North Portland Road and North Columbia Boulevard Intersection Development Project

Technical Memorandum No. 2
Existing and Future Traffic Conditions Analysis

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Prepared for:
City of Portland Bureau of Transportation

Prepared and Submitted by:

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Preface

The intent of the North Portland Road/North Columbia Boulevard Intersection Development Project is to evaluate the feasibility of redesigning the N. Portland Road / N. Columbia Boulevard intersection and connecting ramp structures to channel southbound trucks traveling on N. Portland Road onto N. Columbia Blvd as the preferred route to the Rivergate Industrial area and the St. Johns Bridge. This project supports 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.

This intersection links two Priority Truck Streets which are identified in the City’s Transportation System Plan (TSP) as principal routes for truck mobility in and between industrial districts. This intersection also provides direct access to major regional multimodal freight facilities which include the Port of Portland Terminals 4, 5 and 6, the Burlington Northern & Santa Fe Railroad’s Wilbridge Yard and Lake Yard and the Union Pacific Railroad’s Barnes Yard.

This memorandum describes the existing and future (2035 no-build) traffic conditions in the project area, including traffic volumes, intersection turning movements, vehicles classifications (percentage of trucks and personal vehicles), speed, accident history and safety issues, roadway and intersection geometry, and other relevant issues.

Other documents being completed for the North Portland Rd/North Columbia Blvd Intersection Development project are:

- Technical Memorandum No. 1 – Public Engagement Program, Background and Public Involvement Plan
- Technical Memorandum No. 3 – Background Planning and Policy Guidance
- Technical Memorandum No. 4 – Load Rating Assessments of Columbia Blvd Bridges
- Technical Memorandum No. 5 – Opportunities, Constraints and Project Needs
- Technical Memorandum No. 6 – Preliminary Transportation Options and Solutions
- Technical Memorandum No. 7 – Definition of Alternatives
- Technical Memorandum No. 8 – Alternatives Analysis
- Technical Memorandum No. 9 – Recommendations
- Final Summary Report

This study is funded by the City of Portland. Its findings will be discussed with the project’s Technical Advisory Committee and Stakeholder Advisory Committee.
Aerial view of St. Johns Neighborhood Streets – North Portland Rd/North Columbia Blvd Intersection Development Project study area indicated in red circle.
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I. Introduction

The primary transportation facilities in the St. Johns neighborhood serve two distinct purposes: (1) local, multimodal travel within the St. Johns neighborhood and (2) local and through truck and rail freight movements to support the concentration of industrial sector employment to the north and east of the neighborhood. The N. Portland Rd/N. Columbia Blvd intersection is central to serving these transportation functions. The intersection links two Priority Truck Streets, which the City’s Transportation System Plan (TSP) defines as principal routes for truck mobility in and between industrial districts. The intersection also provides unimpeded access to neighborhood collector/local truck service streets, which have been documented as a frequently used shortcut route for through trucks between the Rivergate industrial area and the St. Johns Bridge.

A goal of the City’s TSP and the St. Johns Truck Strategy (2001) is to direct through truck movement to the designated Major City Traffic/Priority Truck Street route of N. Columbia Blvd/N. Burgard Rd/N. Lombard St (“around the horn”) and to reduce non local truck traffic from using the local street system as a through route.¹ The purpose of the N. Portland Rd – N. Columbia Blvd Intersection Development Plan is to evaluate the feasibility of reconfiguring the N. Portland Rd/N. Columbia Blvd intersection in order to better direct through trucks traveling on N. Portland Rd onto N. Columbia Blvd as the preferred route to the Rivergate Industrial area and the St. Johns Bridge.

II. Key Findings

The results of this study indicate that:

- The existing function and design of N. Portland Rd, N. Columbia Blvd, N. Burgard Rd, and N. Lombard St is consistent with their current TSP traffic and street design classifications, which emphasize vehicle and freight mobility.
- N. Columbia Way and N. Fessenden St currently serve a large volume of traffic from outside the area and regional truck traffic, which is inconsistent with their TSP designation as Neighborhood Collector and Local Service Truck streets.
- All of the study intersections currently operate at acceptable levels of service and are below capacity during the weekday a.m. and p.m. peak hour periods, except for the N. Columbia Way/N. Macrum Ave intersection.
- Over one-quarter (27%) of westbound traffic on the N. Fessenden St/N. Saint Louis Ave corridor is through traffic (vehicles traveling through the area without making a stop at a local destination).
- Over half (55%) of the traffic entering N. Fessenden St from southbound N. Columbia Way is through traffic.
- Approximately 19% of the traffic entering N. Fessenden St from N. Fessenden St east of N. Columbia Way is through traffic.
- Average travel time from the N. Portland Rd/N. Columbia Blvd intersection to the N. Saint Louis Ave/N. Lombard St intersection is approximately two minutes shorter via the Fessenden route than the “around the horn” route.
- N. Fessenden St and N. Saint Louis Ave have a posted speed limit of 35 miles per hour (mph); however, travel speeds vary along the corridor. The 85th percentile travel speed (the speed that

¹ The current configuration of the N. Portland Rd/N. Columbia Blvd intersection does not physically restrict truck movements from this intersection of two Major City Truck Streets to the directly adjacent Neighborhood Collector streets (N. Columbia Way and N. Fessenden St) and Local Access Service Street N. Saint Louis Ave.
85% of vehicles travel at or under) was observed to be 34 mph at the N. Fessenden St/N. Alma Ave intersection and 41 mph near the N. Saint Louis Ave/Smith St intersection.

- Between 2005 and 2009, 186 crashes were reported at study roadways and intersections.
  - 88 crashes (47%) occurred on the “around the horn” route.
  - 81 crashes (44%) occurred on the Columbia Way/Fessenden St/Saint Louis Ave corridor.
  - 17 crashes (9%) occurred at the Lombard St/Saint Louis Ave intersection, which both routes pass through
  - 44% of these crashes resulted in injuries and three crashes on Columbia Blvd resulted in fatalities.
  - Approximately one-third of these crashes involved vehicles making turning movements.
- If design or operational changes are not made at the N. Portland Rd/N. Columbia Blvd intersection or on N. Fessenden St it is anticipated that in 2035:
  - Trucks will continue to travel through the neighborhood as opposed to using the designated “around the horn” freight route due to travel time savings. Given moderate – 1% annual – forecast traffic growth on N. Columbia Blvd and N. Fessenden St, both routes are anticipated to maintain similar travel times in the future.
  - The volume of trucks traveling through the St. Johns neighborhood will likely increase, given forecast growth in freight demand – 2.5% annual growth in truck tonnage – at the Port of Portland².

