CHAPTER

6

TRANSIT PLAN

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.[1] 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

[1] North Macadam Transit and Parking Strategies, June 2000.

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.

This photo shows the street car heading northbound within the South Waterfront District with the aerial tram overhead

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 in to 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

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

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

Ranking Scale	**1**	**2**	**3**	**4**	**5**
New Connections - provides new connections between the URA and the region	no new connections	↔	some new connections	↔	many new connections
Transit Connections - makes connections to existing transit stops/network	no transit connections	↔	some transit connections	↔	extensive transit connections
Safety/Comfort - improves safety and comfort of transit access	access is not safer	↔	access is moderately safer	↔	access is significantly safer
Utilization - potential for high number of users who benefit from project	few users	↔	some users	↔	many users
URA Benefit - project directly benefits URA residents/employees	no benefit	↔	moderate benefit	↔	significant benefit
Cost:Benefit - cost to benefit relationship (cost of project compared to overall benefit reaped from project)	little bang for the buck	↔	cost=be nefit	↔	big bang for the buck
Feasibility - What is the feasibility of the project occurring by 2015?	(project already **I**n **P**rocess / **H**igh feasibility / **L**ow feasibility				
Funded (Yes / No / Partially)	N / A (not applicable)				

Table 6-3: Summarized Ranking of Transit Projects

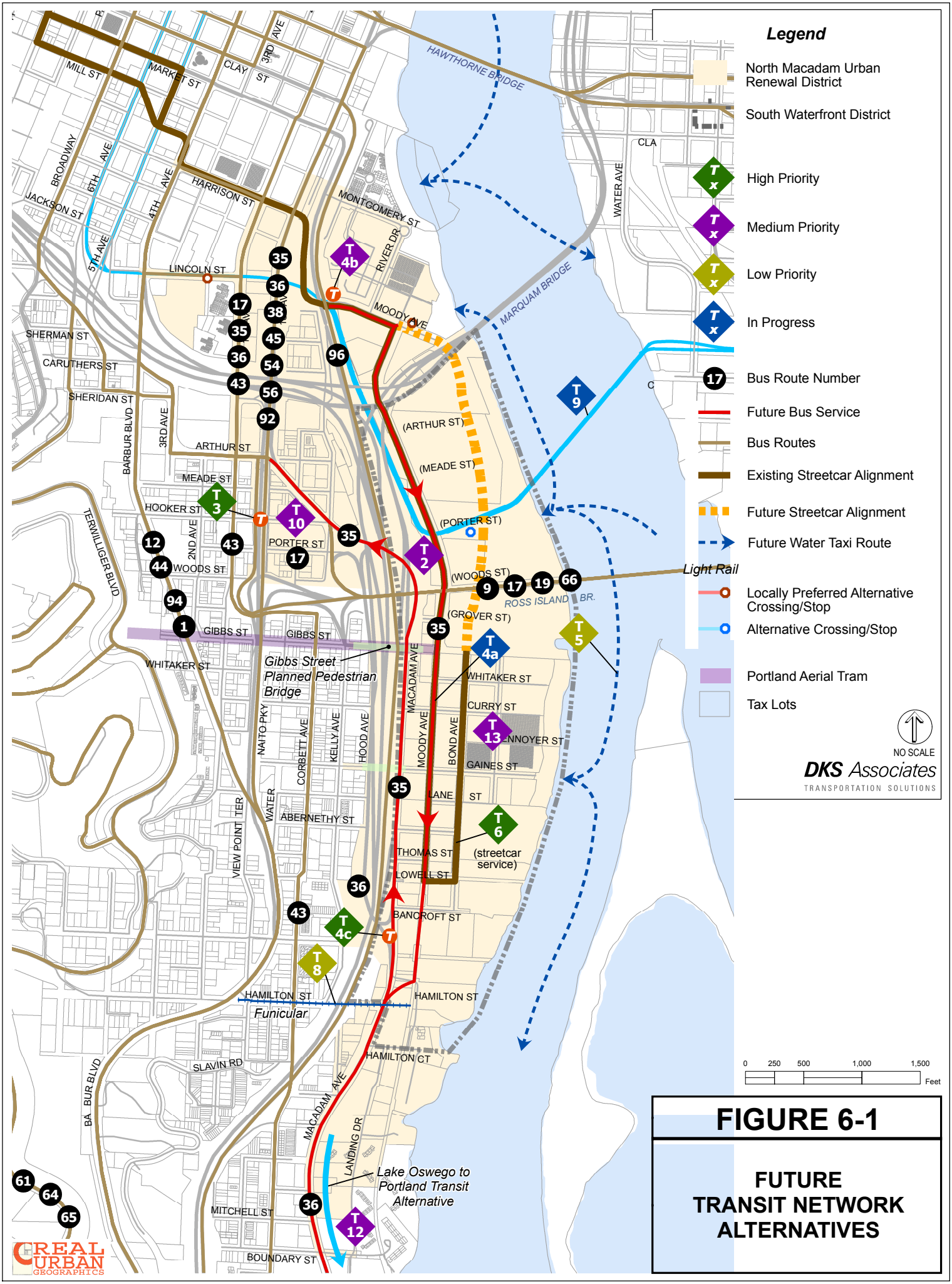
In Process	
T-3	Naito/Hooker Bus Stop Enhancement
T-4a	TriMet Line 35-Macadam Route Change and Stops
T-9	Light Rail Transit
Top Priority	
T-4c	Bancroft Transit Improvements
T-6	Streetcar Headways and Service Hours
Medium Priority Projects	
T-4b	North Portal Transit Improvements
T-2 Mu	lti-modal Transit Hub
T-12	Streetcar to Lake Oswego
T-13	Streetcar through North District and Close the Loop
T-10	Bus Reroute and Stop on SW Porter
Low Priority	
T-5	Water Taxis
T-8	Hamilton Street Funicular
Deleted	
T-11 Ro	ss Island Bridge Transfer Facility

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

Projects		Ranking Criteria											Rank			
Proj #	Project Name	New Connections	Transit Connections	Safety / Comfort	Utilization	URA Benfit	Cost:Benefit	Feasibility	Funded	Requires Future ODOT Approval	Project included in TSP?	Project included in RTP?	Mean	Median	Range	
T-9	Light Rail Transit	5	5	4	5	5	4	IP	P	N	N	Y	4.7	5.0	4-5	
T-4a	TriMet Line 35-Macadam Route Change and Stops	4	5	4	3	5	5	IP	N	N	Y	Y	4.3	4.5	3-5	
T-4c	Bancroft Transit Improvements	4	4	4	3	5	5	H	N	Y	Y	Y	4.2	4.0	3-5	Top Tier Projects
T-6	Streetcar Headways and Service Hours	4	4	4	4	5	4	H	N	N	N	N	4.2	4.0	4-5	
T-3	Naito/Hooker Bus Stop Enhancement	N/A	4	3	3	2	4	H	N	N	N	N	3.2	3.0	2-4	
T-2	Multi-modal Transit Hub	N/A	5	3	4	5	4	M	N	N	N	N	4.2	4.0	4-5	
T-4b	North Portal Transit Improvements	N/A	4	N/A	3	5	2	M	P	N	N	N	3.5	3.5	2-5	
T-12	Streetcar to Lake Oswego	4	4	4	4	4	4	M	N	N	N	Y	4.0	4.0	4	
T-13	Streetcar through North District	1	4	3	5	5	3	M	N	N	Y	N	3.5	3.5	1-5	
T-10	Bus Connection to the National College of Natural Medicine	1	4	3	3	4	3	M	N	Y	N	N	3.0	3.0	1-4	
T-5	Water Taxis	4	5	4	3	3	2	L	N	N	N	N	3.5	3.5	2-5	
T-8	Hamilton Street Funicular	3	5	4	2	2	2	L	N	Y	N	N	3.0	2.5	2-5	
T-11	Ross Island Bridge Transfer Facility	Recommended to be deleted - Light Rail Bridge into South Waterfront District renders this project unnecessary														


Legend
North Macadam Urban Renewal District
South Waterfront District
High Priority
Medium Priority
Low Priority
In Progress
Bus Route Number
Future Bus Service
Bus Routes
Existing Streetcar Alignment
Future Streetcar Alignment
Future Water Taxi Route
Light Rail
Locally Preferred Alternative Crossing/Stop
Alternative Crossing/Stop
Portland Aerial Tram
Tax Lots
NO SCALE
DKS Associates
TRANSPORTATION SOLUTIONS
0 250 500 1,000 1,500
Feet
FIGURE 6-1
FUTURE TRANSIT NETWORK ALTERNATIVES
HAWTHORNE BRIDGE
MARQUAM BRIDGE
ROSS ISLAND BR.
MILL ST
MARKET ST
CLAY ST
3RD AVE
BROADWAY
6TH AVE
5TH AVE
4TH AVE
JACKSON ST
HARRISON ST
MONTGOMERY ST
RIVER DR
WATER AVE
LINCOLN ST
MOODY AVE
SHERMAN ST
CARUTHERS ST
SHERIDAN ST
BARBUR BLVD
ARTHUR ST
(ARTHUR ST)
(MEADE ST)
MEADE ST
HOOKER ST
PORTER ST
(PORTER ST)
2ND AVE
TERWILLIGER BLVD
WOODS ST
(WOODS ST)
GIBBS ST
(GROVER ST)
Gibbs Street Planned Pedestrian Bridge
WHITAKER ST
MACADAM AVE
CURRY ST
BOND AVE
GAINES ST
LANE ST
NAITO PKY
CORBETT AVE
KELLY AVE
HOOD AVE
WATER
ABERNETHY ST
VIEW POINT TER
THOMAS ST
LOWELL ST
BANCROFT ST
HAMILTON ST
Funicular
HAMILTON CT
SLAVIN RD
BA BUR BLVD
LANDING DR
Lake Oswego to Portland Transit Alternative
MITCHELL ST
BOUNDARY ST
T 4b
T 9
T 3
T 10
T 2
T 4a
T 5
T 13
T 6
(streetcar service)
T 4c
T 8
T 12
REAL URBAN GEOGRAPHICS
March 2008, Real Urban Geographics

TRANSIT PROJECTS

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

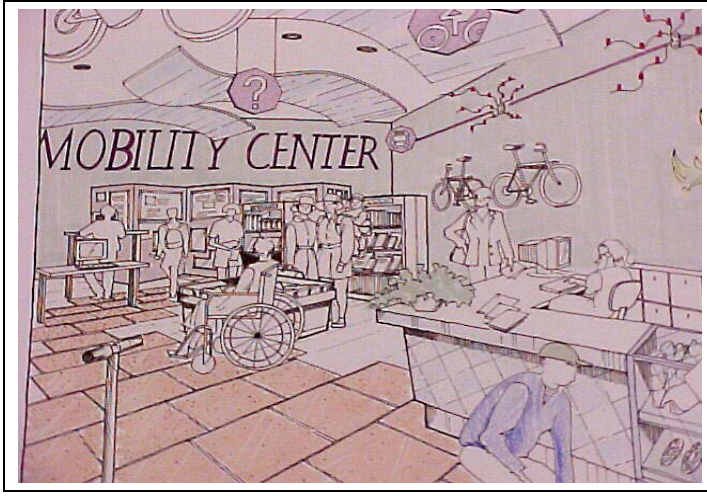
This project proposes a Multi-modal Transit Hub in the South Waterfront District to provide residents and visitors with information on transit travel and the opportunity to purchase transit tickets. The hub would provide information on the existing aerial tram, streetcar, and on future light rail, streetcar 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

Cross-section Detail or Photo



Preliminary Cost Estimate

$ TBD * (see back)

Priority

Medium

TRANSIT PROJECTS

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

TRANSIT PROJECTS

T-3. BUS STOP ENHANCEMENT AT SW NAITO PKWY & SW HOOKER ST

Need/Purpose

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.

Background Data

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.

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.

Project Area

Cross-section Detail or Photo

Preliminary Cost Estimate

$ TBD - $5,000 for wall

Priority

High

TRANSIT PROJECTS

Alternatives/Additional Notes

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.

Additional Images / Graphics

Looking northbound on SW Naito

TRANSIT PROJECTS

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.*

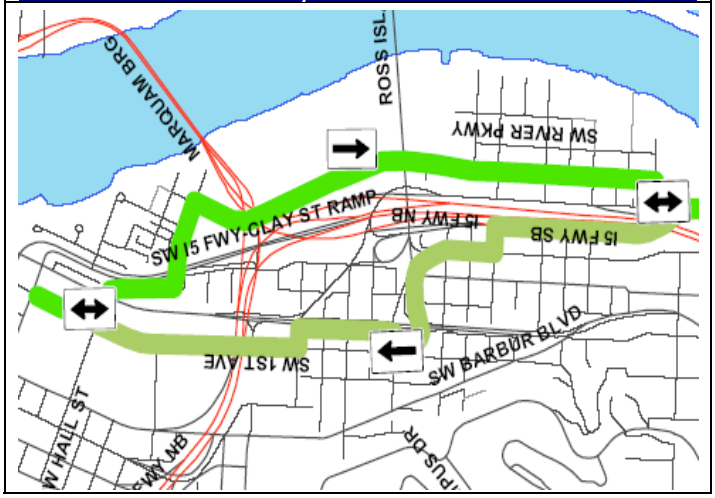
Providing bus service to South Waterfront was included in TriMet's 2005-2008 Transit Improvement Plan.

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



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.

TRANSIT PROJECTS

Alternatives/Additional Notes

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)

TRANSIT PROJECTS

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T-4B. NORTH PORTAL TRANSIT IMPROVEMENTS

Need/Purpose

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.

Background Data

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.

Description of Improvement

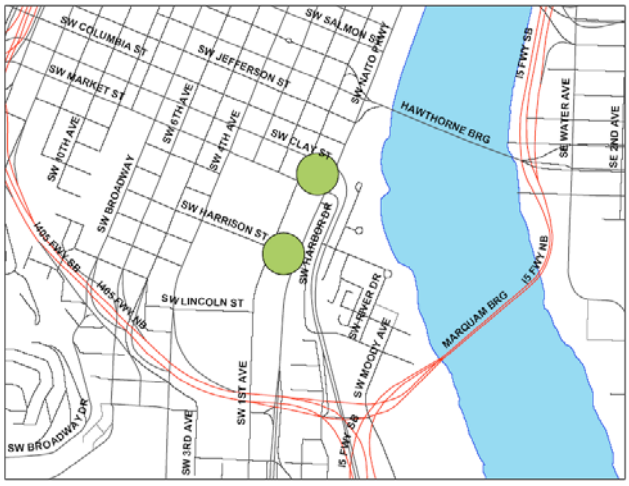
This project includes several improvements requested by TriMet to facilitate efficient northbound bus service out of the North Portal of North Macadam.

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.

Project Area



Cross-section Detail or Photo

Preliminary Cost Estimate

$ TBD

Priority

Low

TRANSIT PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics

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.

