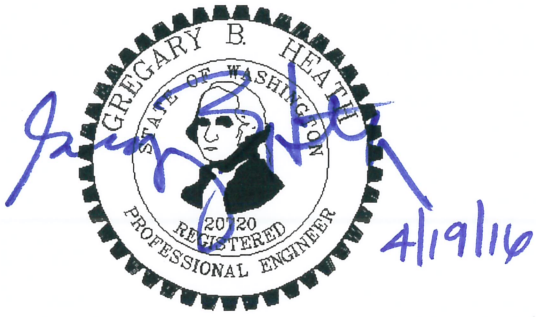
NEW COLD TACOMA
TRAFFIC IMPACT ANALYSIS

City of Tacoma, WA



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April 2016

NEW COLD TACOMA
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I. INTRODUCTION

The main goals of this study focus on the assessment of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the collection of general roadway information, road improvement information and entering sight distance data. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined if needed.

II. PROJECT DESCRIPTION

The proposed project is a high-cube/distribution warehouse building planned for two phases with a total of 232,000 square feet. The site is located on the north side of S 48th Street, just east of S Orchard Street in the City of Tacoma. The current and previous use of the site is for the Hanson Pipe & Products operations.

Access to the site will be provided by a direct connection at the end of S 46th Street as well as a driveway onto S 48th Street for passenger cars only. Surrounding development is generally industrial, commercial, residential, or undeveloped land. For traffic analysis purposes, the anticipated buildout and occupancy year for the project is 2018, which was targeted as the horizon analysis year. Figure 1 on the following page shows the project location and the local street network. The proposed site plan showing the overall site layout is shown in Figure 2.

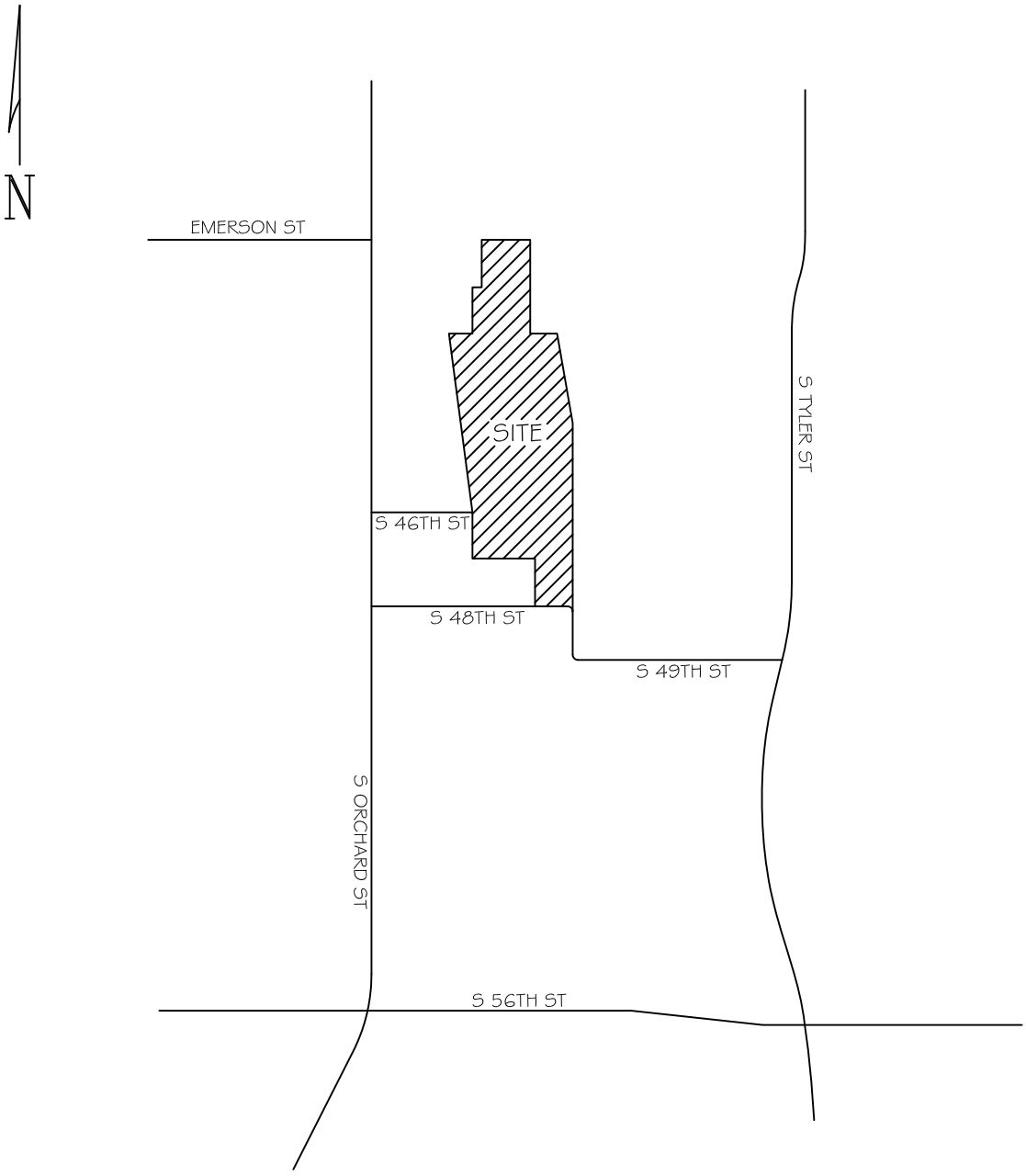
III. EXISTING CONDITIONS

A. Surrounding Roadway System

Descriptions of the key roads serving the project are given below.

S Orchard Street is a north-south, five-lane major arterial that lies to the west of the project site. The posted speed limit is 35 mph. Paving consists of asphalt concrete and lane widths are around 11 feet. Shoulders in the area are curbed, with sidewalks on the east side of the road. A two-way left turn lane is provided.

S 46th Street is an east-west access road that connects to the west side of the project. The speed limit is not posted but assumed 25 mph. Total width is roughly 30 feet, with grass/gravel shoulders.