III. Scope of this Technical Memorandum

This report documents existing and future (2035 no build³) traffic conditions in the project area, including traffic volumes, intersection turning movements, vehicle classifications (percentage of trucks and personal vehicles), speed, accident history and safety issues, roadway and intersection geometry, and other relevant issues. The analyses in this report focus on traffic conditions at the following locations:

1. The roadway segment of N. Fessenden St and N. Saint Louis Ave between N. Columbia Way and N. Lombard St;
2. The roadway segment of N. Columbia Blvd/N. Lombard St between the N. Portland Rd interchange and N. Saint Louis Ave;
3. The intersection of N. Saint Louis Ave and N. Lombard St;
4. The intersection of N. Fessenden St and N. Columbia Way; and
5. The interchange connecting N. Columbia Blvd, N. Portland Rd, and N. Columbia Way.

Figure 1 shows the locations where existing traffic conditions data was collected in April 2011. Historical data from previous studies and plans in the St. Johns neighborhood were also used to inform the analysis presented in this memorandum. This analysis will be used to:

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

² Forecast annual growth between 1997 and 2030 (Portland Freight Master Plan, 2006).
³ The planning horizon year selected for analysis is 2035. This planning horizon year correlates to the Metro regional travel demand forecast model for future land uses and future financially constrained roadway improvements network.
IV. Land Use Context

The N. Portland Rd/N. Columbia Blvd intersection is located along the boundary of the Rivergate and the Columbia Corridor Industrial Districts, and provides direct access to major regional multimodal freight facilities, including the Port of Portland Terminals 4, 5, and 6, the Union Pacific Railroad’s Barnes Rail Yard, and the Burlington Northern & Santa Fe Railroad’s Lake and Wilbridge yards. Kittelson & Associates, Inc. (KAI) staff completed site inventories of the N. Portland Rd/N. Columbia Blvd intersection and surrounding study area in May 2011. At that time, KAI also collected information regarding the land use and transportation system in the study area.

Figure 2 shows the study focus area, study corridors, and existing street cross sections. The land use zoning map for the St. Johns neighborhood is provided in Figure 3. The northern and western portions of the area are primarily industrial and open space, while single and multi-family residential and mixed use residential (including neighborhood retail) is concentrated along N. Fessenden St, N. Saint Louis Ave, and the southern portion of N. Lombard St. The remainder of the study area is primarily single-family residential.

The street design, surrounding land use and zoning, and the geographic arrangement of the streets indicate the type of vehicles and transportation purposes anticipated on different corridors within the project area. The N. Columbia Blvd/N. Burgard Rd/N. Lombard St route through the study area is intended (and designed) to facilitate freight truck access and mobility. The corridor travels through primarily industrial land uses and is characterized by 14-foot wide travel lanes with limited intersections, intermittent sidewalks, and some on-street parking. The N. Fessenden St/N. Saint Louis Ave route through the study area travels through primarily residential and neighborhood retail land uses with 12-foot wide travel lanes, on-street parking, sidewalks and bike lanes, and a larger number of signalized and stop controlled intersections.
V. Existing Transportation Facilities

This section presents an inventory of the transportation facilities available in the study area, including roadways, pedestrian facilities, bicycle facilities, transit, and freight facilities. Table 1 presents characteristics of the existing roadways in the study area and the functional classifications of these streets as defined by the TSP. Appendix A includes descriptions of each of the TSP classifications within the study area. An initial assessment of how each street meets its intended purposes is included in the following subsections.
<table>
<thead>
<tr>
<th>Roadway</th>
<th>Traffic Classification</th>
<th>Transit Classification</th>
<th>Bicycle Classification</th>
<th>Pedestrian Classification</th>
<th>Freight Classification</th>
<th>Emergency Classification</th>
<th>Street Design Classification</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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<tr>
<td>N Columbia Blvd</td>
<td>Regional Trafficway &amp; 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>
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<td>12'-14'</td>
<td>11</td>
<td>40</td>
<td>No</td>
<td>No</td>
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<tr>
<td>N Portland Rd (&amp; ramps)</td>
<td>Major City Traffic Street</td>
<td>Community Transit Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
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<td>2</td>
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<td>45</td>
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<td>Community Transit Street</td>
<td>City Bikeway</td>
<td>City Walkway</td>
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<td>3</td>
<td>12'</td>
<td>35</td>
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<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>N Lombard St</td>
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<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, Regional Corridor &amp; Regional Main Street</td>
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<td>20-35</td>
<td>12</td>
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<td>N Macrum Ave</td>
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<td>Local Service Transit Street</td>
<td>Local Service Bikeway</td>
<td>Local Service Walkway</td>
<td>Local Service Truck Street</td>
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<td>Local Street</td>
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<td>25</td>
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<td>No</td>
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<td>N Oregonian Ave</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>
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<td>25</td>
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<td>N St Louis Ave</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>
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<td>12'</td>
<td>20/35</td>
<td>13</td>
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<td>Yes</td>
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<td>N Burgard Rd</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>
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<td>Urban Road</td>
<td>3/5</td>
<td>12'</td>
<td>40</td>
<td>No</td>
<td>Yes</td>
<td>6</td>
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1 Obtained from the Portland Transportation System Plan at www.portlandmaps.com
2 South of N. Fessenden St, N. Columbia Way is a Local Service Traffic Street.
3 N. Lombard St is a District Collector east of N. Philadelphia Ave and a Major City Traffic Street west of N. Philadelphia Ave
4 Bicycle lanes are provided only on the south side of N Burgard Rd within one half mile of the N. Burgard Rd/N. Columbia Blvd intersection.
5 Sidewalks provided on N Columbia Way between N Fessenden St and N Taft Ave.
6 On-street parking provided on north side of N Columbia Way between N Fessenden St and N Taft Ave.
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 N Lombard St only between N Bruce Ave and N Saint Louis Ave. North of N. Bruce Ave, sidewalks are provided on the west side of N. Lombard St.
9 On N Lombard St, between N Saint Louis Ave and N St. Johns Ave, travel lanes are 11' with 7' unstriped on-street parking lanes. North of St. Johns Ave travel lanes are 18' with 12' unstriped on-street parking lanes.
10 N Macrum Ave is a 5-lane roadway with no on-street parking between N. Columbia Blvd and N. Columbia Way, a 2-lane roadway with on-street parking north of N. Columbia Blvd and south of N. Columbia Way.
11 N Columbia Blvd is a 5-lane roadway, with a center dual-turning lane. Outer lanes are 14' wide, inside lanes and the center turn lane are 12' wide.
12 N Lombard St is 30 mph between N St. Louis Ave, and 35 mph north of N Reno St. During school hours, the speed limit reduces to 20 mph between N St. Johns Ave and N Reno St.
13 N St. Louis Ave is 20 mph between N. Lombard St and N Kellogg St., and 35 mph eastward.
14 Intermittent sidewalks provided on the south side of N. Columbia Blvd within the residential areas one-quarter mile east and west of the N. Portland Rd intersection.
15 4 lanes provided one-half mile east of the N. Burgard Rd/N. Columbia Blvd intersection. Otherwise, 2 westbound lanes and 1 eastbound lane.
**Roadway Facilities**

