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St. Johns Transportation Concept Plan Development Project
Final Report

Prepared For:

Portland Bureau of Transportation
We keep Portland moving

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engineers | planners | scientists

With support from: Kittelson & Associates, Inc. | ICF
| ICF International | Cogan Owens Cogan
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Preface

The purpose of the St. Johns Transportation Concept Development Project is to develop conceptual design and plans for advancing several of the recommendations made in the St. Johns Truck Strategy (2001). A number of these recommendations are focused on directing trucks to designated truck streets, while others seek to improve the livability of local streets through the use of traffic calming strategies and pedestrian safety improvements. Another set of goals for this project is to support the policy objectives of the Portland Freight Master Plan and the St. Johns Truck Strategy by providing a continuous and improved route for trucks instead of using the neighborhood street system.

Since April 2011, the Portland Bureau of Transportation has been collaborating with a 16-member Stakeholder Advisory Committee and 14-member Technical Advisory Committee to update the critical conditions described in the 2001 St. Johns Truck Strategy, complete an assessment of three bridges on Columbia Boulevard over N. Portland Road and the Burlington Northern and Santa Fe Railway mainline track, and complete a broad range of public engagement activities and efforts. Two public open-house meetings and a special outreach program for Spanish-speaking residents were held to identify transportation issues and review of findings and recommendations, which provided a large volume of meaningful input, including new ideas that have assisted the advisory committees in evaluating potential solutions and ideas and establishing recommendations for meeting the objectives in the St. Johns Truck Strategy.

Other documents completed for the St. Johns Transportation Concept Development Project:

- Technical Memorandum No. 1 – Public Engagement Program, Background, and Public Involvement Plan
- Technical Memorandum No. 2 – Existing and Future Traffic Conditions
- Technical Memorandum No. 3 – Background Planning and Policy Guidance
- Technical Memorandum No. 4 – Engineering Assessment of Bridge Structures
- Technical Memorandum No. 5 – Preliminary Solutions and Ideas
- Technical Memorandum No. 6 – Screening of the Preliminary Solutions and Ideas
- Technical Memorandum No. 7 – N. Lombard Street Safety Improvement Assessment

This study is funded by the City of Portland with support from the Regional Flexible Fund Program.
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Summary

The Portland Bureau of Transportation (PBOT), in partnership with the Portland Bureau of Planning and Sustainability, Portland Bureau of Environmental Services, Port of Portland, Metro, TriMet, and the Oregon Department of Transportation (ODOT), has developed a set of location-specific and programmatic recommendations to address traffic circulation, freight mobility, and pedestrian access issues identified in the St. Johns Truck Strategy. The effort to reach these recommendations has been actively supported by a 16-member Stakeholder Advisory Committee (who met on eight occasions and included neighborhood residents, local business representatives and members of the Portland Freight Committee); a 14-member Technical Advisory Committee (including staff from PBOT and the partners listed above); input received at two neighborhood open-house meetings; a special outreach effort with the neighborhood’s Spanish-speaking residents; and a mediation effort sponsored by the Portland City Council to assist in developing consensus about the recommended improvement concepts. In total, 25 improvement concepts, which incorporate infrastructure and operational improvements as well as the use of Portland Police enforcement of speed limits and educational initiatives with the motor carrier industry, have been advanced for detailed engineering, construction, and other implementation activities by PBOT leadership.

This report summarizes the project work accomplished since its inception in Spring 2011, including the project background and supporting policy and planning/engineering practices, the field data that was collected, the analyses that were produced, the input gained from public engagement processes, and the guidance provided by the project’s Stakeholder Advisory Committee and Technical Advisory Committee. Over the course of the project, transportation analyses and community input identified the following problems to be addressed, reasons why those conditions are occurring, and recommendations.

Problems to be Addressed

- High volume of through traffic (both automobile and truck) uses neighborhood streets – in particular, Fessenden Street and St. Louis Avenue between Fessenden Street and Lombard Street, particularly during peak hour periods. Field surveys indicated that as much as 55% of all southbound traffic from Columbia Way to Fessenden Street is through traffic in the PM peak period.

- In some locations, travel speeds on these streets exceed the posted 35 MPH speed limit (85th percentile speeds at Fessenden Street at Alma Avenue is 34 MPH, but 41 MPH on St. Louis Avenue at Smith Street).

- A relatively high volume of truck traffic (9% of all vehicles observed were either medium and large single-unit trucks, large double-unit trucks, or large multi-unit trucks) uses Fessenden Street and St. Louis Avenue instead of the designated area truck route of Columbia Boulevard, Burgard Street and Lombard Street. Truck traffic on similar North Portland district neighborhood collector streets ranges between 4% and 9%.

- Though Lombard Street is a designated priority truck street, it is also home to a residential neighborhood.

- These conditions present challenges for pedestrians who cross these streets.

- According to some residents, truck traffic creates noise and vibration impacts.

- These conditions are inconsistent with the land uses and neighborhood characteristics of Fessenden Street, St. Louis Avenue and Lombard Street. These streets not only accommodate single-family and multi-family...
residences, but provide direct access to schools, parks, bus routes, religious institutions, and community centers.

**Underlying Reasons for these Conditions on Neighborhood Streets**

- Through Traffic Volume—Due to the close proximity of neighborhood streets to industrial areas and employment generators, and the nearby St. Johns Bridge being a less congested and more direct crossing of the Willamette River over its nearest crossings (i.e., the Interstate (I-5) Bridge and Lewis and Clark Bridge) between I-5 and the suburban areas of western Multnomah County and Washington County, between 27% and 55% of the traffic volume on local streets is through traffic.

- Truck Traffic Volume—The route with the shortest distance and fastest travel time between Columbia Boulevard and the St. Johns Bridge to U.S. 30 is Columbia Way-Fessenden Street-St. Louis Avenue (all neighborhood collector streets), which has likely led many truck drivers to utilize this route instead of the designated truck route of Columbia Boulevard to Burgard Street to Lombard Street. The Columbia Way-Fessenden Street-St. Louis Avenue route was found to be more than two minutes faster than the designated truck route.

- Speeds—The current design of those neighborhood streets is inconsistent with their functional classification (e.g., roadways are wider at some locations than their functional classification suggests), which in combination with a limited number of traffic control devices also leads to some motorists exceeding the posted speed limit.

- Pedestrian Crossing Issues—Pedestrian signals are present at just three of the 25 intersections along these streets, and sidewalks are not present on some sections of Lombard Street between Reno Avenue and Bruce Avenue.

**Recommendations**

**North Portland Road and Columbia Boulevard intersection (Figure 8.1)**

- Reconfigure intersection to create left turn for southbound access to Columbia Way and improve turning radius for westbound access to Columbia Way.
- Provide sidewalks and bicycle lanes.

**Columbia Way between Columbia Boulevard and Fessenden Street (Figure 8.2)**

- Re-stripe roadway cross-section by converting one southbound travel lane to a center turn-lane with pedestrian crossing refuge areas.
- Install curb extension at the northwest corner of Columbia Way and Fessenden Street intersection to reduce turning radius/design speed for right turns from Columbia Way to Fessenden Street.
- Provide missing sidewalk and extend bicycle lanes to N. Portland Road.

**Fessenden Street/St. Louis Avenue between Columbia Way and Lombard Street (Figures 8.3 – 8.8)**

- Re-stripe roadway cross-section to reduce travel-lane widths and provide buffered bicycle lanes.
- Reduce speed limit from 35 MPH to 25 MPH (subject to state approval).
- Install median refuge islands with street trees and striped cross-walks at the following six locations: Kellogg Street, Smith Street, Seneca Street, Oswego Avenue, Allegheny Avenue and Tioga Avenue.
- Install curb extensions with street trees and striped crosswalks at the following two locations: Burr Avenue and Midway Avenue.
- Install speed reader boards on both sides of the St. Louis Avenue-Fessenden Street curve.
- Install Rapid Flash Beacons at the following two locations: Seneca Street/New York Avenue and Midway Avenue.
• Install a High-Intensity Activated crosswalk (HAWK) signal at Charleston Street.
• At all crossing improvement locations provide additional pavement markings in the bicycle lanes warning cyclists to yield to crossing pedestrians.
• Reconfigure the New York Avenue leg of the of New York Avenue/St. Louis Avenue intersection to create a perpendicular alignment.

Lombard Street between St. Louis Avenue and Bruce Avenue (Figures 8.9 – 8.11)
• St. Louis Avenue to St. Johns Avenue: re-stripe roadway cross-section to increase travel-lane widths to 12 feet by removing parking from the west side of the street.
• St. Johns Avenue to Bruce Avenue: re-stripe roadway cross-section to provide bicycle lanes.
• Install curb extension and striped crosswalk.
• Install curb extensions at Reno Avenue (northwest and southwest corners).
• Upgrade the existing pedestrian signal at Reno Avenue with advance detection.
• Shift the Lombard Street bicycle route south of Reno Avenue to Central Avenue and Willamette Boulevard.
• Reconfigure the St. Johns Avenue intersection to improve sight distances through the ‘S’ curve in the roadway.
• Install missing sidewalk sections north of Reno Avenue.

Other
• Fessenden Street/St. Louis Avenue:
  o City of Portland and Oregon Trucking Association education effort to instruct motor carriers to utilize the designated truck route.
  o Periodic speed enforcement by Portland Bureau of Police.
  o In the event the City of Portland approves a speed bump design for use or additional testing on Major Emergency Response routes, consider use on Fessenden Street/St. Louis Avenue in the vicinity of the curve.

• Consider incorporating noise mitigation measures as part of any future land use planning efforts along Lombard Street (Portland Bureau of Planning and Sustainability).
• Amend Transportation System Plan to remove City Bikeway designation on Lombard between St. Louis Avenue and Reno Avenue.

Detailed information about these studies and processes can be found in the project’s seven technical memoranda, associated databases, meeting documentation, and other related documents and materials, all of which are provided as appendices to this report.

This project was identified in the Portland Transportation System Plan and the Oregon Statewide Transportation Improvement Plan, and was funded by the City of Portland with support from the Regional Flexible Fund Program.
1. **Purpose of the Project**

Over a period of over two years, the Portland Bureau of Transportation, with assistance from a consultant team led by T.Y. Lin International, Inc. with Kittelson Associates, Inc., Cogan Owens Cogan, and ICF International, have been developing specific project and programmatic recommendations which advance the objectives identified in the *St. Johns Truck Strategy*, the *St. Johns Lombard Plan*, the *Portland Transportation Systems Plan*, the Portland freight, pedestrian and bicycle master plans, and other guiding documents.

