor consistent with regional and local policy.**

- **Roadway Design**
  Measures:
  - Meets or moves towards Portland street design standards/guidelines for all modes.
  - Meets or moves towards regional design guidelines for a *Regional Street.*
  - Meets or moves towards ODOT design standards. Minimizes need for Design Exceptions.
  - Accommodate large vehicle movement for the appropriate freight and transit design vehicles.
  - Avoids reduction of over-dimensional freight capacity consistent with ORS 366.215.

• Provide adequate stormwater management and treatment considering best practices known at this time.

Measures:

- Meets City of Portland stormwater management design guidelines to the maximum extent possible.
- Meets or moves towards State stormwater management design guidelines.
- Addresses maintenance concerns of the agencies that may assume on-going maintenance responsibility of the facilities.

• Improve the urban design, livability and business vitality along SE Powell Blvd.

Measures:

- Street design supports adjacent land use context.
- Supports existing land uses and allows for transition to planned land uses.
- Improves local connectivity by identifying crossing treatments to better link existing and planned local streets and accessways and key destinations.

• Minimize impacts to adjacent properties along SE Powell Blvd.

Measures:

- Minimizes the amount of right-of-way acquisition and/or dedication needed from properties abutting Powell Blvd and minimize the number of buildings that would be partially or totally removed.
- minimizes environmental justice impacts on minority and other historically under-represented populations.
- Minimizes impacts to 4F resources (e.g. avoid park land).
- Minimizes impact on environmental resources (e.g. avoid identified hazardous material sites).

• Identify a conceptual street design that is financially viable.

Measures:

- Provides a plan that can be built in phases.
- Avoids or minimize the need to replace interim improvements when long-term improvements are constructed (e.g. the 122nd Ave to 136th Ave Safety Project).
- Cost.

Appendix B: MCTD Freight Mobility Meeting Notes (ODOT)

[Note the last section of these meeting notes regarding SE Powell Blvd. The original text has been reformatted.]

Freight Mobility Meeting Notes
July 20, 2011

Facilitator: Christy Jordan
Attendee's:
Industry Representatives: Bob Russell, Don Miner, Steve Bates, Clark Boswell
Region 4: Joel McCarroll, Brad Dehart; & Conference Call to Della Mosier
Region 1: Tony Coleman, Ross Kevlin
MCTD: Gregg Dal Ponte, Charlie Hutto

Region 4

OR70: Seattle Ave. to Carroll Ave. (Bonanza): The OR 70-Seattle Avenue to Carroll Avenue Roadway and Highway Divider Project will be located at the western entrance to the Town of Bonanza, Oregon along OR 70. Planned improvements for the project include widening approximately 450 lineal feet of the highway to accommodate the installation of a 70 foot long highway divider for the installation of a welcome sign. The sign will be constructed so that it can be easily removed and replaced should any individual STP require additional width. The proposal reduces the "hole in the air" from 30 feet or so (the whole roadway width) to 17 feet (face of median to edge of pavement). This would limit loads to 14 feet, which MCTD does not believe would be a significant impact to permitted loads. However, implements of husbandry are not required to obtain overwidth permits (they are exempt from over width permits on the non-interstate highways), therefore the number of farmers affected by a reduction in capacity is unknown. It was suggested that Region 4 communicate to the City of Bonanza to speak with Mike Noonan Farms who is located in the area regarding the issue. Farm equipment such as combines can easily exceed 14 feet in width. **Industry concurred.**

Madras: US97 @ J Street

The City of Madras and ODOT teamed up to prepare a design for the intersections of "J" Street and US97 in Madras (the South "Y"). This project is to help solve the problem of congestion and safety issues at the intersection of US97 and "J" Street" The cost estimate is $18 million to address the long term traffic needs, enhancements and storm drainage improvements for a larger area around the southern end of the Madras

Couplet. ODOT and the City have secured $6 million towards the first phase of the master plan. This first phase focuses on extending the existing couplet in Madras and realigning it through town. The project is scheduled to bid in December 2013 and construction is to begin in the summer of 2014. Proposal includes having at least 32 feet+ of horizontal clearance (curb to curb) after the project is complete. **Industry concurred.**

Biggs Jct:
This was a follow up to a past mobility meeting. Region 4 was bringing back to the group 2 options for the Biggs junction interchange project. Option 1 includes installation of a pork chop that will only affect traffic heading north on US97 and turning east on US30. Option 2 is does not include a pork chop. **Industry concurred with Option 1.**
The following question were asked regarding the signal heads and beams:
o What is the height to the bottom of the signal head on the signal bridge?
18 feet. This is the standard for traffic signals and relates to the angle that a driver is looking as he approaches the signal in order to be able to see the signal from the stop bar.
o What is the height of the beam on the signal bridge as it crosses the highway?
Approximately 20 feet. We will know more as we design the signal bridge, but it should only vary a couple of inches either way. Much like the mast arm of a signal it can be disconnected and lifted out of the way of a very high load.
Follow up: Joel McCarroll sent an e-mail after the meeting dated 7-21-2011 and answered the questions. Answers in blue.

