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Attachment F  
Transportation Technical Memorandum

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Sounder Yard and Shops Facility Project

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# Transportation Technical Memorandum

March 25, 2016

Prepared for: Sound Transit

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*In association with: Sowinski Sullivan Architects, PC*

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***Sounder Yard and Shops Facility Project***

**ACRONYMS AND ABBREVIATIONS**

BNSF	Burlington Northern Santa Fe
LOS	level of service
SW	southwest

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## **1.0 BACKGROUND AND OVERVIEW**

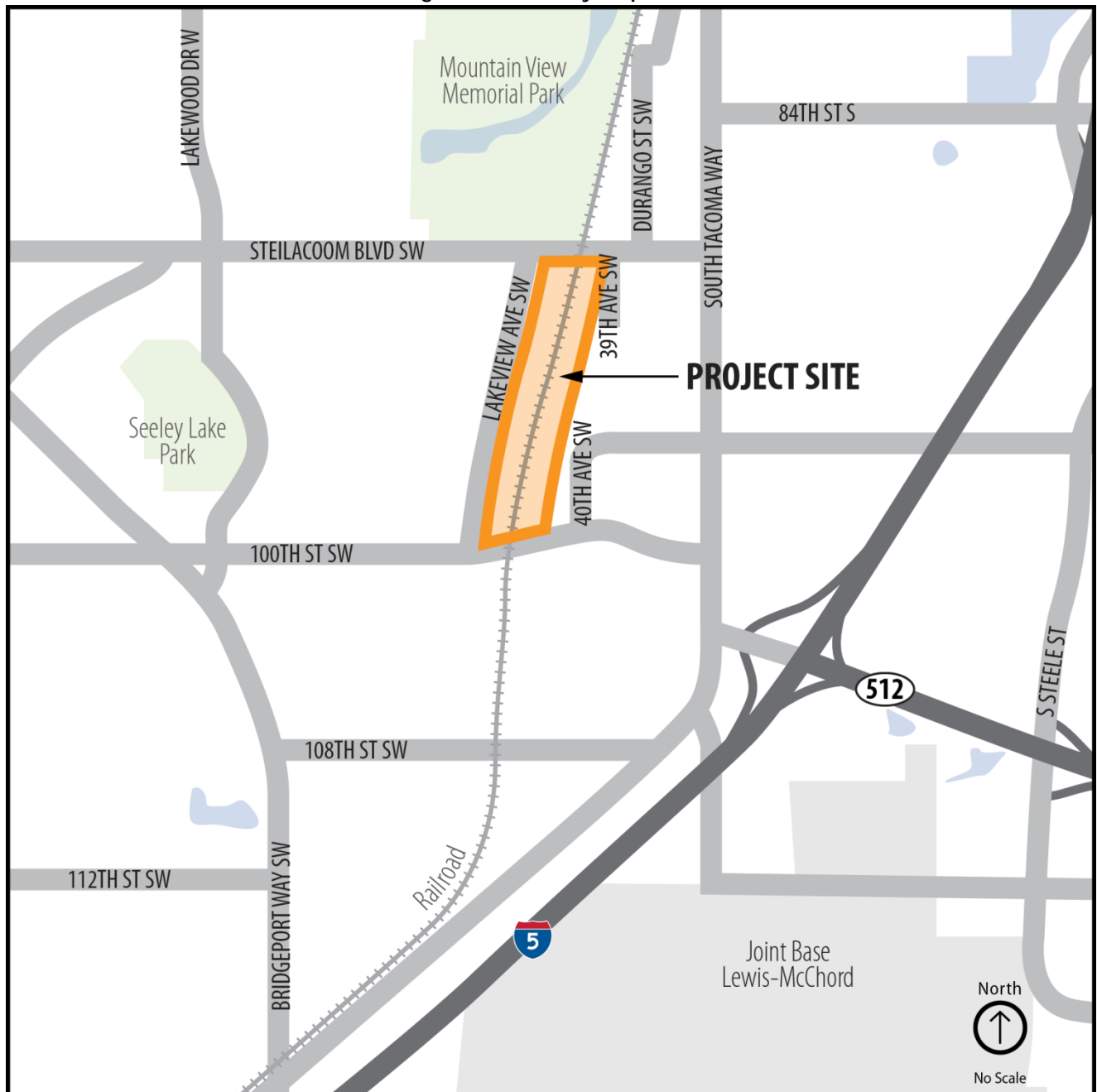
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This memorandum summarizes future transportation impacts associated with the Souder Yard and Shops Facility Project and builds on earlier transportation analysis work completed for the Souder Yard Expansion phase. The Souder Yard and Shops Facility Project involves construction of a large-scale maintenance building to accommodate back shops and other critical uses.

The structure of the traffic analysis effort followed a conventional transportation planning study format to directly support the environmental review (Washington State Environmental Policy Act/National Environmental Policy Act) process and address key peak-period operational issues associated with site-generated traffic. This summary technical memo describes the outcome of the analysis beginning with a formal project description and reference to the study methods and assumptions (Chapter 2.0). The types and sources of data collected for this project and evaluation of the affected environment are defined in Chapter 3.0. Future site-generated traffic levels, peak-hour operational conditions, and resulting impacts are described in Chapter 5.0, while potential mitigation measures to counteract any project impacts are described in Chapter 6.0. A methods and assumptions memorandum, reviewed by the City of Lakewood and Sound Transit, was previously prepared in May 2015 to outline the approach and steps required for preparing this transportation technical memorandum.

The study area for the transportation analysis, shown in Figure 1-1, includes the key arterials of 100th Street SW, Steilacoom Boulevard SW, and Lakeview Avenue SW. Other minor streets include 39th Avenue SW, 40th Avenue SW, and Durango Street SW. Including the site driveway on 100th Street SW; six intersections were targeted for evaluation.

**Figure 1-1. Vicinity Map**



## **2.0 PROJECT DESCRIPTION**

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### **2.1 Existing Improvements**

The existing Souder Century Yard is located between Steilacoom Boulevard SW and 100th Street SW (Figure 1-1). Sound Transit has undertaken and planning a series of improvements to the Century Yard site including:

- M-to-Lakewood Track and Signal Project (completed in 2010)
- Souder Lakewood Layover Improvement Project (completed 2013)
- Souder Yard Expansion Project (scheduled completion late 2017)

Two layover tracks (LT1 and LT2) for train storage were constructed as part of the M-to-Lakewood Track and Signal Project, in the rail right-of-way adjacent to the existing tracks at the Century Yard site in 2010.

The subsequent Souder Lakewood Layover Improvement Project included perimeter fencing, yard lighting, gravel access roads, a dry fire line, and wayside power units.

The current planned improvements of the Souder Yard Expansion Project include the addition of a third layover track (LT3), new train and engine crew building (T & E Building) with an associated 45-stall parking lot, storage building, and stand-alone compressed air unit. In addition, Sound Transit will pave existing gravel access roads, add an additional East Access Road, and install underground utilities, site lighting, and two new bullet-proof guard booths. Drainage facilities will be provided and/or updated accordingly. The Souder Yard Expansion Project improvements will be in place by late 2017, well in advance of the proposed Souder Yard and Shops Facility Project described below.

### **2.2 Souder Yard and Shops Facility Project Proposed Improvements**

The existing Souder Century Yard is located between Steilacoom Boulevard SW and 100th Street SW (Figure 2-1). The majority of the improvements associated with the Souder Yard and Shops Facility Project are located on the northern end of the existing yard, south of Steilacoom Boulevard SW. Sound Transit plans to purchase two additional parcels at the northern end of the existing yard and to the east of the existing site to accommodate the new shop building, vehicle parking, and access (Figure 2-1).

Figure 2-1. Project Site Plan



### ***Souder Yard and Shops Facility Project***

Sound Transit is proposing construction of a new, approximately 40,000-square-foot maintenance building on the Souder Century Yard site. The single-story building would contain back shops, material storage areas, offices, a conference room, welfare facilities for workers, including restrooms, locker rooms, a lunchroom kitchenette, and other ancillary uses. Posted rail, hoisting equipment, cranes, and other machinery required to support the inspection and maintenance of the fleet would be included. The improvements would allow for daily Federal Railroad Administration-required inspection of the fleet. Some of the maintenance activities performed at the Seattle Amtrak Yard would be relocated to the proposed shop; however the Amtrak facility would continue to provide car wash and fueling services.

The proposed project provides no new train service. Up to approximately 24 nighttime crossings of 100th Street SW per week (or up to approximately 12 per night) to and from the site would be required for train switching to move trains between the yard and shop area (see Appendix D). This would block 100th Street SW for approximately 3 minutes for each crossing. To minimize the duration of the blockage, the train sets will move all the way through the intersection, allowing the railroad gate arm to rise and the queue of vehicles to pass before the gates lower again to allow the train to move north across the intersection back into the train yard.

An estimated 31 staff would be employed at the maintenance building (27 day shift and 4 night shift employees). Primary night shift activities consist of moving the train cars into the maintenance building and staging the remaining cars that require work so they are in position for access to the maintenance building.

In addition to the maintenance building, approximately 40 vehicle parking spaces would be provided east of the maintenance building. The existing north access road from Steilacoom Boulevard SW would be reconfigured into a paved access drive for truck deliveries to the loading dock behind the maintenance building. The main entrance to the site would be relocated from Steilacoom Boulevard SW to the new access drive off of 39th Avenue SW, a private roadway that would be improved.

The Tacoma Public Utilities 115kV transmission line, currently located parallel to the rail alignment, would be relocated on-site to avoid conflicts with the planned maintenance facility.

Supporting facilities, such as roadway, site lighting, drainage facilities, and required utility infrastructure, are included in the project. Additional key project elements are as follows:

## ***Souder Yard and Shops Facility Project***

- Construct a new shop lead track on the eastern side of the site
- Construct shop tracks to provide train access to the new maintenance building
- Relocate the existing north guard booth to the new site entrance off 39th Avenue SW
- Construct a new electrical substation to serve the new facility
- Modify or partially relocate existing on-site fiber optic lines crossed by new track

### **2.3 Construction**

Construction of the Souder Yard and Shops Facility Project is expected to occur over a two-year period with the assumption that the preceding yard expansion elements are already in place. The yard expansion work will be completed by late 2017 while completion of the Yard and Shops Facility Project is anticipated in 2021.

## **3.0 METHODOLOGY**

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The methodology associated with this transportation analysis was summarized in a formal methods and assumptions memo, which included descriptions of the analysis scenarios, software tools, modes covered, study area limits, etc. A draft memo was submitted to Sound Transit for comment and review in June 2015. Sound Transit's comments were addressed in the final Souder Yard and Shops Facility Project *Transportation Assumptions and Methodology Memorandum*, which documents the analysis methodology.

## **4.0 EXISTING CONDITIONS**

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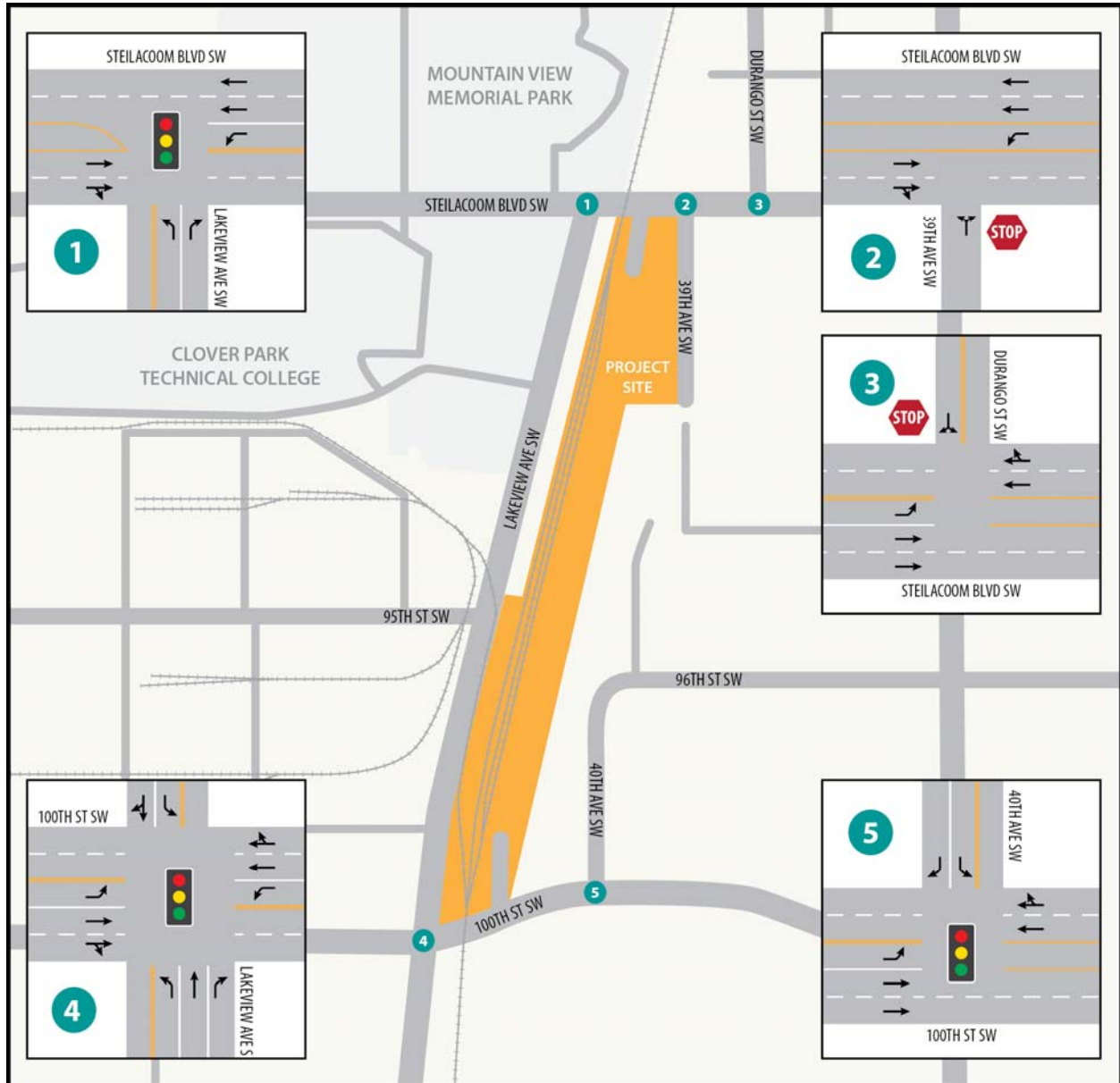
### **4.1 Existing Street Network**

The roadway network near the project site consists of a variety of facilities ranging from two-lane collector arterials to major multi-lane arterials. The City of Lakewood Municipal Code classifies streets and highways within the city limits in Chapter 12A.09. The streets and highways are classified by their intended functions. Key streets reflected in the study area and traffic analysis process include 100th Street SW and Steilacoom Boulevard SW, both classified as principal arterials. Intersecting these principal arterials are Lakeview Avenue SW and 40th Avenue SW, which are both classified as minor arterials. Durango Street SW is also located north of Steilacoom Boulevard SW, which is classified as a collector arterial. In addition, 39th Avenue SW leading into the project site from the north end is classified as a local access street. Major freeway facilities located nearby to the east include Interstate 5 and State Route 512. South Tacoma Way (State Route 99) is also located just east of the project study area. The five primary intersections (not

## Sounder Yard and Shops Facility Project

including site driveways) selected for evaluation and the lane configurations at each location are shown in Figure 4-1.

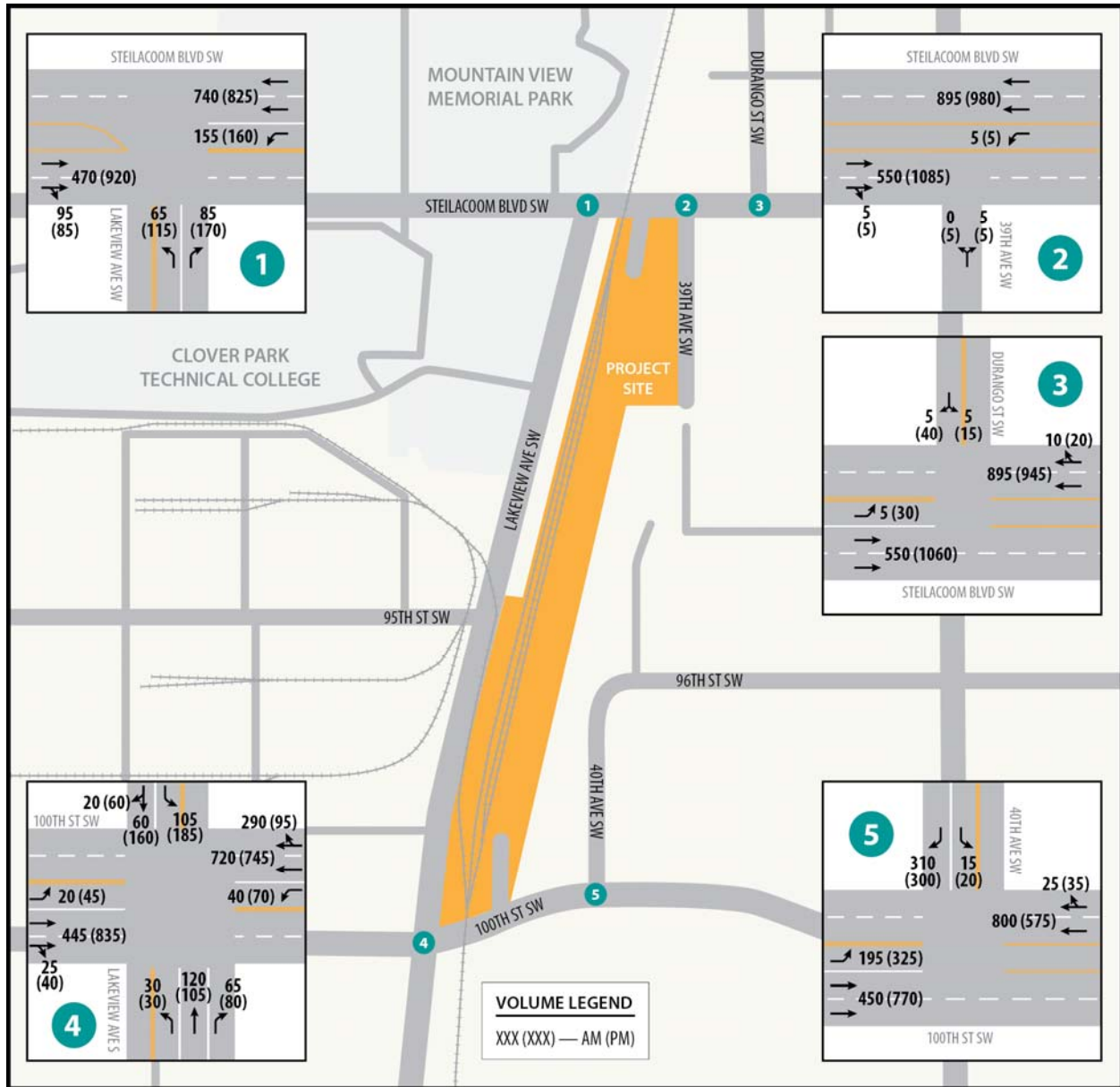
Figure 4-1. Existing Lane Configurations at Key Intersections



### 4.2 Peak-Hour Traffic Volumes

Existing AM and PM peak-period turning-movement traffic volumes for the study intersections were collected in March and June 2015. The AM counts were taken on a weekday from 7-9 AM, while PM peak-period counts were collected on a weekday from 4-6 PM. A summary of intersection volumes is shown in Figure 4-2. The field collected count data (in raw format) is provided in Appendix A.

**Figure 4-2. Existing Peak-Hour Intersection Volumes**



**4.3 Intersection Level of Service**

Operational analysis of AM and PM existing peak-hour traffic conditions for each of the study intersections was performed using the Synchro (Version 9) analysis package. The primary measure to gauge performance was Level of Service (LOS), which is based on average vehicle delays for intersection and serves as a general measure of congestion.



**Souder Yard and Shops Facility Project**

Table 4-1 provides standard LOS criteria and thresholds for signalized intersections, as represented in the 2010 Transportation Research Board *Highway Capacity Manual*. Intersection analysis results in terms of average vehicle delays and LOS are provided in Table 4-2.

**Table 4-1. Level-of-Service Criteria (Signalized Intersections)**

<b>LOS</b>	<b>Signalized Delay (seconds/vehicle)</b>	<b>Description of Delay Range</b>
A	< 10	Low intersection delays, virtually unimpeded
B	> 10 and ≤ 20	Minor delays, less freedom to maneuver through the intersection
C	> 20 and ≤ 35	Moderate but stable delays, less freedom to maneuver through the intersection
D	> 35 and ≤ 55	Long delays and high density, but stable traffic operations
E	> 55 and ≤ 80	Operating conditions at or near capacity, long delays
F	> 80	Forced operation, breakdown conditions, extremely long delays

Source: 2010 Highway Capacity Manual, Transportation Research Board

**Table 4-2. Existing (2015) Peak Hour Level of Service**

<b>Intersection</b>	<b>Control</b>	<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
		<b>LOS</b>	<b>Delay<sup>1</sup></b>	<b>LOS</b>	<b>Delay<sup>1</sup></b>
Steilacoom Blvd SW/Lakeview Ave SW	Signal	A	6	A	10
Steilacoom Blvd SW/39th Ave SW	Stop <sup>2</sup>	B	11	C	18
Steilacoom Blvd SW/Durango St SW	Stop <sup>2</sup>	C	16	C	16
100th Street SW/Lakeview Ave SW	Signal	B	15	C	20
100th Street SW/40th Ave SW	Signal	B	17	B	15

Notes:

<sup>1</sup>Delays are represented by average intersection estimates given in seconds per vehicle.

<sup>2</sup>Stop control intersection delay reflects worst-case approach (minor street).

As shown in Table 4-2, levels of congestion at the key study intersections are generally low to moderate in terms of average vehicle delay and level of service. All intersections captured in the analysis currently operate at LOS C or better (overall) during the PM peak hour. Field observations of traffic conditions during commute periods confirmed the overall moderate congestion levels for the three signalized intersections and two stop-controlled intersections. The City of Lakewood level of service standard for the targeted arterials and intersections is LOS D as described in the *City of Lakewood Comprehensive Plan (2014b)*.

## ***Souder Yard and Shops Facility Project***

### **4.4 Transit Routes and Service**

Public transit near the project site is provided by Pierce Transit bus service. Three main bus routes serve the site and are near or relatively near the proposed maintenance building: Route 3 along Steilacoom Boulevard SW (north side of the site), Route 48 along 100th Street SW (south side of the site), and Route 300 on South Tacoma Way (east side of the site). Pierce Transit also operates a Sound Transit bus route on 108th Street SW; and during weekday evening hours, a number of deadheading buses (non-revenue service trips) use 100th Street SW to return to the Pierce Transit bus maintenance base on 96th Street SW. Service levels (headways) for these routes are approximately 30 minutes for both peak and off-peak periods with the exception of the Route 48 with 30-minute peak service and 60-minute off-peak service. These routes are summarized in Table 4-3. More detailed information regarding routes/service levels can be found on the Pierce Transit website.