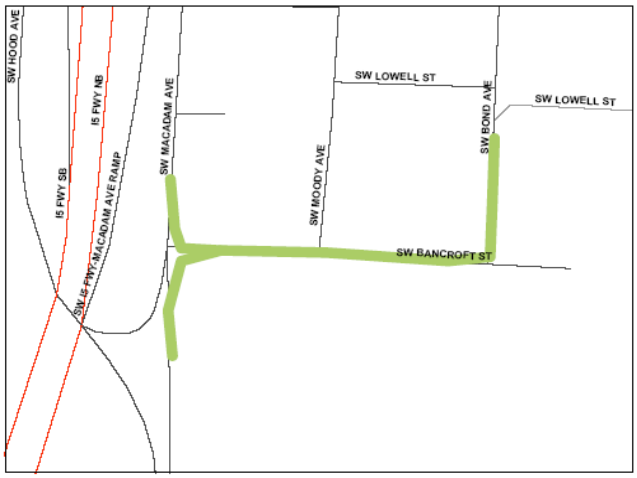
Subsequent reports have also emphasized bus service to the District, including the *Portland Aerial Tram – Final Recommendations and Report.*

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



Cross-section Detail or Photo

The exact configuration of this improvement is still under development

Preliminary Cost Estimate

$ TBD

Priority

High

TRANSIT PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics

TRANSIT PROJECTS

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

Preliminary Cost Estimate

$ 93.4 Million *

Priority

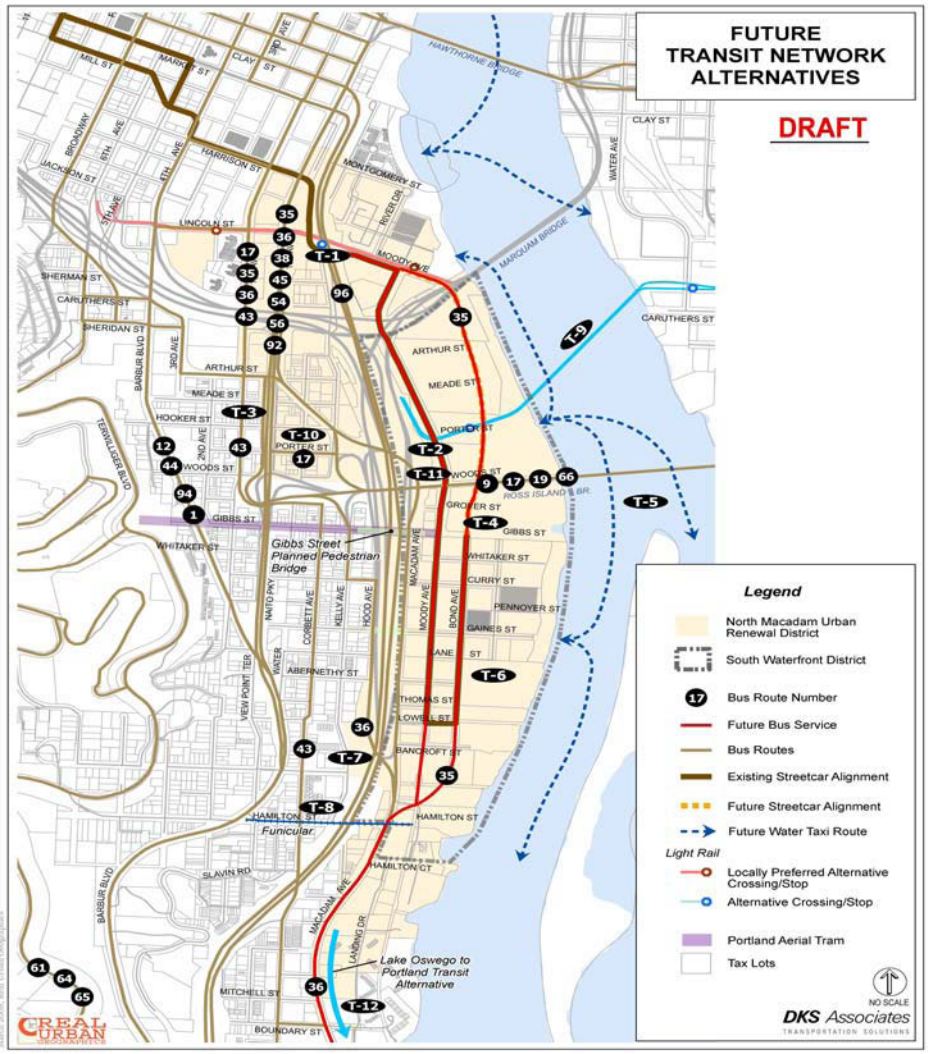
Low

* Taken from *Willamette River Ferry Feasibility Study (2006)*

TRANSIT PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics



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T-6. STREETCAR HEADWAYS AND SERVICE HOURS

Need/Purpose

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.

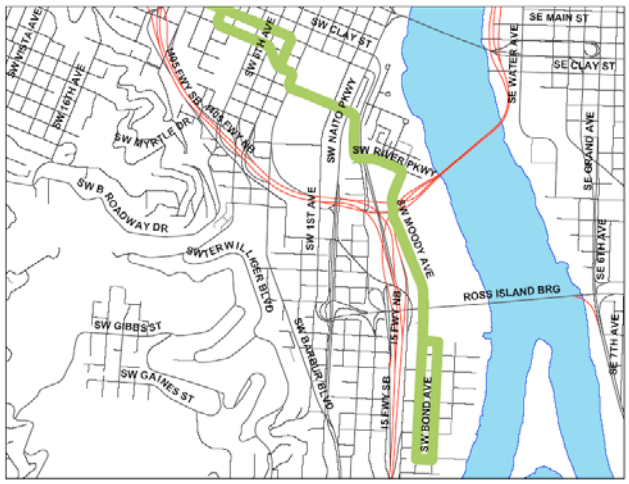
Background Data

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.

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

Preliminary Cost Estimate

$ TBD

Priority

High

TRANSIT PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics

TRANSIT PROJECTS

T-8. HAMILTON STREET FUNICULAR

Need/Purpose

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.

Background Data

The Portland Streetcar is planned to extend from its current terminus in the South Waterfront District to Lake Oswego.

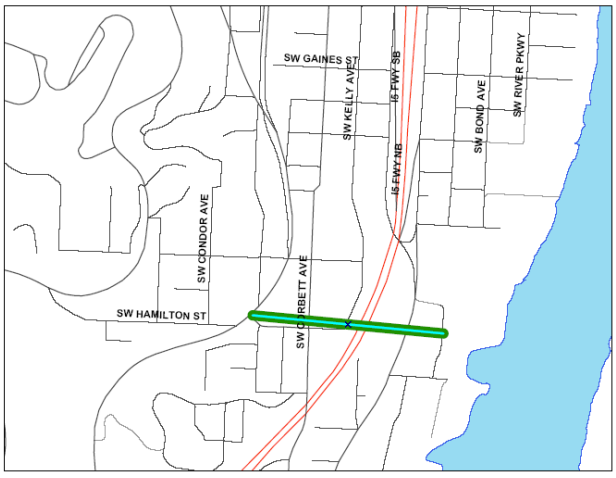
The location of the west end of the proposed funicular would offer service to South Waterfront from Tri-Met buses numbers 1, 12, 38, 44, 45, 54, 55, and 56. The east end of the funicular would connect to buses 35, 36, plus the future Lake Oswego Streetcar extension.

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.

Project Area



Cross-section Detail or Photo

Preliminary Cost Estimate

$ TBD

Priority

Low

TRANSIT PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics

TRANSIT PROJECTS

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

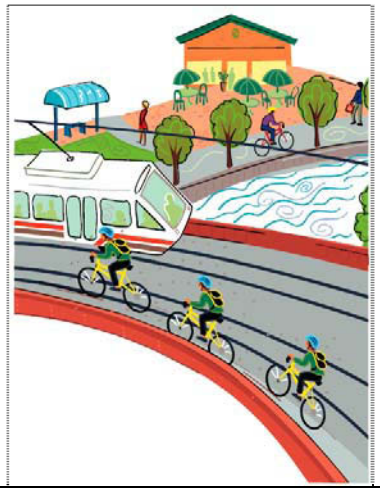
This project is a 7.4-mile line connecting north Clackamas County, Southeast Portland, and the Portland City Center. Project details are available in the South Corridor Portland-Milwaukie Light Rail Project Locally Preferred Alternative Report (Metro Council, July 2008).

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.

Project Area

Courtesy of South Corridor Portland-Milwaukie Light Rail Project Locally Preferred Alternative Report (Metro Council, July 2008)

Cross-section Detail or Photo



Preliminary Cost Estimate

$1.2 to $1.3 Billion*

Priority

In Process

TRANSIT PROJECTS

Alternatives/Additional Notes

* Cost estimate provided by the *Portland-Milwaukie Light Rail Project Supplemental Draft Environmental Impact Statement,* page 5-3, Table 5.1-2. Prepared May 2008.

Additional Images / Graphics

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CITY OF PORTLAND OFFICE OF TRANSPORTATION
1120 S.W. 5th Avenue, Suite 800
Portland, Oregon 97204-1914

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.

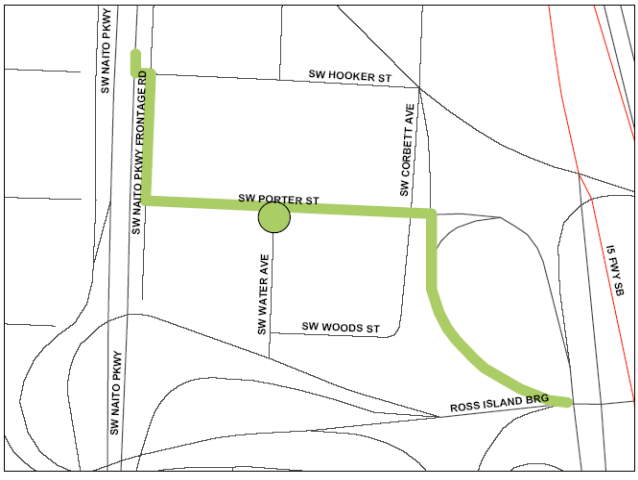
Background Data

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



Cross-section Detail or Photo

Preliminary Cost Estimate

$ TBD

Priority

Medium

TRANSIT PROJECTS

Alternatives/Additional Notes

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.

Additional Images / Graphics

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

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. Extending the streetcar from the South Waterfront to Lake Oswego would provide a much needed and desired high-capacity transit connection.

Background Data

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.

Description of Improvement

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.

Project Area

* See back for map / details

Cross-section Detail or Photo

Preliminary Cost Estimate

$ 199.9 Million - $215.7 Million
(C.E. includes trail component)

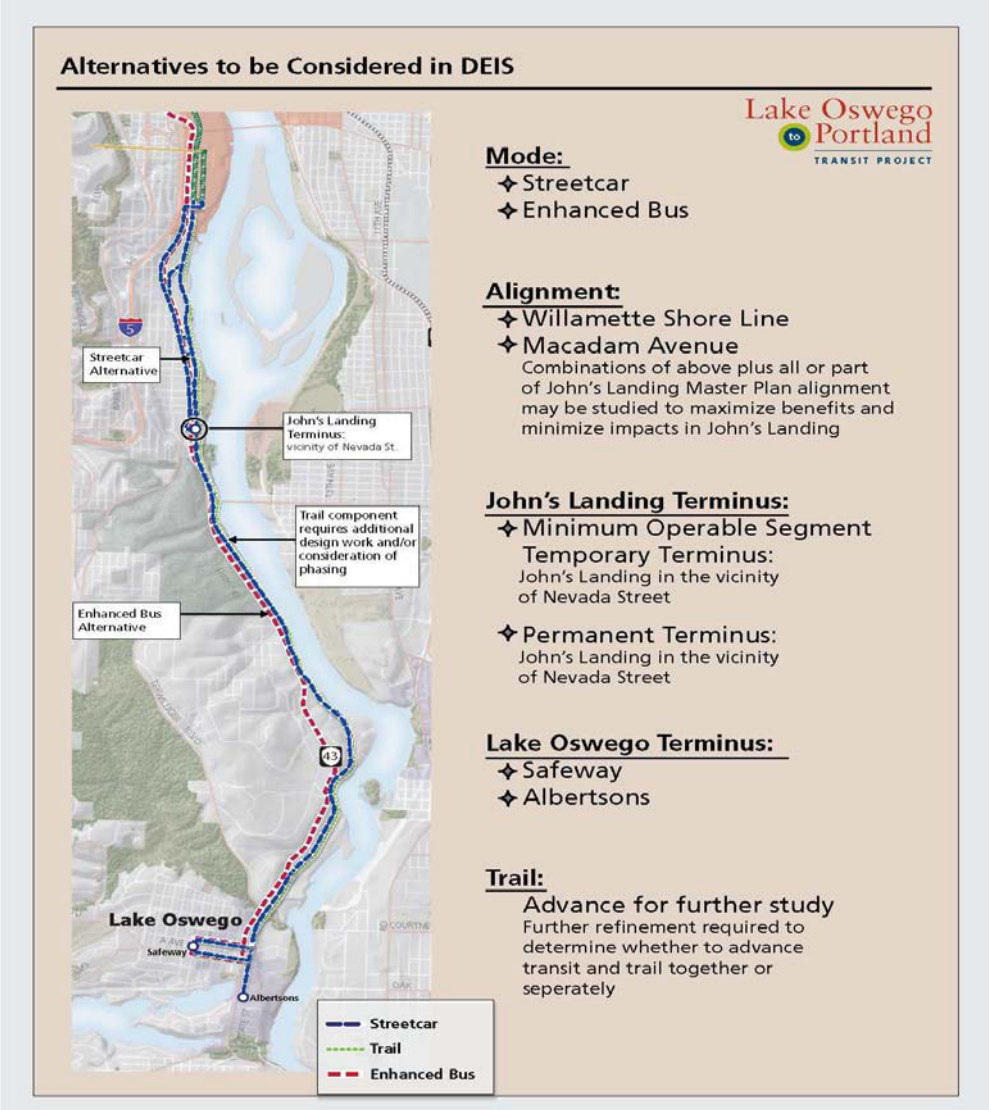
Priority

Medium

TRANSIT PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics



TRANSIT PROJECTS

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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

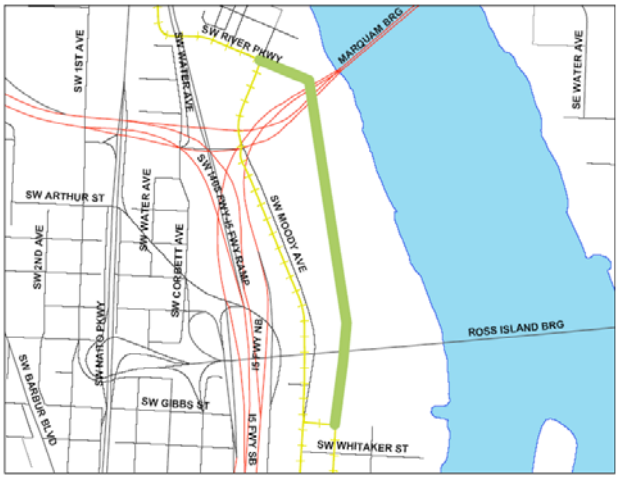
Adopted City policy envisions this district as a mixed-use neighborhood with significant commercial development focused along transit corridors. Urban planning criteria for the area includes goals to integrate development density and design in a form that maximizes transit access for the district using 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



Cross-section Detail or Photo

Preliminary Cost Estimate

$ 30.9 Million*

Priority

Medium

*see back for cost estimate details

TRANSIT PROJECTS

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

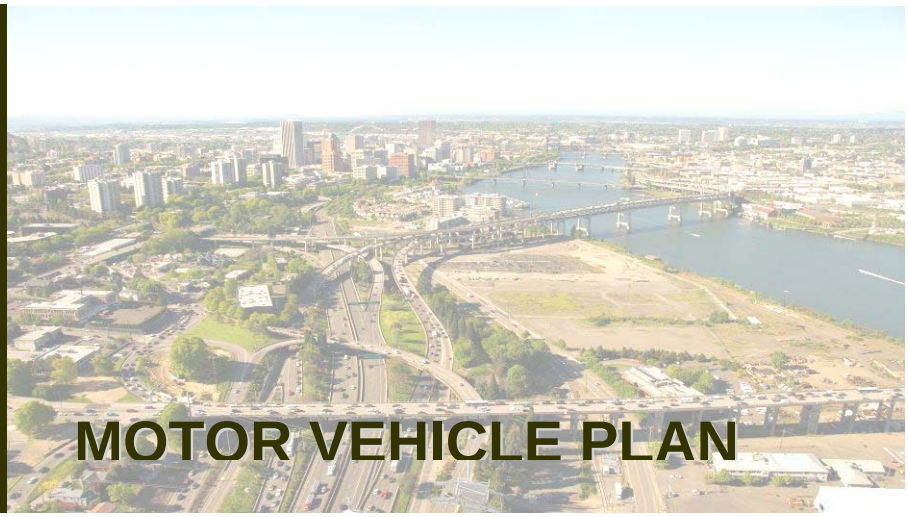
	Quantity	Unit	Unit Cost*	Estimated Cost
Eastside				
Water (inbound/outbound)	610	TF	$4,085	$2,491,850
Relocate SE Water	1	LS	$5,500,000	$5,500,000
Westside				
Moody (outbound)	2680	TF	$4,085	$10,947,800
Bond/River Parkway (inbound)	3620	TF	$4,085	$14,787,700
Vehicles	4	each	$3,800,000	$15,200,000
Subtotal				$48,927,350
Estimating Contingency			20%	$9,785,500
Total				$58,712,850

*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 Prwy 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

CHAPTER

7



MOTOR VEHICLE PLAN

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.

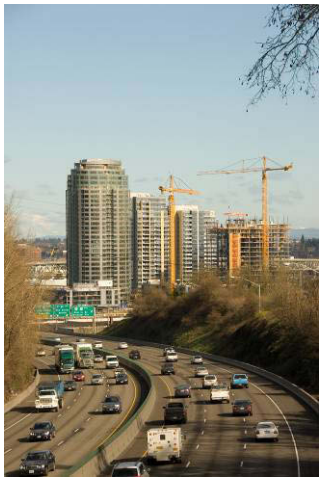
EXISTING AND FUTURE SYSTEM NEEDS

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

[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,

[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.

