INTENT OF STRATEGY
The purpose of this study was to develop a plan for multimodal transportation projects to accommodate future development within the North Macadam Urban Renewal Area (URA). Previous transportation studies and plans have addressed different components of the North Macadam URA. This study was intended to confirm, modify, unify, and add to previous findings and analyze those areas not yet studied. This study identifies the need for both short term (the next 10 years) and long term (the next 20 years) transportation projects, as well as prioritized projects, and establishes approximate year of need and prioritization for projects. The outcome is a comprehensive multimodal transportation plan with project recommendations that support the planned development in the North Macadam URA over the next 20 years.

The North Macadam URA is expected to develop with residential, business and institutional uses over the next 20 years. Based on land use and trip generation assumptions in the North Macadam URA, trips are expected to increase by over 400% by the year 2030\(^1\), making transportation improvements critical to access and circulation for the area.

\(^1\) Chapter 4: Assumptions and Methodology details the growth in trips and explains how the 400% growth rate was obtained. The growth was based on land use assumptions used in the regional travel demand model.
The projects developed in this study address five key modes of transportation:

- Motor vehicle
- Freight
- Pedestrians
- Bicycles
- Transit (light rail, buses, and street car)

**STUDY AREA**

The study intersections fall within the North Macadam URA district, as well as select intersections adjacent to the district that were of significant interest. The North Macadam URA encompasses land bordered by the Willamette River to the east, Montgomery Street and Harrison Street to the north, SW 1st Avenue, SW Naito Parkway, SW Macadam Avenue, and SW Hood Avenue to the west, and the southern boundary is approximately 1,000 feet south of Hamilton Court. In Figure 1-1 the North Macadam URA is shown.

The study area encompasses roadways under the jurisdiction of both City of Portland (PDOT) and Oregon Department of Transportation (ODOT). Each agency has its own traffic operation standards (detailed further in Chapter 7) and agency goals can conflict. For example, ODOT prioritizes regional transportation while PDOT places a priority on local trips. With two separate agencies owning and operating roadways adjacent to each other, challenges were present in developing this transportation strategy.

**PROCESS**

The North Macadam Transportation Development Strategy was developed with coordination among a Project Management Team (PMT), a Technical Advisory Committee (TAC), a Stakeholder Advisory Committee (SAC) and members of the community. Regular meetings were held between the PMT and the advisory committees to gain input and guidance throughout the course of the project. The SAC meetings were public meetings where community members were welcome to provide input to the process. Two open houses were also held at critical points of the project to get feedback from a broader range of the community. Also, the City’s Project Manager made visits to the South Portland Neighborhood Association, Bicycle Advisory Committee, Pedestrian Advisory Committee, and Freight Advisory Committee for input from the broader community.
After the initial scoping process and needs assessment, the existing conditions were analyzed in the study area. A comprehensive list of potential bicycle, pedestrian, transit and motor vehicle projects were developed with input from the TAC, SAC and the various advisory committees. The transportation system was analyzed with future year 2030 traffic volumes and several different transportation projects were developed. Once the transportation projects were developed, each project was analyzed and then with combined input from the involved agencies and stakeholders, projects were recommended and prioritized for each mode of transportation.

The following Figure 1-2 illustrates the process of this study.
Development of Projects
For each mode of transportation, projects were developed to address deficient areas. For bicycle, pedestrian and transit projects the deficiencies were often found through input from local community members. For motor vehicle projects, the deficient areas were determined using traffic software programs that model roadway conditions as well as from community input.

It is important to understand the process used to reach the final list of motor vehicle projects because certain lessons were learned along the way that changed the initial course of the project. At the start of the process, projects were developed that addressed three main areas:

- Regional connections to I-405, US-26 and I-5
- Ross Island Bridge connections on the west end of the bridge
- Local/arterial improvements to the North Macadam URA

The regional projects were the first area to be reevaluated for inclusion in this study. Although the regional connections are a critical component to the roadway network, there were several factors beyond the growth of the North Macadam URA contributing to the need for improvements on these facilities. The intent of this study was to evaluate and improve areas within and directly impacted by traffic to and from the North Macadam URA. Evaluation of the regional connections indicated that they were not a primary determinant of access to/from the district and they should be studied via a separate process.

Another project area involved evaluating the ramps at the west end of the Ross Island Bridge. The ramps to the Ross Island Bridge are immediately adjacent to the North Macadam URA, and originally, it made sense to address the redevelopment in this study. The reconfiguration of the bridge ramps has been a longstanding issue of residents of this area and was studied in detail in the South Portland Circulation Study accepted by Council in 2001. It was determined by city staff and community members that it was appropriate for this study to consider some alternative circulation ideas. The new alternatives developed in this strategy were intended to reflect the neighborhood interest to redevelop the area taken up by the ramps to and from the bridge, and establish a more pedestrian friendly and connected grid-like roadway network.
Some of the alternatives developed in this study process differ significantly from the recommended circulation option in the South Portland Circulation Study\(^2\) from 2001. Although each of these new preliminary alternatives identified circulation benefits for multiples modes, there was enough difference from the previous study that additional detailed analysis and public involvement would be necessary to choose a new preferred alternative. This amount of required process was beyond the scope and timeframe of this study.

The final component of the motor vehicle projects consisted of local and arterial improvements. These projects focus on areas with a more direct impact to travelers to and from the North Macadam URA. These local and arterial improvement projects make up the list of motor vehicle projects analyzed and proposed in this study.

**SUMMARY OF FINDINGS**

The projects are organized by mode of transportation: pedestrian and bicycle, transit, and motor vehicle. In each mode projects are further categorized by priority level (high, medium or low). The prioritization was based on several factors in the analysis, as well as input from the advisory committees. Further detail about the prioritization process can be found in Chapters 5 through 7 for each transportation mode. The following pages give a brief overview of the recommended projects by transportation mode and priority. To begin with, the high priority and in-process projects are highlighted across all modes of transportation.

High Priority/In Process Projects – All Modes
The in-process projects (listed in Table 1-1) are projects already moving forward and in the design phase that were assessed in previous studies. It is important to understand that this North Macadam Development Strategy does not alter anything for these in-process projects, but the projects are shown in this report to help complete the understanding of the future transportation network in the North Macadam URA.

Table 1-1: List of In-Process Projects for All Modes of Transportation

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pedestrian - Bicycle Projects</strong></td>
<td></td>
</tr>
<tr>
<td>BP-6</td>
<td>Portland-Milwaukie Light Rail Bridge Project</td>
</tr>
<tr>
<td>BP-8</td>
<td>Gibbs Street Bridge and Crossing Enhancements</td>
</tr>
<tr>
<td>BP-10</td>
<td>Corbett Avenue Traffic Calming Project</td>
</tr>
<tr>
<td><strong>Transit Projects</strong></td>
<td></td>
</tr>
<tr>
<td>T-3</td>
<td>Naito/Hooker Bus Stop Enhancement</td>
</tr>
<tr>
<td>T-4a</td>
<td>TriMet Line 35-Macadam Route Change and Stops</td>
</tr>
<tr>
<td>T-9</td>
<td>Light Rail Transit</td>
</tr>
<tr>
<td><strong>Motor Vehicle Projects</strong></td>
<td></td>
</tr>
<tr>
<td>MV-1</td>
<td>Milwaukie Light Rail Traffic Signals and Improvement Project</td>
</tr>
</tbody>
</table>

The high priority projects (listed in Table 1-2) are the main focus of this transportation development strategy.
### Table 1-2: List of High Priority Projects for All Modes of Transportation

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-1</td>
<td>South Waterfront Willamette Greenway Trail</td>
</tr>
<tr>
<td>BP-2</td>
<td>North of I-405 Connection</td>
</tr>
<tr>
<td>BP-16</td>
<td>Hood Avenue Sidewalk Enhancement – Porter St. to Gibbs St.</td>
</tr>
<tr>
<td>BP-22</td>
<td>Hood Avenue Crosswalk and Sidewalk Enhancement – Lane to Macadam</td>
</tr>
<tr>
<td>BP-23</td>
<td>Kelly Pedestrian Tunnel Closure and Crosswalk Replacement</td>
</tr>
<tr>
<td>BP-24a</td>
<td>BP-24a: West-end Ross Island Bridgehead Connection</td>
</tr>
<tr>
<td>BP-24b</td>
<td>BP-24b: Kelly Avenue bike lanes</td>
</tr>
<tr>
<td>BP-24c</td>
<td>BP-24c: Ramp Crossing of Kelly Ave to Naito Pkwy NB</td>
</tr>
<tr>
<td>BP-30</td>
<td>Tram Bike Parking</td>
</tr>
<tr>
<td>BP-31</td>
<td>Wayfinding</td>
</tr>
</tbody>
</table>

### Transit Projects

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-4c</td>
<td>Bancroft Transit Improvements</td>
</tr>
<tr>
<td>T-6</td>
<td>Streetcar Headways and Service Hours</td>
</tr>
</tbody>
</table>

### Motor Vehicle Projects

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-5a</td>
<td>Moody/Bond Couplet - Bond Avenue Extension</td>
</tr>
<tr>
<td>MV-5b</td>
<td>Moody/Bond Couplet - Moody Avenue realignment</td>
</tr>
<tr>
<td>MV-9a</td>
<td>South Portal – phase 1</td>
</tr>
<tr>
<td>MV-11a</td>
<td>Porter/Kelly Signalization and Kelly slip ramp closure</td>
</tr>
<tr>
<td>MV-11b</td>
<td>Kelly Ramp realignment</td>
</tr>
<tr>
<td>MV-14b</td>
<td>North Portal: Harbor Drive/River Parkway Improvement</td>
</tr>
<tr>
<td>MV-14c</td>
<td>North Portal: Kelly Avenue/Corbett Avenue Improvement</td>
</tr>
<tr>
<td>MV-14d</td>
<td>North Portal: Southbound Harbor Drive/Sheridan Street Improvement</td>
</tr>
<tr>
<td>MV-14e</td>
<td>North Portal: Sheridan Extension (Moody to Bond)</td>
</tr>
<tr>
<td>MV-21</td>
<td>Signalize Intersections – South Waterfront District</td>
</tr>
<tr>
<td>MV-28</td>
<td>Motor Vehicle Wayfinding</td>
</tr>
<tr>
<td>MV-30</td>
<td>I-5 Northbound Off-Ramp/SW Curry Street – Northbound Right turn closure from I-5 Off-Ramp</td>
</tr>
</tbody>
</table>

To summarize the in process and high priority projects, two graphics show the projects by mode. Figure 1-3 shows the in process and high priority bicycle/pedestrian and transit projects, while Figure 1-4 shows the in process and high priority motor vehicle projects.
FIGURE 1-3
TOP PRIORITY and IN-PROCESS PROJECTS
- BICYCLE/PEDESTRIAN
- TRANSIT
**Bicycle/Pedestrian Projects**

Through the course of this project, several projects were developed to improve pedestrian and bicycle circulation. Table 1-3 lists all of the bike and pedestrian projects and Figure 1-5 shows all of the projects as well as the correlating priority level. *Chapter 5: Pedestrian and Bike Plan* provides greater detail about each of these projects.

**Table 1-3: Proposed Pedestrian and Bicycle Projects**

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-1</td>
<td>South Waterfront Willamette Greenway Trail</td>
</tr>
<tr>
<td>BP-2</td>
<td>North of I-405 Connection</td>
</tr>
<tr>
<td>BP-4</td>
<td>Arthur Street Tunnel</td>
</tr>
<tr>
<td>BP-5</td>
<td>Arthur Street Connection and Steps</td>
</tr>
<tr>
<td>BP-6</td>
<td>Portland-Milwaukie Light Rail Bridge Project</td>
</tr>
<tr>
<td>BP-7</td>
<td>Macadam/City Center Ramp Connection</td>
</tr>
<tr>
<td>BP-8</td>
<td>Gibbs Street Bridge and Crossing Enhancements</td>
</tr>
<tr>
<td>BP-9</td>
<td>Gaines Street Pedestrian Bridge</td>
</tr>
<tr>
<td>BP-10</td>
<td>Corbett Avenue Traffic Calming Project</td>
</tr>
<tr>
<td>BP-11</td>
<td>Hamilton Street to South Portal Pedestrian/Bicycle Connection</td>
</tr>
<tr>
<td>BP-12</td>
<td>Slavin Rd Connection to Red Electric Trail</td>
</tr>
<tr>
<td>BP-13</td>
<td>Naito Pkwy Curb-Cut to Hawthorne Bridge</td>
</tr>
<tr>
<td>BP-14</td>
<td>4th Avenue/Lincoln Street Pedestrian Improvement</td>
</tr>
<tr>
<td>BP-16</td>
<td>Hood Avenue Sidewalk Enhancement – Porter St. to Gibbs St.</td>
</tr>
<tr>
<td>BP-17</td>
<td>South Moody Avenue Connection</td>
</tr>
<tr>
<td>BP-19</td>
<td>Richardson Street Connection</td>
</tr>
<tr>
<td>BP-20</td>
<td>Gibbs Street Promenade</td>
</tr>
<tr>
<td>BP-21</td>
<td>Corbett Avenue Uphill Bike Lane – Boundary to Hamilton</td>
</tr>
<tr>
<td>BP-22</td>
<td>Hood Avenue Crosswalk and Sidewalk Enhancement – Lane to Macadam</td>
</tr>
<tr>
<td>BP-23</td>
<td>Kelly Pedestrian Tunnel Closure and Crosswalk Replacement</td>
</tr>
<tr>
<td>BP-24a</td>
<td>West-end Ross Island Bridgehead Connection</td>
</tr>
<tr>
<td>BP-24b</td>
<td>Kelly Avenue bike lanes</td>
</tr>
<tr>
<td>BP-24c</td>
<td>Ramp Crossing of Kelly Ave to Naito Pkwy NB</td>
</tr>
<tr>
<td>BP-25</td>
<td>Naito Pedestrian Crossing at Porter St</td>
</tr>
<tr>
<td>BP-26</td>
<td>Hooker Street Pedestrian Boulevard between Naito and Kelly</td>
</tr>
<tr>
<td>BP-28</td>
<td>Moody Ave/ River Parkway Sidewalk Cut-Back</td>
</tr>
<tr>
<td>BP-29</td>
<td>Bike Enhancement of Grover St Underpass at Naito Pkwy</td>
</tr>
<tr>
<td>BP-30</td>
<td>Tram Bike Parking</td>
</tr>
<tr>
<td>BP-31a</td>
<td>Wayfinding (bicycle)</td>
</tr>
<tr>
<td>BP-31b</td>
<td>Wayfinding (pedestrian)</td>
</tr>
<tr>
<td>BP-32</td>
<td>Gibbs Bridge To Light Rail Bike Connection</td>
</tr>
<tr>
<td>BP-33</td>
<td>SW 1st Avenue Bicycle Improvements</td>
</tr>
<tr>
<td>BP-34</td>
<td>Harrison Uphill Bike Treatment</td>
</tr>
</tbody>
</table>
Transit Projects

Through the course of this project, twelve transit projects were developed. These projects are listed in Table 1-4 and shown in Figure 1-6. For more detail about each of these transit projects, Chapter 6: Transit Plan, can be referenced.

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-2</td>
<td>Multi-modal Transit Hub</td>
</tr>
<tr>
<td>T-3</td>
<td>Naito/Hooker Bus Stop Enhancement</td>
</tr>
<tr>
<td>T-4a</td>
<td>TriMet Line 35-Macadam Route Change and Stops</td>
</tr>
<tr>
<td>T-4b</td>
<td>North Portal Transit Improvements</td>
</tr>
<tr>
<td>T-4c</td>
<td>Bancroft Transit Improvements</td>
</tr>
<tr>
<td>T-5</td>
<td>Water Taxis</td>
</tr>
<tr>
<td>T-6</td>
<td>Streetcar Headways and Service Hours</td>
</tr>
<tr>
<td>T-8</td>
<td>Hamilton Street Funicular</td>
</tr>
<tr>
<td>T-9</td>
<td>Light Rail Transit</td>
</tr>
<tr>
<td>T-10</td>
<td>Bus Connection to National College of Natural Medicine</td>
</tr>
<tr>
<td>T-12</td>
<td>Streetcar to Lake Oswego</td>
</tr>
<tr>
<td>T-13</td>
<td>Streetcar through North District and Close the Loop</td>
</tr>
</tbody>
</table>
FIGURE 1-6
FUTURE TRANSIT NETWORK ALTERNATIVES
Motor Vehicle/Freight Projects

A total of 19 motor vehicle/freight projects were developed from this study. Several of the projects are related to one another but could be constructed independently or in phases. The motor vehicle projects are listed in Table 1-5 and show in Figure 1-7. For more detail about each of these motor vehicle projects, Chapter 7: Motor Vehicle Plan, can be referenced.

Table 1-5: Proposed Motor Vehicle Projects

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-1</td>
<td>Milwaukie Light Rail Traffic Signals and Improvement Project</td>
</tr>
<tr>
<td>MV-3</td>
<td>Sheridan Street Roadway Extension (SW 3rd Ave to SW Naito Parkway)</td>
</tr>
<tr>
<td>MV-5a</td>
<td>Moody/Bond Couplet - Bond Avenue Extension</td>
</tr>
<tr>
<td>MV-5b</td>
<td>Moody/Bond Couplet - Moody Avenue realignment</td>
</tr>
<tr>
<td>MV-9a</td>
<td>South Portal – phase 1</td>
</tr>
<tr>
<td>MV-9b</td>
<td>South Portal – phase 2</td>
</tr>
<tr>
<td>MV-11a</td>
<td>Porter/Kelly Improvement - Signalization and Kelly slip ramp closure</td>
</tr>
<tr>
<td>MV-11b</td>
<td>Porter/Kelly Improvement - Kelly Ramp realignment</td>
</tr>
<tr>
<td>MV-14b</td>
<td>North Portal: Harbor Drive/River Parkway Improvement</td>
</tr>
<tr>
<td>MV-14c</td>
<td>North Portal: Kelly Avenue/Corbett Avenue Improvement</td>
</tr>
<tr>
<td>MV-14d</td>
<td>North Portal: SB Harbor Drive/Sheridan Street Improvement</td>
</tr>
<tr>
<td>MV-14e</td>
<td>North Portal: Sheridan Street Extension (Moody Avenue to Bond Avenue)</td>
</tr>
<tr>
<td>MV-20</td>
<td>NB Macadam 3rd Lane</td>
</tr>
<tr>
<td>MV-21</td>
<td>Signalize Intersections – South Waterfront District</td>
</tr>
<tr>
<td>MV-24</td>
<td>Hawthorne Bridge/Naito Ramp Improvement</td>
</tr>
<tr>
<td>MV-25</td>
<td>SW Macadam Avenue /SW Boundary Street Improvement</td>
</tr>
<tr>
<td>MV-26</td>
<td>Arthur Street/1st Avenue Improvement</td>
</tr>
<tr>
<td>MV-28</td>
<td>Motor Vehicle Wayfinding</td>
</tr>
<tr>
<td>MV-30</td>
<td>I-5 Northbound Off-Ramp/SW Curry Street – Northbound Right turn closure from I-5 Off-Ramp</td>
</tr>
</tbody>
</table>
Area of Ross Island Bridge alternatives. See Chapter 7 for details.
FUNDING STRATEGY

A comprehensive funding strategy to provide direction on the implementation of projects was also developed as part of this project. This approach was developed over several months and incorporated input from the TAC, SAC, and the North Macadam Urban Renewal Advisory Committee. The Funding Strategy includes a matrix identifying potential funding sources for each project. A variety of funding sources, both public and private, were considered, including, but not limited to, North Macadam Urban Renewal Area Tax Increment Financing, Transportation System Development Charges, Local, State and Federal grants, and private Local Improvement Districts.


**FUNDING STRATEGY**

The North Macadam Transportation Strategy funding strategy identifies both public and private funding sources that can be utilized to develop the transportation system in and around the North Macadam Urban Renewal Area. The funding strategy is intended to provide City agencies and district stakeholders with a clearer understanding of the likely distribution of costs for each project and the total contribution anticipated from each funding source.

This funding strategy will also provide a guide for city bureaus and district stakeholders in how best to pursue the needed funding. Completing the transportation strategy and the funding strategy creates the potential for a North Macadam District legislative agenda in which all district stakeholders can use their common interest in furthering key projects to advocate for priority from outside sources.

**Total Cost**

The Top Priority Projects proposed in the Transportation Strategy total between $125.1 Million and $157.6 Million. The breakdown of project costs by mode is detailed below in Table 1-6.

<table>
<thead>
<tr>
<th>Top Priority Projects</th>
<th>Low Cost</th>
<th>Top Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicle improvements</td>
<td>98.5M</td>
<td>124.8M</td>
</tr>
<tr>
<td>Pedestrian and bicycle projects</td>
<td>6.6M</td>
<td>7.7M</td>
</tr>
<tr>
<td>Transit projects (district contribution)</td>
<td>20M</td>
<td>25M</td>
</tr>
<tr>
<td>Total Cost</td>
<td>125.1M</td>
<td>157.6M</td>
</tr>
</tbody>
</table>

**Funding**

The range of contributions proposed to come from each funding source is shown below in Figure 1-8. The low and high funding amount range varies by source. For some sources, like the city-wide TSDC, the proposed TSDC overlay or the North Macadam URA TIF, a specific amount has been designated with a greater amount of certainty so there is no difference between the low and the high figure. For other sources, the ranges vary considerably from the low to high figures. This reflects the unknown degree to which district projects might be able to obtain funding from each particular source.
Figure 1-8: Funding Source Distribution

**District Funding Contribution**

Based on the proposed ranges, district sources would contribute between 58 and 65 percent of the funding for transportation projects. Non-district sources would contribute between 35 and 42 percent of funding. Looking back at the character of the projects, approximately 48 – 51% of the total cost is for projects that primarily serve the district. The remaining projects serve both the district and the rest of the region and many are on streets with state jurisdiction such Hwy 43, US 26 or serve as ramps or frontage roads to I-5 and I-405.

Comparing the character of funding sources to the character of the projects (as shown in Table 1-7 and Figure 1-9) establishes that district sources will cover the funding needs for projects that serve primarily district users. District sources will also contribute to the improvement of adjacent facilities that serve both the district and the region.

**Table 1-7: District Share of Funding**

<table>
<thead>
<tr>
<th>District Based Funding</th>
<th>Low Amount</th>
<th>High Amount</th>
<th>Percent Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>District funding sources</td>
<td>$80M</td>
<td>$93M</td>
<td>58%-65%</td>
</tr>
<tr>
<td>Non-district funding sources</td>
<td>$43M</td>
<td>$67M</td>
<td>35%-42%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District Serving Projects</th>
<th>Low Amount</th>
<th>High Amount</th>
<th>Percent Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>District serving projects</td>
<td>$60M</td>
<td>$80M</td>
<td>48%-51%</td>
</tr>
<tr>
<td>District and regional serving projects</td>
<td>$65M</td>
<td>$77M</td>
<td>49%-52%</td>
</tr>
</tbody>
</table>
Figure 1-9: District and Non-District Based Funding Contributions

- URA Funding: 25-32%
- Proposed North Mac TSDC Overlay: 11-15%
- Private Dev: 8-9%
- LID: 10%-12%
- Other City Funding: 2-3%
- Regional Funding (ie MTIP): 2-3%
- Federal Funding: 5-6%
- State Funding: 12-16%
- TriMet(LRT): 8-9%
- City-wide TSDC: 5-6%

* Pie sizes display the average of the source funding range
PROJECT BACKGROUND
The North Macadam Urban Renewal Area (URA) is rapidly developing with residential, commercial and school uses. By 2030 traffic volumes are expected to grow by over 400% from 2005 traffic volumes\(^1\). In order to accommodate this growth, the transportation infrastructure needs to be improved across all modes.

There have been several previous studies that addressed issues within and around the URA District, but never a study that holistically addresses all the transportation needs and aspirations of the North Macadam URA. This study was completed with the intent to unify previous findings and to analyze the North Macadam URA as a whole entity. Findings from previous studies were incorporated into this plan, as well as addressing areas not yet studied. A summary of the previous studies is included in Appendix - A of this report.

The intent of this *North Macadam Transportation Development Strategy* was to focus on access points to and from the district, and travel within the district. Regional transportation issues were not addressed in detail within this plan due to the regional nature and context of potential improvements.

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\(^1\) *Source:* Metro Models: 2005 - Metro RTP with North and Central TAZ’s in the South Waterfront District reduced by 60% (see Land Use Memo in Appendix A); 2030 - Milwaukie LRT No Build Model.
In addition to evaluating access and determining projected transportation infrastructure needs, funding strategies were also explored to help identify how funding could be implemented to pay for high priority projects.

**PROJECT GOALS AND OBJECTIVES**

The purpose of this transportation study was to identify short term (within next ten years) and long term (within the next twenty years) transportation needs and projects within the North Macadam Urban Renewal District along with identifying project phasing, priorities, and a funding strategy. These transportation needs and projects will form the core of the *North Macadam Transportation Development Strategy*.

Several project goals were developed as part of the project scoping process that was conducted in 2007 to help guide the process and the outcome of the *North Macadam Transportation Development Strategy*. The following list outlines these project goals:

- **Balanced Transportation System**: Develop a multi-modal transportation system that provides safe and efficient options for transit, bicycle, pedestrian, freight and motor vehicle users and that includes parking management, transportation demand management (TDM), and transportation system management (TSM) strategies to enhance inter-modal connectivity within the North Macadam Urban Renewal Area.

- **Compatibility**: Develop a transportation system that is consistent with the City’s Comprehensive Plan and that coordinates with county, state and regional plans.

- **Coordination**: Coordinate with ongoing planning and development opportunities inside and outside of the North Macadam District, particularly within the study area.

- **Economic Development**: Provide a transportation system that fosters and maintains economic development, particularly in the North Macadam Urban Renewal Area.

- **Funding**: Develop a funding strategy that utilizes a mixture of funding sources that maximizes public and private partnerships.
Livability: Design and construct transportation facilities in a manner that enhances the livability of the South Portland Neighborhood and South Downtown.

Mobility: Develop and maintain a transportation system that accommodates future growth and provides practical, convenient access to, from, through and within the North Macadam District.

Priorities: Plan improvements to coincide with expected need and project phasing.

Sustainability: Provide an integrated, financially and environmentally sustainable transportation system that meets present needs while facilitating the needs of future generations.

Within the study area, some roadways are operated and maintained by the Oregon Department of Transportation (ODOT) while others are operated and maintained by the City of Portland. The issue of two different agencies operating and maintaining a network of roadways can sometimes lead to conflicting goals. Maintaining a balanced perspective between the two agencies was considered during development of the goals. The functional classification and roadway ownership is further detailed in Chapter 3: Existing Conditions of this report.

PROJECT PROCESS

Two key components to the success of this project were public involvement and the technical evaluation. The public involvement allowed for feedback and input from the community to be included in the project, and the technical evaluation created a method to analyze a range of projects and determine the best solution for identified transportation deficiencies.

Public Involvement

During the course of this project there was a continued effort to inform the public and gain feedback to incorporate into the project. The public involvement occurred through Stakeholder Advisory Committee meetings, Technical Advisory Committee meetings, open houses, presentations to neighborhood associations, and individual briefings for stakeholder groups. A website containing information was also available.
Regular monthly Stakeholder Advisory Committee (SAC) meetings were held to review project elements and progress, as well as to get feedback on these elements. Members of the SAC included community members, key agency representatives, property owners and developers. The general public was also welcome to attend the SAC meetings and provide input.

The Technical Advisory Committee (TAC) met on a regular basis throughout the project and supplied technical expertise for review of technically oriented elements. Members of the TAC consisted of representatives from Portland Department of Transportation (PDOT), Oregon Department of Transportation (ODOT), Portland Development Commission (PDC), Bureau of Planning (BOP), TriMet and the consultant team.

Two open houses were held at key points in the process and were well attended by the community members. One open house was held after developing several different transportation alternatives for the North Macadam URA. The second open house was held after specific projects had been developed and prioritized using feedback from the SAC and TAC members. At both open houses community members were invited to provide feedback and input about the projects, which was then incorporated into the transportation development strategy.

Additional meetings and briefings were held for interested parties during this process to provide a better understanding of the projects and implications to the surrounding area.

**Technical Evaluation**

The technical evaluation was done in two processes. One process focused on the motor vehicle environment while the other process focused on the pedestrian/bicycle and transit environment. The motor vehicle process had more quantitative evaluation, whereas the other modes were more qualitative in nature. This section gives a brief overview of both technical evaluation processes.

**Motor Vehicle**

The traffic operation modeling was completed using Synchro software and future year 2030 volumes were estimated using the regional travel demand model. Using the regional travel demand model and forecasting future volumes is a complex process and is
described in more detail in Chapter 4: Methodology and Assumptions.

The main scenarios evaluated for traffic operations included:

- 2007 AM and PM peak hour existing conditions
- 2030 PM peak hour No-Build: Existing roadway network
- 2030 PM peak hour Build: Future roadway network with proposed projects
- Short term analysis 2015, 2020 and 2025 PM peak hours

By completing the traffic operation analysis of the existing conditions, areas currently deficient were identified. Then using the same roadway network but with future year 2030 PM peak hour volumes, the roadway network was again analyzed to determine the full extent of traffic operation issues if no improvements were made to the system.

Certain roadway projects are already “planned” by the City of Portland, so the probability of no roadway improvements over the next 23 years is doubtful. These “planned” roadway projects are part of the Regional Transportation Plan’s (RTP’s) financially constrained project list\(^3\). This list contains projects already identified and likely to be constructed by the year 2030 given the current funding levels.

After accounting for projects on the RTP’s financially constrained list, and adding new potential projects to improve transportation deficiencies, traffic operations were again tested with the 2030 PM peak hour traffic volumes. This testing either confirmed the chosen projects or led to adjustments to ensure each project could accommodate the future year 2030 PM peak hour volumes.

Additional traffic operations were tested for intermediate years between 2007 and 2030 to help identify a timeframe when individual projects may be necessary. For these intermediate years, a linear growth factor and uniform growth throughout the North Macadam URA was assumed.

**Bicycle/Pedestrian and Transit Projects**

Bicycle, pedestrian and transit projects were primarily scoped by identifying deficiencies in the existing network and future

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connection needs. Some projects were identified in previous studies, and those projects were carried forward with this study. Project staff took several walking and bike tours, and a transit tour of the area, in order to gain first hand insight to the bike, pedestrian and transit needs of the area. Additionally, community members who use the bike, pedestrian and transit modes on a daily basis supplied input for these projects.

**PROJECT VETTING**

After determining which projects met future deficiency needs and connectivity/circulation needs, the projects for each mode of transportation went through a vetting process. The vetting process was based on a set of evaluation criteria (slightly different for each of the three project mode categories) used to rank each of the projects. The evaluation criteria was created by the project management team, with input from the TAC and SAC members, and then each project was rated on a scale of 1 to 5 on how well the project met each criteria. A score of 1 represented criteria not met and a score of 5 represented a criteria well fulfilled by the project. The specific evaluation criteria are described in Chapters 5-7 for each transportation mode plan.

For the pedestrian/bike and transit projects, the scoring from this process led directly to the list of prioritized projects. The motor vehicle project list was a little more complicated to prioritize, so additional factors were used to help evaluate the projects.

For the motor vehicle projects, the final prioritized project list was from a combination of factors:

- The scores received from the project ranking criteria;
- Project year of need;
- Percent contribution of traffic to/from the North Macadam URA traveling through the select project area; and
- Project feasibility (based on land use complications, ties to other projects, private development timeline, and other staff knowledge)

Ultimately, this process led to a final list of recommended projects for each mode of transportation (pedestrian/bike, transit, and motor vehicle/freight). Those final project lists were also ranked and prioritized through this vetting process.
The following sections provide an assessment of the existing transportation conditions within the North Macadam Transportation Development Strategy study area. The analysis focuses on current roadway characteristics, traffic volumes, heavy vehicle data, pedestrian/bicycle activity, transit service, parking and study intersection operations. The existing conditions section of this report will help evaluate and identify existing transportation deficiencies within the study area for all modes of travel.

STUDY AREA

The North Macadam Transportation Development Strategy study area is primarily focused on the area within the North Macadam Urban Renewal (URA) District boundary, which includes the South Waterfront District. Select intersections outside of the North Macadam URA boundary were also included based on their significance and/or proximity to the district. The study area intersections were selected based on input from the City of Portland and stakeholders within the study area\(^1\) and include intersections within the district and adjacent to the district. Figure 3-1 identifies the study area and intersections selected for analysis.

\(^1\) Stakeholders included members of the Portland Development Commission and the Urban Renewal Advisory Committee Commission (URAC) and other significant property owners in the area including: Portland State University, Oregon Health Science University and private developers.
The North Macadam study area is surrounded by several regional roadways including I-5, I-405, Macadam Avenue (OR 43) and US 26. Access to the district is limited to three major portals:

- SW Macadam Avenue/SW Bancroft Street
- River Parkway and Sheridan Street to Moody Avenue
- Macadam Avenue at Gaines Street and Curry Street

TRANSPORTATION FACILITIES

Although this study’s primary focus is the North Macadam Urban Renewal District, providing a summary of key roadways and transportation facilities that serve the district is important background information that develops the context for the study and helps evaluate the existing conditions of the study area. The transportation facilities, both in and out of the study area influence the North Macadam District.

Within the study area, I-5, I-405, Kelly Avenue, Hood Avenue, and Macadam Avenue (OR 43) are Oregon Department of Transportation (ODOT) facilities; the other roadways in the study area are maintained by the City of Portland. Both ODOT and the City of Portland classify roadways in their jurisdiction to help describe the use and purpose of each roadway. Interstate 5 and Interstate 405 are classified by ODOT as interstates; Macadam Avenue is classified as a district highway\(^2\). Kelly Avenue is also classified as a district highway by ODOT.

Functional Classification

The functional classification of roadways helps determine the nature of the facility for motor vehicle traffic (and other modes). Larger roadways that carry a higher volume of traffic typically have a higher functional classification as compared to smaller roadways with smaller traffic volumes. The motor vehicle functional classifications within the study area are shown in Figure 3-2 and are based on the City of Portland Transportation System Plan\(^3\) and the South Waterfront District Street Plan\(^4\). The traffic classification describes the type of traffic and land uses the street

\(^{2}\) Oregon Highway Plan, 1999. Table 4.
\(^{3}\) City of Portland Transportation System Plan, 2006 Technical Update adopted on April 5, 2007 (page 2-99)
should serve. Several arterial routes carry regional and other non-local traffic through the study area, including:

- **Barbur Boulevard** - this facility links the Capitol Highway-Beaverton Hillsdale Highway (OR 10) corridor to the regional highway system (I-405 and US 26) and downtown Portland through 5th-6th-Broadway/Arthur Street
- **Naito Parkway** - this facility connects Barbur Boulevard to the Ross Island Bridge, downtown, and to other Willamette River Bridges
- **Kelly Avenue/Arthur Street** - this facility connects the Ross Island Bridge and Macadam Avenue to the regional highway system and into downtown through 5th-6th Avenue/Broadway/Arthur Street
- **Macadam Avenue/Hood Avenue** - this couplet links Macadam Avenue (OR 43) to the regional highway system (I-5, I-405, and Ross Island Bridge) and downtown Portland

Study intersection data was collected through field observations. This data included an inventory of lane geometry at intersections (number of turning lanes), intersection traffic control (signal, stop sign), on-street parking locations, transit stop locations and observations of traffic operations during the AM and PM peak hours. The current study intersection lane geometry and traffic control are shown in Figure 3-4.

**Count Data**

The majority of the traffic count data was collected at the study intersections in early November 2007 to establish a baseline for current operating conditions. The remaining traffic counts were conducted between March and November of 2007. Study intersection performance focused on the morning peak period (7 AM to 9 AM) and the evening peak period (4 PM to 6 PM). Twenty-four hour traffic count data was also collected throughout the study area at key locations. These counts are helpful in understanding the peak conditions of traffic during the entire day. The Average Daily Traffic Volumes for several locations are shown in Figure 3-3. The existing traffic volumes at study area intersections are summarized in Figure 3-4.
TRAFFIC OPERATIONS

To determine the current performance at study intersections, an operational analysis was conducted based on the weekday AM and PM peak hour traffic volumes, lane configurations and traffic controls shown in Figures 3-3 and 3-4. The capacity analysis was based on methodology from the 2000 Highway Capacity Manual\(^5\) to produce levels of service, average vehicle delays, and volume to capacity ratios for assessing any existing operational deficiencies.

Level of Service (LOS), delay, and volume to capacity (v/c) ratios are typically used as measures of effectiveness to evaluate intersection operations. LOS is similar to a “report card” rating based upon average vehicle delay. Level of Service A, B, and C indicate conditions where traffic moves about without significant delays during periods of peak hour travel demand. Level of Service D and E are progressively worse peak hour operating conditions, with Level of Service F representing long delays and vehicle queues and is commonly considered to be a “failing” condition.

A volume to capacity (v/c) ratio is the peak hour traffic volume at an intersection divided by the maximum volume that intersection can accommodate. For example, a v/c ratio equivalent to 0.80 indicates that peak hour traffic is using 80 percent of the intersection’s capacity. If traffic volumes exceed capacity, queues will form and will lengthen until demand subsides below the available capacity. As the v/c ratio approaches 1.0, intersection operation becomes unstable and small disruptions can cause traffic flow to break down.

The majority of the intersections are city facilities, for which mobility standards have been adopted as part of the City of Portland Transportation System Plan. The intersection operational standards are based on the type of intersection control. LOS D is the minimum acceptable design standard for a signalized intersection.\(^6\) For unsignalized intersections, LOS E represents the minimum acceptable design standard. This standard applies to the overall performance at an all-way stop controlled intersection and the minor street approach of a two-way stop controlled intersection. Macadam Avenue (OR 43) is a state facility, for

\(^6\) City of Portland Transportation System Plan, 2006 Technical Update adopted on April 5, 2007.
which mobility standards have been adopted as part of the *1999 Oregon Highway Plan*. ODOT’s preferred performance standard for OR 43 is a maximum volume-to-capacity ratio of 0.99 and applies to all intersections on SW Macadam Avenue (OR 43).

Intersections are typically the controlling bottlenecks of traffic flow. The ability of a roadway system to carry traffic efficiently is nearly always diminished in their vicinity. Table 3-1 summarizes the intersection operating conditions for the AM and PM peak periods.