**Table 4-3. Bus Routes Serving Project Site**

<b>Bus Route</b>	<b>Relevant Arterial</b>	<b>Origin–Destination</b>	<b>Peak/Off Peak Frequency</b>	<b>Weekday Hours of Operation</b>	<b>Nearest Stop to Site</b>
3	Steilacoom Blvd SW	Lakewood—Tacoma	30/30 minutes	6 AM—10 PM	< 500 feet
48	100th St SW	Lakewood—Tacoma	30/60 minutes	5:30 AM—9:30 PM	~ 1/4 mile
300	South Tacoma Way	Tacoma Mall—Joint Base Lewis-McChord	30/30 minutes	6:30 AM—8:30 PM	~ 1/2 mile
574	108th St SW	Lakewood-SeaTac	30/60 minutes	4 PM – 11 PM	~ 1/2 mile

Train and maintenance crews are expected to arrive and depart at typical AM and PM peak commute hours. As shown in Table 4-3, provided bus service for the above routes covers those time periods (7 AM and 4 PM).

### **4.5 Freight Movements**

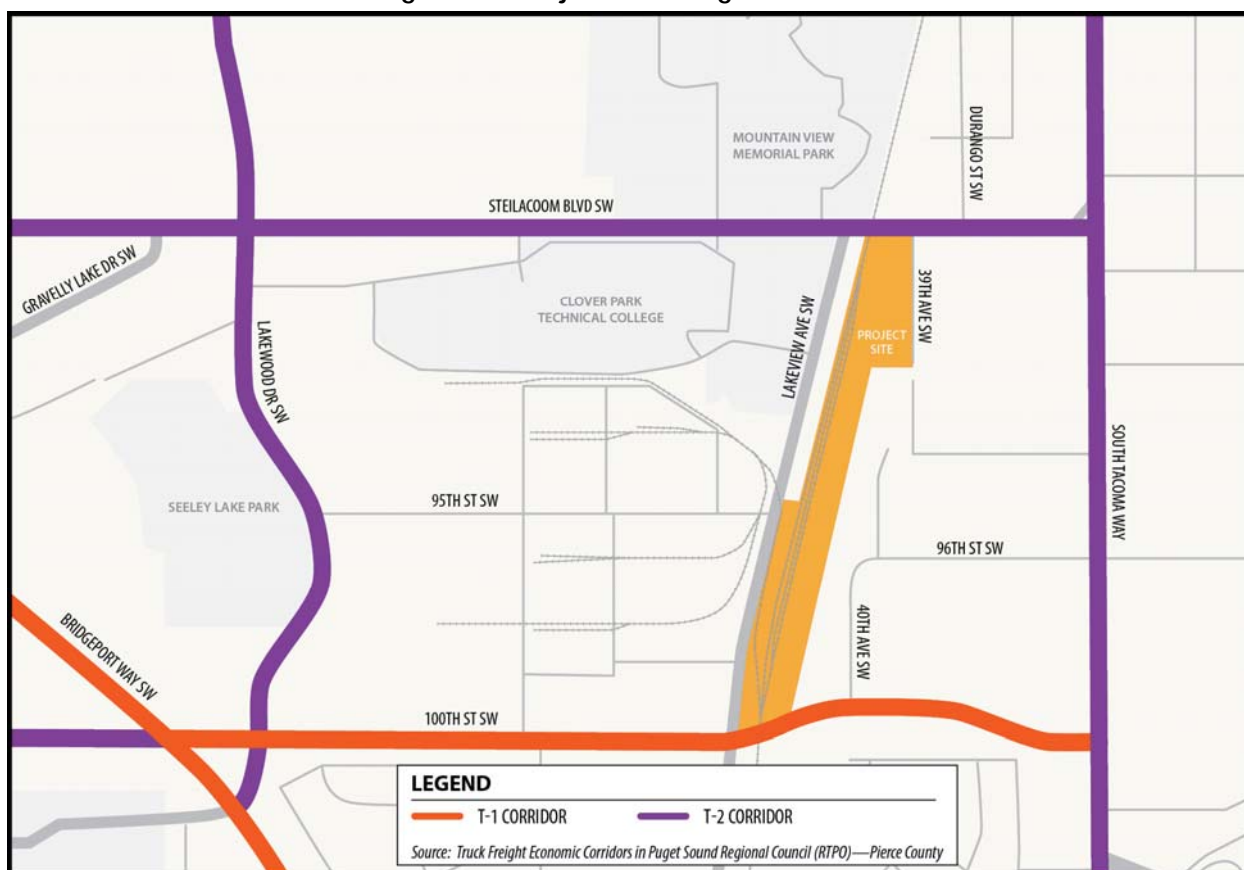
The project site is located in an area that is surrounded by freight-intensive roadways. These roadways are identified as Washington State Freight Economic Corridors by the Washington State Department of Transportation, which classifies freight economic corridors into four categories: T-1 corridors that carry more than 10 million tons per year, T-2 corridors that carry 4-10 million tons per year, alternative freight

### **Souder Yard and Shops Facility Project**

routes for T-1 routes, and first/last mile connector routes between T-1 and T-2 corridors. Several corridors in the project area are identified to be freight corridors, as shown in the list below and in Figure 4-3.

- T-1 corridors:
  - 100th Street SW (east of Bridgeport Way SW)
  - Bridgeport Way SW
- T-2 corridors:
  - Steilacoom Boulevard SW
  - Lakewood Drive SW
  - S Tacoma Way

**Figure 4-3. Project Site Freight Corridors**



Source: WSDOT, Truck Freight Economic Corridors in Puget Sound Regional Council (RTPO)—Pierce County

## ***Sounder Yard and Shops Facility Project***

### **4.6 Non-Motorized Traffic**

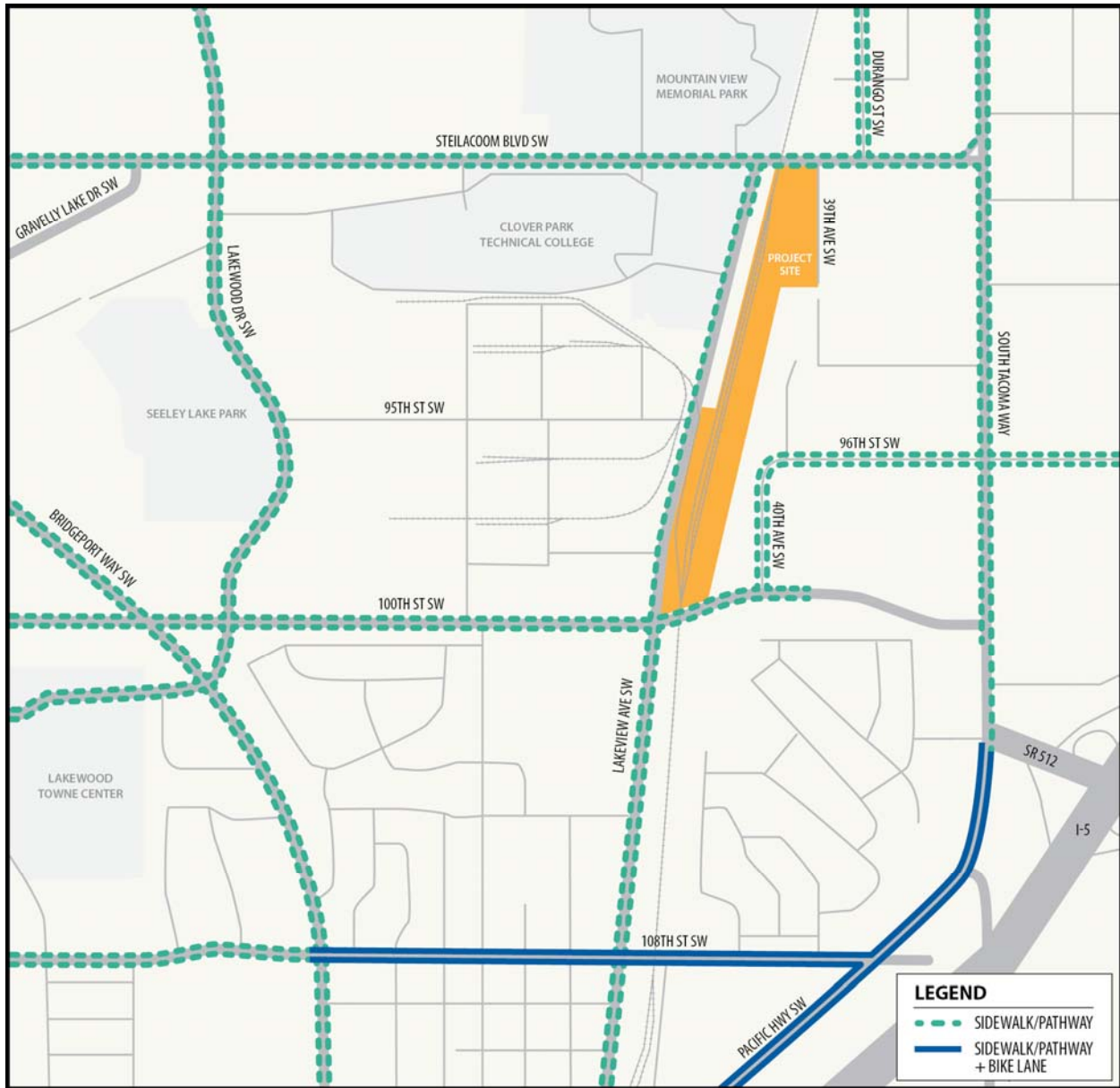
Many of the major roadways were examined near the project site to determine if there is existing infrastructure that promotes non-motorized travel. The major roadways examined include Steilacoom Boulevard SW, S Tacoma Way, Lakeview Avenue SW, Lakewood Drive SW, Bridgeport Way SW, 100th Street SW, 108th Street SW, 39th Avenue SW, 40th Avenue SW, and Durango Street SW. These corridors have an abundance of sidewalks/trails for pedestrians. A roadway of importance that did not have sidewalks/trails was 39th Avenue SW leading into the project site. The east side of Lakeview Avenue SW is also missing a sidewalk between Steilacoom Boulevard SW and 100th Street SW. While traveling eastbound on 100th Street SW, sidewalks are truncated after crossing the 40th Avenue SW intersection.

The only dedicated bike lanes near the project site are at the southern end of S Tacoma Way (where the roadway becomes Pacific Highway SW) and a section of 108th Street SW south of the project site and east of Bridgeport Way SW. Figure 4-4 shows the non-motorized network.

### **4.7 Sounder Layover Roadway Blockages**

Sounder trains currently enter the layover tracks north of 100th Street SW after serving the Lakewood terminus station in the afternoon and evening (weekdays). These northbound layover crossings of 100th Street SW require trains to slow down and switch over to the layover tracks prior to crossing 100th Street SW, thereby blocking 100th Street SW longer than a typical pass-through trip. The current blockage time for these layover movements is approximately 2-3 minutes, which is considered modest in terms of impacts to local streets.

**Figure 4-4. Project Site Non-Motorized Paths**



**4.8 Collision History**

The collision data summary provided by the City of Lakewood is shown in Appendix B. The locations analyzed for collisions involved the principal arterials 100th Street SW south of the project site and Steilacoom Boulevard SW north of the project site. The other roadways that intersect both of these principal arterials and are also within the immediate vicinity of the project site are Lakeview Avenue SW, 39th Avenue SW, 40th Avenue SW, and Durango Street SW. In total, five intersections were examined. The data dates from January 1, 2009 to 2015. The 2015 data was considered partial and preliminary. The findings are summarized in Table 4-4.

**Table 4-4. Collision History**

Intersection	Number of Crashes	Severity				
		No Injury	Possible Injury	Evident Injury	Serious Injury	Unknown
100th St SW and Lakeview Ave SW	17	8	5	1	2	1
100th St SW and 40th Ave SW	15	9	5	1	0	0
Steilacoom Blvd SW and Lakeview Ave SW	32	22	9	0	0	1
Steilacoom Blvd SW and 39th Ave SW	2	0	1	0	0	1
Steilacoom Blvd SW and Durango St SW	4	4	0	0	0	0

Source: Washington State Department of Transportation Crash Data, January 1, 2009 available 2015.

From the data summarized, the Steilacoom Boulevard SW and Lakeview Avenue SW intersection resulted in the highest number of crashes (32). However, the majority of the crashes resulted in no injuries (22). The 100th Street SW and Lakeview Avenue SW intersection had about half the number of crashes (17) in comparison, but resulted in the highest number of serious injuries (2). Of the intersections examined, 100th Street SW and Lakeview Avenue SW was the only intersection that had crashes resulting in serious injury, while Steilacoom Boulevard SW and Lakeview Avenue SW had the highest number of possible injuries. The 100th Street SW and 40th Avenue SW intersection is worth noting because it had a higher number of crashes (15) than the 39th Avenue SW and Durango Street SW intersections.

## **5.0 FUTURE CONDITIONS**

### **5.1 Roadway Network Changes**

Planned or proposed changes for the study area arterials by the targeted 2020 horizon year would include a modest set of improvements that include repaving, new sidewalks, and a potential new signal. These projects are documented in the City of Lakewood *Six-Year Comprehensive Transportation Improvement Program 2015-2010* (2014a) and include the following:

- *Roadway restoration*: Steilacoom Boulevard SW from Lakewood Drive. to S. Tacoma Way (2015)
- *Replace existing signal*: Steilacoom Boulevard SW and Lakeview Avenue SW (2015-2016)
- *New traffic signal*: Steilacoom Boulevard and Durango Street (2015-2016)

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**5.2 Traffic Volume Forecasts**

Traffic volume forecasts for future 2020 conditions were based primarily on background growth in arterial traffic demand and projected site trip generation. A review of the City of Lakewood’s historical volume summary showed a wide range of volume growth for arterials within and outside of the study area. Most annualized growth for neighboring streets was found to be in the range of 0.5 to 1.5 percent per year with some growth rate outliers above 2 percent. As a conservative estimate of growth for the purposes of future year traffic analysis, an annual rate of 1.5 percent was selected. Project trip generation for the Souder Yard Expansion Project that will be built by late 2017 was previously developed to estimate trips associated with daytime BNSF Railway/Sound Transit train crews and nighttime cleaning crews. These trips are included in the 2020 Baseline traffic volume forecasts. Employees and resulting trip activity associated with the Souder Yard and Shops Facility Project would be primarily daytime train maintenance staff with a handful of nighttime maintenance staff. These trips were added to the 2020 Baseline traffic forecast to develop the 2020 Build volume forecasts.

A summary of the trip generation for the Souder Yard Expansion and Souder Yard and Shops Facility Projects is shown in Table 5-1.

**Table 5-1. Project Trip Generation Summary**

Time Period	Souder Yard Expansion		Souder Yard and Shops Facility		Total Souder Yard Expansion and Souder Yard and Shops Facility Project Volumes	
	Entering	Exiting	Entering	Exiting	Entering	Exiting
Morning Peak Hour (7-8 AM)	25	15	30	10	55	25
Evening Peak Hour (4-5 PM)	15	25	10	30	25	55
Mid-day (10 AM—3 PM) <sup>1</sup>	12	12	20	20	32	32
Daily (24-hour period)	52	52	60	60	112	112

Source: Sound Transit and BNSF  
<sup>1</sup>Reflects staff break and delivery trips

Summaries of the 2020 Baseline intersection volumes, trip generation estimates for the Souder Yard and Shops Facility Project, and the 2020 Build intersection volumes for the five key intersections are provided in Figure 5-1 through Figure 5-3. Project trips in Figure 5-2 were divided evenly to the north and south with half of inbound and outbound trips via Steilacoom Boulevard and the remaining half via 100th Street SW.