[4] See the project list for the 2004 Portland Regional Transportation Plan: h ttp://www.oregonmetro.gov/files/planning/2004rtpprojectlist.xls

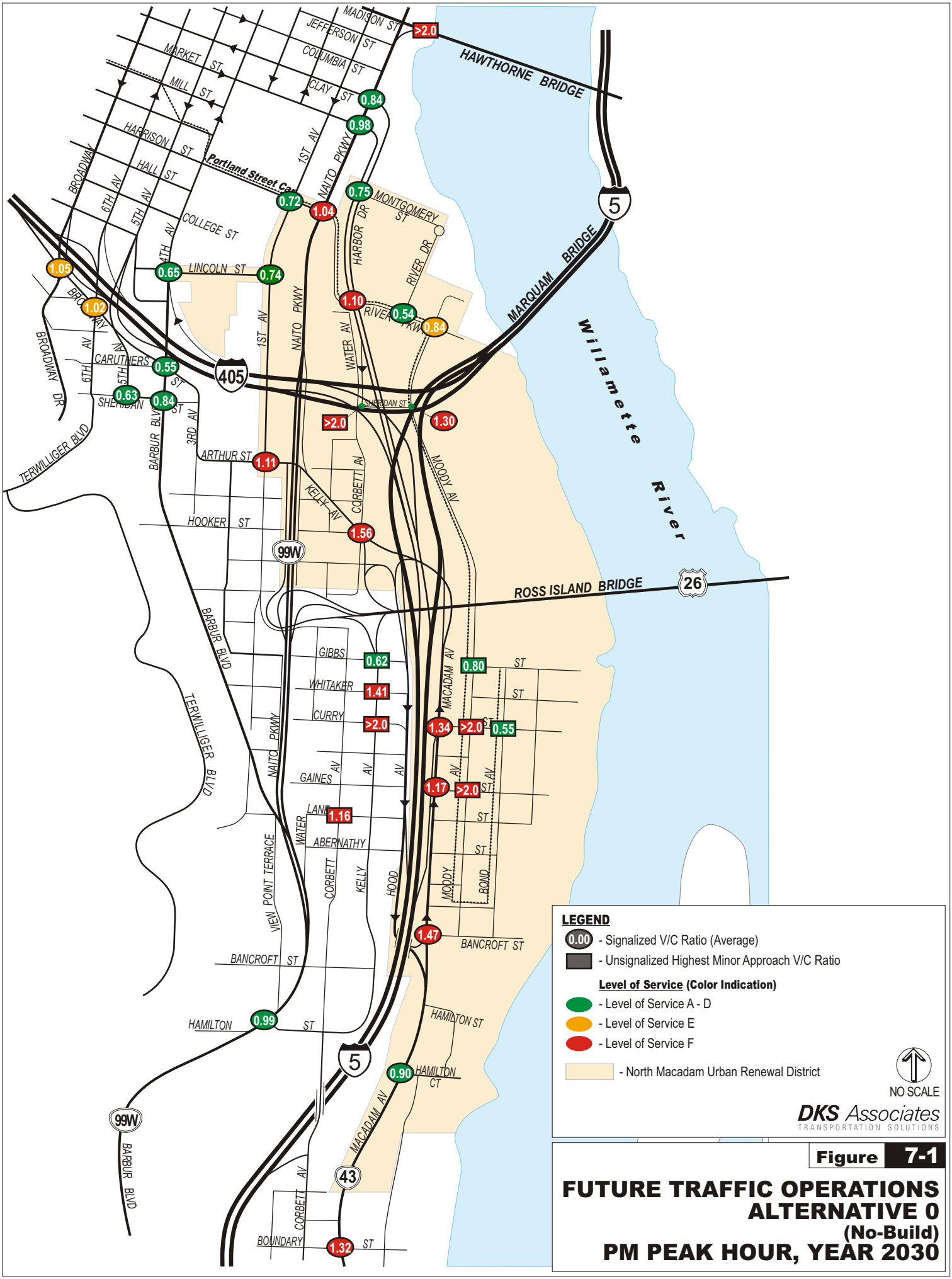


Figure 7-1

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

projects identified in other studies likely to be implemented by 2030[5]. 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.

[5] South Waterfront South Portal, Kittelson and Associates, September 2006

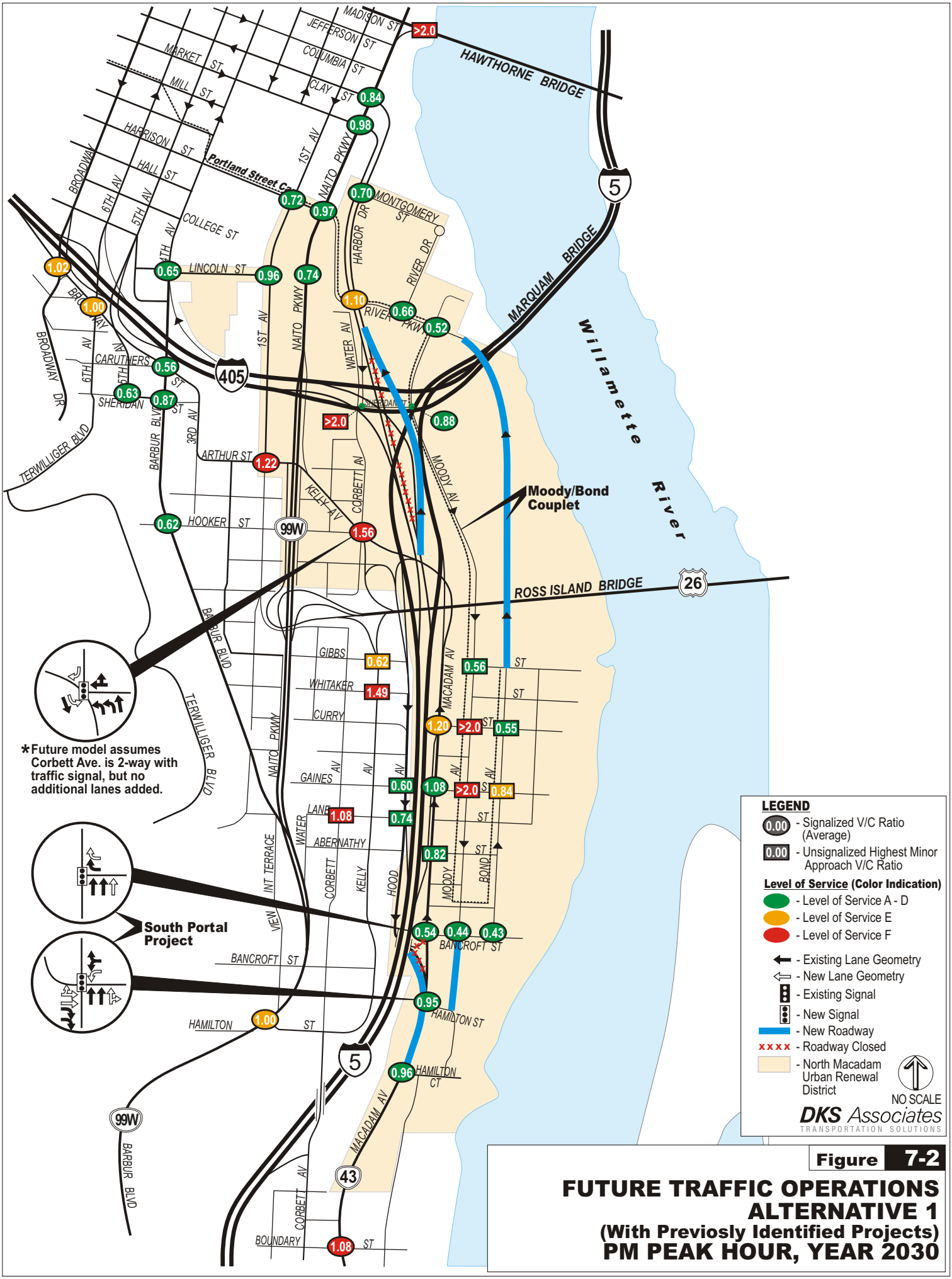


Figure 7-2

FUTURE TRAFFIC OPERATIONS ALTERNATIVE 1

(With Previosly Identified Projects)

PM PEAK HOUR, YEAR 2030

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

Access Point	Inbound Trips	Outbound Trips
North Portal	46%	34%
SW Gaines Street (outbound) or SW Curry Street (inbound from SW Macadam Avenue)	8% 16	%
South Portal	35%	42%
Internal trips*	11%	8%
TOTAL 1	**00%**	**100%**

*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.

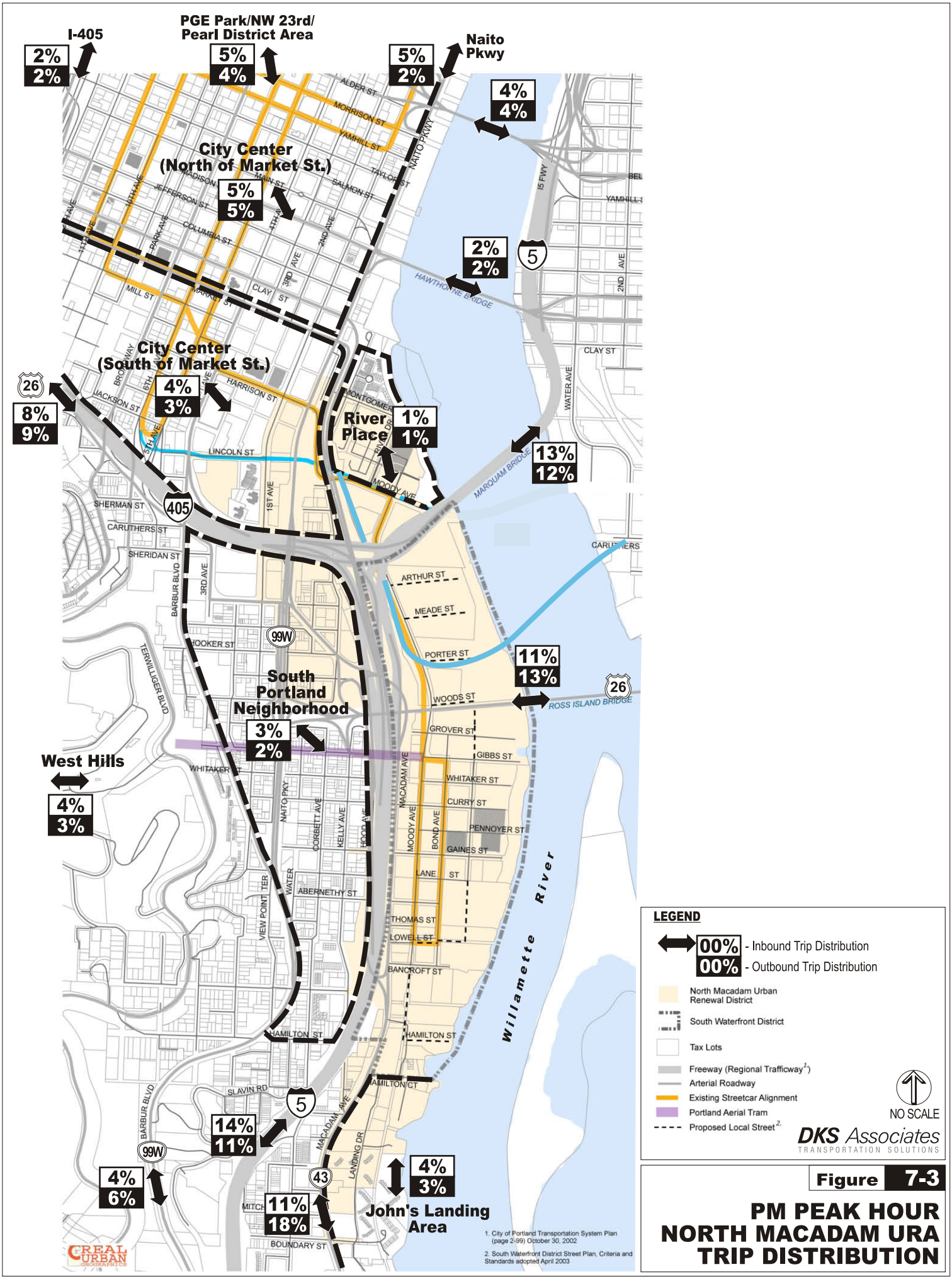


Figure 7-3

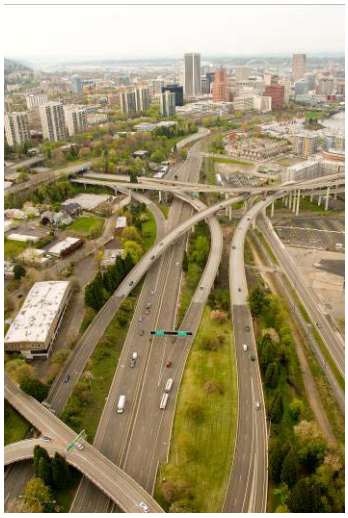
PM PEAK HOUR NORTH MACADAM URA TRIP DISTRIBUTION

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.



Multiple regional facilities such as Interstate 5, Ross Island Bridge (US 26) and Interstate 405 provide connectivity to the North Macadam study area

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.

View of the west end of the Ross Island Bridge looking southbound.

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 7-2: 2030 ADT (Average Daily Traffic) Volumes – Raw Model Data

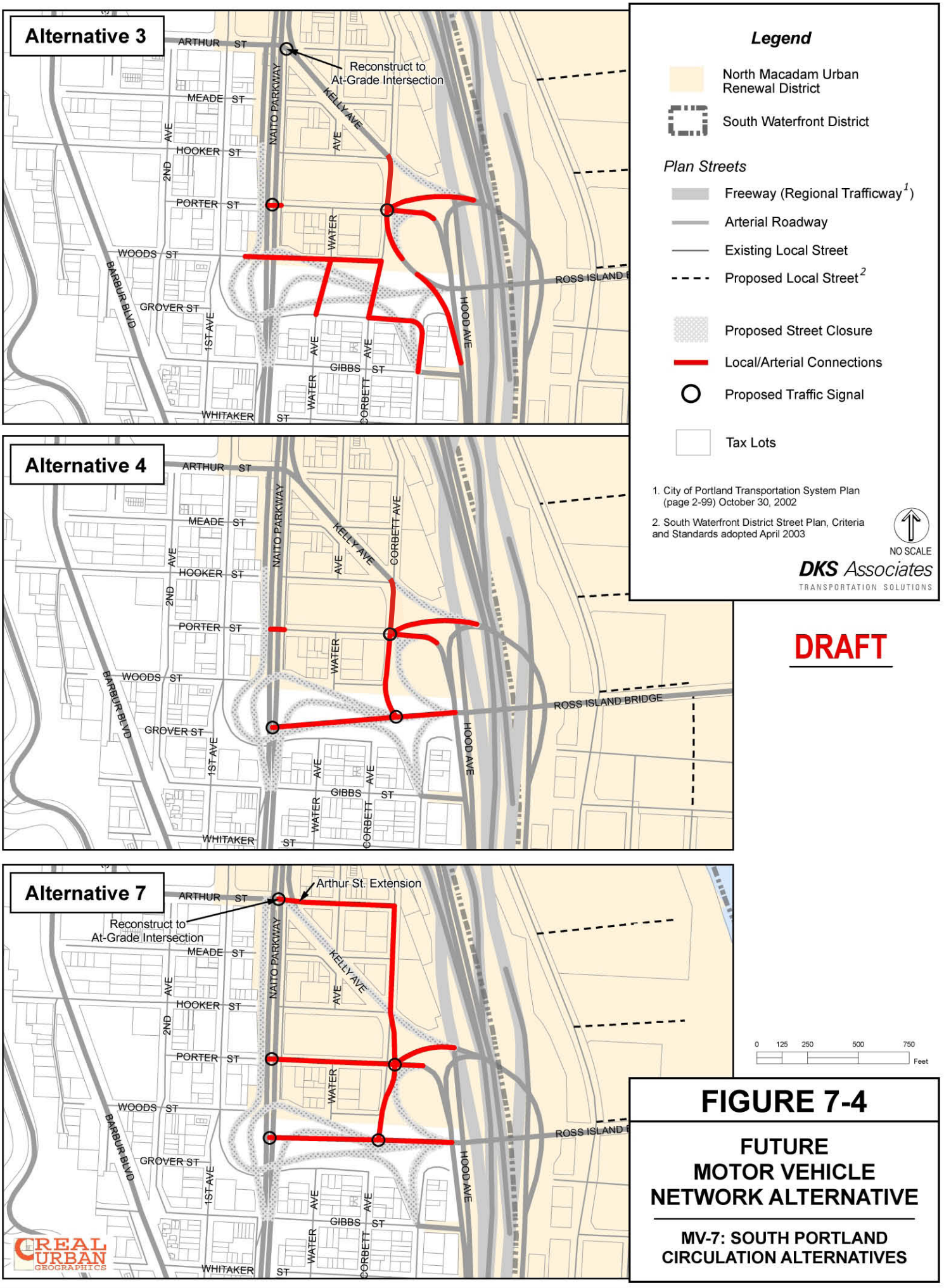
Location	2030 No-Build	Alternative 3	Alternative 4	Alternative 7
Kelly Avenue (south of Arthur Street)	28,000 3	4,000	26,500	27,000*
Naito Parkway (north of Kelly Avenue)	32,000 2	9,000	24,500	29,000
Naito Parkway (south of Kelly Avenue)	29,000 1	5,500	23,600	25,000

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.