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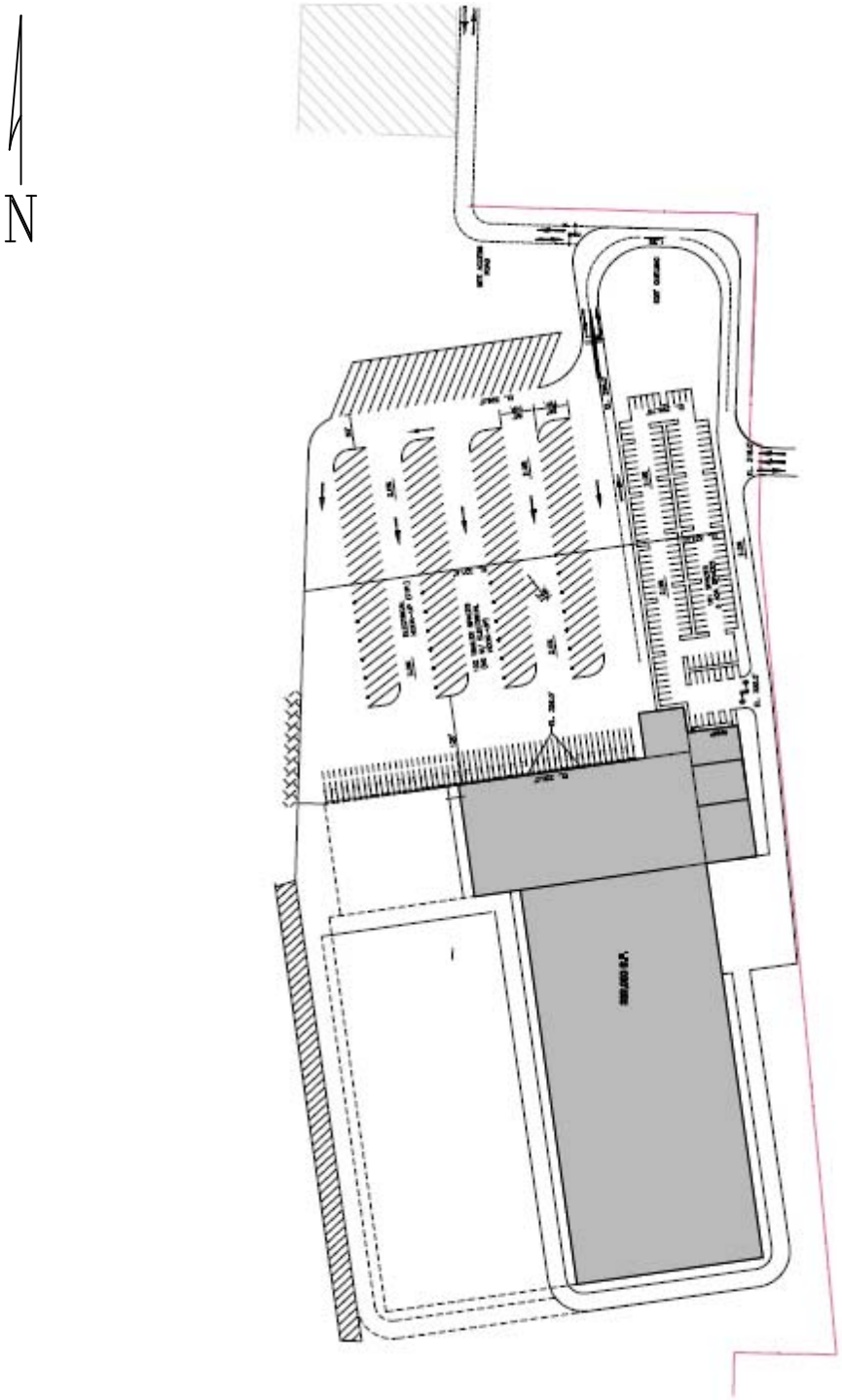
VICINITY MAP & ROADWAY SYSTEM

FIGURE 1



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SITE PLAN

FIGURE 2

S 48th Street is an east-west local road that borders the south side of the site. The speed limit is assumed at 25 mph. Pavement surfacing is comprised of asphalt concrete with a total roadway width of approximately 30 feet. Some speed humps are present. Shoulders are curb/gutter/sidewalk to the west, and grass/gravel to the east of the site.

B. Existing Peak Hour Volumes

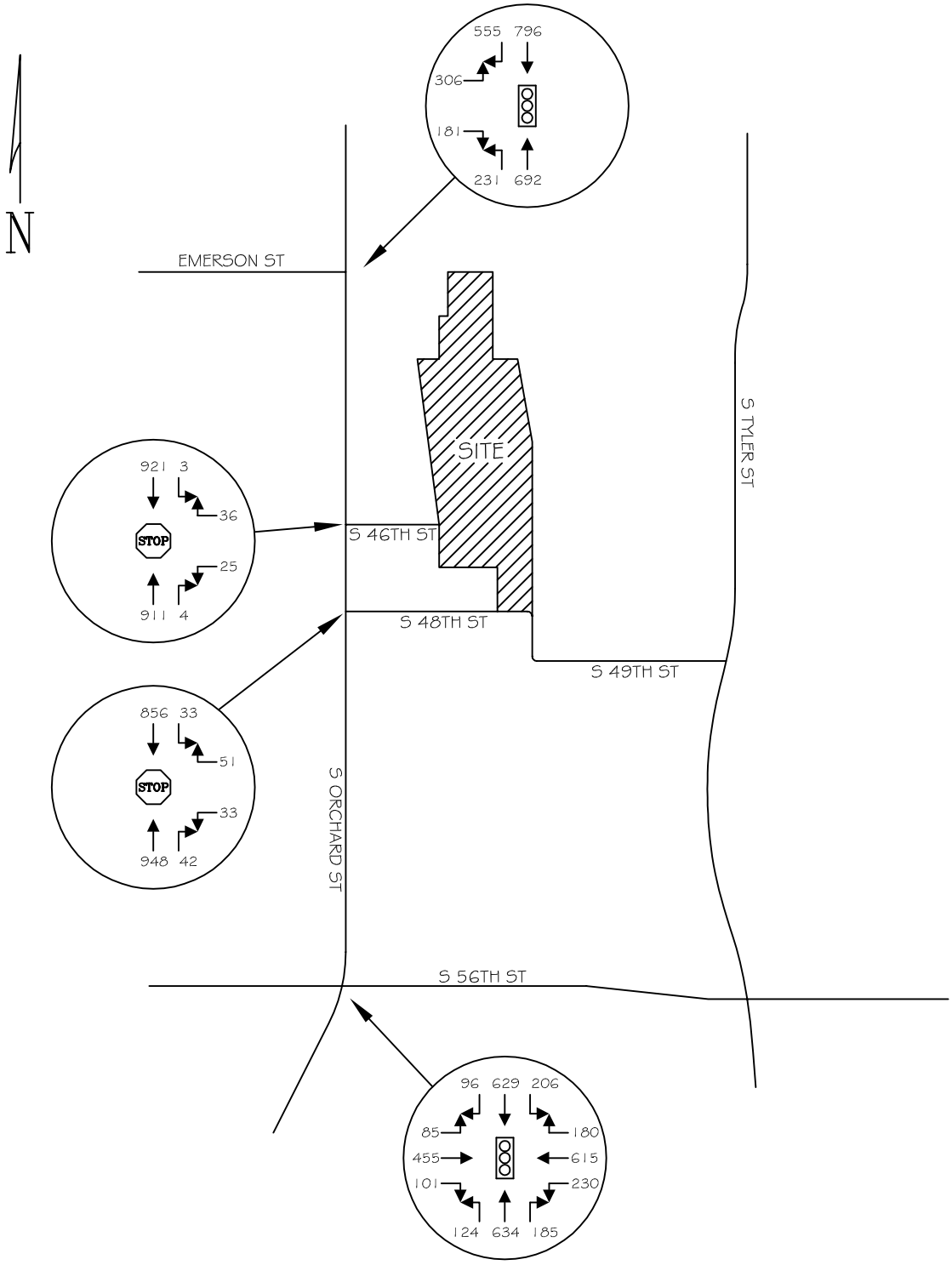
Field data for this study was taken in March of 2013 brought forward to 2016 by factoring up at two percent per year. The S Orchard Street & S 46th Street intersection is based on 2016 data collected for a signal warrant analysis. Traffic counts used in this report were taken during the evening peak period between the hours of 4 PM and 6 PM. This specific peak period was targeted for analysis purposes since it generally represents the highest traffic scenario with respect to street volumes.

Figure 3 shows the weekday PM peak volumes for the key intersections of S Orchard Street & Emerson Street, S Orchard Street & S 46th Street, S Orchard Street & S 48th Street, and S Orchard Street & S 56th Street. Turning movement data can be found in the appendix.

C. Level of Service

Peak hour information and geometric intersection data collected in the field were used to perform capacity computations in accordance with the *2010 Highway Capacity Manual*. Capacity analysis is used to determine level of service, which is an established measure of congestion for transportation facilities. LOS is defined for a variety of facilities including intersections, freeways, arterials, two-lane highways, etc. LOS is a qualitative measure used to rate the operational conditions of roads and intersections. The rating uses six categories from A the lowest delay to F which indicates the highest delay. Generally, the city of Tacoma strives for LOS D as the desired level of delay with LOS E acceptable at major intersections.