The results of this project support these objectives by:

- Establishing disincentives to use neighborhood streets for through truck travel and improving access to the designated neighborhood truck route (the “around the horn” route of Columbia Boulevard-Burgard Street-Lombard Street).
- Enhancing the accessibility and safety of the pedestrian facilities along neighborhood streets.
- Completing the concept development phase of the *St. Johns Truck Strategy* including a program of location-specific and area-wide transportation system and operational improvements, each of which is feasible with regard to: 1) their physical and operational components; 2) relative low cost; and 3) ability to be phased over time to match available funding.
- Reducing traffic speed on neighborhood streets.
- Completing an engineering assessment and set of repair recommendations for three city-owned Columbia Boulevard bridges over the Burlington Northern & Santa Fe Railway mainline tracks and N. Portland Road.

Originally, the project was focused on improvements that could be made at the north end entry to the neighborhood at the intersection and associated ramp structure of N. Portland Road and Columbia Boulevard where it was thought that southbound through truck traffic could be directly channeled to the designated priority truck street route formed by Columbia Boulevard, Burgard Street, and Lombard Street (also known as the “around the horn” route). Field studies later determined that through truck traffic was backing up on neighborhood streets from the south entry to the neighborhood (from the St. Johns Bridge to Lombard Street to St. Louis Avenue). This in turn expanded the scope of the study needs and options.

As the analyses progressed, the Stakeholder Advisory Committee (SAC) believed that if the strategies to direct through truck traffic off neighborhood streets were successful, they might also result in generating a higher volume of through trucks onto Lombard Street, which while identified as a priority truck street, still accommodates pockets of residential neighborhoods. The SAC was concerned that they would be shifting a problem from one set of neighborhood streets (Fessenden Street and St. Louis Avenue) to another (Lombard Street), and a comprehensive evaluation of solutions for Lombard Street was also deemed necessary to be included to the study program.

Moreover, the project team and SAC members recognized that physical barriers and other physical prohibitions to truck traffic on Fessenden Street and St. Louis Avenue would also block emergency vehicles and TriMet bus service from utilizing those streets. The SAC also determined that another solution to reducing through truck traffic on Fessenden Street and St. Louis Avenue could be in the form of traffic calming strategies which would reduce travel speeds so that this local neighborhood route was not as attractive in terms of travel time as the designated “around the horn” truck route.

Finally, further studies found there were issues with excessive travel speed from both automobiles and trucks on Fessenden Street, St. Louis Avenue, and Lombard Street. This results in challenging pedestrian crossings. These
conditions were reported by several representatives of the project’s SAC as well as from input received by the general public.

Another study goal separate from the access and mobility conditions described above was to complete an engineering assessment of three bridges on Columbia Boulevard over the Burlington Northern & Santa Fe Railway and N. Portland Road to identify current load ratings, structural improvement needs and cost estimates to accommodate an anticipated increase in heavy truck volume and overweight loads along this segment of Columbia Boulevard.

A critical component of the project was to review the findings of these analyses with the project’s SAC, Technical Advisory Committee, with the general public at two open-house meetings, and through a special public engagement process for the neighborhood’s Spanish-speaking residents.
2. **Study Area Context**

Settled as an eight-block town site in 1865 by James Johns and annexed into the City of Portland in 1915, the St. Johns community today is diverse and lively with 15,500 residents and a charming, small town character. Its main street hosts a post office, a movie theater, cafes, restaurants and grocery stores. The St. Johns neighborhood also borders several parks and natural habitats, including Cathedral Park, Pier Park, Kelley Point Park, Forest Park, the Columbia Slough, and Smith and Bybee Wetlands Natural Area. To the north of St. Johns is the Linnton neighborhood and the Rivergate Industrial District including the Port of Portland’s Terminals 5 and 6.

**Area Land Use**

As shown in Figure 2.1, the St. Johns neighborhood includes a mix of single and multi-family residential neighborhoods, commercial, mixed residential/commercial, industrial, and open space land uses; each of which is intended to reinforce St. Johns role as the commercial and civic center of the North Peninsula. The district includes the St. Johns Town Center and the Lombard Street main street, both of which include regulations for enhancing the pedestrian environment, such as outdoor cafes and exterior displays. The St. Johns Neighborhood Plan includes the following requirement: “Support the Willamette greenway and opportunities to celebrate the Willamette River as a unique element of the urban environment”. Immediately to the north and west of the St. Johns neighborhood is the Rivergate industrial district, which is served by both the Burlington Northern & Santa Fe Railway (with its nearby Wilbridge Yard and Lake Yard) and the Union Pacific Railroad (with its nearby Barnes Yard). In addition, there are multiple marine facilities (docks, piers, etc.) for handling goods transported on the Willamette and Columbia rivers, warehouses, offices, and related equipment and facilities for shippers, carriers and other industrial uses.

**Figure 2.1 St. Johns Neighborhood Land Use**
Finally, the St. Johns Plan District regulations reference the Riverfront District and how there ought to be a “transition to an urban mixed-use area that is well integrated into St. Johns...to protect industry, and encourage development of housing and office uses only where appropriate.”

**Area Demographics and Socioeconomic Characteristics**

According to the 2010 U.S. Census, 15,500 persons resided in the three census tracts forming the neighborhood with a wide range of demographic and socioeconomic characteristics. St. Johns is a diverse community in terms of ethnicity, age, family size and income, with a mix of homeowners and renters. The St. Johns neighborhood’s population grew by 22% between 1990 and 2010, about 30% higher than Multnomah County as a whole, and has been experiencing revitalization and redevelopment of its commercial core. New homes are being constructed and existing homes upgraded, as it gets to be known that the neighborhood continues to be a desirable place to live, work and visit. With the exception of racial composition, income, housing values, and household size of rental units, the St. Johns area and Multnomah County as a whole have experienced similar trends with respect to reported demographic and socioeconomic characteristics in 2009 such as age, education level, other housing and language.
3. Policy Background

Policies that have guided the study process and recommended improvements developed for this project are not only consistent with federal, state, regional and city goals and objectives, but also directly address the needs identified in the City’s Comprehensive Plan and the Portland Transportation System Plan specific to the St. Johns neighborhood.

**Portland Comprehensive Plan**—There are several goals, policies and objectives in the City’s Comprehensive Plan that are directly relevant to the project—several of which are described below.

- **POLICY 6.13 TRAFFIC CALMING**
  
  **Objective C.** Encourage non-local traffic, including trucks, to use streets of higher traffic and truck classification through design, operations, permitting and signing.

- **POLICY 6.30 TRUCK MOBILITY**
  
  **Objective B.** Accommodate truck travel on designated truck streets through improvements to facility design and operations that address the dimensional needs of trucks.

**Objective C.** Encourage through-truck traffic to use Regional Truckways, Priority Truck Streets and Major Truck Streets for mobility, and Truck Access Streets and Local Service Truck Streets to access local destinations.

- **POLICY 6.31 TRUCK ACCESSIBILITY**
  
  **Objective B.** Upgrade bridges to remove load limits and vertical clearance restrictions on designated truck streets.

**Objective F.** Implement design guidelines for truck streets that meet the dimensional needs of trucks, particularly for Freight Districts, while balancing the needs of other transportation modes in the right-of-way.

- **POLICY 6.35 NORTH TRANSPORTATION DISTRICT**
  
  **Objective A.** Improve truck and freight movement in North Portland through changes to the street system, street classifications, and signing to enhance the economic vitality of the area and minimize impacts on residential, commercial, and recreational areas.

**Objective C.** Direct industrial traffic onto Columbia Boulevard, while allowing limited access from residential neighborhoods and mitigating for unacceptable traffic impacts.

**Portland Transportation System Plan**—Portland’s Transportation System Plan (TSP) is the 20-year guide for planning and investment in the City’s multimodal transportation system, and it provides direct application to the St. John Transportation Concept Development Plan as follows:

“Residents (of the St. Johns neighborhood) have long had concerns about truck traffic ... especially near major industrial areas such as ... the Rivergate Industrial District... Many of the non-local trucks that travel between I-5 and US 30 (St. Helens Highway) now regularly use Fessenden Street and other residential and retail/commercial streets as truck routes. The 1992 Transportation Element identified the need for a study to evaluate North Portland truck routes and mitigation for truck traffic in St. Johns and other North Portland neighborhoods.”

Further, the TSP highlights the N. Portland Road/Columbia Boulevard Intersection Development Project in the TSP and describes it as follows:

(Proiect No. 300070). “Columbia BI/Portland Road, N: Intersection Improvements “Redesign of intersection could include realignment of travel lanes, channelization, signalization, signage, and new sidewalks and curbs. Project reinforces through-truck movements on truck streets and minimizes neighborhood cut-through traffic.”

**Columbia Corridor Transportation Study**—The purpose of this study was to address the concerns that residents had about reducing the impact of both through automobile and truck traffic, as well as pedestrian and bicycle access and safety. The study was also intended to provide a transportation system to support development of an industrial corridor. The
study’s recommendation for the St. Johns area was to conduct the “North Portland Peninsula Truck Circulation Strategy,” which was later titled the St. Johns Truck Strategy.

**St. Johns Truck Strategy** In May 2001, the Portland City Council adopted the St. Johns Truck Strategy which charged PBOT with analyzing strategies to: 1) reduce the amount of truck traffic using neighborhood streets, and to, 2) identify improvements for truck travel to and from the commercial and industrial properties, the freeway system, and the St. Johns Bridge.

The Portland City Council established the following parameters for the study:

- Utilize the existing local and regional street system.
- Be a short-term (2-5 year) solution.
- Not include more than $10 million in solutions.
- Coordinate with other North Portland projects.
- Carefully analyze solutions so as to not shift a problem to a different location.

The project’s Advisory Committee reviewed 47 separate concept alternatives, several of which did not meet the Council’s parameters (e.g., costing more than $10 million) and others that were forwarded on to Metro, ODOT, and the Port of Portland for review in the regional transportation planning process and other planning initiatives.

The committee did recommend eight specific recommendations (see Figure 3.1) which met the Council’s criteria. Several of the recommendations (i.e., recommendations 5 and 6) have been implemented, and four were addressed in this project (i.e., recommendations 1, 2, 3 and 7). The Portland City Code does address the routings of hazardous materials which is an element of recommendation 4, and with regard to recommendation 5, there are ongoing education and enforcement programs for truck issues and regulations, including those sponsored and supported by ODOT, emergency services, trucking interests, and others who often engage the public in these issues.