[6] South Portland Circulation Study, City of Portland. Adopted July 2001.


Alternative 3
Reconstruct to At-Grade Intersection
Alternative 4
Alternative 7
Arthur St. Extension
Reconstruct to At-Grade Intersection
ARTHUR ST
MEADE ST
HOOKER ST
PORTER ST
WOODS ST
GROVER ST
GIBBS ST
WHITAKER ST
NAITO PARKWAY
KELLY AVE
CORBETT AVE
2ND AVE
1ST AVE
WATER AVE
BARBUR BLVD
HOOD AVE
ROSS ISLAND BRIDGE
Legend
North Macadam Urban Renewal District
South Waterfront District
Plan Streets
Freeway (Regional Trafficway[1])
Arterial Roadway
Existing Local Street
Proposed Local Street[2]
Proposed Street Closure
Local/Arterial Connections
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
NO SCALE
DKS Associates
TRANSPORTATION SOLUTIONS
DRAFT
0 125 250 500 750
Feet
FIGURE 7-4
FUTURE MOTOR VEHICLE NETWORK ALTERNATIVE
MV-7: SOUTH PORTLAND CIRCULATION ALTERNATIVES
REAL URBAN GEOGRAPHICS
September 2008, Real Urban Geographics

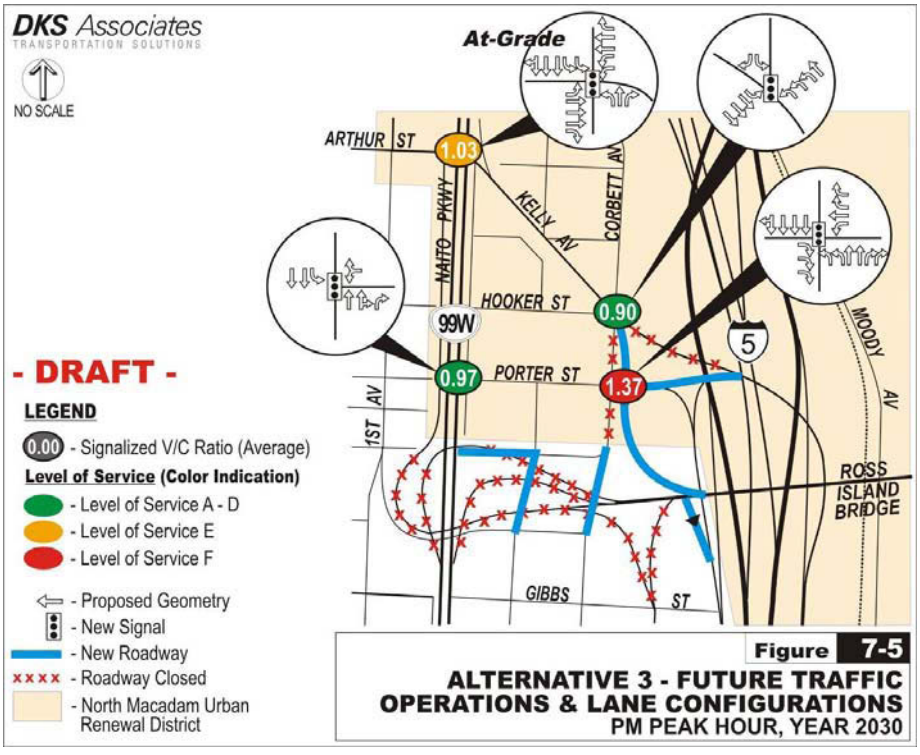
The proposed lane configuration and PM peak hour traffic operations of Alternative 3 are shown in Figure 7-5.

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 Natio 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.

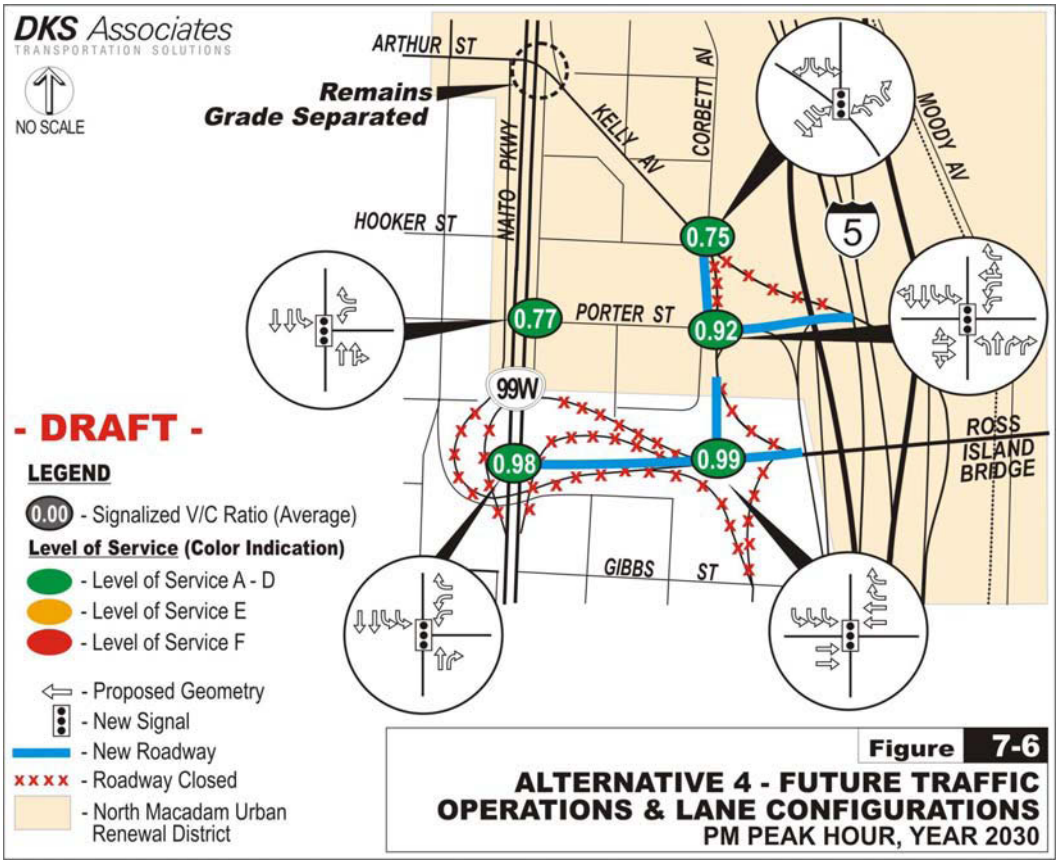
PROS:

- 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.

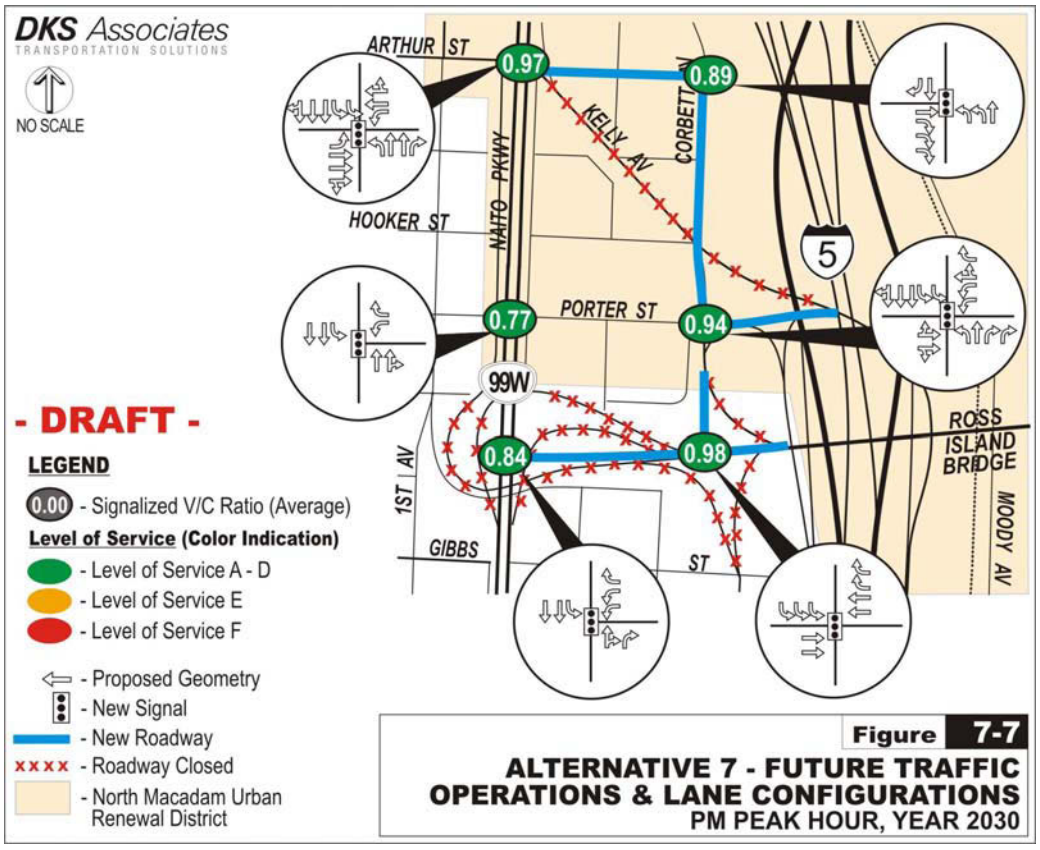
PROS:

- 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).

Views of North Portal area (top) and South Portal area (bottom)

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.

[7] EMME/2 2030 Portland to Milwaukie Light Rail Regional Travel Demand Model "Alternative 1".
[8] South Portland Circulation Study, Report and Recommendations. June 2001

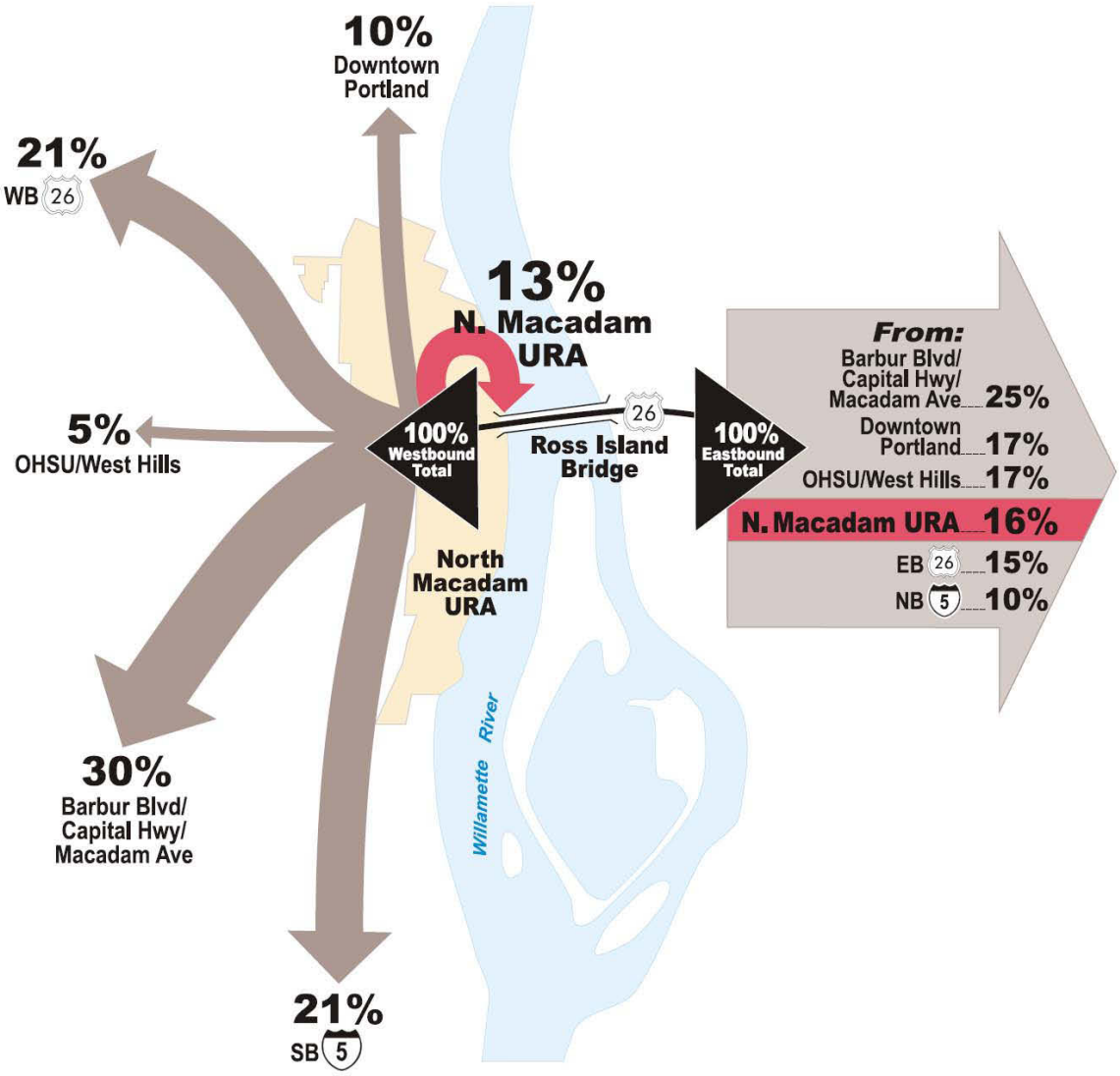


Figure 7-8: Ross Island Bridge Trip Distribution, Year 2030, PM Peak Hour
Source: Metro's EMME/2 Travel Demand Model with the Portland to Milwaukie Light Rail

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

Project Map #	Project Name	Project Description
MV-1*	Milwaukie Light Rail Traffic Signals and Improvement Project	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.
MV-3	Sheridan Street Roadway Extension (SW 3rd Ave to SW Naito Parkway)	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.
MV-5a* Mo	ody/Bond Couplet - Bond Avenue Extension	Extend Bond Avenue from Gibbs Street to River Parkway
MV-5b Mo	ody/Bond Couplet - Moody Avenue realignment	Realign Moody Avenue as development occurs
MV-9a*	South Portal – phase 1	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
MV-9b	South Portal – phase 2	Extending Bond Avenue from Bancroft Street to Hamilton Street. This project extends the Moody/Bond couplet.
MV-11a Po	rter/Kelly Improvement - Signalization and Kelly slip ramp closure	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.
MV-11b Po	rter/Kelly Improvement - Kelly Ramp realignment	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.
MV-14b	North Portal: Harbor Drive/River Parkway Improvement	Construct additional EBR turn lane and SBL turn lane, and extent NBR turn pocket.
MV-14c	North Portal: Kelly Avenue/Corbett Avenue Improvement	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.

Table 7-3: List of Motor Vehicle Projects continued

Project Map #	Project Name	Project Description
MV-14d	North Portal: SB Harbor Drive/Sheridan Street Improvement	Widen SB Harbor Drive to two lanes and construct a traffic signal at the intersection.
MV-14e	North Portal: Sheridan Street Extension (Moody Avenue to Bond Avenue)	Extend Sheridan Street between Moody Avenue and Bond Avenue.
MV-20	NB Macadam 3rd Lane	Construct a 3rd NBT lane on Macadam Avenue (as well as sidewalk) from Bancroft Street to Curry Street.
MV-21	Signalize Intersections – South Waterfront District	Construct traffic signals in the South Waterfront District as development warrants at Moody/Curry, Moody/Gaines, Bond/Curry and Bond/Gaines.
MV-24	Hawthorne Bridge/Naito Ramp Improvement	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
MV-25	SW Macadam Avenue /SW Boundary Street Improvement	Construct an additional eastbound left turn lane and westbound left turn lane.
MV-26	Arthur Street/1st Avenue Improvement	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.
MV-28	Motor Vehicle Wayfinding	Implement new signage within and around the South Waterfront District to help direct motorists into and out of the District.
MV-30	I-5 Northbound Off-Ramp/SW Curry – Closure of the northbound right turn	Construct a median or physical barrier to prohibit the northbound right turn from I-5 Northbound Off-Ramp to SW Curry Street.

*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.