The results of the level of service analysis were determined through the use of the automated intersection analysis program Synchro 9. This program is based on established Highway Capacity Manual procedures. All reported delays are taken from the program results. Existing delays and level of service can be found in Table 1. As shown in the table, the key intersections currently have delays in the LOS A to LOS D range.
Program output can be found in the appendix.



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EXISTING 2016 PM PEAK HOUR VOLUMES

FIGURE 3

TABLE 1
Existing Level of Service
Delays given in Seconds Per Vehicle

Intersection	*Control*	*Geometry*	*LOS*	*Delay*
Orchard/Emerson	Signal	Eastbound	B	18.7
		Northbound	A	9.7
		Southbound	B	12.4
		Overall	B	12.7
Orchard/46th St	Stop	Westbound	D	28.1
		Southbound LT	B	10.4
Orchard/48th St	Stop	Westbound	C	22.3
		Southbound LT	B	11.0
Orchard/56th St	Signal	Eastbound	C	32.7
		Westbound	D	44.1
		Northbound	D	49.5
		Southbound	D	40.0
		Overall	D	43.2

As shown in the table, the existing delays are moderate at LOS B to LOS D.

D. Pedestrian and Bicycle Activity

Existing non-motorist traffic is minor during the PM peak hour. Pedestrian and bicycle trips generated by the proposed project are expected to be minor during peak vehicular traffic periods (specifically 4 PM to 6 PM). The majority of PM peak hour project traffic would be expected to arrive via passenger vehicle given the number of employees along with truck activity. Minor bicycle and/or pedestrian activity has been noted during field observations on area roadways. No special accommodations for pedestrian or bicycle activity due to the project is anticipated.

E. Public Transit

A review of the Pierce Transit regional bus schedule shows that the nearest transit service is located on Orchard Street just west of the project. Pierce Transit Routes 51 and 53 provides service from Tacoma to Lakewood with stops in the project vicinity roughly between 6:00 AM and 7:45 PM and 6:15 AM to 5 PM, respectively. No project trip reductions were made despite the availability of transit service.

F. Sight Distance at Access Driveway

A preliminary examination of the proposed site access points was made to determine whether or not adequate entering sight distance can be provided for inbound and outbound project traffic. AASHTO Green Book standards require a sight distance of 280 feet for a 25 mph design speed, or 445 feet for a 40 mph design speed. The access onto

S 46th Street is a direct connection at the end of the street, with no sight distance issues. Adequate sight is available for the project connection onto S 48th Street, although there is a 90 degree turn in the road to the east approximately 230 feet away. Vehicles navigating this turn would most likely be operating at lower speeds, enabling adequate time for entering movements onto S 48th Street. This access is to be used by employee traffic only.

Heavy vehicles require more entering sight distance due to additional time needed to make turning movements. These vehicles, however, have a higher eye height than passenger vehicles. An examination of the S 46th Street connection onto S Orchard Street was made to ensure adequate entering sight distance for the trucks. AASHTO guidelines indicate an entering sight distance of 718 feet required for a heavy vehicle left turn movement assuming a 40 mph design speed. Examinations indicate this minimum is exceeded in reviewing the S 46th Street connection to S Orchard Street, with over 800 feet of sight available.

IV. FUTURE TRAFFIC CONDITIONS

A. Trip Generation

Trip generation is used to determine the magnitude of project impacts on the surrounding street system. This is usually denoted by the quantity or specific number of new trips that enter and exit a project during a designated time period, such as a specific peak hour or an entire day. The project was looked at in two ways. The first way is as a High Cube Warehouse/Distribution Center (LUC 152) for the 232,000 square feet of building space. This data was derived from the Institute of Transportation Engineers publication, *Trip Generation*, 9th Edition. Based on this LUC, the trip generation for the project is anticipated to be as follows:

TABLE 2
Project Trip Generation – Previously Approved
571.2 ksf High Cube/Distribution (LUC 152)
(vph = vehicles per hour)

Time Period	*Volume*
AM Peak Inbound	43 vph
AM Peak Outbound	20 vph
AM Peak Total	63 vph
PM Peak Inbound	21 vph
PM Peak Outbound	48 vph
PM Peak Total	69 vph

The trip generation method proposed for the New Cold site is based on how the site will operate given by the user who has developed detailed traffic patterns for the project. The primary employee traffic occurs based on a 5 AM shift and a 1 PM shift with existing

employee traffic occurring at 2 PM and 10 PM. The spread sheet used presenting the site operation from a traffic standpoint has been added to the appendix.

TABLE 3
Project Trip Generation
Based on site operations – See appendix

Time Period	*Phase 1*	*Phase 2*	***Total***
AM Peak Inbound	25 vph	25 vph	50 vph
AM Peak Outbound	15 vph	14 vph	29 vph
AM Peak Total	40 vph	39 vph	79 vph
PM Peak Inbound	17 vph	14 vph	31 vph
PM Peak Outbound	22 vph	22 vph	44 vph
PM Peak Total	39 vph	36 vph	75 vph

It should be noted that there had been previous existing activity at the Hanson Pipe & Products facility.

The difference between the previous proposed project scenario of 571,200 square feet of high cube warehouse and the New Cold proposal with both phases is 6 additional PM peak trips and 13 additional AM trips.