**Figure 3.1 Eight Recommendations from St. Johns Truck Strategy**

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St. Johns/Lombard Plan-This Portland Bureau of Planning effort was initiated in the fall of 2001 in collaboration with the community and led to implementation of the St. Johns Town Center, and the Lombard Street main street designations which were conceived in the Metro 2040 Growth Concept. The Plan, which was adopted by the Portland City Council in 2004, incorporated the findings and recommendations of the St. Johns Truck Strategy and spelled out “Action Items” for implementation including:

“Truck access to the St. Johns Bridge – short term; support implementation of the entire St. Johns Truck Strategy. The improvements should control vehicle speeds consistent with the posted speed limit and ensure adequate signage to control trucks near Reno/Lombard pedestrian crossing. Evaluate potential for special surface treatments and signage to direct freight traffic to appropriate routes. Ensure the completion of the St. Johns Truck Strategy projects to improve freight capacity (TC1 and 2 and improvements to the Burgard Bridge) on the designated Lombard Street, Burgard Street and Columbia Boulevard freight route to handle volume and physical loads before implementing traffic calming and safety elements (TC/S 2 and 3) of the St. Johns Truck Strategy.”
4. Project Partners and Stakeholders

In support of the development of this project, a public engagement program was established to guide the planning process and incorporate community input. The public engagement plan included the creation of a Stakeholder Advisory Committee, a Technical Advisory Committee, and the public at large. Membership in the Stakeholder Advisory Committee (SAC) was based in part on a community profile of the St. Johns neighborhood, and one-on-one interviews with 18 Stakeholders about the conduct of the outreach process and suggestions for Stakeholder Advisory Committee members.

In total, eight meetings were held with the SAC, three meetings with the Technical Advisory Committee (TAC), two public open houses, a tailored public involvement effort with the Spanish speaking community of St. Johns, and a range of methods to disseminate information about the project and collect citizen input. PBOT staff also reviewed the project status and findings with the St. Johns Neighborhood Association on two occasions.

From interviews and other contact with key community leaders in the St. Johns area it was immediately apparent that many residents are aware of the issues related to truck traffic on certain residential streets and were anxious to find solutions. Motor carriers and shippers were also aware of the community issues and had some other concerns they hoped would be addressed. The goal of the public involvement effort was to provide all interested parties the opportunity to participate in the planning process and to reach agreement on one or more solutions that all or most can support.

Stakeholder Advisory Committee (SAC)

As the citizen “eyes and ears” of this project, 16 individuals representing community and business interests served on the SAC. The SAC met eight times during the course of this project, which were open to the public and regularly attended by non-SAC members (notes of all SAC meetings are provided in Appendix A):

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<th>Subject</th>
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<tr>
<td>Mtg 1</td>
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<td>Mtg 8</td>
<td>2/4/2013</td>
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Technical Advisory Committee (TAC)

To ensure coordination and consistency between City of Portland agencies and their partner agencies with regard to their programs, plans, initiatives, etc., a TAC of 14 individuals was established to
provide peer review and other technical and programmatic support for the project.

**Technical Advisory Committee Members**

<table>
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<tr>
<th>Representative</th>
<th>Agency</th>
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<tr>
<td>April Bertleson</td>
<td>PBOT</td>
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<td>Michelle Dellinger</td>
<td>PBOT</td>
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<td>Roger Geller</td>
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<td>Dan Layden</td>
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<td>Mark Lear</td>
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<td>Mike Magee</td>
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<td>Heather Boll</td>
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<td>Ben Baldwin</td>
<td>TriMet</td>
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<td>Phillip Healy</td>
<td>Port of Portland</td>
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<td>David Nunamaker</td>
<td>Portland BES</td>
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The TAC met on three occasions during the course of this project on the following dates (TAC meeting notes provided in Appendix B):

<table>
<thead>
<tr>
<th>TAC Member Meetings and Agendas</th>
<th>Date</th>
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<tbody>
<tr>
<td>Mtg 1 Kickoff; description of project; review trans analyses</td>
<td>8/25/2011</td>
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<td>Mtg 2 Brainstorm session- ideas, Opportunities/Constraints</td>
<td>11/18/2011</td>
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<tr>
<td>Mtg3 Review “brainstorm” session ideas, prel analyses, and prel recommendations</td>
<td>1/24/2012</td>
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**Public Events**

Two evening public events were held at the St. Johns Community Center (notes provided in Appendix D):

**First Open House (11/17/2011)** – This project kickoff meeting was attended by 75 individuals excluding project team and SAC members who were able to identify the problems and solutions they wanted the team to be aware of through: 1) post-it notes they placed on large-scale aerial photos (127 comments at 44 locations describing their thoughts were collected), and 2) through comment forms–18 comment forms were completed by attendees. The post-it notes and comments focused on the following themes along Fessenden Street and St. Louis Avenue:

- Increase pedestrian and bicycle safety with improved facilities
- Lower speed limits
- Implement traffic calming measures along key corridor areas

**Second Open House (12/12/2012)** – This meeting was attended by approximately 100 persons who provided comments and input to the preliminary project recommendations using post-it notes on large-scale aerial photos and comment forms. In total, 110 comments about 31 locations were recorded on post-it notes and
50 comment forms were received. A majority of the responses appeared to agree with the proposed recommendations and also suggested ways to increase pedestrian and bicycle safety with improved facilities, lower speed limits, and traffic calming measures in key corridor locations.
5. **Transportation Analysis – Existing and Future (Year 2035) Conditions**

To better understand traffic and transportation conditions in the study area, an inventory of existing transportation facilities (roadways, sidewalks, bicycle lanes, bus stops and bus routes) was completed, and field data was collected in April 2011 on N. Portland Road, Columbia Boulevard, Columbia Way, Fessenden Street, St. Louis Avenue, Lombard Street, and along the “around the horn” route made up of Columbia Boulevard, Burgard Street and Lombard Street (see Figure 5.1 and Table 5.1 for data collection locations and roadway functional classifications, respectively). With these data an analysis was completed to:

- Understand how local and through (passenger and freight) traffic moves through the study area locations.
- Identify existing traffic patterns and conditions.
- Identify how future traffic growth may impact traffic patterns in the study area.
- Understand safety conditions and current travel speeds through the study area.

**Roadway Facilities**

As illustrated by Figure 5.2 and Table 5.1, the existing transportation network provides a range of different facilities which are intended to serve different types of travel. The existing function and design of Columbia Boulevard, Burgard Street and Lombard Street align well with the specifications of their TSP traffic and street design classifications. These three streets form the “around the horn” route through the study area which is intended to facilitate freight truck access and mobility. The corridor travels through primarily industrial land with 14-foot wide travel lanes with limited intersections, intermittent sidewalks, and some on-street parking. Photo 1 shows Lombard Street near Burgard Street, where existing wide lanes and widely spaced access points facilitate motor vehicle and freight movement, as is intended for the TSP classifications for Major City Traffic Streets and Urban Roads.

Lombard Street between Pier Park and St. Johns Avenue is lined with residential and retail land uses, but it is also a Priority Truck Street through St. Johns, and is characterized by a widely varying cross-section with roadway widths ranging between 60.0 feet in the northern segment and 36.0 feet in the southern segment. In addition, Lombard Street has a serpentine alignment between Catlin Avenue and Reno Avenue which creates oblique intersection alignments at Jersey Street and St. Johns Avenue, and results in many vehicles crossing the double-yellow line. South of St. Johns Avenue, Lombard Street is designated as a Regional Main Street and narrows to provide additional pedestrian facilities (as shown in Photo 2).
Figure 5.1 Data Collection Locations
Figure 5.2 Existing Street Cross Sections
## Table 5.1 Existing Transportation Facilities and Roadway Designations

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Traffic Classification¹</th>
<th>Transit Classification¹</th>
<th>Bicycle Classification¹</th>
<th>Pedestrian Classification¹</th>
<th>Freight Classification¹</th>
<th>Emergency Classification¹</th>
<th>Street Design Classification¹</th>
<th>Number of Lanes</th>
<th>Lane Width</th>
<th>Posted Speed (MPH)</th>
<th>Sidewalks</th>
<th>Bicycle Lanes</th>
<th>On-Street Parking</th>
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</thead>
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<tr>
<td>Columbia Boulevard</td>
<td>Reg. Trafficway and Major City Traffic Street</td>
<td>Community Transit Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Priority Truck Street</td>
<td>Major Emergency Response</td>
<td>Urban Road</td>
<td>5</td>
<td>12'-14'</td>
<td>40</td>
<td>No ¹⁴</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>N Portland Road (and ramps)</td>
<td>Major City Traffic Street</td>
<td>Community Transit Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Priority Truck Street</td>
<td>Major Emergency Response</td>
<td>Urban Road</td>
<td>2</td>
<td>12'</td>
<td>45</td>
<td>No</td>
<td>Yes²</td>
<td>No</td>
</tr>
<tr>
<td>Columbia Way</td>
<td>Neighborhood Collector²</td>
<td>Community Transit Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Local Service Truck Street</td>
<td>Major Emergency Response</td>
<td>Local Street</td>
<td>3</td>
<td>12'</td>
<td>35</td>
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<td>Yes</td>
<td>Yes ⁹</td>
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<td>Fessenden Street</td>
<td>Neighborhood Collector²</td>
<td>Transit Access Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Local Service Truck Street</td>
<td>Major Emergency Response</td>
<td>Local Street</td>
<td>2</td>
<td>12'</td>
<td>35</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lombard Street</td>
<td>Major City Traffic Street³</td>
<td>Transit Access Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Priority Truck Street</td>
<td>Major Emergency Response</td>
<td>Urban Road, Reg. Corridor &amp; Reg Main Street</td>
<td>2</td>
<td>11'-18' ¹⁰</td>
<td>20-35¹¹</td>
<td>Yes ⁶</td>
<td>No</td>
<td>Yes ⁹</td>
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<tr>
<td>Oregonian Avenue</td>
<td>Local Service Traffic Street</td>
<td>Local Service Transit Street</td>
<td>Local Service Bikeway</td>
<td>Local Service Walkway</td>
<td>Local Service Truck Street</td>
<td>Minor Emergency Response</td>
<td>Local Street</td>
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<td>11'</td>
<td>25</td>
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<td>Yes</td>
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<tr>
<td>St. Louis Avenue</td>
<td>Local Service Traffic Street</td>
<td>Transit Access Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Local Service Truck Street</td>
<td>Major Emergency Response</td>
<td>Local Street</td>
<td>2</td>
<td>12'</td>
<td>20/35¹²</td>
<td>Yes</td>
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<td>Yes</td>
</tr>
<tr>
<td>Burgard Street</td>
<td>Major City Traffic Street</td>
<td>Transit Access Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
<td>Priority Truck Street</td>
<td>Major Emergency Response</td>
<td>Urban Road</td>
<td>3¹³</td>
<td>12'</td>
<td>40</td>
<td>No</td>
<td>Yes¹</td>
<td>Yes</td>
</tr>
</tbody>
</table>