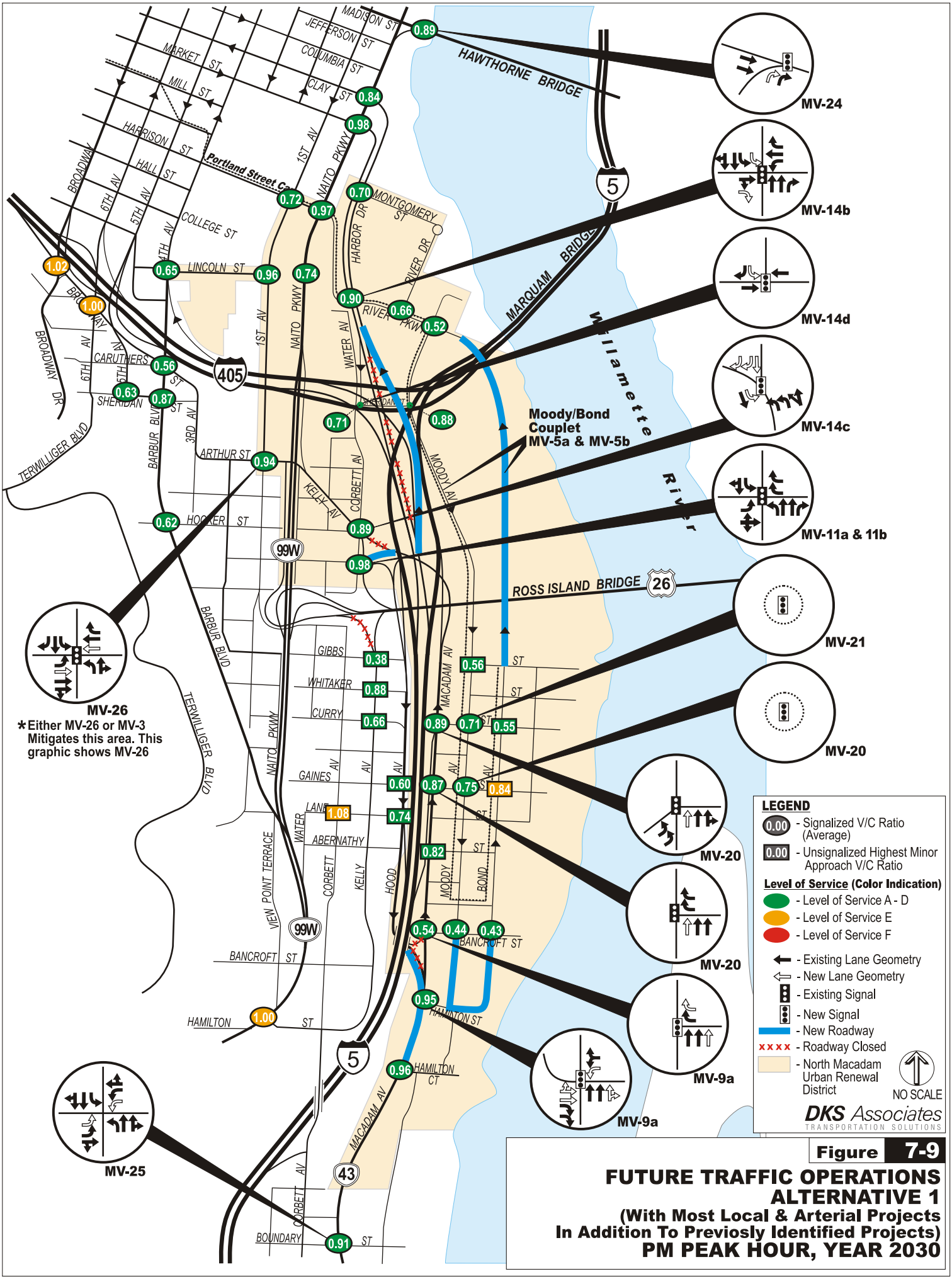


Figure 7-9

FUTURE TRAFFIC OPERATIONS ALTERNATIVE 1

(With Most Local & Arterial Projects In Addition To Previously Identified Projects)

PM PEAK HOUR, YEAR 2030

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

Evaluation Criteria	Ranking Scale				
	1	2	3	4	5
Traffic Operations-The measures of effectiveness includes level of service and volume to capacity ratios and how they improve or degrade as compared to other alternatives.	no improvement	↔	moderate improvement	↔	significant improvement
Access/Circulation/Connectivity-project improves the vehicle access and circulation	no benefit	↔	moderate benefit	↔	high benefit
Compatibility with land use-the proposed project does not require changes to surrounding land use or functional classification and has minimal impact to existing ROW	incompatible	↔		↔	compatible
Benefit to transit network-project improves the transit network by improving travel times (improved operations) along corridors	no benefit	↔	moderate benefit	↔	high benefit
Safety - provides a safer alternative to that which exists today; improves safety at a high collision location; perceived impact it may have on the safety of the roadway system. Performance measures include potential conflict points and the potential for increased or decreased vehicle volumes along corridors	not safer; high traffic conflict	↔	moderately safer; limited traffic conflict	↔	much safer; minimal traffic conflict
Benefit to pedestrian/bicycle network- project improves the pedestrian/bicycle network (signalized crosswalks, better bicycle connection, etc.)	no benefit	↔	moderate benefit	↔	high benefit
URA Benefit - project directly benefits URA residents/employees by serving destinations within the URA	no benefit to URA	↔	moderate benefit to URA	↔	significant benefit to URA
Cost : Benefit - cost to benefit relationship (cost of project compared to overall benefit reaped from project)	minor benefit versus cost	↔	moderate benefit versus cost	↔	significant benefit versus cost

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 7-5: Motor Vehicle Projects Evaluation Matrix

		Ranking Criteria												Scores					
													Projected Year of Traffic Operational Need[1]					
Proj #	Project Name	Traffic Operations/ Mobility	Access/ Circulation/ Connectivity	Compatibility with land use	Benefit to Transit Service	Safety	Benefit to pedestrian/ bicycle networks	URA Benefit	Cost to Benefit	Feasibility	Percent Contribution Based on Total District Trips[6]	Notes	Project included in TSP?	2010-2015	2015-2020	2020-2025	2025-2030	Total	Mean
MV-5a	Moody/Bond Couplet: Bond Avenue Extension Extension (Gibbs Street to River Parkway)	5	4	4	4	4	4	5	4	H	80%- 100%		Yes			X		34	4.25
MV-5b	Moody/Bond Couplet: Moody Avenue Realignment to the West	1	1	5	1	1	3	4	2	H	80%- 100%		No				X	18	2.25
MV-9a	South Portal - Phase 1	5	4	4	4	5	4	5	3	H	35%-55%	Phase 1 includes extending Moody Avenue from Bancroft to Hamilton Street with new traffic signals.	Yes	X[2]	X[3]			34	4.25
MV-11a	Porter Street/Kelly Avenue Traffic Signal and Closure of the Kelly slip ramp to Gibbs Street	3	4	5	1	4	4	4	4	H	10%-30%[7]	This project is the predecessor for MV-11b as well as MV-14c.	Yes	X				29	3.63
MV-11b	Reconstruct Kelly Ramp from Macadam Avenue to new Traffic Signal at Kelly/Porter	2	2	3	1	3	3	4	2	H	10%-30%[7]	This project is critical for the implementation of project MV-14c	Yes		X[4]	X[4]		20	2.50
MV-14b	North Portal: Harbor Drive/River Parkway Improvement	4	2	3	3	3	1	5	4	H	40%-60%	constructed, MV-14b would need to occur earlier.	Yes[8]			X		25	3.13
MV-14c	North Portal: Kelly Avenue/Corbett Avenue Improvement	3	5	2	1	4	4	5	3	H	10%-30%[7]		Yes[8]		X[4]	X[4]		27	3.38
MV-14d	North Portal: SB Harbor Drive/Sheridan Street Improvement	4	3	3	1	4	1	4	3	H	70%-90% (SB leg only)	*Percentages based on the TEV on the southbound leg only.	Yes[8]			X		23	2.88
MV-14e	North Portal: Sheridan Street Extension (Moody Avenue to Bond Avenue)	4	5	4	1	3	4	4	4	H	80%-100%		Yes[8]			X		29	3.63
MV-21	Signalize Intersections - South Waterfront District	4	2	5	2	4	5	4	4	H	80%-100%		No			X		30	3.75
MV-28	Motor Vehicle Wayfinding	2	4	5	1	3	1	4	5	H	n/a		No	X				25	3.13
MV-30	I-5 Northbound Off-Ramp/SW Curry Street - Northbound Right Closure from I-5 Off-Ramp	1	1	5	1	4	1	2	3	H	<20%		Yes	X				18	2.25
MV-9b	South Portal - Phase 2	4	4	3	3	2	3	4	3	M	80%-100%	Phase 2 extends Bond Avenue from Bancroft to Hamilton Street.	No			X		26	3.25
MV-24	Hawthorne Bridge/Naito Ramp Improvement	4	2	1	2	4	2	1	4	M	<20%		No	X				20	2.50
MV-3	Sheridan Street Roadway Extension (3rd Avenue to Naito Parkway)	3	4	3	1	3	4	2	2	L	15%-35%	The grades on the segment are significant and impact feasibility of construction.	No		X			22	2.75
MV-20	NB Macadam 3rd Lane	5	2	4	4	3	1	2	3	L	20%-40%		Yes (project has new scope)		X			24	3.00
MV-25	SW Macadam Avenue/SW Boundary Street Improvement	5	2	2	4	3	1	3	2	L	20%-40%		No			X		22	2.75
MV-26	Arthur Street/1st Avenue Improvement	5	2	1	4	3	1	2	1	L	20%-40%	This project is only necessary if MV-3 is NOT constructed.	No		X			19	2.38
	PROJECTS RECOMMENDED FOR FURTHER STUDY																		
MV-7	South Portland Circulation Study - West end of the Ross Island Bridge (Preliminary Engineering Analysis)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a								

Top Tier Motor Vehicle Projects

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

[2] Earlier year of need based on safey issues concerning limited sight distance as the southbound traffic on SW Hood Avenue approaches the traffic signal at SW Macadam Avenue.

[3] Later year of need based on traffic operation needs.

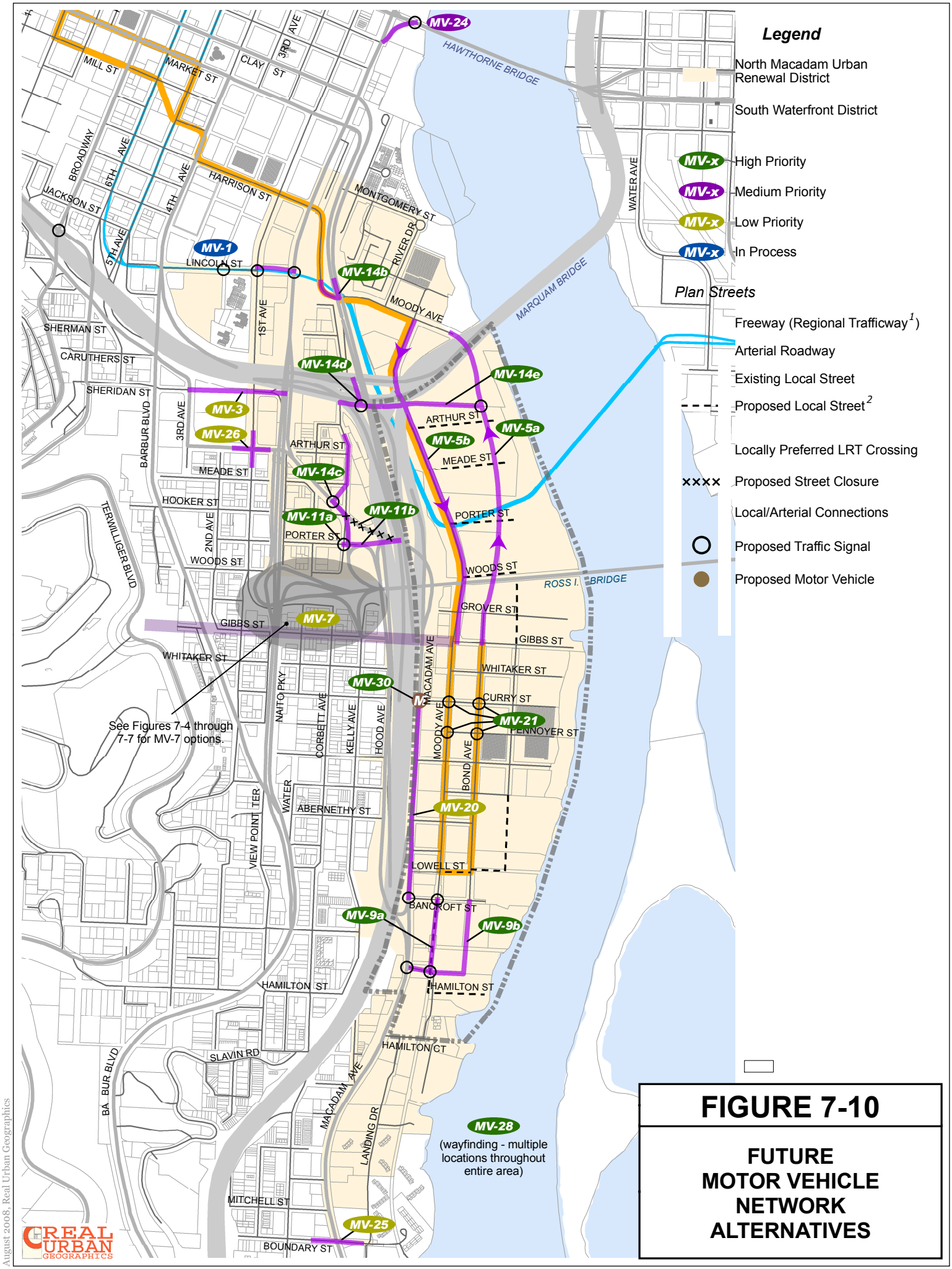
[4] Projects MV-11b and MV-14c are directly related to each other. In order for MV-14c to be constructed the ramp from Macadam Avenue needs to be relocated as shown in project MV-11b. The earlier range for year of need represents the improved connectivity gained by constructing

[5] The percent of 2030 PM peak hour NEW district tirps in comparison to the total entering vehciles at the intersection (or intersection leg if project applies to just one leg).

[6] The percent of 2030 PM peak hour NEW AND EXISTING district trips in comparison to the total entering vehicles at the intersection (or intersection leg if project applies to just one leg).

[7] Main project benefit is to improve district access, which may require a larger contribution from the District than the percent of traffic contribution.

[8] Original scope was for bike/ped improvement only


Legend
North Macadam Urban Renewal District
South Waterfront District
MV-x High Priority
MV-x Medium Priority
MV-x Low Priority
MV-x In Process
Plan Streets
Freeway (Regional Trafficway[1])
Arterial Roadway
Existing Local Street
Proposed Local Street[2]
Locally Preferred LRT Crossing
Proposed Street Closure
Local/Arterial Connections
Proposed Traffic Signal
Proposed Motor Vehicle
MV-24
HAWTHORNE BRIDGE
MILL ST
MARKET ST
CLAY ST
3RD AVE
BROADWAY
6TH AVE
4TH AVE
5TH AVE
JACKSON ST
HARRISON ST
MONTGOMERY ST
RIVER DR
WATER AVE
MV-1
LINCOLN ST
MV-14b
MOODY AVE
MARQUAM BRIDGE
1ST AVE
SHERMAN ST
CARUTHERS ST
SHERIDAN ST
MV-14d
MV-14e
MV-3
3RD AVE
BARBUR BLVD
MV-26
ARTHUR ST
MV-5a
MV-5b
MEADE ST
MV-14c
HOOKER ST
MV-11a
MV-11b
PORTER ST
2ND AVE
WOODS ST
TERWILLIGER BLVD
ROSS I. BRIDGE
GROVER ST
MV-7
GIBBS ST
WHITAKER ST
See Figures 7-4 through 7-7 for MV-7 options.
MV-30
MACADAM AVE
CURRY ST
MV-21
PENNOYER ST
NAITO PKY
CORBETT AVE
KELLY AVE
HOOD AVE
MOODY AVE
BOND AVE
WATER
ABERNETHY ST
VIEW POINT TER
MV-20
LOWELL ST
BANCROFT ST
MV-9a
MV-9b
HAMILTON ST
HAMILTON CT
SLAVIN RD
BA BUR BLVD
MACADAM AVE
LANDING DR
MV-28
(wayfinding - multiple locations throughout entire area)
MITCHELL ST
MV-25
BOUNDARY ST
FIGURE 7-10
FUTURE MOTOR VEHICLE NETWORK ALTERNATIVES
REAL URBAN GEOGRAPHICS
August 2008, Real Urban Geographics

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 Plan[9], 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

[9] City Central Transportation Management Plan, City of Portland, Office of Transportation, Bureau of Planning, Adopted December 6, 1995. Effective January 8, 1996. website access: http://www.portlandonline.com/shared/cfm/image.cfm?id=102949

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.