Figure 5-1. 2020 Baseline Intersection Volumes

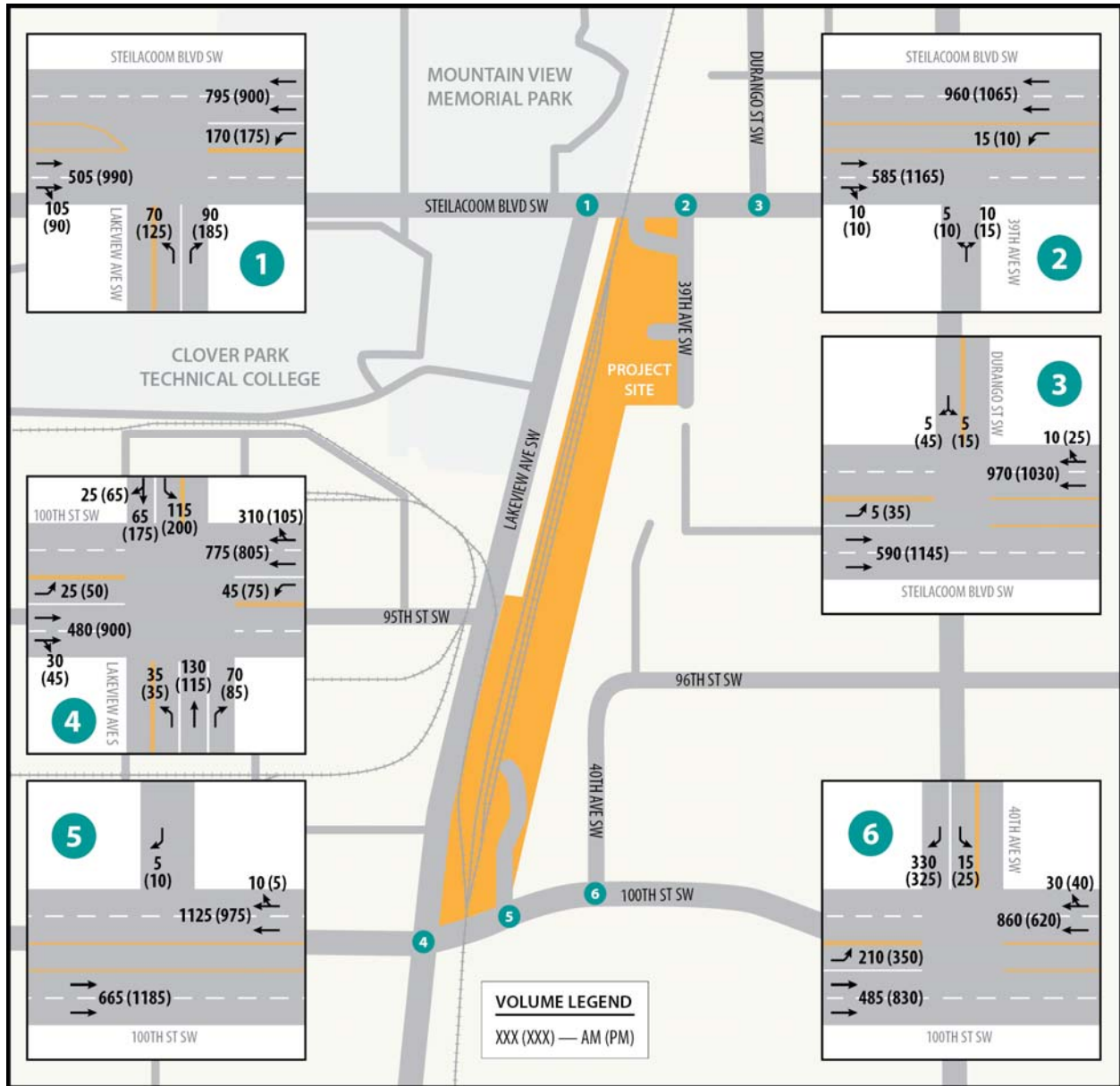




Figure 5-2. Project Trip Generation Volumes

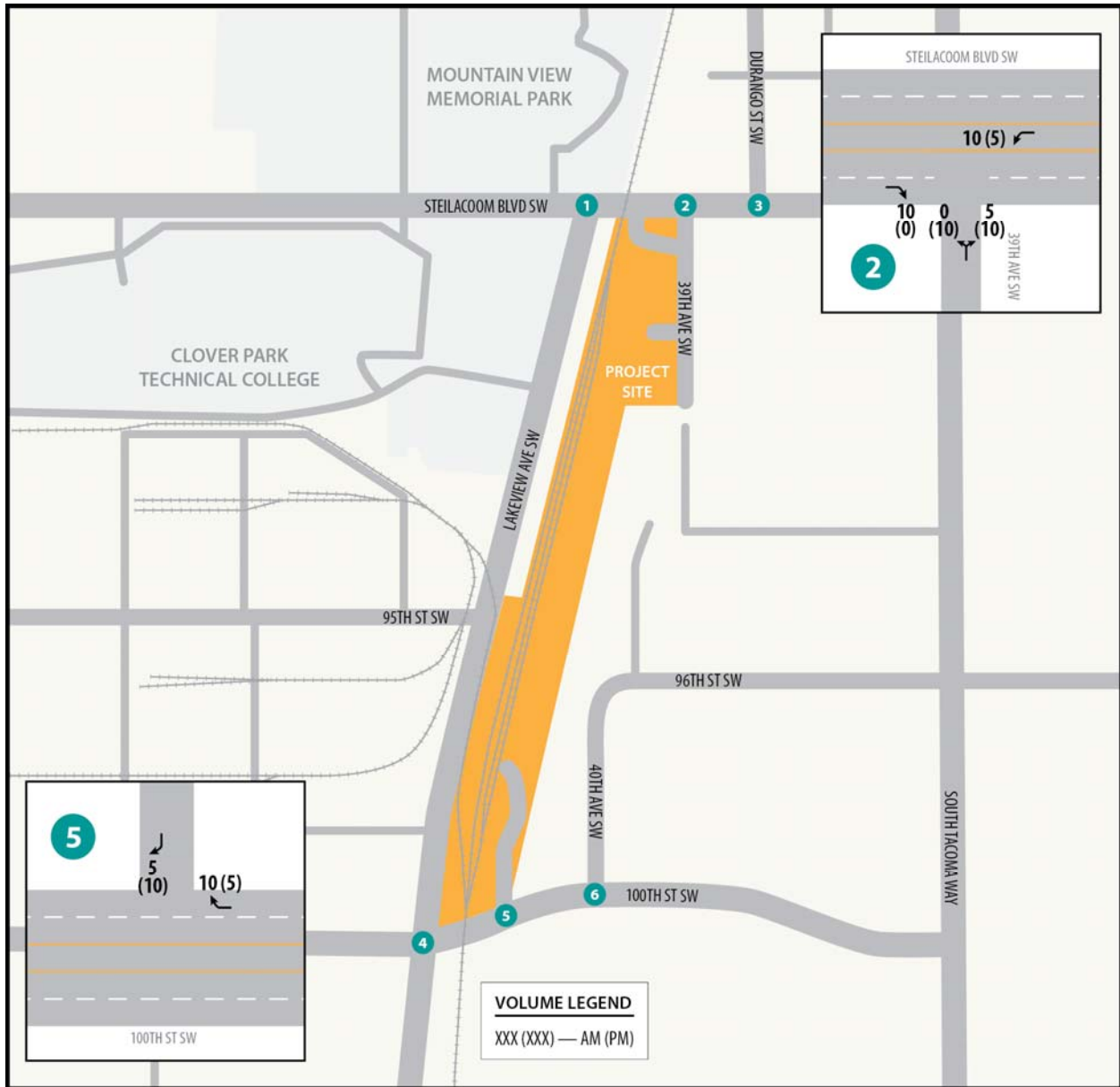
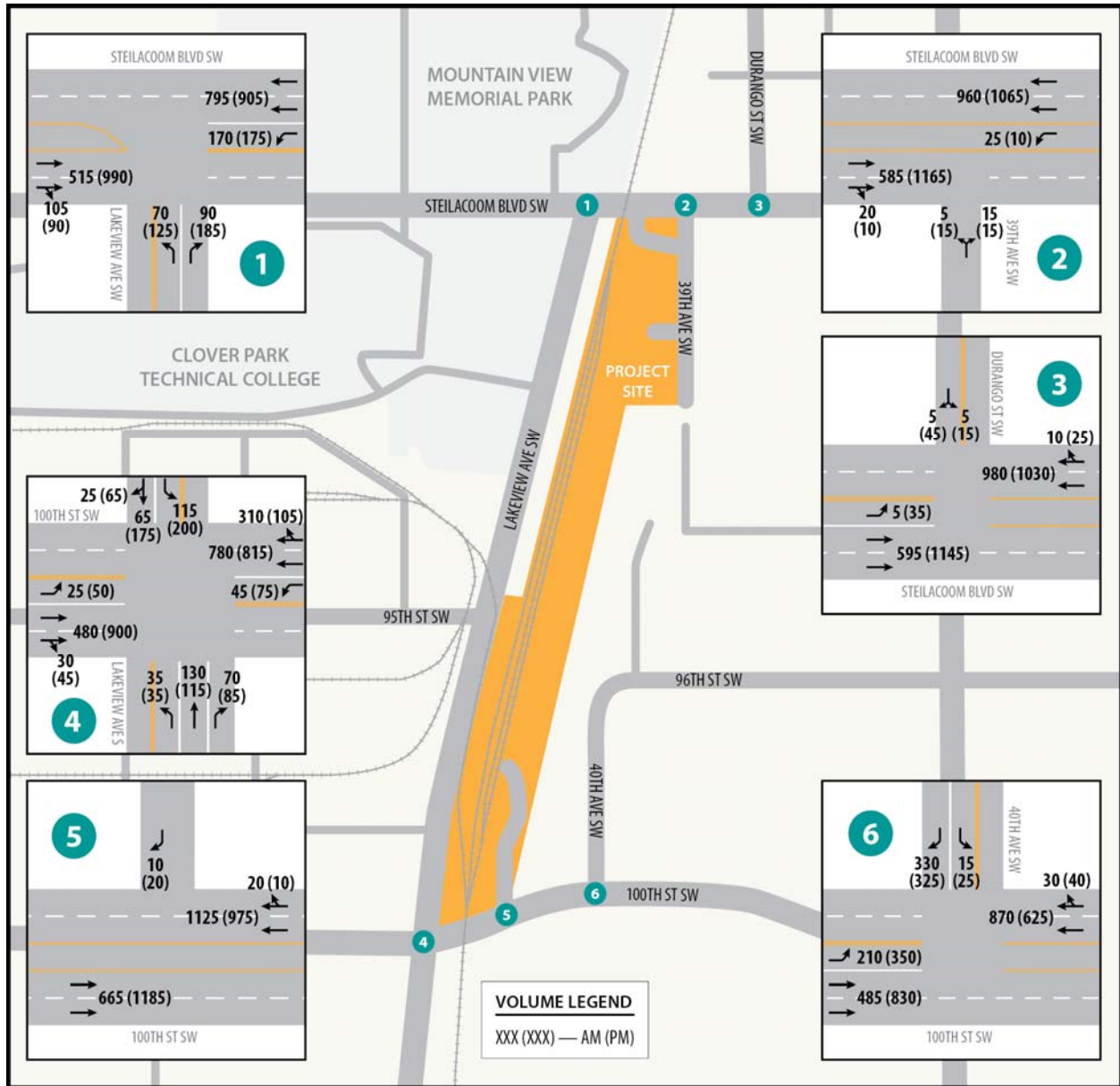


Figure 5-3. 2020 Build Scenario Intersection Volumes



**Souder Yard and Shops Facility Project**

**5.3 Intersection Level of Service**

Operational analysis of future Baseline and Build conditions for AM and PM peak hours was performed using Synchro (Version 9) analysis software. As with the existing conditions assessment, the two primary performance measures used to compare future conditions were average vehicle delays and level of service. No major roadway network changes were included for the future Baseline and Build scenarios compared to existing conditions. In addition, no signal phasing or timing optimization adjustments for the Steilacoom Boulevard SW/Lakeview Avenue SW, 100th Street SW/Lakeview Avenue SW, or 100th Avenue SW/40th Avenue SW intersections were incorporated. The planned signal at Steilacoom Boulevard SW and Durango Street SW is not yet funded (based on the City of Lakewood capital improvement program), so it was not included in the analysis in order to provide a worst-case scenario in terms of potential project impacts. The results of the 2020 analyses for Baseline and Build conditions are summarized in Table 5-2. For additional information, see Appendix C.

Table 5-2. Future 2020 Peak-Hour Level of Service

Intersection	2020 Baseline Conditions				2020 Build Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>
Steilacoom Blvd SW/ Lakeview Ave SW	A	7	B	11	A	7	B	11
Steilacoom Blvd SW/ 39th Ave SW <sup>2</sup>	B	14	C	23	B	14	D	27
Steilacoom Blvd SW/ Durango St SW <sup>2</sup>	C	20	C	20	C	20	C	20
100th Street SW/ Lakeview Ave SW	B	17	C	21	B	17	C	21
100th Street SW/ 40th Ave SW	B	19	B	16	B	20	B	16
100th Street SW/ Site Driveway <sup>2</sup>	B	13	B	13	B	14	B	13

Notes:

<sup>1</sup>Delays are represented by average intersection estimates given in seconds per vehicle.

<sup>2</sup>Delays and LOS reflect minor-street approach only.

As shown in the Table 5-2, similar to existing conditions, peak-hour delays for the future Baseline and Build scenarios are expected to be low to moderate for all intersections evaluated. No substantial changes in overall intersection delay or level of service are anticipated between Baseline and Build conditions, with

## ***Sounder Yard and Shops Facility Project***

only the Steilacoom Boulevard SW/39th Avenue SW stop-controlled intersection showing any potential increase in delay, although considered minimal at 4 seconds per vehicle.

### **5.4 Nighttime Train Switching Impacts (100th Street SW)**

Due to the length of Sounder train sets and configuration of Century Yard, nighttime switching at the south end of the site would be required to move trains into position for maintenance. The typical switching maneuver would involve trains moving southbound across 100th Street SW and then back north across 100th Street SW again into the yard and the designated layover track. Based on a projected maintenance schedule for Sounder trains, up to 12 at-grade blockages (total) at 100th Street SW may occur between 8 PM and 4 AM. This would reflect the back and forth movements required at the 100th Street SW railroad crossing to detach and move individual railcars into the maintenance building. For additional information about the movement of trains, see Appendix D.

Based on 24-hour arterial counts taken over a three day period, the highest documented hourly volumes between 8 PM and 4 AM are generally from 8 to 10 PM. Volumes between 10 PM and 11 PM are approximately 33 percent lower than the 9-10 PM hour and volumes between 11 PM and midnight are 50 percent lower than the 9-10 PM hour. To develop 2020 arterial volume projections, a background growth rate of 1.5 percent per year (similar to the intersection forecasts) was applied to the directional hourly volume data (Table 5-3).

**Table 5-3. Future 2020 Arterial Volumes on 100th Street SW (Nighttime)**

<b>Time Period</b>	<b>2015 Count Volumes<sup>1</sup></b>			<b>2020 Volume Projections</b>		
	<b>Eastbound</b>	<b>Westbound</b>	<b>Total</b>	<b>Eastbound</b>	<b>Westbound</b>	<b>Total</b>
8–9 PM	500	410	910	540	440	980
9–10 PM	365	320	685	395	345	740
8–10 PM (average)	430	365	795	465	395	860

Notes:

<sup>1</sup>Count taken on 100th Street SW just east of Lakeview Avenue SW

Based on train length and speed limits in the maintenance yard, the total duration of train blockages for 100th Street SW would be approximately 3 minutes. As noted in Section 4.7, blockages of up to 3 minutes are similar to what occurs for current Sounder layover access and is considered modest in terms of impacts to local streets.

## ***Souder Yard and Shops Facility Project***

Review of the effective green time for the eastbound and westbound signal phases in relation to the overall cycle length indicates more than sufficient capacity to discharge queues that may develop in either direction. As such, few, if any impacts to background traffic flow on 100th Street SW would occur even during the higher-volume shoulder hours of the nighttime period.

### **5.5 Transit and Freight Impacts**

No impacts to Pierce Transit Route 3 along Steilacoom Boulevard SW are expected as a result of project trip activity. For Pierce Transit Route 48 along 100th Street SW, minor delays may be caused by train switching activity (refer to Section 5.4) for up to three weekday bus trips during evening hours based on information received from Pierce Transit in January 2016. However, the service hours for the Route 48 end at approximately 9 PM, while train switching would likely occur between 8 PM and 4 AM. As such, bus route delays due to train switching movements would be minimal. Pierce Transit also operates Sound Transit's Route 574 that currently departs the Pierce Transit garage facility in the very early morning hours and could be affected by train movements.

In addition, a number of deadheading buses (non-revenue service trips) also use 100th Street SW to return to the Pierce Transit bus maintenance base on 96th Street SW during weekday evening hours. Similar to the Route 48, the Route 574 early morning departure and deadheading buses would be directly affected by delays due to rail switching activity though train operations are not anticipated to substantially delay or add travel time. In addition, alternative routing is available to further minimize delays. Potential future increases in bus service levels and/or evening deadheading activity would also be impacted by train switching across 100th Street SW during overlapping hours of operation.

Freight movements on Steilacoom Boulevard SW, 100th Street SW, and Lakeview Avenue SW would not be affected by project trip activity during typical weekday hours. However, train switching maneuvers across 100th Street SW may cause temporary delays to freight using 100th Street SW. Given the short duration of the blockage of 100th Street SW and alternative routing available via Steilacoom Boulevard SW and Lakeview Avenue SW, however, these disruptions would not have an appreciable effect on overall freight mobility and capacity in the area. Traffic volumes on Steilacoom Boulevard SW drop noticeably after the evening peak period and are modest during the night time period until 7:00 AM. As an example, two-way volume counts show 1,750 vehicles west of Lakeview Avenue SW from 5-6 PM and under 700

## ***Souder Yard and Shops Facility Project***

vehicles from 9-10 PM. As a result, traffic routed to Steilacoom Boulevard SW (as an alternate to 100th Street SW) would not experience substantial delays.

### **5.6 Emergency Services Impacts**

Similar to freight and transit, train switching maneuvers across 100th Street SW could cause temporary delays to emergency services using 100th Street SW. Police and fire services have alternative routes. The most suitable alternative pathway across the rail tracks would be Steilacoom Boulevard SW via Lakeview Avenue SW or South Tacoma Way. As discussed above, traffic volumes on Steilacoom Boulevard SW drop after the evening peak period and are modest during the night time.

The greatest impact would be for westbound traffic on 100th Street SW that must backtrack to access Steilacoom Boulevard SW. In this case, delays would be more prominent since routing to Steilacoom Boulevard SW could include the use of 40th Avenue SW and 96th Street SW. However, emergency services could avoid 100th Street SW during the night time hours when switching occurs, using South Tacoma Way to travel more directly to Steilacoom Boulevard SW or Lakeview Avenue SW in order to avoid the need to backtrack to South Tacoma Way and Steilacoom Boulevard SW. As a result, emergency service delays would be minimal with no significant response time impacts.

### **5.7 Non-Motorized Impacts**

Bicycle and pedestrian movements at key intersections and along major arterials would generally not be affected by project-generated trips during daytime hours (about 7 AM to 7 PM). However, due to nighttime train switching activity across 100th Street SW, delays of approximately 3 minutes could occur for bicyclists and/or pedestrians, although non-motorized volumes on 100th Street SW east of Lakeview Avenue SW are likely to be very low from 8 PM to 4 AM.

### **5.8 Business Access Impacts**

No significant impacts to business access on 39th Avenue SW would occur as a result of project trips entering or exiting the site via 39th Avenue SW. Based on Pierce County land use and parcel records, four businesses are located along 39th Avenue SW south of Steilacoom Boulevard, three of which have direct access to/from 39th Avenue SW. The three businesses consist of a vehicle towing company, a warehouse/office, and a light industrial/warehouse. As shown in Figure 4-2, existing traffic counts for the intersection of Steilacoom Boulevard/39th Avenue SW are low showing only 5-10 vehicle trips entering and 5-10 vehicle trips exiting 39th Avenue SW during the AM and PM peak hours.

## ***Sounder Yard and Shops Facility Project***

The additional 25 trips associated with the Sounder Yard and Shops Facility Project during the AM and PM peak hours (as shown in Figure 5-2) are not expected to affect business access on 39th Avenue SW. Similarly, vehicle delays at the Steilacoom Boulevard/39th Avenue SW intersection would not be affected.

### **5.9 Construction Impacts**

No significant impacts would occur as a result of the Sounder Yard and Shops Facility Project construction or roadway improvements to the existing 39th Avenue SW private roadway. Construction work would take place on-site and construction vehicles would access the site via 39th Avenue SW during normal business hours. Roadway improvements to the existing 39th Avenue SW private roadway may include sidewalk, paving, lighting, or drainage. Access would be maintained during the construction of these improvements and temporary impacts would not be significant.

### **6.0 MITIGATION MEASURES**

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There are no mitigation measures recommended during construction, as the work will take place on the existing property and acquired parcels. There would be no weekday peak hour LOS impacts resulting from the Sounder Yard and Shops Facility Project, thus no mitigation measures would be required.

During operations, the nighttime train switching activity required for train access into the yard and shop area will occur during the lowest volume periods of the day (8 PM to 4 AM). Delays of approximately 3 minutes due to switching maneuvers will affect traffic, non-motorized trips, and revenue and non-revenue bus service on 100th Street SW during this time, although volumes across all modes decline considerably after about 9 PM.

For bikes, pedestrians, and general purpose traffic, there are alternative routes available via Steilacoom Boulevard to the north and 108th Street SW to the south. Discussions with Pierce Transit and Sounder train operations staff will continue through the final design phase to identify opportunities to further minimize potential impacts to Route 48 transit riders and non-revenue (deadheading) buses due to train blockages at 100th Street SW. Potential options may include temporary (time of day) rerouting of Route 48 buses and deadheading buses to Steilacoom Boulevard or permanent route realignment to circumvent 100th Street SW.

## ***Souder Yard and Shops Facility Project***

Emergency services (police, fire, and ambulance) using 100th Street SW could be disrupted due to nighttime train switching activity. However, alternate routes via Lakeview Avenue SW and Steilacoom Boulevard SW will be available and are not expected to significantly increase response times.

## **7.0 REFERENCES**

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City of Lakewood. 2014a. Six-Year Comprehensive Transportation Improvement Program 2015-2020. Final July 21, 2014.

City of Lakewood. 2014b. City of Lakewood Comprehensive Plan. Last revised December 2014.

Parsons Brinckerhoff. 2015a. *Souder Yard and Shops Facility Project Conceptual Design Basis, Revised Conceptual Engineering*. Prepared in association with Sowinski Sullivan Architects. Submitted to Sound Transit. July 17, 2015.

Parsons Brinckerhoff. 2015b. *Souder Yard and Shops Facility Project Transportation Assumptions and Methodology Memorandum*. Prepared in association with Sowinski Sullivan Architects. Submitted to Sound Transit. July 17, 2015.

Transportation Research Board. 2010. *Highway Capacity Manual*.

Washington State Department of Transportation. 2015. Crash Data. January 1, 2009 available 2015.

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<http://www.wsdot.wa.gov/NR/rdonlyres/57F71D3B-0347-44FB-891D-80247D23EFF9/0/PSRCRTPOPierceCounty.pdf>.



# APPENDIX A

## Traffic Volume Count Data

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**Peak Hour Summary**

Site ID: 1



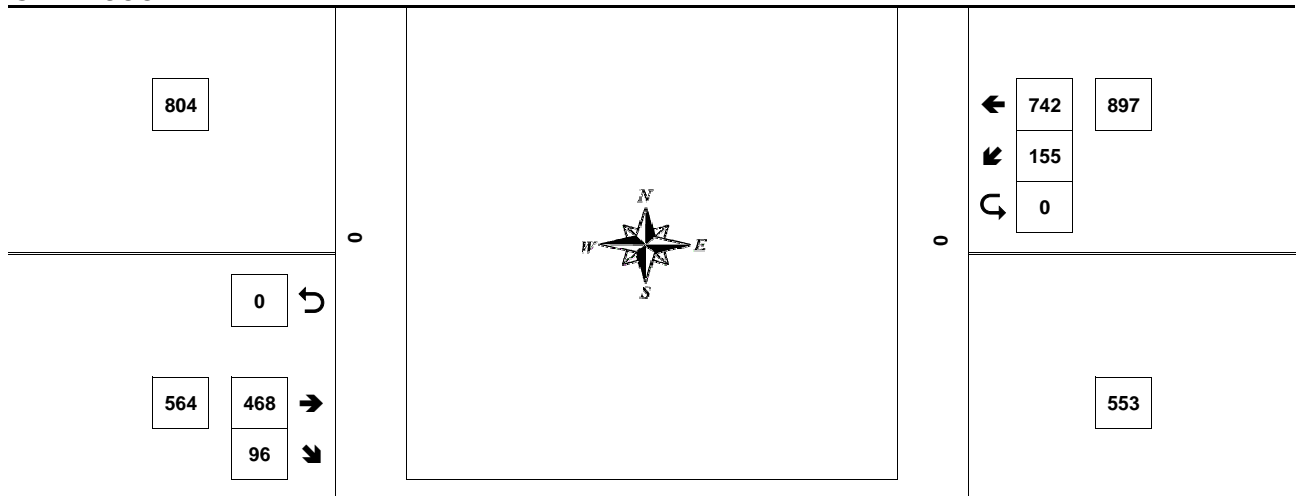
Eric Boivin  
(303) 668-0220

**LAKEVIEW AVE & STEILACOOM BLVD**

7:15 AM to 8:15 AM  
Tuesday, June 16, 2015

**STEILACOOM BLVD**

0



3

**STEILACOOM BLVD**

**LAKEVIEW AVE**

Approach	PHF	HV%	Volume
EB	0.86	5.7%	564
WB	0.83	4.1%	897
NB	0.80	9.5%	147
SB	0.00	0.0%	0
<b>Intersection</b>	<b>0.87</b>	<b>5.2%</b>	<b>1,608</b>

Count Period: 7:00 AM to 9:00 AM

# Total Vehicle Summary



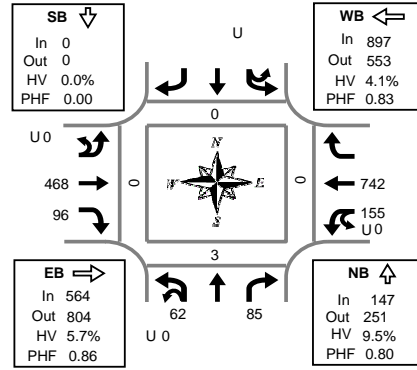
Eric Boivin  
(303) 668-0220

Site ID: 1

## LAKEVIEW AVE & STEILACOOM BLVD

Tuesday, June 16, 2015

7:00 AM to 9:00 AM



**Peak Hour Summary**  
7:15 AM to 8:15 AM

### 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound LAKEVIEW AVE			Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)		
	U	L	R					U	T	R	U	L	T		South		East	West	
7:00 AM	0	11	12					0	125	19	0	25	141		0	0	0		
7:15 AM	0	9	15					0	130	34	0	41	148		0	0	0		
7:30 AM	0	20	26					0	124	20	0	34	186		0	0	0		
7:45 AM	0	23	23					0	129	20	0	42	227		1	0	0		
8:00 AM	0	10	21					0	85	22	0	38	181		2	0	0		
8:15 AM	0	20	19					0	103	19	0	20	160		1	0	0		
8:30 AM	0	12	29					0	115	18	0	32	140		3	0	0		
8:45 AM	0	16	16					0	135	26	0	34	164		0	0	0		
Total Survey	0	121	161					0	946	178	0	266	1,347		7	0	0		

### Peak Hour Summary

7:15 AM to 8:15 AM

By Approach	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	147	251	398	14	0	0	0	0	564	804	1,368	32	897	553	1,450	37	0	3	0	0	
%HV		9.5%				0.0%				5.7%				4.1%							
PHF		0.80				0.00				0.86				0.83							

By Movement	Northbound LAKEVIEW AVE			Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total
	U	L	R					U	T	R	U	L	T			
Volume	0	62	85					0	468	96	0	155	742	1,608		
%HV	0.0%	6.5%	11.8%					0.0%	4.1%	13.5%	0.0%	3.2%	4.3%	5.2%		
PHF	0.00	0.67	0.82					0.00	0.90	0.71	0.00	0.92	0.82	0.87		

### Rolling Hour Summary

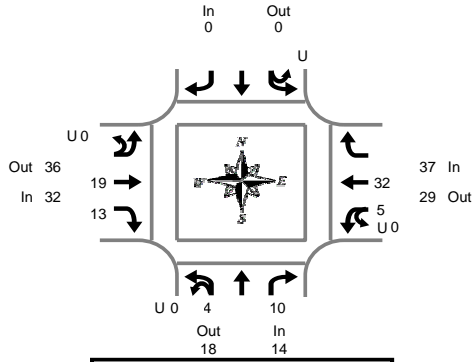
7:00 AM to 9:00 AM

Interval Start Time	Northbound LAKEVIEW AVE			Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T		R	North	South	East
7:00 AM	0	63		76					0	508	93	0	142	702	1,584		1	0	0	0
7:15 AM	0	62		85					0	468	96	0	155	742	1,608		3	0	0	0
7:30 AM	0	73		89					0	441	81	0	134	754	1,572		4	0	0	0
7:45 AM	0	65		92					0	432	79	0	132	708	1,508		7	0	0	0
8:00 AM	0	58		85					0	438	85	0	124	645	1,435		6	0	0	0

# Heavy Vehicle Summary



Eric Boivin  
(303) 668-0220



**Peak Hour Summary  
7:15 AM to 8:15 AM**

## LAKEVIEW AVE & STEILACOOM BLVD

Tuesday, June 16, 2015  
7:00 AM to 9:00 AM

15-Minute Interval Summary  
7:00 AM to 9:00 AM

Interval Start Time	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
7:00 AM	0	0		0	0						0	1	1	2	0	1	2	3	5
7:15 AM	0	0		3	3						0	5	5	10	0	0	5	5	18
7:30 AM	0	1		3	4						0	5	2	7	0	1	10	11	22
7:45 AM	0	2		4	6						0	6	2	8	0	0	9	9	23
8:00 AM	0	1		0	1						0	3	4	7	0	4	8	12	20
8:15 AM	0	1		1	2						0	5	5	10	0	2	8	10	22
8:30 AM	0	0		3	3						0	4	2	6	0	1	15	16	25
8:45 AM	0	1		0	1						0	4	3	7	0	0	18	18	26
Total Survey	0	6		14	20					0	0	33	24	57	0	9	75	84	38