### Table 3-1: Existing Study Area Intersection Operations

<table>
<thead>
<tr>
<th>Intersection</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>Signalized Intersections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison Street/Naito Parkway</td>
<td>20.0</td>
<td>C</td>
</tr>
<tr>
<td>Arthur Street/1st Avenue</td>
<td>21.2</td>
<td>C</td>
</tr>
<tr>
<td>Hamilton Court/Macadam Ave</td>
<td>7.4</td>
<td>A</td>
</tr>
<tr>
<td>Boundary Street/Macadam Ave</td>
<td>21.7</td>
<td>C</td>
</tr>
<tr>
<td>4th Avenue/Lincoln Street</td>
<td>8.0</td>
<td>A</td>
</tr>
<tr>
<td>Montgomery Street/Harbor Drive</td>
<td>11.5</td>
<td>B</td>
</tr>
<tr>
<td>Harrison Street/Harbor Drive</td>
<td>14.1</td>
<td>B</td>
</tr>
<tr>
<td>Curry Street/Macadam Avenue</td>
<td>14.4</td>
<td>B</td>
</tr>
<tr>
<td>Moody Avenue/Gibbs Street</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Macadam Avenue/Gaines Street</td>
<td>5.0</td>
<td>A</td>
</tr>
<tr>
<td>Moody Avenue/River Parkway</td>
<td>33.6</td>
<td>C</td>
</tr>
<tr>
<td>Moody Avenue/River Drive</td>
<td>7.8</td>
<td>A</td>
</tr>
<tr>
<td>Moody Avenue/Sheridan Street</td>
<td>14.7</td>
<td>B</td>
</tr>
<tr>
<td>1st Avenue/Lincoln</td>
<td>14.7</td>
<td>B</td>
</tr>
<tr>
<td>1st Avenue/Harrison Street</td>
<td>20.3</td>
<td>C</td>
</tr>
<tr>
<td>Broadway Street/Lincoln Street</td>
<td>22.1</td>
<td>C</td>
</tr>
<tr>
<td>Caruthers Street/Barbur Blvd</td>
<td>28.5</td>
<td>C</td>
</tr>
<tr>
<td>Sheridan Street/Barbur Blvd</td>
<td>25.5</td>
<td>C</td>
</tr>
<tr>
<td>Hooker Street/Barbur Boulevard</td>
<td>3.5</td>
<td>A</td>
</tr>
<tr>
<td>Bancroft Street/Macadam Ave</td>
<td>16.0</td>
<td>B</td>
</tr>
</tbody>
</table>

### Table 3-1 continued

<table>
<thead>
<tr>
<th>Intersection</th>
<th>AM Peak Hour</th>
<th></th>
<th>PM Peak Hour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
<td>Average Intersection V/C</td>
<td>Highest Approach V/C</td>
</tr>
<tr>
<td>Hamilton Street/Barbur Blvd</td>
<td>15.7</td>
<td>B</td>
<td>0.89</td>
<td>0.91(NB)</td>
</tr>
<tr>
<td>Market Street/Naito Parkway</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay Street/Naito Parkway</td>
<td>28.8</td>
<td>C</td>
<td>0.91</td>
<td>0.99(WB)</td>
</tr>
<tr>
<td>Sheridan Street/5th Avenue</td>
<td>6.5</td>
<td>A</td>
<td>0.31</td>
<td>0.66(EB)</td>
</tr>
<tr>
<td>Broadway Avenue/6th Street</td>
<td>23.3</td>
<td>C</td>
<td>0.85</td>
<td>0.99(NB)</td>
</tr>
<tr>
<td>Broadway Avenue/5th Street</td>
<td>22.4</td>
<td>C</td>
<td>0.79</td>
<td>0.89(NB)</td>
</tr>
<tr>
<td>Bancroft Street/Moody Avenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bancroft Street/Bond Avenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unsignalized intersections</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawthorne Bridge/Naito Parkway</td>
<td>&gt;80</td>
<td>A/F</td>
<td>&gt;1.0</td>
<td>&gt;80</td>
</tr>
<tr>
<td>Curry Street/Bond Avenue</td>
<td>11.6</td>
<td>A/B</td>
<td>0.31</td>
<td>8.6</td>
</tr>
<tr>
<td>Harbor Drive (southbound off-ramp)/Sheridan Street</td>
<td>8.3</td>
<td>A/A</td>
<td>0.16</td>
<td>8.0</td>
</tr>
<tr>
<td>Kelly Avenue/Corbett Avenue</td>
<td>3.6</td>
<td>A/A</td>
<td>0.04</td>
<td>0.8</td>
</tr>
<tr>
<td>Gibbs Street/Kelly Avenue</td>
<td>12.4</td>
<td>A/B</td>
<td>0.02</td>
<td>15.0</td>
</tr>
<tr>
<td>Kelly Avenue/Whitaker Street</td>
<td>11.1</td>
<td>A/B</td>
<td>0.47</td>
<td>17.2</td>
</tr>
<tr>
<td>Curry Street/Kelly Avenue</td>
<td>9.4</td>
<td>A/A</td>
<td>0.34</td>
<td>11.7</td>
</tr>
<tr>
<td>Curry Street/Moody Avenue</td>
<td>9.7</td>
<td>A/A</td>
<td>0.31</td>
<td>9.4</td>
</tr>
<tr>
<td>Hood Avenue/Gaines Street</td>
<td>16.4</td>
<td>A/C</td>
<td>0.49</td>
<td>17.4</td>
</tr>
<tr>
<td>Gaines Street/Moody Avenue</td>
<td>7.6</td>
<td>A/A</td>
<td>0.16</td>
<td>7.7</td>
</tr>
<tr>
<td>Gaines Street/Bond Avenue</td>
<td>7.6</td>
<td>A/A</td>
<td>0.12</td>
<td>7.4</td>
</tr>
<tr>
<td>Corbett Avenue/Lane Street</td>
<td>10.8</td>
<td>A/B</td>
<td>0.02</td>
<td>15.7</td>
</tr>
<tr>
<td>Hood Avenue/Lane Street</td>
<td>13.9</td>
<td>A/B</td>
<td>0.48</td>
<td>13.7</td>
</tr>
<tr>
<td>Abernethy Street/Macadam Ave</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>30.5</td>
</tr>
<tr>
<td>Hamilton Street/Macadam Ave</td>
<td>33.9</td>
<td>A/B</td>
<td>0.75</td>
<td>25.4</td>
</tr>
<tr>
<td>Barbur Boulevard/Whitaker St</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>34.2</td>
</tr>
</tbody>
</table>

**SOURCE:** DKS Associates

LOS = Level of Service  
A/A = major street LOS/minor street LOS  
Signalized delay = Average intersection delay in seconds  
Unsignalized delay = Highest minor street approach delay  
V/C = Volume-to-capacity ratio
Motor Vehicle Performance

Based on the isolated intersection analysis, all of the intersections operate with a LOS D or better, with the exception of Naito Parkway/Madison Street (Hawthorne Bridge). Field observations indicate intersection and/or roadway operations outside of the district contribute to significant vehicle congestion, queuing and vehicle delays at several intersections and roadway links within the district. The vehicle congestion areas are summarized in Figure 3-5.

The Willamette River and Interstate-5 limit access and circulation opportunities to the majority of the district. Access to areas east of I-5 is limited to three primary portals including:

- SW Macadam Avenue/SW Bancroft Street
- River Parkway and Sheridan Street to Moody Avenue
- Macadam Avenue at Gaines Street and Curry Street

Eastbound PM peak hour vehicle congestion on the Ross Island Bridge creates congestion and queuing within the district on the approach roadways to the bridge. Field observations indicate queues during the PM peak hour extend from the approach ramps back towards Broadway and along the Naito Parkway and the Kelly Avenue/Hood Avenue approaches.

Vehicle congestion occurs during peak hours in the area around Broadway/4th Avenue/5th Avenue/6th Avenue due to access and circulation constraints to the city center and Interstate 405. Vehicles traveling northbound to access Interstate-405 utilize the left most lane on Broadway since the on-ramp is only one lane; this lane imbalance contributes to queuing that extends onto Arthur Street and Barbur Boulevard.

Vehicle congestion also occurs during peak hours in both directions on Naito Parkway between Harrison Street and Madison Street (Hawthorne Bridge). For vehicles traveling northbound, the unsignalized approach to the Hawthorne Bridge contributes to queuing that extends through the adjacent signalized intersections at Clay Street, Market Street and Harrison Street.

A number of the current regional routes that service the district have congestion during the AM and PM peak hours.
Field observations during the PM peak hour showed significant queuing for northbound traffic on Corbett Avenue caused by a four way stop controlled intersection at Corbett Avenue and Hamilton Street. This four-way stop is located approximately 1000 feet north of the I-5 Northbound Off-Ramp to Corbett Avenue and field observations showed the northbound queue on Corbett Avenue extended beyond the I-5 Off-Ramp during the PM peak hour.

**TRAVEL TIME SURVEYS**

Travel time runs were performed on two corridors through the study area to evaluate system performance and to help determine the approximate time it takes a vehicle to travel through the study area. Traffic volumes are higher during the PM peak hour and the travel times that were conducted between 4 PM and 6 PM represent the worst-case conditions. Two routes were selected to generally represent travel through the study area and evaluate most of the study area intersections. Five travel time runs were conducted and averaged for each of the routes. The travel time routes (conducted in both the northbound and southbound directions) include:

- **Route 1**: Macadam Avenue- Boundary Street intersection to Broadway/Jackson Street intersection via Macadam Avenue and Kelly Avenue/Corbett Avenue
- **Route 2**: Natio Parkway (South of I-405 to SW Columbia Street)

Travel time runs help evaluate a corridor’s traffic operations by estimating the average speed over segments and associating an LOS with those segments. These travel time runs help to determine areas that have excessive delay along a corridor. Table 3-2 and Table 3-3 summarize the results of the travel time runs for the selected routes. Figure 3-6 illustrates the travel time routes and the corresponding arterial level of service.
### Table 3-2: Travel Time Results for Route 1 (SW Boundary Street to SW Jackson Street)

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>Direction</th>
<th>Distance (miles)</th>
<th>Average Time (sec)</th>
<th>Average Speed (mph)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macadam Avenue</td>
<td>SW Boundary Street to SW Hamilton Court</td>
<td>Northbound</td>
<td>0.36</td>
<td>47</td>
<td>28</td>
<td>A</td>
</tr>
<tr>
<td>Macadam Avenue</td>
<td>SW Hamilton Court to SW Bancroft Street</td>
<td>Northbound</td>
<td>0.21</td>
<td>29</td>
<td>28</td>
<td>A</td>
</tr>
<tr>
<td>Macadam Avenue</td>
<td>SW Bancroft Street to SW Abernethy Street</td>
<td>Northbound</td>
<td>0.16</td>
<td>17</td>
<td>34</td>
<td>A</td>
</tr>
<tr>
<td>Macadam Avenue</td>
<td>SW Abernethy Street to SW Gaines Street</td>
<td>Northbound</td>
<td>0.09</td>
<td>10</td>
<td>33</td>
<td>A</td>
</tr>
<tr>
<td>Macadam Avenue</td>
<td>SW Gaines Street to SW Curry Street</td>
<td>Northbound</td>
<td>0.10</td>
<td>20</td>
<td>20</td>
<td>B</td>
</tr>
<tr>
<td>Macadam Avenue</td>
<td>SW Curry Street to SW Corbett Street</td>
<td>Northbound</td>
<td>0.38</td>
<td>70</td>
<td>25</td>
<td>B</td>
</tr>
<tr>
<td>Kelly Avenue</td>
<td>SW Corbett Street to SW 1st Avenue</td>
<td>Northbound</td>
<td>0.19</td>
<td>122</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>Arthur Street</td>
<td>SW 1st Avenue to 4th Avenue</td>
<td>Northbound</td>
<td>0.26</td>
<td>68</td>
<td>15</td>
<td>C</td>
</tr>
<tr>
<td>Arthur Street</td>
<td>SW 4th Avenue to SW 6th Avenue</td>
<td>Northbound</td>
<td>0.11</td>
<td>57</td>
<td>7</td>
<td>E</td>
</tr>
<tr>
<td>6th Avenue</td>
<td>SW 6th Avenue to SW Jackson</td>
<td>Northbound</td>
<td>0.16</td>
<td>30</td>
<td>19</td>
<td>B</td>
</tr>
<tr>
<td><strong>Average Northbound Total Results</strong></td>
<td></td>
<td></td>
<td><strong>2.0</strong></td>
<td><strong>470</strong></td>
<td><strong>16</strong></td>
<td><strong>C</strong></td>
</tr>
<tr>
<td>Broadway Street</td>
<td>SW Jackson to SW Lincoln Street</td>
<td>Southbound</td>
<td>0.09</td>
<td>35</td>
<td>9</td>
<td>E</td>
</tr>
<tr>
<td>Broadway Street</td>
<td>SW Lincoln Street to SW 6th Avenue</td>
<td>Southbound</td>
<td>0.08</td>
<td>39</td>
<td>8</td>
<td>E</td>
</tr>
<tr>
<td>5th Avenue</td>
<td>SW 6th Avenue to SW Sheridan Street</td>
<td>Southbound</td>
<td>0.15</td>
<td>99</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>Sheridan Street</td>
<td>SW Sheridan Street to SW 4th Avenue</td>
<td>Southbound</td>
<td>0.05</td>
<td>33</td>
<td>5</td>
<td>F</td>
</tr>
<tr>
<td>Arthur Street</td>
<td>SW 4th Avenue to SW 1st Avenue</td>
<td>Southbound</td>
<td>0.24</td>
<td>204</td>
<td>4</td>
<td>F</td>
</tr>
<tr>
<td>Kelly Avenue</td>
<td>SW 1st Avenue to SW Gibbs Street</td>
<td>Southbound</td>
<td>0.50</td>
<td>215</td>
<td>8</td>
<td>E</td>
</tr>
<tr>
<td>Hood Avenue</td>
<td>SW Gibbs Street to SW Gaines Street</td>
<td>Southbound</td>
<td>0.23</td>
<td>41</td>
<td>20</td>
<td>B</td>
</tr>
<tr>
<td>Hood Avenue</td>
<td>SW Gaines Street to SW Lane Street</td>
<td>Southbound</td>
<td>0.05</td>
<td>6</td>
<td>32</td>
<td>A</td>
</tr>
<tr>
<td>Hood Avenue/Macadam Avenue</td>
<td>SW Lane Street to SW Hamilton Court</td>
<td>Southbound</td>
<td>0.41</td>
<td>47</td>
<td>32</td>
<td>A</td>
</tr>
<tr>
<td>Macadam Avenue</td>
<td>SW Hamilton Court to SW Boundary Street</td>
<td>Southbound</td>
<td>0.36</td>
<td>44</td>
<td>29</td>
<td>A</td>
</tr>
<tr>
<td><strong>Average Southbound Total Results</strong></td>
<td></td>
<td></td>
<td><strong>2.16</strong></td>
<td><strong>763</strong></td>
<td><strong>10</strong></td>
<td><strong>D</strong></td>
</tr>
</tbody>
</table>

SOURCE: **DKS Associates**
As shown in Table 3-2, for the two mile segment, the average LOS based on the amount of delay is LOS D for southbound travel and LOS C for northbound travel. Although these results indicate adequate operations, during the PM peak period there are several critical segments where the conditions degrade to LOS F and indicate significant congestion. Vehicles traveling northbound experience excessive delay west of Arthur Street towards downtown and I-405. The arterial LOS along this segment degrades from LOS C to LOS F, which represents low travel speeds and congested conditions. The trend is similar in the southbound direction; vehicles traveling out of downtown destined to the Ross Island Bridge or South Portland experience significant delay beginning north of I-405 on SW Broadway and extending south of the Ross Island Bridge Ramps.

### Table 3-3: Travel Time Results for Route 2 (I-405 to SW Columbia Street)

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>Direction</th>
<th>Distance (miles)</th>
<th>Average Time (sec)</th>
<th>Average Speed (mph)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naito Parkway</td>
<td>I-405 Bridge to SW Harrison Street</td>
<td>Northbound</td>
<td>0.31</td>
<td>324</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Harrison Street to SW Market Street</td>
<td>Northbound</td>
<td>0.14</td>
<td>327</td>
<td>1</td>
<td>F</td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Market Street to SW Clay Street</td>
<td>Northbound</td>
<td>0.05</td>
<td>27</td>
<td>13</td>
<td>D</td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Clay Street to SW Columbia Street</td>
<td>Northbound</td>
<td>0.05</td>
<td>6</td>
<td>21</td>
<td>B</td>
</tr>
<tr>
<td><strong>Average Northbound Total Results</strong></td>
<td></td>
<td></td>
<td><strong>0.55</strong></td>
<td><strong>685</strong></td>
<td><strong>3</strong></td>
<td><strong>F</strong></td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Columbia Street to SW Clay Street</td>
<td>Southbound</td>
<td>0.04</td>
<td>21</td>
<td>8</td>
<td>F</td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Clay Street to SW Market Street</td>
<td>Southbound</td>
<td>0.53</td>
<td>11</td>
<td>17</td>
<td>C</td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Market Street to SW Harrison Street</td>
<td>Southbound</td>
<td>0.14</td>
<td>97</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>Naito Parkway</td>
<td>SW Harrison Street to I-405 Bridge</td>
<td>Southbound</td>
<td>0.28</td>
<td>37</td>
<td>26</td>
<td>A</td>
</tr>
<tr>
<td><strong>Average Southbound Total Results</strong></td>
<td></td>
<td></td>
<td><strong>0.51</strong></td>
<td><strong>166</strong></td>
<td><strong>11</strong></td>
<td><strong>D</strong></td>
</tr>
</tbody>
</table>

**SOURCE:** DKS Associates

As shown in Table 3-3, the average delay in the southbound direction operates with a LOS D; however segments within the corridor operate at LOS F. Vehicles traveling in the northbound direction experience excessive delay (nearly 3 times the delay experienced in the southbound direction) for the majority of the corridor. The SW Clay Street/SW Market Street couplet provides access to and from I-5.
SPEED SURVEY DATA

Speed survey data was gathered within the study area at select locations west of the South Waterfront area. This area is primarily residential neighborhoods, with low posted speeds (generally 25 mph). These speed surveys track the volume and speed of vehicles as they pass a point on the roadway over a 24-hour time period. Table 3-4 summarizes the results of the speed survey data collected on several streets west of the study area, intended to determine the volumes and speeds of vehicles passing through the residential neighborhood.

Table 3-4: Speed Survey Data Results

<table>
<thead>
<tr>
<th>Location</th>
<th>Direction</th>
<th>Posted Speed</th>
<th>Average Speed</th>
<th>85th Percentile Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corbett Avenue south of Curry Street</td>
<td>Northbound</td>
<td>30 mph</td>
<td>28 mph</td>
<td>34 mph</td>
</tr>
<tr>
<td>Corbett Avenue south of Curry Street</td>
<td>Southbound</td>
<td>30 mph</td>
<td>27 mph</td>
<td>34 mph</td>
</tr>
<tr>
<td>Kelly Avenue south of Gibbs Street</td>
<td>Northbound</td>
<td>25 mph</td>
<td>16 mph</td>
<td>24 mph</td>
</tr>
<tr>
<td>Kelly Avenue south of Gibbs Street</td>
<td>Southbound</td>
<td>25 mph</td>
<td>20 mph</td>
<td>27 mph</td>
</tr>
<tr>
<td>Gaines Street east of Corbett Avenue</td>
<td>Eastbound</td>
<td>25 mph</td>
<td>16 mph</td>
<td>22 mph</td>
</tr>
<tr>
<td>Gaines Street east of Corbett Avenue</td>
<td>Westbound</td>
<td>25 mph</td>
<td>16 mph</td>
<td>24 mph</td>
</tr>
<tr>
<td>Corbett Avenue south of Abernethy Street</td>
<td>Northbound</td>
<td>30 mph</td>
<td>27 mph</td>
<td>34 mph</td>
</tr>
<tr>
<td>Corbett Avenue north of Abernethy Street</td>
<td>Southbound</td>
<td>30 mph</td>
<td>27 mph</td>
<td>34 mph</td>
</tr>
</tbody>
</table>

SOURCE: DKS Associates

The 85th percentile speed is used as a measure of the upper limit of reasonable speed for the prevailing conditions on a roadway. The 85th percentile speed represents a condition when 15% of the vehicles surveyed were traveling faster than the 85th percentile speed and 85% of the vehicles were traveling lower than the 85th percentile speed. As shown in Table 3-4, 85th percentile speeds indicate that vehicles traveling at the selected locations are within reasonable limits (within 5 mph of the posted speed limit).

VEHICLE COLLISION HISTORY

Collision data for the study area intersections was obtained from the Oregon Department of Transportation collects collision data along its corridors. The last three years of available crash data (2004-2006) were obtained for the study area intersections. The crash data indicated that there were no fatal crashes within the study area over the 3-year analysis time period. One collision involving a pedestrian/bicyclist was reported at SW Broadway/SW
6th Avenue and another was reported at SW 1st Avenue/SW Harrison Street.

Another means of comparing safety data is to calculate the collision rate at an intersection per million entering vehicles. A collision rate greater than 1.0 collisions per million entering vehicles can indicate locations where further study might be warranted. Within the study area, all of the crash rates were below 0.75, with the exception of SW Kelly Avenue/SW Whitaker Street which had a collision rate of 0.78 and was the highest rate within the study area. A complete table that summarizes the number of collisions over the past three years at the study area intersections and their calculated collision rates per million entering vehicles is included in the appendix.

The City of Portland also maintains a High Accident Location (HAL) list that ranks City facilities based on crash values, crash value rates per million entering vehicles, and total number of crashes. There are 395 intersections identified on the list. Based on the most recent HAL ranking (2001-2004)\(^8\), none of the study area intersections are within the top 100, but three intersections are included on the list:

- SW Harrison Street/Naito Parkway
- SW Boundary Street/SW Macadam Avenue
- SW Barbur Boulevard/SW Hamilton Street

**FREIGHT**

Truck activity refers to medium and/or heavy vehicles traveling on the roadway that have more than four wheels, including multi-axle units as well as delivery trucks and buses. The study area classifies key roadways differently based on their character for serving freight movements; the freight classifications designated by the City of Portland TSP are shown in Figure 3-7.

The heavy vehicle percentages and volumes for the AM and PM peak hours at the study area intersections are shown in Figure 3-7. Heavy vehicle volumes range from 1% to 14% of total traffic during the AM and PM peak hours. Generally, heavy vehicle volumes are higher during the AM peak hour and throughout the day, as compared to the PM peak hour. The truck percentages are generally the highest on Moody Avenue and Bond Avenue

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\(^8\) High Accident Locations (2001-2004) obtained from the City of Portland.
between Curry Street and Gaines Street and can most likely be attributed to construction activity in the South Waterfront area. The roadways with the largest amount of heavy vehicles include: Broadway Street and Arthur Street.

Two 24-hour classification counts were conducted on Macadam Avenue and the I-5 off-ramp at Macadam Avenue. For these counts, heavy vehicles included six wheeled double-axle trucks and trucks with multi-unit axles; this classification does not include delivery trucks or buses. At both locations heavy vehicle traffic was relatively steady between the hours of 6 AM and 4 PM, with higher heavy vehicle volumes on Macadam Avenue. Over the 24 hour period Macadam Avenue had a total of 1,090 heavy vehicles and the I-5 Northbound Off-Ramp had a total of 349 heavy vehicles.

PARKING

An on-street parking inventory was conducted within the North Macadam Urban Renewal District to determine the number of on-street parking spaces and corresponding time limit restrictions. The on-street parking is summarized in Table 3-5. Parking is restricted on SW Naito Parkway, SW Moody Avenue or SW Macadam Avenue (OR 43). Figure 3-8 illustrates the on-street parking restrictions within the North Macadam URA district. Several of the parking spots located West of SW Water Avenue are designated as Zone F parking, which requires a City issued permit to park for longer than two hours. South of SW Gaines Street, several available sparking spaces do not have posted time restrictions at this time but as development continues in the area, restrictions would be posted.

Table 3-5: On-street Parking Inventory within the North Macadam URA District

<table>
<thead>
<tr>
<th>Location</th>
<th>Short-term Parking</th>
<th>Long-term Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 minutes</td>
<td>90 minutes</td>
</tr>
<tr>
<td>Mitchell Street</td>
<td>Bancroft St</td>
<td>0</td>
</tr>
<tr>
<td>Bancroft Street</td>
<td>Gibbs St</td>
<td>0</td>
</tr>
<tr>
<td>Gibbs Street</td>
<td>Sheridan St</td>
<td>0</td>
</tr>
<tr>
<td>Sheridan Street (west of Harbor Dr)</td>
<td>Harrison St</td>
<td>2</td>
</tr>
<tr>
<td>Sheridan St (east of Harbor Dr)</td>
<td>Montgomery St</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Note: *Parking is 2-hour except by Zone F permit
Data is from January 2008.
PEDESTRIAN

The pedestrian network consists of sidewalks, pedestrian bridges, and off-street paths. Sidewalks are present on most streets within the study area. There are several significant pedestrian generators within the study area including: the Oregon Health and Sciences University, the College of Naturopathic Medicine, Willamette Greenway Trail, the aerial tram, transit connections into the downtown core as well as local businesses.

Off-street trails also serve pedestrian activity within and in the vicinity of the study area. The Willamette Greenway Trail is a north-south trail that extends throughout the study area along the Willamette River. The off-street trail along Terwilliger Boulevard is another north-south route that connects OHSU and several other recreational and commuter trails. The *Southwest Urban Trails plan⁹* also identifies the existing trail connection between Terwilliger Boulevard and the North Macadam District and the Willamette Greenway Trail via an off-street trail and Whitaker Street. The existing connection is constrained by I-5; however, a pedestrian bridge crossing is currently in the preliminary design stage at Gibbs Street that will complete the east-west connection to the district. From the south, there is also the potential Red Electric Trail which is an off-street/shared roadway connection along Slavin Road that connects to Corbett Avenue.

Similar to motor-vehicle access into the district, pedestrian facilities also have significant barriers (e.g. Interstate-5, Ross Island Bridge Ramps/Kelly Street vicinity) that limit access into and within the district. Access into the district primarily occurs from the north (SW Moody Avenue) and the south (Willamette Greenway Trail). The Naito Parkway and Ross Island Bridge ramps also form physical barriers that inhibit safe, convenient pedestrian circulation in the vicinity. These barriers and pedestrian deficiencies require significant out-of-direction travel or crossings at unmarked locations for pedestrians trying to access the North Macadam District from the west.

Access to the district from the west is also limited by several high volume roadways with wide cross-sections and/or no pedestrian crossing facilities that pose challenges to the pedestrian environment. Pedestrian gaps in the network include: connections to existing multi-use trails, limited pedestrian crossing opportunity

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along Barber Boulevard, Naito Parkway and Interstate-5, and gaps in the sidewalk system and way finding signage.

Pedestrian crossing counts were performed within the study area to determine the pedestrian activity levels at study area intersections. Figure 3-9 summarizes the pedestrian volumes at study intersections during the AM and PM peak period. The highest pedestrian activity during the AM peak period occurs at SW 4th Avenue/SW Lincoln Street (107 pedestrian crossings) near Portland State University and at SW Arthur Street/SW 1st Street (135 pedestrian crossings). During the PM peak period, pedestrian crossing volumes are highest at SW Naito Parkway/SW Harrison Street (112 pedestrian crossings) and on SW Moody Avenue at SW Gaines Street (103 pedestrian crossings) and at SW Curry Street (87 pedestrian crossings).

Similar to motor-vehicle classifications, the City of Portland designates pedestrian facilities. The majority of the study area is classified as a pedestrian district, with several roadways also identified as City Walkways. The pedestrian classifications (per the City of Portland TSP) are also shown on Figure 3-9.

**BICYCLE**

Bicycle facilities within the study area include designated bicycle lanes, bicycle routes and off-street bicycle paths and trails. Most streets within the study area do not have bicycle facilities and operate as a shared facility with motor vehicles. Streets with low vehicle volumes and slow speeds do not need delineated bike lanes, as right-of-way under these conditions can be shared between motor vehicles and bicycles. The bicycle classifications (per the City of Portland TSP), existing bicycle facilities and AM and PM peak hour bicycle activity at the study area intersections are also shown on Figure 3-10.

From the north, bicycle lanes on SW Moody Avenue serve the North Macadam district. Marked bicycle lanes extend from SW River Parkway to SW Bancroft Street. From the south, bicycle access is provided via the Willamette Greenway Trail or on Macadam Avenue (which does not have bicycle lanes). Elsewhere within the North Macadam Urban Renewal District, marked bicycle lanes are limited.
Generally, bicycle activity within the North Macadam Urban Renewal District is between zero and ten bicycle trips traveling through the study intersections during the peak periods. The highest bicycle activity during both the AM and PM peak periods occurs on the Hawthorne Bridge (at Naito Parkway), with approximately 210 eastbound bicycle trips through the intersection. The intersection at SW 4th Avenue/SW Lincoln Street, near Portland State University also has significant bicycle volumes traveling through the intersection (greater than 50 bicycles entering the intersection) during the AM and PM peak periods.

Several of the bicycle counts conducted within the district were done in November and may underestimate some of the bicycle travel that may occur throughout the year, specifically during the summer months. The City of Portland 10 conducted bicycle counts between July and September of 2007. The daily bicycle counts at Moody Avenue/Gibbs Street were approximately 1,250 over a 24-hour period. As compared to the 2006 daily counts conducted by the City of Portland, bicycle volumes at Moody Avenue/Gibbs Street increased by approximately 135%.

**TRANSIT**

The study area is served by TriMet. Bus routes and the Portland Streetcar operate through the study area and provide access to and from the North Macadam URA District. Bus service is provided on Macadam Avenue via Line 35-Macadam and Line 36-South Shore, but currently does not enter the district east of Macadam Avenue. The City of Portland 11 has classified key routes in the study area for transit corridors. Table 3-6 summarizes these transit functional classifications for key roadways in the study area. Figure 3-11 summarizes the transit service and daily ridership data for bus routes within the study area. As shown, several bus routes operate in the vicinity of the district including 4 routes on the Ross Island Bridge. There is no transit access from the bus routes traveling on the Ross Island Bridge into the district south of the Ross Island Bridge.

The highest concentration of ridership within the North Macadam URA District occurs at SW Macadam Avenue/SW Hamilton

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10 Access online:
http://www.portlandonline.com/shared/cfm/image.cfm?id=169951

Court, Natio Parkway/SW Harrison Street, and along SW 1st Avenue at SW Lincoln Street and SW Arthur Street. Generally peak headways are twenty minutes apart, which correlates to a transit headway level of service of “C”\(^{12}\).

The Portland Streetcar operates between 5:30 AM and 11:45 PM with 13 minute headways during peak times and 15-20 minute headways during off-peak times. The existing streetcar services the South Waterfront area between SW Lowell Street and SW 1st Avenue with continuing service to NW 23\(^{rd}\) Avenue. There are 9 stops within the district on Harrison Street, River Parkway, Moody Avenue, Lowell Street, and Bond Avenue.

The Portland Aerial Tram operates Monday-Friday between 5:30 AM and 9:30 PM and Saturday between 9 AM and 5 PM with service between the South Waterfront and Marquam Hill. Headways are approximately 5 minutes. The tram operates Sundays from Memorial Day to Labor Day between 9:00 AM and 5:00 PM.

**Table 3-6: Transit Functional Classification**

<table>
<thead>
<tr>
<th>Roadway</th>
<th>City of Portland Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW Harrison Street</td>
<td>Regional Transitway and Major Transit Priority Street</td>
</tr>
<tr>
<td>SW 4(^{th}) Avenue</td>
<td>Regional Transitway and Major Transit Priority Street</td>
</tr>
<tr>
<td>SW Moody Avenue</td>
<td>Regional Transitway and Major Transit Priority Street</td>
</tr>
<tr>
<td>SW Arthur Street</td>
<td>Major Transit Priority Street</td>
</tr>
<tr>
<td>SW Kelly Avenue</td>
<td>Major Transit Priority Street</td>
</tr>
<tr>
<td>SW 1(^{st}) Avenue</td>
<td>Transit Access Street</td>
</tr>
<tr>
<td>SW Naito Parkway</td>
<td>Transit Access Street</td>
</tr>
<tr>
<td>SW Corbett Avenue</td>
<td>Transit Access Street</td>
</tr>
<tr>
<td>SW Macadam Avenue</td>
<td>Major Transit Priority Street</td>
</tr>
<tr>
<td>SW Hood Avenue</td>
<td>Major Transit Priority Street</td>
</tr>
<tr>
<td>SW Barbur Boulevard</td>
<td>Regional Transitway and Major Transit Priority Street</td>
</tr>
</tbody>
</table>

\(^{12}\) 2000 Highway Capacity Manual
SUMMARY OF KEY FINDINGS AND ISSUES

The following section summarizes key findings from the existing transportation conditions within the study area.

Pedestrian
- Interstate-5 and the Willamette River create significant barriers for pedestrians traveling to and from the district.
- Pedestrian circulation and access near the western terminus of the Ross Island Bridge and the Kelly District (north of SW Kelly Avenue between I-5 and SW Naito Parkway) is constrained.
- The intersections with the highest pedestrian crossing counts during the peak periods were:
  - 4th Avenue/Lincoln Street
  - Gaines Street/Moody Avenue
  - Curry Street/Moody Avenue
  - 1st Street/Harrison Street

Bicycle
- Interstate-5 and the Willamette River create significant barriers for bicycles traveling to and from the district.
- The intersections with the highest bicycle counts in the AM peak period were:
  - 4th Avenue/Lincoln Street
  - Naito Parkway/Madison St (Hawthorne Bridge)
  - 6th Avenue/Broadway Street
  - River Parkway/Moody Avenue

Transit
- There is limited transit service to the North Macadam District south of the Ross Island Bridge. Existing bus service is provided along Macadam Avenue (Routes 35 and 36), with stops at Boundary Street and Curry Street, but does not enter the core of the district.
- There is no transit access from the Ross Island Bridge into the district (south of the Ross Island Bridge).
- The Portland Streetcar operates within the district from Harrison Street to Lowell Street and has 9 stops at Harrison Street, River Parkway, Moody Avenue, Lowell Street, and Bond Avenue.
- The aerial tram provides transit service between the district and OHSU.

Motor Vehicle/Freight
- The Willamette River and Interstate-5 limit access and circulation opportunities to the majority of the district.
- PM peak hour vehicle congestion eastbound on the Ross Island Bridge creates vehicle congestion and queuing with the district on the approach roadways to the bridge.
- Vehicle congestion occurs during peak hours around Broadway/4th Avenue/5th Avenue/6th Avenue due to access and circulation constraints to the City Center and Interstate 405.
- Vehicle congestion during peak hours in both directions on Naito Parkway occurs between Harrison Street and Madison Street (Hawthorne Bridge).
- Excessive vehicle queues exist during the PM peak hour at the Hamilton Street/Corbett Street intersection.
The following chapter outlines the methodology and assumptions used to model the future transportation conditions in the study area.

MODELING ASSUMPTIONS

Future conditions for the planning horizon (2030) were analyzed to determine future deficiencies within the study area. The future transportation system was modeled using the EMME/2 regional travel demand model which is comprised of two key elements: land use and the planned roadway network. For consistency with other ongoing studies within the study area¹, the 2030 Portland to Milwaukie Light Rail travel demand model was used for future analysis.

The motor vehicle modeling and assumptions related to land use, future vehicle forecasting, and mode choice are discussed below. A traffic operations overview is also included at the end of the chapter.

Land Use

Land use is a key factor in how the transportation system operates and how many vehicle trips are projected to use the roadway network. The amount of land that is planned to be developed, the type of land uses, and how the land uses are mixed together have a direct relationship to expected demands on the transportation

system. Understanding the amount and type of land use is critical to taking actions to maintain and/or enhance transportation system operation.

The land uses are represented in Transportation Analysis Zones (TAZs). The Portland metro region is composed of 1360 TAZs. Each TAZ represents certain land uses that determine the number of trips generated to and from the TAZ. To predict future volumes land uses are adjusted to account for planned developments in each TAZ. In some cases a TAZ must be broken into smaller components to better represent how and where trips access the network.

Projected land uses were assessed within the study area for the year 2005 (base year) and 2030 (future year) that reflect comprehensive plans and Metro’s land use assumptions. These are consistent with the adopted Regional Transportation Plan\(^2\). The land use data was extracted from the regional model for the study area for the following conditions:

- Existing base 2005 conditions (2005 Metro Regional Transportation Plan Model)
- Year 2030 forecast conditions (2030 Metro Portland - Milwaukie Light Rail Model)

The primary growth area is focused in the South Waterfront Area which is bound by I-5, the Willamette River, the Marquam Bridge and Hamilton Court. Table 4-1 summarizes the existing (2005) and future year (2030) land use for the TAZs which most closely replicate the North Macadam study area.\(^3\)

<table>
<thead>
<tr>
<th>Land Use</th>
<th>2005</th>
<th>2030</th>
<th>Growth</th>
<th>Percent Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>266</td>
<td>6,446</td>
<td>6,180</td>
<td>2,300%</td>
</tr>
<tr>
<td>Employees</td>
<td>6,359</td>
<td>15,720</td>
<td>9,361</td>
<td>147%</td>
</tr>
</tbody>
</table>

SOURCE: 2005 Regional Transportation Plan (RTP) Model (EMME/2) and 2030 Portland to Milwaukie LRT Model (EMME/2)

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\(^2\) Metro Regional Transportation System Plan, Adopted July 2004.

\(^3\) The TAZs that closely replicate the South Waterfront area for the base year are 172-174, 175-179, 180, 1168, and 1169. This does not include the entire North Macadam URA with adds TAZs 81, 84-88 and 1159.
As part of this study, the 2030 Metro Portland to Milwaukie Light Rail travel demand model was used to help forecast future volumes for study area intersections. In order to obtain more accurate results, the TAZs that represent the North Macadam area in the Metro model were disaggregated (broken into smaller sub-area TAZs) and the control total land use was assigned within the smaller TAZs.