¹ Obtained from the Portland Transportation System Plan at www.portlandmaps.com
² South of Fessenden Street, Columbia Way is a Local Service Traffic Street.
³ Lombard Street is a District Collector east of Philadelphia Avenue and a Major City Traffic Street west of Philadelphia Avenue.
⁴ Bicycle lanes are provided only on the south side of Burgard Street within one half mile of the Burgard Street/Columbia Boulevard intersection.
⁵ Sidewalks provided on Columbia Way between Fessenden Street and Taft Avenue.
⁶ On-Street parking provided on north side of Columbia Way between Fessenden Street and Taft Avenue.
⁷ Shoulder bicycle lanes provided south of the Columbia Slough. North of the Columbia Slough a multi-use path is provided.
⁸ Sidewalks provided on both sides of Lombard Street only between Bruce Avenue and St. Louis Avenue. North of Bruce Avenue, sidewalks are provided on the west side of Lombard Street.
⁹ On Lombard Street, between St. Louis Avenue and St. Johns Avenue, travel lanes are 11' with 7' unstriped on-street parking lanes. North of St. Johns Avenue travel lanes are 19' with 12' unstriped on-street parking lanes.
¹⁰ Macrum Avenue is a 5-lane roadway with no on-street parking between Columbia Boulevard and Columbia Way, a 2-lane roadway with on-street parking north of Columbia Boulevard and south of Columbia Way.
¹¹ Columbia Boulevard is a 8-lane roadway, with a center dual-turning lane. Outer lanes are 14' wide; inside lanes and the center turn lane are 12' wide.
¹² Lombard Street is 30 MPH between St. Louis Avenue, and 35 MPH north of Reno Street. During school hours, the speed limit reduces to 20 MPH between St. Johns Avenue and Reno Street.
¹³ St. Louis Avenue is 20 MPH between Lombard Street and Kellogg Street, and 35 MPH east.
¹⁴ Intermittent sidewalks provided on the south side of Columbia Boulevard within the residential areas one-quarter mile east and west of the N. Portland Road intersection.
¹⁵ Four lanes provided one-half mile east of the Burgard Street/Columbia Boulevard intersection; otherwise, 2 westbound lanes and 1 eastbound lane.
The function of Columbia Way, Fessenden Street and St. Louis Avenue, on the other hand, is inconsistent with their TSP traffic classifications. These streets meet the street design classification for Local Streets; however, all three streets currently serve a large volume of auto and truck traffic from outside the area, which is inconsistent with their traffic designation as Neighborhood Collectors (Photos 3 and 4). The Fessenden Street/St. Louis Avenue route through the study area travels through primarily residential and neighborhood retail land uses with 12-foot wide travel lanes, on-street parking, sidewalks, bus stops, bicycle lanes, and a number of signalized and stop controlled intersections.

The N. Portland Road/Columbia Boulevard intersection is within a 1.5-mile walk of a middle school and a high school; and the area is not served by Portland School district buses. As a result of the schools and the presence of nearby medium density residential and neighborhood retail developments, there is potential for a significant amount of pedestrian activity on Columbia Way, Fessenden Street and other local streets. These streets currently provide adequate sidewalks and pedestrian warning, consistent with their TSP designation as City Walkways. An abundance of pedestrian and bicycle warning and way finding signage (shown in Photo 5) is also present on Fessenden Street.

**Photo 3. Columbia Way near Fessenden Street, looking north**

**Photo 4. Fessenden Street, looking east**

**Photo 5. Existing bicycle and pedestrian warning and way finding signage on Fessenden Street**

**Bicycle Facilities**
Continuous bicycle lanes are currently provided on Columbia Way, Fessenden Street and St. Louis Avenue. A bicycle lane is provided on the south side of Burgard Street within a half-mile of the Columbia Boulevard/Burgard Street intersection. Wide shoulder bicycle lanes are provided on N. Portland Road south of the Columbia Slough bridge; north of the bridge a multi-use path is provided on the east side of N. Portland Road. This route provides one of the few bicycle crossings of the Columbia Slough as well as direct access to the Columbia Slough and Marine Drive trails, which are both segments of the planned 40-Mile Loop Trail. These facilities are consistent with these streets’ classification as City Bikeways. Columbia Boulevard and Lombard Street currently do not provide bicycle facilities or signage, which is inconsistent with their classification as City Bikeways.

**Pedestrian Facilities**
Sidewalks are provided on most Local Streets and Neighborhood Collectors within the study area. The sidewalk system is limited and non-continuous on most of the Major City Traffic Streets and freight routes (i.e., N. Portland Road and Columbia Boulevard), which is inconsistent with these streets’ TSP designations as City Walkways. About 1,000 linear feet of sidewalk is missing on the west side of Lombard Street between Weyerhauser and Bruce avenues.
Transit Facilities
Bus transit currently serves the St. Johns neighborhood and industrial employment areas on Columbia Boulevard and Columbia Way, consistent with these streets’ classifications as Community Transit Streets. Fessenden Street, Lombard Street and St. Louis Avenue are also served by several bus routes, consistent with their classification as Transit Access Streets. N. Portland Road and Burgard Street are not currently served by any transit service, which is inconsistent with their TSP transit classifications.

TriMet currently operates four bus routes on the study corridors:
- Route 4 provides service from St. Louis Avenue/Lombard Street to Gresham via downtown Portland.
- Route 16 provides service from Rivergate to downtown Portland via Columbia Boulevard, Fessenden Street, and the St. Johns Bridge.
- Route 44 provides service from Pier Park to the PCC Sylvania Transit Center via Lombard Street and downtown Portland.
- Route 75 provides service from Pier Park to Milwaukie via Lombard Street and the Hollywood Transit Center.

Truck Routes
The industrial areas north of Columbia Boulevard and Burgard Street and west of Lombard Street are designated as Freight Districts. Columbia Boulevard, Burgard Street and Lombard Street are identified in the TSP as Priority Truck Streets and operate in accordance with this classification.

St. Louis Avenue (west of Lombard Street), Fessenden Street and Columbia Way are classified as Local Service Truck Streets. These streets are intended to provide local truck access and circulation only for goods and service delivery to individual locations outside of Freight Districts. The current non-local truck traffic through the St. Johns neighborhood on these streets is inconsistent with their current TSP classification.

As shown in Photo 6, there are currently many local cross streets on Columbia Boulevard and Fessenden Street that feature “No Truck” advisory signs to discourage cut through freight traffic; however, there is limited wayfinding signage that directs southbound trucks on N. Portland Road to the designated freight route on Columbia Boulevard.

Photo 6. Existing “No Trucks” signs on local streets Columbia Blvd and N. Van Hutten Ave, facing south

Summary of Existing Transportation Facilities
Table 5.2 summarizes whether or not the existing design and function of roadways in the study area are consistent with each of their TSP functional classifications. In most cases, the roadway functions and activity levels are consistent with their intended functional classification; however, several roadways do not provide the facilities needed to comply with their classification (e.g., missing sidewalks on Columbia Blvd), while other roadways attract traffic volumes that exceed their intended design (e.g., high through traffic volume on St. Louis Avenue).

Existing Conditions Transportation Analyses
The existing conditions traffic volumes and operations analysis describes the amount of traffic in the study area and how well the existing transportation facilities serve demand. Existing trips in the area are a combination of local traffic, through traffic, and traffic entering or leaving the area for work trips and other purposes. Industrial activities generate employee
Table 5.2 Existing Roadway Classification, Function, and Design

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Traffic</th>
<th>Transit</th>
<th>Bicycle</th>
<th>Pedestrian</th>
<th>Freight</th>
<th>Street Design</th>
<th>Emergency Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columbia Boulevard</td>
<td>Yes</td>
<td>Yes</td>
<td>No⁴</td>
<td>No⁵</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N Portland Road</td>
<td>Yes</td>
<td>No²</td>
<td>Yes</td>
<td>No⁴</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>(and ramps)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columbia Way</td>
<td>No¹</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No⁵</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fessenden Street</td>
<td>No¹</td>
<td>Yes</td>
<td>Yes</td>
<td>No⁵</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lombard Street</td>
<td>Yes</td>
<td>Yes</td>
<td>No¹</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>St. Louis Avenue</td>
<td>No¹</td>
<td>Yes</td>
<td>Yes</td>
<td>No⁵</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Burgard Street</td>
<td>Yes</td>
<td>No²</td>
<td>Yes</td>
<td>No⁴</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note:
¹ High volumes of traffic from outside the neighborhood and truck volumes are inconsistent with Neighborhood Collector classification.
² No transit provided, inconsistent with Community Transit Street and Transit Access Street classification.
³ No bicycle facilities or signage provided, inconsistent with City Bikeway classification.
⁴ Limited, non-continuous sidewalks provided, inconsistent with City Walkway classification.
⁵ High non-local truck traffic volumes are inconsistent with Local Service Truck Street classification.

Traffic volumes are highest between 3pm and 4pm on Columbia Boulevard (predominantly eastbound traffic). On all other study area roadways, volumes are highest between 4pm and 5pm. The highest hourly morning volumes occur between 6am and 7am on Columbia Boulevard (predominantly westbound traffic). On all other study area roadways, morning volumes are highest between 7am and 8am. (See Appendix F for traffic volumes recorded.)

Existing Daily and Hourly Traffic Volumes
Columbia Boulevard currently has the highest average daily volume, serving approximately 14,200 to 15,300 vehicles (both east and west directions) per day. N. Portland Road serves the second highest volume—over 12,100 vehicles/day (north and south directions)—followed by Fessenden Street, which serves approximately 11,500 vehicles/day (both directions). Columbia Way serves approximately 11,000 total daily vehicles, 20% of which use the northbound ramp to access Columbia Boulevard. These volumes are consistent with each roadway’s traffic classification in the TSP, with the possible exception of Fessenden Street and Columbia Way, which serve relatively large volumes of non-local traffic for Neighborhood Collectors.

Existing Conditions Level of Service and Operations
All of the study area intersections currently operate at acceptable levels of service and below capacity during the weekday am and pm peak hours, except for the Columbia Way/Macrum Avenue intersection (see Appendix F for level of service worksheets). At that location, the southbound left turning movements currently operate at level of service “E” during the pm peak hour.

Origin-Destination Study of Existing Conditions Vehicular Travel
One of the conclusions reached in the St. Johns...
Truck Strategy was that there is a relatively high volume of through truck movements occurring on neighborhood streets. In order to better understand travel behavior and the distribution of trips through the study area, an origin-destination study was conducted on the Fessenden Street/St. Louis Avenue corridor in April 2011.