Peak Hour Summary  
7:15 AM to 8:15 AM

By Approach	Northbound LAKEVIEW AVE			Southbound n/a			Eastbound STEILACOOM BLVD			Westbound STEILACOOM BLVD			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	14	18	32	0	0	0	32	36	68	37	29	66	83

By Movement	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
Volume	0	4		10	14					0	0	19	13	32	0	5	32	37	83

Rolling Hour Summary  
7:00 AM to 9:00 AM

Interval Start Time	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
7:00 AM	0	3		10	13						0	17	10	27	0	2	26	28	68
7:15 AM	0	4		10	14						0	19	13	32	0	5	32	37	83
7:30 AM	0	5		8	13						0	19	13	32	0	7	35	42	87
7:45 AM	0	4		8	12						0	18	13	31	0	7	40	47	90
8:00 AM	0	3		4	7						0	16	14	30	0	7	49	56	93

**Peak Hour Summary**

Site ID: 1



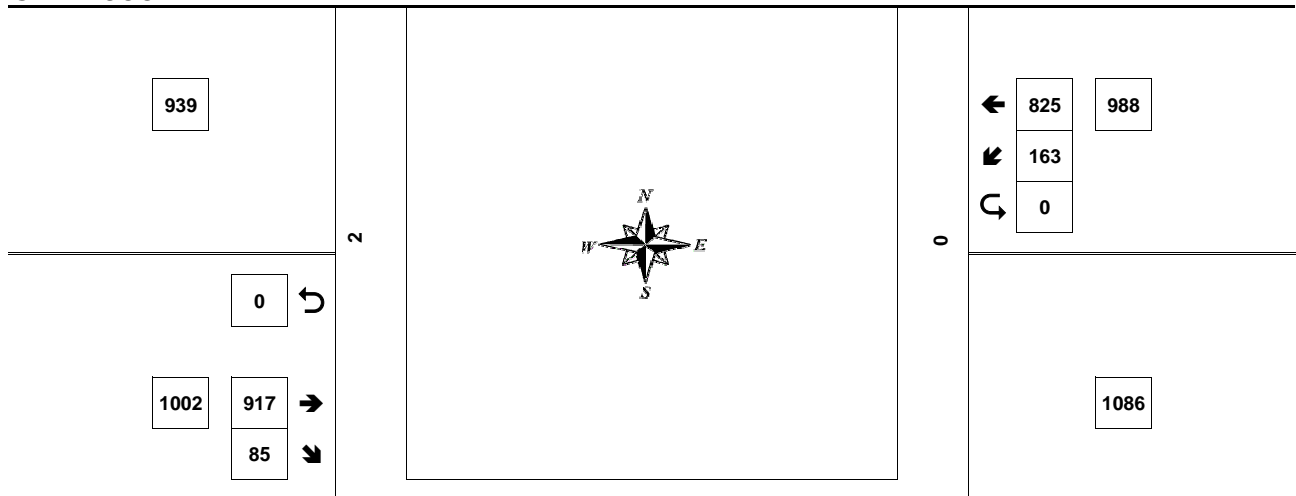
Eric Boivin  
(303) 668-0220

**LAKEVIEW AVE & STEILACOOM BLVD**

4:30 PM to 5:30 PM  
Tuesday, June 16, 2015

**STEILACOOM BLVD**

0



**STEILACOOM BLVD**

**LAKEVIEW AVE**

Approach	PHF	HV%	Volume
EB	0.96	4.7%	1,002
WB	0.86	6.6%	988
NB	0.85	1.1%	283
SB	0.00	0.0%	0
<b>Intersection</b>	<b>0.92</b>	<b>5.1%</b>	<b>2,273</b>

Count Period: 4:00 PM to 6:00 PM

# Total Vehicle Summary



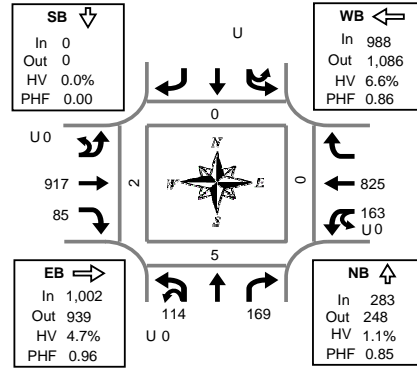
Eric Boivin  
(303) 668-0220

Site ID: 1

## LAKEVIEW AVE & STEILACOOM BLVD

Tuesday, June 16, 2015

4:00 PM to 6:00 PM



**Peak Hour Summary**  
4:30 PM to 5:30 PM

### 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound LAKEVIEW AVE			Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)		
	U	L	R	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		South	East	West
4:00 PM	0	29	43					0	196	29	0	31	196	524		3	0	0	
4:15 PM	0	23	40					0	203	22	0	38	188	514		0	0	0	
4:30 PM	0	17	50					0	218	22	0	39	189	535		1	0	1	
4:45 PM	0	26	43					0	241	19	0	46	240	615		1	0	1	
5:00 PM	0	45	38					0	233	17	0	38	213	584		1	0	0	
5:15 PM	0	26	38					0	225	27	0	40	183	539		2	0	0	
5:30 PM	0	25	34					0	190	25	0	32	218	524		0	0	0	
5:45 PM	0	23	38					0	191	16	0	40	204	512		0	0	1	
Total Survey	0	214	324					0	1,697	177	0	304	1,631	4,347		8	0	3	

### Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	283	248	531	3	0	0	0	0	1,002	939	1,941	47	988	1,086	2,074	65	2,273	0	5	0	2
%HV	1.1%				0.0%				4.7%				6.6%				5.1%				
PHF	0.85				0.00				0.96				0.86				0.92				

By Movement	Northbound LAKEVIEW AVE			Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total
	U	L	R	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	
Volume	0	114	169					0	917	85	0	163	825	2,273		
%HV	0.0%	0.9%	1.2%					0.0%	2.8%	24.7%	0.0%	6.7%	6.5%	5.1%		
PHF	0.00	0.63	0.85					0.00	0.95	0.79	0.00	0.89	0.86	0.92		

### Rolling Hour Summary

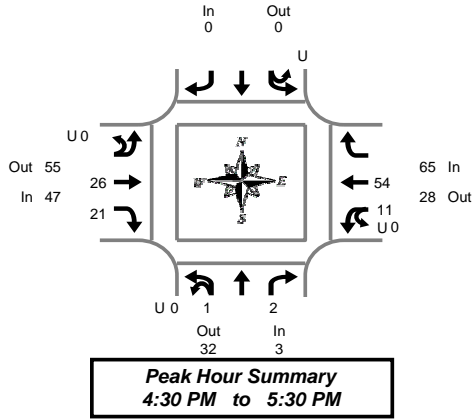
4:00 PM to 6:00 PM

Interval Start Time	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	South	East	West
4:00 PM	0	95		176					0	858	92	0	154	813	2,188		5	0	2		
4:15 PM	0	111		171					0	895	80	0	161	830	2,248		3	0	2		
4:30 PM	0	114		169					0	917	85	0	163	825	2,273		5	0	2		
4:45 PM	0	122		153					0	889	88	0	156	854	2,262		4	0	1		
5:00 PM	0	119		148					0	839	85	0	150	818	2,159		3	0	1		

# Heavy Vehicle Summary



Eric Boivin  
(303) 668-0220



## LAKEVIEW AVE & STEILACOOM BLVD

Tuesday, June 16, 2015

4:00 PM to 6:00 PM

15-Minute Interval Summary  
4:00 PM to 6:00 PM

Interval Start Time	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total			
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total					
4:00 PM	0	0		2	2						0		6	4	10	0	1	12	13	25
4:15 PM	0	0		1	1						0		7	1	8	0	0	10	10	19
4:30 PM	0	1		1	2						0		7	6	13	0	2	23	25	40
4:45 PM	0	0		0	0						0		6	3	9	0	1	14	15	24
5:00 PM	0	0		0	0						0		8	4	12	0	2	12	14	26
5:15 PM	0	0		1	1						0		5	8	13	0	6	5	11	25
5:30 PM	0	0		0	0						0		3	3	6	0	1	9	10	16
5:45 PM	0	1		1	2						0		2	4	6	0	0	13	13	21
Total Survey	0	2		6	8						0	0	44	33	77	0	13	98	111	39

Peak Hour Summary  
4:30 PM to 5:30 PM

By Approach	Northbound LAKEVIEW AVE			Southbound n/a			Eastbound STEILACOOM BLVD			Westbound STEILACOOM BLVD			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	32	35	0	0	0	47	55	102	65	28	93	115

By Movement	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total			
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total					
Volume	0	1		2	3					0	0		26	21	47	0	11	54	65	115

Rolling Hour Summary  
4:00 PM to 6:00 PM

Interval Start Time	Northbound LAKEVIEW AVE				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total			
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total					
4:00 PM	0	1		4	5						0		26	14	40	0	4	59	63	108
4:15 PM	0	1		2	3						0		28	14	42	0	5	59	64	109
4:30 PM	0	1		2	3						0		26	21	47	0	11	54	65	115
4:45 PM	0	0		1	1						0		22	18	40	0	10	40	50	91
5:00 PM	0	1		2	3						0		18	19	37	0	9	39	48	88



**Peak Hour Summary**

Site ID: 2



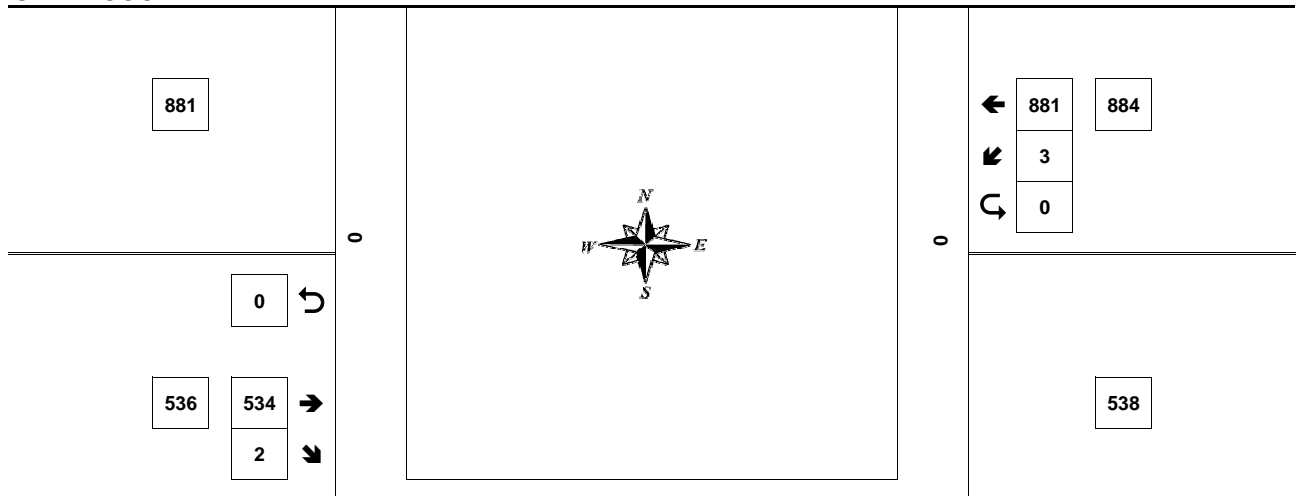
Eric Boivin  
(303) 668-0220

**39TH AVE SW & STEILACOOM BLVD**

7:15 AM to 8:15 AM  
Tuesday, June 16, 2015

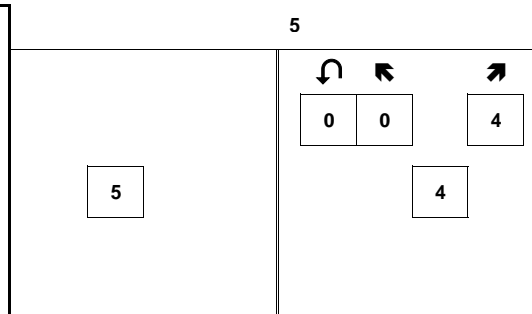
**STEILACOOM BLVD**

0



5

**STEILACOOM BLVD**



**39TH AVE SW**

Approach	PHF	HV%	Volume
EB	0.92	5.8%	536
WB	0.84	5.2%	884
NB	0.50	25.0%	4
SB	0.00	0.0%	0
<b>Intersection</b>	<b>0.87</b>	<b>5.5%</b>	<b>1,424</b>

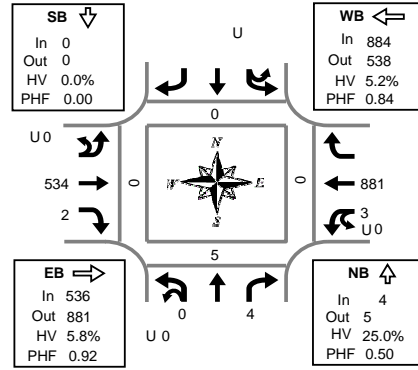
Count Period: 7:00 AM to 9:00 AM

# Total Vehicle Summary



Eric Boivin  
(303) 668-0220

**Site ID: 2**  
**39TH AVE SW & STEILACOOM BLVD**  
 Tuesday, June 16, 2015  
 7:00 AM to 9:00 AM



**Peak Hour Summary**  
7:15 AM to 8:15 AM

## 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		South	East	West		
7:00 AM	0	0	0	0					0		137	0	0	0	156					1	0	0
7:15 AM	0	0	0	2					0		139	1	0	1	187					1	0	0
7:30 AM	0	0	0	1					0		146	0	0	0	219					1	0	0
7:45 AM	0	0	0	1					0		144	1	0	1	263					1	0	0
8:00 AM	0	0	0	0					0		105	0	0	1	212					2	0	0
8:15 AM	0	0	0	1					0		121	0	0	0	178					0	0	0
8:30 AM	0	0	0	0					0		143	0	0	1	178					2	0	1
8:45 AM	0	1	0	0					0		152	2	0	2	193					0	0	0
Total Survey	0	1	0	5					0		1,087	4	0	6	1,586					8	0	1

## Peak Hour Summary

7:15 AM to 8:15 AM

By Approach	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total	Pedestrians & Bicycles In Crosswalk (By Location)				
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West	
Volume	4	5	9	1	0	0	0	0	536	881	1,417	31	884	538	1,422	46	0	5	0	0	0	
%HV		25.0%				0.0%				5.8%				5.2%								
PHF		0.50				0.00				0.92				0.84								

By Movement	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R						
Volume	0	0	0	4					0		534	2	0	3	881							1,424
%HV	0.0%	0.0%		25.0%					0.0%		5.6%	50.0%	0.0%	0.0%	5.2%							5.5%
PHF	0.00	0.00		0.50					0.00		0.91	0.50	0.00	0.75	0.84							0.87

## Rolling Hour Summary

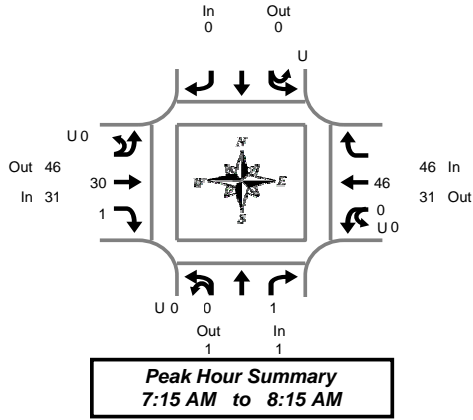
7:00 AM to 9:00 AM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	South	East	West	
7:00 AM	0	0	0	4					0		566	2	0	2	825					4	0	0
7:15 AM	0	0	0	4					0		534	2	0	3	881					5	0	0
7:30 AM	0	0	0	3					0		516	1	0	2	872					4	0	0
7:45 AM	0	0	0	2					0		513	1	0	3	831					5	0	1
8:00 AM	0	1	0	1					0		521	2	0	4	761					4	0	1

# Heavy Vehicle Summary



Eric Boivin  
(303) 668-0220



## 39TH AVE SW & STEILACOOM BLVD

Tuesday, June 16, 2015  
7:00 AM to 9:00 AM

### 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
7:00 AM	0	0		0	0						0	3	0	3	0	0	6	6	9
7:15 AM	0	0		0	0						0	8	1	9	0	0	7	7	16
7:30 AM	0	0		0	0						0	8	0	8	0	0	12	12	20
7:45 AM	0	0		1	1						0	9	0	9	0	0	13	13	23
8:00 AM	0	0		0	0						0	5	0	5	0	0	14	14	19
8:15 AM	0	0		1	1						0	7	0	7	0	0	11	11	19
8:30 AM	0	0		0	0						0	7	0	7	0	0	23	23	30
8:45 AM	0	1		0	1						0	5	0	5	0	0	21	21	27
Total Survey	0	1		2	3					0	0	52	1	53	0	0	107	107	3

### Peak Hour Summary 7:15 AM to 8:15 AM

By Approach	Northbound 39TH AVE SW			Southbound n/a			Eastbound STEILACOOM BLVD			Westbound STEILACOOM BLVD			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	0	0	0	31	46	77	46	31	77	78

By Movement	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total			
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total					
Volume	0	0		1	1					0	0		30	1	31	0	0	46	46	78

### Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
7:00 AM	0	0		1	1						0	28	1	29	0	0	38	38	68
7:15 AM	0	0		1	1						0	30	1	31	0	0	46	46	78
7:30 AM	0	0		2	2						0	29	0	29	0	0	50	50	81
7:45 AM	0	0		2	2						0	28	0	28	0	0	61	61	91
8:00 AM	0	1		1	2						0	24	0	24	0	0	69	69	95

**Peak Hour Summary**

Site ID: 2



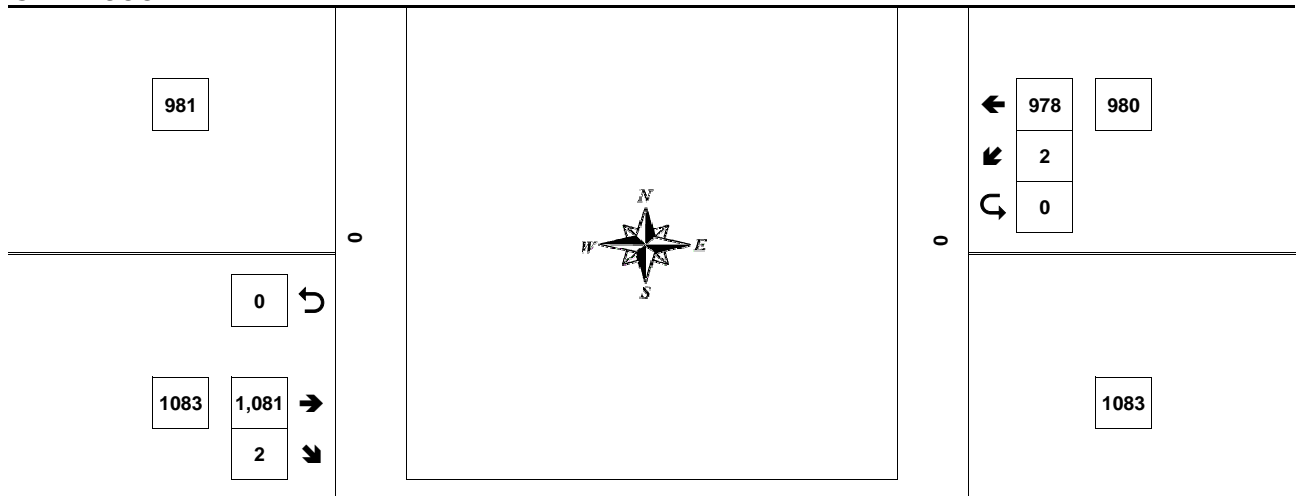
Eric Boivin  
(303) 668-0220

**39TH AVE SW & STEILACOOM BLVD**

4:30 PM to 5:30 PM  
Tuesday, June 16, 2015

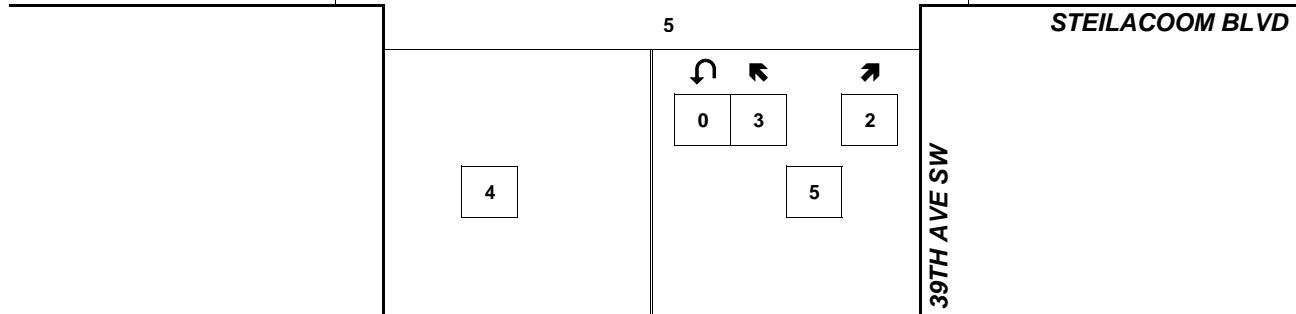
**STEILACOOM BLVD**

0



5

**STEILACOOM BLVD**



Approach	PHF	HV%	Volume
EB	0.97	2.8%	1,083
WB	0.86	6.3%	980
NB	0.63	20.0%	5
SB	0.00	0.0%	0
<b>Intersection</b>	<b>0.92</b>	<b>4.5%</b>	<b>2,068</b>

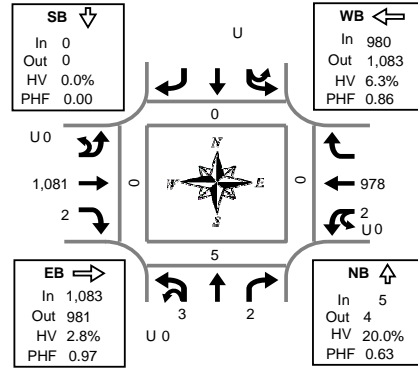
Count Period: 4:00 PM to 6:00 PM

# Total Vehicle Summary



Eric Boivin  
(303) 668-0220

**Site ID: 2**  
**39TH AVE SW & STEILACOOM BLVD**  
 Tuesday, June 16, 2015  
 4:00 PM to 6:00 PM



**Peak Hour Summary**  
 4:30 PM to 5:30 PM

**15-Minute Interval Summary**  
 4:00 PM to 6:00 PM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	U	L	T	R					U	T	R		U	L	T			South	East	West	
4:00 PM	0	0	0	0					0	238	0	0	0	0	230	468	3	0	0		
4:15 PM	0	1	0	2					0	241	0	0	1	225	470	1	0	0			
4:30 PM	0	1	0	0					0	268	0	0	0	231	500	0	0	0			
4:45 PM	0	0	0	0					0	277	0	0	0	284	561	1	0	0			
5:00 PM	0	1	1	1					0	279	1	0	0	234	516	1	0	0			
5:15 PM	0	1	1	1					0	257	1	0	2	229	491	3	0	0			
5:30 PM	0	1	0	0					0	229	0	0	0	241	471	0	0	0			
5:45 PM	0	0	0	0					0	225	0	0	0	233	458	0	0	0			
Total Survey	0	5		4					0	2,014	2	0	3	1,907	3,935	9	0	0			