As illustrated by Figure 2 and Table 1, the existing transportation network provides a range of different facilities to serve different types of travel. This is in part due to the historic mix of industrial and residential uses in the study area. All roadways in the study area are currently owned and operated by the City of Portland. Due to the mature nature of the development in the area there is limited vacant space to expand or build new roadways; however, enhanced roadway design, travel demand management, and traffic operations strategies are other tools that can be considered as a means to improve traffic conditions on roadways in the study area.

The existing function and design of N. Columbia Blvd, N. Burgard Rd, and N. Lombard St align well with the specifications of their TSP traffic and street design classifications. Exhibit 1 shows the cross section of N. Lombard St near N. Burgard Rd, 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. South of N. St. Johns Avenue, N. Lombard St is designated as a Regional Main Street and narrows to provide additional pedestrian facilities, as shown in Exhibit 2.

The current function of N. Columbia Way and N. Fessenden St, on the other hand, is inconsistent with their TSP traffic classifications. As shown in Exhibits 3 and 4, these streets meet the street design classification for Local Streets; however, both streets currently serve a large volume of traffic from outside the area and trucks, which is inconsistent with their traffic designation as Neighborhood Collectors.

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Exhibit 1  N. Lombard Street near N. Burgard Road, looking south.
Exhibit 2  N. Lombard Street near N. St. Louis Avenue, looking south.

Exhibit 3  N. Columbia Way near N. Fessenden Street, looking north.

Exhibit 4  N. Fessenden Street, looking east.
Pedestrian Facilities

As shown in Table 1, 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 Rd and N. Columbia Blvd), which is inconsistent with these streets’ TSP designations as City Walkways.

The N. Portland Rd/N. Columbia Blvd intersection is within the 1.5 mile walk zone 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 N. Columbia Way, N. Fessenden St, and other local streets. These streets currently provide adequate sidewalks and pedestrian access, consistent with their TSP designation as City Walkways. An abundance of pedestrian and bicycle warning and way finding signage (shown in Exhibit 5) is also present on N. Fessenden St.

Exhibit 5  Existing bicycle and pedestrian warning and way finding signage on N. Fessenden Street.
Bicycle Facilities

Continuous bike lanes are currently provided on N. Columbia Way, N. Fessenden St, and N. Saint Louis Ave. A bike lane is provided on the south side of N. Burgard Rd within one-half mile of the N. Columbia Blvd/N. Burgard Rd intersection. Wide shoulder bicycle lanes are provided on N. Portland Rd south of the Columbia Slough bridge; north of the bridge a multi-use path is provided on the east side of N. Portland Rd. 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.

N. Columbia Blvd and N. Lombard St do not currently provide bicycle facilities or signage, which is inconsistent with their classification as City Bikeways.

Transit Facilities

Bus transit currently serves the St. Johns neighborhood and industrial employment areas on N. Columbia Blvd and N. Columbia Way, consistent with these streets’ classifications as Community Transit Streets. N. Fessenden St, N. Lombard St, and N. Saint Louis Ave are also served by several bus routes, consistent with their classification as Transit Access Streets. N. Portland Rd and N. Burgard Rd 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 N. Saint Louis Ave/N. Lombard St to Gresham via downtown Portland;
- Route 16 provides service from Rivergate to downtown Portland via N. Columbia Blvd, N. Fessenden St, and the St. Johns Bridge;
- Route 44 provides service from Pier Park to the PCC Sylvania transit center via N. Lombard St and downtown Portland; and
- Route 75 provides service from Pier Park to Milwaukie via N. Lombard St and the Hollywood transit center.

Table 2 provides a summary review of the transit service in the study area, including the number of bus stops and the service headways (time between buses arriving at a stop) for each route. Bus stops are located approximately one-quarter mile apart or less at intersections on N. Lombard St and N. Fessenden St and over one-half mile apart at site driveways on Columbia Blvd.
Table 2 Existing Transit Facilities and Headways

<table>
<thead>
<tr>
<th>Tri-Met Route Number</th>
<th>Tri-Met Route Name</th>
<th>Number of Stops in Study Area</th>
<th>Average Headways (minutes)</th>
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<td></td>
<td>Weekday</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Peak</td>
</tr>
<tr>
<td>Route 4</td>
<td>SE Division/N. Fessenden</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Route 16</td>
<td>N. St Johns/SW Front Ave</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Route 44</td>
<td>SW Capitol Hwy/N. Mocks Crest</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Route 75</td>
<td>N. Lombard/NE 39th (Cesar Chavez)</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>

NS = No Service  
Source: www.trimet.org

Freight Facilities

The industrial areas north of N. Columbia Blvd and N. Burgard Rd and west of N. Lombard St are designated as Freight Districts. N. Columbia Blvd, N. Burgard Rd, and N. Lombard St are identified in the Portland TSP as Priority Truck Streets and operate in accordance with this classification.

N. Saint Louis Ave (west of N. Lombard St), N. Fessenden St, and N. 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 Exhibit 6, there are currently many local cross streets on N. Columbia Blvd and N. Fessenden St that feature “No Truck” advisory signs to discourage cut through freight traffic; however, there is limited way finding signage that directs southbound trucks on N. Portland Rd to the designated freight route on N. Columbia Blvd.