During the afternoon peak period (4:00 pm to 6:00 pm), 1,270 westbound vehicles were observed on the Fessenden Street/St. Louis Avenue corridor. Of these vehicles:

- 37% (469 vehicles) made inbound trips to local destinations
- 35% (445 vehicles) made outbound trips from local origins
- 27% (339 vehicles) made trips through the area without stopping at a local destination
- 1% (17 vehicles) made stop-by trips (stopped at a local destination on their trip through the area)

Of particular note:
- 55% of vehicles entering the corridor from southbound Columbia Way made through trips
- 19% of vehicles entering the corridor from westbound Fessenden Street (east of Columbia Way) made through trips

Existing Conditions Vehicle Classification

A vehicle classification study was also conducted to evaluate heavy vehicle travel trends in the area and to estimate the percentage of trucks using the Fessenden Street/St. Louis Avenue corridor as a through route between N. Portland Road and the St. Johns Bridge. In April 2011, the classification of all vehicles traveling on Fessenden Street (between Alma Avenue and Midway Avenue) was recorded over a 24-hour period. Figure 5.3 summarizes the results of the vehicle classification study.

![Figure 5.3 Fessenden Street Vehicle Classification Study Results](image)
Over a 24-hour period, 11,517 vehicles were observed on Fessenden Street. Of these vehicles, the majority (62%) were passenger cars. Approximately 20% of traffic (2,249 vehicles) was classified as Class 3 or “light trucks,” a category which includes a range of small trucks from personal pickup trucks and vans to small commercial vehicles (e.g., commercial vans, local delivery vehicles).

Medium and large commercial trucks comprised 9% of traffic (965 vehicles) on Fessenden Street, with 7% of the traffic volume (717 vehicles) being “single-unit” trucks such as dump trucks or UPS/FedEx vehicles. Semi-trailers and other double-unit trucks comprised 2% of all traffic (248 vehicles) on Fessenden Street. Vehicle classification trends were not significantly different for eastbound and westbound traffic.

To provide context, trucks represent between 4% and 9% of all traffic on other North Portland district collector streets (see Table 5.4).

<table>
<thead>
<tr>
<th>Neighborhood Collector Streets</th>
<th>% Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver Avenue (north of Dekum Street)</td>
<td>4.2%</td>
</tr>
<tr>
<td>Denver Avenue (north of Killingsworth)</td>
<td>3.8%</td>
</tr>
<tr>
<td>Rosa Parks Way (between Greeley &amp; Denver)</td>
<td>6.7%</td>
</tr>
<tr>
<td>Fessenden Street (between Alma &amp; Midway)</td>
<td>8.2%</td>
</tr>
<tr>
<td>Killingsworth Street (between Greeley &amp; Denver)</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

**Table 5.3 Truck Traffic Percentage on No Portland District Collector Streets**

**Existing Conditions Travel Time - “Around-the-Horn” and Neighborhood Street Routes**

One of the key factors contributing to cut-through traffic in the study area is the faster travel time from N. Portland Road to the St. Johns Bridge via the Fessenden Street/St. Louis Avenue route compared to the “around the horn” route. The distance from N. Portland Road to the St. Johns Bridge is approximately 3.9 miles via the “around the horn” route. This route includes seven signalized intersections and the street cross section narrows significantly on Lombard Street south of St. Johns Avenue where there is an “S”-curve in the road and lane widths decrease from 18 feet wide to 11 feet wide.

The distance from N. Portland Road to the St. Johns Bridge via the Columbia Way/Fessenden Street/St. Louis Avenue route is approximately 1.7 miles. Vehicles on this route travel through four signalized intersections and a flashing yellow light. The street cross section changes very little along this route, though traffic appears to slow between the Burr Avenue/Fessenden Street and Columbia Way/Fessenden Street traffic signals (this area is also near a park and school and contains multiple pedestrian and playground warning signs).

Figure 5.4 displays the routes and the average travel time on each route during the afternoon peak period (4pm to 6p.m.). As shown, the travel time from the N. Portland Road/Columbia Boulevard intersection to the St. Louis Avenue/Lombard Street intersection is approximately two minutes shorter via the Fessenden Street/St. Louis route than the “around the horn” route. Eastbound travel times on both routes were shorter than westbound travel times, primarily due to prevailing travel patterns during the afternoon peak period.

**Existing Conditions Vehicle Speeds**

Figure 5.5 presents existing speed profiles for Fessenden Street between Alma Avenue and Midway Avenue. In this area, the posted speed limit is 35 miles per hour. Only 14% of vehicles were observed to exceed the speed limit at this location and the 85th percentile speed was 34 miles per hour. The majority of drivers at this location drive 25 to 35 miles per hour.
Figure 5.4 Travel Time Study Routes

Travel Time Study Routes
- Eastbound “Around the Horn” (Average travel time = 6:12)
- Eastbound Fessenden (Average travel time = 4:06)
- Westbound “Around the Horn” (Average travel time = 7:11)
- Westbound Fessenden (Average travel time = 4:52)
Eastbound traffic travels at slightly higher speeds than westbound traffic but still generally complies with the posted speed.

**Existing Conditions Safety Analysis**

Between 2005 and 2009, 63 crashes were reported at the study area intersections. Approximately a third of these crashes resulted in injuries. The largest absolute number of crashes and crashes per million entering vehicles occurred at the St. Louis Avenue/Lombard Street intersection. Nearly half of crashes at study area intersections involved turning vehicles.

A preliminary review of the 2005 to 2009 roadway segment crash data was also completed for the “around the horn” and Fessenden Street/St. Louis Avenue routes. Three fatal crashes were identified on Columbia Boulevard during this review; one of which involved a passenger vehicle striking a fixed object at the N. Portland Road/Columbia Boulevard interchange, and two fatal crashes occurred near the intersection of Columbia Boulevard and Swift Court. One involved a pedestrian who was killed by a passenger vehicle; the other involved a passenger who was killed in a three-car sideswipe collision.

**Future Conditions**

The future conditions analysis identifies how the study area’s transportation system will operate in the year 2035 without any improvements to the study area roadways and intersections (under the “no-build” scenario). This scenario assumes that existing through freight traffic will continue and grow at the same rate as other traffic in the area.

**Year 2035 Traffic Volumes and Operations**

Based on a review of existing traffic volumes and City of Portland model 2029 traffic forecasts for the study area, 2035 traffic volumes were developed through the application of a one percent annual growth rate to account for regional growth.4

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4 Portland travel demand model.
In the year 2035 all of the study area intersections are expected to continue to operate at acceptable levels of service and below capacity during the weekday PM peak hours, except for the Columbia Way/Macrum Avenue intersection. At this location, the southbound through and left turning movements will operate at level of service “F” during the PM peak hour. (Appendix H provides the Future Traffic Conditions Analysis/level of service worksheets under year 2035 traffic conditions.)

These results indicate that the future no-build scenario traffic in the area is not expected to grow enough by 2035 to create any new bottlenecks or locations with high levels of congestion in the Fessenden Street/St. Louis Avenue corridor during the afternoon peak period. As a result, it is likely that in the year 2035 the travel time from the N. Portland Road/Columbia Boulevard intersection to the St. Johns Bridge will continue to be shorter via the Fessenden Street/St. Louis Avenue corridor than the “around the horn” route. Trucks will likely continue to travel through the neighborhood as opposed to using the designated freight route due to this time savings.

The number of southbound vehicles turning west onto Fessenden Street from Columbia Way is expected to increase by approximately 800 vehicles/day between 2011 and 2035, while the number of southbound vehicles turning west onto Columbia Boulevard from the N. Portland Road ramp is expected to increase by approximately 150 vehicles/day. The City of Portland forecast model does not differentiate between automobile and truck traffic, however, it is anticipated that the volume of trucks traveling through the neighborhood will increase with overall growth in freight demand; i.e., 2.5% annual growth in truck tonnage at the Port of Portland\(^5\). As a result, design and or operational changes will likely be required at the N. Portland Road/Columbia Boulevard intersection or on the Fessenden Street/St. Louis Avenue corridor to encourage trucks to use the designated “around the horn” freight route.

**Key Transportation Analysis Findings**

In summary, the transportation analyses completed for the project confirmed many of the issues identified in the *St. Johns Truck Strategy* as well as comments received from members of the Stakeholder Advisory Committee, Technical Advisory Committee, and the general public. With respect to traffic operations and accident history, no significant issues have been found, however, conditions on some of the study area roadways are inconsistent with their functional classification designations for the amount of through traffic utilizing some roadways, the geometric conditions of some roadways, difficulty for pedestrians crossing streets, and to a lesser extent, resulting vehicular speed.

The key transportation analysis findings which respond to the project’s purpose are:

- There is a larger percentage of medium and large truck traffic on Fessenden Street/St. Louis Avenue. Daily truck traffic on Fessenden Street west of Alma Avenue makes up approximately 9% of all traffic volume (or 1,033 trucks/day), and truck traffic is as high as 16% (or 1,481 trucks/day) on St. Louis Avenue west of Central Street.

- More than a quarter of westbound afternoon peak traffic on Fessenden Street/St. Louis Avenue is non-local through traffic. Through traffic from Columbia Way southbound to the St. Johns Bridge was estimated to be as high as 55% of all vehicular trips. (Based on the available data it is not possible to determine the percentage of non-local traffic that is large trucks.)

- The travel time for the “around the horn” route from the N. Portland Road/Columbia Boulevard intersection to the Lombard Street/St. Louis Avenue intersection is approximately two minutes longer than the Fessenden Street/St. Louis Avenue route.

- The 85th percentile speed for vehicles on Fessenden Street between Alma and Midway

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avenues in the PM peak hour is 34 MPH (i.e., less than the posted 35 MPH speed limit), however, over 14% of vehicles were observed traveling over the posted speed limit.

- Fessenden Street/St. Louis Avenue serves approximately 11,500 VPD. As a result of high traffic volumes and vehicle speeds, it is often difficult for pedestrians to find adequate gaps in traffic to cross Fessenden Street and St. Louis Avenue.
6. Opportunities and Constraints

Before developing improvements to the issues and conditions identified by advisory committees and the community at large or through technical analyses (as described in Sections 4 and 5), it is important to establish a framework for their development beginning with the “constraints” which may govern any solution, and the “opportunities” which both avoid the constraints and may potentially be viable elements of any solution.

The Opportunities and Constraints analysis defines the kinds of improvements which can be considered, and the set of tools that can be utilized to achieve the project goals and objectives. Prior planning and policy guidance informed the project’s opportunities and constraints, and with the updated traffic analysis and ongoing discussions with the project’s SAC, TAC, other stakeholders, and the general public, a clearer definition for how to design the improvements implied in the St. Johns Truck Strategy objectives emerged.