US26: Warm springs
The Confederated Tribe of Warm Springs (CTWS) is building a casino across from a museum in the Warm Springs Reservation. The traffic is such that they'll share a driveway with a deli across from the museum. US26 will need to be widened and turn lanes in both directions will need to be added. The proposal is for construction to begin this fall and the casino to open in January. It will not decrease horizontal clearance, and should actually increase it. Clark Boswell asked if during construction there would be any horizontal restrictions that affect overwidth loads (especially his 14 foot base width loads). Joel will provide more information when it's closer to construction.

NOA:
Brad informed the group that WSDOT would be performing a Biggs Bridge painting project that Region 4 and WSDOT will be coordinating together.

REGION 1:

US26: Outer Powell

Ross presented diagrams of proposed conceptual design plans for US26 between 99th to 162nd. Illustration A was approved by the group. The group indicated the columnar trees should be planted in lieu of fuller types that extend into the road way. Steve asked for **21** feet horizontal clearance, however, design shows **20** feet. The group agrees that that either width would be acceptable. The group also discussed a safety project in the same corridor, and where concerns were discussed about raised medians. The request from the freight stakeholders was to maintain **20** feet horizontal clearance curb to curb. **Industry concurred with above mentioned widths and illustration A.**

Appendix C: TriMet High Capacity Transit Cross-Sections (Metro)

Potential for High Capacity Transit on Powell Boulevard

Definition of High Capacity Transit

High capacity transit (HCT) is defined by its function to carry high volumes of passengers quickly and efficiently from one place to another. Other defining characteristics of HCT service include the ability to bypass traffic and avoid delay by operating in exclusive or semi-exclusive rights of way, faster overall travel speeds due to wide station spacing, frequent service, transit priority street and signal treatments, and premium station and passenger amenities. The transit modes in the Portland-Metro region most commonly associated with high capacity transit include:

- Light rail transit – light rail trains operating in exclusive or semi-exclusive right of way (exclusive right of way includes fully grade separated right of way and semi-exclusive right of way includes separated and shared rights of way)
- Bus rapid transit – regular or advanced bus vehicles operating primarily in exclusive or semi-exclusive right of way
- Rapid streetcar – streetcar trains operating primarily in exclusive or semi-exclusive right of way

High Capacity Transit priority tiers

The Regional High Capacity Transit System Plan summary report (June 2010) lays out the planning process and results on high capacity transit options in the region. On July 9, 2009, the Metro Council adopted Resolution 09-4052 for the purpose of accepting the regional high capacity transit system tiers and corridors, the system expansion policy framework, and policy amendments for addition to the 2035 Regional Transportation Plan, state component. A set of 18 high capacity transit corridors was identified and adopted for evaluation and prioritization by the Metro Council on February 12, 2009. To distinguish near-term regional priorities from corridors that will need time to develop, a simple set of priority tiers was established. The four tiers relate to a HCT corridor's readiness and regional capacity to study and implement HCT projects. In order of priority, the four tiers are: Near-term regional priority corridors; Next phase regional priority corridors; Developing priority corridors: and Regional vision corridors. The Regional HCT System Plan recommends near term regional priority corridors receive top priority for advancement to a federal alternatives analysis, federal funding and implementation.

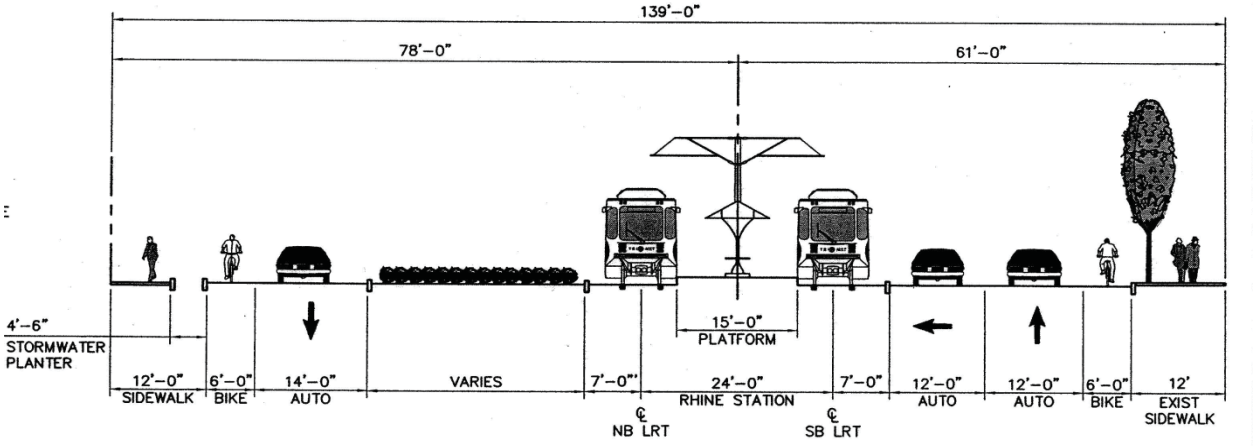
Through an extensive screening and evaluation process (using economic, environmental, community and deliverability criteria), the plan selected the three top priorities for regional investment in high capacity transit. A new HCT corridor in the vicinity of Powell Boulevard from Portland central city to Gresham was selected as one of the three near-term regional priority corridors.