Exhibit 6  Existing “No Trucks” signs on local streets. N. Columbia Blvd and N. Van Houten Ave, facing south.
**Summary of Existing Transportation Facilities**

Based on observed existing transportation facilities, street design, traffic volumes, vehicle classifications, and a review of other transportation data, the roadways in the study area were assessed for inconsistencies between their current TSP functional classifications and their existing design and/or transportation function. Table 3 summarizes whether or not the existing design and function of roadways in the study area are consistent with each of their TSP functional classifications.

**Table 3 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>
</tr>
</thead>
<tbody>
<tr>
<td>N Columbia Blvd</td>
<td>Yes</td>
<td>Yes</td>
<td>No(^3)</td>
<td>No(^4)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N Portland Rd (&amp; ramps)</td>
<td>Yes</td>
<td>No(^2)</td>
<td>Yes</td>
<td>No(^4)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N Columbia Way</td>
<td>No(^1)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No(^5)</td>
<td>Yes</td>
</tr>
<tr>
<td>N Fessenden St</td>
<td>No(^1)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No(^5)</td>
<td>Yes</td>
</tr>
<tr>
<td>N Lombard St</td>
<td>Yes</td>
<td>Yes</td>
<td>No(^3)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N Macrum Ave</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N Oregonian Ave</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N St Louis Ave</td>
<td>No(^1)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No(^5)</td>
<td>Yes</td>
</tr>
<tr>
<td>N Burgard Rd</td>
<td>Yes</td>
<td>No(^2)</td>
<td>Yes</td>
<td>No(^4)</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.
VI. Existing Traffic Volumes and Operations

The existing 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 trips before and after shift changes and delivery trips to and from businesses during the work day. The commercial areas of downtown St. Johns and along N. Lombard St primarily generate short trips to and from residences and businesses in the immediate area and, to a lesser degree, longer trips in the form of deliveries and customers to and from distant neighborhoods.

Daily and Hourly Traffic Volumes

In April 2011, 24-hour traffic counts were conducted at the following locations:

1. N. Columbia Blvd between N. Oregonian Ave and N. Macrum Ave;
2. N. Fessenden St between N. Alma Ave and N. Midway Ave.;
3. N. Columbia Way south of the N. Columbia Blvd ramp;
4. Northbound ramp from N. Columbia Way to N. Columbia Blvd;
5. N. Portland Rd north of the N. Columbia Blvd ramp; and
6. N. Columbia Blvd between the N. Columbia Way on-ramp and N. Clarendon Ave;

Appendix B shows the existing hourly and average daily traffic volumes at the recorded locations. N. Columbia Blvd currently has the highest average daily volume, serving approximately 14,200 to 15,300 vehicles (both east and west directions) per day. N. Portland Rd serves the second highest volume – over 12,100 vehicles (north and south directions) per day – followed by N. Fessenden St, which serves approximately 11,500 vehicles (both directions) per day. N. Columbia Way serves approximately 11,000 total vehicles per day, 20 percent of which use the northbound ramp to access N. Columbia Blvd. These volumes are consistent with each roadway’s traffic classification in the TSP, with the possible exception of N. Fessenden St and N. Columbia Way, which serve relatively large volumes of non-local traffic for Neighborhood Collectors.

Traffic volumes are highest between 3:00 and 4:00 p.m. on N. Columbia Blvd (predominantly eastbound traffic). On all other study roadways, volumes are highest between 4:00 and 5:00 p.m. The highest hourly morning volumes occur between 6:00 and 7:00 a.m. on N. Columbia Blvd (predominantly westbound traffic). On all other study roadways, morning volumes are highest between 7:00 and 8:00 a.m.

Existing Level of Service and Operations

In April 2011, turning-movement counts were also obtained for the following study intersections:

1. N. Columbia Blvd at the ramp to/from N. Portland Rd;
2. N. Columbia Blvd at N. Macrum Ave;
3. N. Columbia Way at N. Macrum Ave;
4. N. Columbia Way at N. Fessenden St;
5. N. Columbia Way at N. Columbia Blvd; and
6. N. Saint Louis Ave at N. Lombard St.
All of the field turning movement counts used in this analysis were collected on a typical mid-week day during the morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak time periods. The system-wide morning and evening peak hours were found to occur between 7:20 a.m. and 8:20 a.m. and 4:20 p.m. and 5:20 p.m., respectively. Appendix C contains the traffic count worksheets used in this study.

Intersection operations were evaluated based on volume-to-capacity (v/c) ratio and level of service standards. All level of service analyses described in this report was performed in accordance with the procedures provided in the 2000 Highway Capacity Manual. A description of level of service and the criteria by which they are determined is presented in Appendix D. Appendix D describes how level of service is measured and what is generally considered the acceptable range of level of service. Intersection level of service (LOS) is analogous to the letter grades in a school report card. Motorists using an intersection that operates at LOS “A” experience very little delay, while those using an intersection that operates at LOS “F” can experience intolerably long delays.

All intersection level of service evaluations used the peak 15-minute flow rate during the weekday a.m. and p.m. peak hours. Using the peak 15-minute flow rate ensures that this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. The transportation system will likely operate under conditions better than those described in this report during all other time periods.

Figure 4 illustrates the existing lane configurations and traffic control devices in place at the study intersections. As shown in Figures 5 and 6, all of the study intersections currently operate at acceptable levels of service and below capacity during the weekday a.m. and p.m. peak hours, except for the N. Columbia Way/N. Macrum Ave intersection. At that location, the southbound left turning movements currently operate at level of service “E” during the p.m. peak hour; however, this movement is far under capacity. Appendix E includes the level of service worksheets under year 2011 existing traffic conditions.

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4 Turning movement counts were only collected during the p.m. peak period for the N. Columbia Blvd/N. Portland Rd ramp.
VI. Other Traffic Analyses

A number of special studies were conducted to more fully understand the origins and destinations of traffic, the composition of vehicle types, vehicle travel time, vehicular speeds, and safety. The results of these studies are discussed below.

**Origin-Destination Study**

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 N. Fessenden St/N. Saint Louis Ave corridor in April 2011. During the afternoon peak period (4:00 to 6:00 p.m.) the license plate numbers of all passing vehicles were recorded at the eastern and western ends of the corridor (N. Fessenden St/N. Alma Ave and N. Saint Louis Ave/N. Lombard St). This information was evaluated to determine travel times and the general origin and destination of vehicles on the corridor.