**Planned Roadway Network**

The planned transportation system included projects included in Metro’s Regional Transportation Plan Financially Constrained funding scenario. This scenario only included transportation system improvements that are expected to be constructed and implemented within the current funding levels. Key assumptions include Portland to Milwaukie Light Rail, South Portal improvements on SW Macadam Avenue, and I-5 northbound off-ramp improvements to the district. The base roadway network also includes the extension of the Moody Avenue/Bond Avenue extension.

Additional roadway system improvements are needed to address the existing and future needs and deficiencies, as well as serve the projected future growth in the North Macadam Urban Renewal District.

**Trip Generation**

The trip generation process translates land use quantities (number of dwelling units, retail, and other employment) into vehicle trip ends (number of vehicles entering or leaving a transportation analysis zone) using trip generation rates established during the model verification process. The Metro trip generation process is elaborate, entailing detailed trip characteristics for various types of housing, retail employment, non-retail employment, and special activities. Typically, most traffic impact studies rely on the Institute of Transportation Engineers (ITE) research for analysis. The model process is tailored to variations in travel characteristics and activities in the region.

Table 4-2 illustrates the estimated growth in vehicle trips generated within the North Macadam/South Waterfront study area during the PM peak period between 2005 and 2030. It indicates that vehicle trips within the study area would grow by approximately 217

---

percent between 2005 and 2030 if the land develops according to the 2030 land use assumptions. Assuming a 25-year horizon to the 2030 scenario, this represents annualized growth rate of about 9 percent per year.

Table 4-2: North Macadam Raw Model Trip Generation

<table>
<thead>
<tr>
<th></th>
<th>2005 Trips</th>
<th>2030 Trips</th>
<th>2030-2005 (Growth)</th>
<th>2030-2005 (% Growth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Macadam Study Area (area bordered by Hamilton Court, I-5, Marquam Bridge and Willamette River)</td>
<td>2,574</td>
<td>8,171</td>
<td>5,597</td>
<td>217%</td>
</tr>
</tbody>
</table>

SOURCE: 2005 and 2030 Metro Regional Travel Demand Models

Another part of the land use process is calibrating the 2005 Base Model to verify that it accurately reflects the existing vehicle trips. To calibrate the Base Model, existing traffic volumes are compared to those in the Base Model. During this process it is helpful to disaggregate the TAZs to ensure that trips access the network as they would on the actual roadway system.

The calibration process for this study compared the trip generation for the base year (2005) model and the existing (2007) counts within the study area. The base year (2005) model trip generation was high relative to the existing (2007) counts in the Central and North portions of the study area. In order to more accurately represent the growth that is likely to occur in the district, the trip generation in the following TAZ’s (172-179, 1168 and 1169) were reduced by 60% for the base year (2005) model. While it may not be consistent with Metro’s adopted land use, it is more consistent with traffic patterns observed today and would represent a more likely (or worst case) scenario. More details on this process are included in a technical memorandum that is attached to Appendix A of this report.

Table 4-3: North Macadam Trip Generation with Reduced 2005 Trips to Better Correlation to 2007 Traffic Volumes

<table>
<thead>
<tr>
<th></th>
<th>2005 Trips</th>
<th>2030 Trips</th>
<th>2030-2005 (Growth)</th>
<th>2030-2005 (% Growth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Macadam Study Area (area bordered by Hamilton Court, I-5, Marquam Bridge and Willamette River)</td>
<td>1,376</td>
<td>8,171</td>
<td>6,795</td>
<td>493%</td>
</tr>
</tbody>
</table>

SOURCE: Adjusted 2005 Metro Regional Travel Demand Model, and 2030 unadjusted Metro Regional Travel Demand Models.

Using the adjusted 2005 Model, the vehicle trips are expected to grow by almost 500% between 2005 and 2030. This correlates to a 20% annualized growth rate per year and gives a more conservative (or worst case) growth estimate than with no adjustment to the 2005 Model trips.

**Trip Distribution**

Distribution is based on the number of trip ends generated in each zone pair, and on factors that relate the likelihood of travel between any two zones to the travel time between zones. In projecting long-range future traffic volumes, it is important to consider potential changes in regional travel patterns. Although the locations and amounts of traffic generation within the North Macadam Urban Renewal district are essentially a function of future land use in the city, the distribution of trips is influenced by regional growth. External trips (trips that have either an origin and not a destination in the North Macadam district or have a destination but not an origin in North Macadam) and through trips (trips that pass through the North Macadam District and have neither an origin nor a destination in North Macadam) were projected using trip distribution patterns based upon census data and traffic counts performed at gateways into the Metro area Urban Growth Boundary (UGB) calibration.

**Traffic Assignment**

In this process, trips from one zone to another are assigned to specific travel routes in the network, and resulting trip volumes are accumulated on links of the network until all trips are assigned. Network travel times are updated to reflect the congestion effects of the traffic assigned through an equilibrium process. Travel speeds and times are estimated using “volume-delay functions” which attempt to simulate the impact of congestion on travel times (greater delay) as traffic volume increases. The volume-delay functions take into account the specific characteristics of each roadway link, such as capacity, speed and facility type.

**Mode Choice**

Within the model, assumptions have been made that reflect the number of trips by various modes (single-occupant vehicle, transit, carpool, pedestrian, bicycle, etc.). The 2030 Portland to Milwaukie Light Rail model assumes the completion of the light rail segment between Portland and Milwaukie and the effects of improved transit are given as assumptions in the travel forecast of vehicle
trips. Table 4-4 summarizes the mode split assumptions for the 2005 (base) and 2030 (future) models.

<table>
<thead>
<tr>
<th>Mode</th>
<th>2005</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive alone</td>
<td>56%</td>
<td>48%</td>
</tr>
<tr>
<td>Drive with Passenger</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>Passenger Trips</td>
<td>19%</td>
<td>27%</td>
</tr>
<tr>
<td>Transit</td>
<td>3%</td>
<td>9%</td>
</tr>
<tr>
<td>Bike/Walk</td>
<td>4%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Total: 100% 100%

SOURCE: 2005 and 2030 Trip Summary Comparison from Metro’s Travel Demand Model, includes TAZs 81,84-88, 172-180, 646, 647, and 1159

FUTURE VOLUME FORECASTS (POST PROCESSING)

Intersection turn movements were extracted from the model at study area intersections for both the base year 2005 and forecast year 2030 scenarios. These intersection turn movements were not used directly, but the increment of the year 2030 turn movements over the 2005 turn movements was applied (added) to existing (actual 2007) turn movement counts within the study area.

A post processing technique was utilized to refine model travel forecasts to the volume forecasts utilized for 2030 intersection analysis. The turn movement volumes used for future year intersection analysis can be found in the technical appendix.

To help visualize the process, the equation below shows how the future forecast volumes were obtained. The adjustment factor (23/25) was due to a two year difference between the existing counts in 2007 and the 2005 base year.

\[
(2030 \text{ Model} - 2005 \text{ Model}) \times \frac{23}{25} + \text{Existing Counts} = \text{Future Forecast}
\]
TRAFFIC MEASURES OF EFFECTIVENESS

An understanding of the traffic analysis terminology as well as summarizing the measures of effectiveness used is helpful to evaluate traffic operations for this study.

**Level-of-Service (LOS)**

Intersections LOS is similar to a “report card” rating, based on the average vehicle delay for all movements at the intersection. Level-of-service A, B or C indicate conditions where vehicles can move freely. Level-of-service D and E are progressively worse and generally indicated intersections where queuing of vehicles occur. Level-of-service F is the worst performance an intersection can attain.

**Volume-to-Capacity (V/C) Ratio**

Another measure of effectiveness is the volume-to-capacity (v/c) ratio for signalized intersection. This is a measure of the amount of capacity (number of vehicles an intersection can accommodate) compared to the actual number of vehicles that utilize the intersection during the peak hour. As an intersection becomes more heavily utilized, the v/c ratio increases. For existing conditions the maximum value is 1.0 (the capacity of an intersection must be equal to or greater than volume of cars measured traveling through an intersection). Intersection start to reach a “capacity” constrained condition when the v/c ratio is at approximately 0.90 to 0.95 or higher (meaning that 90% to 95% of the intersection is used with only 5% to 10% available for new demand). Under future conditions, the demand can be higher than the capacity and values greater than 1.0 can occur.
BICYCLE AND PEDESTRIAN FACILITIES

A central focus of the North Macadam Transportation Strategy is to create a balanced transportation system where a significant portion of district residents and employees can access the district and attend to their daily needs without relying on the motor vehicle. Balancing the district’s transportation demand will prolong the useful life of the district’s motor vehicle facilities and provide useful alternative access as nearby regional facilities experience increased congestion as result of continued growth throughout the region.

The North Macadam District is ideally positioned and planned to emphasize both bicycle and pedestrian transportation. Its proximity to downtown and access to the emerging regional trail system creates the potential for the district users to connect to numerous destinations quickly and comfortably. In addition, the connection to the institutions on Marquam Hill offered by the Portland Aerial Tram is already proving to be an attractive option for a large number of cyclists and pedestrians and will only grow with the construction of the Gibbs St Pedestrian Bridge.

As stated earlier in this report, the South Waterfront Plan established an overall mode split goal of at least 30 percent and a work mode split of at least 40 percent, for public transit, pedestrian and bicycle trips to the district. Achieving this goal is only possible if the North Macadam URA is seamlessly connected to adjacent neighborhoods and downtown by safe and convenient pedestrian and bicycle connections. The City and district stakeholders will
need to work together to continue to implement improvements to realize the desired urban character of the district as it grows.

**Current Pedestrian and Bicycle Infrastructure**

Despite initial infrastructure improvements in the district, bicycle and pedestrian access to the North Macadam URA remains difficult for many Portland residents, especially those in neighborhoods to the South and West of the district. The large number of regional roadways in the study area including I-5, I-405 and Naito Parkway combined with grade changes create significant physical barriers for pedestrians or cyclists traveling to or from the North Macadam district, especially in the East-West directions.

Due to the barriers created by the I-5 freeway and the Willamette River, access is primarily from the north and south of the District. Today, access to the South Waterfront is limited to SW Moody Avenue from the north and the Greenway trail from the south. Within the district, bike lanes and city standard sidewalks have been added as the street network has been improved.

Access to and from the Ross Island Bridge area is particularly difficult, isolating a large portion of the Urban Renewal Area. There are no developed surface bikeway connections, and the surface connections that do exist are not bicycle-friendly or welcoming to pedestrians. While sidewalks do exist, they are often of a minimal width (4’-6”). Additionally, inadequate roadway crossings and high speed, high traffic volumes make navigating this area amongst the most challenging in the region.

Another important element for pedestrians and cyclists is the connectivity of the system and the ability to navigate the system effectively. The city’s existing pedestrian and bicycle wayfinding systems provide signs with maps and directions to specific destinations throughout the city but these systems have not yet been extended into the North Macadam District.

**Projects Considered**

To develop a comprehensive list of possible projects to serve the future needs of the district, project ideas developed in previous planning studies were first compiled and reviewed. New project ideas we also developed from identified issues and suggestions provided at individual meetings with stakeholder and neighborhood groups and at the first public open house. In addition, project staff toured the study area by bicycle and by foot.
on multiple occasions to experience the access challenges first hand and identify possible solutions.

As I-5 is a major barrier for district access, a key priority for the pedestrian and bicycle component of this strategy is to create improved accesses at locations where existing roadways go over or under the I-5 freeway. Using all existing access locations presents the only affordable option to create frequent connections for the district. Given the large number of regional facilities in the area, many of these proposed pedestrian and bicycle projects are on or near Oregon Department of Transportation (ODOT) facilities. The implementation of these projects will require close coordination and partnership with ODOT.

**Proposed Pedestrian and Bicycle Improvement Projects**

Twenty-eight projects were developed to support the pedestrian and bicycle needs of the district and surrounding areas. Some projects were separated into smaller projects to allow for greater implementation as funding becomes available. Some projects are also related to specific redevelopment plans identified in previous studies and as such will not be realized until those developments are implemented. Table 5-1 lists the pedestrian and bicycle projects compiled by the project team.

**Table 5-1: Pedestrian and Bicycle Projects**

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-1</td>
<td>South Waterfront Willamette Greenway Trail</td>
<td>Connection to existing alignment of multi-use waterfront trail.</td>
</tr>
<tr>
<td>BP-2</td>
<td>North of I-405 Connection</td>
<td>New pedestrian/bike connection between 3rd Ave and Water Ave, passing along south side of The International School and under I-405. The connection will tie into South Auditorium trails.</td>
</tr>
<tr>
<td>BP-4</td>
<td>Arthur Street Tunnel</td>
<td>Arthur Street tunnel under I-5 to connect NCNM and surrounding area more directly to OHSU Schnitzer campus.</td>
</tr>
<tr>
<td>BP-5</td>
<td>Arthur Street Connection and Steps</td>
<td>Pedestrian/bike only boulevard along Arthur St. from Kelly Ave to Corbett Ave with steps and ramps from Water Ave to Corbett Ave.</td>
</tr>
<tr>
<td>BP-6</td>
<td>Porter-Sherman Light Rail Bridge Crossing</td>
<td>Pedestrian/bike/transit bridge crossing over the Willamette River.</td>
</tr>
<tr>
<td>BP-7</td>
<td>Macadam/City Center Ramp Connection</td>
<td>Widen sidewalk and add railing along the Macadam/City Center ramp to improve connections between SWF and City Center.</td>
</tr>
<tr>
<td>BP-8</td>
<td>Gibbs Street Bridge and Crossing Enhancements</td>
<td>Pedestrian bridge over I-5 and crossing enhancements along Gibbs or Whitaker at Kelly Ave, Corbett Ave, Naito Pkwy and Barbur Blvd.</td>
</tr>
<tr>
<td>BP-9</td>
<td>Gaines Street Pedestrian Bridge</td>
<td>Pedestrian bridge over I-5.</td>
</tr>
</tbody>
</table>
Table 5-1: Pedestrian and Bicycle Projects continued

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-10</td>
<td>Corbett Avenue Traffic Calming Project</td>
<td>Enhanced pedestrian crossings (refuge islands, curb extensions, cross walks and speed bumps) at several intersections along Corbett Ave (Hamilton to Gibbs).</td>
</tr>
<tr>
<td>BP-11</td>
<td>Hamilton Street to South Portal Pedestrian/Bicycle Connection</td>
<td>New pedestrian/bike trail along hillside west of I-5 from Hamilton Street to existing I-5 underpass at Hood/Bancroft.</td>
</tr>
<tr>
<td>BP-12</td>
<td>Slavin Rd Connection to Red Electric Trail</td>
<td>Combined off-street and on-street pedestrian/bicycle connection between Barbur Boulevard and Corbett Avenue.</td>
</tr>
<tr>
<td>BP-13</td>
<td>Naito Pkwy Curb-Cut to Hawthorne Bridge</td>
<td>Curb cut from Naito Pkwy SB to Hawthorne Bridge ramp and at top of ramp onto the bridge to allow better bike access.</td>
</tr>
<tr>
<td>BP-14</td>
<td>4th Avenue/Lincoln Street Pedestrian Improvement</td>
<td>Provide signalized pedestrian crossings on south and east legs of the intersection.</td>
</tr>
<tr>
<td>BP-16</td>
<td>Hood Avenue Sidewalk Enhancement – Porter St. to Gibbs St.</td>
<td>New pedestrian/bike connection along Kelly between Porter Street and Gibbs Street. This connection from NCNM / Ross Island Bridge to the Gibbs Bridge for access into the SWF District</td>
</tr>
<tr>
<td>BP-18</td>
<td>South Moody Avenue Connection</td>
<td>New pedestrian/bike connection between Hamilton Street and Boundary Street along the existing trolley right-of-way.</td>
</tr>
<tr>
<td>BP-19</td>
<td>Richardson Street Connection</td>
<td>New pedestrian/bike connection along Richardson Street from Corbett Avenue to the eastside of Macadam Avenue. Include break in Macadam Ave median.</td>
</tr>
<tr>
<td>BP-20</td>
<td>Gibbs Street Promenade</td>
<td>Pedestrian/bike promenade along Gibbs Street from Moody (at the base of the lower tram terminal) to the Greenway Trail.</td>
</tr>
<tr>
<td>BP-21</td>
<td>Corbett Avenue Uphill Bike Lane – Boundary to Hamilton</td>
<td>Add bike lane to Corbett Avenue NB from Boundary Street to Hamilton Street.</td>
</tr>
<tr>
<td>BP-22</td>
<td>Hood Avenue Crosswalk and Sidewalk Enhancement – Lane to Macadam</td>
<td>Place jersey barriers with a handrail between Hood Avenue sidewalk (eastside of street) and traffic. Add pedestrian crossing of Hood Ave at Lane St.</td>
</tr>
<tr>
<td>BP-23</td>
<td>Kelly Pedestrian Tunnel Closure and Crosswalk Replacement</td>
<td>Close pedestrian tunnel beneath Kelly at Naito and Arthur. Replace tunnel with at-grade crosswalk and pedestrian island on Kelly at Meade St.</td>
</tr>
<tr>
<td>BP-24</td>
<td>Ross Is. Bridge to SW 1st Ave Connection</td>
<td>Improvements to provide continuous connection from the west end Ross Island Bridge sidewalk to SW 1st Ave. Comprised of BP-24a, BP-24b, BP-24c.</td>
</tr>
<tr>
<td>BP-24a</td>
<td>West-end Ross Island Bridgehead Connection</td>
<td>Add pedestrian crossing and island across Kelly at Porter (connect bus stop to NCNM campus) and across Ross Island Bridge WB ramp at Hood/Porter (connect bus stop to north sidewalk of bridge). Add pedestrian crossing across the N. Macadam/City Center ramp at Kelly (connect bus stop to sidewalk on north side of Kelly).</td>
</tr>
<tr>
<td>BP-24b</td>
<td>Kelly Avenue bike lanes</td>
<td>Add bike lane on north side of Kelly Ave between SW 1st Ave and the west-end Ross Island Bridgehead.</td>
</tr>
<tr>
<td>BP-24c</td>
<td>Ramp Crossing of Kelly Ave to Naito Pkwy NB</td>
<td>Stripe crosswalk across two lane ramp from Kelly Ave to Naito Pkwy NB.</td>
</tr>
<tr>
<td>BP-25</td>
<td>Naito Pedestrian Crossing at Porter St</td>
<td>Add at-grade pedestrian crossing facility across Naito at Porter.</td>
</tr>
<tr>
<td>BP-26</td>
<td>Hooker Street Pedestrian Boulevard between Naito and Kelly</td>
<td>Convert Hooker Street into a pedestrian boulevard between Naito and Kelly.</td>
</tr>
</tbody>
</table>
### Table 5-1: Pedestrian and Bicycle Projects continued

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-28</td>
<td>Moody Ave/ River Parkway Sidewalk Cut-Back</td>
<td>Cut sidewalk back at SW corner of Moody Ave and River Parkway to provide sufficient space to continue bike lane through the right-hand turn.</td>
</tr>
<tr>
<td>BP-29</td>
<td>Bike Enhancement of Grover St Underpass at Naito Pkwy</td>
<td>Add speed bumps and sharrows (or bike lanes if sufficient space) to Grover St car lanes under Naito Pkwy overpass to improve bike usage and safety.</td>
</tr>
<tr>
<td>BP-30</td>
<td>Tram Bike Parking</td>
<td>Add secure bike parking facility adjacent to the lower tram terminal to meet existing and future bike parking demand.</td>
</tr>
<tr>
<td>BP-31a</td>
<td>Wayfinding (Bicycle)</td>
<td>Add wayfinding signs to assist bicyclists in accessing the South Waterfront District and finding specific locations with the North Macadam Urban Renewal Area.</td>
</tr>
<tr>
<td>BP-31b</td>
<td>Wayfinding (Pedestrian)</td>
<td>Add wayfinding signs to assist pedestrians in accessing the South Waterfront District and finding specific locations with the North Macadam Urban Renewal Area.</td>
</tr>
<tr>
<td>BP-32</td>
<td>Gibbs Bridge To Light Rail Bike Connection</td>
<td>Add bicycle trail from east end of Gibbs Street Pedestrian Bridge to LRT station at SW Porter St.</td>
</tr>
<tr>
<td>BP-33</td>
<td>SW 1st Avenue Bicycle Improvements</td>
<td>Add a bike lane on SW 1st Avenue between SW Arthur Street and SW Harrison Street in the northbound direction.</td>
</tr>
<tr>
<td>BP-34</td>
<td>Harrison Uphill Bike Treatment</td>
<td>Replace the right vehicle lane on SW Harrison with an uphill bike lane from SW Naito Parkway to SW 4th Avenue.</td>
</tr>
</tbody>
</table>

### Project Evaluation

Twenty-eight proposed projects were carried forward into the formal project evaluation process. An evaluation matrix was developed to provide a consistent quantitative method of prioritizing potential projects. In creating evaluation criteria, project staff utilized guidelines listed in the CROW Design Manual for Bicycle Traffic (June 2007) and added additional measures to capture the attributes of the proposed projects proposed in this study. In addition, staff also used a feasibility criteria to measure if the project could likely be implemented by 2015. The evaluation criteria is shown in Table 5-2 and the evaluation matrix is shown in Table 5-3. Figure 5-1 maps the pedestrian and bicycle projects and also shows the priority assigned to each project as a result of the evaluation process.
North Macadam Urban Renewal District
South Waterfront District

- High Priority
- Medium Priority
- Low Priority
- In Progress

Plan Streets
- Freeway (Regional Trafficway)
- Proposed Local Street
- Proposed Pedestrian Bridge
- Proposed Pedestrian/Bike Connection
- Existing & Planned Pedestrian/Bike Network
- Existing & Proposed City Bikeway
- Pedestrian Enhancement
- Bicycle Enhancement

Pedestrian/Bicycle Network Alternatives

1. City of Portland Transportation System Plan, October 30, 2002
2. South Waterfront District Street Plan, Criteria and Standards adopted April 2003

FIGURE 5-1
FUTURE PEDESTRIAN/BICYCLE NETWORK Alternatives
### Table 5-2: Pedestrian and Bicycle Project Evaluation Criteria

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Ranking Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Cohesion</strong> - builds a network of logical and cohesive routes that makes connections across barriers and/or fills gaps where no connection currently exists; builds out the regional network</td>
<td>little cohesion; no regional connection</td>
</tr>
<tr>
<td><strong>Comfort</strong> - creates a positive user experience; good surface, generous space and little hindrance from other traffic participants; an attractive and socially safe environment without smell or noise inconvenience</td>
<td>poor user experience</td>
</tr>
<tr>
<td><strong>Safety</strong> - provides a safer alternative to that which exists today; avoids conflicts, separates uses, reduces speeds at conflict points, ensures unambiguous traffic situations</td>
<td>not safer; high traffic conflict</td>
</tr>
<tr>
<td><strong>Directness</strong> – provides short route with few detours and shorter travel times relative to other transportation modes from origin to destination</td>
<td>indirect route; slower than alt. modes</td>
</tr>
<tr>
<td><strong>Utilization</strong> - serves as a major destination (e.g. Willamette Greenway Trail) or links major destinations, high density areas, or connection points</td>
<td>links low-density / low-use areas</td>
</tr>
<tr>
<td><strong>URA Benefit</strong> - project directly benefits URA residents/employees by serving destinations within the URA</td>
<td>no benefit to URA</td>
</tr>
<tr>
<td><strong>Cost : Benefit</strong> - cost to benefit relationship (cost of project compared to overall benefit reaped from project)</td>
<td>little bang for the buck</td>
</tr>
<tr>
<td><strong>Feasibility</strong> - What is the feasibility of the project occurring by 2015?</td>
<td>(project already In Process / High feasibility / Low feasibility</td>
</tr>
</tbody>
</table>

**In Process and High Priority Projects**

The pedestrian and bicycle projects given high priority ranking represent the initial package of projects needed to provide safe and comfortable district access from surrounding neighborhoods and downtown Portland. A few projects that are in process are also included to reference their importance in the City’s ongoing effort to improve district access. These projects are included in Table 5-4.
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Name</th>
<th>Cohesion</th>
<th>Comfort</th>
<th>Safety</th>
<th>Directness</th>
<th>Utilization</th>
<th>URA Benefit</th>
<th>Benefit Feasibility</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP-6</td>
<td>Portland-Milwaukie Light Rail Bridge Crossing</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>BP-8</td>
<td>Gibbs Street Bridge and Crossing Enhancements</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.6</td>
</tr>
<tr>
<td>BP-10</td>
<td>Corbett Avenue Traffic Calming Project</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>BP-2</td>
<td>South Waterfront Marijuana Greenway Trail</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4.4</td>
</tr>
<tr>
<td>BP-31</td>
<td>Bike Parking</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4.4</td>
</tr>
<tr>
<td>BP-31a</td>
<td>Bike Parking</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4.4</td>
</tr>
<tr>
<td>BP-31b</td>
<td>Pedestrian Parking</td>
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Table 5-3: Pedestrian and Bicycle Project Evaluation Matrix

Ranking Criteria

- Cohesion
- Comfort
- Safety
- Directness
- Utilization
- URA Benefit
- Cost
- Benefit Feasibility
- Mean

Projects

- Top Tier Projects
- Second Tier Projects
- Low Tier Projects

Notes:

- Recommended to be deleted - these improvements more appropriately considered by the Central City Plan
- Recommended to be deferred - infrastructure improvements already required by redevelopment requirements
- Alternatives studied but not recommended in this plan
### Table 5-4: In Process and High Priority Bike and Pedestrian Projects

<table>
<thead>
<tr>
<th>Project No.</th>
<th>In Process Bicycle and Pedestrian Projects</th>
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<tr>
<td>BP-6</td>
<td>Portland-Milwaukie Light Rail Bridge Crossing</td>
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<td>Tram Bicycle Parking</td>
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<td>Wayfinding To and Around the North Macadam URA</td>
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<td>BP-24a: West-end Ross Island Bridgehead Connection (BP-24)</td>
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<td>BP-24b: Kelly Avenue Bike Lane (BP-30)</td>
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<td>BP-22</td>
<td>Hood Avenue Crosswalk &amp; Sidewalk Enhancement - Lane to Macadam</td>
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*These photographs are along Kelly Avenue just north of the Ross Island Bridge. This is one area that the bike and pedestrian projects targeted for improvement.*
Expanding the City Bicycle and Pedestrian Network into the North Macadam URA

Two new routes are proposed as additions to the City’s bicycle and pedestrian network designated in the Transportation System Plan. These routes will better integrate the North Macadam District with adjacent neighborhoods. The routes are discussed below.

SW Hooker and Corbett/Water Avenue Bikeway/Walkway
East-west bicycle connections to the North Macadam URA are particularly challenging from the existing Bicycle and Pedestrian network in the Lair Hill Neighborhood. By changing SW Hooker Street to be classified as a city walkway and city bikeway, SW Hooker Street, SW Corbett Avenue/SW Water Avenue provide a promising connection through this area. SW Hooker Street has an existing pedestrian signal at its intersection with SW Barbur Boulevard, and an existing pedestrian and bicycle bridge over SW Naito Parkway. In addition, BP-26 envisions an enhanced pedestrian streetscape with limited vehicle access on SW Hooker Street between SW Naito Parkway and SW Kelly Avenue as a focus of the planned NCNM campus expansion. A new signal and pedestrian crossing is proposed at SW Kelly Avenue, and a realigned SW Corbett Avenue would provide a connection to the district via SW Sheridan Avenue/SW Moody Avenue.

SW Gibbs or SW Whitaker City Bikeway and Walkway
The introduction of the Gibbs St. Pedestrian Bridge over I-5 will attract increased numbers of District bound pedestrians and cyclists from SW Portland. Several pedestrian crossings are proposed for improvement concurrent with bridge construction: SW Kelly Avenue/SW Gibbs Street, SW Naito Parkway/SW Gibbs Street, and SW Naito Parkway/SW Whitaker Street. SW Barbur Boulevard will connect with SW Trails Trail #1 and create a new East-West corridor through the Lair Hill Area.

PROJECT SUMMARY SHEETS
For each project a summary sheet was created to give further detail about the project. The pedestrian and bicycle project sheets are listed numerically.
**BP-1. SOUTH WATERFRONT WILLAMETTE GREENWAY TRAIL**

**Need/Purpose**

The South Waterfront Greenway Trail will stretch from the Marquam Bridge south to the River Forum Building, providing a critical link in the river trail system. Once completed, this section will provide a complete trail connection along the west side of the Willamette River from the Steel Bridge south to the Sellwood Bridge. The South Waterfront Greenway will balance the needs of people, wildlife, and a healthy river.

**Background Data**

The *South Waterfront Greenway Development Plan*, accepted by City Council in 2004, provides a vision and concept plan for the entire South Waterfront Greenway. The Central District section of the South Waterfront Greenway (from SW Gibbs St south to SW Lane St) is the first section of the South Waterfront Greenway to be designed and constructed in the South Waterfront District.

Transportation System Plan #20057
Regional Transportation Plan #10162

**Description of Improvement**

The South Waterfront Greenway Trail will be designed and constructed in phases as land is redeveloped. The section currently under review is the Central District Greenway, which stretches from SW Gibbs St to SW Lane St. This project will create a linear riverfront park and trail, with separated paths for pedestrians and cyclists. In addition, it will improve natural habitat by grading, stabilizing, and replanting the riverbank.

The South Waterfront Greenway Trail is a project directed by the Portland Bureau of Parks and Recreation and the Portland Development Commission. The North Macadam Transportation Development Strategy strongly supports the project moving forward but is not taking a lead on the project.

**Project Area**

Central District portion of the South Waterfront Greenway Trail

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

$56 Million*

**Priority**

High

* Figure provided by the *South Waterfront Greenway Implementation Strategy* (June 2008) per development plans outlined by the South Waterfront Greenway Master Plan.
### PEDESTRIAN / BIKE PROJECTS

#### Alternatives/Additional Notes

#### Additional Images / Graphics
PEDESTRIAN / BIKE PROJECTS

BP-2. NORTH OF I-405 CONNECTION

Need/Purpose
There are few pedestrian and bicycle access routes between downtown and the South Waterfront District. This project would provide a direct, non-motorized connection between downtown and the District. Particularly, it would connect Portland State University (PSU) and the OHSU Schnitzer Campus, two institutions that are partnering to share teaching facilities. This project could provide a means by which the Milwaukie Light Rail project could meet the State requirement for bike provisions to be included with the transit project.

Background Data
The proposed project would be built in the north of I-405 right-of-way, from SW 4th Ave to SW Naito Parkway. ODOT owns the facility and must approve the project. The existing space varies between 48 and 75 feet in width, the majority of which is relatively flat. However, one section, about 150 ft in length, is sloped at 6-24%. The project includes two road crossings – SW 1st Ave under PDOT, and SW Naito Pkwy under ODOT domain.

Description of Improvement
This project would be an off-road, non-motorized, 12’ wide, multi-use path from SW 4th Ave & SW Lincoln St to SW Naito Pkwy, one at-grade street crossings at SW 1st Ave, one improved pedestrian underpass at SW Naito Pkwy, and sidewalk improvements on SW Caruthers from SW Naito Pkwy to SW Water Ave. The total length of the off-road path is about 1350 feet (excluding the street crossings and sidewalk improvements). Path construction requires negotiating trees in the right-of-way, building a 12’ asphalt/concrete path, and constructing a retaining wall about 150 ft long. The at-grade pedestrian and bicycle crossing of SW 1st Ave requires two new ped/bike ramps, a break in the median, striping the crosswalk, and posting crosswalk signs. The SW Naito Pkwy underpass requires improved, vandal-proof lighting and a wider connection between the underpass and SW Caruthers St. The sidewalk on the north side of SW Caruthers St should be widened to 12 feet, with street lighting and street trees added.

Project Area

Cross-section Detail or Photo

Preliminary Cost Estimate
$2.4 to $2.8 Million

Priority
High
An at-grade crossing of SW Naito Pkwy is more desirable than using the existing pedestrian underpass. The underpass provides homeless shelter and is unsanitary and uncomfortable for many users. The challenges associated with the at-grade crossing of Naito are as follows: 1) it does not meet the criteria for a marked crosswalk without other amenities, the islands are not adequate, and it may need a signal but not meet warrants required for a signal; 2) the roadway is too narrow to maintain all travel lanes and add an island; 3) it is an active section of roadway – northbound drivers have an add lane and a merge lane and southbound drivers have a departure lane – the marked speed is 40 mph; 4) the ADA ramp from SW Naito Pkwy to SW Caruthers St requires a switchback, it is about a 10% grade. An alternative to a marked crosswalk at SW Naito Pkwy would be to cut ped/bike ramps in the sidewalk and a break in the median with no crosswalk or signage. Any crossings would require ODOT approval.
BP-5. ARTHUR STREET CONNECTION AND STEPS

**Need/Purpose**
As the South Waterfront District continues to develop, demand for safer, more comfortable pedestrian and bike connections to the District will continue to increase. As shown in the North of Kelly District Plan, SW Arthur St, from SW Naito Pkwy to SW Corbett Ave, was identified as a pedestrian and bike corridor. This connection would provide a pleasant, non-motorized route from the north Lair Hill neighborhood, including the National College of Natural Medicine, to the South Waterfront District. It also would contribute to attracting redevelopment to the North of Kelly District.

**Background Data**
Project originally proposed in the North of Kelly District Plan (October 2007) by the Oregon Transportation and Growth Management Program, Portland Development Commission, and Crandall Arambula PC.

This section of SW Arthur St (from SW Naito Pkwy to SW Corbett Ave) is a quiet, low-volume street. It has standard six-foot sidewalks. The grade from SW Water Ave to SW Corbett Ave is about 13%.

**Description of Improvement**
This project would establish SW Arthur St, from SW Kelly Ave to SW Corbett Ave, as a pedestrian/bicycle corridor. SW Arthur St, between SW Kelly Ave and SW Water Ave, would be a shared roadway for motorized and non-motorized users. The north sidewalk should be expanded to 15 feet and should include street furniture, street trees and street lighting.

SW Arthur St, between SW Water Ave and SW Corbett Ave, would be a pedestrian/bicycle-only street, consisting of pedestrian steps down to SW Corbett Ave with a bicycle and ADA-compatible ramp built into the steps. The cross-section would consist of a 16’ outdoor seating and assembly space, 8’ steps, 12’ landscape planter and water detention, 8’ steps, 16’ outdoor seating and assembling space (see cross-section below).

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

**Priority**

$15 Million*

Medium

* The Arthur Street Steps and Tunnel cost estimate in the North of Kelly District Plan (October 2007) was $15M. The tunnel would make up the vast majority of the cost. Separated costs of the two segments is TBD.
SW Arthur Street looking east from SW Kelly Avenue toward SW Water Avenue – recommended sidewalk expansion to 15 feet

SW Arthur Street looking west from SW Corbett Avenue toward SW Water Avenue – recommended non-motorized boulevard with the Arthur Steps
### BP-6. PORTLAND-MILWAUKIE LIGHT RAIL BRIDGE CONNECTION

#### Need/Purpose

The Portland-Milwaukie Light Rail Project will connect the Portland City Center to the City of Milwaukie and north Clackamas County. Included in the project is the Willamette River Crossing, a bridge over the Willamette River that will connect the South Waterfront District at the OHSU Schnitzer Campus and Portland’s eastside, south of the Oregon Museum of Science and Industry. The bridge will serve transit, bicycles and pedestrians, providing a critical local and regional link for non-motorized travel.

#### Background Data

Currently, cyclists and pedestrians coming from Portland’s southeast neighborhoods and beyond have few comfortable choices for accessing the South Waterfront District and the Portland Aerial Tram. The Sellwood Bridge to the south has poor pedestrian and bicycle facilities. The Ross Island Bridge to the north also has poor pedestrian and bike facilities and no safe connection to the South Waterfront District or downtown from the west bridgehead. The Willamette River Crossing will provide this much needed link.

Regional Transportation Plan #10901

#### Description of Improvement

The Willamette River Crossing designs include deck widths that range from 58-66 feet depending on the location of the bridge and the bridge type. This would include a 13-foot lane in each direction that would be shared by light rail, streetcar and buses. In addition, there would be two 12-foot bicycle/pedestrian lanes on either side of the transit lanes.

The Willamette River Crossing is part of the Portland-Milwaukie Light Rail Project that is a partnership project between the Cities of Milwaukie, Oregon City and Portland, Clackamas and Multnomah counties, Oregon Department of Transportation, TriMet, and Metro. The North Macadam Transportation Development Strategy strongly supports the project moving forward but is not taking a lead on the project.

#### Project Area

[Map of project area]

#### Cross-section Detail or Photo

[Cross-section diagram]

#### Preliminary Cost Estimate

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#### Priority

In Process
# PEDESTRIAN / BIKE PROJECTS

## Alternatives/Additional Notes

## Additional Images / Graphics
BP-7. MACADAM / CITY CENTER RAMP CONNECTION

**Need/Purpose**
The Macadam/City Center Ramp currently serves as one of few connections between the North Macadam Urban Renewal Area neighborhoods east of I-5 and the South Waterfront District. The sidewalk on the northeast side of the ramp is narrow and adjacent to fast-moving traffic, however the direct connection it provides makes it attractive to pedestrians and bicyclists. Widening the sidewalk and providing a barrier between it and the travel lanes would make this a more comfortable, safer connection.

This is a new improvement, not previously proposed in another report.

ODOT has jurisdiction over this facility.

The existing sidewalk varies between 4 and 5.5 feet.

The existing roadway is two 15-foot northeast bound travel lanes.

The total length of the structure is 1500 feet.

**Description of Improvement**
This project proposes widening the existing sidewalk by two feet (to 6–7.5 feet) and adding a guardrail between the sidewalk and the roadway for the 150-foot length of the ramp structure. Widening the sidewalk would require narrowing the travel lanes from 15 feet to 14 feet, which would necessitate grinding the existing center stripe and restriping.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

$ TBD

**Priority**

Low
## Alternatives/Additional Notes

This project received a medium feasibility rank because of cost and nearby alternatives. It is uncertain that the structure can support a wider sidewalk. Determining the structure’s ability to support a wider sidewalk and actually building the wider sidewalk would be costly. Further, this project would perform essentially the same function as its preferred alternative: BP-16. In addition, the Gibbs Street Pedestrian Bridge is scheduled to be constructed by the fall of 2010. The bridge is to be constructed three blocks to the south of the existing ramp. It will provide a direct and comfortable connection over SW Hood Ave, I-5, and SW Macadam Ave. Finally, this project would require ODOT approval.