“Constraints”
The data and input that has been collected has identified a number of constraints to study area improvements, such as:

- While seeking to decrease the number of through trucks using Fessenden Street/St. Louis Avenue, access for large emergency vehicles (e.g., fire trucks), buses, and trucks making local deliveries must be maintained.
- While speed bumps are utilized throughout the City as a means of slowing vehicular traffic speeds, they are discouraged on emergency service vehicle routes\(^\text{6}\).
- While Lombard Street is designated as a Priority Truck Street it does host residential, commercial, and recreational land uses, which require safe pedestrian crossings.
- Since the Fessenden Street/St. Louis Avenue route is half the length of the ‘around-the-horn’ freight route, through truck traffic will use it unless travel speeds can be decreased.
- The Fessenden Street/St. Louis Avenue corridor is a desirable short cut for motorists travelling between I-5 and western Multnomah County and Washington County.
- The ‘S’ curve in the Fessenden Street/St. Louis Avenue corridor results in potential sight distance issues for motorists, pedestrians and bicyclists.
- There are multiple origins and destinations on either side of the Fessenden Street/St. Louis Avenue corridor generating pedestrian crossings at multiple locations.
- Funding limitations.

“Opportunities”
The St. Johns Truck Strategy, as well as improvement projects utilized elsewhere in the City, provides a variety of tools that could be used to achieve the project goals and objectives. For example:

- Redesign of the N. Portland Road/Columbia Boulevard intersection could include, but not necessarily be limited to:
  - Realignment of travel lanes emphasizing the connection between Columbia Boulevard and N. Portland Road for trucks and/or specifically discouraging trucks from using Columbia Way.
  - New signal and/or signing, emphasizing the connection between N. Portland Road and Columbia Boulevard for trucks and specifically discouraging trucks from using Columbia Way.
- New sidewalks and curbs.
- New medians channeling traffic in the appropriate directions.
- Traffic calming for Fessenden Street/St. Louis Avenue could include, but not be limited to: lane restriping; curb extensions; pedestrian refuges, and median islands.
- The right-turn lane from Columbia Way southbound to Fessenden Street

\(^\text{6}\) A test of a “fire (truck) friendly” speed bump is currently underway and may result in a device that can work on emergency service vehicle routes.
westbound should be removed, reducing the incentives for trucks to travel this way.

- Re-alignment of Lombard Street right-of-way between St. Johns Avenue and St. Louis Avenue
  - Shift roadway north and east of existing roadway fronting existing structures.

The St. Johns/Lombard Plan recommends the following tools:

- Signage to control trucks near Reno Avenue/Lombard Street pedestrian crossing.
- Special surface treatments and signage to direct freight traffic to appropriate routes.

Additional tools include:

- Reconstructing the intersection ramp from Columbia Boulevard at N. Portland Road to improve heavy truck ingress and egress movements.
- Installing traffic islands on N. Portland Road to encourage southbound traffic to use Columbia Boulevard rather than continue onto Columbia Way and to prevent truck traffic from making right turns onto N. Portland Road from the Columbia Boulevard egress ramp.
- Constructing a new on-grade ramp to connect eastbound Columbia Boulevard to N. Portland Road via Columbia Way.
- Developing low-cost operational improvements such as traffic signalization, signage or one-way directional movement on Columbia Way.
- Installing curb extensions, speed humps/bumps, chicanes, reducing speed limits and travel lane widths, crossing improvements along the Columbia Way-Fessenden Street-St. Louis Avenue corridor.
- Restriping Lombard Street to provide 12.0 foot travel lanes, and remove parking from one side of street between St. Johns Avenue and St. Louis Avenue.
- Install missing sidewalks on Lombard Street and upgrade pedestrian signal at Lombard Street and Reno Avenue.

“Brainstorming” Solutions

To advance the discussion of the findings and considerations described above, three “brainstorming” sessions were held in November and December 2011 with the TAC and the SAC, which resulted in the development of 47 improvement concepts. Many of these preliminary solutions and ideas have been tested and implemented by PBOT in other parts of the City. The intent of these brainstorming sessions was to simply generate ideas about how to directly meet the St. Johns Truck Strategy objectives and remedy the transportation and livability problems identified without rejecting them because of perceived negative issues. The 47 preliminary solutions and ideas are presented in Appendix J and are organized by geographic area:

- N. Portland Road/Columbia Boulevard intersection
- Columbia Way between Columbia Boulevard and Fessenden Street
- Fessenden Street/St. Louis Avenue corridor
- Lombard Street between St. Louis Avenue and Reno Avenue

Table 6.1 summarizes the opportunities associated with improvements that were developed during “brainstorming” sessions with the project team and TAC members, and later reviewed with the SAC and the general public. The table lists the roadways and intersections requiring further attention, opportunities at those locations, and the types of tools that could be used in the creative problem solving process. Note that the tools are limited to transportation engineering design and operations treatments.
<table>
<thead>
<tr>
<th>Locations</th>
<th>Identified Opportunity</th>
<th>“Brainstorming” Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Portland Road/ Columbia Boulevard Intersection Area</td>
<td>I. Could discourage southbound through trucks at this north gateway into the neighborhood. II. Could encourage through trucks to use the “around the horn” route through reduced impediments to travel time.</td>
<td>• More prominent “No Through Truck” signage • Eliminate all SB movements on Portland Road; force Portland Rd SB through movement to ramp to Columbia • Modify the green time allocated to the turning movements. Modify intersection control to support intersection redesign. Intersection redesign to simplify certain turning moves and deemphasize others. Roundabout at intersection with lane configurations that make it difficult for trucks to proceed SB on Portland Road • Signal timing changes which lengthen phase for Portland Road SB • Create a “gateway” design at the intersection with landscaping, art work, etc., indicating that ‘you’re entering a neighborhood/different kind of environment’ • Create an elevated single point interchange to improve movements between Portland Rd and Columbia Blvd; and eliminate ramp between Portland Rd and Columbia Blvd • PBOT concept – to come</td>
</tr>
<tr>
<td>Columbia Way/ Fessenden/ Gilbert/Oregonian Intersection Area</td>
<td>I. Could discourage southbound through trucks at this entry to the neighborhood. II. Could encourage through trucks to use the “around the horn” route through reduced impediments to travel time. III. Could improve safety and convenience of pedestrian and bicycle movements</td>
<td>• Convert Columbia Way SB right turn lane to a combined through/ right turn lane, which will slow travel time for vehicles accessing Fessenden WB • Convert Columbia Way SB curb side bicycle lane to a raised “Cycle Track” which will slow the speed of right-turning vehicles onto Fessenden • Provide traffic calming measures similar to those on Smith Street • Replicate special pavers in westside crosswalk to all other intersection crosswalks to reinforce pedestrian crossing safety and indicate to motorists they’re entering a different kind of environment</td>
</tr>
<tr>
<td>“Around the Horn” Route</td>
<td>I. Could encourage through truck travel through reduced travel time impediments. II. Could encourage through trucks by making access to “around the horn” more intuitive and convenient at the two key intersections (i.e. at the point of decision/choice)</td>
<td>• PBOT concept for MTIP funding • Intersection redesign for larger vehicles. Widen lanes and shoulders. Manage access to/from private property. • Modify the green time allocated to the turning movements. Intelligent Transportation System features that favor freight movement • Modify centerlines, edge-lines and lane lines to accommodate large vehicles; improve sight distances, vehicle clearances, and operating speeds. • Enhanced guide signing</td>
</tr>
<tr>
<td>Fessenden Street/St. Louis Avenue</td>
<td>I. If corridor was more “neighborhood friendly”, could discourage through truck traffic II. Pedestrian safety issues associated with transit riders crossing to access TriMet bus stops in the morning III. Need improved lighting for pedestrian crossings/safety IV. Could reduce relatively high travel speeds (reduce speeds to 25 MPH on residential streets)</td>
<td>• Traffic calming including roadway narrowing, curb extensions, median islands, speed humps). Sidewalk amenities (including street trees and furniture). Enhanced street lighting. Stormwater management features. Manage access to/from private property • Narrow street through capital construction (staggered through corridor) ➢ Widen sidewalks ➢ Construct landscaped median islands ➢ Construct series of medians ➢ Construct curb extensions that improve storm drainage</td>
</tr>
<tr>
<td>Locations</td>
<td>Identified Opportunity</td>
<td>“Brainstorming” Concepts</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------</td>
<td>-------------------------</td>
</tr>
</tbody>
</table>
| V.        | Could improve pedestrian crossing opportunities | ➢ Introduce traffic signals  
➢ Introduce speed bumps  
• Narrow street through signing and striping (staggered or not through corridor)  
  ➢ Narrow travel lanes to 10’ or 11’  
  ➢ Stripe a wider bicycle lane  
  ➢ Introduce 4-way STOP signs  
  ➢ Construct landscaped median islands  
  ➢ Construct series of medians  
• Provide new crosswalks to and from bus stops w/corresponding signage/traffic controls at:  
  ➢ Columbia Way  
  ➢ Midway Avenue (direct connection to pedestrian overpass on Columbia Blvd)  
  ➢ Burr Avenue/Calhoun Avenue (adjacent to George Park)  
  ➢ Charleston Avenue (with traffic controls, can improve crossing at blind curve)  
  ➢ Pier Park Place (direct access to Pier Park)  
  ➢ Central Avenue (connection to Greenway)  
• Modify the green time allocated to the turning movements. Intersection crosswalk surface treatments. Intersection signalization. Pedestrian signals upgraded to "countdown" signals  
• Enhanced guide signing, warning signing and regulatory signing. Enhanced on-street parking to improve sight distances and increase parking availability |
| VI.       | Could address “blind curve” | ➢ Monitor PBOT signal/signage improvement being installed  
➢ If desirable, potential refinements could include: signal timing modifications; striping/channelization changes; and different signage  
➢ Provide new crosswalks on Lombard w/corresponding signage/traffic controls at:  
  ➢ Lombard Street/Jersey Street /St. Louis Avenue intersection  
  ➢ Reno Avenue to improve pedestrian crossings to school  
  ➢ St. Johns Avenue  
  ➢ Additional locations that may surface at the open house  
• Stripe parking spaces better to reinforce definition of roadway  
• Introduce striped bike lanes to better define roadway and to provide connections to area bikeways |
| VII.      | Could consider traffic calming measures | | |
| VIII.     | Could provide “beautification” elements as part of mitigation. | | |
| IX.       | Could consider BES bio-swales to reduce width of street | | |
| X.        | Could reduce/eliminate bicycle/pedestrian conflicts | | |

**Lombard Street**

I. Could discourage northbound through trucks at this south gateway into the neighborhood.  
II. Could improve sight distance issues  
III. Could reduce relatively high speeds (reduce speeds to 25mph on residential streets)  
IV. Could make the speeds more uniform to reduce the noise of braking/down-shifting and accelerating/up-shifting  
V. Could improve pedestrian crossing opportunities