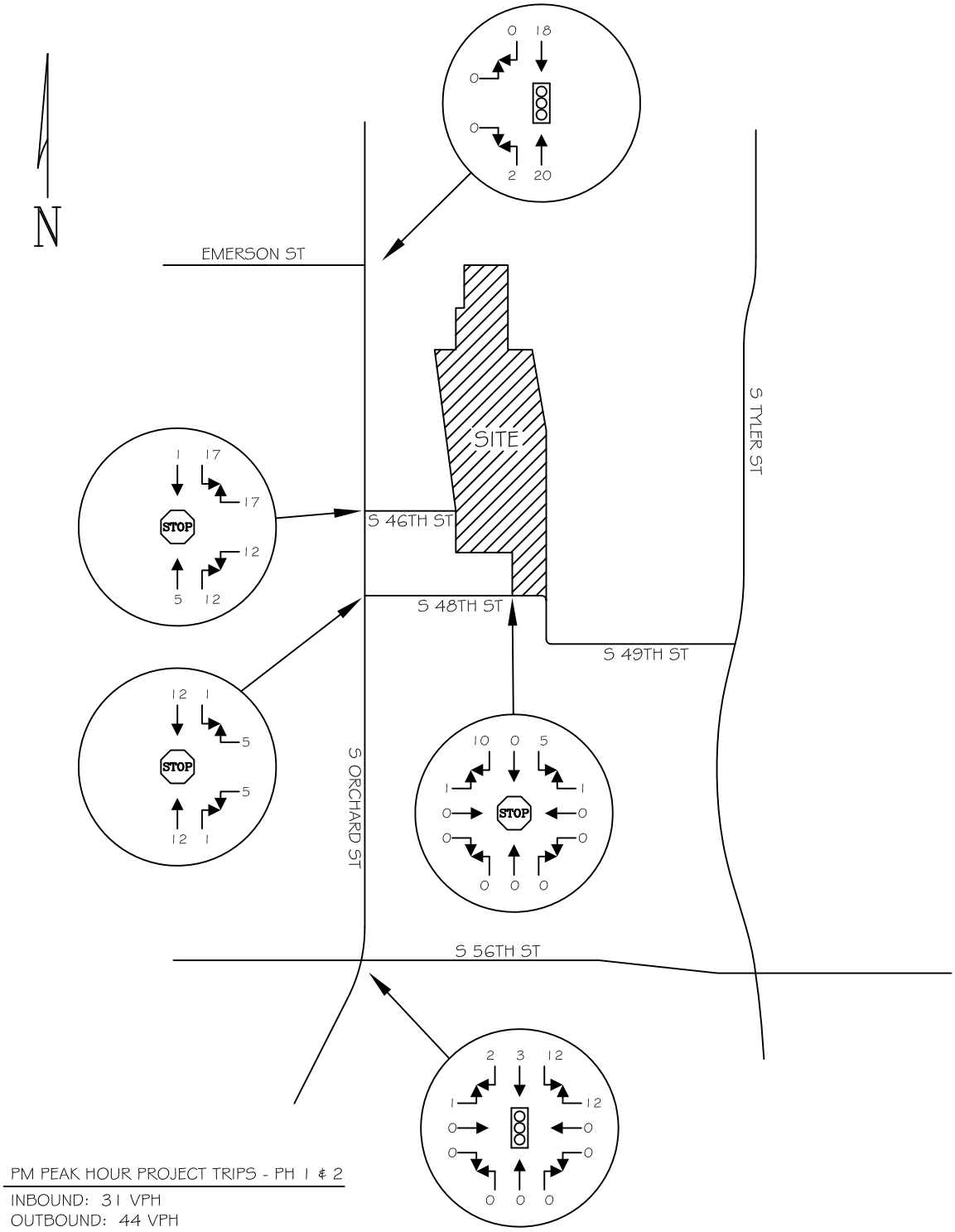
B. Trip Distribution

General estimations of traffic distribution are made to determine the impacts of a project on the surrounding street network. Trips generated by the project are expected to follow the pattern shown in Figure 4 on the following page. Percentages are generally based on existing traffic patterns in terms of employee distribution and toward the I-5 corridor and the Port of Tacoma in terms of truck traffic. The client proposes that all employee traffic would use the S 48th access for security purposes and the truck traffic from the site would use S 46th Street to Orchard Street.

C. Roadway Improvements

A review of the most recent City of Tacoma Six-Year Road Transportation Improvement Program dated 2016 to 2021 indicates that there are no current city roadway improvements in the immediate vicinity.

A review of the latest City of University Place Transportation Improvement Program dated 2015 to 2020 also indicates no planned improvements in the site vicinity.



PM PEAK HOUR PROJECT TRIPS - PH 1 & 2

INBOUND: 31 VPH
OUTBOUND: 44 VPH

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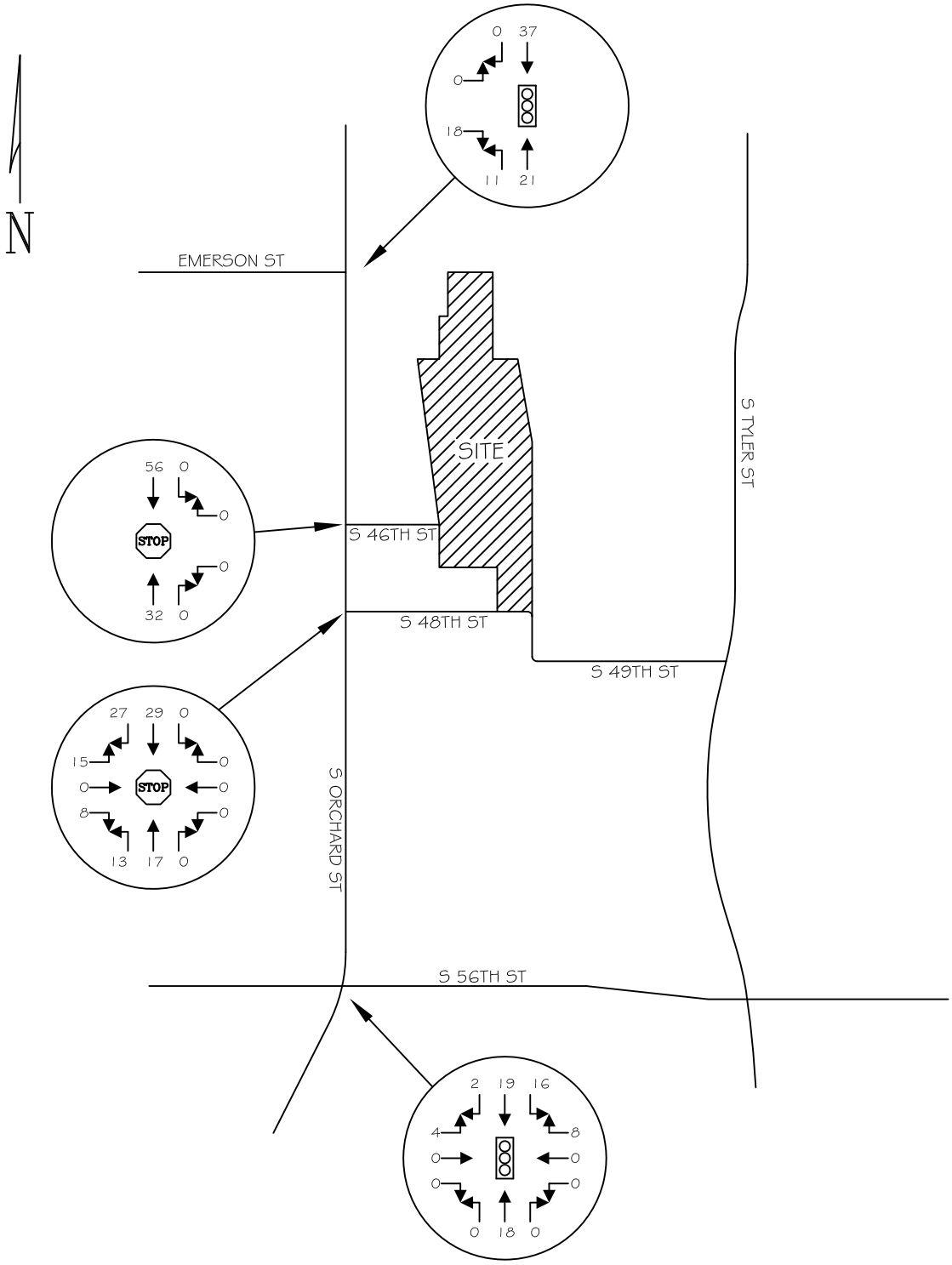
PROJECT TRIP DISTRIBUTION