**Peak Hour Summary**  
 4:30 PM to 5:30 PM

By Approach	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	5	4	9	1	0	0	0	0	1,083	981	2,064	30	980	1,083	2,063	62	2,068	0	5	0	0
%HV		20.0%				0.0%				2.8%				6.3%			4.5%				
PHF		0.63				0.00				0.97				0.86			0.92				

By Movement	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total			
	U	L	T	R					U	T	R		U	L	T					
Volume	0	3		2					0	1,081	2	0	2	978	2,068					
%HV	0.0%	33.3%		0.0%					0.0%	2.8%	0.0%	0.0%	0.0%	6.3%	4.5%					
PHF	0.00	0.75		0.50					0.00	0.97	0.50	0.00	0.25	0.86	0.92					

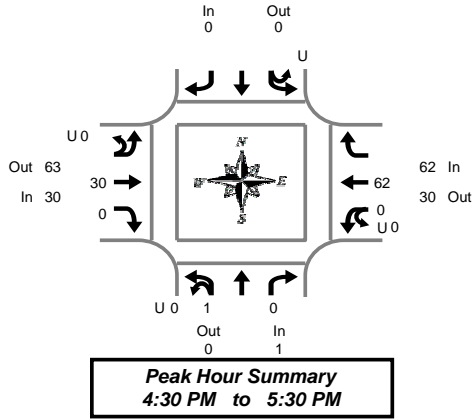
**Rolling Hour Summary**  
 4:00 PM to 6:00 PM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	South	East	West
4:00 PM	0	2		2					0	1,024	0	0	1	970	1,999			5	0	0	
4:15 PM	0	3		3					0	1,065	1	0	1	974	2,047			3	0	0	
4:30 PM	0	3		2					0	1,081	2	0	2	978	2,068			5	0	0	
4:45 PM	0	3		2					0	1,042	2	0	2	988	2,039			5	0	0	
5:00 PM	0	3		2					0	990	2	0	2	937	1,936			4	0	0	

# Heavy Vehicle Summary



Eric Boivin  
(303) 668-0220



## 39TH AVE SW & STEILACOOM BLVD

Tuesday, June 16, 2015

4:00 PM to 6:00 PM

### 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
4:00 PM	0	0	0	0	0						0	9	0	9	0	0	13	13	22
4:15 PM	0	0	0	0	0						0	8	0	8	0	0	16	16	24
4:30 PM	0	0	0	0	0						0	8	0	8	0	0	20	20	28
4:45 PM	0	0	0	0	0						0	8	0	8	0	0	19	19	27
5:00 PM	0	1	0	0	1						0	8	0	8	0	0	11	11	20
5:15 PM	0	0	0	0	0						0	6	0	6	0	0	12	12	18
5:30 PM	0	0	0	0	0						0	3	0	3	0	0	9	9	12
5:45 PM	0	0	0	0	0						0	4	0	4	0	0	12	12	16
Total Survey	0	1	0	0	1						0	54	0	54	0	0	112	112	0

### Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound 39TH AVE SW			Southbound n/a			Eastbound STEILACOOM BLVD			Westbound STEILACOOM BLVD			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	0	0	30	63	93	62	30	92	93

By Movement	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
Volume	0	1	0	0	1					0	0	30	0	30	0	0	62	62	93

### Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound 39TH AVE SW				Southbound n/a				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total				
4:00 PM	0	0	0	0	0						0	33	0	33	0	0	68	68	101
4:15 PM	0	1	0	0	1						0	32	0	32	0	0	66	66	99
4:30 PM	0	1	0	0	1						0	30	0	30	0	0	62	62	93
4:45 PM	0	1	0	0	1						0	25	0	25	0	0	51	51	77
5:00 PM	0	1	0	0	1						0	21	0	21	0	0	44	44	66

**Peak Hour Summary**

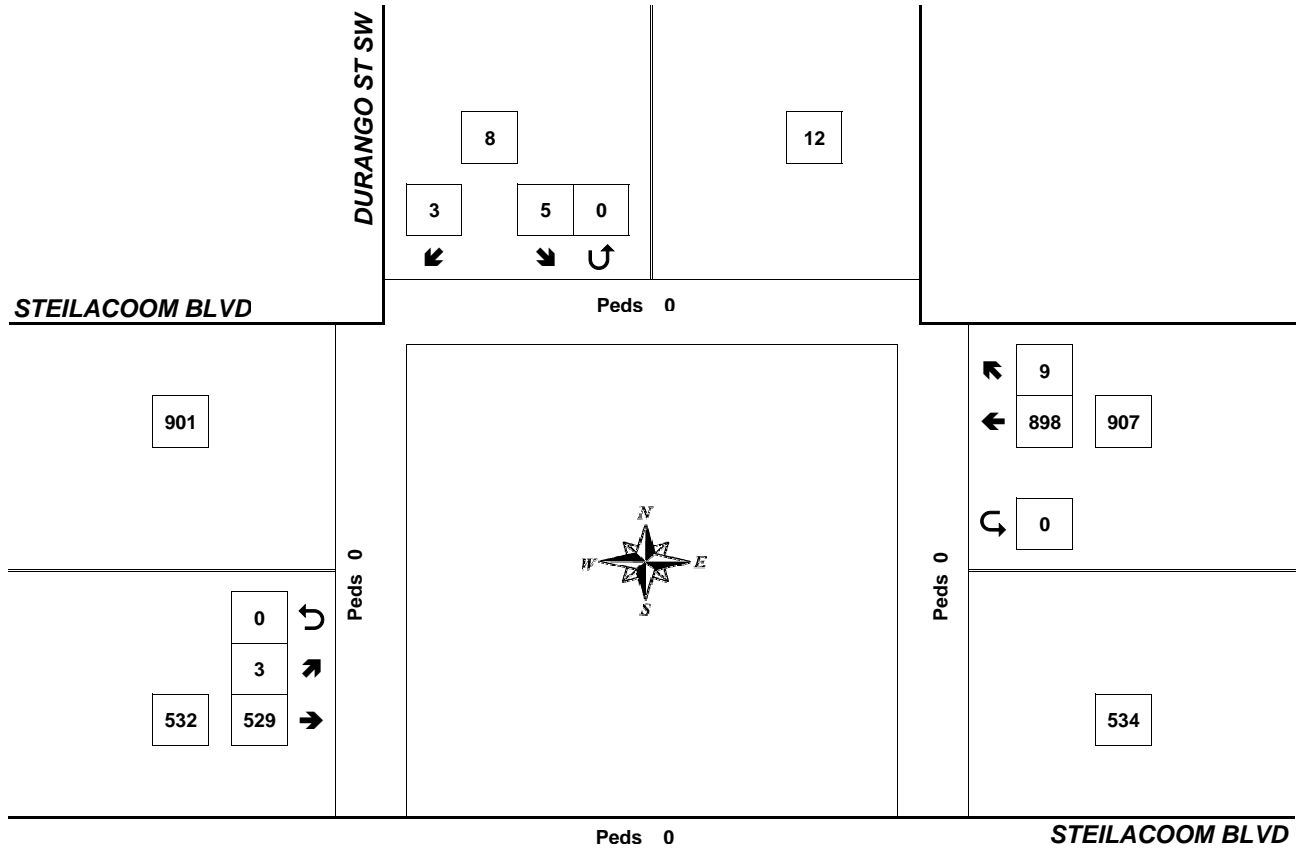
Site ID: 3



Eric Boivin  
(303) 668-0220

**DURANGO ST SW & STEILACOOM BLVD**

7:15 AM to 8:15 AM  
Tuesday, June 16, 2015



Approach	PHF	HV%	Volume
EB	0.91	6.0%	532
WB	0.84	4.9%	907
NB	0.00	0.0%	0
SB	0.50	25.0%	8
<b>Intersection</b>	<b>0.87</b>	<b>5.4%</b>	<b>1,447</b>

Count Period: 7:00 AM to 9:00 AM

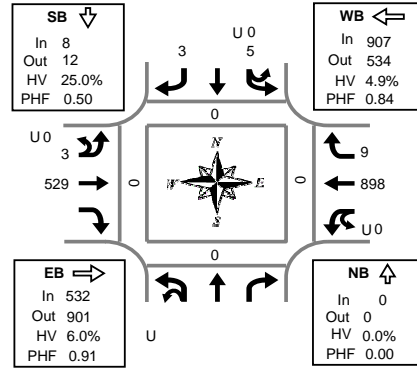
# Total Vehicle Summary



Eric Boivin  
(303) 668-0220

## Site ID: 3 DURANGO ST SW & STEILACOOM BLVD

Tuesday, June 16, 2015  
7:00 AM to 9:00 AM



### Peak Hour Summary 7:15 AM to 8:15 AM

### 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)		
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	East	West
7:00 AM	0	2	1	0	1	136	0	0	156	2	298	0	0	0	0	0	0	0		
7:15 AM	0	1	0	0	1	138	0	0	193	1	334	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	143	0	0	221	3	367	0	0	0	0	0	0	0		
7:45 AM	0	2	1	0	1	145	0	0	267	2	418	0	0	0	0	0	0	0		
8:00 AM	0	2	2	0	1	103	0	0	217	3	328	0	0	0	0	0	0	0		
8:15 AM	0	1	1	0	6	109	0	0	176	0	293	0	0	0	0	0	0	0		
8:30 AM	0	0	1	0	4	139	0	0	181	6	331	1	0	0	0	0	0	0		
8:45 AM	0	2	1	0	4	136	0	0	201	4	348	0	0	0	0	0	0	0		
Total Survey	0	10	7	0	18	1,049	0	0	1,612	21	2,717	1	0	0	0	0	0	0		

### Peak Hour Summary 7:15 AM to 8:15 AM

By Approach	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	0	0	0	0	8	12	20	2	532	901	1,433	32	907	534	1,441	44	1,447	0	0	0	0
%HV	0.0%				25.0%				6.0%				4.9%				5.4%				
PHF	0.00				0.50				0.91				0.84				0.87				

By Movement	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R				
Volume	0	5	3	0	3	529	0	0	898	9	1,447	0	0	0	0	1,447				
%HV	0.0%	40.0%	0.0%	0.0%	0.0%	6.0%	0.0%	0.0%	4.9%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	5.4%				
PHF	0.00	0.63	0.38	0.00	0.75	0.91	0.00	0.00	0.84	0.75	0.87	0.00	0.00	0.00	0.00	0.87				

### Rolling Hour Summary 7:00 AM to 9:00 AM

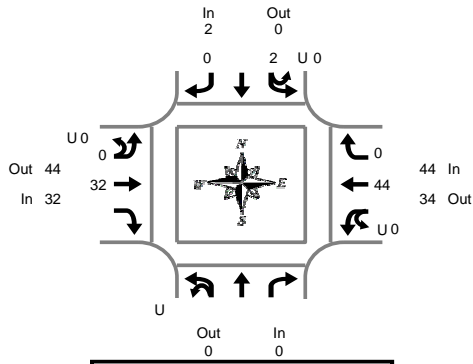
Interval Start Time	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	South	East	West
7:00 AM	0	5	2	0	3	562	0	0	837	8	1,417	0	0	0	0	1,417	0	0	0	0	
7:15 AM	0	5	3	0	3	529	0	0	898	9	1,447	0	0	0	0	1,447	0	0	0	0	
7:30 AM	0	5	4	0	8	500	0	0	881	8	1,406	0	0	0	0	1,406	0	0	0	0	
7:45 AM	0	5	5	0	12	496	0	0	841	11	1,370	1	0	0	0	1,370	1	0	0	0	
8:00 AM	0	5	5	0	15	487	0	0	775	13	1,300	1	0	0	0	1,300	1	0	0	0	



# Heavy Vehicle Summary



Eric Boivin  
(303) 668-0220



## DURANGO ST SW & STEILACOOM BLVD

Tuesday, June 16, 2015  
7:00 AM to 9:00 AM

**Peak Hour Summary**  
7:15 AM to 8:15 AM

15-Minute Interval Summary  
7:00 AM to 9:00 AM

Interval Start Time	Northbound n/a					Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD					Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total	U	L	T		R	Total
7:00 AM						0	0	0	0	0	0	0	2		2	0		4	0	4	6
7:15 AM						0	0	0	0	0	0	0	9		9	0		7	0	7	16
7:30 AM						0	0	0	0	0	0	0	9		9	0		14	0	14	23
7:45 AM						0	1	0	0	1	0	0	8		8	0		11	0	11	20
8:00 AM						0	1	0	0	1	0	0	6		6	0		12	0	12	19
8:15 AM						0	0	0	0	0	0	0	7		7	0		10	0	10	17
8:30 AM						0	0	0	0	0	0	1	7		8	0		21	0	21	29
8:45 AM						0	0	0	0	0	0	0	4		4	0		19	0	19	23
Total Survey						0	0	2	0	2	0	1	52		53	0		98	0	98	0

Peak Hour Summary  
7:15 AM to 8:15 AM

By Approach	Northbound n/a			Southbound DURANGO ST SW			Eastbound STEILACOOM BLVD			Westbound STEILACOOM BLVD			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	2	0	2	32	44	76	44	34	78	78

By Movement	Northbound n/a					Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD					Westbound STEILACOOM BLVD				Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total	U	L	T		R	Total
Volume					0	0	2		0	2	0	0	32		32	0		44	0	44	78

Rolling Hour Summary  
7:00 AM to 9:00 AM

Interval Start Time	Northbound n/a					Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD					Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total	U	L	T		R	Total
7:00 AM						0	1	0	0	1	0	0	28		28	0		36	0	36	65
7:15 AM						0	2	0	0	2	0	0	32		32	0		44	0	44	78
7:30 AM						0	2	0	0	2	0	0	30		30	0		47	0	47	79
7:45 AM						0	2	0	0	2	0	1	28		29	0		54	0	54	85
8:00 AM						0	1	0	0	1	0	1	24		25	0		62	0	62	88

**Peak Hour Summary**

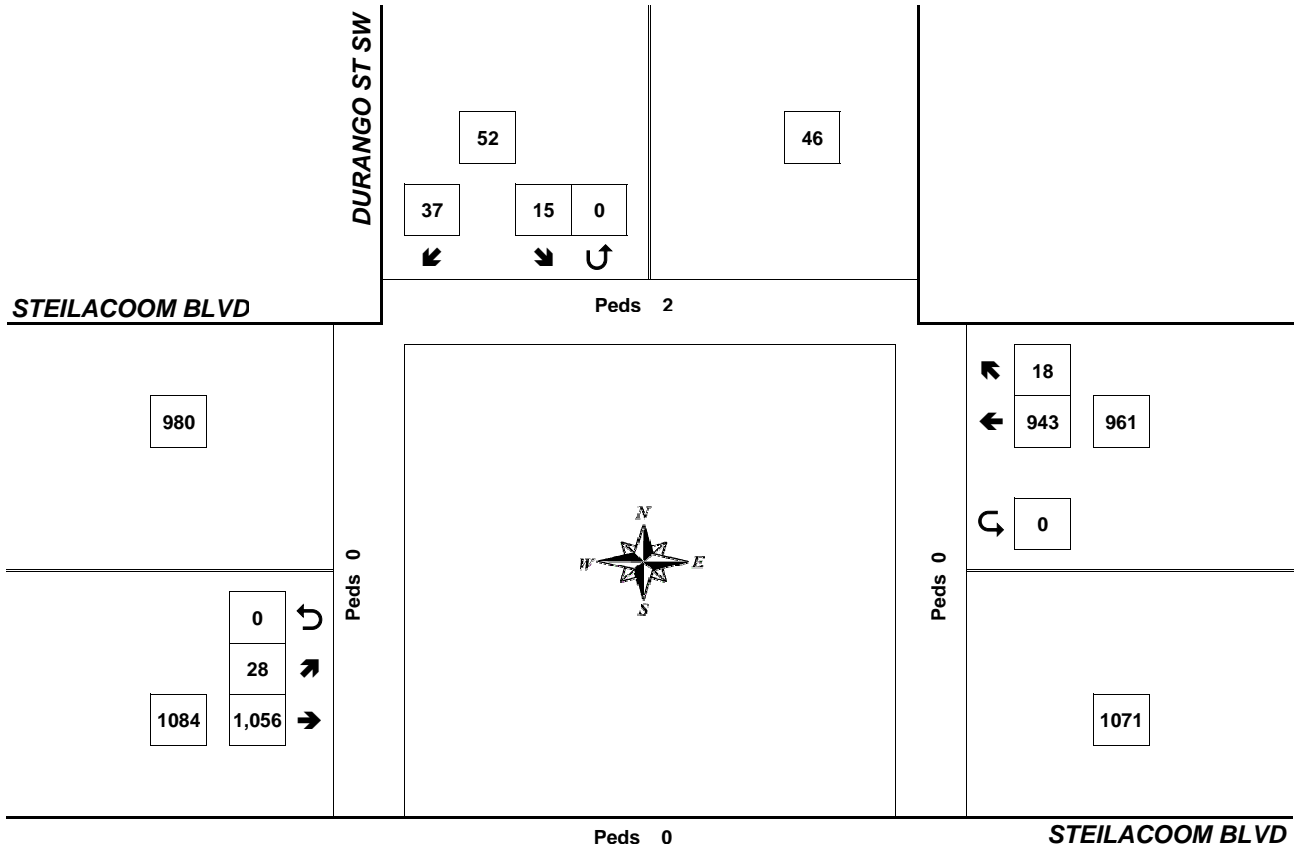
Site ID: 3



Eric Boivin  
(303) 668-0220

**DURANGO ST SW & STEILACOOM BLVD**

4:30 PM to 5:30 PM  
Tuesday, June 16, 2015



Approach	PHF	HV%	Volume
EB	0.96	3.0%	1,084
WB	0.85	6.1%	961
NB	0.00	0.0%	0
SB	0.81	11.5%	52
<b>Intersection</b>	<b>0.91</b>	<b>4.7%</b>	<b>2,097</b>

Count Period: 4:00 PM to 6:00 PM

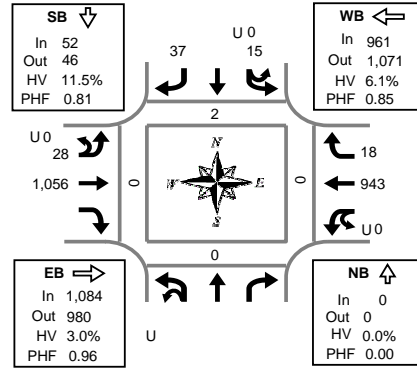
# Total Vehicle Summary



Eric Boivin  
(303) 668-0220

## Site ID: 3 DURANGO ST SW & STEILACOOM BLVD

Tuesday, June 16, 2015  
4:00 PM to 6:00 PM



### Peak Hour Summary 4:30 PM to 5:30 PM

### 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)		
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	East	West
4:00 PM	0	4		16	0	6	236		0		212	3		477	1	0	0			
4:15 PM		0		2	8	0	6	228		0		224	3		471	1	0	0		
4:30 PM		0		2	14	0	6	266		0		213	8		509	1	0	0		
4:45 PM		0		5	6	0	8	273		0		282	1		575	1	0	0		
5:00 PM		0		4	11	0	7	266		0		223	4		515	0	0	0		
5:15 PM		0		4	6	0	7	251		0		225	5		498	0	0	0		
5:30 PM		0		5	11	0	9	216		0		236	6		483	0	0	0		
5:45 PM		0		3	8	0	6	227		0		228	3		475	0	0	0		
Total Survey				0	29		80		0	55	1,963		0	1,843	33	4,003	4	0	0	

### Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	0	0	0	0	52	46	98	6	1,084	980	2,064	33	961	1,071	2,032	59	2,097	2	0	0	0
%HV			0.0%			11.5%				3.0%				6.1%			4.7%				
PHF			0.00			0.81				0.96				0.85			0.91				

By Movement	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Total				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R					
Volume	0	15		37	0	28	1,056		0		28	1,056		0		943	18	2,097			
%HV		0.0%		26.7%		5.4%	0.0%	3.6%		3.0%		0.0%	6.0%		11.1%	4.7%					
PHF		0.00		0.75		0.66		0.00		0.88	0.97		0.00		0.84	0.56		0.91			

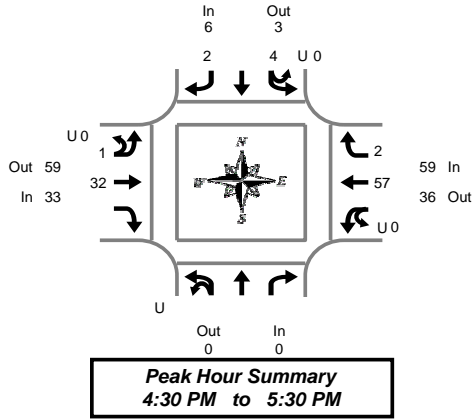
### Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound n/a				Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD				Westbound STEILACOOM BLVD				Interval Total	Pedestrians & Bicycles In Crosswalk (By Location)			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		North	South	East	West
4:00 PM		0		13		44		0	26	1,003		0		931	15	2,032	4	0	0	0	
4:15 PM		0		13		39		0	27	1,033		0		942	16	2,070	3	0	0	0	
4:30 PM		0		15		37		0	28	1,056		0		943	18	2,097	2	0	0	0	
4:45 PM		0		18		34		0	31	1,006		0		966	16	2,071	1	0	0	0	
5:00 PM		0		16		36		0	29	960		0		912	18	1,971	0	0	0	0	

# Heavy Vehicle Summary



Eric Boivin  
(303) 668-0220



## DURANGO ST SW & STEILACOOM BLVD

Tuesday, June 16, 2015

4:00 PM to 6:00 PM

15-Minute Interval Summary  
4:00 PM to 6:00 PM

Interval Start Time	Northbound n/a					Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD					Westbound STEILACOOM BLVD				Interval Total			
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total	U	L	T		R	Total	
4:00 PM						0	0		0	0	0	1	8		9	0		13	0	13	22	
4:15 PM						0	0		0	0	0	0	8		8	0		15	0	15	23	
4:30 PM						0	0		0	0	0	0	11		11	0		18	0	18	29	
4:45 PM						0	1		1	2	0	1	4		5	0		18	1	19	26	
5:00 PM						0	2		0	2	0	0	9		9	0		10	1	11	22	
5:15 PM						0	1		1	2	0	0	8		8	0		11	0	11	21	
5:30 PM						0	1		0	1	0	0	3		3	0		8	0	8	12	
5:45 PM						0	0		0	0	0	0	4		4	0		12	0	12	16	
Total Survey						0	0		5	2	7	0	2	55		57	0		105	2	107	4