## Additional Images / Graphics

- **Sidewalk (5.5 feet) on north side of Macadam/City Center Ramp looking east with South Waterfront District development in the background.**
- **Sidewalk (4.5 feet) on northeast side of Macadam/City Center Ramp looking south underneath the Ross Island Bridge with the aerial tram tower in the background.**
### Need/Purpose

Interstate 5 is a major barrier between the Corbett, Terwilliger and Lair Hill neighborhoods and the Willamette River and South Waterfront District (SWD). Currently, there is over one-half mile with no connection across I-5. The Gibbs Street Pedestrian (and bicycle) Bridge will provide non-motorized users with safe and convenient access between these neighborhoods and the Willamette River/SWD. It will also provide direct pedestrian and bicycle connection from OHSU facilities in the SWD with the OHSU Marquam Hill Campus.

### Background Data

The first concepts for the bridge were identified by participants in the international competition to design the Portland Aerial Tram. The designs have been refined by a public process involving public input, direction from the citizen and technical advisory committees, and project consultants. Final bridge design is to be completed by July 2009 and construction is to be completed by Fall 2010. The project also includes ped and bike crossing enhancements of SW Kelly Ave, SW Corbett Ave, SW Naito Pkwy, and SW Barbur Blvd.

Transportation System Plan #20061
Regional Transportation Plan #10163

### Description of Improvement

The Gibbs Street Pedestrian Bridge will span SW Hood Ave, I-5, and SW Macadam Ave. Because it crosses I-5, it must be approved by ODOT. The useable portion of the bridge must be at least 15 feet wide and the structure must provide 17’6” clearance above all three roadways. The bridge span is about 700 feet long. It must meet ADA requirements, meaning that no part of the bridge may exceed a 5% incline or 8.33% incline with resting platforms. The project will include two large elevators and a stairway to connect the east end bridgehead to Moody Avenue (about 65 feet). The project will also include pedestrian and bicycle crossing improvements at Kelly and Gibbs, Corbett and Gibbs, Naito and Whitaker, and Barbur between Gibbs and Whitaker. The crossing improvements will include striping, some curb extensions and a pedestrian signal.

### Project Area

![Project Area Diagram](image)

### Cross-section Detail or Photo

![Cross-section Detail](image)

### Preliminary Cost Estimate

$11.0 Million*

* Cost Estimate provided by the Gibbs Street Pedestrian Bridge website: [www.gibbsbridge.org](http://www.gibbsbridge.org).

### Priority

In Process
PEDESTRIAN / BIKE PROJECTS

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<th>Alternatives/Additional Notes</th>
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<th>Additional Images / Graphics</th>
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BP-10. CORBETT AVENUE TRAFFIC CALMING PROJECT

**Need/Purpose**

SW Corbett Avenue is designated as a local service street but often functions as a neighborhood collector, carrying traffic volumes of up to 4500 vehicles per day. Traffic speed counts also reveal speeding vehicles along this section of Corbett. High traffic volumes and speeds can be attributed to increased growth and congestion along the Barbur/Macadam/I-5 corridor, which causes many vehicles to divert onto Corbett for quick access to the Ross Island Bridge/Hwy 26 or the Central City. This project aims to preserve livability and safety for local residents and to return the performance of SW Corbett Avenue to its current street classification.

**Background Data**

Both the Portland Aerial Tram Final Recommendation and Report and the South Portland Circulation Study have identified the need for traffic calming along Corbett Avenue. This project is the third phase of traffic calming in the area. Phase one and phase two occurred on SW Virginia and SW Corbett (Boundary to Hamilton), respectively. In 2004, the Portland Office of Transportation secured funding for this third phase of traffic calming. In 2007, PDOT conducted a public outreach process and worked with the community to identify a preferred design. The plan was adopted by Portland City Council fall 2007.

**Description of Improvement**

This project will construct traffic calming improvements on SW Corbett Ave from SW Hamilton St to SW Grover St. The approved design includes three curb extensions (with striped crossing), three median islands, three speed tables, one raised crosswalk, wayfinding signage, and reduction in posted speed limit from 30 to 25mph.

**Preliminary Cost Estimate**

$160,000 – $180,000*

*Cost estimate derived from 60% design

**Priority**

In process
PEDESTRIAN / BIKE PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics

Map Legend
- Bus Stop (%)
- Fire Hydrant
- Sewer Inlet
- Curve Ramps
- Crosswalk
- Buildings
- Traffic Islands
- Traffic Circle
- Curb Extension
- Speed Bump

DKS Associates
TRANSPORTATION SOLUTIONS

April 2008
PEDESTRIAN / BIKE PROJECTS

BP-12. SLAVIN ROAD ROUTE FOR THE RED ELECTRIC TRAIL

<table>
<thead>
<tr>
<th>Need/Purpose</th>
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<tr>
<td>There are limited bicycle and pedestrian routes that connect southwest Portland to the North Macadam Urban Renewal Area. The proposed Slavin Road Route for the Red Electric Trail would provide a quiet, meandering route to Barbur Blvd to connect Hillsdale and the SW community beyond Hillsdale with the North Macadam Urban Renewal Area and the Willamette Greenway Trail.</td>
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<thead>
<tr>
<th>Background Data</th>
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<tr>
<td>The Red Electric Trail is a proposed, 16-mile bike and pedestrian trail that would connect the Tualatin and Willamette rivers. A challenging section of the trail is the steep descent of the east face of the west hills. The Red Electric Trail Planning Study recommends a pedestrian trail on the north side of the ravine in George Himes Park and an elevated structure for a two-way bicycle passage on a different alignment. The Study offers the Slavin Road Route for the Red Electric Trail as an alternative. This route is supported by nearby neighborhood associations.</td>
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<tr>
<th>Description of Improvement</th>
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<tr>
<td>This route is over one-mile long and is a combined on-road / off-road pedestrian and bicycle connection between SW Barbur Blvd and SW Corbett Ave. The route follows the wooded area from the end of SW Parkhill Dr to a future path under the rebuilt Barbur Blvd Bridge. It follows the contours to connect with old Slavin Rd and continues along Slavin Rd to SW Seymour St near SW Corbett Ave. This project proposes a 12’ asphalt path with 2’ aggregate shoulders through the wooded areas and a 7’ combination curb and sidewalk along the existing SW Slavin Rd. Construction of the trail requires: porous AC pavement on aggregate base; adjusting water facilities; adding street lighting on new wood poles along the bike path and upgrading luminaires along Slavin; building retaining walls along the entire length of the path (10’ high) except for sidewalk sections along existing roadway and path using existing pavement.</td>
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<th>Project Area</th>
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<th>Cross-section Detail or Photo</th>
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<tr>
<th>Preliminary Cost Estimate</th>
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<tr>
<td>$7.1 Million</td>
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<tr>
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<tr>
<td>Medium</td>
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* Preliminary cost estimate derived from the Portland Parks and Recreation Red Electric Trail Planning Study (May 2007). The cost estimate does not include property acquisition or bridge improvements.
PEDESTRIAN / BIKE PROJECTS

**Alternatives/Additional Notes**


- Right-of-Way—Assumes using ODOT right-of-way, as well as some private property donations
- Assume that ODOT will reconstruct the Barbur Blvd Bridge with bike path under roadway for this option to function
- BES – No storm, sanitary, water-quality facilities needed, using porous pavement
- Assume new luminaires and arms on new wood poles every 200’ along bike path; upgrade luminaires along new sidewalk along Slavin Rd.
- Slavin Rd is a City maintained street; therefore it is not improved in this estimate.

**Additional Images / Graphics**

[Images showing various outdoor scenes related to pedestrian and bike projects.]
BP-13. NAITO PARKWAY CURB-CUT TO HAWTHORNE BRIDGE

**Need/Purpose**
There is currently no safe, bicycle-friendly access to the South Waterfront District for cyclists traveling on SW Naito Pkwy southbound. This curb cut would allow cyclists to use the vacant Hawthorne Bridge on-ramp to get over SW Naito Pkwy and use the Hawthorne ped/bike access ramp to return to grade on the east side of SW Naito Pkwy, connecting to the Greenway Trail.

**Background Data**
The existing Hawthorne Bridge on-ramp is no longer in use, it is closed to vehicles. SW Naito Pkwy has bicycle lanes in the southbound lanes as far south as SW Jefferson St, where the bridge ramp connects. Beyond SW Jefferson St the bicycle lanes disappear.

**Description of Improvement**
The improvement is a curb cut from the bicycle lane on Naito Pkwy southbound to the Hawthorne Bridge on-ramp and a curb cut from the Hawthorne Bridge sidewalk to the eastbound bicycle lane. This would provide eastbound bicycle access onto the Hawthorne Bridge. The ramp is located on the south side of the Hawthorne Bridge, just west of Naito Pkwy.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**
$19,000 - $21,000

**Priority**
Medium
## PEDESTRIAN / BIKE PROJECTS

### Alternatives/Additional Notes

---

### Additional Images / Graphics

---
**Need/Purpose**

As the southern portion of the Portland City Center near the intersection of SW 4th Ave & SW Lincoln St continues to develop, pedestrian crossings should be added to the south and the east sides of this intersection. The Portland-Milwaukie Light Rail Project will pass through this intersection, Portland State University plans to develop the intersection’s southeast parcels, the proposed west terminus of the North of I-405 Connection proposed in this report (BP-2) is at SW 4th Ave & SW Lincoln St. The new development will attract more pedestrians to this intersection.

**Background Data**

In June 2007 a City signal inspector investigated the possibility of adding crosswalks to the south and east legs of the intersection. Because the location is substandard, the project would require replacing about half of the signal installation.

Some of the vehicles regulated by the signal on the south leg of the intersection are exiting I-405 via the SW 4th Ave off-ramp. ODOT may have concerns about ramp back-ups with the addition of a pedestrian signal on the south leg.

**Description of Improvement**

This project recommends replacing about half of the signal installation, which includes replacing the signal pole and installing/updating the ped crossings, signal indications, conduits (which lack capacity of additional wires) and pole mounted controller (which also lacks capacity of additional wires). It also requires striping the south and east legs of the intersection, cutting back the SW 4th Ave pedestrian island, and constructing a large curb extension on the southeast corner.

**Project Area**

[Map of the project area]

**Cross-section Detail or Photo**

[Cross-section diagram]

**Preliminary Cost Estimate**

$320,000 – $380,000

**Priority**

Medium
PEDESTRIAN / BIKE PROJECTS

**Alternatives/Additional Notes**

**Additional Images / Graphics**

SW 4th Ave & SW Lincoln St – looking southeast toward SW 4th Ave northbound. Three lanes on right-side of photo are a continuation of SW 4th Ave, two lanes on left-side of photo are exiting I-405.
### Need/Purpose
The Gibbs Street Pedestrian Bridge will provide safe, comfortable bicycle and pedestrian access across I-5 to the South Waterfront District. The Hood Avenue Sidewalk Enhancement is intended to provide better bicycle and pedestrian access to the west end of the Gibbs bridgehead. It links the Ross Island Bridge sidewalk to the Bridge via a wide, well-lit bicycle and pedestrian sidewalk along the west side of Hood Avenue. BP-24a should be implemented in conjunction with this project to provide safe access to the proposed route.

### Background Data
The sidewalk that exists today is 6’ wide. There is no median between the sidewalk and Hood Avenue. Hood Avenue is three lanes of high-volume, high-speed traffic (posted speeds are 40 mph). To the west of the sidewalk is an open, grassy right of way. ODOT owns and operates the Hood Ave right of way. The agency has expressed willingness to support this project, while reserving the right to expand Kelly and take the improved connection.

### Description of Improvement
The Hood Avenue Sidewalk Enhancement recommends the expansion of the sidewalk along the west side of Hood Ave from 6’ to 12’ and the addition of a median to provide some separation from fast moving traffic. Passing underneath the Ross Island Bridge, the bridge piers will restrict the width of the path. Pedestrian street lighting should be added along the sidewalk to improve safety. The length of the sidewalk enhancement is 750 feet. The preferred pedestrian connection to the Gibbs Street Pedestrian Bridge is along SW Grover St. Such a connection requires cutting through existing shrubs to connect the SW Hood Ave sidewalk to the SW Grover St sidewalk. The alternative pedestrian path would be to continue pedestrians another block south along SW Hood Ave to SW Gibbs St and direct pedestrians up Gibbs, on the north side of the bridge, to the bridgehead.

### Project Area

### Cross-section Detail or Photo

### Preliminary Cost Estimate
$1.2 - $1.4 Million

### Priority
High
Sidewalk along east side of Hood Avenue recommended for expansion to 12 foot mixed-use path with pedestrian lighting.
BP-18. SOUTH MOODY AVENUE CONNECTION

Need/Purpose

New sections of the South Waterfront Willamette Greenway Trail propose separating bicycle and pedestrian traffic. This project would provide for extension of a separate, more direct bike path further south beyond where it is currently planned. The path would be built in the existing Willamette Shore Trolley right-of-way. It is recommended to be implemented with the Lake Oswego streetcar extension.

Background Data

This project is contingent on the construction of the Lake Oswego streetcar extension.

Description of Improvement

This project recommends a 12-14 foot-wide bike path with two-foot shoulders to be built in conjunction with the Lake Oswego streetcar extension in the existing Willamette Shore Trolley right-of-way. The extension is recommended from SW Hamilton St in the north to SW Boundary St in the south.

For more project details, please refer to the Lake Oswego to Portland Transit and Trail Study Evaluation Summary Public Review Draft (July 12, 2007).

Preliminary Cost Estimate

$7.4 Million*

Priority

Medium
## Alternatives/Additional Notes

*This preliminary cost estimate is for construction of the entire trail from the South Waterfront District to Lake Oswego as provided in the *Lake Oswego to Portland Transit and Trail Study Evaluation Summary Public Review Draft (July 12, 2007)*. A cost estimate for this short section of the trail has not been developed.*

## Additional Images / Graphics
PEDESTRIAN / BIKE PROJECTS

BP-19. RICHARDSON STREET CONNECTION

**Need/Purpose**
SW Richardson St east of SW Macadam Ave is a multi-use path that connects to the Willamette Greenway Trail. Access to this path however, is limited because it originates at low-density commercial uses along SW Macadam Ave and is not connected to high-density residential users. The proposed project would extend a trail one block west of SW Macadam Ave and connect to many multi-family residential complexes, increasing access to the Willamette Riverfront and Greenway Trail.

**Background Data**
The right of way where the trail is proposed is heavily vegetated, the slope is about 12%, and it is about 170 feet in length.

**Description of Improvement**
This project recommends the construction of a 170 ft trail between SW Macadam Ave and the south sidewalk along SW Richardson St. It should be a 12 foot-wide, asphalt/concrete trail. In addition, two pedestrian ramps should be constructed to cross SW Macadam Ave with a break cut into the median. Pedestrian volumes do not justify a marked crosswalk. The SW Macadam Ave ramps and median break will require ODOT approval.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**
$1.2 - $1.4 Million

**Priority**
Medium
## Alternatives/Additional Notes

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## Additional Images / Graphics

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April 2008
**Need/Purpose**

The *Portland Aerial Tram Final Recommendations and Report* (June 10, 2004) calls for Gibbs Street, in the South Waterfront District, to be a “universal space” – a flexible urban space that can house a variety of activities and function (similar to Pioneer Courthouse Square). The space is to accommodate a number of uses, including tram facilities, pedestrian bridge traffic, bus and streetcar stops, access to adjacent development and the Willamette Greenway, programmed events, and vehicular access in an understated way.

**Background Data**

The construction of this project will be dependent on the redevelopment of the Zidell property.

This project was envisioned during the Portland Aerial Tram project as part of the connection from Marquam Hill to the Waterfront. AGPS Architecture developed the project through the conceptual design phase.

The *South Waterfront Greenway Development Plan Schematic Design* (August 2004) has also developed a design for this space.

**Description of Improvement**

The *South Waterfront District Street Plan, Criteria and Standards* (October 2007) calls for a 110’ Gibbs Street right-of-way. This promenade will extend from SW Bond Ave to the Willamette Greenway Trail. The ground plane will be composed of unit pavers, decomposed granite or some other sort of permeable material that will provide a base upon which other elements are placed. The Portland Aerial Tram Report calls for a line of trees along the northern border of the space, a series of low walls running east-west to provide seating, and grass panels to provide space to play and relax. It also calls for connecting the existing storm water planter at the tram station with a proposed storm water planter at the foot of Gibbs, adjacent to the Greenway.

**Project Area**

![Project Area Diagram](image1)

**Cross-section Detail or Photo**

![Cross-section Diagram](image2)

**Preliminary Cost Estimate**

$ *

*Undetermined

**Priority**

Medium
SW Gibbs St looking east

SW Gibbs Street looking east with programmed activities

SW Gibbs Street looking west

**BP-21. CORBETT AVENUE UPHILL BIKE LANE – BOUNDARY STREET TO HAMILTON STREET**

<table>
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<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
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<tbody>
<tr>
<td>SW Corbett Ave is a designated City Bikeway. It provides one of two bicycle access routes from southwest Portland, west of I-5, to downtown Portland. SW Corbett Ave is a roadway heavily used by both vehicles and bicycles; currently there are no bicycle lanes. A particularly steep section of SW Corbett Ave is from SW Boundary St to SW Hamilton St. This project proposes to make SW Corbett Ave a more comfortable and more attractive bicycle route by adding an uphill bike lane on the west side of Corbett Ave along this stretch.</td>
<td>SW Corbett Ave from SW Boundary St to SW Hamilton St is 36 feet wide. Currently there are two travel lanes (one in each direction), with parking on each side of the street. There is not sufficient space to add a 5-foot bike lane to the existing street configuration. A stretch of this section of Corbett Ave is on structure and passes over I-5. Parking is not permitted on this structure.</td>
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<tr>
<th><strong>Description of Improvement</strong></th>
<th><strong>Project Area</strong></th>
<th><strong>Cross-section Detail or Photo</strong></th>
<th><strong>Preliminary Cost Estimate</strong></th>
<th><strong>Priority</strong></th>
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<tr>
<td>This project proposes adding an uphill bike lane to SW Corbett Ave from SW Boundary St to SW Hamilton St. Adding a bike lane requires removing one lane of parking. As the on-street parking spaces on the east side of the street are in the highest demand, this parking should remain and parking on the west side of the street should be removed. The center line will have to be removed and restriped 5 feet to the west. A 5-foot bike lane should be striped between the southbound travel lane and the parking. The proposed stretch of striping is about 0.4 miles.</td>
<td><img src="image" alt="Project Area Map" /></td>
<td><img src="image" alt="Cross-section Detail" /></td>
<td>$19,000 *</td>
<td>Medium</td>
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*Construction costs as estimated by PDOT Traffic Engineer, Wendy Cawley (July 3, 2008). Cost estimate does not include project management costs (including public process to remove parking).
### Alternatives/Additional Notes

- One consideration, instead of adding a separate bike lane, would be to provide shared bike route markings along the uphill stretch to improve bicycle safety.
PEDESTRIAN / BIKE PROJECTS

BP-22. HOOD AVENUE CROSSWALK & SIDEWALK ENHANCEMENT – LANE ST TO MACADAM AVE

<table>
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<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
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<tr>
<td>Access between the Corbett, Terwilliger, Lair Hill neighborhoods and the South Waterfront District and Willamette River is limited by I-5. The Hood Avenue underpass below I-5 near Bancroft Street provides the only connection across I-5 from the Macadam Avenue/City Center off-ramp to SW Corbett Ave, a distance of about 1 mile. The underpass may only be accessed by walking along the SW Hood Ave sidewalk for about 5 blocks before reaching the underpass.</td>
<td>In order to access the SW Hood Ave sidewalk, pedestrians and cyclists must cross two lanes of very fast moving SW Hood Ave traffic at SW Lane St. The sidewalk is 5½ feet and over-grown. The curb is the only barrier between vehicles and pedestrians/cyclists using the sidewalk. There are two travel lanes with a posted speed of 40 mph, which transitions to 35mph near the I-5 underpass curve. SW Hood Ave is under ODOT jurisdiction.</td>
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<th>Description of Improvement</th>
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<tr>
<td>In order to provide better pedestrian and bicycle access to the SW Hood Ave I-5 underpass, the proposed project includes a crosswalk and the placement of jersey barriers between SW Hood Ave and the existing sidewalk. To provide access to the existing SW Hood Ave sidewalk on the east side of the street, it is necessary to add a crosswalk across SW Hood Ave at the south side of SW Lane St. This improvement should include a curb extension on the west side, pedestrian ramp on the east side, a marked crosswalk, and crosswalk signs. A minimum sight distance of 690 feet is required for such a crossing; the sight distance at this location is more than 800 feet. To increase safety and comfort to sidewalk users, 1150 linear feet of concrete barriers with handrails should be placed between the eastern-most travel lane and the sidewalk. This will require grinding and restriping 1150 linear feet of striping.</td>
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<th>Project Area</th>
<th>Cross-section Detail or Photo</th>
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<tr>
<td>[Diagram of the project location]</td>
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<tr>
<th>Preliminary Cost Estimate</th>
<th>Priority</th>
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<tbody>
<tr>
<td>$1.0 - $1.2 Million</td>
<td>High</td>
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</table>
One alternative to crossing Hood Avenue at Lane would be to move the crossing one block south to Abernethy. Freeway traffic exiting I-5 has more separation from SW Hood at Abernethy, which may make this option more comfortable for pedestrians.

Further scoping is needed to ascertain feasibility of this option.

SW Hood Avenue at SW Lane Street – recommended crossing to be placed here

Sidewalk along west side of SW Hood Avenue, leading to I-5 underpass – jersey barriers recommended to be placed between roadway and sidewalk
### Need/Purpose

SW Kelly Ave is a high capacity, high speed roadway. It acts as a barrier between neighborhoods to the northeast and southwest, as there is only one designated pedestrian crossing of SW Kelly Ave between the Ross Island Bridge and SW 1st Avenue (a distance of more than a quarter-mile). Over this distance, two bus stops are located on the northeast side of Kelly, carrying many riders heading to destinations southeast of Kelly. The one existing crossing is a pedestrian tunnel that passes under SW Kelly Ave just east of SW Naito Pkwy. The tunnel is unsanitary, feels unsafe, and provides shelter to homeless. Of 28 respondents to a PDOT survey, 24 requested that the tunnel be closed and replaced with a street-level crossing due to tunnel-related safety concerns.

### Background Data

SW Kelly Ave is 2 lanes WB and 2 lanes EB with parking on south side of street.

Posed speeds on SW Kelly Ave are 35 mph.

ODOT has jurisdiction over both SW Kelly Ave and the Kelly pedestrian tunnel.

ODOT agrees that the Kelly tunnel should be closed.

### Description of Improvement

This project recommends closing the SW Kelly Ave tunnel by cementing over the top of each opening. This should only occur concurrently with the installation of an at-grade pedestrian crossing on SW Kelly Ave. Due to limited sight-distance near the tunnel, the crossing should be placed south of the SW Meade St intersection where there is 450 feet sight distance in each direction. The crosswalk should specifically include: reducing Kelly southbound to one lane, turning the existing center southbound lane into a center two-way left turn lane, constructing a pedestrian island in the left turn lane at the crossing location, constructing two pedestrian ramps, striping the crosswalk and adding crosswalk signs to alert vehicles. In addition, the bus stop on the north side of Kelly near the pedestrian tunnel should be relocated close to the pedestrian crossing. If BP-24B Kelly Avenue Bike Lane is implemented, this crossing must be signalized.*

### Project Area

[Diagram of SW Kelly Ave with tunnel closure and pedestrian crossing highlighted]

### Cross-section Detail or Photo

[Cross-section diagram with pedestrian island and crosswalk shown]

### Preliminary Cost Estimate

$260,000 - $310,000

$410,000-$560,000 if crossing is signalized (see above)*

### Priority

High
PEDESTRIAN / BIKE PROJECTS

Additional Images / Graphics

SW Kelly Avenue pedestrian underpass just east of SW Naito Parkway – the tunnel conditions are unsanitary and feel unsafe

Northeast Tunnel entrance looking across Kelley to SW entrance

Looking west down Kelly Avenue from NE tunnel entrance.

SW Kelly Avenue tunnel entrance looking Northeast.
PEDESTRIAN / BIKE PROJECTS

BP-24A. WEST END ROSS ISLAND BRIDGEHEAD CONNECTION

**Need/Purpose**

The sidewalk at the west end of the Ross Island Bridge delivers bicyclists and pedestrians to a maze of fast vehicular movements, with no designated crossings. In addition, the #9, 17, 19 bus stop just north of the bridgehead is located on an island surrounded by three high-capacity roadways and no pedestrian crossings to help bus users safely get to and from the bus stop. Many students, staff and faculty at the Natural College of Natural Medicine (NCNM) use this bus stop getting to and from campus. This project provides safer and more comfortable pedestrian and bike access to and from the Ross Island Bridge and the bus stop.

**Background Data**

SW Kelly Ave provides a direct connection from south of the Portland City Center to the Ross Island Bridge. The section of SW Kelly Ave from SW 1st Ave to the Ross Island Bridge is 1300 feet.

In the southbound direction, SW Kelly Ave includes two travel lanes and on street parking, the northbound direction includes two and three travel lanes.

Average daily trips on SW Kelly Ave northbound are 10,220.

The roadway is ODOT fee simple, ODOT will have to approve the proposed project.

**Description of Improvement**

**Crossing #1**: From the bridge sidewalk to the bus stop island, construct a pedestrian refuge island (with pedestrian ramps) between the two merging eastbound travel lanes – the right turn bridge off-ramp and SW Porter St. At the northeast corner of SW Corbett Ave and SW Porter St build a curb extension.

**Crossing #2**: Reduce southbound travel lanes on SW Kelly Ave/SW Corbett St (from SW Naito Pkwy to SW Porter St) to one lane and convert center southbound lane to a two-way left turn lane. At the intersection of SW Corbett Ave and SW Porter St, construct a raised median island in the left turn lane. At the northwest corner of SW Corbett Ave and SW Porter St add a pedestrian ramp. Stripe and sign a crosswalk between the northeast and northwest corners of SW Corbett Ave and SW Porter St. Add a “Stop Here for Peds” bar and signs for traffic exiting the bridge and heading north on SW Corbett Ave. Include a multi-use bus/bicycle lane between Crossing #2 and Crossing #3.

**Crossing #3**: Extend the curb at the southeast corner of the SW Corbett Ave and City Center/ Macadam ramp intersection. Add pedestrian ramps to sidewalks on both sides of the City Center/ Macadam ramp crossing.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

$610,000 - $670,000

**Priority**

High
NCHRP report 562 indicates that crosswalks can be marked on SW Corbett at Kelly and on the Kelly/Ross Island Bridge ramp with active or enhanced treatment (e.g. additional signage, beacons, or other).

Crossing #1 – looking south from northeast corner of SW Corbett Ave & SW Porter St intersection toward the Ross Island Bridge sidewalk and off-ramp

Crossing #2 – looking west from northeast corner of SW Corbett Ave & SW Porter St intersection toward the National College of Natural Medicine campus

Crossing #3 – looking south from intersection of Corbett and Kelly
PEDESTRIAN / BIKE PROJECTS

BP-24B. KELLY AVENUE BIKE LANE

<table>
<thead>
<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sidewalk at the west end of the Ross Island Bridge delivers cyclists to a maze of fast vehicular movements, with no designated or safe way to cross intersections or continue to the Portland City Center. Cyclists must dodge unpredictable traffic to cross the intersections, then join the fast moving traffic lanes on SW Corbett Ave/SW Kelly Ave or ride on the sidewalks. By reducing SW Kelly Ave/SW Corbett Ave to one lane southbound, a bicycle lane can be added to SW Corbett Ave/SW Kelly Ave northbound of from the Ross Island Bridge to SW Naito Pkwy, creating a safer, more direct connection between the Bridge and the City Center. Due to low volumes on SW Kelly Ave southbound, a bike lane is not recommended in this travel direction.</td>
<td>SW Kelly Ave provides a direct connection from south of the Portland City Center to the Ross Island Bridge. The section of SW Kelly Ave from SW 1st Ave to the Ross Island Bridge is 1300 feet. In the southbound direction, SW Kelly Ave includes two travel lanes and on street parking, the northbound direction includes two and three travel lanes. Average daily trips on SW Kelly Ave northbound are 10,220. The roadway is ODOT fee simple, ODOT will have to approve the proposed project.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description of Improvement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>This project recommends adding a northbound bike lane on SW Corbett Ave/SW Kelly Ave. The bike lane would begin where the bridge sidewalk ends and continue along SW Corbett Ave/SW Kelly Ave/SW Arthur St to SW 1st Ave. SW Corbett Ave Bike Lane: In the grassy median on the east side of SW Corbett Ave, from SW Porter St to the City Center/Macadam ramp intersection with SW Kelly Ave, construct a 15 foot-wide bike and pedestrian path or provide cyclists with an on-street alternative by converting the bus lane to a shared bus/bicycle facility. SW Kelly Ave Bike Lane: On the north side of SW Kelly Ave, from the intersection of the City Center/Macadam ramp &amp; SW Corbett Ave to SW 1st Ave, stripe a 5 foot bike lane. This requires converting the center southbound lane into a two-way left turn only lane, and grinding and restriping the existing northbound lanes. The northbound SW Kelly Ave lanes would change from 12’-14’-12’ to 11’-11’-11’-5’. On SW Arthur Ave, restripe northbound travel lanes to 10.5’ and 10.5’ to allow for striping a 5’ bike lane. To cross the two right turn travel lanes onto SW Naito Pkwy northbound, cyclists will be directed to the pedestrian crossing proposed in project BP-24c.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Area</th>
<th>Cross-section Detail or Photo</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Preliminary Cost Estimate</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>$660,000 - $740,000</td>
<td>High</td>
</tr>
</tbody>
</table>
# PEDESTRIAN / BIKE PROJECTS

## Alternatives/Additional Notes

Implementation of BP-24b will require addition of signal at Kelly Avenue Crosswalk Replacement (BP-23).

## Additional Images / Graphics
## BP-24C. RAMP CROSSINGS OF KELLY AVENUE TO NAITO PARKWAY

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In order to provide a safe pedestrian and bicycle connection between the Ross Island Bridge and SW 1st Ave, non-motorized users need a safe way to cross the SW Kelly Ave to Naito Pkwy ramps, both northbound and southbound. This project proposes enhanced crossings across both on-ramps to be used by pedestrians and bicyclists. (It will be a similar configuration to that constructed where SW Naito Pkwy branches from SW Barbur Blvd in the northbound direction.)</td>
<td>Both the northbound and southbound SW Kelly Ave ramps onto Naito Pkwy accommodate two travel lanes. While the right lane is required to turn right onto the ramp, the center lane can chose to take the ramp or continue straight. Unable to predict vehicular movements in the center lane, with posted speeds of 35 MPH, and with no crosswalk, these are difficult crossings for both pedestrians and cyclists. The roadways and ramps are under ODOT jurisdiction.</td>
</tr>
</tbody>
</table>

### Description of Improvement

This project recommends striping a pedestrian crosswalk across the two-lane ramp from northeast-bound SW Kelly Ave to northbound SW Naito Pkwy. Prior to approving a marked crosswalk, pedestrian volumes will need to be counted and must meet the minimum requirement. In addition to striping, stop lines should be painted across the two lanes (prior to the crosswalk) with “Stop Here for Peds” signs. The existing curb cuts for the crosswalk across the northbound travel lanes may need to be rebuilt to meet ADA compliance. For the crosswalk across the southbound travel lanes, a large curb extension should be built out from the sidewalk under SW Naito Pkwy, north toward the SW Arthur St sidewalk. Curb cuts should be built on the north side of this intersection at SW Arthur St, but an enhanced crossing is not recommended at this time.

### Project Area

![Project Area Map](image1)

### Cross-section Detail or Photo

![Cross-section Photo](image2)

### Preliminary Cost Estimate

| $360,000 - $390,000 |

### Priority

| High |
The two-lane ramp from southeast-bound SW Kelly Ave to southbound SW Naito Pkwy does not meet NCHRP Report 562 requirements for a marked crosswalk. Auto volumes are too high.

A PDOT traffic engineer examined the opportunity to limit the right turn onto the ramp to the northbound SW Kelly Ave-SW Naito Pkwy Ramp right-hand lane only. Doing this would provide increased predictability to pedestrians and bicyclists trying to cross the ramp. However, due to the weave on SW Kelly Ave that occurs prior to the ramp, a two lane ramp onto SW Naito Pkwy northbound is required.

Looking westbound on SW Kelly Ave, toward the SW Naito Pkwy elevated structure. There are pedestrian crossing signs on either side of the ramp, but no traffic slowing or stopping measures.
BP-25. SW NAITO PARKWAY PEDESTRIAN CROSSING AT SW PORTER STREET

**Need/Purpose**
In the vicinity of the National College of Natural Medicine, SW Naito Pkwy acts as a barrier between the college campus and the Lair Hill neighborhood to the west. Despite multiple lanes of fast moving traffic, pedestrians often cross SW Naito Pkwy at-grade at SW Porter Ave. This project recommends a formalized pedestrian crossing of SW Naito Pkwy at Porter. At this point, Naito is in an urban neighborhood and it is appropriate that the limited-access nature of the roadway changes to be slower and more permeable.

**Background Data**
This section of SW Naito Pkwy is 8 lanes wide.
- Two-lane, low-volume, frontage road
- Northbound – one bus lane and one travel lane
- Two southbound travel lanes on SW Naito Pkwy
- Two southbound travel lanes feeding onto the Ross Island Bridge.
- Three narrow, concrete medians separating lanes.
The travel speed on this section of SW Naito Pkwy is 40 mph.

**Description of Improvement**
This project recommends placing a signalized crosswalk* across SW Naito Pkwy at SW Porter St. In addition to the signal and striping, the project requires rebuilding sections of the medians, complete with pedestrian cuts, and widening the sidewalk on each side of SW Naito Pkwy. An ADA-compatible ramp will need to be built from SW Porter St west of SW Naito Pkwy down to SW Naito Pkwy. Currently, the two streets are connected by two sets of about 4 stairs each.

*See Additional Notes on back side.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**
$940,000 - $1.1 Million

**Priority**
Medium
### Alternatives/Additional Notes

The crossing requires a signal because it does not meet marked crosswalk criteria. Pedestrian counts need to be done at this location to determine whether the crossing meets warrants for a signal. To meet signal warrants, there must be less than one adequate gap per minute and 193 pedestrians crossing at this location during peak period. If it does not meet warrants, then this project will need to be put on hold until the character of SW Naito Pkwy in this vicinity starts to change or warrant requirements are met.

A signalized crosswalk on SW Naito Pkwy at SW Hooker St was considered, but the street configuration at this point is not appropriate for a pedestrian crossing. SW Porter St was selected as a better crossing location.

### Additional Images / Graphics
BP-26. HOOKER STREET PEDESTRIAN BOULEVARD BETWEEN NAITO PKWY AND KELLY AVE

**Need/Purpose**

SW Hooker St between Naito Pkwy and Kelly Ave cuts between the academic buildings of the National College of Natural Medicine, Ross Island Bridge campus. While the traffic volumes on this stretch of SW Hooker St are low, reclassification and reconfiguration of the street to a pedestrian boulevard would change the street function from dividing the campus to connecting it. This project connects to the new Kelly Street crossing (BP-23), and links the neighborhood to the OHSU Schnitzer Campus.

**Background Data**

This section of SW Hooker Street is 36 feet wide and about 500 feet long.

East end of the street dead ends before SW Kelly Ave.

West end of the street is a forced right turn onto SW Naito Pkwy frontage road.

One other low-volume street, SW Water Ave, dead ends into SW Hooker Street at its mid-point.

The Hooker Street Pedestrian and Bicycle Bridge over SW Naito Pkwy connects at the middle of this stretch of SW Hooker St.

**Description of Improvement**

This project recommends that this 500 foot-long section of SW Hooker St, from SW Naito Pkwy to SW Kelly Ave, be turned from a neighborhood street into a predominately pedestrian boulevard. The construction of this section of SW Hooker St could be modeled off of the Chinatown festival streets in northwest Portland or off of SW Pennoyer St, from SW Bond Ave to the Willamette River in the South Waterfront District. The street could be constructed out of pavers or bricks. The street and sidewalk should be at the same level and blend together. The street should include street furniture, historical lighting, street trees, bike parking, and other pedestrian-friendly features.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

$3.8 - $4.4 Million

**Priority**

Medium
SW Pennoyer St. in South Waterfront district
### BP-28. MOODY AVE / RIVER PARKWAY SIDEWALK CUTBACK

#### Need/Purpose

From the Portland City Center to the South Waterfront District is a direct bike route along SW Harrison St, SW River Pkwy, and SW Moody Ave. A bike lane is consistent along this route, with the exception of a short section where it disappears – the right hand turn from SW River Pkwy eastbound to SW Moody Ave southbound. In order to eliminate confusion for cyclists and motorists and increase the safety of this route, a continuous bike lane should be carried through this curve.

#### Background Data

The bike lane drops for 130 feet around the curve. The current street width at the curve from the center of the southbound streetcar lane to the curb is 19’.

#### Description of Improvement

This project recommends that the curb at the southwest corner of SW Moody Ave and SW River Pkwy be required to be reconstructed when the parcel is redeveloped. The reconstruction should build the curb 22.5’ from the center of the southbound streetcar lane. This would allow for striping a 5’ bike lane through the corner.

#### Project Area

![Project Area Diagram]

#### Cross-section Detail or Photo

![Cross-section Diagram]

#### Preliminary Cost Estimate

$240,000 - $260,000

#### Priority

Medium
# PEDESTRIAN / BIKE PROJECTS

## Alternatives/Additional Notes

## Additional Images / Graphics
BP-29. BIKEWAY ENHANCEMENT OF SW GROVER ST & SW 1ST AVE

**Need/Purpose**

SW Corbett Ave to SW 1st Ave is a designated City Bikeway, providing bicycle connection from southwest Portland neighborhoods to the Portland City Center. Just south of the Ross Island Bridge, SW Corbett Ave bends 90 degrees to the west and turns into SW Grover St. SW Grover St continues for a short distance, passing underneath SW Naito Pkwy and reemerging at SW 1st Ave. Bicycle lanes are not striped along any section of this route. Traffic calming along SW Corbett Ave (BP-10) will improve the biking experience along Corbett. The Grover and 1st Ave to Arthur section should have similar traffic calming and signing to improve bicycling safety and comfort.