FIGURE 4



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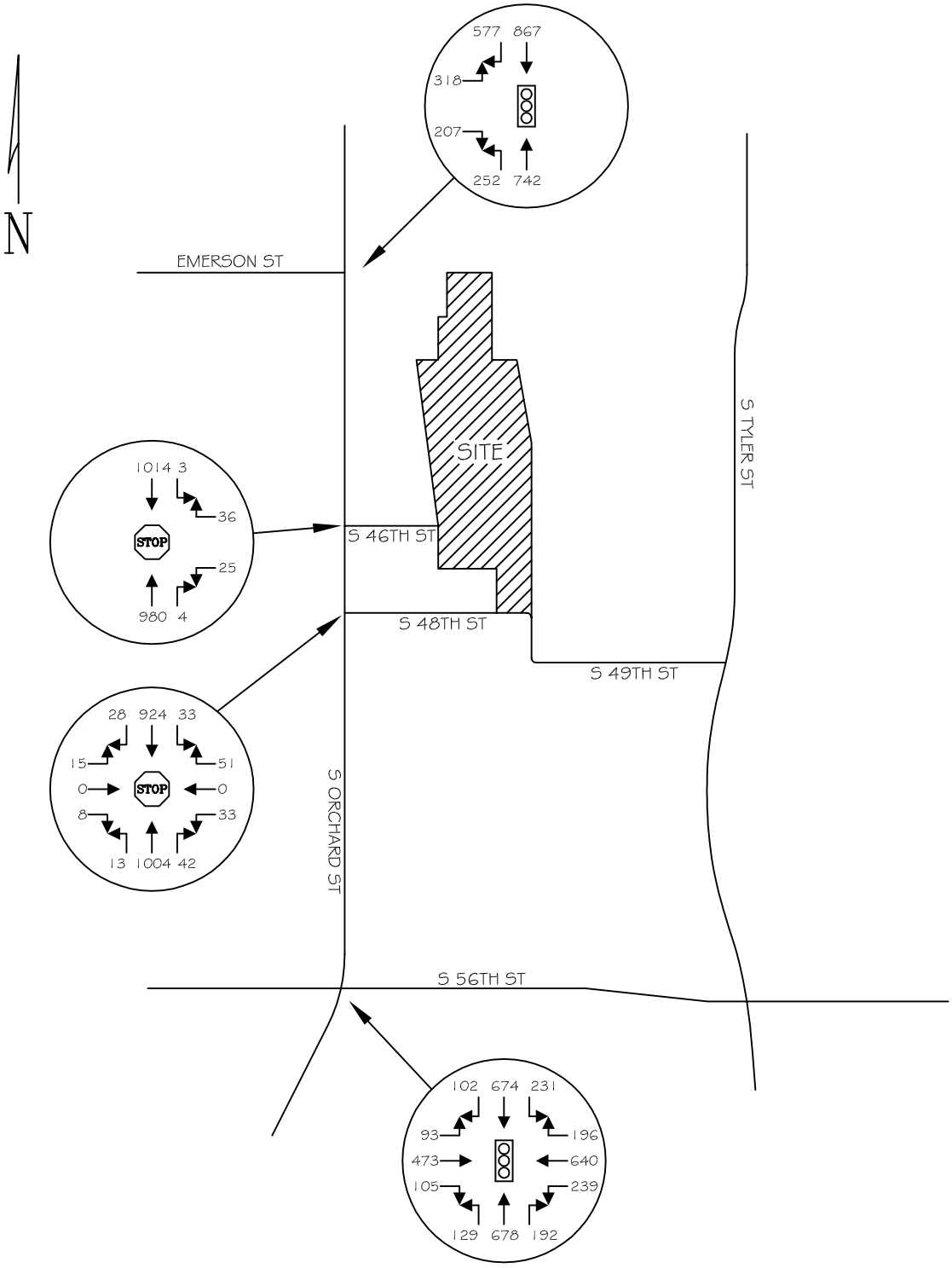
PIPELINE VOLUMES

FIGURE 5



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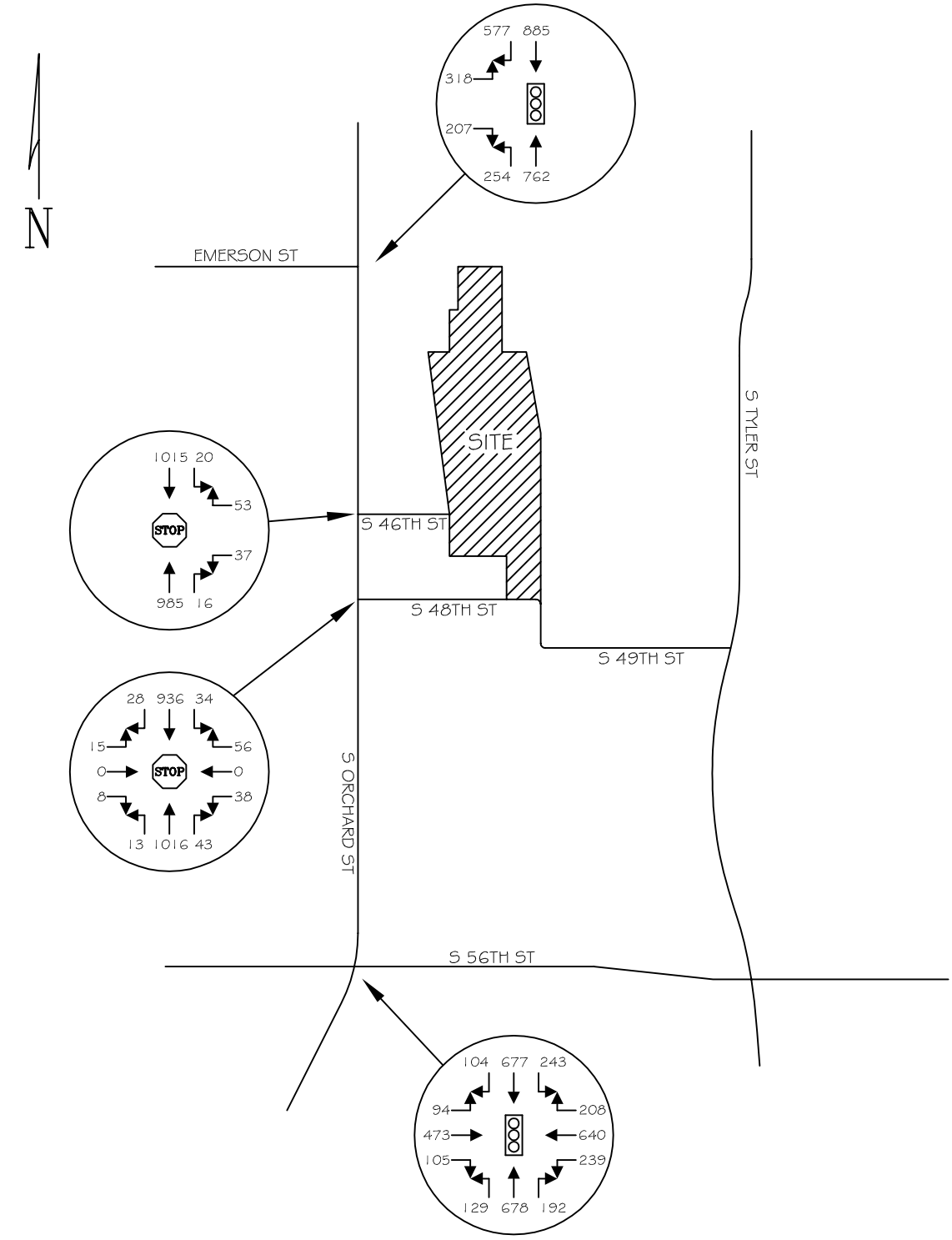
2018 PM PEAK HOUR VOLUMES WITHOUT PROJECT

FIGURE 6



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2018 PM PEAK HOUR VOLUMES WITH PROJECT

FIGURE 7

D. Peak Hour Volumes

The year of 2018 was chosen as a horizon year for analysis purposes for both phase 1 alone and assuming both phases are constructed. Future 2018 traffic volumes without the project built out were derived by applying a 2 percent background growth rate per year to the existing traffic volumes shown in Figure 3.

In addition, pipeline volumes from the Orchard Ridge and Woodside Creek residential developments were included for future estimations as the projects are assumed to be not built and occupied. These pipeline volumes are shown in Figure 5. As was the case in the original analysis the pipeline volumes assume a west leg connection added to the S Orchard Street/S 48th Street intersection. The two way left turn lane on S Orchard Street that currently exists at the intersection is assumed once the west leg is built.