Peak Hour Summary  
4:30 PM to 5:30 PM

By Approach	Northbound n/a			Southbound DURANGO ST SW			Eastbound STEILACOOM BLVD			Westbound STEILACOOM BLVD			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	6	3	9	33	59	92	59	36	95	98

By Movement	Northbound n/a					Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD					Westbound STEILACOOM BLVD				Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total	U	L	T		R	Total
Volume					0	0	4		2	6	0	1	32		33	0		57	2	59	98

Rolling Hour Summary  
4:00 PM to 6:00 PM

Interval Start Time	Northbound n/a					Southbound DURANGO ST SW				Eastbound STEILACOOM BLVD					Westbound STEILACOOM BLVD				Interval Total		
	U	L	T	R	Total	U	L	T	R	Total	U	L	T	R	Total	U	L	T		R	Total
4:00 PM						0	1		1	2	0	2	31		33	0		64	1	65	100
4:15 PM						0	3		1	4	0	1	32		33	0		61	2	63	100
4:30 PM						0	4		2	6	0	1	32		33	0		57	2	59	98
4:45 PM						0	5		2	7	0	1	24		25	0		47	2	49	81
5:00 PM						0	4		1	5	0	0	24		24	0		41	1	42	71

Start Time	28-May-12		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	63	79	99	92	81	94	*	*	*	*	*	*	81	88
01:00	*	*	74	67	83	71	92	63	*	*	*	*	*	*	83	67
02:00	*	*	82	54	71	59	64	58	*	*	*	*	*	*	72	57
03:00	*	*	60	59	70	65	70	66	*	*	*	*	*	*	67	63
04:00	*	*	125	128	117	129	123	123	*	*	*	*	*	*	122	127
05:00	*	*	223	328	205	320	227	306	*	*	*	*	*	*	218	318
06:00	*	*	445	596	453	623	438	617	*	*	*	*	*	*	445	612
07:00	*	*	623	<b>1038</b>	649	<b>1068</b>	629	<b>1005</b>	*	*	*	*	*	*	634	<b>1037</b>
08:00	*	*	594	836	587	862	599	907	*	*	*	*	*	*	593	868
09:00	*	*	650	855	603	800	564	801	*	*	*	*	*	*	606	819
10:00	*	*	642	824	647	826	703	754	*	*	*	*	*	*	664	801
11:00	*	*	<b>865</b>	880	<b>773</b>	805	<b>756</b>	848	*	*	*	*	*	*	<b>798</b>	844
12:00 PM	*	*	822	935	901	928	916	958	*	*	*	*	*	*	880	940
01:00	*	*	967	894	959	938	955	942	*	*	*	*	*	*	960	925
02:00	*	*	1002	969	1004	<b>1032</b>	1010	<b>1011</b>	*	*	*	*	*	*	1005	1004
03:00	*	*	1041	1011	1043	1020	1017	987	*	*	*	*	*	*	1034	<b>1006</b>
04:00	*	*	<b>1141</b>	<b>1048</b>	<b>1083</b>	997	<b>1119</b>	959	*	*	*	*	*	*	<b>1114</b>	1001
05:00	*	*	1011	883	1011	895	1017	922	*	*	*	*	*	*	1013	900
06:00	*	*	740	654	756	715	753	736	*	*	*	*	*	*	750	702
07:00	*	*	570	499	593	483	616	581	*	*	*	*	*	*	593	521
08:00	*	*	499	404	485	400	506	422	*	*	*	*	*	*	497	409
09:00	*	*	330	297	355	327	409	331	*	*	*	*	*	*	365	318
10:00	*	*	179	176	224	178	244	240	*	*	*	*	*	*	216	198
11:00	*	*	144	131	124	119	158	165	*	*	*	*	*	*	142	138
Lane Day	0	0	12892	13645	12895	13752	13066	13896	0	0	0	0	0	0	12952	13763
	0		26537		26647		26962		0		0		0	26715		
AM Peak			11:00	07:00	11:00	07:00	11:00	07:00							11:00	07:00
Vol.			865	1038	773	1068	756	1005							798	1037
PM Peak			16:00	16:00	16:00	14:00	16:00	14:00							16:00	15:00
Vol.			1141	1048	1083	1032	1119	1011							1114	1006

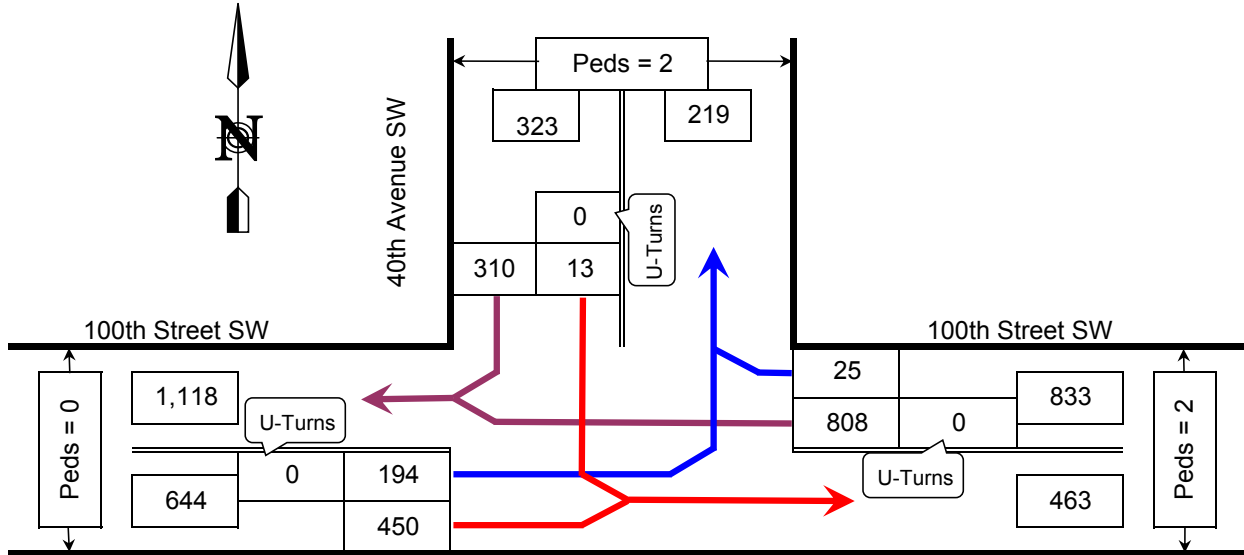
Comb. Total	0		26537		26647		26962		0		0		0		26715	
ADT	Not Calculated															

Start Time	03-Jun-13		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	82	80	66	76	89	80	*	*	*	*	*	*	79	79
01:00	*	*	74	74	53	55	80	63	*	*	*	*	*	*	69	64
02:00	*	*	76	62	51	79	76	55	*	*	*	*	*	*	68	65
03:00	*	*	52	45	60	67	49	60	*	*	*	*	*	*	54	57
04:00	*	*	101	125	90	108	95	118	*	*	*	*	*	*	95	117
05:00	*	*	196	227	185	244	181	245	*	*	*	*	*	*	187	239
06:00	*	*	347	446	377	497	355	454	*	*	*	*	*	*	360	466
07:00	*	*	526	737	552	713	501	649	*	*	*	*	*	*	526	700
08:00	*	*	502	712	510	640	514	681	*	*	*	*	*	*	509	678
09:00	*	*	587	693	542	663	551	683	*	*	*	*	*	*	560	680
10:00	*	*	620	722	638	655	661	701	*	*	*	*	*	*	640	693
11:00	*	*	<b>707</b>	<b>742</b>	<b>732</b>	<b>721</b>	<b>698</b>	<b>733</b>	*	*	*	*	*	*	<b>712</b>	<b>732</b>
12:00 PM	*	*	809	773	760	757	766	689	*	*	*	*	*	*	778	740
01:00	*	*	771	779	794	746	775	756	*	*	*	*	*	*	780	760
02:00	*	*	868	804	858	<b>802</b>	792	740	*	*	*	*	*	*	839	782
03:00	*	*	874	776	873	768	882	760	*	*	*	*	*	*	876	768
04:00	*	*	<b>945</b>	<b>843</b>	<b>913</b>	791	<b>921</b>	<b>817</b>	*	*	*	*	*	*	<b>926</b>	<b>817</b>
05:00	*	*	942	744	888	776	898	745	*	*	*	*	*	*	909	755
06:00	*	*	692	563	676	628	674	643	*	*	*	*	*	*	681	611
07:00	*	*	555	466	582	545	562	470	*	*	*	*	*	*	566	494
08:00	*	*	466	424	600	480	523	427	*	*	*	*	*	*	530	444
09:00	*	*	374	317	422	321	372	338	*	*	*	*	*	*	389	325
10:00	*	*	250	199	266	211	254	225	*	*	*	*	*	*	257	212
11:00	*	*	149	124	140	137	164	145	*	*	*	*	*	*	151	135
Lane Day	0	0	11565	11477	11628	11480	11433	11277	0	0	0	0	0	0	11541	11413
AM Peak Vol.			707	742	732	721	698	733							712	732
PM Peak Vol.			945	843	913	802	921	817							926	817

Comb. Total	0	23042	23108	22710	0	0	0	22954
ADT	Not Calculated							

**TURNING MOVEMENTS DIAGRAM**

**7:00 AM - 9:00 AM PEAK HOUR: 7:15 AM TO 8:15 AM**



INTERSECTION	
PEAK HOUR VOLUME	
IN	1,800
OUT	1,800

	HV	PHF
SB	9.6%	0.75
WB	5.8%	0.88
EB	6.8%	0.86
INTRS.	6.8%	0.91

HV = Heavy Vehicles  
PHF = Peak Hour Factor

**100th Street SW @ 40th Avenue SW**

**Lakewood, WA**

COUNTED BY: VT

DATE OF COUNT: Thu. 3/12/15

REDUCED BY: CN

TIME OF COUNT: 7:00 AM - 9:00 AM

REDUCTION DATE: Sat. 3/14/15

WEATHER: Rainy

# DTG TRAFFIC DATA GATHERING

## INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: 100th Street SW @ 40th Avenue SW  
Lakewood, WA

DATE OF COUNT: Thu. 3/12/15  
TIME OF COUNT: 7:00 AM - 9:00 AM

COUNTED BY: VT  
WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON 40th Avenue SW						FROM SOUTH ON						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS	
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right		
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	5	0	2	0	44	0	0	0	0	0	0	0	9	0	0	162	8	0	11	0	29	101	0	346	
07:30 AM	0	9	0	2	0	66	0	0	0	0	0	0	0	9	0	0	197	9	0	15	0	36	94	0	404	
07:45 AM	0	8	0	3	0	81	0	0	0	0	0	0	0	14	0	0	208	6	0	10	0	48	139	0	485	
08:00 AM	0	8	0	4	0	104	0	0	0	0	0	0	0	16	0	0	232	6	0	5	0	42	104	0	492	
08:15 AM	2	6	0	4	0	59	0	0	0	0	0	0	2	9	0	0	171	4	0	14	0	68	113	0	419	
08:30 AM	0	2	0	2	0	59	0	0	0	0	0	0	0	15	0	0	158	5	0	10	0	31	92	0	347	
08:45 AM	0	4	0	0	0	46	0	0	0	0	0	0	0	11	0	0	155	3	0	27	0	32	119	0	355	
09:00 AM	0	1	0	1	0	63	0	0	0	0	0	0	0	14	0	0	175	6	0	13	0	26	117	0	388	
<b>PEAK HOUR TOTALS</b>	<b>2</b>	<b>31</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>310</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>48</b>	<b>0</b>	<b>0</b>	<b>808</b>	<b>25</b>	<b>0</b>	<b>44</b>	<b>0</b>	<b>194</b>	<b>450</b>	<b>0</b>	<b>INTERSECTION</b>	
<b>ALL MOVEMENTS</b>	<b>323</b>						<b>0</b>						<b>833</b>						<b>644</b>						<b>1800</b>	
<b>% HV</b>	<b>9.6%</b>						<b>#N/A</b>						<b>5.8%</b>						<b>6.8%</b>						<b>6.8%</b>	
<b>PEAK HOUR FACTOR</b>	<b>0.75</b>						<b>#N/A</b>						<b>0.88</b>						<b>0.86</b>						<b>0.91</b>	

PHF = Peak Hour Factor

7:00 AM - 9:00 AM PEAK HOUR: 7:15 AM TO 8:15 AM

REDUCED BY: CN

DATE OF REDUCTION: 3/14/2015

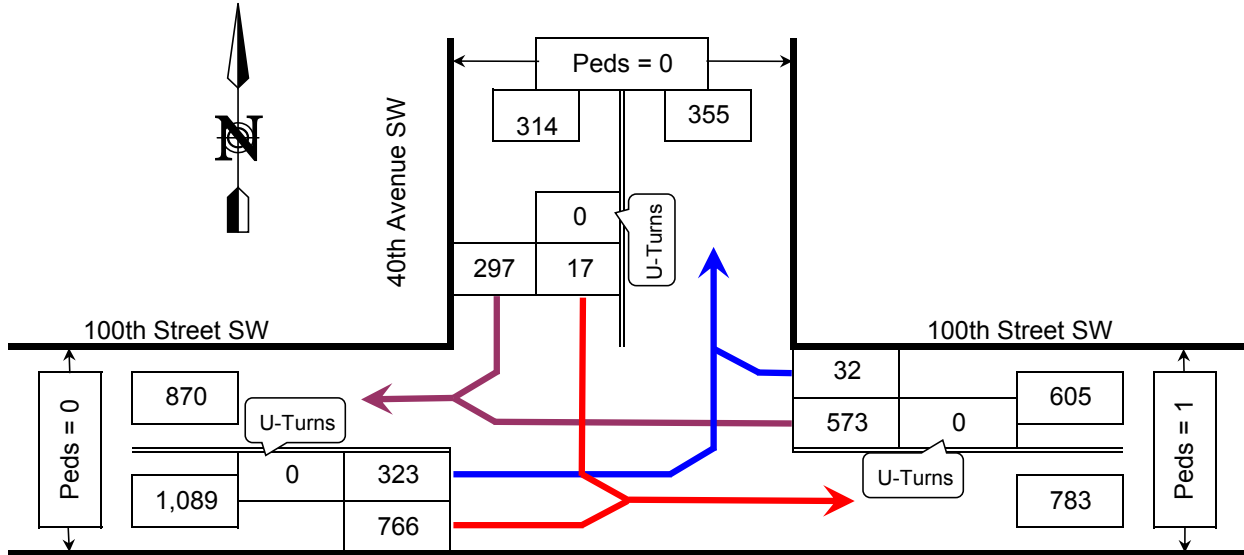
### ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON 40th Avenue SW						FROM SOUTH ON						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS	
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right		
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM - 6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM - 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	30	0	11	0	295	0	0	0	0	0	0	0	48	0	0	799	29	0	41	0	155	438	0	1727	
7:15 AM - 8:15 AM	2	31	0	13	0	310	0	0	0	0	0	0	2	48	0	0	808	25	0	44	0	194	450	0	1800	
7:30 AM - 8:30 AM	2	24	0	13	0	303	0	0	0	0	0	0	2	54	0	0	769	21	0	39	0	189	448	0	1743	
7:45 AM - 8:45 AM	2	20	0	10	0	268	0	0	0	0	0	0	2	51	0	0	716	18	0	56	0	173	428	0	1613	
8:00 AM - 9:00 AM	2	13	0	7	0	227	0	0	0	0	0	0	2	49	0	0	659	18	0	64	0	157	441	0	1509	



**TURNING MOVEMENTS DIAGRAM**

**4:00 PM - 6:00 PM PEAK HOUR: 4:15 PM TO 5:15 PM**



INTERSECTION	
PEAK HOUR VOLUME	
IN	2,008
OUT	2,008

	HV	PHF
SB	3.2%	0.86
WB	4.8%	0.95
EB	2.9%	0.85
INTRS.	3.5%	0.91

HV = Heavy Vehicles  
PHF = Peak Hour Factor

**100th Street SW @ 40th Avenue SW**

**Lakewood, WA**

COUNTED BY: CN

DATE OF COUNT: Wed. 3/11/15

REDUCED BY: CN

TIME OF COUNT: 4:00 PM - 6:00 PM

REDUCTION DATE: Fri. 3/13/15

WEATHER: Rainy

# DTG TRAFFIC DATA GATHERING

## INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: 100th Street SW @ 40th Avenue SW  
Lakewood, WA

DATE OF COUNT: Wed. 3/11/15  
TIME OF COUNT: 4:00 PM - 6:00 PM

COUNTED BY: CN  
WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON 40th Avenue SW						FROM SOUTH ON						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS	
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right		
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	1	0	6	0	85	0	0	0	0	0	0	0	9	0	0	118	11	0	11	0	67	216	0	503	
04:30 PM	0	2	0	3	0	65	0	0	0	0	0	0	1	6	0	0	156	4	0	8	0	80	178	0	486	
04:45 PM	0	2	0	6	0	85	0	0	0	0	0	0	0	7	0	0	133	5	0	6	0	78	180	0	487	
05:00 PM	0	3	0	3	0	71	0	0	0	0	0	0	0	7	0	0	145	14	0	14	0	70	182	0	485	
05:15 PM	0	3	0	5	0	76	0	0	0	0	0	0	0	9	0	0	139	9	0	4	0	95	226	0	550	
05:30 PM	0	1	0	10	0	61	0	0	0	0	0	0	0	7	0	0	163	7	0	11	0	60	178	0	479	
05:45 PM	0	1	0	5	0	85	0	0	0	0	0	0	0	7	0	0	122	7	0	5	0	91	182	0	492	
06:00 PM	0	2	0	2	0	53	0	0	0	0	0	0	0	5	0	0	153	5	0	9	0	63	127	0	403	
PEAK HOUR TOTALS	0	10	0	17	0	297	0	0	0	0	0	0	1	29	0	0	573	32	0	32	0	323	766	0	INTERSECTION	
ALL MOVEMENTS	314						0						605						1089						2008	
% HV	3.2%						#N/A						4.8%						2.9%						3.5%	
PEAK HOUR FACTOR	0.86						#N/A						0.95						0.85						0.91	

PHF = Peak Hour Factor

4:00 PM - 6:00 PM PEAK HOUR: 4:15 PM TO 5:15 PM

REDUCED BY: CN

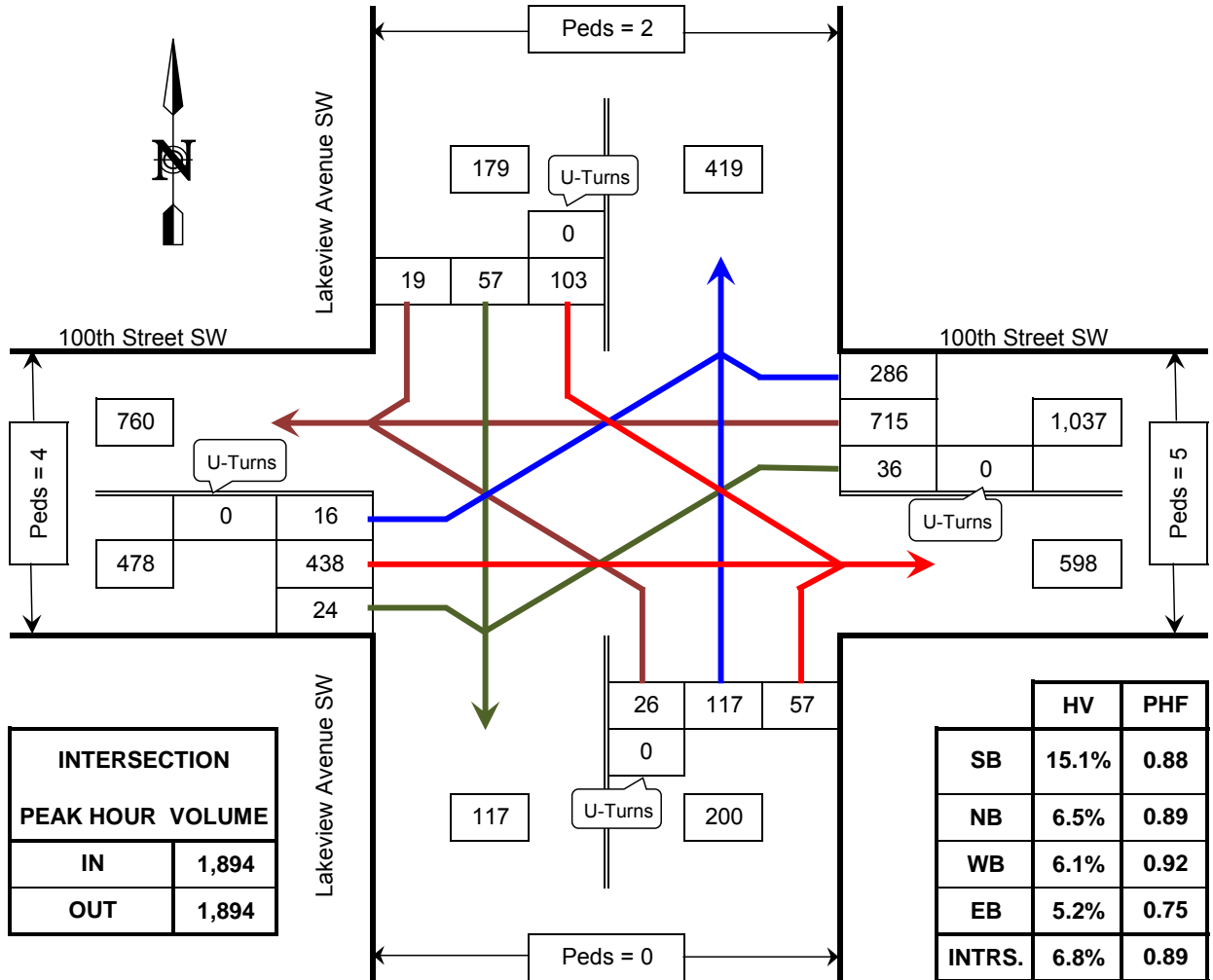
DATE OF REDUCTION: 3/13/2015

### ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON 40th Avenue SW						FROM SOUTH ON						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS	
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right		
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	8	0	18	0	306	0	0	0	0	0	0	1	29	0	0	552	34	0	39	0	295	756	0	1961	
4:15 PM - 5:15 PM	0	10	0	17	0	297	0	0	0	0	0	0	1	29	0	0	573	32	0	32	0	323	766	0	2008	
4:30 PM - 5:30 PM	0	9	0	24	0	293	0	0	0	0	0	0	0	30	0	0	580	35	0	35	0	303	766	0	2001	
4:45 PM - 5:45 PM	0	8	0	23	0	293	0	0	0	0	0	0	0	30	0	0	569	37	0	34	0	316	768	0	2006	
5:00 PM - 6:00 PM	0	7	0	22	0	275	0	0	0	0	0	0	0	28	0	0	577	28	0	29	0	309	713	0	1924	