MOTOR VEHICLE PLAN PROJECTS

Investing in Portland's Future
PDC
PORTLAND DEVELOPMENT COMMISSION

CITY OF PORTLAND
OFFICE OF TRANSPORTATION
1120 S.W. 5th Avenue, Suite 800
Portland, Oregon 97204-1914

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.

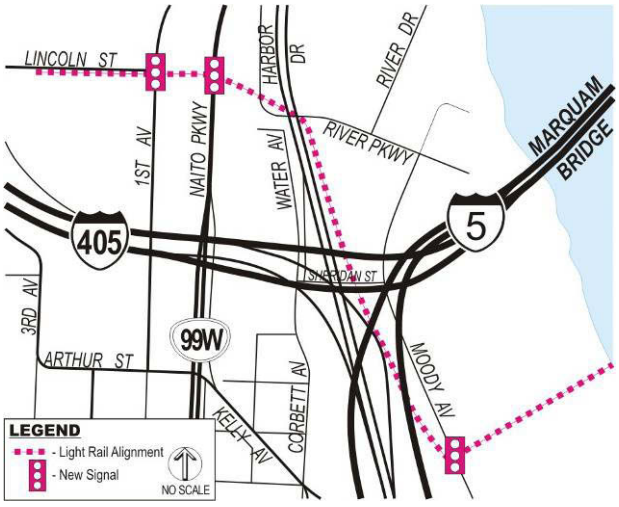
Background Data

- 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.

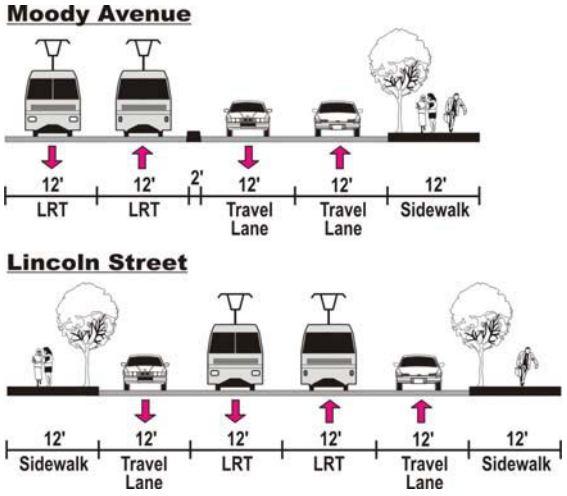
Description of Improvement

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

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Priority

In Process

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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.

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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.

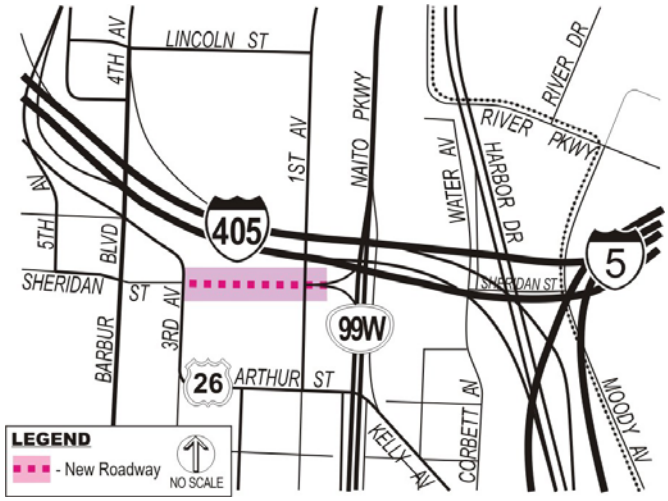
Background Data

- 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.

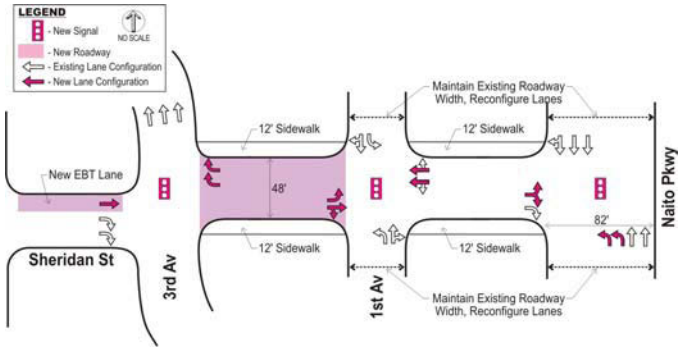
Description of Improvement

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

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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 3rd Avenue, looking eastbound at area where Sheridan Street would

SW Sheridan Street/SW 1st Avenue, looking westbound to where Sheridan would extend.

MOTOR VEHICLE PLAN PROJECTS

MV-5A MOODY-BOND COUPLET – 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

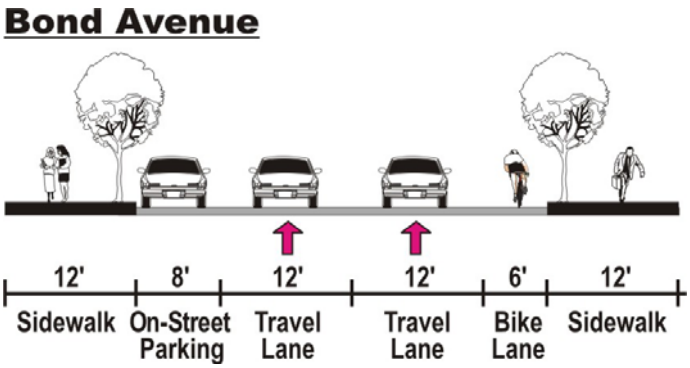
- With the development of the South Waterfront District, vehicle trips are expected to increase significantly.
- SW Moody Avenue currently extends the entire length of the South Waterfront District, but SW Bond Avenue terminates at SW Gibbs Street.
- SW Moody Avenue and SW Bond Avenue are both classified 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



Preliminary Cost Estimate

(PDOT)

Priority

High

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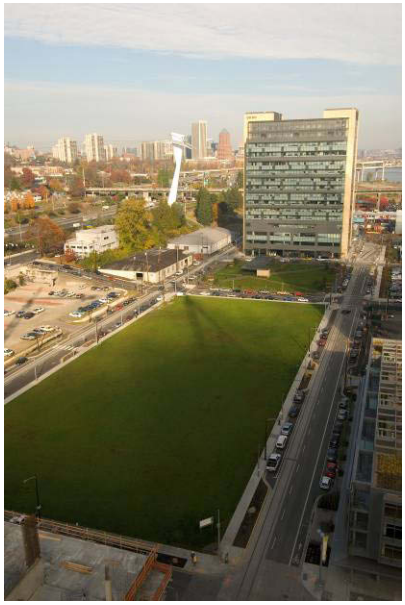
Alternatives/Additional Notes

- 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

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MV-5B. MOODY-BOND COUPLET – 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

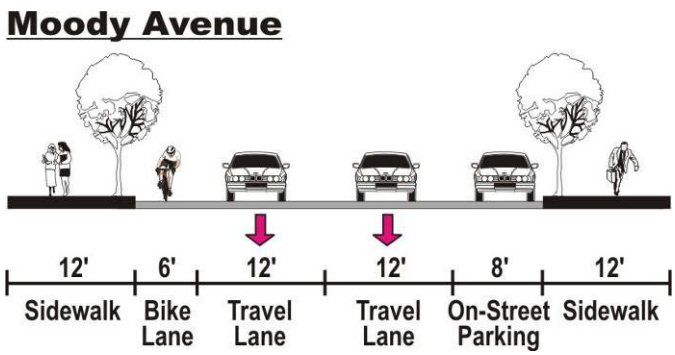
- The slight realignment of SW Moody Avenue would allow for additional development opportunities.

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

Cross-section Detail or Photo



Preliminary Cost Estimate

(PDOT)

Priority

High

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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. 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.

Additional Images / Graphics

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.

MOTOR VEHICLE PLAN PROJECTS

MV-9A. SOUTH PORTAL PHASE 1

Need/Purpose

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.

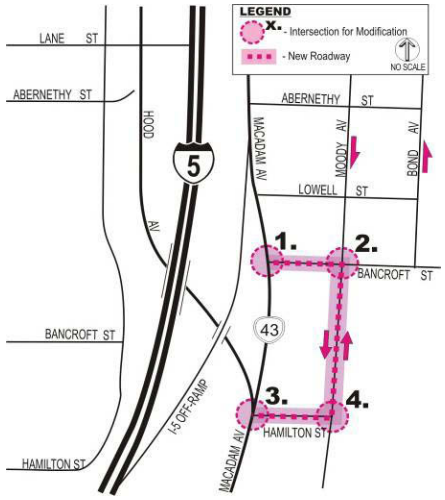
Background Data

- 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.

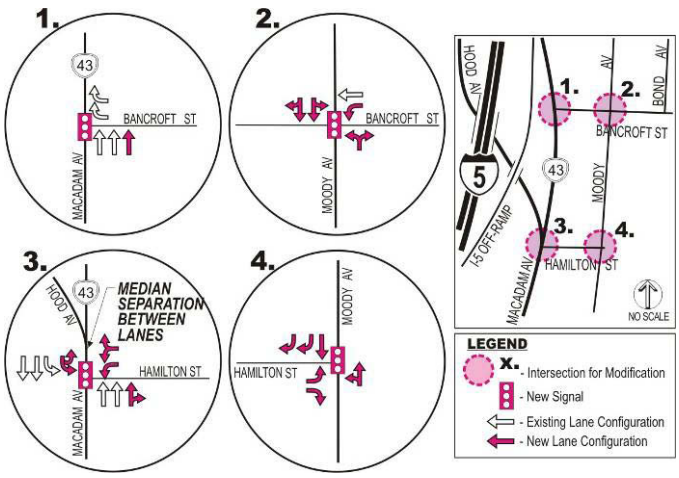
Description of Improvement

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.

Project Area



Cross-section Detail or Photo



Preliminary Cost Estimate

$32 Million

Priority

High

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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 RTP Financially Constrained model.

Additional Images / Graphics

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.

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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.

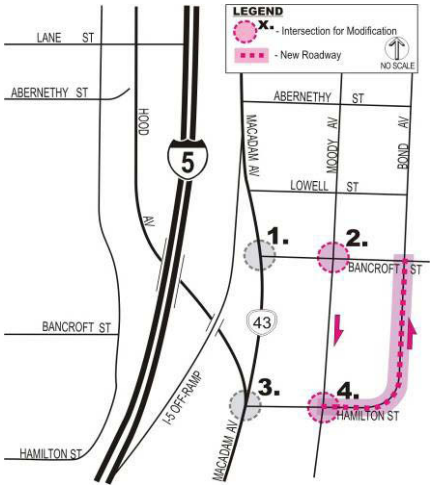
Background Data

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

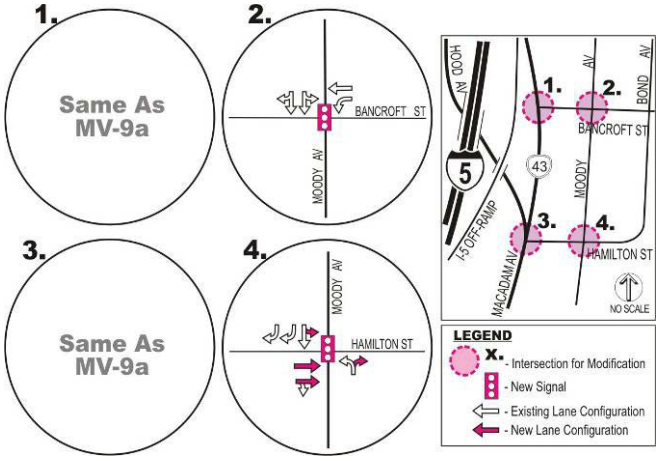
Description of Improvement

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

MOTOR VEHICLE PLAN PROJECTS

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 .

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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).

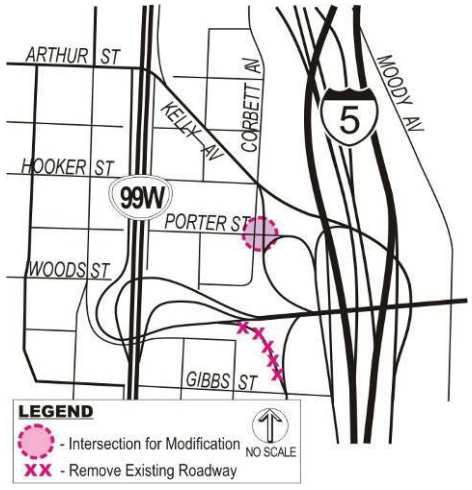
Background Data

- 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.

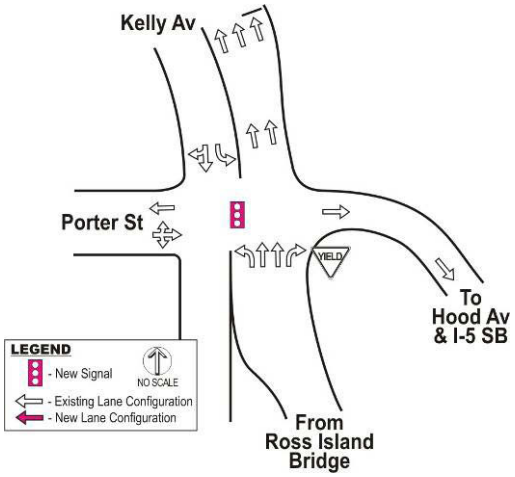
Description of Improvement

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



Cross-section Detail or Photo



Preliminary Cost Estimate

$850,000 to $960,000

Priority

High

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Alternatives/Additional Notes

- 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.

Additional Images / Graphics

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.

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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.

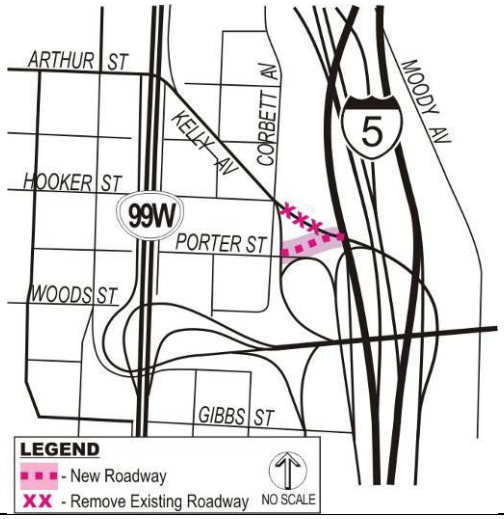
Background Data

- 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.

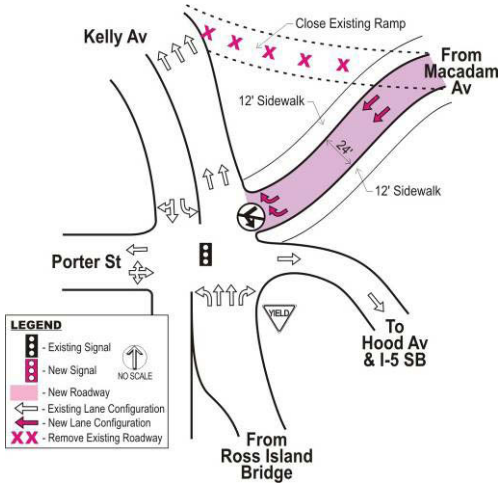
Description of Improvement

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



Cross-section Detail or Photo



Preliminary Cost Estimate

$12.9 to $14.9 Million

Priority

High

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Alternatives/Additional Notes

- 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.

Additional Images / Graphics

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.

MOTOR VEHICLE PLAN PROJECTS

MV-14B. HARBOR DRIVE/RIVER PARKWAY IMPROVEMENT (PREVIOUSLY MV-23)

Need/Purpose

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.

Background Data

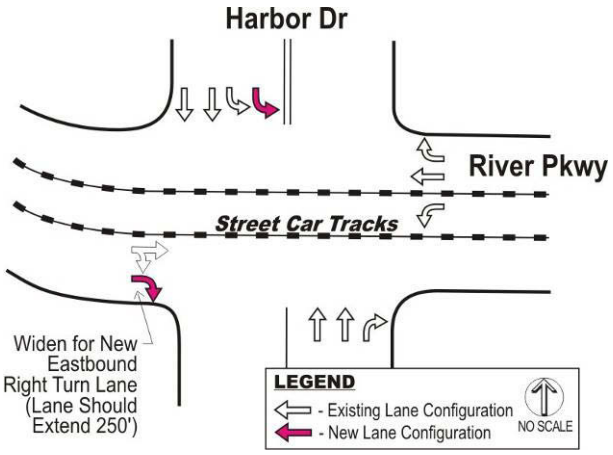
- This intersection provides key access between downtown Portland and the South Waterfront District as well as to other southbound regional connectors.
- The streetcar travels through this intersection on SW Harrison Street.