• Monitor PBOT signal/signage improvement being installed  
• If desirable, potential refinements could include: signal timing modifications; striping/channelization changes; and different signage  
• Provide new crosswalks on Lombard w/corresponding signage/traffic controls at:  
  ➢ Lombard Street/Jersey Street /St. Louis Avenue intersection  
  ➢ Reno Avenue to improve pedestrian crossings to school  
  ➢ St. Johns Avenue  
  ➢ Additional locations that may surface at the open house  
• Stripe parking spaces better to reinforce definition of roadway  
• Introduce striped bike lanes to better define roadway and to provide connections to area bikeways
7. Evaluation of Potential Solutions and Ideas

The project team completed a five-stage screening assessment of the 47 potential solutions and ideas. As the assessment progressed, the team modified criteria and scorings, and collected field information and information about best practices from PBOT staff in order to prepare a valid and complete screening of those solutions and ideas. The screening process and corresponding criteria are illustrated in Table 7.1. In summary:

- Stage 1, the solutions and ideas were reviewed for any fatal flaws. Those with fatal flaws were dropped from further evaluation.
- Stage 2, the solutions and ideas were evaluated for how well they met the St. Johns Truck Strategy objectives. They were ranked on a scale from 0 to 5, with 0 indicating the solution/idea did a poor job of meeting objectives, while a 5 meant the solution/idea did an excellent job of meeting objectives.
- Stage 3 focuses on whether or not the solution/idea meets adopted PBOT Design Guidelines. Those that do not meet those guidelines were not always rejected because in some instances, exceptions could be granted or guidelines waived.
- Stage 4 includes assessments of whether or not the solution or idea can be implemented in a phased manner, or would need to be constructed as a single project.
- Stage 5 describes the estimated capital cost of the project (Low, Medium, and High), and whether the solution or idea would require special and/or costly maintenance.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Process/Criteria</th>
</tr>
</thead>
</table>
| Stage 1 - Fatal Flaw Assessment | Eliminate ideas that are fatally flawed because:  
- It creates a safety conflict(s)  
- It creates significantly congested condition(s)  
- It significantly impacts function of TSP classifications  
- Adversely impacts NN and/or NHS designation  
- It creates significant adverse impacts to emergency services  
- Results in complete loss of property access  
- Has a capital cost +$10M |
| Stage 2 – Meet St. Johns Truck Strategy Objectives | Eliminate ideas that do not meet SJTS objectives or objectives established by TAC, SAC and public:  
- Eliminate through truck traffic on Columbia Way, Fessenden Street, St. Louis Avenue  
- Reduce speeds on Columbia Way, Fessenden Street, St. Louis Avenue  
- Directs through truck traffic to designated through truck routes  
- Improves pedestrian access and safety on Columbia Way, Fessenden Street, St. Louis Avenue |
| Stage 3 – Meet Other Objectives | (Possibly) Downgrade ideas that do not meet other PBOT objectives  
- Minimal traffic diversion to adjacent local streets  
- Minimal impact to existing on-street parking supply  
- Requires significant new ROW  
- Improves bicycle access and safety  
- Improves conditions in blind curve  
- Improves street aesthetics on Columbia Way, Fessenden Street, St. Louis Avenue |
| Stage 4 – Can Idea be Phased? | For consideration in Recommendations development |
| Stage 5 – Capital and Maintenance Costs | For consideration in Recommendations development.  
Capital Costs - Low (under $500,000), Medium (bet. $500,000 -$2,000,000), High (over $2,000,000)  
Maintenance Costs - Requires additional and/or special maintenance |
7.1 Screening of Preliminary Solutions and Ideas
Using the screening criteria and process described in the previous sections, the project team completed an assessment which they reviewed with the TAC. The findings of the updated analyses are presented for each of the five geographic areas below.

N. Portland Road/Columbia Boulevard Intersection
The relevant St. Johns Struck Strategy and other objectives at this location are to reduce through truck traffic and traffic speeds, and to improve pedestrian safety and crossings. The N. Portland Road, Columbia Way and Columbia Boulevard intersection is functionally a gateway to the St. Johns neighborhood and the decision point for through truck traffic to use the ‘around the horn’ route or continue south through the neighborhood to their final destination. This intersection is deficient with respect to pedestrian facilities. There are no sidewalks, crosswalks or pedestrian signal equipment. Outside of a few directional signs (described later) there is no perceptible indication to southbound traffic that continuing straight is recommended for local traffic only. The ‘decision point’ and ‘gateway’ considerations are two reasons for attempting to address the problem at this location.

Eleven preliminary solutions and ideas were developed for this location (see Table 7.2), each of which were screened for their feasibility, ability to meet the study objectives, design guidelines, cost, and evaluated against other criteria of the screening process.

Table 7.2 N. Portland Road/Columbia Boulevard Intersection Screening Analysis Findings

<table>
<thead>
<tr>
<th>Ability to</th>
<th>Fatal Flaws</th>
<th>Meet SJTS Objectives</th>
<th>Meet Design Guidelines</th>
<th>Be Phased</th>
<th>Cost (L, M, H)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Wayfinding Signage</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Some recently constructed.</td>
</tr>
<tr>
<td>A2 Signal Timing</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Can result in delays for southbound traffic</td>
</tr>
<tr>
<td>A3 Enhance Markings</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Can improve pedestrian safety</td>
</tr>
<tr>
<td>A4 T-intersection</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>May eliminate access to Green Transfer.</td>
</tr>
<tr>
<td>A5 Realign intersection</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Medium</td>
<td>Can reduce speeds and enhance safety.</td>
</tr>
<tr>
<td>A6 Southbound Yield</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>May eliminate access to Green Transfer.</td>
</tr>
<tr>
<td>A7 Roundabout</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>May eliminate access to Green Transfer.</td>
</tr>
<tr>
<td>A8 Elevated Intersection</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Over $10.0m.</td>
</tr>
<tr>
<td>A9 Flyover interchange</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Over $10.0m.</td>
</tr>
<tr>
<td>A10 Southbound Barrier</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cuts off access by emergency service vehicles, buses and local truck deliveries</td>
</tr>
<tr>
<td>A11 Partial interchange</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Over $10.0m.</td>
</tr>
</tbody>
</table>

Legend: Because these improvements were found to be fatally flawed – see Notes column – they were eliminated from further consideration.
Columbia Way between Columbia Boulevard and Fessenden Street

The relevant *St. Johns Truck Strategy* and other objectives at this location are to reduce through truck traffic and traffic speeds. Two preliminary solutions and ideas were developed and evaluated for this location (see Table 7.3).

**Table 7.3 Columbia Way between Columbia Boulevard and Fessenden Street Screening Analysis Findings**

<table>
<thead>
<tr>
<th>Ability to</th>
<th>Fatal Flaws</th>
<th>Meet SJTS Objectives</th>
<th>Meet Design Guidelines</th>
<th>Be Phased</th>
<th>Cost (L, M, H)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>Median (Markings)&lt;sup&gt;7&lt;/sup&gt;</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B1.5</td>
<td>Median (Raised)&lt;sup&gt;8&lt;/sup&gt;</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
</tbody>
</table>

Columbia Way and Fessenden Street Intersection

The relevant *St. Johns Truck Strategy* and other objectives at this location are to reduce through truck traffic and traffic speeds, and to improve pedestrian safety and crossings. Seven preliminary solutions and ideas were developed and evaluated for this location (see Table 7.4).

**Table 7.4 Columbia Way and Fessenden Street Intersection Screening Analysis Findings**

<table>
<thead>
<tr>
<th>Ability to</th>
<th>Fatal Flaws</th>
<th>Meet SJTS Objectives</th>
<th>Meet Design Guidelines</th>
<th>Be Phased</th>
<th>Cost (L, M, H)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2</td>
<td>Enhance Current Markings</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B3</td>
<td>Bike Box</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B4</td>
<td>Cycle Track</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B5</td>
<td>Shared southbound Right turn/Through Lane</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B6</td>
<td>Signal Timing</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B7</td>
<td>Close Oregonian Avenue Leg</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
<tr>
<td>B8</td>
<td>Hybrid</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
</tr>
</tbody>
</table>

<sup>7</sup> That is, a striped flush median with paint or a striped flush median with paint *and* raised concrete channelizing islands at select intersections and/ or pedestrian refuge islands at select mid block locations

<sup>8</sup> That is, a raised continuous landscaped median with possible artwork, mid block crosswalks and openings with left turn channelization only at the major public intersection (i.e., Macrum Avenue).
Fessenden Street/St. Louis Avenue Corridor

The relevant *St. Johns Truck Strategy* and other objectives at this location are to reduce through truck traffic and traffic speeds, and to improve pedestrian safety and crossings. Sixteen preliminary solutions and ideas were developed and evaluated for this location (see Table 7.5).

**Table 7.5 Fessenden Street/St. Louis Avenue Corridor Screening Analysis Findings**

<table>
<thead>
<tr>
<th></th>
<th>Ability to</th>
<th>Fatal Flaws</th>
<th>Meet SJTS Objectives</th>
<th>Meet Design Guidelines</th>
<th>Be Phased</th>
<th>Cost (L, M, H)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1-C2</td>
<td>Narrow Travel Lanes</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Except in the curve that connects St. Louis Avenue and Fessenden Street.</td>
</tr>
<tr>
<td>C3-C4</td>
<td>Reduce speed limit to 25 MPH</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>If accompanied by project features.</td>
</tr>
<tr>
<td>C5-C6</td>
<td>Curb Extensions</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Requires site specific application of design standards.</td>
</tr>
<tr>
<td>C7-C9</td>
<td>Pedestrian Median Islands</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Requires site specific application of design standards.</td>
</tr>
<tr>
<td>C10</td>
<td>Street trees/Art in Median</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Art must be approved.</td>
</tr>
<tr>
<td>C11</td>
<td>Neighborhood Street Art</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Independent art that colors the street pavement is prohibited.</td>
</tr>
<tr>
<td>C12</td>
<td>Partner with Trucking Industry</td>
<td>None</td>
<td>Yes</td>
<td>NA</td>
<td>Yes</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>C13</td>
<td>Regular Speed Enforcement</td>
<td>None</td>
<td>NA</td>
<td>NA</td>
<td>Yes</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>C13A</td>
<td>Regular Enforcement of Truck Street Designation</td>
<td>None</td>
<td>NA</td>
<td>NA</td>
<td>Yes</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>C14</td>
<td>Radar Speed Reader Boards</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>No design guidelines; each installation must be approved.</td>
</tr>
<tr>
<td>C15</td>
<td>Intersection Medians</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Requires site specific application of design standards.</td>
</tr>
<tr>
<td>C16</td>
<td>Rectangular Rapid Flashing Beacons</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>
Lombard Street Corridor

The relevant St. Johns Truck Strategy and other objectives at this location are to preserve and enhance the ability for Lombard Street to accommodate through truck traffic, to enhance safety, and to improve pedestrian safety and crossings. Eleven preliminary solutions and ideas were developed and evaluated for this location (see Table 7.6).