**Background Data**

The slope on the west side of the Grover Street Underpass is almost 8% and the slope on the east side of the underpass is about 5%.

The roadway at the underpass curves from an east-west orientation to a north-south orientation, restricting sight distance.

The marked speed is 30 mph.

The travel lanes are each 15 feet wide.

**Description of Improvement**

This project recommends that bicycle enhancements are made on SW Grover St, from SW Water Ave to SW 1st Ave, and on SW 1st Ave from SW Grover St to SW Arthur St. Recommended enhancements include traffic calming in the form of about three speed bumps, painted bike sharrows in the travel lanes, and “Bikes on Roadway” and “Speed Bumps Ahead” signs. The aim of these enhancements is to help develop the designated bikeway and improve the safety and comfort for cyclists traveling along SW Grover St and SW 1st Ave.

The specific locations of the speed bumps are to be determined.

**Project Area**

[Map of project area]

**Cross-section Detail or Photo**

[Cross-section of project area]

**Preliminary Cost Estimate**

$23,000 – $25,000

**Priority**

Medium
### Alternatives/Additional Notes

We have recommended sharrows in favor of bicycle lanes for this improvement owing to two conditions in the project area:

1) The underpass curves are not wide enough to safely accommodate a bicycle lane.
2) Installing a bicycle lane in the segment between SW Grover and SW Arthur would impinge upon on-street parking and thus likely meet resistance from neighbors.

### Additional Images / Graphics

![Typical bike sharrow](image-url)
There is greater demand than supply for bicycle parking at the base of the Portland Aerial Tram (the tram). With no available bicycle racks, cyclists are locking bikes to nearby benches and trees, and overflowing into the OHSU underground parking structure one-block away.

As the South Waterfront District continues to grow, demand for bicycle parking will increase. This particular location will increasingly become a nexus for bicycle travelers in southwest Portland with the tram, streetcar, light rail, Greenway Trail, and Gibbs Promenade. Additional bike parking is important to help the District achieve its targeted mode splits.

Currently there are about 120 bike parking spaces at the base of the aerial tram. Many tram users opt to take their bicycles on the tram rather than lock them at the base. This is leading to overcrowding on the tram (up to 10 bicycles per tram car have been reported).

Interviews will be conducted in Spring/Summer 2009 to better understand bicycle travel patterns and needs. It is anticipated that a safer, more comfortable, more expansive bicycle parking facility at the base of the tram will encourage more bicycle commuting and fewer bicycles being carried in the tram cars.

This project recommends a one-level, covered bicycle parking structure with high visibility and good lighting. The structure should provide a minimum of 24 parking spaces. It is recommended that the structure offer two parking options: one that is free to all users with standard City approved bike racks; the other that is secured bike parking available to monthly paying customers.

This project may be merged with T-2: Multi-Modal Transit Hub

**Preliminary Cost Estimate**

$ 25,000 – $3+ Million*

* Preliminary cost estimate taken from Bikestation.org does not include annual operating cost.
### Alternatives/Additional Notes

OHSU has indicated that it would be open to alternative locations and/or configurations of the bicycle parking facility. Acceptable options would include:

- Location of the bicycle facility near the anticipated Porter Street MAX station
- Splitting the bicycle station into several smaller facilities located at several dispersed sites throughout the district

### Additional Images / Graphics
**BP-31A. BICYCLE WAYFINDING TO AND AROUND THE NORTH MACADAM URA**

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The City of Portland’s bikeway destination signs provide direction and distance to specified destinations, including commercial centers, parks of regional significance, transit facilities, and certain institutions. With few access points to the South Waterfront District and several fast moving, limited access roads passing through the area, a bicycle wayfinding system should be established to help guide bicyclists into and out of the District.</td>
<td>The South Waterfront District is developing into a high density residential and business district. Currently there are no signs directing bicyclists to the District from other locations or to destinations within the District. The City bikeway destination signs are placed at intersections along all developed bikeways, at key decision points, and as guidance through difficult turns.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Description of Improvement</strong></th>
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</thead>
<tbody>
<tr>
<td>This project recommends adding directional placards to existing signs to help direct bicyclists along safe routes to the South Waterfront District. It also recommends adding new signs in and around the South Waterfront District to direct residents and visitors to specific destinations in and near the District. The new signs should provide directions to the commercial center, the Central Greenway Trail and other parks of regional significance, institutions, and transit facilities, including the tram, streetcar, future light rail, and future bus stops.</td>
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<tr>
<th><strong>Project Area</strong></th>
<th><strong>Cross-section Detail or Photo</strong></th>
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<table>
<thead>
<tr>
<th><strong>Preliminary Cost Estimate</strong></th>
<th><strong>Priority</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$ TBD</td>
<td>High</td>
</tr>
</tbody>
</table>
**PEDESTRIAN / BIKE PROJECTS**

<table>
<thead>
<tr>
<th>Additional Images / Graphics</th>
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</thead>
</table>

DKS Associates
TRANSPORTATION SOLUTIONS

April 2008
### BP-31B. PEDESTRIAN WAYFINDING TO AND AROUND THE SOUTH WATERFRONT

#### Need/Purpose

The City of Portland’s Pedestrian Wayfinding Signage System is a pedestrian-oriented informational and directional signage program. It currently exists in Portland’s City Center, including the I-405 loop and the Lloyd District.

A pedestrian wayfinding system should be established in the South Waterfront District to direct residents and visitors to institutions, transit connections, parks, and nearby districts.

#### Background Data

The South Waterfront District is developing into a high density residential and business district. Currently there are no signs directing pedestrians to the District from other locations or to destinations within the District.

#### Description of Improvement

This project recommends adding directional placards to existing signs to help direct pedestrians into the South Waterfront District. It also recommends adding new signs in and around the South Waterfront District to direct residents and visitors to specific destinations.

About 15 directional placards should be added to existing signs located in Downtown and the University District to direct pedestrian to the South Waterfront District.

About 20 new signs should be installed in the University District and the Corbett/Lair Hill/Terwilliger neighborhoods to direct pedestrians to the South Waterfront District and the OHSU Marquam Hill Campus.

About 15 new signs should be installed throughout the South Waterfront District. The new signs should provide directions to: OHSU Marquam Hill Campus, OHSU Schnitzer Campus, the Center for Health and Healing, the National College of Natural Medicine, John’s Landing, Riverplace, Portland City Center, the tram, the streetcar, the Greenway Trail, South Waterfront Park, the future Gibbs Pedestrian Bridge and the future light rail, among others.

#### Project Area

#### Cross-section Detail or Photo

![Cross-section Detail or Photo](image)

#### Preliminary Cost Estimate

$ TBD

#### Priority

Medium
Location of existing pedestrian signs in the five districts.
## Need/Purpose
The eastern end of the Gibbs Street Pedestrian Bridge has no direct bicycle connection to the future Porter Street LRT station. This improvement will provide safe and comfortable movement between the bridge and LRT station by avoiding conflict with automobile activity on SW Moody and pedestrian activity in the elevator.

## Description of Improvement
This improvement is a 5% grade bike path from the top of the Gibbs Pedestrian Bridge to Porter Street. The path is shown in ODOT ROW and would be on structure for part of the distance.

## Project Area

## Cross-section Detail or Photo

## Preliminary Cost Estimate
$2.5 Million

## Priority
Low
| Additional Images / Graphics |
BP-33. SW 1st Avenue Bicycle Improvements

**Need/Purpose**

SW 1st Avenue is a designated City Bikeway. It provides one of two bicycle access routes from South Waterfront to downtown Portland and the only direct route from the NCNM campus across I-405. SW 1st Avenue north of SW Arthur Street is a roadway shared by vehicles and bicycles without the benefit of a northbound bicycle lane. This project proposes to make SW 1st Ave. a more comfortable and more attractive bicycle route by adding a northbound bike lane on SW 1st Avenue between SW Arthur Street and SW Harrison Street. SW Harrison Street is another designated City Bikeway, which links the S. Waterfront and PSU.

**Description of Improvement**

This improvement will add a bike lane on SW 1st Avenue between SW Arthur Street and SW Harrison Street. Adding a bike lane will require removing one northbound vehicle lane.

**Background Data**

Currently there are four travel lanes (two in each direction), separated by a median. There is also a southbound bike lane on SW 1st Ave. from SW Jefferson Street to SW Arthur Street.

Northbound vehicle traffic on SW 1st Avenue is moderate to light.

There is not sufficient space to add a 5-foot bike lane to the existing street configuration.

**Project Area**

[Map of SW 1st Avenue showing bike lanes and vehicle lanes]

**Cross-section Detail or Photo**

[Diagram showing bike lanes and vehicle lanes on SW 1st Avenue]

**Preliminary Cost Estimate**

$ TBD

**Priority**

Medium
SW 1st Avenue is on structure across I-405. Enough median space is appropriated by a left turn lane on 1st Ave SB to prevent NB traffic lanes form being able to shift over enough to accommodate both the two traffic lanes and a new bike lane. There is a 6’ wide sidewalk on structure.

SW 1st Ave looking NB. Note the light traffic and wide, tree-filled median.

SW 1st Avenue’s NB lanes terminate at SW Harrison, forcing either a right or left turn.
BP-34. HARRISON UPHILL BIKE TREATMENT

**Need/Purpose**

SW Harrison Street is a designated City Bikeway. It provides one of two bicycle access routes from South Waterfront to downtown Portland and the only direct route to Portland State University. SW Harrison St. is a roadway used by vehicles, streetcars and bicycles; currently there are no bicycle lanes on an uphill section of Harrison Street, between SW Naito Parkway to SW 4th Avenue. This project proposes to make SW Harrison Street a more comfortable and more attractive bicycle route by adding an uphill bike treatment on the north side of SW Harrison Street along this stretch.

**Background Data**

Currently there are four travel lanes (two in each direction), separated by a median. The two inside lanes contain streetcar tracks. The median is home to two streetcar stops (each stop serves both directions) and pedestrian crosswalk refuges.

There is not sufficient space to add a 5-foot bike lane to the existing street configuration without removing a traffic lane.

There are bike lanes in both directions on SW Harrison Street between SW Naito Parkway and SW Moody Avenue.

Vehicle traffic on this segment of SW Harrison Street is moderate to light.

**Description of Improvement**

This improvement would replace the right vehicle lane on SW Harrison with an uphill bike lane from SW Naito Parkway to SW 4th Avenue, but will need traffic operations evaluation to determine:

- How the bike lane will affect vehicle stacking between Naito and 1st
- If and how cars will be able to drive around stopped streetcars

**Project Area**

![Project Area Diagram]

**Cross-section Detail or Photo**

![Cross-section Diagram]

**Preliminary Cost Estimate**

$ TBD

**Priority**

Medium
Crossing 4th Ave on Harrison will still present challenges.

SW Harrison showing median utilized for street tree planting and Streetcar stops for both EB and WB line.

SW Harrison uphill showing special limitations for widening of street into curb or expansion of lanes.
IMPORTANCE OF TRANSIT IN NORTH MACADAM

A high-quality transit system is the foundation of North Macadam’s land use and development goals. In addition to providing critical access and mobility to, from, and within the District, the Transit Strategy will also sculpt the landscape and iconic features that define the District’s vitality. The North Macadam URA will employ a Transit Strategy that creates connections through transportation infrastructure and provides the catalyst to create density and the pedestrian oriented environment envisioned in the North Macadam Framework Plan.

Currently, the District has the lowest transit capacity and longest headways in the Central City. North Macadam’s accessibility is further constrained by physical barriers erected over decades of highway construction, leaving few routes for vehicular entry or exit.

The transit improvements proposed in this strategy envision a 30% alternative mode split to alleviate congestion and move people efficiently throughout the District and connect them to destinations throughout the region. The strategy includes the new Locally Preferred Alternative alignment for the Portland to Milwaukie light rail project, and streetcar service integrated into the greater Portland Streetcar Loop and extended to Lake Oswego. As the District grows, implementation of additional bus service will

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provide further connections with the surrounding neighborhoods and links into the regional transportation network.

CURRENT TRANSIT CONDITIONS

Current transit service varies considerably within the North Macadam District. TriMet currently provides bus service along Macadam Avenue via Line 35-Macadam and Line 36-South Shore with stops at Boundary Street and Curry Street. The Ross Island Bridge carries a number of bus transit lines through the South Portland portion of the district providing connections to Southeast Portland and Downtown. However, there is no transit connection from the Ross Island Bridge bus lines to the growing district below. The Portland Streetcar operates nine stops within the district from SW 1st Avenue to SW Lowell, and the Aerial Tram connects the district to OHSU’s Marquam Hill facilities and the bus transit serving that campus.

Beginning in Spring 2009, TriMet plans to route Line 35-Macadam southbound through the South Waterfront on Moody Street. TriMet will consider northbound service through the district pending the proposed improvements to the SW Bancroft Street area in project T-4c.

More detailed information on current conditions can be found in Chapter 3: Existing Transportation Conditions.

TRANSIT PROJECTS

The transit projects proposed in this strategy address gaps in existing service and provide the high capacity transit needed to deliver effective service when the district achieves full build-out. The proposed projects evolved through a combined effort of stakeholder interviews, coordination with TriMet, and reviewing projects identified in previous studies. One previous study of significant importance was the North Macadam Parking and Transit Strategy (2000). Several components of that study were incorporated into this North Macadam Transportation Development Strategy.

As outlined in the 2000 North Macadam Parking and Transit Strategy the proposed transit service matches the projected transit users needs (origin and destination). Those origin and destination locations for the North Macadam District include communities to the South and Southwest, Southeast Portland, and Clackamas County. As a Central City District, high capacity transit
connections to the downtown core and Northwest are also projected to be essential to supporting the district’s development. While there is limited transit service today, once the transit projects are implemented, the North Macadam District is projected to have a level and diversity of transit service equaled only by the Central City itself.

Table 6-1 lists the transit projects identified by the project team.

**Table 6-1: Transit Improvement Project List**

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-02</td>
<td>Multi-modal Transit Hub</td>
<td>Transit hub for streetcar, aerial tram, and future light rail, Lake Oswego streetcar extension, and bus service.</td>
</tr>
<tr>
<td>T-03</td>
<td>Naito/Hooker Bus Stop Enhancement</td>
<td>Add shelter and improved lighting at Naito Pkwy and Hooker St bus stop</td>
</tr>
<tr>
<td>T-04a</td>
<td>Bus #35 Reroute and Stops</td>
<td>Reroute bus #35 from Macadam into the South Waterfront District and add bus stops</td>
</tr>
<tr>
<td>T-04b</td>
<td>North Portal Transit Improvements</td>
<td>Improvements to allow for bus travel through the North Portal</td>
</tr>
<tr>
<td>T-04c</td>
<td>Bancroft Transit Improvements</td>
<td>Improvements to allow for bus access into the South Waterfront District at Bancroft</td>
</tr>
<tr>
<td>T-05</td>
<td>Water Taxis</td>
<td>Add water taxis, including landing stations</td>
</tr>
<tr>
<td>T-06</td>
<td>Streetcar Headways and Service Hours</td>
<td>Increase streetcar headways and extend service hours</td>
</tr>
<tr>
<td>T-08</td>
<td>Hamilton Street Funicular</td>
<td>Add a funicular along Hamilton Street to connect Barbur Blvd and I-5</td>
</tr>
<tr>
<td>T-09</td>
<td>Light Rail Transit</td>
<td>Add LRT to the South Waterfront District</td>
</tr>
<tr>
<td>T-10</td>
<td>Bus Connection to National College of Natural Medicine</td>
<td>Reroute TriMet bus from the Ross Island Bridge through NCNM to new bus stop at SW Naito and SW Porter</td>
</tr>
<tr>
<td>T-12</td>
<td>Streetcar to Lake Oswego</td>
<td>Extend streetcar service to Lake Oswego</td>
</tr>
<tr>
<td>T-13</td>
<td>Streetcar through North District</td>
<td>Extend streetcar service on Bond, from Gibbs St to River Place</td>
</tr>
</tbody>
</table>

**Evaluating the Project List**

The Transit Project priority ranking assessment reflects a composite of evaluations from stakeholders, partners, and staff. Each category has a ranking of 1 to 5 based upon the criteria in Table 6-2.

In addition, each project was assigned a low, medium, or high feasibility ranking based on the realistic likelihood that the project in question could be produced by the year 2015 or would be implemented later in the districts’ development. Factors influencing feasibility include the need for adjacent development to support the project or known obstacles occurring in the near or immediate future preventing its implementation.
Table 6-3 summarizes the transit project rankings and Table 6-4 shows the complete Project Evaluation Matrix for transit projects. Each project not already In Process was assigned a high, medium, or low priority ranking based on assessment of its ranking score and its feasibility. A map of the transit projects is shown in Figure 6-1.

**Table 6-2: Project Ranking Scale**

<table>
<thead>
<tr>
<th>Ranking Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New Connections</strong> - provides new connections between the URA and the region</td>
<td>no new connections</td>
<td>some new connections</td>
<td>many new connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transit Connections</strong> - makes connections to existing transit stops/network</td>
<td>no transit connections</td>
<td>some transit connections</td>
<td>extensive transit connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Safety/Comfort</strong> - improves safety and comfort of transit access</td>
<td>access is not safer</td>
<td>access is moderately safer</td>
<td>access is significantly safer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Utilization</strong> - potential for high number of users who benefit from project</td>
<td>few users</td>
<td>some users</td>
<td>many users</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>URA Benefit</strong> - project directly benefits URA residents/employees</td>
<td>no benefit</td>
<td>moderate benefit</td>
<td>significant benefit</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost:Benefit</strong> - cost to benefit relationship (cost of project compared to overall benefit reaped from project)</td>
<td>little bang for the buck</td>
<td>cost=benefit</td>
<td>big bang for the buck</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feasibility</strong> - What is the feasibility of the project occurring by 2015?</td>
<td>(project already In Process / High feasibility / Low feasibility)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Funded (Yes / No / Partially)</strong></td>
<td>Yes / No / Partially</td>
<td></td>
<td></td>
<td></td>
<td>N / A (not applicable)</td>
</tr>
</tbody>
</table>
### Table 6-3: Summarized Ranking of Transit Projects

<table>
<thead>
<tr>
<th>In Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-3</td>
</tr>
<tr>
<td>T-4a</td>
</tr>
<tr>
<td>T-9</td>
</tr>
<tr>
<td>Top Priority</td>
</tr>
<tr>
<td>T-4c</td>
</tr>
<tr>
<td>T-6</td>
</tr>
<tr>
<td>Medium Priority Projects</td>
</tr>
<tr>
<td>T-4b</td>
</tr>
<tr>
<td>T-2</td>
</tr>
<tr>
<td>T-12</td>
</tr>
<tr>
<td>T-13</td>
</tr>
<tr>
<td>T-10</td>
</tr>
<tr>
<td>Low Priority</td>
</tr>
<tr>
<td>T-5</td>
</tr>
<tr>
<td>T-8</td>
</tr>
<tr>
<td>Deleted</td>
</tr>
<tr>
<td>T-11</td>
</tr>
</tbody>
</table>

### PROJECT SUMMARY SHEETS

For each project a summary sheet was created to give further detail about the project. The transit project sheets are listed numerically.
### Table 6-4: Transit Project Evaluation Matrix

<table>
<thead>
<tr>
<th>Proj #</th>
<th>Project Name</th>
<th>New Connections</th>
<th>Transit Connections</th>
<th>Safety / Comfort</th>
<th>Utilization</th>
<th>URA Benefit</th>
<th>Cost Benefit</th>
<th>Feasibility</th>
<th>Funded</th>
<th>Requires Future ODOT Approval</th>
<th>Project included in TSP?</th>
<th>Project included in RTP?</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-9</td>
<td>Light Rail Transit</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>IP</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>T-4a</td>
<td>TriMet Line 35-Macadam Route Change and Stops</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>IP</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>T-4c</td>
<td>Bancroft Transit Improvements</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>H</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>T-6</td>
<td>Streetcar Headways and Service Hours</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>H</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-3</td>
<td>Naito/Hooker Bus Stop Enhancement</td>
<td>N/A</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>H</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-2</td>
<td>Multi-modal Transit Hub</td>
<td>N/A</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>M</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-4b</td>
<td>North Portal Transit Improvements</td>
<td>N/A</td>
<td>4</td>
<td>N/A</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>M</td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-12</td>
<td>Streetcar to Lake Oswego</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>M</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-13</td>
<td>Streetcar through North District</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>M</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-10</td>
<td>Bus Connection to the National College of Natural Medicine</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>M</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-5</td>
<td>Water Taxis</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>L</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-8</td>
<td>Hamilton Street Funicular</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>L</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>T-11</td>
<td>Ross Island Bridge Transfer Facility</td>
<td>Recommended to be deleted - Light Rail Bridge into South Waterfront District renders this project unnecessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: The table ranks projects from highest to lowest feasibility, with the highest rating being 5. Feasibility is determined by a combination of factors including cost-benefit analysis, project scope, and potential impact on the transit system.*
Lake Oswego to Portland Transit Alternative (streetcar service)
## T-2. MULTI-MODAL TRANSIT HUB

### Need/Purpose
The South Waterfront District is developing into a transit crossroads. Currently the Portland Aerial Tram and the Portland Streetcar operate in the District. As this report indicates, the Portland-Milwaukie light rail line (T-9), the Lake Oswego streetcar extension (T-12), and bus service (T-4) are proposed for the District. Providing a hub at which residents and visitors could receive comprehensive information to navigate the transit system and buy transit passes would enhance the transit experience and utilization. This hub would service south downtown as the Pioneer Courthouse Square transit hub services central downtown.

### Background Data
The *North Macadam District Framework Plan* (August 1999) is the first document to reference the Multi-modal Transit Hub.

This project may be merged with BP-30: Portland Aerial Tram Bicycle Parking due to the potential for shared space and staffing.

### Description of Improvement
This project proposes a Multi-modal Transit Hub in the South Waterfront District to provide residents and visitors with information on transit travel and the opportunity to purchase transit tickets. The hub would provide information on the existing aerial tram, streetcar, and on future light rail, streetcar extension, and bus service. If water taxis and the Hamilton Street funicular are one day introduced to the District, information and passes for these modes of transit would also be included.

The hub should be located either at the intersection of the streetcar and the base of the aerial tram or at the intersection of the streetcar and future Portland-Milwaukie Light Rail line.

The hub should be integrated into a high-visibility, high-traffic, multi-use building.

### Project Area
![Project Area Map](image)

### Cross-section Detail or Photo
![Cross-section Photo](image)

### Preliminary Cost Estimate
$ TBD * (see back)

### Priority
Medium
Alternatives/Additional Notes

* This project envisions the Transit Hub to be opened and operated by the South Waterfront Transportation Management Association at a cost at or below $100,000 per year.

---

Additional Images / Graphics

The Transportation Place is intended to be a major “attractor”. It will be located near the light rail, tram, and streetcar lines in Portland’s South Waterfront neighborhood and be highly visible from the street. Located in an area of high pedestrian/transit activity, the Transportation Place will feature interactive and educational displays designed to attract the public. It will be both a retail outlet for transportation products and services as well as a meeting place for organizations and individuals. An ideal space will be large enough to include:

- A retail “transportation store” with high quality transportation products
- A counter for assisting customers staffed by transportation professionals
- Space for bike and electric bike rental
- A coffee/juice bar
- Meeting space for non-profits and other transportation related groups
- Computer terminals for trip planning
- Transit ticket, pass and permit sales
- Car sharing outlet with vehicle near the site
- “Eco tour” travel agency focusing on non-auto travel alternatives
- Loaner bikes for downtown/South Waterfront employees
- Disabled mobility information and ADA certification
- Carpool matching services and permit information
- Inter-city train schedules and ticket sales
- Delivery service for non-auto shoppers
### T-3. BUS STOP ENHANCEMENT AT SW NAITO PKWY & SW HOOKER ST

<table>
<thead>
<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>The existing bus stop on the west side of SW Naito Pkwy at SW Hooker St provides southbound transit access to commuters of the National College of Natural Medicine (NCNM) and the surrounding businesses and residences. The bus stop is located on a narrow sidewalk along busy SW Naito Pkwy, which is abutted by a 3-foot earthen mound, dense vegetation, and a set of stairs up to SW Hooker St. The stop is also adjacent to the Hooker Street Pedestrian Bridge ramp, which provides shelter to homeless. Cutting into the retaining wall to widen the sidewalk at the bus stop, as well as replacing the vegetation with a more transparent alternative would greatly improve the safety and comfort of this stop.</td>
<td>The NCNM Transportation Planning Analysis – February 2008 mentioned the need for improvements at this bus stop. The bus stop improvement is not dependent on another project. TriMet data shows the Naito/Hooker southbound bus stop services 143 daily boardings and deboardings.</td>
</tr>
</tbody>
</table>

### Description of Improvement

This project recommends widening the sidewalk at the location of the existing Naito/Hooker southbound bus stop and adding pedestrian scale lighting. Sidewalk widening will require excavating 15’ by 6’ of earth, laying a concrete pad, and erecting a retaining wall.

---

<table>
<thead>
<tr>
<th>Project Area</th>
<th>Cross-section Detail or Photo</th>
</tr>
</thead>
</table>

**Preliminary Cost Estimate**

$ TBD - $5,000 for wall

**Priority**

High
Currently, TriMet and City of Portland are working together to establish the particulars and dimensions of this improvement. TriMet has indicated that if the City of Portland assumes responsibility for relocating the retaining wall, it [TriMet] will implement the bus stop enhancements.

Looking northbound on SW Naito
### T-4A. TRIMET LINE 35-MACADAM ROUTE CHANGE AND STOPS

#### Need/Purpose
The streetcar provides a transit connection between the South Waterfront District and the City Center. The District, however, does not have a transit connection to areas to the south. In order to provide those traveling to and from the District with an alternative to the motor vehicle, it is necessary to expand transit service. Routing Line 35-Macadam so that it passes through the District would provide a much needed and desired transit connection.

#### Background Data
The North Macadam District Framework Plan, accepted by City Council August 11, 1999, recommended that bus service be implemented concurrent with the reconstruction of Bond Street. Subsequent reports have also emphasized bus service to the District, including the Portland Aerial Tram – Final Recommendations and Report. Providing bus service to South Waterfront was included in TriMet’s 2005-2008 Transit Improvement Plan.

#### Description of Improvement
This improvement routes TriMet Line 35-Macadam into the South Waterfront District, but leaves the northbound route unchanged. While all parties desire to reroute the bus in both directions, TriMet concludes that the one-direction reroute is the only feasible option at this time due to northbound traffic issues in and around SW Whitaker and Moody/Bond, as well as delays and loss of service to other users.

General improvements required prior to introducing bus service to the area include: intersection improvements at SW Bancroft St and SW Macadam Ave, adding bus stops in the District, restriping lanes and moving some parking on SW Whitaker St, and possibly adding transit signal prioritization at SW Harbor Dr and SW River Pkwy. For specific recommendations, see the back of this sheet.

#### Project Area
![Map of Project Area](image)

#### Cross-section Detail or Photo

#### Preliminary Cost Estimate
$ TBD*

#### Priority
In Process

* Tri-Met has indicated that it would assume the costs for this improvement.
The following items identify the technical changes needed prior to line 35-Macadam routing change in the South Waterfront District.

**Bus stops in District – North to South**

1. Harrison St, between Naito and Harbor (between two streetcar stops)
   - Potential bus stop
2. River Pkwy / Moody Ave @ River Dr
   - Introduce stop just west of SW River Dr
   - Curb is sufficient height
3. Moody Ave, near Schnitzer parking lot
   - No stop necessary at this time
4. Moody Ave @ Gibbs St
   - Place at existing curb bulb-out on northwest corner of Moody and Whitaker
5. Moody Ave @ Gaines St
   - Use existing streetcar stop, which is substandard (narrow platform) but could likely be used with no modifications
6. Moody Ave, b/t Lowell St and Bancroft St
   - Place stop mid-block (lose parking)
**T-4B. NORTH PORTAL TRANSIT IMPROVEMENTS**

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This improvement supports the effective Line 35-Macadam route change through the district (T-4a). While this portal functions today, as the district grows it may be necessary to add these improvements. The current bus routing does not go through South Waterfront northbound, so no improvements are needed at the North Portal at this time.</td>
<td>TriMet will route Line 35-Macadam southbound through the South Waterfront, via the North Portal, in spring 2009. TriMet expects to have 20 buses/hour running in/out of the area by full build out. Buses will use the new Harrison Street connector to Naito Parkway. TriMet believes that certain intersections will be choking points and that there are a few things that can be done to make it smoother, helping TriMet maintain reliable and timely service.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Description of Improvement</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This project includes several improvements requested by TriMet to facilitate efficient northbound bus service out of the North Portal of North Macadam. Transit improvements are anticipated at 2 locations: SW Moody and River Pkwy, and SW Harbor and River Pkwy. These proposed improvements should be reviewed when any improvements are considered for these locations. Future signalization enhancements may be needed at SW Harrison. The improvements are detailed on the back of this sheet.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Project Area</strong></th>
<th><strong>Cross-section Detail or Photo</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Preliminary Cost Estimate</strong></th>
<th><strong>Priority</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$ TBD</td>
<td>Low</td>
</tr>
</tbody>
</table>
1. Improve the lane configuration and/or traffic signalization where SW Harrison street intersects with SW Naito Pkwy to provide the best possible transit access into the South Waterfront District through the North Portal. As the district’s transit service is currently under development and evaluation by TriMet, the specifics of this improvement have not been determined at this time.

2. Allow buses to use the exclusive streetcar left turn lane (NB to WB) at the intersection of Moody and RiverParkway. Assuming that the streetcar will get a jump on the auto traffic, this would also allow buses to get in front of the auto traffic and maneuver into the far right lane. However, from the preliminary plans that we have, it looks as though this would require the WB track to be extended south a bit in order to allow for a shared left turn pocket (buses and streetcar) so as not to have head on collisions with an oncoming streetcar.

3. Add a signal queue jump (WB) and "right turn only except bus" sign at the intersection of Harbor Drive and River Parkway. This would allow a bus to move in front of the streetcar on Harrison and not be delayed by the streetcar stopping at the Harrison platform. Since the bus would stop farside of the River Parkway & River Drive intersection (see #3 below), some autos may be able to maneuver around the bus and therefore, the signal jump would need to be long enough to allow for the potential autos to turn and the bus to get ahead of the streetcar.

4. TriMet plans on adding bus stops at the River Parkway & River Drive intersection. Bus stops would be farside in both EB and WB directions. 80' concrete bus stop pads should be added at each location.
# TRANSIT PROJECTS

## T-4C. BANCROFT TRANSIT IMPROVEMENTS

### Need/Purpose

This improvement is needed to enable the effective Line 35-Macadam route change through the district (T-4a). Tri-met has strongly emphasized that in order for bus service to work in the South Waterfront, changes are needed to ensure preferential treatment for transit service entering and exiting through the district’s southern portal.

### Background Data

The *North Macadam District Framework Plan*, accepted by City Council August 11, 1999, recommended that bus service be implemented concurrent with the reconstruction of Bond Street. Subsequent reports have also emphasized bus service to the District, including the *Portland Aerial Tram – Final Recommendations and Report*. By 2030, the South Waterfront District is expected to house 5,000 housing units and 10,000 jobs.

### Description of Improvement

1. Add Opticom queue jump for buses to Bancroft signal for vehicles turning southbound onto Macadam Avenue.
2. Move/add loop detectors.
3. Restripe Bancroft east of macadam to narrow and move all lanes slightly south and create additional WB transit lane on Bancroft.
4. Remove parking on north side of Bancroft between Moody and Macadam.
5. Consider moving back northwest curb at Bancroft and Moody to allow for continuous bus lane along Bancroft WB from Moody to Macadam.
6. Restripe Moody to designate the right lane for buses and traffic entering Macadam northbound bound and the left lane for traffic either entering Macadam southbound or turning east on Bancroft.

### Project Area

![Project Area Diagram](image)

The exact configuration of this improvement is still under development.

### Preliminary Cost Estimate

<table>
<thead>
<tr>
<th>Priority</th>
<th>$ TBD</th>
</tr>
</thead>
</table>

*DKS Associates*  
TRANSPORTATION SOLUTIONS  
April 2009
**TRANSPORTATION SOLUTIONS**

<table>
<thead>
<tr>
<th>Alternatives/Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Images / Graphics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
**T-5. WATER TAXIS**

### Need/Purpose

Increases in roadway congestion will negatively impact automobile and transit travel times on surface roads. As central city development coalesces along the Willamette River, water-borne commuter and circulator service may an attractive alternative to provide quick connections between downtown locations.

### Background Data

Recent work by the City of Portland’s River Renaissance program was reviewed, as was Metro’s 2000 River Transit study in conjunction with the South Corridor Project. Both found the commuter market for river transit limited, and operating and maintenance costs to be high relative to land-based alternatives.

### Description of Improvement

This improvement would establish water taxi service on both shores of the Willamette River. Landing stations would be built at various points from Oregon City to Downtown Portland. Three stops were anticipated in the North Macadam URA, requiring docks and landing stations to be built along the South Waterfront Greenway.

Due to high capital costs and environmental permit issues, implementation of this project is not recommended at this time.

### Project Area

See map on back

### Cross-section Detail or Photo

See map on back

### Preliminary Cost Estimate

$ 93.4 Million *

### Priority

Low

* Taken from Willamette River Ferry Feasibility Study (2006)
**T-6. STREETCAR HEADWAYS AND SERVICE HOURS**

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently, Portland Streetcar provides the only transit service between South Waterfront and Downtown Portland business and cultural districts. Existing demand from residents and other stakeholders calls for more frequent service and later operating hours.</td>
<td>Streetcar service into, and out of, South Waterfront occurs every 13 minutes during peak times, and every 14-20 minutes during off-peak times, with service ending at 11:30 PM on weeknights and 11:45 on weekends. It should be noted that frequency of service is not limited by the single track on Moody Ave, as that single track can handle approximately 1 car every 5 minutes. Currently, service is limited by funding constraints.</td>
</tr>
</tbody>
</table>

**Description of Improvement**

This improvement would increase streetcar headways and extend service hours. Portland Streetcar planners have indicated that current funding does not support the additional cars and operators need to increase service throughout the streetcar system in its current configuration. It is recommended that this project be revisited later while, in the meantime, implementing transit project T-4a: Line 35-Macadam Route Change and Stops to provide more transit options into South Waterfront from Portland’s business and cultural districts.

**Project Area**

**Cross-section Detail or Photo**

<table>
<thead>
<tr>
<th><strong>Preliminary Cost Estimate</strong></th>
<th><strong>Priority</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$ TBD</td>
<td>High</td>
</tr>
</tbody>
</table>
# TRANSIT PROJECTS

## T-8. HAMILTON STREET FUNICULAR

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently there is no transit service connecting the South Waterfront to the southwest Portland metro area. Barbur Blvd. currently carries multiple bus lines and is planned as a high capacity transit corridor in the future. Providing this link between existing service and South Waterfront may reduce the need to add bus routes through the district.</td>
<td>The Portland Streetcar is planned to extend from its current terminus in the South Waterfront District to Lake Oswego. The location of the west end of the proposed funicular would offer service to South Waterfront from Tri-Met buses numbers 1, 12, 38, 44, 45, 54, 55, and 56. The east end of the funicular would connect to buses 35, 36, plus the future Lake Oswego Streetcar extension.</td>
</tr>
</tbody>
</table>

### Description of Improvement

This improvement would build a twin-car, east-to-west railed funicular along SW Hamilton between Barbur Boulevard and a streetcar stop on the Lake Oswego Streetcar Line on the southern edge of the South Waterfront District. The incline would be below grade between Barbur and Kelly and on structure over the freeway and Macadam Avenue. The funicular tracks would stretch approximately 1600 feet with a grade difference of about 210 feet. This project will not likely be desired until later in district development when high capacity transit lines are operating at both ends.

<table>
<thead>
<tr>
<th><strong>Project Area</strong></th>
<th><strong>Cross-section Detail or Photo</strong></th>
</tr>
</thead>
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<table>
<thead>
<tr>
<th><strong>Preliminary Cost Estimate</strong></th>
<th><strong>Priority</strong></th>
</tr>
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<tbody>
<tr>
<td>$ TBD</td>
<td>Low</td>
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</table>
## Alternatives/Additional Notes

<table>
<thead>
<tr>
<th>Alternatives/Additional Notes</th>
</tr>
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<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

## Additional Images / Graphics

<table>
<thead>
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<th>Additional Images / Graphics</th>
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</table>

T-9. PORTLAND-MILWAUKIE LIGHT RAIL TRANSIT

Need/Purpose
The Portland-Milwaukie Light Rail Project will be a 7.4-mile line providing additional transportation options for fast-growing communities with high traffic congestion in north Clackamas County and Southeast Portland. The locally preferred alternative connects the South Waterfront District to SE Portland via the proposed Willamette River Crossing bridge and to the Portland City Center. The project provides direct light rail service to the OHSU Schnitzer Campus, with nearby access to the Portland Aerial Tram and the Portland Streetcar.

Background Data
Currently, there is limited transit service to the South Waterfront District. Only the Portland Streetcar connects the District to the Portland City Center. There is no transit connection between the District and SE Portland / the City of Milwaukie. By 2030, the South Waterfront District is expected to house 5,000 housing units and 10,000 jobs.

Description of Improvement
This project is a 7.4-mile line connecting north Clackamas County, Southeast Portland, and the Portland City Center. Project details are available in the South Corridor Portland-Milwaukie Light Rail Project Locally Preferred Alternative Report (Metro Council, July 2008).

The project is a partnership between the Cities of Milwaukie, Oregon City and Portland, Clackamas and Multnomah counties, Oregon Department of Transportation, TriMet, and Metro. The North Macadam Transportation Development Strategy strongly supports the project moving forward but is not taking a lead on the project.

Preliminary Cost Estimate
$1.2 to $1.3 Billion*

Priority
In Process
TRANSIT PROJECTS

Alternatives/Additional Notes


Additional Images / Graphics
T-10. BUS CONNECTION TO THE NATIONAL COLLEGE OF NATURAL MEDICINE

**Need/Purpose**

The current lack of pedestrian amenities in and around the NCNM campus renders it difficult and dangerous to access the campus from most of its nearby bus stops. Making route changes to the buses coming westbound over the Ross Island Bridge to SW Porter and SW Naito would provide a safe, convenient mode of entry and exit to NCNM.