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

Cross-section Detail or Photo



Preliminary Cost Estimate

$2.6 to $2.9 Million

Priority

High

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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.

Additional Images / Graphics

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.

MOTOR VEHICLE PLAN PROJECTS

MV-14C. KELLY AVENUE/CORBETT AVENUE IMPROVEMENT (PREVIOUSLY MV-27)

Need/Purpose

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.

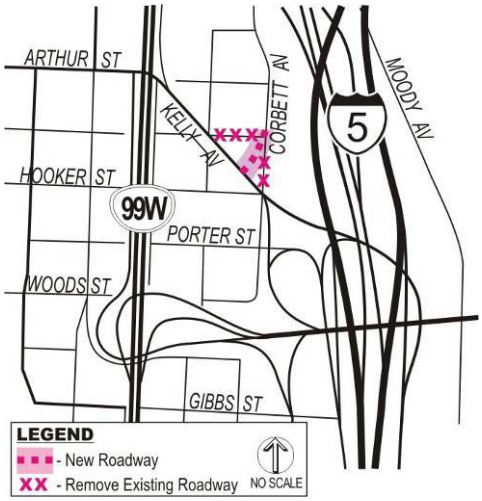
Background Data

- Currently SW Corbett Avenue at SW Kelly Avenue is northbound only.

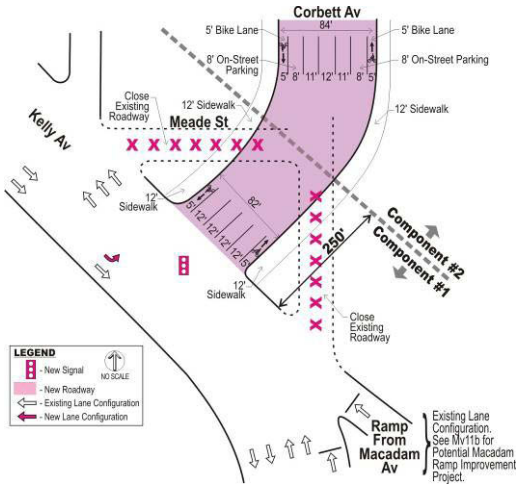
Description of Improvement

This project would realign SW Corbett Avenue where it intersections 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



Cross-section Detail or Photo



Preliminary Cost Estimate

$5.3 to $10.6 Million

Priority

High

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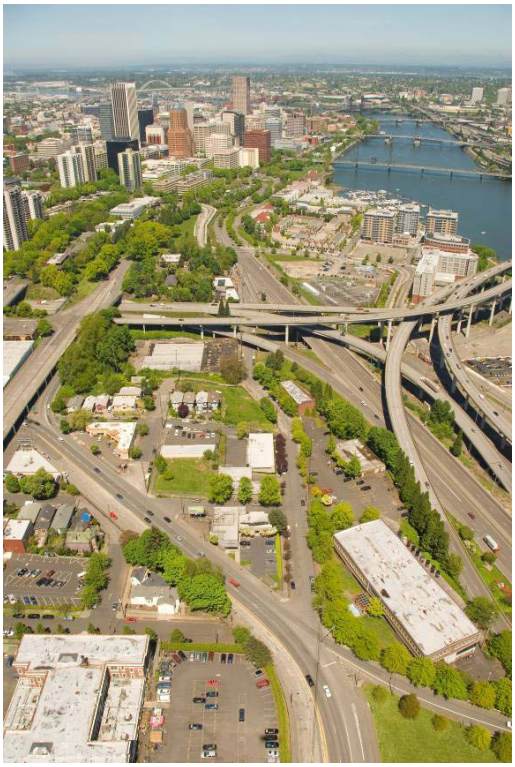
Alternatives/Additional Notes

- 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.

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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

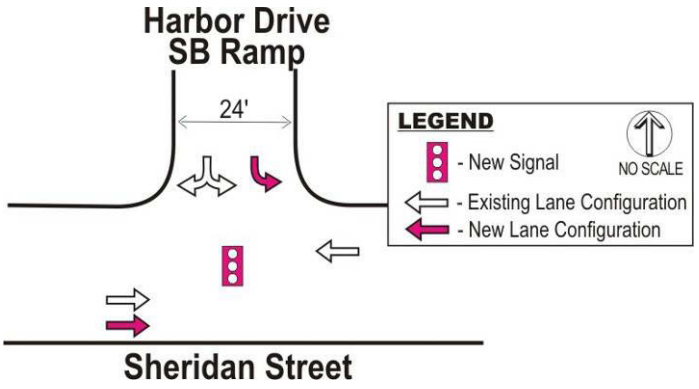
- This intersection was initially paired together with the MV-14A (North Portal – northbound Harbor Drive ramp and SW Sheridan Street intersection) however, this project should be pursued as a stand alone project if MV-14A does not move forward.

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

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Alternatives/Additional Notes

- 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.

Additional Images / Graphics

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.

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

Need/Purpose

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.

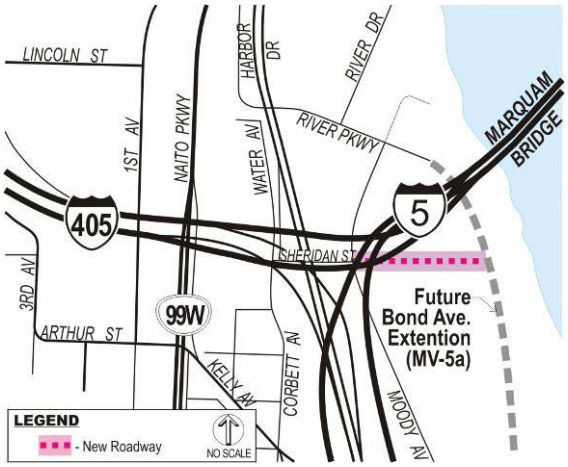
Background Data

- 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.

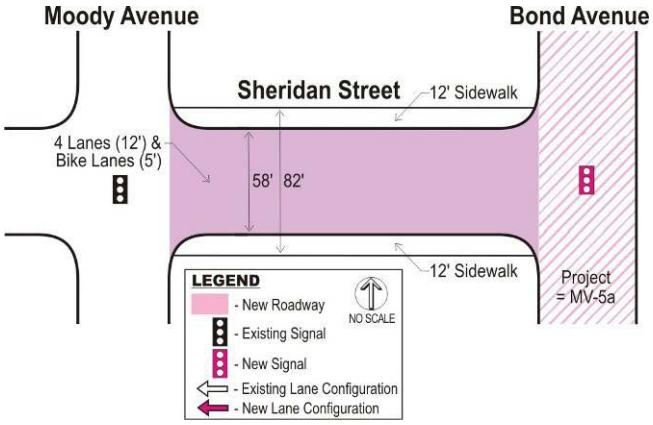
Description of Improvement

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

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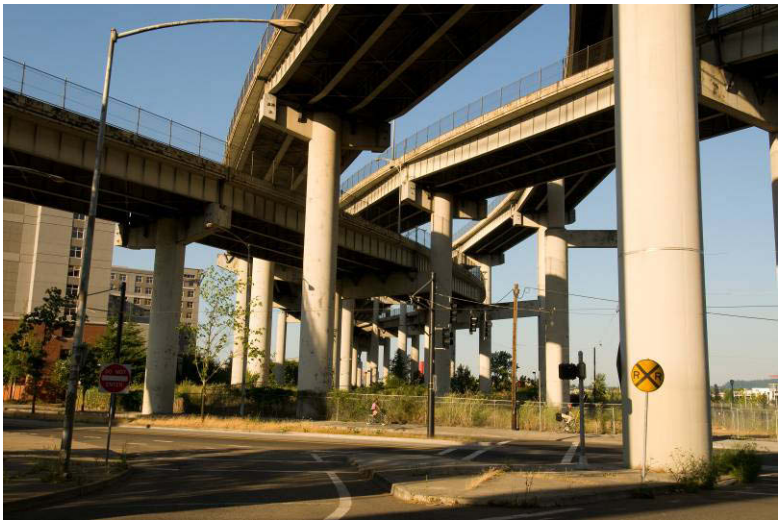
Alternatives/Additional Notes

Additional Images / Graphics



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.

MOTOR VEHICLE PLAN PROJECTS

MV-20. THIRD NORTHBOUND THROUGH LANE ON MACADAM (SOUTH PORTAL TO CURRY ST)

Need/Purpose

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.

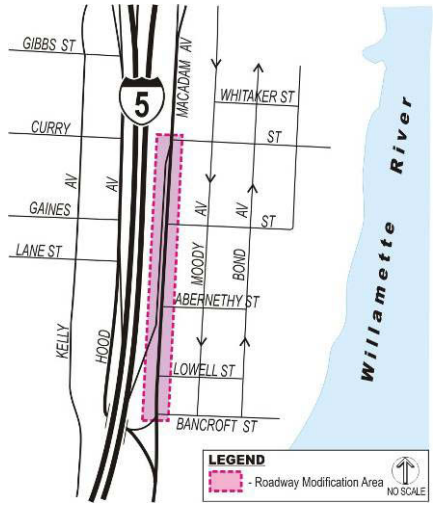
Background Data

- 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.

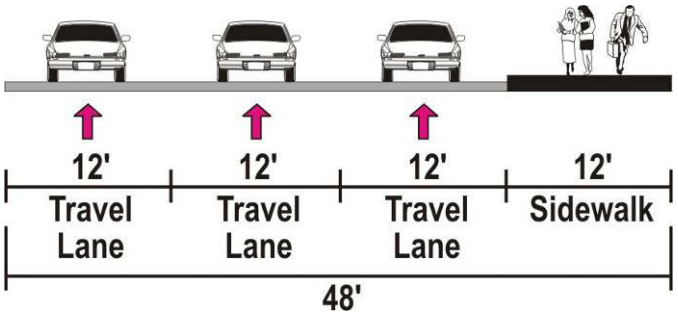
Description of Improvement

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



Cross-section Detail or Photo



Preliminary Cost Estimate

$17.6 to $20.5 Million

Priority

Low

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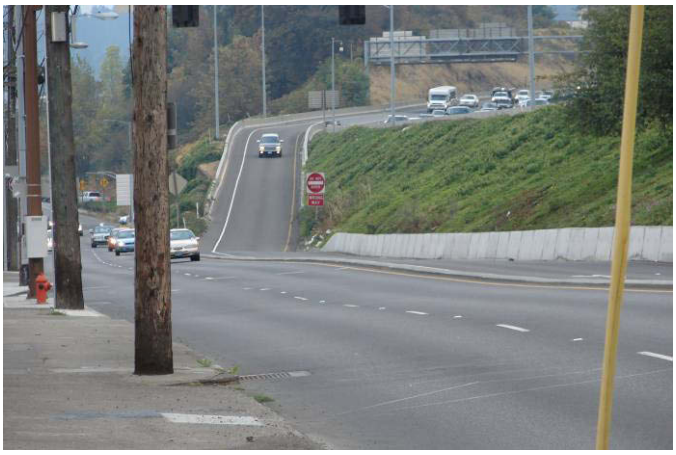
Alternatives/Additional Notes

- 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.

MOTOR VEHICLE PLAN PROJECTS

MV-21. SIGNALIZE INTERSECTIONS IN THE SOUTH WATERFRONT DISTRICT

Need/Purpose

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:

- SW Moody Avenue/SW Curry Street
- SW Moody Avenue/SW Gaines Street
- SW Bond Avenue/SW Curry Street
- SW Bond Avenue/SW Curry Street

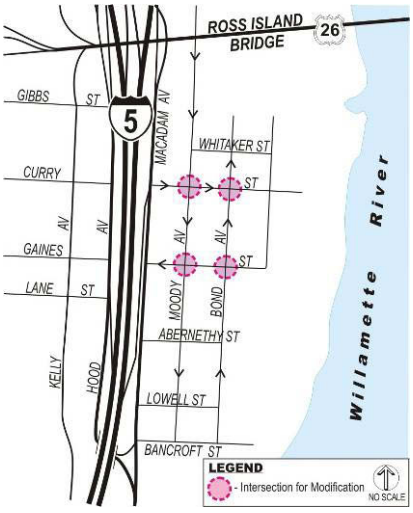
Background Data

- 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).
- These intersections are all within the South Waterfront District and server local businesses and residences.

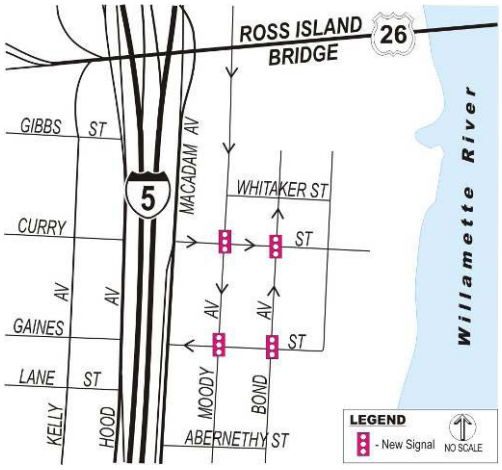
Description of Improvement

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

MOTOR VEHICLE PLAN PROJECTS

Alternatives/Additional Notes

Additional Images / Graphics

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.

MOTOR VEHICLE PLAN PROJECTS

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.

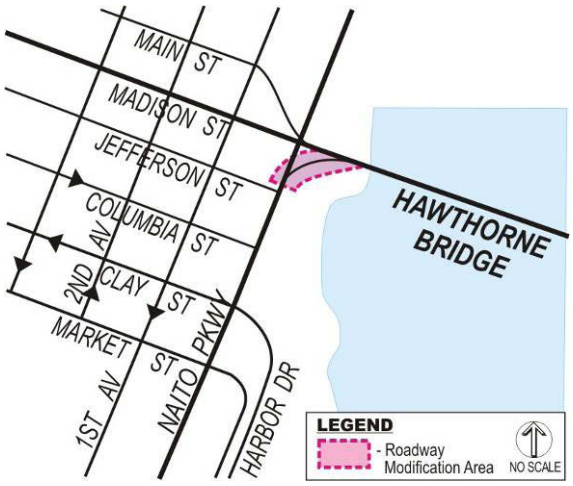
Background Data

- 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.

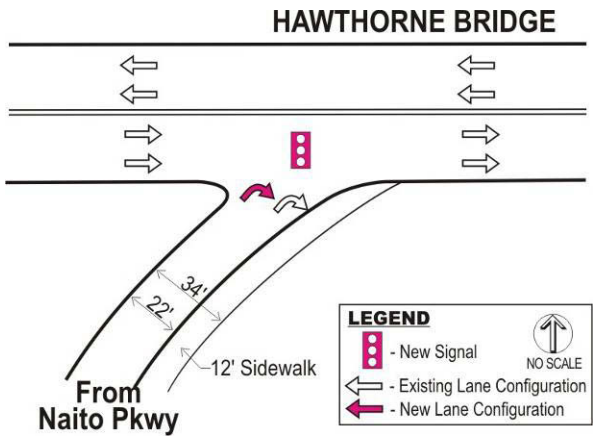
Description of Improvement

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



Cross-section Detail or Photo



Preliminary Cost Estimate

$4.1 to $4.8 Million

Priority

Medium

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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.

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MV-25. MACADAM AVENUE/BOUNDARY STREET IMPROVEMENT

Need/Purpose

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.

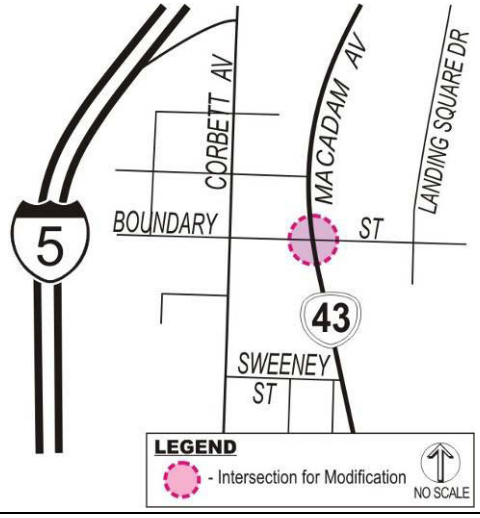
Background Data

- 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.

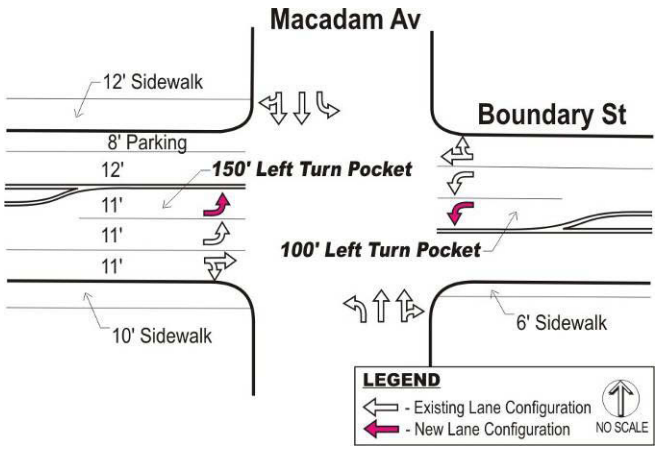
Description of Improvement

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.