Each vehicle observed on the corridor was assigned a trip type:

- **Inbound trips** are trips that begin outside the study area and end at a destination within the study area (e.g., a SE Portland resident traveling to eat at a restaurant on N. Fessenden St);
- **Outbound trips** are trips that begin inside the study area and end at a destination outside of the study area (e.g., a St. Johns resident commuting to a job in another neighborhood);
- **Through trips** are trips that begin and end outside the study area and travel through the study area without stopping (e.g., trucks using N. Fessenden St as a short-cut from N. Portland Rd to the St. Johns Bridge); and
- **Stop-by trips** are trips that begin and end outside the study area, but stop at a local destination (e.g., trucks making deliveries to local businesses).\(^5\)

During the afternoon peak period (4:00 to 6:00 p.m.), 1,270 westbound vehicles were observed on the N. Fessenden St/N. Saint Louis Ave 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 N. Columbia Way made through trips;
- 19% of vehicles entering the corridor from westbound N. Fessenden St (east of N. Columbia Way) made through trips; and

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\(^5\) Stop-by trips were estimated based on travel time. Vehicles that took more than 15 minutes to travel from one end of the corridor to another were assumed to have made a stop at a local destination.
Vehicle Classification Study

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 N. Fessenden St/N. Saint Louis Ave corridor as a through route between N. Portland Rd and the St. Johns Bridge. In April 2011, the classification of all vehicles traveling on N. Fessenden St (between N. Alma Ave and N. Midway Ave) was recorded over a 24-hour period. Figure 7 summarizes the results of the vehicle classification study.

Figure 7 N. Fessenden St Vehicle Classification Study Results

<table>
<thead>
<tr>
<th></th>
<th>Westbound</th>
<th>Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorcycles</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Cars</td>
<td>62%</td>
<td>62%</td>
</tr>
<tr>
<td>Buses</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Light Trucks</td>
<td>19%</td>
<td>20%</td>
</tr>
<tr>
<td>Medium &amp; Large Single-Unit Trucks</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Large Double-Unit Trucks</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Large Multi-Unit Trucks</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Note: Vehicle classification was determined by an automated tube count system based on axle spacing and wheelbase. The “Other” vehicles category includes vehicles with unusual axle or wheelbase spacing that could not be classified.

Over a 24-hour period, 11,517 vehicles were observed on N. Fessenden St. Of these vehicles, the majority (62%) were passenger cars.6 Approximately 20% of traffic (2,249 vehicles) was classified as Class 3 or “light

6 This category includes all sedans, coupes, and station wagons manufactured primarily for the purpose of carrying passengers. Passenger cars pulling recreational or other light trailers are included in this category.
trucks”, a category which includes a range of small trucks from personal pickups and vans to small commercial vehicles (e.g., commercial vans, local delivery vehicles). ⁷

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

Table 4 summarizes the results of previous vehicle classification studies conducted at other locations in the study area. These results show that the N. Fessenden St. corridor has lower volumes of medium and large trucks than N. Lombard St, the designated freight route; but there are higher truck volumes on the segment of N. Fessenden St. between the N. Portland Rd/N. Columbia Blvd intersection and the St. Johns bridge than on other segments of the street (e.g. east of Geneva Ave).

Table 4 Historical Vehicle Classification Study Results

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Direction</th>
<th>Average Daily Traffic Volume (ADT)</th>
<th>Percent Cars</th>
<th>Percent Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Fessenden St</td>
<td>4/6/2011</td>
<td>EB</td>
<td>6,024</td>
<td>90.5</td>
<td>9.5</td>
</tr>
<tr>
<td>West of Alma Ave</td>
<td></td>
<td>WB</td>
<td>5,493</td>
<td>91.6</td>
<td>8.4</td>
</tr>
<tr>
<td>N. Saint Louis Ave</td>
<td>2/3/2010</td>
<td>NB</td>
<td>4,695</td>
<td>83.7</td>
<td>16.3</td>
</tr>
<tr>
<td>West of Central St</td>
<td></td>
<td>SB</td>
<td>4,711</td>
<td>84.8</td>
<td>15.2</td>
</tr>
<tr>
<td>N. Fessenden St</td>
<td>6/11/2007</td>
<td>EB</td>
<td>2,429</td>
<td>95.2</td>
<td>4.8</td>
</tr>
<tr>
<td>East of Geneva Ave</td>
<td></td>
<td>WB</td>
<td>2,337</td>
<td>93.6</td>
<td>6.4</td>
</tr>
<tr>
<td>N. Lombard St</td>
<td>5/24/2010</td>
<td>NB</td>
<td>4,561</td>
<td>78.8</td>
<td>21.2</td>
</tr>
<tr>
<td>South of Catlin Ave</td>
<td></td>
<td>SB</td>
<td>4,479</td>
<td>79.9</td>
<td>20.1</td>
</tr>
</tbody>
</table>

¹ “Trucks” includes all vehicles larger than Class 3 or “light trucks”.

Source: Quality Counts and PBOT

⁷ Included in this classification are pickups, panels, vans, and other vehicles such as campers, motor homes, ambulances, hearses, carryalls, and minibuses. Other two-axle, four-tire, single-unit vehicles pulling recreational or other light trailers are included in this category.
**Travel Time**

One of the key factors contributing to cut-through traffic in the study area is the travel time from N. Portland Rd to the St. Johns Bridge via the N. Fessenden St/N. Saint Louis Ave route compared to the “around the horn” route. To better understand the differences between the routes, a travel time study was conducted to measure the average eastbound and westbound travel times on both routes.

The distance from N. Portland Rd to the St. Johns Bridge is approximately 3.9 miles via the “around the horn” route. Vehicles on this route must turn at the N. Portland Rd/Columbia Blvd ramp, Lombard St/Burgard Rd, and Lombard St/Saint Louis Ave. This route includes seven signalized intersections and the street cross section narrows significantly on N. Lombard Street south of St Johns Ave 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 Rd to the St. Johns Bridge is approximately 1.7 miles via the N. Fessenden St route. Vehicles on this route must only turn at the Fessenden St/Columbia Way intersection and 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 Ave/Fessenden St and Columbia Way/Fessenden St traffic signals (this area is also near a park and school and contains multiple pedestrian and playground warning signs).