**Background Data**

At this time, TriMet buses #9, #17, and #19 have routes inbound from Southeast Portland which could possibly accommodate a rerouting through NCNM.

**Description of Improvement**

This project would re-route a TriMet bus or buses onto the NCNM campus on their way into downtown from the Ross Island Bridge. The bus would turn west on SW Porter St. at SW Corbett and Kelly Ave. to a new stop at SW Naito and Porter. The bus would then continue northbound on Naito before rejoining its original route. SW Porter does not currently access SW Naito. This bus reroute would likely require an additional signalized intersection on SW Naito. Depending on the degree of reconstruction required on Naito to provide this access, this project may be dependant on the larger reconfiguration alternatives discussed in the Ross Island Bridgehead Alternatives section of this report.

**Project Area**

![Project Area Map]

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

$ TBD

**Priority**

Medium
At this time, TriMet does not support this improvement, citing the cost and scope required to reconfigure and possibly signalize the intersection of SW Porter and SW Naito to accommodate bus usage. Any changes occurring to SW Naito at this point require ODOT approval.

The preferred alternative to this project is to implement BP-24a, which provides designated pedestrian crossings from the Corbett Ave bus stop to the NCNM campus.

Looking west across Naito from SW Porter

Looking south towards intersection of SW Porter and SW Naito NB

Looking towards SW Porter at NCNM from middle of SW Naito
### Transit Projects

#### T-12. Streetcar to Lake Oswego

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The streetcar provides a transit connection between the South Waterfront District and the City Center. The District, however, does not have a transit connection to areas to the south. In order to provide those traveling to and from the District with an alternative to the motor vehicle, it is necessary to expand transit service. Extending the streetcar from the South Waterfront to Lake Oswego would provide a much needed and desired high-capacity transit connection.</td>
<td>This 5.7-mile long corridor connects Portland Central City with the Lake Oswego Town Center. The Corridor contains two main public rights-of-way, Highway 43, and the Willamette Shore Line Railway alignment. The highway is constrained by steep topography to the east and to the west. Early on in the process, ODOT prepared an analysis addressing why it is infeasible to widen the roadway. Metro policy, as expressed in the Regional Transportation plan, is to improve mobility and capacity in the Corridor through transit due to the severe constraints to widening the highway.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Description of Improvement</strong></th>
<th><strong>Project Area</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This project installs streetcar tracks along a 5.7-mile long corridor connecting Lake Oswego and the Portland City Center. The new tracks would connect to existing service in the South Waterfront District. The Lake Oswego Alternatives Analysis also includes a trail component, which was required by one of the grants funding the project. Project details are available in the Lake Oswego to Portland Transit and Trail Study (Metro Council, July 2007). The current analysis is evaluating alternative alignments in the South Waterfront-Johns Landing segment on Macadam Avenue and the Willamette Shore right of way.</td>
<td>* See back for map / details</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cross-section Detail or Photo</strong></th>
<th><strong>Preliminary Cost Estimate</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 199.9 Million - $215.7 Million (C.E. includes trail component)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Priority</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
</tr>
</tbody>
</table>
Alternatives to be Considered in DEIS

Mode:
- Streetcar
- Enhanced Bus

Alignment:
- Willamette Shore Line
- Macadam Avenue

Combination of above plus all or part of John’s Landing Master Plan alignment may be studied to maximize benefits and minimize impacts in John’s Landing

John’s Landing Terminus:
- Minimum Operable Segment
- Temporary Terminus: John’s Landing in the vicinity of Nevada Street
- Permanent Terminus: John’s Landing in the vicinity of Nevada Street

Lake Oswego Terminus:
- Safeway
- Albertsons

Trail:
Advance for further study
Further refinement required to determine whether to advance transit and trail together or separately
### T-13. STREETCAR THROUGH THE NORTH DISTRICT

#### Need/Purpose

One of the primary development constraints in South Waterfront is transportation access to and from the central business district and regional highway and transit systems. Commercial and residential development of the North District will require extending transit service into that area and linking it to the citywide transportation and land use network, including the system of interconnected streetcar corridors as outlined in the City's Streetcar Plan.

#### Background Data

Adopted City policy envisions this district as a mixed-use neighborhood with significant commercial development focused along transit corridors. Urban planning criteria for the area includes goals to integrate development density and design in a form that maximizes transit access for the district using light rail transit (LRT), bus or streetcar services as appropriate. The presence of an in-use industrial facility in the designated right-of-way currently prohibits implementation of this improvement.

#### Description of Improvement

This project would install streetcar tracks in SW Bond Street from its current terminus at the base of the Portland Aerial Tram at SW Gibbs St. to its future routing northward. The tracks would follow the future course of SW Bond under the Marquam Bridge, and then veer west to complete the Moody/Bond Couplet by reconnecting into SW River Parkway. With the completion of the Portland-Milwaukie Light Rail Bridge, this connection will also link South Waterfront into the Streetcar Loop as outlined in the Portland Streetcar Plan.

#### Project Area

![Project Area Diagram](image)

#### Cross-section Detail or Photo

![Cross-section Photo](image)

#### Preliminary Cost Estimate

$30.9 Million*

*see back for cost estimate details

#### Priority

Medium
Alternatives/Additional Notes

* Cost estimate is based on estimate of Westside improvements plus contingency from the Portland Streetcar Close-the-Loop Project Order-of Magnitude Cost Estimate and does NOT include the cost of vehicles.

Additional Images / Graphics

Portland Streetcar
Close-the-Loop Project
Order-of-Magnitude Cost Estimate

<table>
<thead>
<tr>
<th></th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Cost*</th>
<th>Estimated Cost</th>
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<tr>
<td><strong>Eastside</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water (inbound/outbound)</td>
<td>610</td>
<td>TF</td>
<td>$4,085</td>
<td>$2,491,850</td>
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<td>Relocate SE Water</td>
<td>1</td>
<td>LS</td>
<td>$5,500,000</td>
<td>$5,500,000</td>
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<tr>
<td><strong>Westside</strong></td>
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<td></td>
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<tr>
<td>Moody (outbound)</td>
<td>2680</td>
<td>TF</td>
<td>$4,085</td>
<td>$10,947,800</td>
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<tr>
<td>Bond/River Parkway (inbound)</td>
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<td>TF</td>
<td>$4,085</td>
<td>$14,787,700</td>
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<tr>
<td><strong>Vehicles</strong></td>
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<td>each</td>
<td>$3,800,000</td>
<td>$15,200,000</td>
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<td><strong>Subtotal</strong></td>
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<td><strong>Estimated Contingency</strong></td>
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<td>20%</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
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<td>$58,712,850</td>
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*Unit cost based on an adjusted Loop Project $/TF capital cost estimate plus 20% for 4 years inflation (2011 Loop vs. 2015 Close-the-Loop completion). Accordingly, it should be noted that the estimated costs will not cover special requirements such as: 1) rebuilding/relocating SW Moody, building SW Bond or River Pwy or any related utility work; 2) any special train controls or signals for joint streetcar/LRT use on the bridge; 3) special treatment or structures for soil contamination or bearing problems; or 4) any others.

10/13/2008
This chapter summarizes the motor vehicle projects recommended for the North Macadam URA, as well as the process used to determine the need for these projects. At the end of this chapter, in-depth summary sheets are included for each of the recommended motor vehicle projects.

EXISTING AND FUTURE SYSTEM NEEDS

In order to determine deficiencies in the transportation system within the study area, existing and future roadway conditions were analyzed. The existing conditions analysis (as reported in Chapter 3: Existing Conditions) identified several motor vehicle needs within the study area:

- The Willamette River and I-5 limit access and circulation opportunities to the majority of the district.
- PM peak hour vehicle congestion eastbound on the Ross Island Bridge creates vehicle congestion and queuing within the District on the approach roadways to the bridge.
- Vehicle congestion occurs during peak hours in the area around Broadway/4th Avenue/5th Avenue/6th Avenue due to access and circulation constraints to the City Center and Interstate 405.
- Vehicle congestion during peak hours in both directions on Naito Parkway occurs between Harrison Street and Madison Street (Hawthorne Bridge).
- Excessive vehicle queues exist during the PM peak hour at the Hamilton Street/Corbett Street intersection.
Future traffic volumes were developed for the PM peak hour for 2030\(^1\) and tested on the existing (2007) roadway network to determine where additional deficiencies may occur if the roadway network was left untouched. Under this “no-build” scenario several intersections failed to meet City of Portland\(^2\) and ODOT\(^3\) traffic operation standards. These unacceptable operations at intersections indicate locations where projects may be necessary to mitigate the impact of the growth in the area and the region.

Figure 7-1 shows the traffic operations at study intersections for 2030 PM peak hour conditions assuming no changes to the existing roadway network. The future no-build condition was tested to help show the full impact of what would happen to traffic operations if no improvements were constructed over the next 23 years.

Combining the deficiencies identified in the existing conditions and future No-Build model, the following areas became key targets for motor vehicle projects:

- North Portal (improvements to access at the North end of the district, multiple locations)
- South Portal (improvements to access the south end of the district at SW Macadam Avenue/SW Bancroft Street and SW Macadam Avenue/SW Hamilton Street)
- Local connections within the North Macadam URA
- West end of the Ross Island Bridge
- Regional connections to I-5, US 26 and I-405

**2030 Traffic Analysis (Alternative 1)**

Before creating a list of new projects, it was important to recognize that certain projects were already “planned” for the roadway network. The planned projects included those in the 2030 Regional Transportation Plan’s (RTP) financially constrained list\(^4\) as well as

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1 See the Chapter 4: Assumptions and Methodology
2 City of Portland standards are listed in TRN 10.27: For signalized intersections, LOS D is adequate, for stop controlled intersections LOS E for a minor leg approach is adequate. Website: [http://www.portlandonline.com/auditor/index.cfm?a=41049&c=31913](http://www.portlandonline.com/auditor/index.cfm?a=41049&c=31913)
3 Under No-Build conditions, ODOT Mobility Standards are listed in the 1999 Oregon Highway Plan, Table 7 (pg 84). For ODOT roadways in the Central City maximum v/c ratio (1st Hour) is 1.1, for Corridors including Macadam Avenue (OR 43) the maximum v/c ratio (1st Hour) is 0.99.
Figure 7-1

FUTURE TRAFFIC OPERATIONS
ALTERNATIVE 0
(No-Build)
PM PEAK HOUR, YEAR 2030

LEGEND
- Signalized V/C Ratio (Average)
- Unsignalized Highest Minor Approach V/C Ratio

Level of Service (Color Indication)
- Level of Service A - D
- Level of Service E
- Level of Service F

- North Macadam Urban Renewal District
projects identified in other studies likely to be implemented by 2030. These projects were incorporated into the traffic demand model and led to the creation of Alternative 1 as a base case scenario.

The projects included in the financially constrained RTP list included:

- South Portal
- Portland to Milwaukie Light Rail
- SW Bond Avenue extension from SW Gibbs Street to SW River Parkway (part of the Moody-Bond couplet)
- A North Portal project initially identified as a new ramp from I-5 northbound to a new signalized at-grade intersection at SW Sheridan Street was included in the Alternative 1 model. However, modifications have been made to this North Portal project and the North Portal now refers to all access to the District at the northern end.

Additionally, the future travel demand model assumed that SW Corbett Avenue would return to two-way operation with a signal at SW Kelly Avenue. Currently SW Corbett Avenue is northbound only, but by making this a two way street with a signalized intersection, vehicles from the North Macadam URA could exit the district through this access point.

Under alternative 1, some of the deficient areas were improved; however there were still areas that did not meet operational standards. Figure 7-2 shows the traffic operations of Alternative 1 with these planned projects during the PM peak hour in the year 2030.

From analyzing the roadway network with the planned projects in place, new projects could be implemented to help mitigate areas that are still deficient. However, before getting into a discussion of the projects developed, it is important to understand some of the lessons learned from modeling the future growth in the North Macadam URA. These lessons helped shape the development of the proposed projects and various alternatives.

---

FUTURE TRAFFIC OPERATIONS
ALTERNATIVE 1
(With Previously Identified Projects)
PM PEAK HOUR, YEAR 2030

LEGEND
- Signalized V/C Ratio (Average)
- Unsignalized Highest Minor Approach V/C Ratio
Level of Service (Color Indication)
- Level of Service A - D
- Level of Service E
- Level of Service F
- Existing Lane Geometry
- New Lane Geometry
- Existing Signal
- New Signal
- New Roadway
- Roadway Closed
- North Macadam Urban Renewal District

Future model assumes Corbett Ave. is 2-way with traffic signal, but no additional lanes added.
MODELING LESSONS LEARNED

By analyzing the travel demand model for Alternative 1, the general traffic characteristics surrounding the North Macadam URA were better understood. This understanding helped in the project planning process to best develop the transportation network to meet the future needs of the North Macadam URA.

The first piece of information critical to understanding the traffic characteristics in the area was to understand the trip distribution to the access points for the North Macadam URA. Two areas identified as deficient in the future No-Build model were the North and South Portals to the district, so the usage of each area needed to be analyzed. In addition to the North and South Portals, there is a third access point to the district from SW Macadam Avenue on SW Gaines Street (outbound only) and SW Curry Street (inbound only). Based on the 2030 Alternative 1 travel demand model, Table 7-1 shows the trip distribution at the access points to the North Macadam URA. These percentages show that the North Portal is more heavily used for inbound trips, yet for outbound trips the South Portal has a higher percent of trips.

Table 7-1: Trip Distribution for Inbound and Outbound Trips to/from the North Macadam URA, PM Peak Hour Year 2030

<table>
<thead>
<tr>
<th>Access Point</th>
<th>Inbound Trips</th>
<th>Outbound Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Portal</td>
<td>46%</td>
<td>34%</td>
</tr>
<tr>
<td>SW Gaines Street (outbound) or SW Curry Street (inbound from SW Macadam Avenue)</td>
<td>8%</td>
<td>16%</td>
</tr>
<tr>
<td>South Portal</td>
<td>35%</td>
<td>42%</td>
</tr>
<tr>
<td>Internal trips*</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Trips made within the district that do not travel through any of the access points.

Beyond the access points to the North Macadam District, the trip distribution was traced through the roadway network to determine general locations of origin and destination. For example, the table above establishes that 46% of inbound trips enter the district through the North Portal area, but where do those trips come from? To answer that question, the 2030 travel demand model (PM peak hour) was studied to determine approximately how the inbound and outbound trips span out over the region. Figure 7-3 shows the trip distribution for the inbound and outbound trips to the North Macadam URA during the PM peak hour in year 2030.

This trip distribution became important for projects identified outside the North Macadam URA (to fix deficient areas) to help determine whether the deficiency was caused by trips to and from the North Macadam URA or by other regional or local users.
Although deficiencies were noted outside of the North Macadam URA, it became apparent that some of these were regional problems and not the direct responsibility of the North Macadam URA.

**ALTERNATIVE DEVELOPMENT**

Several different roadway alternatives were developed and addressed as part of this study. These alternatives had three main components:

- Local and arterial projects
- Alternatives for the west end of the Ross Island Bridge
- Projects to regional connectors.

A Technical Advisory Committee (TAC) comprised primarily of Portland Department of Transportation (PDOT) and Oregon Department of Transportation (ODOT) agency staff was formed at the onset of the project to help provide guidance and feedback to the consulting team regarding technical issues and to develop future improvement projects. In addition to the Technical Advisory Committee (TAC) meetings, three work sessions were conducted to brainstorm ideas for local and regional roadway connections that would be incorporated into the long-term modeling process. Representatives from PDOT, ODOT, Portland Development Commission (PDC) and the consulting team were included in the work sessions.

Several projects were identified from previous studies (e.g. South Portal, South Portland Circulation Study, I-405 Freeway Study) and prior staff knowledge. New roadway connection projects were also developed as potential solutions to existing and future transportation needs within the North Macadam Urban Renewal District. The motor vehicle project development was focused on key needs identified by stakeholders and included projects for the north portal, south portal, Ross Island Bridge Ramps, and other local circulation connections. Regional connections were also developed within the study area that could potentially improve access to I-405, US 26 and I-5. From this list, “packages” of roadway improvement projects were assembled into seven different roadway network alternatives. Each alternative included the planned projects discussed earlier in addition to the other types of projects listed:

- Alternative 1 – local/arterial projects
- Alternative 2 – regional and local/arterial projects
Alternative 3 – Ross Island Bridge ramp redevelopment and local/arterial projects
Alternative 4 – Ross Island Bridge ramp redevelopment and local/arterial projects
Alternative 5 – regional and local/arterial projects
Alternative 6 – regional and local/arterial projects
Alternative 7 – Ross Island Bridge ramp redevelopment and local/arterial projects

After further consultation and agreement between TAC members, the three alternatives that included projects to regional connectors (I-405 and US-26) were removed from the potential alternatives. While they are important to the overall health of the transportation system, they were outside the scope of this project. Traffic to and from the North Macadam URA was only one of many factors that necessitated the need for projects to these regional connectors.

Next the alternative list focused on three alternatives (3, 4, and 7) that all included the same local and arterial projects, but each had different concepts for redeveloping the ramps at the west end of the Ross Island Bridge. Alternative 1 (the base scenario with the planned projects and local/arterial projects) was also still part of the evaluation process. Eventually the strategy for addressing the Ross Island Bridge alternatives shifted to advise further study before making a final recommendation to City Council.

Although a new proposal for the redevelopment of the Ross Island Bridge ramps is not being recommended to City Council as part of this plan, it was important to analyze the bridge options with the local and arterial projects to ensure that moving forward with the recommended projects did not preclude one of these alternatives from someday being constructed. Additionally, the travel demand models show a slightly different allocation of traffic depending on the ramp configuration, so it was important to test the local and arterial projects with the variation in traffic volumes between the alternatives.

Ross Island Bridge Alternatives- Recommended for Further Study
While the Ross Island Bridge alternatives are not part of the final recommendation package for this project, it is useful to explore the alternatives developed initially as part of the process to identify preliminary strengths and weaknesses associated with each.
The ramps to the Ross Island Bridge are immediately adjacent to the North Macadam URA, with through traffic impacting the local area. The basic idea for all of the Ross Island Bridge alternatives was to deconstruct the existing ramps on the west end and reconnect the bridge traffic directly to city streets at new signalized intersections. The three alternatives developed are shown in Figure 7-4.

Due to different circulation options in each alternative, the travel demand model routed vehicles slightly differently between alternatives. The change in volumes between alternatives impacts the traffic operations and necessary lane geometry further described in the following paragraphs about each alternative. Table 7-2 summarizes the 2030 raw model volumes on key roadways at the west end of the Ross Island Bridge.

<table>
<thead>
<tr>
<th>Location</th>
<th>2030 No-Build</th>
<th>Alternative 3</th>
<th>Alternative 4</th>
<th>Alternative 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelly Avenue (south of Arthur Street)</td>
<td>28,000</td>
<td>34,000</td>
<td>26,500</td>
<td>27,000*</td>
</tr>
<tr>
<td>Naito Parkway (north of Kelly Avenue)</td>
<td>32,000</td>
<td>29,000</td>
<td>24,500</td>
<td>29,000</td>
</tr>
<tr>
<td>Naito Parkway (south of Kelly Avenue)</td>
<td>29,000</td>
<td>15,500</td>
<td>23,600</td>
<td>25,000</td>
</tr>
</tbody>
</table>

Note: * For Alternative 7, Kelly Avenue is closed. The volume shown is on the new Arthur Street connection.

**Alternative 3**

Alternative 3 closely matches the recommended alternative that was identified in the South Portland Circulation Study\(^6\), adopted in 2001, which identified a preferred option for the west end of the Ross Island Bridge. The primary objective of the plan was to separate regional from local traffic within the study area by removing the Ross Island Bridgehead ramps, streamline the connections to I-5 and I-405 freeways, and change the character of SW Naito Parkway to fit better with the surrounding neighborhoods. This plan does address the issue of vehicles traveling through the neighborhoods and provides several opportunities for redevelopment; however, the preferred option pushes all the Ross Island Bridge traffic volume onto SW Kelly Avenue and requires significant widening on SW Kelly Avenue to accommodate future volumes. This alternative also proposes an at-grade intersection at SW Naito Parkway/SW Arthur Street along with other local roadway connections on Porter Street and additional traffic signals.

---

Alternative 3

Reconstruct to At-Grade Intersection

Legend
- North Macadam Urban Renewal District
- South Waterfront District

Plan Streets
- Freeway (Regional Trafficway)
- Arterial Roadway
- Existing Local Street
- Proposed Local Street
- Proposed Street Closure
- Local/Arterial Closure
- Proposed Traffic Signal
- Tax Lots

1. City of Portland Transportation System Plan (page 2-99) October 30, 2002
2. South Waterfront District Street Plan Criteria and Standards adopted April 2003

DRAFT

FIGURE 7-4
FUTURE MOTOR VEHICLE NETWORK ALTERNATIVE
MV-7: SOUTH PORTLAND CIRCULATION ALTERNATIVES
The proposed lane configuration and PM peak hour traffic operations of Alternative 3 are shown in Figure 7-5.

**PROS:**
- This alternative creates a local street grid system that promotes pedestrian activity and connectivity.
- Reduces vehicle traffic on SW Naito Parkway through the Lair Hill Neighborhood.
- Provides the opportunity to rebuild SW Naito Parkway as a two-lane local street as described in the South Portland Circulation Study in 2001.
- Promotes the maximum development potential by creating nearly four city blocks of new available land at the bridge ramp area.

**CONS:**
- The new intersection at SW Kelly Avenue/SW Porter Street would likely need to have a cross section of over 10 (ten) lanes in order to operate with a volume-to-capacity (V/C) ratio of less than 1.00 during the PM peak hour in 2030.
- The majority of Ross Island Bridge traffic is routed onto SW Kelly, perpetuating its impact as a neighborhood circulation barrier.
- This alternative changes the SW Arthur Street/SW Naito Parkway intersection from grade separated to at-grade. By making this change to at-grade and signalizing the intersection, the cross section again needs to be over 10 lanes to operate with a V/C ratio below 1.00. Prohibiting left turns at this intersection is not a feasible mitigation under this alternative as bridge access is concentrated on SW Kelly Avenue.
- The connection between US 26 from Beaverton to the Ross Island Bridge segment of US 26 could be slowed due to new traffic signals along Kelly Avenue and Naito Parkway.
Alternative 4

This alternative is different from the recommendation in the South Portland Circulation Study, yet there are several similar benefits that should be recognized. Alternative 4 does not allow for SW Naito Parkway to be downsized to a local street. However, the alternative allows for Naito to be reduced in size and character, achieves several other community goals and is the most feasible from a traffic operations standpoint. This alternative deconstructs the existing ramps and constructs new at-grade intersections and traffic signals at the Ross Island Bridge/Kelly Avenue and the Ross Island Bridge/Naito Parkway. The Arthur Street/Naito Parkway intersection remains grade separated under this alternative.

PROS:
- Future year 2030 PM peak hour analysis shows that the Alternative 4 configuration meets City of Portland and ODOT operational standards with reasonable mitigations.
- Increases roadway connectivity and options for accessing the Ross Island Bridge, and distributes Ross Island Bridge traffic to multiple streets.
- Reduces the impact of traffic on the South Portland Neighborhood by reconstructing bridge ramps and SW Naito Parkway, replacing them with arterial style streets and intersections.
- Promotes redevelopment by creating new land in the current Ross Island Bridge area.
- Creates safer pedestrian activity due to slower vehicle speeds on Kelly Avenue and pedestrian crossings.

CONS:
- At the Ross Island Bridge/Kelly Avenue intersection additional structure would be necessary to support two westbound right turn lanes for approximately 500 feet.
- The connection between US 26 from Beaverton to the Ross Island Bridge segment of US 26 could be slowed due to new traffic signals along Kelly Avenue and Naito Parkway.
- This alternative does not create as much redevelopment area as Alternative 3 or Alternative 7.
- This alternative does not reduce traffic on SW Naito Parkway through the Lair Hill Neighborhood.

The proposed lane configuration and PM peak hour traffic operations of Alternative 4 are shown in Figure 7-6.
Alternative 7

This alternative is similar to Alternative 4 with new at-grade intersections at Ross Island Bridge/Kelly Avenue and Ross Island Bridge/Naito Parkway, but is different to the north. Under Alternative 7, Kelly Avenue is closed from Naito Parkway to Corbett Avenue. Instead, a new intersection is constructed by extending Arthur Street to Corbett Avenue (and improving Corbett Avenue). The intersection at Arthur Street/Naito Parkway would be at-grade, similar to Alternative 3.

By changing the Arthur Street/Naito Parkway intersection from grade separated to at-grade, traffic operations suffer and mitigations require more lanes at the intersection. One option to improve traffic operations at this at-grade intersection would be to prohibit all left turn movements. Left turning vehicles could turn before or after that intersection and still reach their desired destination.
PROS:

- Future year 2030 PM peak hour analysis shows that the Alternative 7 configuration meets City of Portland operational standards with additional mitigations at some key study area intersections the following intersections:
- Promotes redevelopment where the existing Ross Island Bridge Ramps would be deconstructed and on current Kelly Avenue right of way.
- New signalized intersections improve pedestrian safety and connectivity.

CONS:

- The new at-grade intersection at Arthur Street/Naito Parkway would need a large cross section if left turns were allowed. By prohibiting all left turns at this intersection fewer lanes would be necessary and could incur less right-of-way impacts.
- The connection between US 26 from Beaverton to the Ross Island Bridge segment of US 26 could be slowed due to new traffic signals along Naito Parkway and Corbett Avenue.
- Intersection of Corbett/Arthur would have steep approaches, making sighting and turns difficult.

The proposed lane configuration and PM peak hour traffic operations of Alternative 7 are shown in Figure 7-7.
As the project evolved, two key reasons developed that led to recommending these alternatives be studied further before making a final recommendation. The first reason was because these ramps developed as more of a regional issue than a local issue for the North Macadam URA. The trip distribution data\(^7\) showed that approximately 15% of trips on the Ross Island Bridge originate from or are destined to the North Macadam URA (see Figure 7-8). Although the North Macadam URA is impacted by high volumes of through traffic, the ramps need to be studied in more of a regional context because the impact is much broader than just the North Macadam URA.

Secondly, two of the alternatives (4 and 7) developed in this study conflicted with a key aspect of the recommendation made in the South Portland Circulation Study in 2001\(^8\) which had strong community support. The recommended circulation option from the 2001 study was an alternative that brought all of the traffic from the Ross Island Bridge to SW Kelly Avenue and lowered traffic on SW Naito Parkway and allowed SW Naito Parkway to develop as a local street. Alternative 3 in this study was most similar to that previous recommendation; however, significant traffic operation problems were identified using this roadway network (as shown in Figure 7-5).

Combined, these two main reasons led the project team to recommend the alternatives for the Ross Island Bridge be pursued in further analysis before making a final recommendation.

**Local and Arterial Projects**

The remainder of this chapter focuses on the local and arterial projects that support the development of motor vehicle transportation to, from, and within the North Macadam URA. The local and arterial projects focused on the following areas:

- North Portal and South Portal
- SW Kelly Avenue/SW Porter Street in conjunction to North Portal access (near the Naturopathic College of Natural Medicine)
- Moody/Bond Couplet within the North Macadam URA
- Other intersections within the North Macadam URA
- Select locations outside the N Macadam URA, but critical to vehicles traveling to or from the district.

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\(^7\) EMME/2 2030 Portland to Milwaukie Light Rail Regional Travel Demand Model “Alternative 1”.

The following sections briefly describe the proposed projects and then go into detail about how the projects were evaluated and prioritized. The chapter concludes with in-depth summary sheets for each project.
MOTOR VEHICLE IMPROVEMENT PROJECTS

This section discusses the development and prioritization process for the motor vehicle projects.

Development of Projects

The development of motor vehicle projects was based on technical analysis. A total of 19 motor vehicle projects were developed to support the future motor vehicle and freight needs of the North Macadam URA. Table 7-3 below lists all of the motor vehicle projects in numerical order. Traffic operations at the study intersections were tested with these projects in place. The resulting traffic operations are shown in Figure 7-9.

Table 7-3: List of Motor Vehicle Projects

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-1*</td>
<td>Milwaukie Light Rail Traffic Signals and Improvement Project</td>
<td>Construct new traffic signals on Lincoln Ave in coordination with Portland to Milwaukie Light Rail Project and extend Lincoln between 1st Avenue and Naito Parkway.</td>
</tr>
<tr>
<td>MV-3</td>
<td>Sheridan Street Roadway Extension (SW 3rd Ave to SW Naito Parkway)</td>
<td>Construct new 4 lane roadway extension between 3rd Avenue and Naito Parkway and install signals at three intersections: Sheridan/3rd, Sheridan/1st and Sheridan/Naito. If this project is constructed, MV-26 (Arthur Street/1st Avenue Improvements) is NOT necessary.</td>
</tr>
<tr>
<td>MV-5a*</td>
<td>Moody/Bond Couplet - Bond Avenue Extension</td>
<td>Extend Bond Avenue from Gibbs Street to River Parkway</td>
</tr>
<tr>
<td>MV-5b</td>
<td>Moody/Bond Couplet - Moody Avenue realignment</td>
<td>Realign Moody Avenue as development occurs</td>
</tr>
<tr>
<td>MV-9a*</td>
<td>South Portal – phase 1</td>
<td>Reconfigure intersection at Bancroft Street/Macadam Avenue and construct 3 new signalized intersections at Moody Avenue/Bancroft Street; Moody Avenue/Hamilton Street; and Hamilton Street/Macadam Avenue</td>
</tr>
<tr>
<td>MV-9b</td>
<td>South Portal – phase 2</td>
<td>Extending Bond Avenue from Bancroft Street to Hamilton Street. This project extends the Moody/Bond couplet.</td>
</tr>
<tr>
<td>MV-11a</td>
<td>Porter/Kelly Improvement - Signalization and Kelly slip ramp closure</td>
<td>Install a signal at Kelly/Porter. The SB slip ramp from the Ross Island Bridge to Kelly Avenue would also be closed, due to new signalized access at Kelly/Porter.</td>
</tr>
<tr>
<td>MV-11b</td>
<td>Porter/Kelly Improvement - Kelly Ramp realignment</td>
<td>The ramp that feeds into Kelly Avenue (from Macadam Avenue ramp over I-5) would be reconstructed to join into the new Kelly/Porter signalized intersection.</td>
</tr>
<tr>
<td>MV-14b</td>
<td>North Portal: Harbor Drive/River Parkway Improvement</td>
<td>Construct additional EBR turn lane and SBL turn lane, and extent NBR turn pocket.</td>
</tr>
<tr>
<td>MV-14c</td>
<td>North Portal: Kelly Avenue/Corbett Avenue Improvement</td>
<td>Reconstruct Corbett Avenue from Sheridan Street to Kelly Avenue and realign Corbett to intersect Kelly Avenue perpendicularly (in-between the existing Corbett Avenue and Meade Street intersections on Kelly Avenue). Install a new signal at this intersection.</td>
</tr>
</tbody>
</table>
Table 7-3: List of Motor Vehicle Projects continued

<table>
<thead>
<tr>
<th>Project Map #</th>
<th>Project Name</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-14d</td>
<td>North Portal: SB Harbor Drive/Sheridan Street Improvement</td>
<td>Widen SB Harbor Drive to two lanes and construct a traffic signal at the intersection.</td>
</tr>
<tr>
<td>MV-14e</td>
<td>North Portal: Sheridan Street Extension (Moody Avenue to Bond Avenue)</td>
<td>Extend Sheridan Street between Moody Avenue and Bond Avenue.</td>
</tr>
<tr>
<td>MV-20</td>
<td>NB Macadam 3rd Lane</td>
<td>Construct a 3rd NBT lane on Macadam Avenue (as well as sidewalk) from Bancroft Street to Curry Street.</td>
</tr>
<tr>
<td>MV-21</td>
<td>Signalize Intersections – South Waterfront District</td>
<td>Construct traffic signals in the South Waterfront District as development warrants at Moody/Curry, Moody/Gaines, Bond/Curry and Bond/Gaines.</td>
</tr>
<tr>
<td>MV-24</td>
<td>Hawthorne Bridge/Naito Ramp Improvement</td>
<td>Signalize the EB entry to the Hawthorne Bridge and add a second NBR lane on the Naito Ramp to the west of the existing lane</td>
</tr>
<tr>
<td>MV-25</td>
<td>SW Macadam Avenue /SW Boundary Street Improvement</td>
<td>Construct an additional eastbound left turn lane and westbound left turn lane.</td>
</tr>
<tr>
<td>MV-26</td>
<td>Arthur Street/1st Avenue Improvement</td>
<td>Construct a third eastbound through lane, a separate westbound right turn lane, and a second southbound through lane. (see Summary Sheet for lane lengths). This project is only necessary if MV-3 (Sheridan Street Roadway Extension) is NOT constructed.</td>
</tr>
<tr>
<td>MV-28</td>
<td>Motor Vehicle Wayfinding</td>
<td>Implement new signage within and around the South Waterfront District to help direct motorists into and out of the District.</td>
</tr>
<tr>
<td>MV-30</td>
<td>I-5 Northbound Off-Ramp/SW Curry – Closure of the northbound right turn</td>
<td>Construct a median or physical barrier to prohibit the northbound right turn from I-5 Northbound Off-Ramp to SW Curry Street.</td>
</tr>
</tbody>
</table>

*Projects assumed in the 2030 Regional Travel Demand Model with the Portland to Milwaukie Light Rail Project

Based on the traffic operations shown in Figure 7-9, two areas that achieved significant traffic operations improvement from these projects were the North Portal and South Portal. Projects MV14b through MV14e are all improvements to the North Portal area. Throughout the course of this project, the definition of the North Portal changed to include all access to the northern portion of the district and not just the access from I-5 northbound.
Other key findings include:

- SW Macadam Avenue will require a third northbound lane to maintain sufficient traffic operations in 2030 (PM peak hour).
- The SW 1st Avenue/SW Arthur street intersection will need mitigations to operate within traffic operation standards in 2030 (PM peak hour).
- Improvements to the SW Kelly Avenue/SW Porter Street area can be made to benefit the motor vehicle mode of travel as well as pedestrian and bicyclists to/from the North Macadam URA.

Projects were identified both within and outside of the North Macadam URA. The project prioritization process, later in this chapter, describes how the projects were ultimately ranked.

After creating the initial list of motor vehicle projects and running some technical analysis, the projects were prioritized. The following section discusses how these motor vehicle projects were evaluated and prioritized.

**Prioritization of Projects**

The purpose of evaluating the motor vehicle projects, similar to the other modes, was to create a prioritized project list. Evaluation criterion was developed for motor vehicles to help determine project priority and focus investment on high priority projects. Members of the Stakeholder Advisory Committee (SAC), Technical Advisory Committee (TAC), and active community members were given the opportunity to rank each improvement project based on the evaluation criteria.

Evaluation criteria represented both qualitative and quantitative aspects to the motor vehicle projects. For example, traffic operations could be evaluated on a quantitative basis using the v/c ratios and LOS factors, whereas “compatibility with land use” was more of a qualitative evaluation based on discussions about the project. Most criteria were evaluated on a numerical scale of 1 to 5. The evaluation criteria for the motor vehicle projects are listed in Table 7-4. The resulting evaluation matrix for all the motor vehicle projects is shown in Table 7-5.
### Table 7-4: Motor Vehicle Evaluation Criteria

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Ranking Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traffic Operations</strong> - The measures of effectiveness</td>
<td></td>
</tr>
<tr>
<td>includes level of service and volume to capacity ratios and</td>
<td>no</td>
</tr>
<tr>
<td>how they improve or degrade as compared to other alternatives.</td>
<td>moderate</td>
</tr>
<tr>
<td></td>
<td>significant</td>
</tr>
<tr>
<td><strong>Access/Circulation/Connectivity</strong> - project improves</td>
<td>no</td>
</tr>
<tr>
<td>the vehicle access and circulation</td>
<td>moderate</td>
</tr>
<tr>
<td></td>
<td>high</td>
</tr>
<tr>
<td><strong>Compatibility with land use</strong> - the proposed project does</td>
<td>incompatible</td>
</tr>
<tr>
<td>not require changes to surrounding land use or functional</td>
<td></td>
</tr>
<tr>
<td>classification and has minimal impact to existing ROW</td>
<td></td>
</tr>
<tr>
<td><strong>Benefit to transit network</strong> - project improves the</td>
<td>no</td>
</tr>
<tr>
<td>transit network by improving travel times (improved operations)</td>
<td>moderate</td>
</tr>
<tr>
<td>along corridors</td>
<td>high</td>
</tr>
<tr>
<td><strong>Safety</strong> - provides a safer alternative to that which</td>
<td>not safer;</td>
</tr>
<tr>
<td>exists today; improves safety at a high collision location;</td>
<td>high traffic</td>
</tr>
<tr>
<td>perceived impact it may have on the safety of the roadway</td>
<td>moderately</td>
</tr>
<tr>
<td>system. Performance measures include potential conflict points</td>
<td>safer; limited</td>
</tr>
<tr>
<td>and the potential for increased or decreased vehicle volumes</td>
<td>traffic</td>
</tr>
<tr>
<td>along corridors</td>
<td>conflict</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Benefit to pedestrian/bicycle network</strong> - project</td>
<td>no</td>
</tr>
<tr>
<td>improves the pedestrian/bicycle network (signalized</td>
<td>moderate</td>
</tr>
<tr>
<td>crosswalks, better bicycle connection, etc.)</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>URA Benefit</strong> - project directly benefits URA residents</td>
<td>no</td>
</tr>
<tr>
<td>employees by serving destinations within the URA</td>
<td>moderate</td>
</tr>
<tr>
<td></td>
<td>significant</td>
</tr>
<tr>
<td><strong>Cost : Benefit</strong> - cost to benefit relationship (cost of</td>
<td>minor benefit</td>
</tr>
<tr>
<td>project compared to overall benefit reaped from project)</td>
<td>moderate</td>
</tr>
<tr>
<td></td>
<td>significant</td>
</tr>
</tbody>
</table>

In addition to the criteria listed in Table 7-4, the motor vehicle projects used three more techniques to help prioritize projects:

- Year of need (based on traffic operations as well as safety factors)
- Percent contribution (the percent of trips from the North Macadam URA contributing to the total trips through the specified project area)
- Feasibility

The following briefly describes each of these techniques that were employed to help round out the project evaluation and ranking:
Year of Need
A short term traffic operations analysis was conducted to determine at approximately what point the existing roadway network fails to meet the demand needs of the surrounding community. This analysis helped guide when certain projects would be necessary from a traffic operations point of view. The analysis assumed the no-build roadway network, linear growth in trips over time, as well as uniform development throughout the North Macadam URA. If these assumptions were to change drastically, the resulting year of need for the projects could also change.