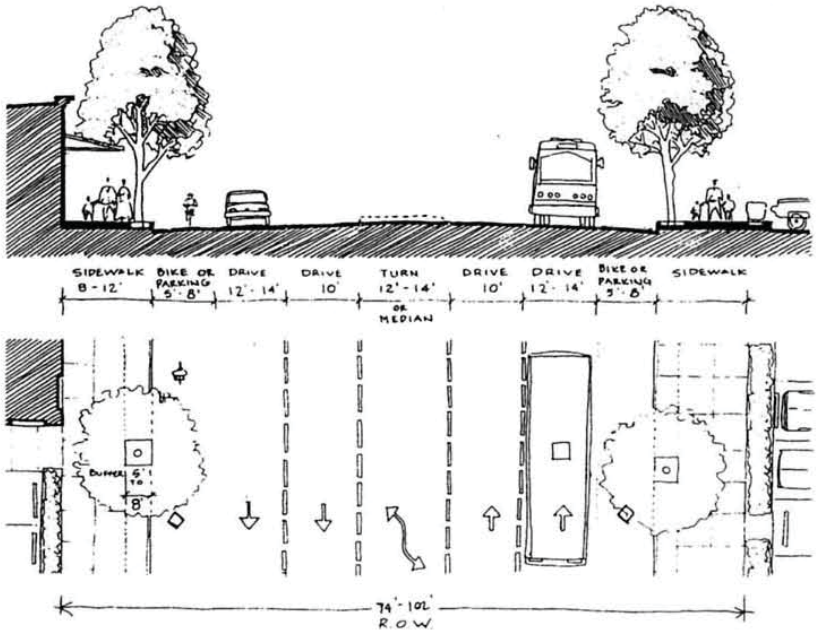
Process for further multi-modal corridor evaluation

The Oregon Department of Transportation (ODOT) requires that any proposed HCT corridor affecting a state Highway (such as Powell Blvd.) comply with a variety of ODOT regulations and standards, whether the alignment is within, adjacent to or parallel to the existing right of way. The Transportation Planning Rule (TPR) defines a refinement plan as an amendment to a transportation system plan, such as the Regional Transportation Plan (RTP), that "resolves, at a system level, determinations on function, mode or general location which were deferred during transportation system planning." Corridor refinements are necessary where a transportation need exists, but mode, function and general location of a transportation improvement are not determined.

A refinement plan is the approach ODOT recommends for conducting further analysis of potential corridors identified in the HCT planning process and adopted in the RTP. Regardless of the type of right of way required, this process would facilitate resolution of concerns over the effect of HCT corridors on vehicular mobility and freight on state highways. Per the TPR, project development would follow a refinement plan and would implement HCT corridors adopted in the RTP by "determining the precise location, alignment, and preliminary design (of those corridors) based on site-specific engineering and environmental studies".

The Outer Powell Boulevard Conceptual Design Plan is acknowledging the status of a new HCT corridor in the vicinity of Powell Boulevard from Portland central city to Gresham as one of the three near-term regional priority corridors. There is a need for a refinement plan on this near-term regional priority corridor to resolve concerns over the effect HCT would have on vehicular mobility and freight on Powell Boulevard if high capacity transit were to be located there. The Outer Powell Boulevard Conceptual Design Plan will not seek to determine the impacts of HCT on Powell Boulevard or the function, mode or general location of HCT in this corridor. Any HCT on Powell should attempt to stay within the 106 feet of right-of way required for a five-lane enhanced section that is defined in the Outer Powell Boulevard Alternatives Package (February 2011). To acknowledge Near-Term regional priority of development of HCT in this corridor, two examples of cross-sections with HCT (one for Portland to Milwaukie LRT at the Rhine Station and a generic one for bus rapid transit in an exclusive bus lane) are shown below for illustrative purposes.