Figure 8 displays the routes and the average travel time on each route during the afternoon peak period (4:00 to 6:00 p.m.). As shown, the travel time from the N. Portland Rd/Columbia Blvd intersection to the N. Saint Louis Ave/Lombard St intersection is approximately two minutes shorter via the Fessenden St 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.
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)
Vehicle Speeds

In areas with high volumes of through traffic, high vehicle speeds are frequently a concern. Vehicle speeds on N. Fessenden St are also of interest because they impact travel time.

Figures 9 and 10 present existing speed profiles for N. Fessenden St between N. Alma Ave and N. Midway Ave. 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. Eastbound traffic travels at slightly higher speeds than westbound traffic but still generally complies with the posted speed.

Figure 9 N. Fessenden St Speed Profile
In order to determine if the observed vehicle speeds at N. Fessenden St and Alma Ave are typical for the corridor, they were compared to the results of previous vehicle speed studies conducted at other locations on the corridor. Table 5 summarizes the results of previous speed studies. These findings indicate that travel speeds vary along the corridor. Traffic on the eastern portion of the corridor – near George City Park and George Middle School – generally has a lower 85th percentile travel speed compared to traffic on the western portion of the corridor, where 85th percentile speeds approach 40 miles per hour.
Table 5 Historical Vehicle Speed Study Results

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Posted Speed</th>
<th>Direction</th>
<th>Average Daily Traffic Volume (ADT)</th>
<th>Speed 85th Percentile</th>
<th>Vehicles &gt;= 10% Over Posted Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Fessenden St East of Geneva Ave</td>
<td>6/11/2007</td>
<td>25</td>
<td>EB</td>
<td>2,578</td>
<td>30</td>
<td>2.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WB</td>
<td>2,411</td>
<td>30</td>
<td>2.4%</td>
</tr>
<tr>
<td>N Fessenden St East of Macrum Ave</td>
<td>5/11/2006</td>
<td>25</td>
<td>EB</td>
<td>3,121</td>
<td>35</td>
<td>14.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WB</td>
<td>2,842</td>
<td>33</td>
<td>8.2%</td>
</tr>
<tr>
<td>N. Fessenden St East of Alma Ave</td>
<td>1/18/2006</td>
<td>35</td>
<td>EB</td>
<td>6,033</td>
<td>34</td>
<td>0.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WB</td>
<td>5,519</td>
<td>35</td>
<td>0.3%</td>
</tr>
<tr>
<td>N. Fessenden St West of Oswego Ave</td>
<td>2/3/2010</td>
<td>35</td>
<td>EB</td>
<td>5,665</td>
<td>39</td>
<td>1.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WB</td>
<td>5,449</td>
<td>39</td>
<td>2.0%</td>
</tr>
<tr>
<td>N. Saint Louis Ave East of Smith St</td>
<td>1/09/2008</td>
<td>35</td>
<td>SN</td>
<td>4,872</td>
<td>44</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NB</td>
<td>5,196</td>
<td>37</td>
<td>0.4%</td>
</tr>
<tr>
<td>N. Saint Louis Ave West of Central St.</td>
<td>2/3/2010</td>
<td>35</td>
<td>NB</td>
<td>4,695</td>
<td>37</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SB</td>
<td>4,711</td>
<td>36</td>
<td>0.3%</td>
</tr>
<tr>
<td>N. Lombard St South of Catlin Ave</td>
<td>5/24/2010</td>
<td>30</td>
<td>NB</td>
<td>4,555</td>
<td>34</td>
<td>1.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SB</td>
<td>4,486</td>
<td>31</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

Source: PBOT

VIII. Safety Analysis

Crash Analysis
The most recent five years of reported crash data - from 2005 through 2009 – were obtained from ODOT and analyzed to identify potential safety deficiencies or conflict points within the study area. The analysis concentrated primarily on crashes at study intersections. Crash data were also preliminarily reviewed at the roadway segment level on N. Columbia Blvd, Burgard St, and Lombard St to compare crash frequencies on the “around the horn” and N. Fessenden St corridors.

Typically, intersection safety is evaluated by calculating the intersection’s crash rate (the number of crashes per million vehicles entering the intersection) and the frequency of crashes (the number of crashes per year). These rates are then compared to other similar facilities. The types and locations of crashes are also examined to identify patterns that may indicate safety deficiency. The observed crash frequency and crash rate for each study intersection and the roadway segments is summarized in Tables 6 and 8.\(^8\) Tables 7 and 9 provide additional detail about the types of crashes that have been reported at each of the study intersections and roadway segments.\(^9\)

---

\(^8\) Not all crashes that occur at an intersection are reflected in the reported data. Some crashes are not reported by motorists or do not exceed the property damage limit necessary to be reported and classified.

\(^9\) Segment crash data does not include crashes that occurred at intersections on either end of the segment (e.g. data for the Lombard St segment between Burgard Rd and Saint Louis Avenue does not include crashes that occurred at the intersections of Lombard St/Saint Louis Ave or Lombard St/Burgard Rd)
### Table 6 Intersection Crash Analysis Summary (2005-2009)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Property Damage Only</th>
<th>Injury</th>
<th>Fatal</th>
<th>Total</th>
<th>Crash Frequency (per year)</th>
<th>Observed Crash Rate (per MEV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Columbia Blvd/Portland Rd ramp</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>1.2</td>
<td>0.25</td>
</tr>
<tr>
<td>2. Portland Rd/Columbia Blvd ramp</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>3. Columbia Way ramp/Columbia Blvd</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>1.8</td>
<td>0.38</td>
</tr>
<tr>
<td>4. Clarendon Ave/Columbia Blvd</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.4</td>
<td>0.08</td>
</tr>
<tr>
<td>5. Macrum Ave/Columbia Blvd</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>9</td>
<td>1.8</td>
<td>0.40</td>
</tr>
<tr>
<td>6. Macrum Ave/Columbia Way</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0.6</td>
<td>0.14</td>
</tr>
<tr>
<td>7. Fessenden St/Columbia Way/Gilbert Ave/Oregonian Ave</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>1.4</td>
<td>0.25</td>
</tr>
<tr>
<td>8. Fessenden St/Midway Ave</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>1.2</td>
<td>0.29</td>
</tr>
<tr>
<td>9. Saint Louis Ave/Lombard St</td>
<td>12</td>
<td>5</td>
<td>0</td>
<td>17</td>
<td>3.4</td>
<td>0.55</td>
</tr>
<tr>
<td>10. Burgard St/Columbia Blvd</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>0.8</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>23</strong></td>
<td><strong>0</strong></td>
<td><strong>63</strong></td>
<td><strong>12.6</strong></td>
<td></td>
</tr>
</tbody>
</table>