Project Area



Cross-section Detail or Photo



Preliminary Cost Estimate

$2.3 to $2.6 Million

Priority

Low

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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.

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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

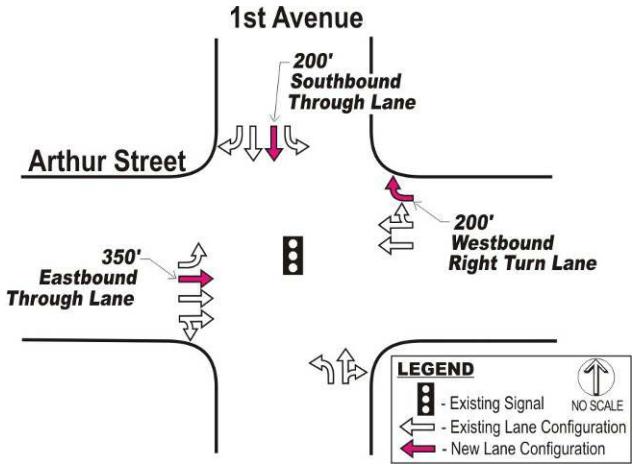
Under existing 2007 PM peak hour conditions eastbound queues can extend back to the intersection at SW Sheridan Street/SW Barbur Boulevard.

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

Cross-section Detail or Photo



Preliminary Cost Estimate

$2.3 to $2.6 Million

Priority

Low

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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.

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MV-28. WAYFINDING

Need/Purpose

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.

Background Data

- 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 an create new roadway connections.

Description of Improvement

Throughout the South Waterfront District and on roadways leading to the district, signage would be added to help direct traffic.

Project Area

Cross-section Detail or Photo

Preliminary Cost Estimate

$100,000 to $200,000

Priority

High

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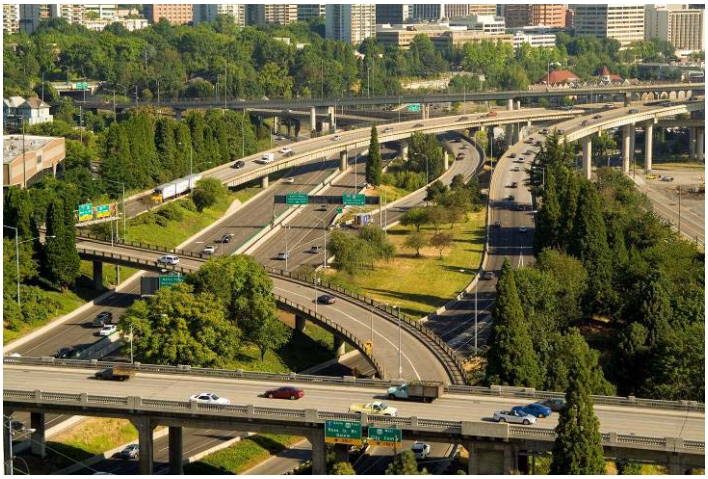
Alternatives/Additional Notes

Additional Images / Graphics

Wayfinding Example signs:



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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.

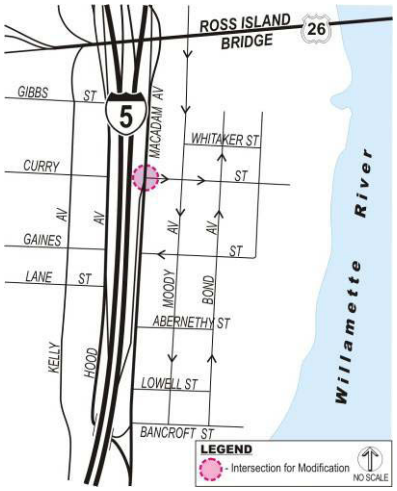
Background Data

- 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.

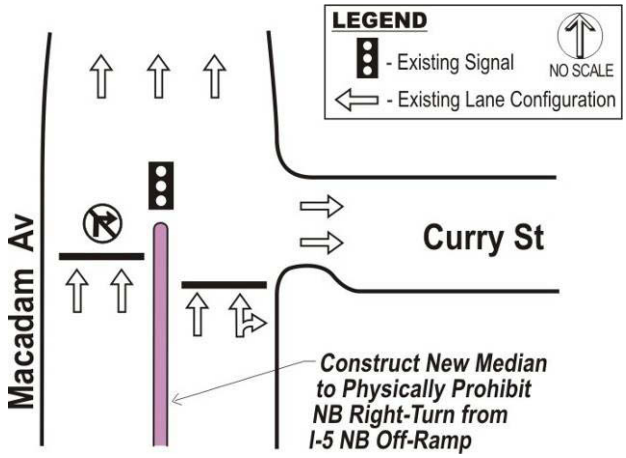
Description of Improvement

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

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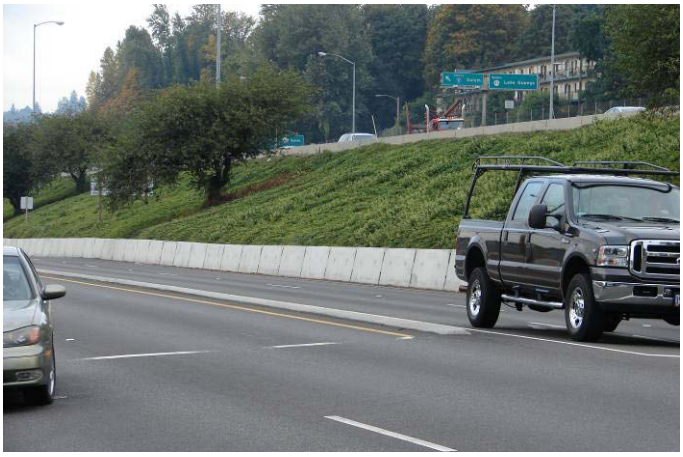
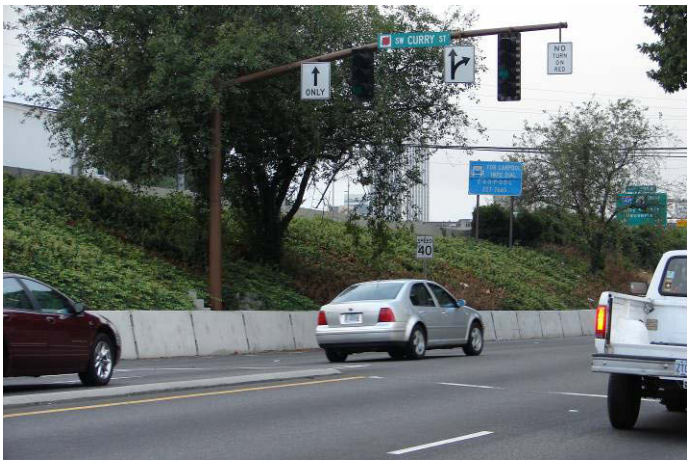
Alternatives/Additional Notes

- 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.

CHAPTER

8

TRANSPORTATION DEMAND MANAGEMENT

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.

CHAPTER

9

FUNDING STRATEGY FOR TOP PRIORITY PROJECTS

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

Top Priority Projects	Low Cost	High Cost
Motor vehicle improvements	$98.5M	$124.8M
Pedestrian and bicycle projects	$6.6M	$7.7M
Transit projects (district match)	$20M	$25M
Total Cost	$125.1M	$157.6M

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

Project #	Public Investment Projects and Programs	Anticipated Project Cost in 2012 dollars		Estimated District Share	Estimated Non-District Share
		Low ($)	High ($)		
Phase I - 2010 - 2020					
MV-5b	Moody Avenue Realignment to the West (District share is reduced by the approx portion constructed by LRT project)	21,700,000 2	5,800,000	40%	60%
MV-9a	Hamilton St Streetcar Interface (South Portal) 30% design			45%	55%
MV-9b	Hamilton St Streetcar Interface (South Portal)	31,980,000	38,000,000	45%	55%
MV-11a	Porter/Kelly Signalization and Kelly slip ramp closure	850,000	960,000	30%	70%
MV-14b	Harbor Dr / River Parkway improvement (Tied to I-5 Macadam Ramp project) – OTIA Funded	2,890,000	6,000,000	0%	100%
MV-28	Motor Vehicle Wayfinding	TBD	TBD	100%	0%
BP-22	SW Hood Sidewalk Enhancement	1,042,000	1,178,000	60%	40%
BP-23	SW Kelly Avenue Tunnel Closure and Crosswalk Improvement	260,000	310,000	30%	70%
BP-24a	West End Ross Island Bridge Pedestrian Crossing (Try MV-11a first)	610,000	670,000	30%	70%
BP-24b	SW Kelly Avenue Bike Lane	650,000	750,000	10%	90%
BP-24c	Ramp Crossing of SW Kelly Ave to SW Naito Parkway	360,000	390,000	10%	90%
BP-30	Bike Parking Facility (Tram or other location)	100,000	200,000	50%	50%
BP-31	Pedestrian / Bicycle Wayfinding	50,000	100,000	100%	0%
T-9	Portland-Milwaukie Light Rail	10,000,000	10,000,000	100%	0%
T-13	Streetcar Double Track Through North District	10,000,000	15,000,000	100%	0%
Phase I (2010-2020) Project Summary		**80,492,000**	**99,358,000**		

Table 9-3: Phase II 2020 to 2030 Project Cost, Phasing, and District Share

Project #	Public Investment Projects and Programs	Anticipated Project Cost in 2012 dollars		Estimated District Share	Estimated Non-District Share
		Low ($)	High ($)		
Phase II - 2020 – 2030					
MV-11b	Kelly Ramp Realignment (Needed to allow for MV-14c)	12,789,000 1	4,920,000	30%	70%
MV-14c	North Portal - Kelly Avenue / Corbett Avenue improvement (linked to MV-11b)	5,280,000	10,610,000	60%	40%
MV-14d	North Portal - SB Harbor Drive Ramp/ Sheridan St improvement	2,200,000	2,570,000	80%	20%
MV-14e	Sheridan Street Extension (Moody Avenue to Bond Avenue)	3,500,000	3,500,000	100%	0%
MV-21	Traffic Signal Installation throughout South Waterfront sub-district	2,270,000	2,480,000	100%	0%
MV-5a	Bond Avenue Extension (Gibbs Street to River Parkway)*	15,000,000 2	0,000,000	90%	10%
BP-16	Hood Avenue Enhancement – Porter St. to Gibbs St.	1,160,000	1,360,000	50%	50%
BP-2	North of I-405 Connection	2,370,000	2,760,000	20%	80%
Phase II (2020-2030) Project Summary		**44,569,000**	**58,200,000**		

* 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

Project #	Public Investment Projects and Programs	Anticipated Project Cost in 2012 dollars	
		Low ($)	High ($)
Phase I (2010-2020) Project Summary		**80,492,000**	**99,358,000**
Phase II (2020-2030) Project Summary		**44,569,000**	**58,200,000**
Total Project Cost/Source Contribution in 2012 dollars		**125,061,000**	**157,558,000**

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.

Step5: 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.

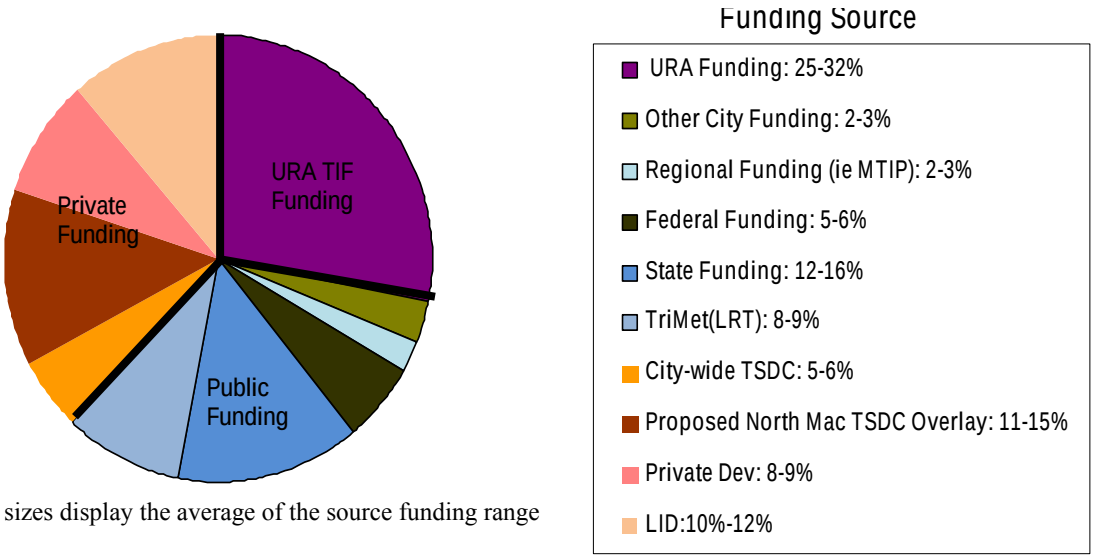
Step 6: Confirm and Adjust Source Funding Ranges
Review all source ranges based on the distribution of costs to ensure that any one source is not being relied upon beyond its realistic contribution.

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

Source	Low	High
Total Costs Range	$125.1	$157.6
URA funding	$40.0	$40.0
Other City funding	$3.0	$5.0
Regional funding (ie MTIP)	$2.0	$5.0
Federal funding	$6.0	$10.0
State funding	$15.0	$25.0
TriMet $1	0.0	$15.0
City-wide TSDC	$7.5	$7.5
Proposed North Mac TSDC Overlay	$18.0	$18.0
Private development	$10.0	$15.0
LID	$12.0	$20.0
Total Funding	***$123.5***	***$160.5***



* Pie sizes display the average of the source funding range

Figure 9-1: 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 (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

District Based Funding	Low Amount		High Amount		Percent Range
District funding sources	$80M		$93M		58%-65%
Non-district funding sources	$43M		$67M		35%-42%
District Serving Projects	**Low Amount**		**High Amount**		**Percent Range**
District serving projects	$60M		$80M		48%-51%
District and regional serving projects	$65M		$77M		49%-52%

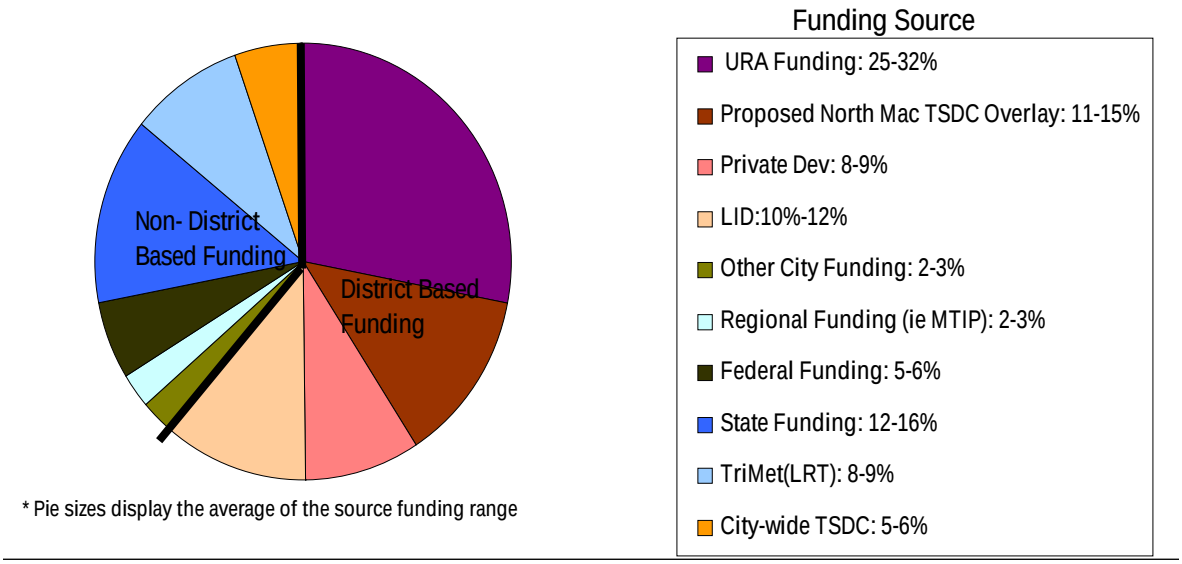


Figure 9-2: District and Non-District Based Funding Contributions

Possible Funding Sources for North Macadam Transportation Improvements

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.

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.