Future 2018 traffic volumes without the project are shown on Figure 6, while 2018 volumes with project traffic added are shown on Figure 7.

E. Level of Service

A level of service analysis was made of the future peak hour volumes with project generated trips included. This analysis again involved the use of the Synchro 9 program. Results for 2018 traffic conditions are shown in Table 3.

TABLE 4

Future 2018 Level of Service – Phases 1 and 2

Delays given in Seconds Per Vehicle

			Without Project		With Project	
Intersection	*Control*	*Approach*	*LOS*	*Delay*	*LOS*	*Delay*
Orchard/Emerson	Signal	Eastbound	B	18.1	B	18.0
		Northbound	B	10.6	B	10.6
		Southbound	B	14.5	B	14.8
		Overall	B	13.7	B	13.7
Orchard/46th	Stop	Westbound	D	32.8	E	39.7
		Southbound LT	B	10.7	C	19.7
Orchard/48th	Stop	Eastbound	D	25.5	D	26.2
		Westbound	D	30.6	D	34.6
		Northbound LT	B	10.2	B	10.3
		Southbound LT	B	11.3	B	11.4
Orchard/56th	Signal	Eastbound	D	38.9	D	38.9
		Westbound	D	52.2	D	54.1
		Northbound	E	60.8	E	60.9
		Southbound	D	51.4	E	56.9
		Overall	D	51.9	D	53.9

As shown in the table, delays at the key intersections would be in the LOS B to LOS E overall range with project traffic included. Note that the Orchard/46th analysis with

project traffic assumes construction of separate left and right turn lanes for the westbound approach. This was the only intersection to have an increase is LOS due to project traffic. The increase in delay, is not significant at 6.9 seconds. The Synchro output shows the westbound peak hour factor, slightly increased from existing conditions, 0.33 to 0.45. This was done to account for truck traffic that will make up a majority of peak hour project traffic utilizing the Orchard/46th intersection. Trucks are the primary users of the 46th Street entrance and trucks are run more evenly throughout the day.

F Signal Warrant

A separate signal warrant analysis was performed to thoroughly examine the need, if any, for a signal to be installed at the Orchard Street & 46th Street intersection. The warrant analysis followed procedures outlined in the MUTCD. All eight MUTCD warrants were used for a complete analysis. In the April 18, 2016 dated signal warrant analysis it was found a signal is *not warranted* with none of the eight MUTCD warrants met. See the original study for input values, original traffic count data, methodologies, and results.

V. CONCLUSIONS & MITIGATION

The New Cold project proposes to add a 232,000 square feet of highly automated cold storage warehousing to a site that had been previously approved for 571,200 square feet of high cube warehousing. The project proposes to be built in two phases with the first phase proposed for 2018 from a traffic standpoint. The second phase is proposed for the future and would be based on market needs.

The site is just east of S Orchard Street at S 46th Street and S 48th Street, replacing the Hanson Pipe & Products facility that has occupied the site for a number of years. Phase 1 traffic is anticipated at 40 trips during the AM peak hour and 39 trips during the PM peak hour. The second phase would add 39 AM trips and 36 PM trips. The difference from the previously approval is 6 additional PM peak trips with the New Cold proposed use.

Fairly heavy evening peak hour volumes currently exist along S Orchard Street, Emerson Street, and S 56th Street, with milder volumes on the S 46th and S 48th side streets. Sight distance at the access points is adequate for passenger vehicles and heavy vehicles. Future 2018 delays with project traffic included are calculated to be in the LOS B to LOS E overall range. A signal warrant analysis for the S Orchard Street & S 46th Street intersection can be found in the appendix. Results show that a signal is not warranted.

Based on this analysis the following conditions are proposed.

1. The westbound approach of S 46th Street at S Orchard Street is to be widened and striped for separate left and right turn lanes.

2. The South 48th Street access is to be used for passenger cars only with all truck access to occur via South 46th Street.

3. After discussion with City of Tacoma staff it was agreed that street striping would be added on 46th Street in front of driveways and signage would be erected that indicates the driveways are not to be blocked by traffic including trucks from the New Cold facility queuing at the stop at Orchard Street.

NEW COLD TACOMA
TRAFFIC IMPACT ANALYSIS

APPENDIX

LEVEL OF SERVICE

The following are excerpts from the *2010 Highway Capacity Manual - Transportation Research Board Special Report 209.*

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six LOS categories are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions.

Level-of-Service definitions

The following definitions generally define the various levels of service for arterials.

Level of service A represents primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delay at signalized intersections is minimal.

Level of service B represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver in the traffic stream is only slightly restricted and delays are not bothersome.

Level of service C represents stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification.

Level of service D borders on a range in which small increases in flow may cause substantial increases in approach delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free-flow speed.

Level of service E is characterized by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level of service F characterizes arterial flow at extremely low speeds, from less than one-third to one-quarter of the free-flow speed. Intersection congestion is likely at critical signalized locations, with long delays and extensive queuing.

These definitions are general and conceptual in nature, and they apply primarily to uninterrupted flow. Levels of service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

For each type of facility, levels of service are defined based on one or more operational parameters that best describe operating quality for the subject facility type. While the concept of level of service attempts to address a wide range of operating conditions, limitations on data collection and availability make it impractical to treat the full range of operational parameters for every type of facility. The parameters selected to define levels of service for each facility type are called "measures of effectiveness" or "MOE's", and represent available measures that best describe the quality of operation on the subject facility type.

Each level of service represents a range of conditions, as defined by a range in the parameters given. Thus, a level of service is not a discrete condition, but rather a range of conditions for which boundaries are established.

The following tables describe levels of service for signalized and unsignalized intersections. Level of service for signalized intersections is defined in terms of average control delay. Delay is a measure of driver discomfort, frustration, fuel consumption and lost travel time, as well as time from movements at slower speeds and stops on intersection approaches as vehicles move up in queue position or slow down upstream of an intersection. Level of service for unsignalized intersections is determined by the computed or measured control delay and is determined for each minor movement. The LOS for signalized and unsignalized intersections is shown below.

Signalized Intersections - Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Unsignalized Intersections - Level of Service

Level of Service	Average Total Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

As described in the 2010 Highway Capacity Manual, level of service breakpoints for all-way stop controlled (AWSC) intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from distinct kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an AWSC intersection. Thus a higher level of control delay is acceptable at a signalized intersection for the same level of service, which is shown below.

AWSC Intersections - Level of Service

Level of Service	Average Total Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Detailed Average Rate Trip Calculations
For 232 Th.Sq.Ft. GFA of High-Cube Warehouse / Distribution Center(152) - [R]

Project: New Cold Tacoma
Phase:

Open Date:
Analysis Date:

Description:

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	1.68	1.46	1.00	390
7-9 AM Peak Hour Enter	0.08	0.00	1.00	19
7-9 AM Peak Hour Exit	0.03	0.00	1.00	7
7-9 AM Peak Hour Total	0.11	0.33	1.00	26
4-6 PM Peak Hour Enter	0.04	0.00	1.00	9
4-6 PM Peak Hour Exit	0.08	0.00	1.00	19
4-6 PM Peak Hour Total	0.12	0.35	1.00	28
AM Pk Hr, Generator, Enter	0.10	0.00	1.00	23
AM Pk Hr, Generator, Exit	0.04	0.00	1.00	9
AM Pk Hr, Generator, Total	0.14	0.38	1.00	32
PM Pk Hr, Generator, Enter	0.06	0.00	1.00	14
PM Pk Hr, Generator, Exit	0.10	0.00	1.00	23
PM Pk Hr, Generator, Total	0.16	0.41	1.00	37
Saturday 2-Way Volume	0.90	1.14	1.00	209
Saturday Peak Hour Enter	0.08	0.00	1.00	19
Saturday Peak Hour Exit	0.05	0.00	1.00	11
Saturday Peak Hour Total	0.13	0.36	1.00	30
Sunday 2-Way Volume	0.83	1.09	1.00	193
Sunday Peak Hour Enter	0.09	0.00	1.00	21
Sunday Peak Hour Exit	0.04	0.00	1.00	9
Sunday Peak Hour Total	0.13	0.36	1.00	30