1 MEV = million entering vehicles

### Table 7 Intersection Crash Type and Severity (2005-2009)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>No. of Crashes</th>
<th>Angle</th>
<th>Rear-End</th>
<th>Side-swipe</th>
<th>Turning</th>
<th>Non-collision</th>
<th>Ped</th>
<th>Backing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Columbia Blvd/Portland Rd ramp</td>
<td>6</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. Portland Rd/Columbia Blvd ramp</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Columbia Way ramp/Columbia Blvd</td>
<td>9</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Clarendon Ave/Columbia Blvd</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Macrum Ave/Columbia Blvd</td>
<td>9</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Macrum Ave/Columbia Way</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. Fessenden St/Columbia Way/Gilbert Ave/Oregonian Ave</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. Fessenden St/Midway Ave</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. Saint Louis Ave/Lombard St</td>
<td>17</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10. Burgard St/Columbia Blvd</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>10</strong></td>
<td><strong>16</strong></td>
<td><strong>2</strong></td>
<td><strong>30</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>
### Table 8 Roadway Segment Crash Analysis Summary (2005-2009)

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Property Damage Only</th>
<th>Injury</th>
<th>Fatal</th>
<th>Total</th>
<th>Crash Frequency (per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Ramp to/from Columbia Blvd &amp; Portland Rd</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>12. Columbia Blvd (between Clarendon Ave and Burgard Rd)</td>
<td>34</td>
<td>31</td>
<td>3</td>
<td>68</td>
<td>13.6</td>
</tr>
<tr>
<td>13. Burgard Rd (between Columbia Blvd and Lombard St)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>14. Lombard St (between Burgard Rd and Saint Louis Ave)</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td>13</td>
<td>2.6</td>
</tr>
<tr>
<td>15. Saint Louis Ave (between Lombard St and Fessenden St)</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>16. Fessenden St (between Saint Louis Ave and Columbia Way)</td>
<td>28</td>
<td>19</td>
<td>0</td>
<td>47</td>
<td>9.4</td>
</tr>
<tr>
<td>17. Columbia Way (between Fessenden St and Columbia Blvd/Portland Rd ramp)</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>7</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
<td><strong>72</strong></td>
<td><strong>3</strong></td>
<td><strong>158</strong></td>
<td><strong>31.6</strong></td>
</tr>
</tbody>
</table>

*Segment crash data does not include crashes that occurred at intersections at the ends of the segment*

### Table 9 Roadway Segment Crash Type and Severity (2005-2009)

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>No. of Crashes</th>
<th>Angle</th>
<th>Rear-End</th>
<th>Side-swipe</th>
<th>Parking</th>
<th>Turning</th>
<th>Non-collision</th>
<th>Fixed Object</th>
<th>Ped</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Ramp to/from Columbia Blvd &amp; Portland Rd</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12. Columbia Blvd (between Clarendon Ave and Burgard Rd)</td>
<td>68</td>
<td>11</td>
<td>23</td>
<td>6</td>
<td>16</td>
<td>0</td>
<td>2</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>13. Burgard Rd (between Columbia Blvd and Lombard St)</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14. Lombard St (between Burgard Rd and Saint Louis Ave)</td>
<td>13</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15. Saint Louis Ave (between Lombard St and Fessenden St)</td>
<td>20</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>16. Fessenden St (between Saint Louis Ave and Columbia Way)</td>
<td>47</td>
<td>16</td>
<td>13</td>
<td>1</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>17. Columbia Way (between Fessenden St and Columbia Blvd/Portland Rd ramp)</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>158</strong></td>
<td><strong>38</strong></td>
<td><strong>48</strong></td>
<td><strong>12</strong></td>
<td><strong>43</strong></td>
<td><strong>1</strong></td>
<td><strong>4</strong></td>
<td><strong>10</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

*Segment crash data does not include crashes that occurred at intersections at the ends of the segment*
Between 2005 and 2009, 63 crashes were reported at the study intersections. Approximately one-third of these crashes resulted in injuries. The largest absolute number of crashes and crashes per million entering vehicles occurred at the Saint Louis Ave/Lombard St intersection. Nearly half of crashes that occurred at study intersections involved vehicles making turning movements.

A preliminary review of 2005 to 2009 roadway segment crash data was also completed for the “around the horn” and N. Fessenden St routes. Three (3) fatal crashes were identified on N. Columbia Blvd during this review. One of these fatal crashes involved a passenger vehicle striking a fixed object on a bridge near the N. Portland Rd/Columbia Blvd interchange. Two fatal crashes occurred near the intersection of N. Columbia Blvd and Swift Ct. One involved a pedestrian who was struck and killed by a passenger vehicle, the other involved a passenger who was killed in a three-car sideswipe collision.

Due to the way that crash data is reported, the intersection and roadway segment crash totals cannot simply be added together to determine the total number of reported crashes in the study area. After subtracting crashes that are included in both the intersection and roadway segment crash tables, a total of 186 crashes were reported at study roadways and intersections. Of this total:

- 88 crashes (47%) occurred on the “around the horn” route.
- 81 crashes (44%) occurred on the Columbia Way/Fessenden St/Saint Louis Ave corridor.
- 17 crashes (9%) occurred at the Lombard St/Saint Louis Ave intersection, which both routes pass through.

Of particular note:
- Approximately 44% of all crashes on study intersections and roadway segments resulted in injuries.
- Approximately one-third of these crashes involved vehicles making turning movements.

Other Safety Assessments
Crash records provide an indication of where safety deficiencies might exist; however, multiple factors influence transportation safety and should be evaluated when assessing intersection and roadway operations changes and improvements. For instance, adequate sight distance at driveways and intersections is important to help ensure that drivers can see far enough to determine when there is a large enough gap in traffic and they can safely enter or exit the driveway/intersection. Maintaining adequate sight distance is particularly important in areas with high volumes of large trucks, which require a longer reaction and stopping distance than cars. Exhibit 6 shows the existing northbound approach of the Columbia Way ramp/Columbia Blvd intersection, where sight distance is currently limited by the bridge structure, light posts and the angle of the approach.