**TURNING MOVEMENTS DIAGRAM**

7:00 AM - 9:00 AM PEAK HOUR: 7:15 AM TO 8:15 AM



INTERSECTION	
PEAK HOUR VOLUME	
IN	1,894
OUT	1,894

	HV	PHF
SB	15.1%	0.88
NB	6.5%	0.89
WB	6.1%	0.92
EB	5.2%	0.75
INTRS.	6.8%	0.89

PHF = Peak Hour Factor  
HV = Heavy Vehicles

**Lakeview Avenue SW @ 100th Street SW  
Lakewood, WA**

COUNTED BY: SN  
 REDUCED BY: CN  
 REDUCTION DATE: Fri. 3/13/15

DATE OF COUNT: Thu. 3/12/15  
 TIME OF COUNT: 7:00 AM - 9:00 AM  
 WEATHER: Rainy

# DTG TRAFFIC DATA GATHERING

## INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Lakeview Avenue SW @ 100th Street SW  
Lakewood, WA

DATE OF COUNT: Thu. 3/12/15  
 TIME OF COUNT: 7:00 AM - 9:00 AM

COUNTED BY: SN  
 WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON Lakeview Avenue SW						FROM SOUTH ON Lakeview Avenue SW						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:15 AM	0	4	0	8	18	4	0	1	0	3	16	8	0	10	0	7	132	52	0	11	0	8	97	1	
07:30 AM	0	8	0	23	12	7	0	5	0	7	23	22	3	13	0	8	157	68	0	9	0	1	78	3	
07:45 AM	0	7	0	25	14	5	0	4	0	5	35	16	0	18	0	7	190	79	2	6	0	8	143	8	
08:00 AM	0	3	0	22	17	3	0	2	0	6	35	9	2	17	0	9	202	72	2	4	0	6	112	8	
08:15 AM	2	9	0	33	14	4	0	2	0	8	24	10	0	15	0	12	166	67	0	6	0	1	105	5	
08:30 AM	1	5	0	21	18	2	0	2	0	4	31	8	0	15	0	14	152	40	0	8	0	4	98	3	
08:45 AM	0	15	0	29	15	2	1	3	0	6	29	4	0	19	0	9	156	36	0	13	0	6	99	5	
09:00 AM	0	11	0	31	15	8	1	3	0	4	22	9	0	14	0	9	158	55	2	6	0	3	93	5	
<b>PEAK HOUR TOTALS</b>	<b>2</b>	<b>27</b>	<b>0</b>	<b>103</b>	<b>57</b>	<b>19</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>26</b>	<b>117</b>	<b>57</b>	<b>5</b>	<b>63</b>	<b>0</b>	<b>36</b>	<b>715</b>	<b>286</b>	<b>4</b>	<b>25</b>	<b>0</b>	<b>16</b>	<b>438</b>	<b>24</b>	
<b>ALL MOVEMENTS</b>	<b>179</b>						<b>200</b>						<b>1037</b>						<b>478</b>						<b>1894</b>
<b>% HV</b>	<b>15.1%</b>						<b>6.5%</b>						<b>6.1%</b>						<b>5.2%</b>						<b>6.8%</b>
<b>PEAK HOUR FACTOR</b>	<b>0.88</b>						<b>0.89</b>						<b>0.92</b>						<b>0.75</b>						<b>0.89</b>

PHF = Peak Hour Factor

7:00 AM - 9:00 AM PEAK HOUR: 7:15 AM TO 8:15 AM

REDUCED BY: CN

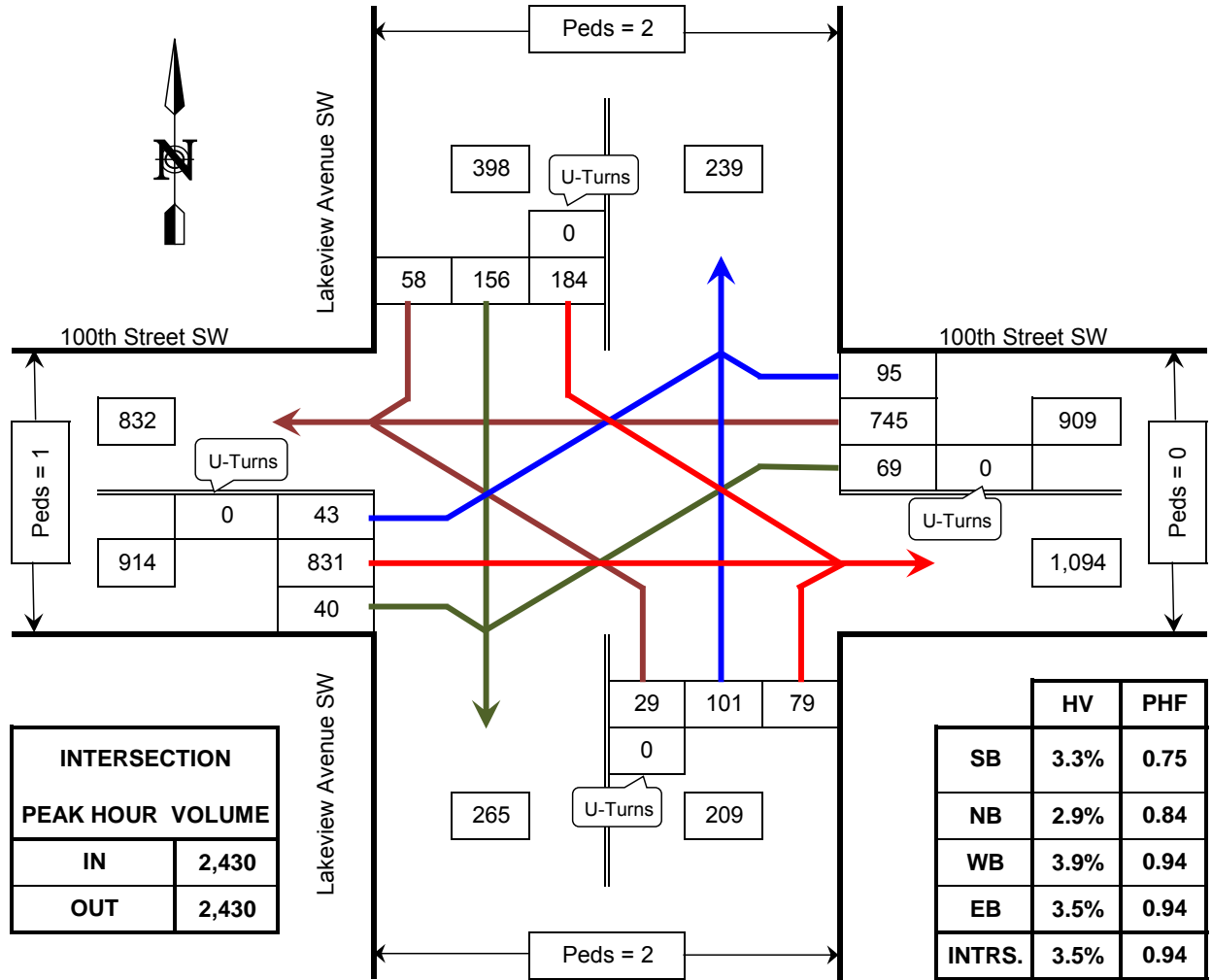
DATE OF REDUCTION: 3/13/2015

### ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON Lakeview Avenue SW						FROM SOUTH ON Lakeview Avenue SW						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 AM - 6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 AM - 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM - 8:00 AM	0	22	0	78	61	19	0	12	0	21	109	55	5	58	0	31	681	271	4	30	0	23	430	20	
7:15 AM - 8:15 AM	2	27	0	103	57	19	0	13	0	26	117	57	5	63	0	36	715	286	4	25	0	16	438	24	
7:30 AM - 8:30 AM	3	24	0	101	63	14	0	10	0	23	125	43	2	65	0	42	710	258	4	24	0	19	458	24	
7:45 AM - 8:45 AM	3	32	0	105	64	11	1	9	0	24	119	31	2	66	0	44	676	215	2	31	0	17	414	21	
8:00 AM - 9:00 AM	3	40	0	114	62	16	2	10	0	22	106	31	0	63	0	44	632	198	2	33	0	14	395	18	

### TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:30 PM TO 5:30 PM



PHF = Peak Hour Factor  
HV = Heavy Vehicles

### Lakeview Avenue SW @ 100th Street SW Lakewood, WA

COUNTED BY: SN

DATE OF COUNT: Wed. 3/11/15

REDUCED BY: CN

TIME OF COUNT: 4:00 PM - 6:00 PM

REDUCTION DATE: Fri. 3/13/15

WEATHER: Rainy

# DTG TRAFFIC DATA GATHERING

## INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Lakeview Avenue SW @ 100th Street SW  
Lakewood, WA

DATE OF COUNT: Wed. 3/11/15  
TIME OF COUNT: 4:00 PM - 6:00 PM

COUNTED BY: SN  
WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON Lakeview Avenue SW						FROM SOUTH ON Lakeview Avenue SW						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS	
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right		
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	1	5	0	74	35	6	0	3	0	11	25	23	0	10	0	25	165	31	0	5	0	8	200	8	611	
04:30 PM	2	6	0	46	32	5	1	1	0	6	23	15	1	8	0	15	176	23	3	8	0	6	214	12	573	
04:45 PM	1	2	0	31	41	13	0	2	0	9	21	19	0	7	0	18	194	19	0	8	0	16	198	10	589	
05:00 PM	0	4	0	45	33	10	2	3	0	7	22	18	0	10	0	20	178	22	0	11	0	12	185	10	562	
05:15 PM	1	4	0	61	48	23	0	0	0	5	23	23	0	10	0	11	181	25	1	5	0	7	228	9	644	
05:30 PM	0	3	0	47	34	12	0	1	0	8	35	19	0	8	0	20	192	29	0	8	0	8	220	11	635	
05:45 PM	1	3	0	34	32	10	0	1	0	4	28	23	0	6	0	16	146	9	0	3	0	7	172	9	490	
06:00 PM	0	2	0	14	24	6	0	1	0	7	20	14	0	9	0	18	198	18	0	8	0	3	178	6	506	
PEAK HOUR TOTALS	2	13	0	184	156	58	2	6	0	29	101	79	0	35	0	69	745	95	1	32	0	43	831	40	INTERSECTION	
ALL MOVEMENTS	398						209						909						914						2430	
% HV	3.3%						2.9%						3.9%						3.5%						3.5%	
PEAK HOUR FACTOR	0.75						0.84						0.94						0.94						0.94	

PHF = Peak Hour Factor

4:00 PM - 6:00 PM PEAK HOUR: 4:30 PM TO 5:30 PM

REDUCED BY: CN

DATE OF REDUCTION: 3/13/2015

### ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON Lakeview Avenue SW						FROM SOUTH ON Lakeview Avenue SW						FROM EAST ON 100th Street SW						FROM WEST ON 100th Street SW						INTERVAL TOTALS	
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right		
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	03-Jun-13		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	63	65	51	73	67	67	*	*	*	*	*	*	60	68
01:00	*	*	34	32	36	35	47	37	*	*	*	*	*	*	39	35
02:00	*	*	32	37	36	36	34	42	*	*	*	*	*	*	34	38
03:00	*	*	23	25	23	27	33	35	*	*	*	*	*	*	26	29
04:00	*	*	89	76	88	70	89	76	*	*	*	*	*	*	89	74
05:00	*	*	172	186	161	202	170	202	*	*	*	*	*	*	168	197
06:00	*	*	326	397	349	419	337	427	*	*	*	*	*	*	337	414
07:00	*	*	659	714	656	714	648	699	*	*	*	*	*	*	654	709
08:00	*	*	680	657	650	681	670	720	*	*	*	*	*	*	667	686
09:00	*	*	591	562	615	572	582	576	*	*	*	*	*	*	596	570
10:00	*	*	570	618	621	574	597	553	*	*	*	*	*	*	596	582
11:00	*	*	737	687	723	637	705	582	*	*	*	*	*	*	722	635
12:00 PM	*	*	777	707	720	704	754	676	*	*	*	*	*	*	750	696
01:00	*	*	753	754	741	747	692	706	*	*	*	*	*	*	729	736
02:00	*	*	738	852	744	847	808	828	*	*	*	*	*	*	763	842
03:00	*	*	867	906	879	789	842	824	*	*	*	*	*	*	863	840
04:00	*	*	944	940	896	916	862	869	*	*	*	*	*	*	901	908
05:00	*	*	860	959	858	962	851	881	*	*	*	*	*	*	856	934
06:00	*	*	700	662	657	673	610	627	*	*	*	*	*	*	656	654
07:00	*	*	529	483	534	478	500	484	*	*	*	*	*	*	521	482
08:00	*	*	467	463	472	459	437	438	*	*	*	*	*	*	459	453
09:00	*	*	318	351	336	374	322	353	*	*	*	*	*	*	325	359
10:00	*	*	225	246	180	237	246	268	*	*	*	*	*	*	217	250
11:00	*	*	160	128	158	112	155	129	*	*	*	*	*	*	158	123
Lane Day	0	0	11314	11507	11184	11338	11058	11099	0	0	0	0	0	0	11186	11314
AM Peak Vol.			737	714	723	714	705	720							722	709
PM Peak Vol.			944	959	896	962	862	881							901	934

Comb. Total	0	22821	22522	22157	0	0	0	22500
ADT	Not Calculated							

Start Time	28-May-12		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	45	57	67	75	55	66	*	*	*	*	*	*	56	66
01:00	*	*	28	48	44	55	42	51	*	*	*	*	*	*	38	51
02:00	*	*	29	31	31	58	30	52	*	*	*	*	*	*	30	47
03:00	*	*	24	24	34	20	27	31	*	*	*	*	*	*	28	25
04:00	*	*	69	69	59	75	80	75	*	*	*	*	*	*	69	73
05:00	*	*	175	172	170	194	170	191	*	*	*	*	*	*	172	186
06:00	*	*	299	486	286	521	309	516	*	*	*	*	*	*	298	508
07:00	*	*	517	<b>894</b>	532	<b>968</b>	568	<b>863</b>	*	*	*	*	*	*	539	<b>908</b>
08:00	*	*	570	761	553	788	556	758	*	*	*	*	*	*	560	769
09:00	*	*	572	652	544	651	516	672	*	*	*	*	*	*	544	658
10:00	*	*	641	665	591	694	626	652	*	*	*	*	*	*	619	670
11:00	*	*	<b>750</b>	717	<b>743</b>	657	<b>798</b>	672	*	*	*	*	*	*	<b>764</b>	682
12:00 PM	*	*	799	724	782	690	768	755	*	*	*	*	*	*	783	723
01:00	*	*	850	762	822	757	827	705	*	*	*	*	*	*	833	741
02:00	*	*	851	813	<b>898</b>	797	871	808	*	*	*	*	*	*	873	806
03:00	*	*	<b>873</b>	787	837	<b>841</b>	<b>912</b>	759	*	*	*	*	*	*	<b>874</b>	796
04:00	*	*	872	832	841	825	826	808	*	*	*	*	*	*	846	822
05:00	*	*	806	<b>845</b>	832	824	880	<b>809</b>	*	*	*	*	*	*	839	<b>826</b>
06:00	*	*	661	534	691	504	604	551	*	*	*	*	*	*	652	530
07:00	*	*	540	426	502	418	571	448	*	*	*	*	*	*	538	431
08:00	*	*	443	310	475	409	360	359	*	*	*	*	*	*	426	359
09:00	*	*	276	253	318	309	290	276	*	*	*	*	*	*	295	279
10:00	*	*	213	197	180	202	221	208	*	*	*	*	*	*	205	202
11:00	*	*	138	95	156	119	165	122	*	*	*	*	*	*	153	112
Lane Day	0	0	11041	11154	10988	11451	11072	11207	0	0	0	0	0	0	11034	11270
	0		22195		22439		22279		0		0		0		22304	
AM Peak			11:00	07:00	11:00	07:00	11:00	07:00							11:00	07:00
Vol.			750	894	743	968	798	863							764	908
PM Peak			15:00	17:00	14:00	15:00	15:00	17:00							15:00	17:00
Vol.			873	845	898	841	912	809							874	826

Comb. Total	0	22195	22439	22279	0	0	0	22304
ADT	Not Calculated							



# APPENDIX B

## Collision Data

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OFFICER REPORTED CRASHES THAT OCCURRED ON ALL ROADS IN THE CITY OF LAKEWOOD  
 1/1/2009 - available 2015 (2015 data is considered partial and preliminary)

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 AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE WSDOT, OR ANY JURISDICTIONS INVOLVED IN THE DATA

JURISDICTION	PRIMARY TRAFFICWAY	INTERSECTING TRAFFICWAY	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	FIRST COLLISION TYPE / OBJECT STRUCK	VEH 1 ACTION	VEH 2 ACTION	MV DRIVER CONT CIRC 1 (UNIT 1)	MV DRIVER CONT CIRC 1 (UNIT 2)
City Street	100 ST SW	40 AV SW	3312057	1/31/2009	14:55	Evident Injury	Passenger Car	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Going Straight Ahead	Making Left Turn	None	Did Not Grant RW to Vehicle
City Street	100 ST SW	40 AVE SW	3311695	10/3/2009	18:00	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	100 ST SW	LAKEVIEW AV SW	3037923	4/11/2009	1:20	Evident Injury	Passenger Car		At Intersection and Related	Utility Pole	Going Straight Ahead		Other	
City Street	100 ST SW	LAKEVIEW AVE SW	E030569	10/15/2009	15:14	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - both moving - sideswipe	Going Straight Ahead	Slowing	Follow Too Closely	None
City Street	100TH ST SW	40TH AVE SW	E154154	2/10/2012	16:23	No Injury	Not Stated	Passenger Car	At Intersection and Related	Same direction -- both turning left -- both moving -- rear end	Making Left Turn	Making Left Turn	Improper Turn	None
City Street	100TH ST SW	40TH AVE SW	E244507	5/16/2013	18:20	No Injury	Bus or Motor Stage	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Other	None
City Street	100TH ST SW	40TH AVE SW	E172929	6/2/2012	9:02	Possible Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Follow Too Closely	None
City Street	100TH ST SW	40TH AVE SW	E250943	6/12/2013	16:15	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Right Turn	Going Straight Ahead	Under influence of Drugs	None
City Street	100TH ST SW	40TH AVE SW	E243788	5/10/2013	22:15	No Injury	Not Stated	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Other	None
City Street	100TH ST SW	40TH AVE SW	E377399	11/21/2014	11:42	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Making Right Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	100TH ST SW	40TH AVE SW	E195240	9/22/2012	12:23	Possible Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	100TH ST SW	40TH AVE SW	E241886	5/5/2013	15:39	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Other Driver Distractions Inside Vehicle	None
City Street	100TH ST SW	40TH AVE SW	E109664	5/6/2011	7:51	Possible Injury	Passenger Car	Not Stated	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	100TH ST SW	40TH AVE SW	E207049	11/13/2012	12:02	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Inattention	None
City Street	100TH ST SW	40TH AVE SW	E134151	10/29/2011	11:00	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Starting in Traffic Lane	Stopped at Signal or Stop Sign	Follow Too Closely	None
City Street	100TH ST SW	40TH AVE SW	E168053	5/6/2012	14:25	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	100TH ST SW	40TH AVE SW	E042504	2/13/2010	16:58	No Injury	Pickup,Panel Truck or		At Intersection and Related	Other Objects	Making Left Turn		Exceeding Reas. Safe Speed	
City Street	100TH ST SW	LAKEVIEW AVE SW	E274352	9/29/2013	16:55	No Injury	Not Stated	Passenger Car	At Intersection and Related	Entering at angle	Other*	Going Straight Ahead	Other	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E068126	9/19/2010	1:00	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Follow Too Closely	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E318170	4/1/2014	20:10	Possible Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Unknown Driver Distraction	Driver Not Distracted
City Street	100TH ST SW	LAKEVIEW AVE SW	E285395	11/15/2013	19:50	Possible Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Going Straight Ahead	Making Left Turn	Other Driver Distractions Inside Vehicle	Driver Not Distracted
City Street	100TH ST SW	LAKEVIEW AVE SW	E193623	9/20/2012	13:26	No Injury	Truck - Double Trailer		At Intersection and Related	Railway Crossing Gate	Going Straight Ahead		None	
City Street	100TH ST SW	LAKEVIEW AVE SW	E214498	12/17/2012	19:02	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	Entering at angle	Going Straight Ahead	Going Straight Ahead	Disregard Stop and Go Light	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E055638	6/8/2010	9:59	Possible Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Going Straight Ahead	Going Straight Ahead	Disregard Stop and Go Light	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E300396	1/15/2014	17:39	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Inattention	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E308582	2/9/2014	13:21	Serious Injury	Passenger Car	Passenger Car	At Intersection and Related	Entering at angle	Going Straight Ahead	Going Straight Ahead	Inattention	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E046961	3/26/2010	3:10	Serious Injury	Passenger Car	Railway Vehicle	At Intersection and Related	Railway Vehicle Strikes Vehicle	Going Straight Ahead	Going Straight Ahead	Disregard Stop and Go Light	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E392040	10/17/2014	16:00	Unknown	Not Stated	Passenger Car	At Intersection and Related	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	Other	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E381818	12/6/2014	15:18	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Under Influence of Drugs	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E191675	9/5/2012	15:48	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Other	None
City Street	100TH ST SW	LAKEVIEW AVE SW	E230060	3/4/2013	16:40	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None

OFFICER REPORTED CRASHES THAT OCCURRED ON ALL ROADS IN THE CITY OF LAKEWOOD

1/1/2009 - available 2015 (2015 data is considered partial and preliminary)

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AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE WSDOT, OR ANY JURISDICTIONS INVOLVED IN THE DATA