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation Manual, 9th Edition, 2012

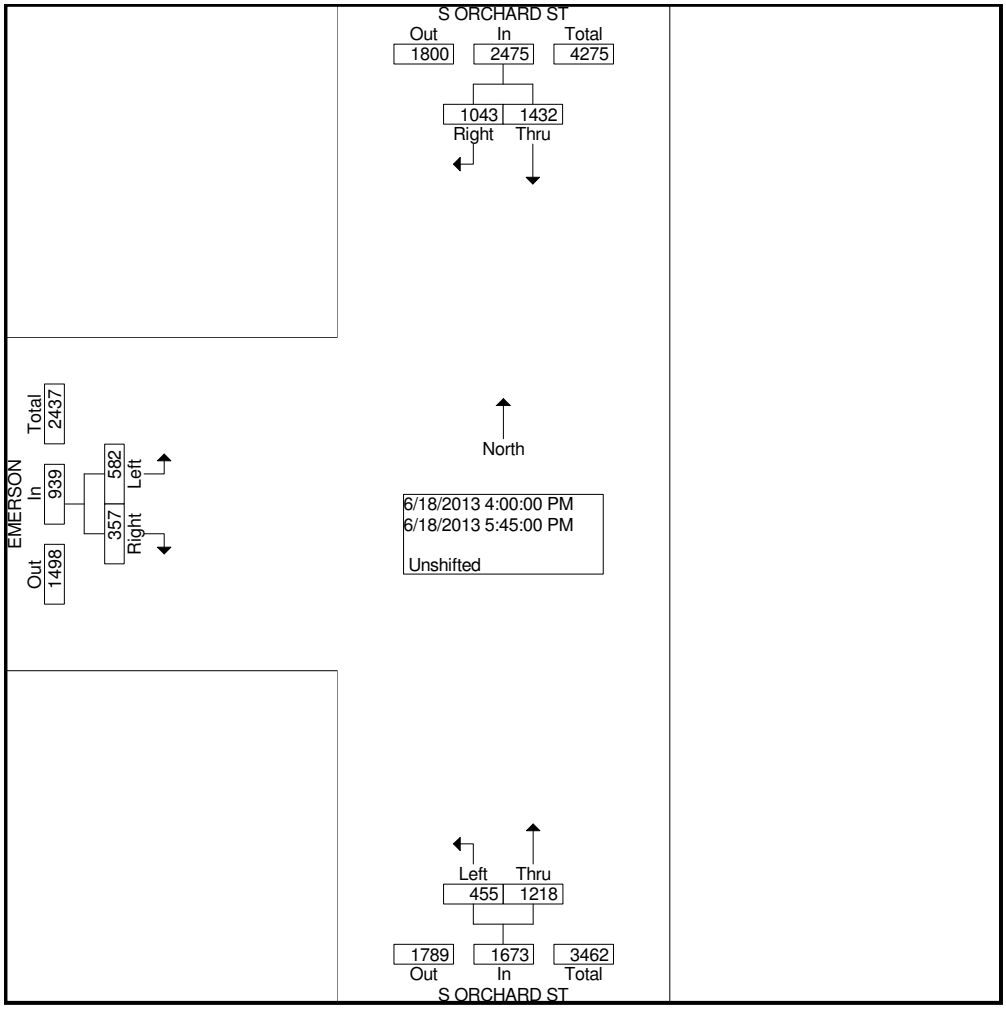
TRIP GENERATION 2013, TRAFFICWARE, LLC

Heath & Associates, Inc.
2214 Tacoma Road
Puyallup, WA 98371

File Name : 3395c
Site Code : 00003395
Start Date : 6/18/2013
Page No : 1

Groups Printed- Unshifted

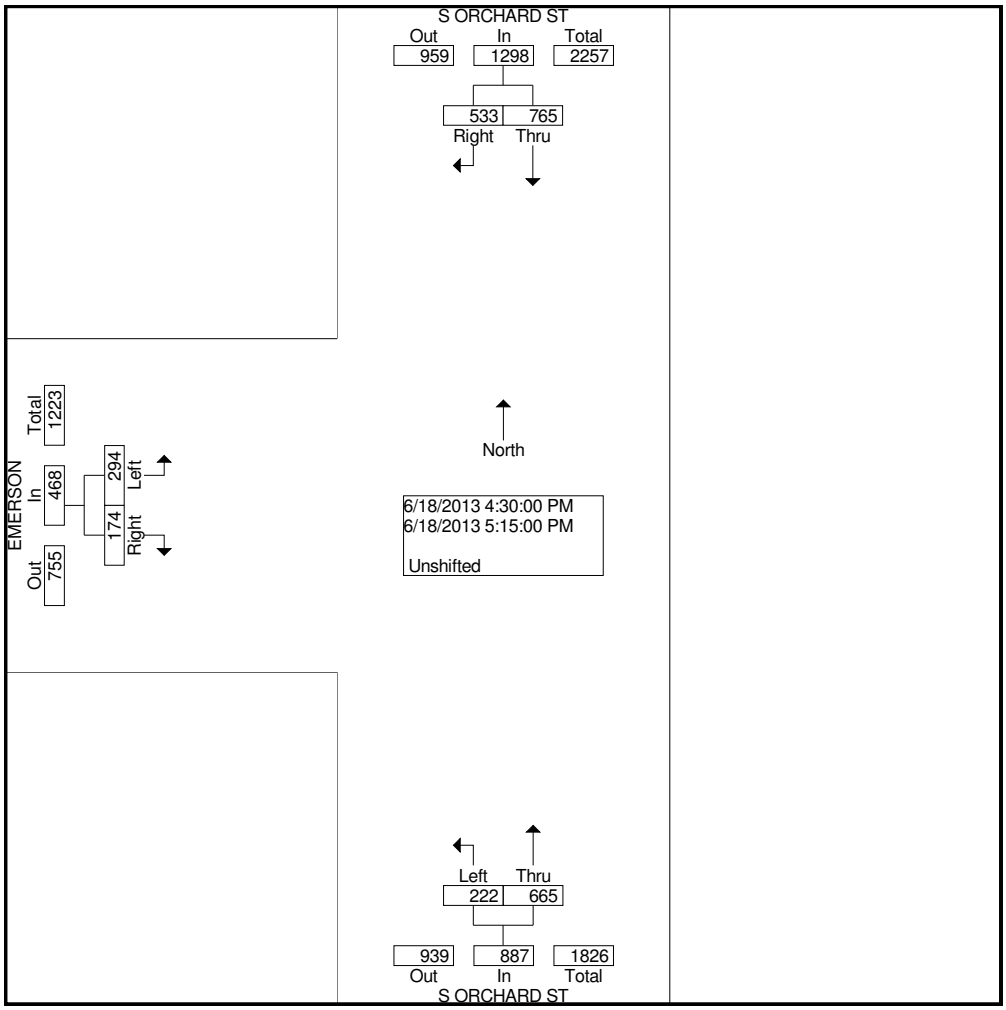
	S ORCHARD ST Southbound			EMERSON Westbound			S ORCHARD ST Northbound			EMERSON Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	113	166	0	0	0	0	0	132	71	42	0	79	603
04:15 PM	132	172	0	0	0	0	0	151	52	49	0	66	622
04:30 PM	127	196	0	0	0	0	0	157	56	43	0	69	648
04:45 PM	152	188	0	0	0	0	0	156	49	40	0	75	660
Total	524	722	0	0	0	0	0	596	228	174	0	289	2533
05:00 PM	96	194	0	0	0	0	0	181	64	51	0	71	657
05:15 PM	158	187	0	0	0	0	0	171	53	40	0	79	688
05:30 PM	148	169	0	0	0	0	0	146	65	46	0	58	632
05:45 PM	117	160	0	0	0	0	0	124	45	46	0	85	577
Total	519	710	0	0	0	0	0	622	227	183	0	293	2554
Grand Total	1043	1432	0	0	0	0	0	1218	455	357	0	582	5087
Apprch %	42.1	57.9	0.0	0.0	0.0	0.0	0.0	72.8	27.2	38.0	0.0	62.0	
Total %	20.5	28.2	0.0	0.0	0.0	0.0	0.0	23.9	8.9	7.0	0.0	11.4	