139'–0"
78'–0"
61'–0"
4'–6"
STORMWATER
PLANTER
12'–0"
SIDEWALK
6'–0"
BIKE
14'–0"
AUTO
VARIES
7'–0"
24'–0"
RHINE STATION
7'–0"
15'–0"
PLATFORM
12'–0"
AUTO
12'–0"
AUTO
6'–0"
BIKE
12'
EXIST
SIDEWALK
℄
NB LRT
℄
SB LRT


SIDEWALK
8 - 12'
BIKE OR
PARKING
5' - 8'
DRIVE
12' - 14'
DRIVE
10'
TURN
12' - 14'
OR
MEDIAN
DRIVE
10'
DRIVE
12' - 14'
BIKE OR
PARKING
5' - 8'
SIDEWALK
BUFFER
5'
TO
8'
74' - 102'
R.O.W.

Previous graphic for Light Rail Transit is from TriMet's Design Criteria – Chapter 3 Track Geometry and Track Work; and Chapter 6 Stations.

The typical LRT median track section (double track outside the platform area) requires a minimum of 28 feet as shown in Figure 3-7 of TriMet's Design Criteria.

As stated in TriMet's Design Criteria (Chapter 6), the minimum platform width for side platforms should be 12 feet with 15 feet being preferred, and the minimum width for center platforms should be 15 feet (as shown in the LRT cross section on the previous page) with 20 feet being preferred. The minimum length for both center and side platforms shall be 190 feet, with 200 feet being preferred, unless approved in writing by TriMet.

Exclusive Bus Lanes (from TriMet's Design Criteria – Chapter 23 Bus Facilities)
Where high traffic volumes and congestion exist, exclusive bus lanes may be warranted. The *Highway Capacity Manual* (Transportation Research Board), states that a bus lane is considered necessary when 30 or more buses per hour are operating on that street during peak periods. Whether an exclusive bus lane is used depends on many factors, including local transportation policies, street classification, bus characteristics, and geometry.

The bus rapid transit cross-section on the previous page depicts recommended bus lane widths for two conditions: mixed use or exclusive use. Lane dimensions do not include an allowance for bike lanes, gutters, or on-street parking. For a bus lane adjacent to a mixed-use travel lane, a 12 foot bus lane width should be provided.

Appendix D: Implementation Strategy Illustration (PBOT)

IMPLEMENTATION STRATEGY FOR THE OUTER POWELL CONCEPTUAL DESIGN PLAN

CRITERIA FOR SHORT TERM IMPROVEMENTS

- **Safety** for all modes (including left-turn lane access)
- Pedestrian and bicycle **system gaps**
- Pedestrian **crossing improvements**
- **Transit travel times** and access
- **Transportation System** Management improvements (such as upgraded signals)

NEAR TERM now to 2025 (or longer)

SE 99th to SE 162nd
3-Lane Roadway
Same in long term

SE 162nd to SE 174th
3-Lane Roadway with dedication for long term alternatives

LONG TERM 2025 - 2035 (or longer)

BENCHMARKS to determine the transition from near term to long term improvements:

- Review of upcoming transportation model update
- Completion of the Powell-Division Corridor HCT Plan
- Committed funding for new arterial from the south connecting to Powell, east of Powell Butte
- Congestion measure for the SE 136th, 162nd and 174th intersections

SE 162nd to SE 174th
Unbalanced 3-Lane Roadway

SE 162nd to SE 174th
4-Lane Roadway

BEYOND 2035 OTHER CONCEPTUAL OPTIONS

6-Lane Roadway

3-Lane Roadway with Parking

High Capacity Transit with 3-Lane Roadway

Appendix E: Authorizing Resolution (City Council)

EXHIBIT B

Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.

May 25, 2012

Mayor Adams and Portland City Council
Portland City Hall
1121 SW 4th Avenue
Portland, OR 97204

Subject: Outer Powell Boulevard Conceptual Design Plan

Dear Mayor Adams and City Commissioners:

On April 10 and April 24, 2012, the Portland Bureau of Transportation and members of their Community Working Group presented the *Outer Powell Boulevard Conceptual Design Plan* in a briefing to the Portland Planning and Sustainability Commission.

We learned that the Plan was a direct outgrowth of the East Portland Action Plan and that the concepts put forth in the Plan are meant to accommodate the 20 year needs along SE Powell Boulevard. The Plan calls for three lanes from just east of I-205 to the city limits at SE 174th. It also calls for bicycle and sidewalk facilities along the entire length.

The *Outer Powell Boulevard Conceptual Design Plan* will inform preliminary engineering phases for future public capital improvements. It will also inform property owners and developers about the reasoning behind future requirements for development, dedication, and frontage improvements.

We voted unanimously to send this letter of support to you and encourage you to accept the Plan and its findings.

Thank you for your consideration,

Andre' Baugh
Chair