JURISDICTION	PRIMARY TRAFFICWAY	INTERSECTING TRAFFICWAY	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	FIRST COLLISION TYPE / OBJECT STRUCK	VEH 1 ACTION	VEH 2 ACTION	MV DRIVER CONT CIRC 1 (UNIT 1)	MV DRIVER CONT CIRC 1 (UNIT 2)
City Street	100TH ST SW	LAKEVIEW AVE SW	E212859	12/13/2012	10:44	Possible Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Inattention	None
City Street	STEILACOOM BLVD SW	39TH AVE SW	E363565	10/9/2014	18:00	Unknown	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Not Related	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	Other	None
City Street	STEILACOOM BLVD SW	39TH AVE SW	E299140	1/8/2014	17:00	Possible Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	Driver Not Distracted
City Street	STEILACOOM BLVD SW	DURANGO ST SW	E408207	3/1/2015	15:23	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	DURANGO ST SW	E175914	6/15/2012	17:30	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Driveway within Major Intersection	Entering at angle	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	DURANGO ST SW	2922563	5/12/2009	11:47	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Driveway within Major Intersection	From same direction - one right turn - one straight	Making Right Turn	Going Straight Ahead	Improper Turn	None
City Street	STEILACOOM BLVD SW	DURANGO ST SW	E251645	6/20/2013	17:19	No Injury	Passenger Car	Passenger Car	At Driveway within Major Intersection	Entering at angle	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AV SW	3212451	7/29/2009	19:13	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Going Straight Ahead	Making Left Turn	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AV SW	2434961	6/30/2009	18:05	No Injury	Passenger Car	Passenger Car	At Intersection and Not Related	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AV SW	E116534	7/25/2011	14:30	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	Entering at angle	Making Left Turn	Stopped at Signal or Stop Sign	Exceeding Reas. Safe Speed	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E062125	8/4/2010	17:50	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E050305	4/24/2010	13:49	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Inattention	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E055524	6/9/2010	16:24	No Injury	Passenger Car	Passenger Car	At Intersection and Related	Entering at angle	Going Straight Ahead	Making Left Turn	Disregard Stop and Go Light	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E275889	10/7/2013	7:21	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E255332	7/8/2013	9:00	Possible Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Not Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Follow Too Closely	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E368072	10/25/2014	16:30	No Injury	Passenger Car	Not Stated	At Intersection and Related	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	Under Influence of Alcohol	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	3041678	4/22/2009	13:06	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Making Right Turn	Stopped at Signal or Stop Sign	Other	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	3312177	3/23/2009	15:19	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	Entering at angle	Going Straight Ahead	Making Left Turn	Disregard Stop and Go Light	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E146407	1/2/2012	16:28	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Making Left Turn	Going Straight Ahead	Disregard Stop and Go Light	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E076196	11/8/2010	7:20	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	Follow Too Closely	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E219164	12/30/2012	15:44	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Not Related	From same direction - both going straight - both moving - sideswipe	Going Straight Ahead	Going Straight Ahead	Other	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E166340	4/25/2012	13:40	Possible Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Follow Too Closely	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	3314600	3/9/2010	15:39	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Inattention	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E073800	10/26/2010	13:25	No Injury	Passenger Car	Passenger Car	At Intersection and Related	Entering at angle	Going Straight Ahead	Making Left Turn	Disregard Stop and Go Light	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E287885	11/23/2013	17:17	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E252961	6/26/2013	23:25	No Injury	Not Stated	Passenger Car	At Intersection and Related	Entering at angle	Changing Lanes	Making Right Turn	Unknown Driver Distraction	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E365694	10/15/2014	10:23	Possible Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Starting in Traffic Lane	Stopped at Signal or Stop Sign	Exceeding Reas. Safe Speed	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E159121	3/15/2012	13:05	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E092838	2/20/2011	13:09	Possible Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Going Straight Ahead	Making Left Turn	Disregard Stop and Go Light	None

OFFICER REPORTED CRASHES THAT OCCURRED ON ALL ROADS IN THE CITY OF LAKEWOOD

1/1/2009 - available 2015 (2015 data is considered partial and preliminary)

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AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE WSDOT, OR ANY JURISDICTIONS INVOLVED IN THE DATA

JURISDICTION	PRIMARY TRAFFICWAY	INTERSECTING TRAFFICWAY	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	FIRST COLLISION TYPE / OBJECT STRUCK	VEH 1 ACTION	VEH 2 ACTION	MV DRIVER CONT CIRC 1 (UNIT 1)	MV DRIVER CONT CIRC 1 (UNIT 2)
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E260984	8/3/2013	18:45	No Injury	Passenger Car	Not Stated	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Inattention	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	3314890	2/24/2009	20:17	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Follow Too Closely	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E148363	1/14/2012	16:15	No Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Slowing	Stopped at Signal or Stop Sign	Operating Defective Equipment	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	3209758	4/6/2011	7:50	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Going Straight Ahead	Making Left Turn	Disregard Stop and Go Light	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E221171	1/16/2013	16:05	Possible Injury	Passenger Car	Passenger Car	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Inattention	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E324743	4/30/2014	15:00	No Injury	Passenger Car	Passenger Car	At Intersection and Related	Entering at angle	Making Right Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	Driver Not Distracted
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E358251	9/21/2014	17:44	Unknown	Passenger Car	Passenger Car	At Intersection and Related	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	Unknown Driver Distraction	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E205519	11/13/2012	10:28	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Follow Too Closely	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E181919	7/21/2012	15:56	No Injury	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Follow Too Closely	None
City Street	STEILACOOM BLVD SW	LAKEVIEW AVE SW	E080230	11/22/2010	10:05	No Injury	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Entering at angle	Making Right Turn	Going Straight Ahead	Did Not Grant RW to Vehicle	None



# APPENDIX C

## Signal Phasing and Timing Data

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City of Lakewood Traffic Signal  
Control System

Timing Sheet

3/17/2015 10:14:23 AM

Station : 55 - 100th & Lakeview ( Standard File )

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Walk		7		7		7		7								
Ped Clearance		22		20		26		25								
Min Green	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5
Passage	1	3	1	3	1	3	2	3	1	1	1	1	1	1	1	1
Max1	20	48	20	30	20	48	30	30	25	25	25	25	25	25	25	25
Max2	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Yellow	3.5	4	3.5	4	3.5	4	3.5	4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red	1	1	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Red Revert																
Added Initial																
Max Initial																
Time Before Reduce																
Cars Before Reduce																
Time To Reduce																
Reduce By																
Min Gap																
Dynamic Max Limit																
Dynamic Max Step																
Enable	ON	ON	ON	ON	ON	ON	ON	ON								
Auto Entry																
Auto Exit																
Non Act1																
Non Act2																
Lock Call									ON	ON	ON	ON	ON	ON	ON	ON
Min Recall																
Max Recall																
Ped Recall																
Soft Recall		ON				ON										
Dual Entry		ON		ON		ON		ON								
Sim Gap Enable		ON		ON		ON		ON	ON	ON	ON	ON	ON	ON	ON	ON
Guar Passage																
Rest In Walk																
Cond Service																
Add Init Calc																
Bike Clear																

Preemption

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Flash	ON	ON	ON	ON	ON	ON
Override Higher	ON	ON	ON	ON	ON	ON
Flash Dwell	ON	ON				
Link						
Delay						
Min Duration			4	4	4	4
Min Green			1	1	1	1
Min Walk			1	1	1	1
Ped Clear			10	10	10	10
Track Green	27					
Min Dwell			6	6	6	6
Max Presence			120	120	120	120
Track R1	1					
Track R2	6					
Track R3						
Track R4						
Dwell Ped1						
Exit R1	2		2	4	2	4
Exit R2	6		6	8	6	8
Exit R3						
Exit R4						

PHASING:  
→ VEH  
← PED



↑ NORTH

Prepared By

Date Implemented

Preempt LP

Channel	1	2	3	4
Min				
Max				
Type	OFF	OFF	OFF	OFF
Platoon Rx				
Cond Lockout				
Coord in Preempt				
Platoon Tx				
Lock				
Begin Mode	SKIP	SKIP	SKIP	SKIP
Priority P1				
Priority P2				
Priority P3				
Priority P4				
Max Lockout				
Ext Dwell				
Ant Arrival				
Max Grn 1				
Max Grn 2				
Max Grn 3				
Max Grn 4				
Max Grn 5				
Max Grn 6				
Max Grn 7				
Max Grn 8				
Max Grn 9				
Max Grn 10				
Max Grn 11				
Max Grn 12				
Max Grn 13				
Max Grn 14				

Reviewed By

Traffic Engineer

Max Grn 15				
Max Grn 16				
Headway Group				
Queue Jump				
Headway Time				
TX Time				
PP Hold Time				
PP Tx Phase 1				
PP Tx Phase 2				
PP Tx Phase 3				
PP Tx Phase 4				

City of Lakewood Traffic Signal  
Control System

Timing Sheet

3/17/2015 10:14:23 AM

Station : 55 - 100th & Lakeview ( Standard File )

**Coordination**

Hour	Minute	Action	Pattern	Cycle	Offset	Split	Seqnc	Short	Long	Dwell	Split 1	Split 2	Split 3	Split 4	Split 5	Split 6	Split 7	Split 8	Split 9	Split 10	Split 11	Split 12	Split 13	Split 14	Split 15	Split 16	
<b>Day Plan 1</b>											<b>Easy</b>																
16		5	5	110	62	5	3		25		18	50		42	18	50		42									
18		6	254																								
<b>Day Plan 2</b>											<b>Easy</b>																
<b>Day Plan 3</b>											<b>Easy</b>																

City of Lakewood Traffic Signal Control System

Timing Sheet

3/17/2015 10:14:23 AM

Station : 55 - 100th & Lakeview ( Standard File )

Hour	Minute	Action	Pattern	Cycle	Offset	Split	Seqnc	Short	Long	Dwell	Split 1	Split 2	Split 3	Split 4	Split 5	Split 6	Split 7	Split 8	Split 9	Split 10	Split 11	Split 12	Split 13	Split 14	Split 15	Split 16
<b>Day Plan 4</b>											<b>Easy</b>															

Scheduler

Plan	Month												Day of Week							Day of Month							1			2			3			Day Plan						
	J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6		7	8	9	0	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2												1						1																								2
3																																										1

User Comments:

City of Lakewood Traffic Signal  
Control System

Timing Sheet

3/17/2015 10:17:42 AM

Station : 56 - 100th & 40th ( Standard File )

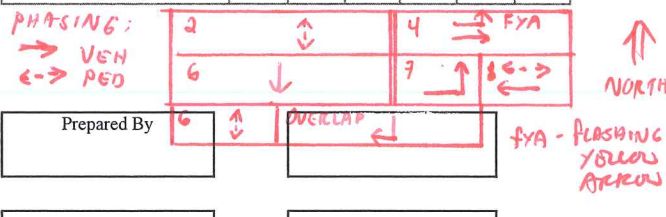
Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Walk		7				7		7								
Ped Clearance		17				17		16								
Min Green				3		3	4	8	5	5	5	5	5	5	5	5
Passage				3		0.3	3	5	1	1	1	1	1	1	1	1
Max1				60		35	30	60	25	25	25	25	25	25	25	25
Max2									50	50	50	50	50	50	50	50
Yellow	3.5	4	3.5	4	3.5	4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Red Revert				2		2	2	2								
Added Initial																
Max Initial																
Time Before Reduce																
Cars Before Reduce																
Time To Reduce																
Reduce By																
Min Gap																
Dynamic Max Limit																
Dynamic Max Step																
Enable		ON		ON		ON	ON	ON					ON			
Auto Entry																
Auto Exit																
Non Act1																
Non Act2																
Lock Call									ON	ON	ON	ON	ON	ON	ON	ON
Min Recall																
Max Recall																
Ped Recall																
Soft Recall				ON				ON								
Dual Entry				ON				ON								
Sim Gap Enable				ON				ON	ON	ON	ON	ON	ON	ON	ON	ON
Guar Passage																
Rest In Walk																
Cond Service																
Add Init Calc																
Bike Clear																

**Preemption**

Channel	1	2	3	4	5	6
Lock Input	ON	ON				ON
Override Flash	ON	ON				ON
Override Higher	ON	ON				ON
Flash Dwell	ON	ON				ON
Link						
Delay						
Min Duration			4	4	4	
Min Green			1	1	1	
Min Walk			1	1	1	
Ped Clear			16	16	16	
Track Green						
Min Dwell			6	6	6	
Max Presence			120	120	120	
Track R1						
Track R2						
Track R3						
Track R4						
Dwell Ped1						
Exit R1			4	4	4	
Exit R2			8	8	8	
Exit R3						
Exit R4						

**Preempt LP**

Channel	1	2	3	4
Min				
Max				
Type	OFF	OFF	OFF	OFF
Platoon Rx				
Cond Lockout				
Coord in Preempt				
Platoon Tx				
Lock				
Begin Mode	SKIP	SKIP	SKIP	SKIP
Priority P1				
Priority P2				
Priority P3				
Priority P4				
Max Lockout				
Ext Dwell				
Ant Arrival				
Max Grn 1				
Max Grn 2				
Max Grn 3				
Max Grn 4				
Max Grn 5				
Max Grn 6				
Max Grn 7				
Max Grn 8				
Max Grn 9				
Max Grn 10				
Max Grn 11				
Max Grn 12				
Max Grn 13				
Max Grn 14				



Reviewed By

Traffic Engineer

Max Grn 15				
Max Grn 16				
Headway Group				
Queue Jump				
Headway Time				
TX Time				
PP Hold Time				
PP Tx Phase 1				
PP Tx Phase 2				
PP Tx Phase 3				
PP Tx Phase 4				

City of Lakewood Traffic Signal  
Control System

Timing Sheet

3/17/2015 10:17:42 AM

Station : 56 - 100th & 40th ( Standard File )

**Coordination**

Hour	Minute	Action	Pattern	Cycle	Offset	Split	Sequenc	Short	Long	Dwell	Split 1	Split 2	Split 3	Split 4	Split 5	Split 6	Split 7	Split 8	Split 9	Split 10	Split 11	Split 12	Split 13	Split 14	Split 15	Split 16	
<b>Day Plan 1</b>											<b>Easy</b>																
16		5	5	110	83	5	1		25		27	40	28	15		67	28	15									
18		6	254																								
<b>Day Plan 2</b>											<b>Easy</b>																
<b>Day Plan 3</b>											<b>Easy</b>																





City of Lakewood Traffic Signal  
Control System

Timing Sheet

6/29/2015 1:10:51 PM

Station : 15 - Steilacoom & Lakeview Drive ( Standard File )

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Walk				7		7										
Ped Clearance				20		19										
Min Green		8		2	2	8										
Passage		4		2	1	4										
Max1		32		32	30	64										
Max2																
Yellow		4		3.5	3.5	4										
Red		0.5		0.5	0.5	0.5										
Red Revert		2		2	2	2										
Added Initial		2.5				2.5										
Max Initial		16				16										
Time Before Reduce		10				10										
Cars Before Reduce																
Time To Reduce		16				16										
Reduce By																
Min Gap		2				2										
Dynamic Max Limit																
Dynamic Max Step																
Enable		ON		ON	ON	ON										
Auto Entry																
Auto Exit																
Non Act1																
Non Act2																
Lock Call																
Min Recall																
Max Recall		ON														
Ped Recall																
Soft Recall		ON				ON										
Dual Entry		ON				ON										
Sim Gap Enable		ON			ON	ON										
Guar Passage																
Rest In Walk																
Cond Service																
Add Init Calc																
Bike Clear																

**Preemption**

Channel	1	2	3	4	5	6
Lock Input						
Override Flash						
Override Higher						
Flash Dwell	ON					
Link						
Delay						
Min Duration	4		6	6	6	6
Min Green	1		1	1		
Min Walk	1		1	1		
Ped Clear	1		1	1		
Track Green	21					
Min Dwell			4	4	4	4
Max Presence			120	120	120	120
Track R1	2					
Track R2	5					
Track R3						
Track R4						
Dwell Ped1						
Exit R1	2		2	2		
Exit R2	6		6	6		
Exit R3						
Exit R4						

**Preempt LP**

Channel	1	2	3	4
Min				
Max				
Type	OFF	OFF	OFF	OFF
Platoon Rx				
Cond Lockout				
Coord in Preempt				
Platoon Tx				
Lock				
Begin Mode	SKIP	SKIP	SKIP	SKIP
Priority P1				
Priority P2				
Priority P3				
Priority P4				
Max Lockout				
Ext Dwell				
Ant Arrival				
Max Grn 1				
Max Grn 2				
Max Grn 3				
Max Grn 4				
Max Grn 5				
Max Grn 6				
Max Grn 7				
Max Grn 8				
Max Grn 9				
Max Grn 10				
Max Grn 11				
Max Grn 12				
Max Grn 13				
Max Grn 14				

Prepared By

Date Implemented

Reviewed By

Traffic Engineer

Max Grn 15				
Max Grn 16				
Headway Group				
Queue Jump				
Headway Time				
TX Time				
PP Hold Time				
PP Tx Phase 1				
PP Tx Phase 2				
PP Tx Phase 3				
PP Tx Phase 4				





# APPENDIX D

## Sounder Century Yard Train Operations

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## APPENDIX D

### Sounder Century Yard Train Operations

#### **Yard-to-Shop Train Movement for Maintenance**

Sounder trains are stored at the Century Yard in Lakewood overnight for cleaning and light maintenance and redeployment the following morning; or they are staged for movement into the shop for preventive or unscheduled maintenance. Performing maintenance at the shop would require the equipment (passenger cars and locomotives, referred to as units here) to move from the storage tracks to the shop and, once having completed maintenance, to move from the shop back to the storage tracks in the yard. With newly maintained equipment, the trains would be put on the storage tracks for the next day's service.

Figure 1 depicts the movements required for the units from one train. Moving from the storage tracks in the yard to the shop, the train would head south on the mainline track and onto the island circuit, causing the signal and gates at 100th Street SW to activate. The train would cross 100th Street SW and travel beyond the island circuit to deactivate the signal and gates, then pause to allow any traffic queued on 100th Street SW to clear. Once the queue is clear, the train would head north reactivating the island circuit causing the gates to descend. The train would re-cross 100th Street SW and enter the shop on the shop lead track. This operation would be reversed to move the train from the shop to the storage tracks in the yard. Each maintenance train movement would require four crossings of 100th Street SW, stopping traffic for approximately 3 minutes each time.

#### **Maintenance Types and Frequency**

The Sounder shop would handle two types of maintenance: preventive maintenance and unscheduled maintenance. Preventive maintenance is maintenance regularly scheduled in accordance with the Federal Railroad Administration mandates. Sound Transit anticipates six units would require preventive maintenance each week, with three units taken out of service on one day of the week and three more taken out of service on a second day of the week.

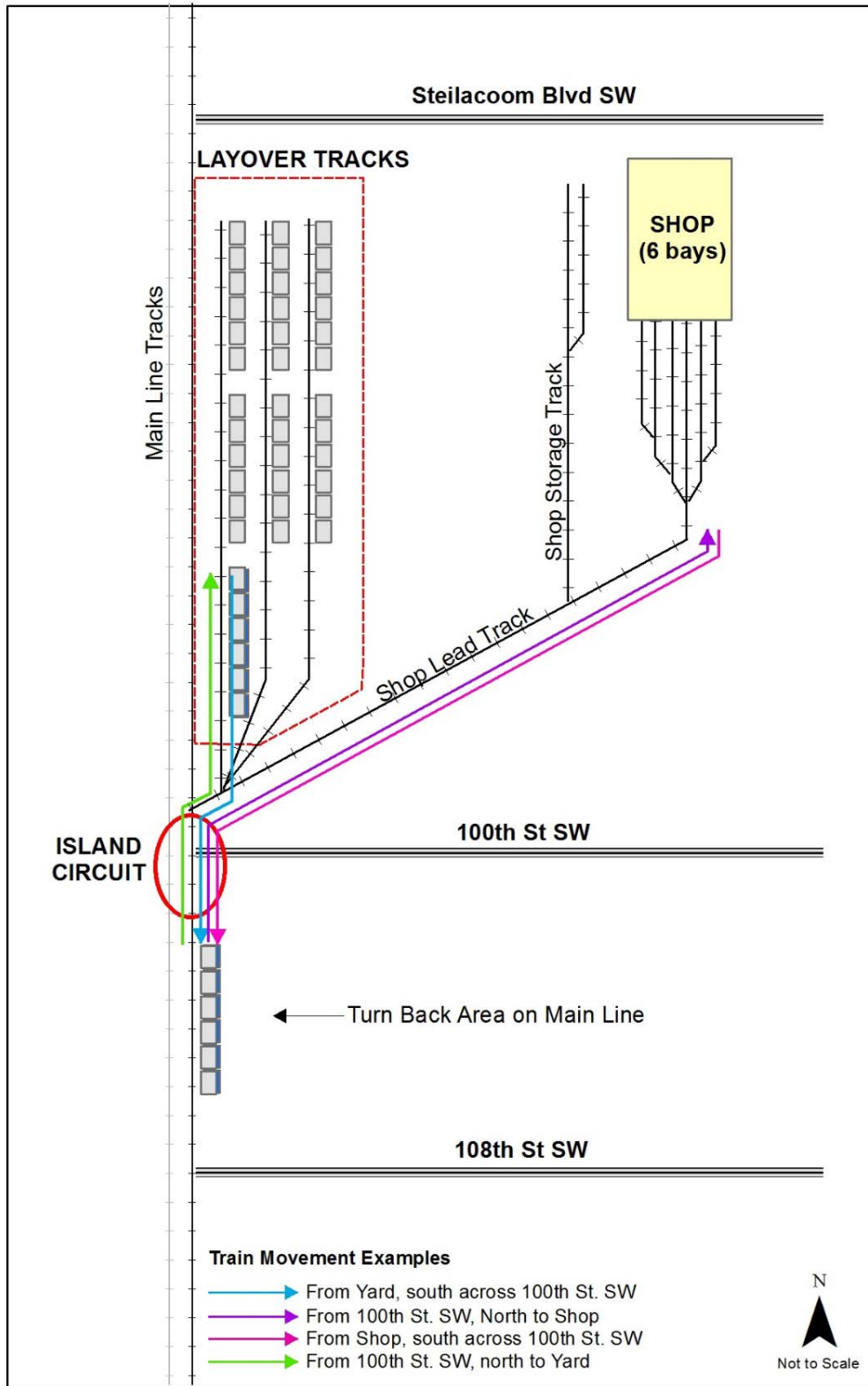
Unscheduled maintenance consists of unanticipated repairs to cars or locomotives. The scope and number of units requiring unscheduled maintenance would vary. Historical data indicates an average of two units per week would require movement into the shop for unanticipated repairs. The worst case to date has been four units in one week.

#### **Number of Maintenance Train Crossings at 100th Street SW**

Preventive maintenance of the six units per week would occur in groupings of three units that have been assembled into one train in the south Seattle yard prior to reaching Century Yard. Moving each preventive maintenance train would require four crossings of 100th Street SW. Two preventive maintenance trains each week would require eight crossings of 100th Street SW each week.

Units needing unscheduled maintenance would generally not be within the same train. Therefore, the units would be moved between the storage tracks in the yard and the shop in separate movements, which equates to four crossings of 100th Street SW for each unit needing repair. With a maximum of four units needing repair per week, that equates to 16 crossings per week. The maximum number of crossings of 100th Street SW in one week would therefore be 24, as shown in Table 1.

Figure 1: Site Plan of Crossings at 100th Street SW





**Table 1: Number of Maintenance Train Crossings at 100th Street SW**

Per Week		Per Night	
No. of Units	Total Crossings (4 per train)	No. of Units	Total Crossings (4 per train)
2 (PM) <sup>1</sup>	8	1 (PM)	4
4 (UM)	16	2 (UM) <sup>2</sup>	8
<b>Total: 6</b>	<b>Total: 24 max.</b>	<b>Total: 3</b>	<b>Total: 12 max.</b>
<b>KEY</b>			
PM= Preventative Maintenance			
UM= Unscheduled Maintenance for repairs			
<b>Notes:</b>			
<sup>1)</sup> 3 units requiring PM on one train			
<sup>2)</sup> Assumed the average of 2 UM per week occur on 1 night.			

Because potential traffic and noise impacts require assessment on a daily rather than weekly basis, Sound Transit estimated the maximum number of crossings of 100th Street SW per night assuming that train movements included one preventive maintenance train and the week's average unscheduled maintenance. This assumption provides a conservative worst-case scenario for impact analysis of up to 12 crossings of 100th Street SW per night as depicted in Table 1. In actual operations, preventative maintenance and unscheduled maintenance would most likely occur on different nights, resulting in a lower number of crossings per night on average.

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