### Table 7.6 Lombard Street Corridor Screening Analysis Findings

<table>
<thead>
<tr>
<th></th>
<th>Ability to</th>
<th>Fatal Flaws</th>
<th>Meet SJTS Objectives</th>
<th>Meet Design Guidelines</th>
<th>Be Phased</th>
<th>Cost (L, M, H)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Restriping bet. Bruce Ave and Pier Park</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Related to SAC request</td>
</tr>
<tr>
<td>D2</td>
<td>Construct sidewalk at Reno Ave bus stop</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Medium</td>
<td>Related to SAC request</td>
</tr>
<tr>
<td>D3</td>
<td>Construct missing sidewalk near Crown and Seal site</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Related to SAC request</td>
</tr>
<tr>
<td>D4</td>
<td>Add bicycle route guide signage</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Reinforce use of existing parallel bicycle route</td>
</tr>
<tr>
<td>D5</td>
<td>Upgrade pedestrian signal at Reno Ave</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Related to SAC request</td>
</tr>
<tr>
<td>D6</td>
<td>Prohibit on-street parking at Reno Avenue bus stops</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>D7</td>
<td>Realign Lombard St/St. Johns Ave/ Jersey St intersection</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Medium</td>
<td>Improves navigability of truck route, and pedestrian safety</td>
</tr>
<tr>
<td>D8</td>
<td>Smooth reversing curves</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Improves navigability of truck route, and pedestrian safety</td>
</tr>
<tr>
<td>D9</td>
<td>Landscape pavement at Lombard St/St. Johns Ave/Jersey Street intersection</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Related to improved aesthetics as well as enhanced pedestrian safety</td>
</tr>
<tr>
<td>D10</td>
<td>Curb extensions and crosswalks at Catlin Ave</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td>Related to SAC request</td>
</tr>
<tr>
<td>D11</td>
<td>Remove parking bet St. Johns and St. Louis Aves</td>
<td>None</td>
<td>NA</td>
<td>Yes</td>
<td>Yes</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>
8. Recommended Improvements

Based on the evaluation exercise of the 47 improvement concepts described in sections 6 and 7, the project team prepared a series of preliminary recommendations for review with PBOT staff, and the SAC and TAC membership. Each of those groups forwarded multiple modifications and refinements of the preliminary recommendations, including additional analysis and documentation to justify the intended function and performance of the preliminary recommendations. A revised set of preliminary recommendations was produced incorporating those suggestions and were presented to PBOT staff and the SAC, and a decision was made to advance the revised preliminary recommendations for review at the December 12, 2012 Public Open House.

The input received at the open-house meeting about the revised preliminary recommendations (see Appendix C: Open House Summary) was overwhelmingly positive. A final meeting of the SAC was held on February 4, 2013 to review the citizen input, and the SAC membership voted to formally endorse the revised preliminary recommendations as the final recommendations (see Appendix A: SAC Meeting #8 Summary).

The final recommendations are described below and presented in Figures 8.1 through 8.11.

St. Johns Transportation Concept Plan Development: Final Recommendations

N Portland Road at the Columbia Boulevard Ramp (Figure 8.1)
- Reconfigure intersection to create left turn for southbound access to Columbia Way and improve turning radius for westbound access to Columbia Way.
- Provide sidewalks and bicycle lanes.

Columbia Way between the Columbia Boulevard ramps and Fessenden Street (Figure 8.2)
- Re-stripe roadway cross-section by converting one southbound travel lane to center turn lane with pedestrian crossing refuges.
- Install curb extension at the northwest corner to reduce turning radius/ design speed for right turns from Columbia Way to Fessenden Street.
- Provide missing sidewalk and extend bicycle lanes to N. Portland Road.

Fessenden Street/St. Louis Avenue between Columbia Way and Lombard Street (Figures 8.3 - 8.8)
- Re-stripe roadway cross-section to reduce travel lane widths and provide buffered bicycle lanes.
- Reduce speed limit from 35 MPH to 25 MPH (subject to state approval).
- Install median refuge islands with street trees and striped crosswalks at the following six locations: Kellogg Street, Smith Street, Seneca Street, Oswego Avenue, Allegheny Avenue and Tioga Avenue.
- Install curb extensions with street trees and striped crosswalks at the following two locations: Burr Avenue and Midway Avenue.
- Install Speed Reader Boards on both sides of the St Louis Avenue-Fessenden Street curve.
- Install Rapid Flash Beacons at the following two locations: Seneca Street/New York Avenue and Midway Avenue.
- Install a HAWK signal at Charleston Avenue.
- At all crossing improvement locations provide additional pavement markings in the bicycle lanes warning cyclists to yield to crossing pedestrians.
- Reconfigure the New York Avenue leg of the of New York Avenue/St. Louis Avenue intersection to create a perpendicular alignment.

Lombard Street between St. Louis Avenue and Bruce Avenue (Figures 8.9 - 8.11)
- St. Louis Avenue to St. Johns Avenue: re-stripe roadway cross-section to increase travel lanes widths to 12 feet by removing parking from west side of the street.
- St. Johns Avenue to Bruce Avenue: re-stripe roadway cross-section to provide bicycle lanes.
• Install curb extension and striped crosswalk at Catlin Avenue, northeast corner.
• Install curb extensions at Reno Avenue.
• Upgrade the existing pedestrian signal at Reno Avenue with advance detection.
• Shift Lombard Street bicycle route south of Reno Avenue to Central Avenue and Willamette Boulevard.
• Reconfigure St. Johns Avenue intersection to improve sight distances through the ‘S’ curve in roadway.
• Install missing sidewalk sections north of Reno Avenue.

Other
• Fessenden Street/St. Louis Avenue:
  o City of Portland and Oregon Trucking Association education effort to instruct motor carriers to utilize the designated truck route.
  o Periodic speed enforcement by Portland Bureau of Police.
  o In the event the City of Portland approves a speed bump design for use or additional testing on Major Emergency Response routes, consider use on Fessenden Street/St. Louis Avenue in the vicinity of the curve.

  • Consider incorporating noise mitigation measures as part of any future land use planning efforts along Lombard Street (Portland Bureau of Planning and Sustainability).
  • Amend Transportation System Plan to remove City Bikeway designation on Lombard between St. Louis Avenue and Reno Avenue.
Figure 8.1 N. Portland Road at Intersection with Columbia Boulevard Ramps
Figure 8.2 Columbia Way between Columbia Boulevard Ramps and Fessenden Street
Figure 8.3 Fessenden Street between Columbia Way and Fairhaven Avenue
Figure 8.4 Fessenden Street between Fairhaven Avenue and Polk Avenue
Figure 8.5 Fessenden Street between Polk Avenue and Richmond Avenue
Figure 8.6 Fessenden Street between Richmond Avenue and New York Avenue
Figure 8.7 St. Louis Avenue between Pier Park Place and Smith Street
Figure 8.8 St. Louis Avenue between Smith Street and Lombard Street
Figure 8.9 Lombard Street between St. Louis Avenue and Catlin Avenue
Figure 8.10 Lombard Street between Catlin Avenue and Reno Avenue
Figure 8.11 Lombard Street between Reno Avenue and Bruce Avenue
9. Bridge Assessment

A critical issue identified in the St. Johns Truck Strategy was the need to complete a sufficiency (i.e., load rating) evaluation of three City-owned Columbia Boulevard bridge structures (see Figure 9.1) over N. Portland Road/Columbia Way and the Burlington Northern & Santa Fe Railway for both existing and future conditions.

Load rating procedures provided by ODOT were followed in evaluating the existing strengths of each bridge superstructure and applicable portions of substructure elements. Two bridges need repairs at a future date but until that time, it is recommended that loads be decreased by reducing the number of travel lanes from two lanes to one lane for each bridge. The findings of these evaluations, as well as their implications for this study, are described below.

Findings of the Load Rating Analysis

Load ratings were performed for each bridge in its respective current condition using ODOT’s prescribed load rating procedure as applied to local agency bridges. The results of this analysis indicate that the through and steel girders of Bridges 78 and 78A are deficient with respect to their shear strength, and the shear strength of the floor beams of Bridge 78 are inadequate to handle Permit 6 (8 axle trucks with a gross vehicle weight of 150,500 lbs). Bridge 79 was found to have existing adequate strength for all proposed loads in both the current and in the assumed future deteriorated condition.

Recommended Repair Schemes

As part of this study, several repair schemes to address the deficiencies above have been identified. These modifications would allow the bridge to remain in a two-lane configuration with unrestricted truck access. These are identified for each deficient element below.

Bridge 78

Possible through-girder strengthening scheme: The existing through-girders will need to be strengthened for shear under the proposed truck loads. The existing through-girder webs could be strengthened in a straightforward manner by adding web stiffeners at appropriate locations near the girder supports.

Figure 9.1 Location of Bridges
Adding these stiffeners would require the removal and replacement of existing longitudinal web stiffeners comprising angles riveted to the girder webs, but this appears to be feasible. Following the addition of transverse web stiffeners, modified longitudinal stiffeners (clipped at transverse stiffener locations) would be bolted back onto their original locations. Touch-up painting would be required at the completion of structural modifications.

An alternate load rating was performed with the conceptual web strengthening incorporated. In this condition, the through-girder rating factors were sufficient for the proposed loads.

Possible floor beam strengthening scheme:
Strengthening the floor beams for shear would require added web stiffeners, as indicated above for the through-girders. This work would need to be performed from beneath the bridge to avoid impacts to the existing deck. Accordingly, this work would need to be coordinated with rail traffic below the bridge.

Bridge 78A
The existing steel girders reported as deficient in shear capacity would be amenable to a strengthening scheme like that described above for the through-girders and floor beams of Bridge 78. Web stiffeners would be required near the exterior girder supports. The operation would be more straightforward for this bridge, as there are no existing longitudinal stiffeners to remove and replace during the installation of transverse web stiffeners. However, load ratings with traffic in an alternative configuration were also performed, as described below.

Proposed Traffic Modifications
At PBOT’s request, an assessment was completed to determine whether changes to traffic flow on Bridges 78 and 78A would allow them to support Oregon legal loads without any structural repairs like those described above. These analyses found that restricting traffic to one lane in each direction through use of concrete medians on both bridges would result in sufficient load ratings.
10. Next Steps

The recommended roadway concepts discussed in this report are ready to be advanced into more detailed design and construction which will commence when funding becomes available. In 2013, PBOT staff formally requested grant funding from the Regional Flexible Fund and State Transportation Improvement Plan programs for design and construction funding. Decisions about those grants will be made in 2013.

With regard to the bridge assessments, PBOT will submit a recommendation to ODOT to limit loads by reducing the traffic lanes on bridges 78 and 78A to one lane. Traffic engineering necessary to incorporate the controls outlined in this report will be performed by PBOT at the proper time.