Visibility also influences pedestrian and bicycle safety. Clearly marked crosswalks and designated bicycle facilities in appropriate locations can help to increase the visibility of pedestrians and cyclists and increase safety. Pedestrian and bicycle design features are also important for creating safe routes to school in areas near elementary and middle schools.
IX. 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 N. Portland Rd/N. Columbia Blvd intersection (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.¹⁰

Figure 11 summarizes the level of service analysis for the study intersections under year 2035 weekday p.m. peak hour traffic conditions. All of the study area intersections will continue to operate at acceptable levels of service and below capacity during the weekday p.m. peak hours, except for the N. Columbia Way/N. Macrum Ave intersection. At this location, the southbound through and left turning movements will continue to operate at level of service “F” during the p.m. peak hour; however, both movements will remain far under capacity. Appendix F includes the level of service worksheets under year 2035 traffic conditions.

These results indicate that 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 N. Fessenden St corridor during the afternoon peak period. As a result, it is likely that in the year 2035 the travel time from the N. Portland Rd/N. Columbia Blvd intersection to the St. Johns Bridge will continue to be shorter via the

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¹⁰ The average annual growth rate between 2005 and 2029 for all movements at study intersections included in the Portland model was approximately one percent.
N. Fessenden St 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 N. Fessenden St from Columbia Way is expected to increase by approximately 800 vehicles per day between 2011 and 2035, while the number of southbound vehicles turning west onto Columbia Blvd from the N. Portland Rd ramp is expected to increase by approximately 150 vehicles per day. The Portland model does not differentiate between car and truck traffic in its transportation demand forecasts, however, it is anticipated that the volume of trucks traveling through the neighborhood will increase with overall traffic given forecast growth in freight demand – 2.5% annual growth in truck tonnage – at the Port of Portland\textsuperscript{11}. As a result, design and or operational changes will likely be required at the N. Portland Rd/N. Columbia Blvd intersection or on N. Fessenden St in order to encourage trucks to use the designated “around the horn” freight route.

\textsuperscript{11} Forecast annual growth between 1997 and 2030 (Portland Freight Master Plan, 2006).
X. **Summary of Key Findings**

The findings of the existing and future no-build conditions analysis are summarized below.

**Land Use Context**
- Transportation facilities within the study area serve two primary purposes: (1) local, multimodal (passenger and freight) travel within the St. Johns neighborhood and (2) local and through truck and rail freight movements to support the concentration of industrial sector employment to the north and east of the neighborhood.
- The N. Columbia Blvd/N. Burgard Rd/N. Lombard St route is intended (and designed) to facilitate freight access and mobility and is characterized by 14-foot wide travel lanes with limited intersections, sidewalks, and on-street parking.
- The N. Fessenden St/N. Saint Louis Ave route travels through primarily residential and neighborhood retail land uses with 12-foot wide travel lanes, on-street parking, sidewalks and bike lanes, and a larger number of signalized and stop controlled intersections.

**Existing Transportation Facilities**
- The existing function and design of N. Columbia Blvd, N. Burgard Rd, and N. Lombard St is consistent with their current Transportation System Plan (TSP) traffic and street design classifications, which emphasize vehicle and freight mobility.
- N. Columbia Way and N. Fessenden St currently serve a large volume of traffic from outside the area and regional truck traffic, which is inconsistent with their TSP designation as Neighborhood Collectors and Local Service Truck Streets.

**Existing Traffic Volumes and Operations**
- All of the study intersections currently operate at acceptable levels of service and below capacity during the weekday a.m. and p.m. peak hours, except for the N. Columbia Way/N. Macrum Ave intersection. Southbound through and left turning movements at the intersection currently operate at level of service “E” during the p.m. peak hour; however, both movements are far under capacity.

**Neighborhood Traffic Concerns**
- Over one-quarter (27%) of westbound traffic on the N. Fessenden St/N. Saint Louis Ave corridor is through traffic (vehicles traveling through the area without making a stop at a local destination).
  - Over half (55%) of the traffic entering N. Fessenden St from southbound N. Columbia Way is through traffic.
  - Approximately 19% of the traffic entering N. Fessenden St from N. Fessenden St east of N. Columbia Way is through traffic.
- Over one-third (37%) of westbound traffic on N. Fessenden St has a local destination. Another 35% of trips originate from the neighborhood.
- Approximately 20% of vehicles on N. Fessenden St are “4 tire trucks”; (e.g. pickups, U-Haul, local distribution vehicles). Large trucks (vehicles with 6 or more tires) comprised 9% of traffic on N. Fessenden St.
- Average travel time from the N. Portland Rd/N. Columbia Blvd intersection to the N. Saint Louis Ave/N. Lombard St intersection is approximately two minutes shorter via the Fessenden route than the “around the horn” route.
• Travel speeds vary along the N. Fessenden St corridor. The 85th percentile travel speed (the speed that 85% of vehicles travel at or under) was observed to be 34 mph at the N. Fessenden St/N. Alma Ave intersection and 41 mph near the N. Saint Louis Ave/Smith St intersection.

Safety Analysis
• Between 2005 and 2009, 186 crashes were reported at study roadways and intersections.
  o 88 crashes (47%) occurred on the “around the horn” route.
  o 81 crashes (44%) occurred on the Columbia Way/Fessenden St/Saint Louis Ave corridor.
  o 17 crashes (9%) occurred at the Lombard St/Saint Louis Ave intersection, which both routes pass through.
  o 44% of these crashes resulted in injuries and three crashes on Columbia Blvd resulted in fatalities.
  o Approximately one-third of these crashes involved vehicles making turning movements.

Year 2035 Traffic Volumes and Operations
• All of the study intersections will continue to operate at acceptable levels of service and below capacity during the weekday p.m. peak hours, except for the N. Columbia Way/N. Macrum Ave intersection. Southbound through and left turning movements at this intersection will continue to operate at level of service “F” during the p.m. peak hour; however, both movements will remain far under capacity.
• If design or operational changes are not made at the N. Portland Rd/N. Columbia Blvd intersection or on N. Fessenden St it is anticipated that in 2035:
  o Trucks will continue to travel through the neighborhood as opposed to using the designated “around the horn” freight route due to travel time savings. Given moderate – 1% annual – forecast traffic growth on N. Columbia Blvd and N. Fessenden St, both routes are anticipated to maintain similar travel times in the future.
  o The volume of trucks traveling through the St. Johns neighborhood will likely increase, given forecast growth in freight demand – 2.5% annual growth in truck tonnage – at the Port of Portland.