This year of need is listed in Table 7-5 for all the projects. In reviewing Table 7-5, one aspect that might stand out is that some projects in the high priority category have a later year of need than those projects placed in lower categories. The year of need was only one of several factors that contributed to the prioritization of projects.

Percent Contribution
The trip distribution established by the travel demand model helped establish a criteria termed percent contribution. The percent contribution criteria measured how much of the total traffic entering an intersection was due to trips originating from or destined to the North Macadam URA. One of the primary reasons for establishing the percent contribution was to gain a better understanding of what was contributing to the need for improvements and greater capacity at the project intersections. The percent contribution will be shown for each of the motor vehicle projects as part of the evaluation matrix in Table 7-5.

Feasibility and Project Priority
Using a combination of all of the criteria discussed, the projects were rated on the level of feasibility: high, medium or low. This rating took into account all of the evaluation criteria as well as additional knowledge that members of the TAC and SAC brought to the table including:

- Right-of-way impacts
- Ability to leverage funding (is the project identified on CIP/TSP/have other funding source)
- Are there opportunities to package projects together (i.e. roadway reconstruction with bicycle lane re-stripe project)
- Timeline of private development plans
It is important to understand that all of these evaluation criteria were used together to help determine project priority. No single criteria led the process to determine project priority. The resulting prioritized list of projects was developed through a combined effort from the PMT, TAC members, SAC members, and active community members. The evaluation matrix and prioritized list for motor vehicle projects is shown below in Table 7-5. A graphic showing the location of all of the prioritized motor vehicle projects is shown in Figure 7-7.

Aerial photo of the SW Kelly Avenue area where several of the motor vehicle projects focus to improve the North Portal access to the study area
<table>
<thead>
<tr>
<th>Proj #</th>
<th>Project Name</th>
<th>2010-2015</th>
<th>2015-2020</th>
<th>2020-2025</th>
<th>2025-2030</th>
<th>Total</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-5a</td>
<td>Moody/Bond Couplet: Bond Avenue Extension (Gibbs Street to River Parkway)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MV-5b</td>
<td>Moody/Bond Couplet: Moody Avenue Realignment to the West</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>MV-9a</td>
<td>South Portal - Phase 1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MV-11a</td>
<td>Porter Street/Kelly Avenue Traffic Signal and Closure of the Kelly slip ramp to Gibbs Street</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MV-11b</td>
<td>Reconstruct Kelly Ramp from Macadam Avenue to new Traffic Signal at Kelly/Porter</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MV-14c</td>
<td>North Portal: Kelly Avenue/Corbett Avenue Improvement</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MV-14d</td>
<td>North Portal: SB Harbor Drive/Sheridan Street Improvement</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MV-14e</td>
<td>North Portal: Sheridan Street Extension (Moody Avenue to Bond Avenue)</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MV-24</td>
<td>Hawthorne Bridge/Naito Ramp Improvement</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MV-30</td>
<td>I-5 Northbound Off-Ramp/SW Curry Street - Northbound Right Closure from I-5 Off-Ramp</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>MV-40</td>
<td>South Portal - Phase 2</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>MV-26</td>
<td>Arthur Street/1st Avenue Improvement</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Note:**
- The year of need assumes even distribution of development both geographically and in relation to time. If certain pockets of the North Macadam URA develop quicker than others or development does not occur uniformly over time, some projects may be required sooner or later than others.
- Earlier year of need based on safety issues concerning limited sight distance as the southbound traffic on SW Hood Avenue approaches the traffic signal at SW Macadam Avenue.
- Projects MV-11b and MV-14c are directly related to each other. In order for MV-14c to be constructed the ramp from Macadam Avenue needs to be relocated as shown in project MV-11b. The earlier range for year of need represents the improved connectivity gained by constructing the project.
- Percentages based on the TEV on the southbound leg only.
- Percentages based on the TEV on the northbound leg only.
- Percentages based on the TEV on the southbound leg only.
- Percentages based on the TEV on the northbound leg only.
- Percentages based on the TEV on the southbound leg only.
- Percentages based on the TEV on the northbound leg only.
- Percentages based on the TEV on the southbound leg only.
- Percentages based on the TEV on the northbound leg only.
- Percentages based on the TEV on the southbound leg only.
- Percentages based on the TEV on the northbound leg only.

**Ranking Criteria:**
- Safety
- Benefit to Transit Service
- Benefit to Pedestrian/Bicycle Networks
- Grade Separation
- Benefit to Travelers
- Benefit to Economic Development
- Benefit to Access/Circulation/Connectivity
- Benefit to URA
- Benefit to Traffic Operations/Mobility
- Benefit to Feasibility
- Percent Contribution Based on Total District Trips

**Scores**
- Project Classification: Top Tier: Motor Vehicle Projects
- Project Classification: PROJECTS RECOMMENDED FOR FURTHER STUDY

**Footnotes:**
1. The year of need assumes even distribution of development both geographically and in relation to time. If certain pockets of the North Macadam URA develop quicker than others or development does not occur uniformly over time, some projects may be required sooner or later than others.
2. Earlier year of need based on safety issues concerning limited sight distance as the southbound traffic on SW Hood Avenue approaches the traffic signal at SW Macadam Avenue.
3. Percentages based on the TEV on the southbound leg only.
4. Percentages based on the TEV on the northbound leg only.
5. Percentages based on the TEV on the southbound leg only.
6. Percentages based on the TEV on the northbound leg only.
7. Percentages based on the TEV on the southbound leg only.
8. Percentages based on the TEV on the northbound leg only.
9. Percentages based on the TEV on the southbound leg only.
10. Percentages based on the TEV on the northbound leg only.
11. Percentages based on the TEV on the southbound leg only.
12. Percentages based on the TEV on the northbound leg only.
13. Percentages based on the TEV on the southbound leg only.
14. Percentages based on the TEV on the northbound leg only.
15. Percentages based on the TEV on the southbound leg only.
16. Percentages based on the TEV on the northbound leg only.
17. Percentages based on the TEV on the southbound leg only.
18. Percentages based on the TEV on the northbound leg only.
19. Percentages based on the TEV on the southbound leg only.
20. Percentages based on the TEV on the northbound leg only.
21. Percentages based on the TEV on the southbound leg only.
22. Percentages based on the TEV on the northbound leg only.
23. Percentages based on the TEV on the southbound leg only.
24. Percentages based on the TEV on the northbound leg only.
25. Percentages based on the TEV on the southbound leg only.
26. Percentages based on the TEV on the northbound leg only.
27. Percentages based on the TEV on the southbound leg only.
28. Percentages based on the TEV on the northbound leg only.
29. Percentages based on the TEV on the southbound leg only.
30. Percentages based on the TEV on the northbound leg only.
31. Percentages based on the TEV on the southbound leg only.
32. Percentages based on the TEV on the northbound leg only.
33. Percentages based on the TEV on the southbound leg only.
34. Percentages based on the TEV on the northbound leg only.
35. Percentages based on the TEV on the southbound leg only.
36. Percentages based on the TEV on the northbound leg only.
37. Percentages based on the TEV on the southbound leg only.
38. Percentages based on the TEV on the northbound leg only.
39. Percentages based on the TEV on the southbound leg only.
40. Percentages based on the TEV on the northbound leg only.
41. Percentages based on the TEV on the southbound leg only.
42. Percentages based on the TEV on the northbound leg only.
43. Percentages based on the TEV on the southbound leg only.
44. Percentages based on the TEV on the northbound leg only.
45. Percentages based on the TEV on the southbound leg only.
46. Percentages based on the TEV on the northbound leg only.
47. Percentages based on the TEV on the southbound leg only.
48. Percentages based on the TEV on the northbound leg only.
49. Percentages based on the TEV on the southbound leg only.
50. Percentages based on the TEV on the northbound leg only.
51. Percentages based on the TEV on the southbound leg only.
See Figures 7-4 through 7-7 for MV-7 options.
FREIGHT
Freight needs were addressed through the motor vehicle projects in the study area. This study did not target freight traffic specifically, but included freight along with motor vehicles. All of the proposed motor vehicle projects would improve freight access to the North Macadam URA.

As projects are designed in the North Macadam URA, freight needs will be considered. Roadways, loading areas, parking, and turning radii will need to allow for adequate heavy vehicle movement in, out and through the District.

PARKING MANAGEMENT
Parking management, both on-street and off-street, in the North Macadam URA will need to be reevaluated as development occurs in order to meet the district’s needs. Parking strategies can influence travel decisions and can be used to encourage use of non-auto modes. As part of the City Central Transportation Management Plan9, the overall parking goal is to “pinch the supply of parking to provide the necessary incentive to use alternative transportation modes.” While use of non-auto modes will be encouraged, to balance the district’s transportation demand there will still need to be an adequate supply of parking to meet the demands of travelers without other options.

Parking strategies can be used to target different types of parking, such as short term, carpool, and long term. The strategies can be used to generate revenue for communities, or to create parking permit programs. Parking rates can be adjusted to reflect the supply versus demand and parking restrictions can be issued to limit on-street parking during peak hours or in loading zones. All of these aspects to parking strategies will need to be reassessed as the North Macadam URA continues to develop.

PLAN/POLICY RECOMMENDATIONS
Three roadways in this study area are proposed as additions to the City’s motor vehicle network designated in Portland’s Transportation System Plan (TSP). SW Corbett Avenue, SW

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Water Avenue, and SW Sheridan Street are currently classified as local access streets, however, this study proposes a classification change to traffic access street for all three roadways. A traffic access street is intended to provide access to central city destinations, provide connections between central city districts, and distribute traffic from regional trafficways and major city traffic streets for access within the district. These classification changes would promote improved access to the North Macadam URA.

**PROJECT SUMMARY SHEETS**

For each project a summary sheet was created to give further detail about the project. The motor vehicle project sheets are listed numerically.
MV-1. MILWAUKIE LIGHT RAIL IMPROVEMENTS

Need/Purpose
The Portland to Milwaukie Light Rail project identified a new locally preferred alternative that will be carried forward to the next phase of the planning/design process. The Porter-Sherman Alignment would run along the center of SW Lincoln Street between 5th/6th Avenue and SW Naito Parkway, and then continue on structure and connect at-grade immediately west of SW Moody Avenue at SW Porter Street. As part of the project design and the recommended mitigations in the Supplemental Draft Environmental Impact Study, intersection projects were identified at major LRT crossings within the study area.

Background Data
- The LRT alignment is within the North Macadam Urban Renewal District boundary.
- The project was also identified on the System Development Charge (SDC) Overlay project list.
- Specific mitigations may change as the project progresses into preliminary engineering and the final Environmental Impact Statement.

Description of Improvement
This project includes Lincoln Street being extended to include motor vehicle and transit between 1st Avenue and Naito Parkway. This would require the installation of new traffic signals along the locally preferred alternative alignment at SW Lincoln Street/SW 2nd Avenue, SW Lincoln Street/SW Naito Parkway and Moody Avenue/Porter Street.

Project Area

Project Detail

Preliminary Cost Estimate
--

Priority
In Process
Alternatives/Additional Notes
The Portland to Milwaukie LRT SDEIS identified additional project related mitigations, including:
- Implement special traffic control for LRT and buses for full transit priority at SW Porter Street/SW Moody Avenue.
- Construct eastbound left turn pocket at SW 4th Avenue/SW Lincoln Street
- Construct eastbound left turn pocket at SW Naito Parkway/SW Lincoln Street
The new segment of Lincoln Street will be accessible to all modes of travel (not just transit).

Additional Images / Graphics
Lincoln/1st Avenue looking eastbound where Lincoln will extend.
MV-3. SHERIDAN EXTENSION (3RD TO NAITO)

**Need/Purpose**
Currently SW Arthur Street is used to connect eastbound and westbound motor vehicle traffic between the Ross Island Bridge and downtown Portland or US-26. During peak hours, vehicles traveling on SW Arthur Street experience long delays and queuing. Extending SW Sheridan Street between SW 3rd Avenue and SW Naito Parkway would provide a second east-west passage for these vehicles. This project would help distribute traffic more evenly, decrease delays and queuing on SW Arthur Street, and improve connectivity between SW Naito Parkway and downtown Portland, including access to I-405.

**Background Data**
- Currently, SW Arthur Street is the only main east-west connection between SW Naito Parkway and SW 3rd Avenue.
- Under existing conditions, SW Arthur Street between SW 1st Avenue and SW 3rd Avenue carries approximately 27,000 vehicles per day (approximately 2,500 during the AM peak hour and 2,700 during the PM peak hour).
- The grades along this proposed roadway segment are significant.

**Description of Improvement**
This project would construct a two-lane roadway extension between SW Naito Parkway and SW 3rd Avenue. The project would also include the installation of traffic signals at SW 3rd Avenue/SW Sheridan Street, SW 1st Avenue/SW Sheridan Street and SW Naito Parkway/SW Sheridan Street.

**Project Area**

**Project Detail**

**Preliminary Cost Estimate**
$8.4 to $9.8 Million

**Priority**
Low
MOTOR VEHICLE PLAN PROJECTS

Alternatives/Additional Notes

- Under future year conditions (2030), with the proposed SW Sheridan Street extension, the demands on SW Arthur Street are reduced to approximately 19,000 vehicles per day.
- By constructing the SW Sheridan Street Extension, the traffic operations at the SW Arthur Street/SW 1st Avenue intersection improve, and no mitigations are necessary at SW Arthur Street/SW 1st Avenue.

Additional Images / Graphics

- SW Sheridan Street/SW 1st Avenue, looking westbound to where Sheridan Street would extend.
- SW Sheridan Street/SW 3rd Avenue, looking eastbound at area where Sheridan Street would...
MOODY-BOND COUPLE – BOND EXTENSION

**Need/Purpose**
The Bond Avenue extension and creation of Moody-Bond couplet is a critical component to the circulation in the South Waterfront District. By extending SW Bond Avenue to SW River Parkway, and continuing the couplet to SW River Parkway, the northbound and southbound traffic circulation would improve. Currently the couplet ends at SW Whitaker Street, and that area acts as a bottleneck for traffic entering and exiting the South Waterfront District. Without the couplet the intersection at SW Sheridan Street/SW Moody Avenue also fails to meet jurisdictional standards under future year (2030) conditions.

**Background Data**
- With the development of the South Waterfront District, vehicle trips are expected to increase significantly.
- SW Moody Avenue currently extends the entire length of the South Waterfront District, but SW Bond Avenue terminates at SW Gibbs Street.
- SW Moody Avenue and SW Bond Avenue are both classified as traffic access streets in the City of Portland Transportation System Plan.
- The couplet configuration mitigates future (2030) deficiencies at SW Sheridan Street/SW Moody Avenue.

**Description of Improvement**
Moody Avenue would be converted to a southbound only roadway. Bond Street would extend north to River Parkway and serve as the northbound couplet pair to Moody Avenue. The decouple point would occur at the intersection of River Parkway. Several proposed east-west streets would provide connections between Moody Avenue and Bond Avenue, including: Sheridan Street, Arthur Street, Meade Street, Porter Street, and Woods Street.

**Project Area**

**Cross-section Detail or Photo**

**Bond Avenue**

**Preliminary Cost Estimate**
(PDOT)

**Priority**
High
Alternatives/Additional Notes

- This project was included in the 2030 Financially Constrained Scenario (Alternative 1).
- There is a short segment of SW River Parkway between SW Moody Avenue and SW Bond Avenue that may need to be a two way road to allow access to an existing parking garage on the south side of SW River Parkway. This issue is worth further discussion.
- The construction of SW Sheridan Street between SW Moody Avenue and SW Bond Avenue is critical to the circulation of South Waterfront traffic once the couplet is complete. However, it is assumed that the roadway extension will happen independently and is not included in this project, but should be noted that its development is critical.
- The extension of SW Bond Avenue and creation of a couplet with SW Moody Avenue would also have implications on the existing streetcar alignment with is currently two-way on SW Moody Avenue.
- A bike lane should be included in the future extension of SW Bond Avenue.

Additional Images / Graphics

View of Moody Avenue as a two-way Street, north of Gibbs.

View of the existing Moody-Bond couplet at the south end of the District
MV-5B. MOODY-BOND COUPLER – MOODY REALIGNMENT

### Need/Purpose

As part of the Moody-Bond couplet project, part of SW Moody Avenue would be realigned to the west to allow for new development. SW Moody Avenue would be one way southbound and SW Bond Avenue would be developed as one-way northbound (see project MV-5a). The realignment of SW Moody Avenue would take place as the area develops.

### Background Data

- The slight realignment of SW Moody Avenue would allow for additional development opportunities.

### Description of Improvement

This project shifts the alignment of SW Moody Avenue to the west. Depending on the extend of the shift, and potential change in elevation, the Street Car tracks may need to be modified.

### Project Area

![Project Area Diagram]

### Cross-section Detail or Photo

![Cross-section Diagram]

### Preliminary Cost Estimate

(PDOT)

### Priority

High
This project was included in the 2030 Financially Constrained Scenario (Alternative 1).

There is a short segment of SW River Parkway between SW Moody Avenue and SW Bond Avenue that may need to be a two way road to allow access to an existing parking garage on the south side of SW River Parkway. This issue is worth further discussion.

The construction of SW Sheridan Street between SW Moody Avenue and SW Bond Avenue is critical to the circulation of South Waterfront traffic once the couplet is complete. The SW Sheridan Street extension is described in project MV-14e.

One consideration for the realignment and reconstruction of SW Moody Avenue is the phasing of when the SW Bond Avenue extension (MV-5a) will occur. SW Moody Avenue could be the primary north-south access to the South Waterfront District for several years and will need to carry high volumes of two-way traffic.

View of SW Moody Avenue as a two-way Street, with a median separating northbound and southbound traffic and street car tracks as well. This photo is just north of SW Sheridan Street looking southbound.
The purpose of this project is to improve access to the South Waterfront District from the south. With the current configuration of the SW Macadam Avenue/ SW Bancroft Street/SW Hood Avenue intersection, the geometry is skewed, which leads to compromised sight distance for southbound traffic on SW Hood Avenue. In addition, the signal must serve several different phases of traffic, which decreases the efficiency of the traffic signal. The South Portal design addresses all of these issues and improves access to and from the South Waterfront District.

Access to the South Waterfront District is currently limited to an entrance at the north end (the North Portal) and at the south end near SW Bancroft Street (the South Portal)

The existing intersection at SW Bancroft Street/SW Macadam Avenue is expected to have significant delays due to the additional traffic from the planned development in the South Waterfront District.

Improved access is needed into the South Waterfront area from the south to accommodate future vehicle demand.

This project would create three new signalized intersections, and modify a forth intersection, to help facilitate access in and out of the South Waterfront District. SW Hood Avenue would intersect at Hamilton Street and be the main point of entry, as well as for southbound trips exiting. The intersection at SW Bancroft Street/SW Macadam Avenue would be the main exit for vehicles headed northbound. The proposed lane geometries are shown below.

Preliminary Cost Estimate

$32 Million

Priority

High
This South Portal project was originally recommended in the South Waterfront South Portal Study (2006) as Alternative #4A.

Phase 1 consists of the SW Moody Avenue extension to SW Hamilton Street with new signals at SW Moody Avenue/SW Bancroft Street, SW Moody Avenue/SW Hamilton Street and SW Hamilton Street/SW Macadam Avenue.

Phase 2 consists of extending SW Bond Avenue from SW Bancroft Street to the SW Moody Avenue/SW Hamilton Street intersection.

The South Portal is included in the 2030 RTP Financially Constrained model.

Aerial view of the South Portal area looking southbound. SW Hood Avenue can be seen emerging from under I-5 to the intersection at SW Macadam Avenue.

This photo is a northbound view on Macadam Avenue and shows the limited sight distance of southbound traffic on SW Hood Avenue approaching the SW Bancroft Avenue intersection.

SW Bancroft Street/SW Macadam Avenue looking northbound.
MV-9B. SOUTH PORTAL – PHASE 2

**Need/Purpose**
The purpose of this project is to improve access to the South Waterfront District from the south. SW Bond Avenue would extend from SW Bancroft Street to SW Hamilton Street, lengthening the Moody/Bond couplet.

**Background Data**
- This project helps to extend the Moody/Bond couplet.
- Phase 2 would need to be constructed after phase 1.
- This project supplements MV-9a.

**Description of Improvement**
Phase 2 of the South Portal project consists of extending SW Bond Avenue from SW Bancroft Street to the SW Moody Avenue/SW Hamilton Street intersection.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**
$18.5 Million

**Priority**
Medium
**Alternatives/Additional Notes**

- This South Portal project was originally recommended in the South Waterfront South Portal Study (2006) as Alternative #4A.
- Phase 1 consists of the SW Moody Avenue extension to SW Hamilton Street with new signals at SW Moody Avenue/SW Bancroft Street, SW Moody Avenue/SW Hamilton Street and SW Hamilton Street/SW Macadam Avenue.
- Phase 2 consists of extending SW Bond Avenue from SW Bancroft Street to the SW Moody Avenue/SW Hamilton Street intersection.
- The South Portal is included in the 2030 Financially Constrained model.

**Additional Images / Graphics**

SW Bancroft Street/SW Bond Avenue intersection, looking southbound and the existing dead end. Property would need to be acquired to build Phase II of the South Portal.
## MV-11A. KELLY/PORTER TRAFFIC SIGNAL AND KELLY SLIP RAMP CLOSURE TO GIBBS STREET

### Need/Purpose
By signalizing the intersection the southbound motor vehicle approach will have safer access to SW Hood Avenue via a protected left turn. The southbound left movement is currently allowed, but without a traffic signal the movement is low in part due to the difficulty in making the maneuver. Also, by closing the SW Kelly ramp (to Kelly/Gibbs) that southbound traffic will be redirected to this new signalized intersection where the traffic can access Hood Avenue. Closing that ramp will help reduce neighborhood cut through traffic. The reduced motor vehicle traffic at the SW Kelly Avenue/SW Gibbs Street intersection will also make the pedestrian crossing safer (as part of the Gibbs Street Pedestrian Bridge project).

### Background Data
- The existing intersection is difficult for pedestrians to cross.
- Currently there is a fair amount of pedestrian activity due to the close vicinity of the Naturopathic School of Medicine.
- This project would continue the pedestrian pathway in the BP-16 (SW Hood Avenue Sidewalk Enhancement) project and provide a crossing of Kelly Avenue.
- Cut through traffic in the South Portland neighborhood would be reduced due to closing the SW Kelly slip ramp to SW Gibbs Street.

### Description of Improvement
This project includes constructing a new traffic signal at the SW Kelly Avenue/SW Porter Street intersection and closing the SW Kelly Avenue southbound ramp (from the Ross Island Bridge in the eastbound direction to SW Kelly Avenue/SW Gibbs Street).

### Project Area

![Project Area Diagram](image)

### Cross-section Detail or Photo

![Cross-section Diagram](image)

### Preliminary Cost Estimate
$850,000 to $960,000

### Priority
High
This project could be constructed independently whether or not any of the alternatives for the west end of the Ross Island Bridge are chosen.

Each of the alternatives for the bridge connections includes this intersection reconstruction.

MV-11a is tied to MV-11b. And in order for MV-14c to be constructed both MV-11a and MV-11b would need to be constructed (due to signal spacing and merge issues). However, MV-11a can happen independently of both of these other projects.

SW Kelly Avenue/SW Porter Street intersection looking southbound.

SW Kelly Avenue/SW Porter Street intersection looking southeast. The stop approach for the southbound left turning vehicles can be seen in this photo.
### MV-11B. KELLY RAMP RECONSTRUCTION TO TRAFFIC SIGNAL AT KELLY/PORTER

#### Need/Purpose

By reconfiguring the Kelly ramp from SW Macadam Avenue, other improvements on SW Kelly Avenue are able to take place.

#### Background Data

- Signalizing and reconfiguring this intersection is necessary in order for the improvements at SW Corbett Avenue/SW Kelly Avenue (MV-14c) to move forward due to signal spacing criteria.

#### Description of Improvement

A segment of SW Kelly Avenue would be closed from SW Corbett Avenue to the Macadam ramp and reconstructed to form a five-leg intersection at SW Porter Street/SW Kelly Avenue.

#### Project Area

![Project Area Diagram](image)

#### Cross-section Detail or Photo

![Cross-section Diagram](image)

#### Preliminary Cost Estimate

$12.9 to $14.9 Million

#### Priority

High
This project would be dependent on MV-11a being constructed first, due to the necessity of a traffic signal at this intersection in order to realign the Kelly ramp.

In order for this project to be constructed, MV-14C would need to occur to provide adequate merge length for the Kelly ramp traffic from SW Macadam Avenue as well as to provide adequate signal spacing between the SW Kelly Avenue/SW Porter Street intersection.

The existing ramp from Macadam Avenue to Kelly Avenue comes in on the left in this photo. That ramp would be reconstructed and brought in further south to the Kelly/Porter intersection.

A view eastbound at the ramp from SW Macadam Avenue that would be closed and reconstructed to join in with the SW Kelly Avenue/SW Porter Street intersection.
**MV-14B. HARBOR DRIVE/RIVER PARKWAY IMPROVEMENT (PREVIOUSLY MV-23)**

<table>
<thead>
<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
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</table>
| Based on the expected growth in traffic volume through this intersection, a second eastbound right lane and a second southbound left turn lane would be necessary to meet operational standards for the City of Portland. Due to commuter behavior through this intersection, the AM and PM peak hours experience different critical movements. The second eastbound right lane helps to mitigate the PM peak hour traffic flow (out of downtown), while the second southbound left turn lane accommodates the AM peak hour flow (into the South Waterfront District). The two additional turn lanes are needed jointly to mitigate this intersection. | - This intersection provides key access between downtown Portland and the South Waterfront District as well as to other southbound regional connectors.  
- The streetcar travels through this intersection on SW Harrison Street. |

### Description of Improvement

This project would widen the west leg of the intersection to allow for a second eastbound right turn lane (12 foot width) along with the existing shared through/right turn lane. A second southbound left turn lane would also be constructed. The sidewalk would be replaced with this widening.

### Project Area

![Project Area Diagram]

### Cross-section Detail or Photo

![Cross-section Diagram]

### Preliminary Cost Estimate

$2.6 to $2.9 Million

### Priority

High
Alternatives/Additional Notes

- The Streetcar travels on SW River Parkway and SW Harrison Street through the intersection at SW Harbor Drive. In order to widen the eastbound travel lane to make room for a separate eastbound right turn lane, the overhead catenary system (OCS) poles for the streetcar will likely need to be relocated.

- One concern in regard to widening this intersection that should be noted is pedestrian safety. By widening the west and north legs to accommodate additional turn lanes, the pedestrian crossing for those legs increase.

---

Looking down the eastbound approach that would require widening for a second eastbound right turn lane.

The north leg of the intersection would require a second southbound left turn lane.
### MV-14C. KELLY AVENUE/CORBETT AVENUE IMPROVEMENT (PREVIOUSLY MV-27)

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
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<tbody>
<tr>
<td>With the existing alignment of SW Corbett Avenue access is limited to the area north of SW Kelly Avenue, west of SW Corbett Avenue, and east of SW Naito Parkway. SW Water Avenue and SW Meade Street allow vehicles to exit the area, but there are insufficient gaps in traffic flow for exiting vehicles to turn left onto SW Kelly Avenue. By reconstructing the intersection, vehicles would have better access to the Kelly area both entering and exiting. Also, in conjunction with the MV-11 project (Kelly/Porter) realigning the intersection would be necessary for appropriate signal spacing.</td>
<td>- Currently SW Corbett Avenue at SW Kelly Avenue is northbound only.</td>
</tr>
</tbody>
</table>

#### Description of Improvement

This project would realign SW Corbett Avenue where it intersects with SW Kelly Avenue to intersect further northwest from its existing location, and construct a new traffic signal. The new alignment would allow full access to SW Corbett Avenue. A second component of this project would be to reconstruct SW Corbett Avenue all the way to SW Sheridan Street (from SW Kelly Avenue). The reconstruction would consist of a 3 lane cross section as well as bike lanes, parking, and a 12' sidewalk on each side of the roadway. The range in the preliminary cost estimate reflects whether or not the reconstruction of SW Corbett Avenue to SW Sheridan Street is included.

#### Project Area

![Project Area Diagram](image)

#### Cross-section Detail or Photo

![Cross-section Diagram](image)

#### Preliminary Cost Estimate

$5.3 to $10.6 Million

#### Priority

High
Alternatives/Additional Notes

- The realignment of SW Corbett Avenue would require the acquisition and removal of an existing building on the plot of land bordered by SW Kelly Avenue, SW Meade Street, and SW Corbett Avenue.
- This alignment was also recommended in the Kelly District Plan.
- The MV-11A and MV-11B projects are tied to this project due to signal spacing and merge issues.
- Bike lane continuity should be considered in all projects. This project connects to SW Sheridan Street (SW Water Avenue to SW Moody Avenue) which then connects to project MV-14e (SW Sheridan Street extension between SW Moody Avenue and SW Bond Avenue). If bike lanes are considered in one of these segments, they should be considered in all connecting projects.
- This project reflects the proposed roadway network in two of the alternatives (3 and 4) for the Ross Island Bridge Alternatives in the South Portland Circulation Options being recommended for further study. There are some differences between Alternative 7 and this MV-14C project which should be noted.

Additional Images / Graphics

This aerial photo shows the SW Corbett Avenue/SW Kelly Avenue intersection in the bottom right. Notice the ramp from SW Macadam Avenue joining SW Kelly Avenue just south of SW Corbett Avenue.

This picture is from SW Corbett Avenue, looking southbound to SW Kelly Avenue and at traffic just coming off the Ross Island Bridge in the westbound direction.
MV-14D. SB HARBOR DRIVE/SHERIDAN STREET IMPROVEMENT (PREVIOUSLY MV-29)

**Need/Purpose**
As the South Waterfront District continues to develop, the intersection of southbound SB Harbor Drive/SW Sheridan Street will be one of the main access points to the South Waterfront District. This intersection is currently stop controlled with only one lane for both the southbound right and southbound left turning vehicles. Based on future year 2030 AM and PM peak hour analysis, two lanes on the ramp are necessary to avoid excessive delay and vehicle queuing.

**Background Data**
- This intersection was initially paired together with the MV-14A (North Portal – northbound Harbor Drive ramp and SW Sheridan Street intersection) however, this project should be pursued as a stand alone project if MV-14A does not move forward.

**Description of Improvement**
This project widens the southbound Harbor Drive ramp at SW Sheridan Street from one lane to two lanes, and constructs a new traffic signal at the intersection. Sheridan Street would also be improved to accommodate two eastbound lanes.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**
$2.2 to $2.6 Million

**Priority**
High
An important consideration for this project is whether to signalize the SW Water Avenue/SW Sheridan Street intersection, or to conceivably close SW Water Avenue at SW Sheridan Street. If the MV-2 (Sherman Extension) project is constructed, the area north of SW Sheridan Street could be accessed via SW Naito Parkway.

One reason to close SW Water Avenue at SW Sheridan Street would be to maintain low traffic volumes near the International School.

If the SW Water Avenue connection remains open, but unsignalized, the southbound left turning traffic on SW Water Avenue will experience significant delay times. Priority will be given to the east-west traffic on SW Sheridan Street so that the traffic on the Southbound Harbor Drive Off-Ramp can move through the intersection at SW Water Avenue/SW Sheridan Street without stopping and creating significant vehicle queues on the ramp.

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**Looking northbound at the Southbound SW Harbor Drive ramp/SW Sheridan Street intersection. SW Water Avenue can be seen at the far left in this photo.**

**Looking southbound on SW Harbor Drive as the Southbound Harbor Drive ramp leaves the main roadway to SW Sheridan Street.**

- **DKS Associates**
# MOTOR VEHICLE PLAN PROJECTS

## MV-14E. SHERIDAN EXTENSION (MOODY AVENUE TO BOND AVENUE)

<table>
<thead>
<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
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</table>
| This project is necessary as the Moody/Bond couplet is constructed. Without this critical east-west roadway, vehicles may encounter out of direction travel that could degrade traffic operations at surrounding intersections. | - North of this proposed roadway, the next east-west connection is at SW River Parkway and to the south the next east-west connection is SW Whitaker Street.  
- Other east-west roadways may be build as development occurs, however, no other projects exist that specify those east-west roadways between SW Gibbs Street and SW River Parkway. |

### Description of Improvement
This project would extend SW Sheridan Street between SW Moody Avenue and SW Bond Avenue (constructed according to project MV-5a). The roadway would allow two-way travel and would accommodate both motor vehicles as well as bicycles.

### Project Area

### Cross-section Detail or Photo

### Preliminary Cost Estimate

### Priority
High
A view of SW Sheridan Street as it currently tee’s into SW Moody Avenue. This project would extend SW Sheridan Street through to the east.
**MV-20. THIRD NORTHBOUND THROUGH LANE ON MACADAM (SOUTH PORTAL TO CURRY ST)**

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
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</table>
| With the development of the South Waterfront District more vehicles will be accessing the district (both entering and exiting) via SW Macadam Avenue. SW Macadam Avenue is northbound only north of SW Bancroft Street. Due to the intersections at SW Gaines Street and SW Curry Street, three lanes are necessary to maintain adequate traffic flow and avoid excessive vehicle queuing. While the study was completed using PM peak hour volumes, the AM peak hour volumes are slightly greater due to the roadway directionality and commuter behavior, further driving the need for a third northbound through lane on SW Macadam Avenue. | - Future year 2030 PM peak hour traffic volumes are approximately 2,000 vehicles, an increase of about 600 trips from 2007 counts.  
- Existing traffic counts along Macadam Avenue show that AM peak hour volumes are greater than PM peak hour volumes by about 15%.  
- The South Portal project (MV-9) provides three northbound lanes on SW Macadam Avenue from SW Hamilton Street to SW Bancroft Street, this project would continue that third northbound lane. |

**Description of Improvement**

This project would widen SW Macadam Avenue from a two lane cross section to a three lane cross section with a sidewalk on the east side of the roadway. The project would continue from the South Portal (at Bancroft) to SW Curry Street, approximately 1800 feet in length.

**Project Area**

![Project Map](image)

**Cross-section Detail or Photo**

![Cross-section Diagram](image)

**Preliminary Cost Estimate**

$17.6 to $20.5 Million

**Priority**

Low
The I-5/Macadam ramp study conducted by DKS Associates also determined the need for a third northbound through lane on SW Macadam Avenue.

PM peak hour year 2030 traffic analysis shows that with the existing two-lane geometry, the intersections at SW Gaines Street/SW Macadam Avenue and SW Curry Street/SW Macadam Avenue both have volume-to-capacity (v/c) ratios greater than 1.00. By adding the third northbound through lane those two intersections meet City of Portland operating standards.

The cost range shown in this estimate reflects the cost of building the additional lane to the west of the existing SW Macadam Avenue roadway. By building to the west, no additional right-of-way would be necessary, however, due to the terrain, the high cost reflects the need to construct significant retaining walls and shift the northbound I-5 Off-Ramp.

Additional Images / Graphics

- SW Macadam Avenue from near SW Gaines Street looking southbound.
- SW Macadam Avenue from near SW Abernathy Street, looking northbound.
MV-21. SIGNALIZE INTERSECTIONS IN THE SOUTH WATERFRONT DISTRICT

<table>
<thead>
<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
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<tbody>
<tr>
<td>As traffic volumes increase some intersections will need to be signalized as development warrants. From the 2030 PM peak hour traffic analysis, four intersections were identified as meeting peak hour signal warrants:</td>
<td></td>
</tr>
<tr>
<td>- SW Moody Avenue/SW Curry Street</td>
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<tr>
<td>- SW Moody Avenue/SW Gaines Street</td>
<td></td>
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<tr>
<td>- SW Bond Avenue/SW Curry Street</td>
<td></td>
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<tr>
<td>- SW Bond Avenue/SW Curry Street</td>
<td></td>
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<tr>
<td>Today these intersections all operate with stop controls on the east and west legs, but free flow in the northbound and southbound direction (depending on which street due to the couplet).</td>
<td></td>
</tr>
<tr>
<td>These intersections are all within the South Waterfront District and serve local businesses and residences.</td>
<td></td>
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</tbody>
</table>

**Description of Improvement**

This project would implement construction of signals at intersections in the South Waterfront District as development warrants. These signals should be implemented with the existing lane geometry.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

$2.3 to $2.5 Million

**Priority**

High
SW Moody Avenue/SW Curry Street intersection – one of the South Waterfront intersections that will likely require a traffic signal by the year 2030.

An aerial view of the South Waterfront area including the four intersections that will likely require traffic signals in the future.
MV-24. HAWTHORNE BRIDGE/NAITO RAMP IMPROVEMENT

**Need/Purpose**

During the PM peak hour the eastbound traffic flow over the Hawthorne Bridge provides minimal gaps for traffic from the northbound SW Naito Parkway ramp to access the bridge. Without a future traffic signal and second turn lane from the ramp, queuing on SW Naito Parkway will be excessive and interfere with intersections to the south. In addition this project provides an improved and safer bicycle crossing.

**Background Data**

- This intersection is currently stop controlled for the northbound SW Naito Parkway ramp (1-lane) approach to the Hawthorne Bridge.
- During a construction project on SW Naito Parkway in 2007 a traffic flagger was stationed at the junction of the ramp and the bridge to help avoid excessive queuing on the ramp. This action was met with positive results and simulated the implementation of a traffic signal at that intersection.

**Description of Improvement**

This project would widen the northbound ramp from SW Naito Parkway onto the Hawthorne Bridge eastbound for a second northbound right lane. A signal would also be installed for eastbound traffic on the bridge and the northbound traffic from Naito Parkway. The westbound traffic would remain free flow through this intersection.

**Project Area**

[Map of project area]

**Cross-section Detail or Photo**

[Diagram of project cross-section]

**Preliminary Cost Estimate**

$4.1 to $4.8 Million

**Priority**

Medium
### Alternatives/Additional Notes

- This project could be constructed in 2 phases:
  - Phase I: install new traffic signal for eastbound traffic.
  - Phase II: widen ramp from Naito Parkway to add a second lane.

### Additional Images / Graphics

- An eastbound view of the Hawthorne Bridge just before the SW Naito Parkway ramp entrance.

- A view from the northbound SW Naito Parkway ramp onto the Hawthorne Bridge. This ramp would be widened to two lanes and a traffic signal placed at the intersection with the eastbound Hawthorne Bridge traffic.
### MV-25. MACADAM AVENUE/BOUNDARY STREET IMPROVEMENT

<table>
<thead>
<tr>
<th><strong>Need/Purpose</strong></th>
<th><strong>Background Data</strong></th>
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<tbody>
<tr>
<td>With the development of the South Waterfront District as well as other growth, total traffic entering this intersection is expected to increase by about 60%. Due to this increase in traffic the side streets get less green time as more green time is necessary for the north-south movements. In order to allow adequate intersection operations and still provide green time for the heavy northbound/southbound movement, dual eastbound and westbound left turn lanes are necessary.</td>
<td>Without mitigation, this intersection does not meet City of Portland or ODOT operational standards based on future year 2030 PM peak hour analysis. About 20% of the growth in traffic volumes at this intersection is due to new trips to and from the South Waterfront District. SW Boundary Street experiences moderate to heavy bicycle traffic and additional widening for bike lanes should be considered for this project.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Description of Improvement</strong></th>
<th><strong>Project Area</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>This project would mitigate the intersection of SW Macadam Avenue/SW Boundary Street by widening the eastbound and westbound legs to each include dual left turns. The dual left turn pocket should each extend for approximately 200 feet for the west leg and 150 feet for the east leg. Further widening of the roadway on SW Boundary Street between SW Corbett Avenue and SW Macadam Avenue should be considered for bike lanes.</td>
<td><img src="image" alt="Project Area Diagram" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cross-section Detail or Photo</strong></th>
<th><strong>Preliminary Cost Estimate</strong></th>
<th><strong>Priority</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Cross-section Diagram" /></td>
<td>$2.3 to $2.6 Million</td>
<td>Low</td>
</tr>
</tbody>
</table>
Alternatives/Additional Notes

- An alternative to adding the eastbound and westbound dual left turn lanes would be to add additional northbound and southbound through lanes. However, adding additional northbound and southbound through lanes is not feasible due to right-of-way issues and the length of roadway that would need to be widened.

Additional Images / Graphics

This is a view of the east leg of the intersection, the proposed project would widen the approach for a second westbound left turn lane.
## MV-26. ARTHUR STREET/1ST AVENUE IMPROVEMENTS

### Need/Purpose

This intersection is the bottleneck for vehicles traveling eastbound to the Ross Island Bridge. Traffic volumes entering this intersection during the PM peak hour are expected to grow by approximately 20% from existing 2007 volumes by the year 2030. That growth would lead to excessive queuing and delays without mitigations. If the MV-3 (Sheridan Street Extension) project is constructed, then no mitigation would be necessary at this intersection. This project would occur instead of MV-3.

### Background Data

Under existing 2007 PM peak hour conditions eastbound queues can extend back to the intersection at SW Sheridan Street/SW Barbur Boulevard.

### Description of Improvement

This project would add lanes to this intersection in the eastbound, southbound, and westbound directions. In the eastbound direction an additional through lane would be constructed for approximately 350 feet; in the southbound direction an additional through lane would be constructed for approximately 200 feet; and in the westbound direction an additional right turn pocket would be constructed for about 200 feet.

### Project Area

![Project Area Diagram]

### Cross-section Detail or Photo

![Cross-section Diagram]

### Preliminary Cost Estimate

$2.3 to $2.6 Million

### Priority

Low
**Alternatives/Additional Notes**

- This project would only be considered if MV-3 (Sheridan Extension) was not constructed.
- The Sheridan Extension reduces the traffic demand on SW Arthur Street by creating a second east-west passage.

**Additional Images / Graphics**

![A view of SW Arthur Street/SW 1st Avenue from the NE corner.](image-url)
# Motor Vehicle Plan Projects

## MV-28. Wayfinding

<table>
<thead>
<tr>
<th>Need/Purpose</th>
<th>Background Data</th>
</tr>
</thead>
</table>
| Access to/from the South Waterfront District can be difficult to navigate, and could greatly benefit from more signage. The signage would be both inside and outside the district with the goal of creating well defined and easy to navigate travel paths for drivers unfamiliar to the area. | - Very little signing currently exists to direct drivers to and from the South Waterfront District.  
- As projects are constructed in the South Waterfront District, the signing will be an on-going process and will change as different projects are developed and create new roadway connections. |

<table>
<thead>
<tr>
<th>Description of Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughout the South Waterfront District and on roadways leading to the district, signage would be added to help direct traffic.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Area</th>
<th>Cross-section Detail or Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Map of South Waterfront District]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preliminary Cost Estimate</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100,000 to $200,000</td>
<td>High</td>
</tr>
</tbody>
</table>
### Alternatives/Additional Notes


### Additional Images / Graphics

Wayfinding Example signs:

![Wayfinding Example 1](image1.jpg)
![Wayfinding Example 2](image2.jpg)
MV-30. I-5 OFF-RAMP AT SW CURRY STREET – NORTHBOUND RIGHT TURN PROHIBITOR

**Need/Purpose**
Prohibiting the northbound right turn from the I-5 northbound off-ramp at SW Curry Street is primarily a safety issue. The intersection that currently exists was constructed as a “temporary” signal. The I-5 North Macadam Ramp Project by ODOT pursued the prohibition of this movement. By prohibiting this northbound right turn, I-5 northbound traffic would continue to the intersection of SW Harbor Drive/SW River Parkway or exit at the preceding SW Corbett exit.

**Background Data**
- Between 2006 and 2007 there were approximately three collisions at this intersection involving a northbound right turning vehicle from the I-5 Off-Ramp being struck by a northbound vehicle running a red light on SW Macadam Avenue.

**Description of Improvement**
This project would construct a median barrier (TBD) through the intersection to physically prevent northbound vehicles from the I-5 Off-Ramp from turning right onto SW Curry Street.

**Project Area**

**Cross-section Detail or Photo**

**Preliminary Cost Estimate**

**Priority**
High
Alternatives/Additional Notes

- By prohibiting this turn movement, more out of direction travel may occur by vehicles traveling up to the SW Harbor Drive/SW River Parkway intersection and then traveling southbound to their final destination in the South Waterfront District.

Additional Images / Graphics

Northbound traffic from the I-5 Off-Ramp is in the two lanes on the right hand side of this photo (closer to the hillside) while SW Macadam Avenue is the two left most lanes. The two roadways are separated by a concrete median a few inches in height.

SW Curry Street/I-5 Northbound Off-Ramp/SW Macadam Avenue intersection looking northbound. SW Macadam Avenue is on the right in this photo and the I-5 Off-Ramp traffic is on the left.
TRANSPORTATION DEMAND MANAGEMENT AND THE NORTH MACADAM DISTRICT

Transportation Demand Management (TDM) is a term used to describe strategies for increasing the efficient use of transportation resources. TDM strives to influence human behavior to reduce or redistribute transportation demand. TDM strategies provide alternatives to driving alone and address issues such as air quality, congestion, mobility, economy, safety, health, land use, energy consumption, and transportation expenditures in both the private and public sectors.

The principal objective of TDM programs is to reduce vehicle miles traveled (VMT) by promoting carpool, transit, bicycle and pedestrian programs. The reductions in VMT result in improved air quality, help the City combat climate change, and reduce consumption of petroleum products. TDM can also be a critical part of an economic development strategy. For developers of new properties, it may reduce the number of parking spaces needed for residents or employees, and result in a significant cost savings. These strategies generally result in lower transportation expenses for employees. Promoting walking and cycling can also have a positive impact on the health of the workforce.

TDM programs are dependent on the provision of complementary transportation facilities. Implementation of TDM programs should generally occur in concert with the allocation of new infrastructure, to maximize the return on investment. Education and outreach programs will yield only modest results unless coupled with improvements in transit, walking, bicycling, or carpool
infrastructure. The same is true for infrastructure projects; however, when infrastructure is added to the network there should be a demand management element.

**North Macadam Recommendations**

Specific to North Macadam, it is evident that the district will not have the capacity to accommodate future growth in traffic if more than 60% of the trips in to the district are by automobile. Given that, it is important to consider demand management programs and policies that will ensure the infrastructure that is built in the district is used efficiently by residents, employees, and visitors. Demand management programs can be implemented by cities, employers, business associations, or mandated by air quality districts and can be implemented in a number of ways. In North Macadam, the City chose to explore a commonly used public-private partnership model called a Transportation Management Association (TMA) to deliver TMD programs to the district.

A TMA is a non-profit entity that works within a defined area to promote the allocation and use of transportation options for its members. A TMA can provide a unified voice as an advocate on behalf of the area for transportation related issues including parking, signage, and business promotion, as well as provide a venue for distributing transit (including streetcar) passes to residents and businesses.

Several TMAs have been established in the Portland Metropolitan Area, including Washington County, the Lloyd District, Swan Island, the Gresham Regional Center, and Clackamas Regional Center. In most cases, TMAs have formed as stakeholders in a given area come to recognize common concerns regarding transportation and access and its impact on the vitality and livability of a district or neighborhood. Each of these TMA’s has been successful in increasing awareness and use of transportation options other than the single occupant automobile to, from, and within their districts. Each provides a unique “package” of services/programs that have been tailored to the affected area and audience.

In 2007, the City received a grant from Metro to study the feasibility of starting a TMA to serve the residents and businesses in the North Macadam Urban Renewal Area (URA). With the City acting as a lead, a group of South Waterfront residents, businesses, and developers met for several months to discuss whether to form a TMA to serve South Waterfront. The group administered a
survey to residents and businesses (see tables 8-1 and 8-2), worked to establish transportation goals for the district, and identified a potential funding mechanism for a TMA. The feedback from residents, businesses, and developers was positive, and the stakeholders expressed a desire to form a TMA that could develop programs and services targeted at South Waterfront residents and employees including:

- Advocating on behalf of the district for improvements to the transportation system including changes to parking, transit, and bicycle facilities.
- Providing streetcar passes to all residents.
- Developing programs and working with residents and businesses to encourage the use of transportation options.
- Developing a shuttle program, or circulator to serve the district.
- Provide trip planning services or new employee orientations.

A TMA could serve as an extremely valuable resource for the diverse stakeholders of the South Waterfront area. A TMA could serve as a central point of contact for users of the district to access programs, products and services that make transportation and mobility convenient and efficient. In the months following adoption of this strategy the City will continue working with residents and businesses to identify a funding mechanism and a business plan for the TMA.
The North Macadam Transportation Strategy funding strategy identifies a variety of both public and private funding sources that can be utilized to develop the transportation system in and around the North Macadam Urban Renewal Area. The funding strategy is intended to provide City agencies and district stakeholders with a clearer understanding of the likely distribution of costs for each project and the potential contribution anticipated from each funding source.

Completing the transportation strategy and the funding strategy creates the potential for a North Macadam District legislative agenda in which all district stakeholders can use their common interest in furthering key projects to advocate for priority from outside sources.

It is important to note that identifying complete funding for all projects is not needed immediately nor is full commitment by any anticipated source required or productive at this time. Rather, this funding strategy will need to evolve over time as district priorities shift and unforeseen project implementation opportunities arise.

One new funding source, The North Macadam Transportation System Development Charge Overlay, was developed concurrently with the Transportation Strategy to provide an additional dedicated funding source focused on the district’s transportation needs. This source will be a key local funding tool that can be used to apply for and match outside grant sources.
PROJECT COSTS

To establish a realistic estimate of the total cost of constructing the recommended Top Priority Projects, cost estimates were prepared for each project. The standard Portland Bureau of Transportation construction cost estimate methodology was used for consistency and so that estimates produced could be relied upon in moving projects into design and construction. All estimates used a 5 year escalation or a 2012 implementation year. However, a cost range was developed for each project to reflect the schematic level of design detail that the estimates were based on and the unknown implementation date of each project.

The Top Priority Projects proposed in the Transportation Strategy total between $125.1 Million and $157.6 Million dollars. The breakdown of project costs by mode is detailed below in Table 9-1.

Table 9-1: Total Cost by Mode for Top Priority Projects

<table>
<thead>
<tr>
<th>Top Priority Projects</th>
<th>Low Cost</th>
<th>High Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicle improvements</td>
<td>$98.5M</td>
<td>$124.8M</td>
</tr>
<tr>
<td>Pedestrian and bicycle projects</td>
<td>$6.6M</td>
<td>$7.7M</td>
</tr>
<tr>
<td>Transit projects (district match)</td>
<td>$20M</td>
<td>$25M</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$125.1M</td>
<td>$157.6M</td>
</tr>
</tbody>
</table>

Project Phasing

To further prioritize the project list the Top Priority projects were separated into two implementation phases. The phasing priorities were based on the immediate need to resolve a deficiency at a project location and existing or pending motor vehicle capacity issues. Projects were sorted into two general time categories: Phase I projects for the time period between 2010 and 2020 and Phase II projects for the 2020 and 2030 time period.

Phase I projects focus on the district motor vehicle portals, the most severe pedestrian and bicycle deficiencies, the next phase of transit improvements, and initial progress on changing the character of the Ross Island Bridgehead. A group of projects were also moved up to Phase I to accommodate anticipated development or other larger initiatives. The clearest examples are projects in the area between the Ross Island Bridge and the Marquam Bridge. Projects such as Moody Avenue, Bond Avenue and the streetcar double track were moved to Phase I ahead of their traffic need in order to respond to the Portland to Milwaukie Light Rail project,
the proposed Harbor Drive /River Parkway and the proposed development within the north district of South Waterfront.

Allocation of projects to a particular phase is based on developments that are known today, but in the future a project or group of projects could rise in priority based on more expedient development activity or projects may need to be delayed if adjacent development slows. This allocation could include projects not currently on the Top Priority list.

The cost and district share of each project is shown in Table 9-2 for Phase I projects and Table 9-3 for Phase II projects. Table 9-3 provides an overall summary of both Phases I and II.

**Table 9-2: Phase I 2010 to 2020 Project Cost and District Share**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Public Investment Projects and Programs</th>
<th>Anticipated Project Cost in 2012 dollars</th>
<th>Estimated District Share</th>
<th>Estimated Non-District Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low ($)</td>
<td>High ($)</td>
<td></td>
</tr>
<tr>
<td>MV-5b</td>
<td>Moody Avenue Realignment to the West (District share is reduced by the approx portion constructed by LRT project)</td>
<td>21,700,000</td>
<td>25,800,000</td>
<td>40%</td>
</tr>
<tr>
<td>MV-9a</td>
<td>Hamilton St Streetcar Interface (South Portal) 30% design</td>
<td></td>
<td></td>
<td>45%</td>
</tr>
<tr>
<td>MV-9b</td>
<td>Hamilton St Streetcar Interface (South Portal)</td>
<td>31,980,000</td>
<td>38,000,000</td>
<td>45%</td>
</tr>
<tr>
<td>MV-11a</td>
<td>Porter/Kelly Signalization and Kelly slip ramp closure</td>
<td>850,000</td>
<td>960,000</td>
<td>30%</td>
</tr>
<tr>
<td>MV-14b</td>
<td>Harbor Dr / River Parkway improvement (Tied to I-5 Macadam Ramp project) – OTIA Funded</td>
<td>2,890,000</td>
<td>6,000,000</td>
<td>0%</td>
</tr>
<tr>
<td>MV-28</td>
<td>Motor Vehicle Wayfinding</td>
<td>TBD</td>
<td>TBD</td>
<td>100%</td>
</tr>
<tr>
<td>BP-22</td>
<td>SW Hood Sidewalk Enhancement</td>
<td>1,042,000</td>
<td>1,178,000</td>
<td>60%</td>
</tr>
<tr>
<td>BP-23</td>
<td>SW Kelly Avenue Tunnel Closure and Crosswalk Improvement</td>
<td>260,000</td>
<td>310,000</td>
<td>30%</td>
</tr>
<tr>
<td>BP-24a</td>
<td>West End Ross Island Bridge Pedestrian Crossing (Try MV-11a first)</td>
<td>610,000</td>
<td>670,000</td>
<td>30%</td>
</tr>
<tr>
<td>BP-24b</td>
<td>SW Kelly Avenue Bike Lane</td>
<td>650,000</td>
<td>750,000</td>
<td>10%</td>
</tr>
<tr>
<td>BP-24c</td>
<td>Ramp Crossing of SW Kelly Ave to SW Naito Parkway</td>
<td>360,000</td>
<td>390,000</td>
<td>10%</td>
</tr>
<tr>
<td>BP-30</td>
<td>Bike Parking Facility (Tram or other location)</td>
<td>100,000</td>
<td>200,000</td>
<td>50%</td>
</tr>
<tr>
<td>BP-31</td>
<td>Pedestrian / Bicycle Wayfinding</td>
<td>50,000</td>
<td>100,000</td>
<td>100%</td>
</tr>
<tr>
<td>T-9</td>
<td>Portland-Milwaukie Light Rail</td>
<td>10,000,000</td>
<td>10,000,000</td>
<td>100%</td>
</tr>
<tr>
<td>T-13</td>
<td>Streetcar Double Track Through North District</td>
<td>10,000,000</td>
<td>15,000,000</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Phase I (2010-2020) Project Summary</strong></td>
<td><strong>80,492,000</strong></td>
<td><strong>99,358,000</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9-3: Phase II 2020 to 2030 Project Cost, Phasing, and District Share

<table>
<thead>
<tr>
<th>Project #</th>
<th>Public Investment Projects and Programs</th>
<th>Anticipated Project Cost in 2012 dollars</th>
<th>Estimated District Share</th>
<th>Estimated Non-District Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low ($)</td>
<td>High ($)</td>
<td></td>
</tr>
<tr>
<td>MV-11b</td>
<td>Kelly Ramp Realignment (Needed to allow for MV-14c)</td>
<td>12,789,000</td>
<td>14,920,000</td>
<td>30%</td>
</tr>
<tr>
<td>MV-14c</td>
<td>North Portal - Kelly Avenue / Corbett Avenue improvement (linked to MV-11b)</td>
<td>5,280,000</td>
<td>10,610,000</td>
<td>60%</td>
</tr>
<tr>
<td>MV-14d</td>
<td>North Portal - SB Harbor Drive Ramp/ Sheridan St improvement</td>
<td>2,200,000</td>
<td>2,570,000</td>
<td>80%</td>
</tr>
<tr>
<td>MV-14e</td>
<td>Sheridan Street Extension (Moody Avenue to Bond Avenue)</td>
<td>3,500,000</td>
<td>3,500,000</td>
<td>100%</td>
</tr>
<tr>
<td>MV-21</td>
<td>Traffic Signal Installation throughout South Waterfront sub-district</td>
<td>2,270,000</td>
<td>2,480,000</td>
<td>100%</td>
</tr>
<tr>
<td>MV-5a</td>
<td>Bond Avenue Extension (Gibbs Street to River Parkway)*</td>
<td>15,000,000</td>
<td>20,000,000</td>
<td>90%</td>
</tr>
<tr>
<td>BP-16</td>
<td>Hood Avenue Enhancement – Porter St. to Gibbs St.</td>
<td>1,160,000</td>
<td>1,360,000</td>
<td>50%</td>
</tr>
<tr>
<td>BP-2</td>
<td>North of I-405 Connection</td>
<td>2,370,000</td>
<td>2,760,000</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Phase II (2020-2030) Project Summary</strong></td>
<td><strong>44,569,000</strong></td>
<td><strong>58,200,000</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* A portion of Bond street may be constructed in Phase 1 to respond to proposed development

Table 9-4: Total Project Cost for Phase I and Phase II Projects

<table>
<thead>
<tr>
<th>Project #</th>
<th>Public Investment Projects and Programs</th>
<th>Anticipated Project Cost in 2012 dollars</th>
<th>Low ($)</th>
<th>High ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase I (2010-2020) Project Summary</td>
<td></td>
<td>80,492,000</td>
<td>99,358,000</td>
<td></td>
</tr>
<tr>
<td>Phase II (2020-2030) Project Summary</td>
<td></td>
<td>44,569,000</td>
<td>58,200,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total Project Cost/Source Contribution in 2012 dollars</strong></td>
<td></td>
<td>125,061,000</td>
<td>157,558,000</td>
<td></td>
</tr>
</tbody>
</table>
APPROACH TO TRANSPORTATION FUNDING

Use of Local Funding to leverage Regional, State, and Federal Grants for Larger Projects

Very rarely are larger transportation projects completed utilizing only one funding source. Typically, to use local resources most effectively, the City of Portland attempts to utilize local funding sources to leverage regional, state and federal grant requests. If the City and district stakeholders are not successful in obtaining all of the grant based funding, additional district based sources would be required to contribute to complete the full funding of top priority projects.

District Share of Funding Improvements to Regional Traffic Facilities

To determine the most appropriate funding sources to support identified transportation projects, one consideration is the proportion of regional versus district related vehicle trips estimated to utilize a proposed project in the future. Another consideration is the relative importance of a given project or group of projects in resolving the district’s access constraints particularly for pedestrians and cyclists. The estimated district share for each top priority project is listed in Tables 9-2 and 9-3 for Phase I and Phase II respectively.

Given the number of regional facilities that surround the district, the top priority list includes a few projects where district traffic may represent a small proportion of a project’s projected traffic increase but the access that the regional project provides is critical to the district’s growth. In these cases the district share was increased above the district’s traffic contribution to reflect the importance of access in this location. An example is the proposed signalized intersection at Kelly and Water Avenue at the west end of the Ross Island Bridge (MV-14c). For this project, creating improved district access to and from US-26 and I-405 and Naito in the north end of the district is far more important than just the district’s percentage of traffic.

Funding of District Focused Transportation Improvements

A small number of the projects identified in the transportation strategy benefit primarily district employees and residents, thus the cost of these projects were allocated solely between district sources. Examples of this type of project include internal district
streets, district wayfinding projects, and traffic signal installation on district streets.

**Funding Transit Improvements**

A number of high capacity transit projects are planned to go through this district over the next 20 years. These projects are expected to develop funding packages that include local match contributions from district based sources. The Portland to Milwaukie Light Rail project is currently developing a funding plan that includes a $10 million contribution from the proposed TSDC Overlay. Future expansion of the streetcar system within the north district of South Waterfront, for “Close the Loop”, and Lake Oswego extensions may also require district contributions.

Expectations for district based contributions are included in part in this funding strategy but are not fully known at this time. Future requests for district-based support for the projects should be coordinated with this funding strategy to ensure that the expenditure from an individual district based source does not preclude a planned element of this strategy.

**Methodology for Establishing Potential Funding Source Contribution Ranges**

The goal of this funding strategy is to establish a conceptual estimate of cost allocations at the funding source level and not to establish the exact allocation of funding for each project or commit any particular source at this time. However, in order to establish the appropriate funding amount expected from each source, it was necessary to apply theoretical allocation at the project level, evaluate the estimated cost distribution, and then “pull back” to the funding source level.

The following steps summarize the major activities employed in creating the cost range for each source:

**Step 1: Evaluate the Nexus**

Identify a High, Medium, Low, and N/A nexus between each funding source and each project. This narrowed the number of sources considered for individual types of projects.

**Step 2: Establish Source Funding Range**

Identify broad cost ranges for each funding source based on the number of projects that had a high nexus with that source.
Step 3: Allocate District/Non-District Source Share
Allocate the district and non-district share on each project. This allocation was based on the proportion of district traffic utilizing a project location and the relevance of the project to district specific access needs (particularly for pedestrian and bicycle projects).

Step 4: Allocate District Costs
Allocate district costs first to known sources (TIF, TSDC Overlay) that had been identified as highly matched to project attributes, then allocate costs to less established sources (LID, Private Development) identified as highly matched to project attributes.

Step 5: Allocate Non-District Costs
Allocate non-district costs first to known sources (city-wide TSDC and already committed resources from other sources) that had been identified as a good match for project attributes. Non-district costs were then allocated to grant based sources that appeared to be highly matched to project attributes.

Step 6: Confirm and Adjust Source Funding Ranges
Review all source ranges based on the distribution of costs to ensure that any one source is not being relied upon beyond its realistic contribution.
PROPOSED FUNDING SOURCE CONTRIBUTION

The range of contributions proposed to come from each funding source is shown in Table 9-5 (dollar amounts) and Figure 9-1 (percent contribution). The low and high funding amount range varies by source. For some sources, like the city-wide TSDC, the proposed TSDC overlay or the North Macadam URA TIF, a specific amount has been designated with a greater amount of certainty so there is no difference between the low and the high figure. For other sources, the ranges vary considerably from the low to high figures. This reflects the unknown degree to which district projects might be able to obtain funding from each particular source. Some sources may end up being heavily relied upon and would contribute the high amount shown while other sources will prove less fruitful and only contribute the low amount. The more successful the district is in advocating and obtaining outside funding sources, the less district sources will have to carry the burden of funding internal district projects and deficiencies in the surrounding network.

Table 9-5: Proposed Funding Ranges from all Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Costs Range</td>
<td>$125.1</td>
<td>$157.6</td>
</tr>
<tr>
<td>URA funding</td>
<td>$40.0</td>
<td>$40.0</td>
</tr>
<tr>
<td>Other City funding</td>
<td>$3.0</td>
<td>$5.0</td>
</tr>
<tr>
<td>Regional funding (ie MTIP)</td>
<td>$2.0</td>
<td>$5.0</td>
</tr>
<tr>
<td>Federal funding</td>
<td>$6.0</td>
<td>$10.0</td>
</tr>
<tr>
<td>State funding</td>
<td>$15.0</td>
<td>$25.0</td>
</tr>
<tr>
<td>TriMet</td>
<td>$10.0</td>
<td>$15.0</td>
</tr>
<tr>
<td>City-wide TSDC</td>
<td>$7.5</td>
<td>$7.5</td>
</tr>
<tr>
<td>Proposed North Mac TSDC Overlay</td>
<td>$18.0</td>
<td>$18.0</td>
</tr>
<tr>
<td>Private development</td>
<td>$10.0</td>
<td>$15.0</td>
</tr>
<tr>
<td>LID</td>
<td>$12.0</td>
<td>$20.0</td>
</tr>
<tr>
<td><strong>Total Funding</strong></td>
<td><strong>$123.5</strong></td>
<td><strong>$160.5</strong></td>
</tr>
</tbody>
</table>
Based on the proposed ranges, district sources would contribute between 58 and 65 percent of the funding for transportation projects. Non-district sources would contribute between 35 and 42 percent of funding. Looking back at the character of the projects, approximately 48 – 51% of the total cost is for projects that primarily serve the district. The remaining projects serve both the district and the rest of the region and many are on streets with state jurisdiction such Hwy 43, US 26 or serve as ramps or frontage roads to I-5 and I-405.

Comparing the character of funding sources to the character of the projects (shown in Table 9-6 and Figure 9-2) establishes that district sources will cover the funding needs for projects that serve primarily district users. District sources will also contribute to the improvement of adjacent facilities that serve both the district and the region.

**Table 9-6: District Share of Funding**

<table>
<thead>
<tr>
<th>District Based Funding</th>
<th>Low Amount</th>
<th>High Amount</th>
<th>Percent Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>District funding sources</td>
<td>$80M</td>
<td>$93M</td>
<td>58%-65%</td>
</tr>
<tr>
<td>Non-district funding sources</td>
<td>$43M</td>
<td>$67M</td>
<td>35%-42%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District Serving Projects</th>
<th>Low Amount</th>
<th>High Amount</th>
<th>Percent Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>District serving projects</td>
<td>$60M</td>
<td>$80M</td>
<td>48%-51%</td>
</tr>
<tr>
<td>District and regional serving projects</td>
<td>$65M</td>
<td>$77M</td>
<td>49%-52%</td>
</tr>
</tbody>
</table>
Local Improvement Districts

Portland, like other jurisdictions, uses local improvement districts (LIDs) to partially or fully fund infrastructure improvements. LID assessments are apportioned among properties in the district based on benefits to each property. Portland City Code 17.080.050 limits new assessments plus delinquent taxes and pending City liens, such as streetcar and tram LIDs, to one-half the real market valuation of the properties in the new LID. There are currently 3 active LIDs in the North Macadam District: Streetcar to Gibbs, Streetcar to Lowell and the Portland Aerial Tram.

There is potential for additional LID assessments in the North Macadam district beneath the maximum amount allowed by law. However, property owners have raised a concern that additional LID’s may make development prohibitively expensive thereby slowing district growth and tax increment production. Projects proposed for LID funding will need to have a well demonstrated benefit to assessed properties for an additional LID to be successful. Nearly all areas of the district currently have an LID, so a future LID will either have to be district-wide in nature or there will need to be multiple smaller LID’s for projects, especially in the northern and southern area of the district.

Figure 9-2: District and Non-District Based Funding Contributions

Possible Funding Sources for North Macadam Transportation Improvements

- Local Improvement Districts
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City-Wide Transportation Systems Development Charge

A transportation system development charge (TSDC) is a one-time fee assessed new development to help fund the cost of public improvements to serve a growing population.

Under state law, the fees collected may only be used to fund capacity-increasing projects for future users, and cannot be spent on correcting existing deficiencies. Portland’s existing TSDC program collects and expends dollars citywide.

City-wide Transportation Systems Development Charges (TSDCs) are paid by new development, redevelopment and changes in use that increase trips by at least 15% compared to the previous use of the land.

TSDCs can be collected only for specific transportation improvement projects that are (a) included in the City’s capital improvement program (CIP), and (b) meet a variety of eligibility criteria. The resulting list of projects is the TSDC-CIP.

Portland’s original TSDC for 1997-2007 included a project for North Macadam street improvements. These improvements are budgeted to receive approximately $6M in TSDC funding through the previous citywide program. In addition, Portland’s updated list of TSDC eligible projects for 2008-2017 includes four projects in the North Macadam area:

- South Portal, Phase I and II
- SW Moody/Bond Street Improvements
- South Light Rail
- SW Macadam, Bancroft to Sellwood Bridge, ITS

Those projects are eligible to receive between 13% and 18% of total project costs from the citywide TSDC program.

North Macadam Transportation System Development Charge Overlay

The proposed TSDC Overlay would create a zone in which additional TSDC fees would be collected and expended on capacity-increasing projects to serve future users within the North Macadam urban renewal area. The TSDC Overlay is a proposed funding tool, designed to collect local dollars to leverage other federal, state, and local dollars to fully fund these multi-modal improvement projects. This fee is in addition to the city-wide TSDC.
Development of the TSDC Overlay proposal initially focused on area stakeholders with outreach through one-on-one interviews, the North Macadam Transportation Strategy Advisory Committee, small group meetings with property owners and developers, as well as two public Open Houses.

With stakeholder input, a list of eleven potentially eligible projects was winnowed down to six key projects that focus on moving people into, through and out of the North Macadam area. The purpose of these projects is to support the movement of motor vehicles, freight, transit riders, cyclists and pedestrians in this unique area of the Central City.

In November 2008, Commissioner Sam Adams met with stakeholders and proposed that $10 million of the estimated TSDC Overlay revenue be used to help fund a portion of the local match for the light rail project as this transit project is essential to the area’s successful future growth and development.

The proposed TSDC Overlay project list includes the following six projects, whose total (low confidence level) cost is estimated at $194.5 million dollars of which $32.9 million dollars is eligible for North Macadam TSDC Overlay funding.

- SW Harbor Drive & River Parkway Intersection Improvements
- South Portal, Phase I
- Moody/Bond Street Improvement: Gibbs to Sheridan (East leg of couplet)
- South Light Rail
- SW Kelly Way / Hood Avenue Ramp Improvement (South Portland Circulation)
- North Portal: SW Corbett and Sheridan Street Improvements

In 2008, stakeholder input led staff to recommend a TSDC Overlay rate projected to collect approximately $22 million dollars over 20 years; however, this revenue projection was in error. At the recommended TSDC Overlay rate, approximately $18 million dollars would be collected over 20 years to help fund construction of these projects. See attached Exhibit A, for the proposed North Macadam TSDC Overlay rates.
None of these projects can be fully funded by the TSDC Overlay; all of these projects require matching funds, and therefore, not all of the projects on this list may be constructed.

**Urban Renewal Tax Increment Financing**

The City of Portland through the Portland Development Commission (PDC) uses tax increment financing to collect the incremental increases in tax revenue in urban renewal areas that are used for a variety of uses, including contributing towards the funding of infrastructure improvements in the urban renewal area. The North Macadam Urban Renewal Area was formed in 1999 and will expire in 2019. Over the past 10 years, $75M in tax increment financing (TIF) has contributed towards street and infrastructure improvements, the Portland Aerial Tram, and the extension of the Portland Streetcar, from River Place to Gibbs in 2006 and from Gibbs Street to Lowell in 2007. URA funds have also funded parks and open space amenities, utilities, research and office space and affordable housing. This $75 million in TIF, and an additional $50 million of other public money, invested in planned public investment has attracted $459 million in private development with another $300 million in additional development under construction and scheduled for completion by 2011-12. The private sector has also contributed $69 million toward public infrastructure.

Current conservative estimates project $80,000,000 in future TIF will be available between 2012-2019. With 30% required to be dedicated to affordable housing, of the $56,000,000 remaining, it is anticipated that 70%, or $40,000,000, will be available to support transportation projects. This estimate incorporates known development and is not at the level of maximum indebtedness; as such, the amount of TIF available for transportation projects could increase as district development progresses.

**City General Transportation Revenue**

General Transportation Revenue (GTR) is PDOT’s discretionary source of revenue. GTR is comprised of two sources: State Highways Trust Fund (mostly gas taxes) and parking meter fees and fines. State Highway Trust Fund monies are constitutionally restricted for use on “construction of roads, streets and roadside rest areas.” Currently, about two-thirds of GTR is used to fully fund projects in the Preservation, Rehabilitation, and Neighborhood Livability programs and the other one-third is used as match dollars for grants on larger capital projects.
GTR has been flat in recent years and this trend is expected to continue, as expenses continue to grow. This trend will lead to a gap between expenses and revenue in coming years and increasing downward pressure on this funding source’s potential to support new transportation projects. Unless changes are made to the gas tax system or a new source is developed it is not anticipated that this source will make a significant contribution to the district.

**City General Fund Revenue**

General Fund Revenue is the largest funding source for the City of Portland and is relied on to fund a variety of services and programs. General Fund Revenue is not typically allocated as a funding source for new transportation projects. However, City Council has elected on occasion to direct One-Time funding to individual transportation projects and programs on a limited basis including the recent allocation of $3 Million dollars to the I-5/Macadam Ave Ramp Project.

**Private Contributions to Transportation Projects Funded Through Development Review**

One mechanism of obtaining funding for transportation projects is through conditions of approval during the development review process. This mechanism can occur at two stages, Land Division and Platting, or Development Permitting at the time of building permit application. Contributions to larger projects and towards locations not adjacent to the development site typically occur during land division when a transportation system adequacy study is required and the potential development is evaluated based on the maximum entitled development on given parcels.

Contributions required through building permit are normally smaller in scale and related to the immediate needs of adjacent intersection and block faces based on the proposed development allowed under existing zoning. In locations where the street network has not been established, it is anticipated that private development will be improving local streets adjacent to their properties.

**TriMet Transit Improvement Program**

The Transit Investment Plan (TIP) lays out TriMet’s strategies and programs to meet regional transportation and livability goals through focused investments in service, capital projects and customer information. The TIP is a rolling five-year plan that is
updated annually. The TriMet Board of Directors first adopted the TIP in June 2002.

The TIP relies on long-term goals and strategies developed by Metro, including the Regional Transportation Plan (RTP). These plans direct development to Regional Centers, Town Centers and key corridors. The TIP shows how TriMet will implement the transit portion of the RTP over the next five years.

Within available financial resources, TriMet and its partners balance needs to guide where, when and how to invest transit-related dollars. The TIP priorities are to:

1. Build the Total Transit System—Enhance customer information, access to transit, stop amenities, frequency, reliability, passenger comfort, safety and security.
2. Expand high-capacity transit—Invest in MAX Light Rail, Commuter Rail and Streetcar service along key corridors to connect Regional Centers.
3. Expand Frequent Service—Add routes to TriMet’s network of bus lines than run every 15 minutes or better, every day.
4. Improve local service—Work with local jurisdictions to improve transit service in specific local areas.

Within the North Macadam URA, the TIP will fund portions of future transit projects including Portland to Milwaukie Light Rail and the Lake Oswego Streetcar Extension. In the short term, funds allocated in TriMet’s TIP are funding the line #35 bus reroute and stop improvements.

**State, Regional and Federal Grants or Designated Appropriations**

The federal government and the State of Oregon make grants and/or designate specific budget appropriations to cities for transportation improvements. Each grant program has specific eligibility criteria. Grants and designated appropriations are highly competitive. Specific grant programs include:

a. **OTIA** (Oregon Transportation Infrastructure Act). A state grant awarded by the Oregon Transportation Commission. No matching funds are required. All funding is currently allocated, and the program is not expected to be renewed.

b. **MTIP – CMAQ** (Metro Transportation Improvement Program – Congestion Mitigation Air Quality). A
Federal highway grant allocated by Metro. Local match is required.

c. MTIP – STP (Metro Transportation Improvement Program – Surface Transportation Program). A Federal highway grant allocated by Metro. Local match is required.

d. HPP (High Priority Project). A Federal earmark by the US Congress. Local match is required.

e. CDBG (Community Development Block Grant). A Federal grant administered by the Federal Housing Authority. Limited to areas with low to moderate income levels. Local match is desired.

f. Connect Oregon. A state grant awarded by the Oregon Transportation Commission for projects that support air, rail, marine and transit infrastructure.

g. Bicycle and Pedestrian Program Grants. A state grant awarded by the Oregon Transportation Commission after recommendations by the Oregon Pedestrian and Bicycle Advisory Committee. No match requirement. Next grant cycle will be 2010-2011.

h. Transportation Enhancement Fund. A state grant awarded by the Oregon Transportation Commission. Local match is required. Projects must relate to surface transportation. Projects have already been selected for 2009-2011 funding.