Heath & Associates, Inc.
2214 Tacoma Road
Puyallup, WA 98371

File Name : 3395c
Site Code : 00003395
Start Date : 6/18/2013
Page No : 2

	S ORCHARD ST Southbound				EMERSON Westbound				S ORCHARD ST Northbound				EMERSON Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	533	765	0	1298	0	0	0	0	0	665	222	887	174	0	294	468	2653
Percent	41.1	58.9	0.0		0.0	0.0	0.0		0.0	75.0	25.0		37.2	0.0	62.8		
05:15 Volume	158	187	0	345	0	0	0	0	0	171	53	224	40	0	79	119	688
Peak Factor																	0.964
High Int.	05:15 PM				3:45:00 PM				05:00 PM				05:00 PM				
Volume	158	187	0	345	0	0	0	0	0	181	64	245	51	0	71	122	
Peak Factor				0.941								0.905				0.959	



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Puyallup, WA 98371

File Name : 3713a
Site Code : 00003713
Start Date : 4/14/2016
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Groups Printed- Group 2

	S ORCHARD STREET Southbound			S 46TH STREET Westbound			S ORCHARD STREET Northbound			Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
05:00 AM	0	17	0	0	0	1	1	35	0	0	0	0	54
05:15 AM	0	23	3	0	0	1	3	36	0	0	0	0	66
05:30 AM	0	36	3	0	0	1	4	57	0	0	0	0	101
05:45 AM	0	57	2	1	0	0	4	73	0	0	0	0	137
Total	0	133	8	1	0	3	12	201	0	0	0	0	358
06:00 AM	0	62	3	1	0	3	7	55	0	0	0	0	131
06:15 AM	0	67	3	0	0	0	4	90	0	0	0	0	164
06:30 AM	0	119	1	0	0	0	7	107	0	0	0	0	234
06:45 AM	0	114	4	1	0	2	7	130	0	0	0	0	258
Total	0	362	11	2	0	5	25	382	0	0	0	0	787
07:00 AM	0	139	9	0	0	1	5	153	0	0	0	0	307
07:15 AM	0	156	20	3	0	5	11	149	0	0	0	0	344
07:30 AM	0	204	5	2	0	0	3	165	0	0	0	0	379
07:45 AM	0	194	3	3	0	2	4	216	0	0	0	0	422
Total	0	693	37	8	0	8	23	683	0	0	0	0	1452
08:00 AM	0	183	3	2	0	1	1	185	0	0	0	0	375
08:15 AM	0	143	4	2	0	2	1	200	0	0	0	0	352
08:30 AM	0	165	6	5	0	0	0	174	0	0	0	0	350
08:45 AM	0	155	1	2	0	1	6	188	0	0	0	0	353
Total	0	646	14	11	0	4	8	747	0	0	0	0	1430
09:00 AM	0	115	6	2	0	2	5	132	0	0	0	0	262
09:15 AM	0	110	6	6	0	2	1	154	0	0	0	0	279
09:30 AM	0	146	7	5	0	1	1	129	0	0	0	0	289
09:45 AM	0	140	2	3	0	2	1	138	0	0	0	0	286
Total	0	511	21	16	0	7	8	553	0	0	0	0	1116
10:00 AM	0	127	1	6	0	1	3	130	0	0	0	0	268
10:15 AM	0	116	8	8	0	3	1	143	0	0	0	0	279
10:30 AM	0	139	4	4	0	1	1	135	0	0	0	0	284
10:45 AM	0	121	5	5	0	1	4	140	0	0	0	0	276
Total	0	503	18	23	0	6	9	548	0	0	0	0	1107
11:00 AM	0	112	6	3	0	6	6	139	0	0	0	0	272
11:15 AM	0	130	8	4	0	3	3	153	0	0	0	0	301
11:30 AM	0	135	4	8	0	1	1	136	0	0	0	0	285
11:45 AM	0	142	5	9	0	1	3	141	0	0	0	0	301
Total	0	519	23	24	0	11	13	569	0	0	0	0	1159
12:00 PM	0	132	3	20	0	7	3	151	0	0	0	0	316
12:15 PM	0	114	9	4	0	4	5	125	0	0	0	0	261
12:30 PM	0	178	13	3	0	2	8	130	0	0	0	0	334
12:45 PM	0	149	12	5	0	4	5	160	0	0	0	0	335
Total	0	573	37	32	0	17	21	566	0	0	0	0	1246
01:00 PM	0	133	5	6	0	1	3	146	0	0	0	0	294
01:15 PM	0	123	1	5	0	5	5	149	0	0	0	0	288
01:30 PM	0	166	3	5	0	2	2	181	0	0	0	0	359
01:45 PM	0	178	3	2	0	2	1	175	0	0	0	0	361
Total	0	600	12	18	0	10	11	651	0	0	0	0	1302
02:00 PM	0	148	4	7	0	4	4	188	0	0	0	0	355
02:15 PM	0	175	4	2	0	1	1	179	0	0	0	0	362
02:30 PM	0	192	6	1	0	5	0	212	0	0	0	0	416
02:45 PM	0	184	2	2	0	5	2	195	0	0	0	0	390
Total	0	699	16	12	0	15	7	774	0	0	0	0	1523

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Groups Printed- Group 2

	S ORCHARD STREET Southbound			S 46TH STREET Westbound			S ORCHARD STREET Northbound			Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
03:00 PM	0	188	2	6	0	6	3	185	0	0	0	0	390
03:15 PM	0	190	1	4	0	4	2	188	0	0	0	0	389
03:30 PM	0	196	2	24	0	15	1	186	0	0	0	0	424
03:45 PM	0	201	1	3	0	3	2	217	0	0	0	0	427
Total	0	775	6	37	0	28	8	776	0	0	0	0	1630
04:00 PM	0	196	2	8	0	6	2	220	0	0	0	0	434
04:15 PM	0	179	4	4	0	2	3	221	0	0	0	0	413
04:30 PM	0	223	1	26	0	20	2	204	0	0	0	0	476
04:45 PM	0	219	2	2	0	2	1	215	0	0	0	0	441
Total	0	817	9	40	0	30	8	860	0	0	0	0	1764
05:00 PM	0	249	0	2	0	1	0	260	0	0	0	0	512
05:15 PM	0	230	0	6	0	2	1	232	0	0	0	0	471
05:30 PM	0	236	0	1	0	0	1	238	0	0	0	0	476
05:45 PM	0	191	0	7	0	2	1	198	0	0	0	0	399
Total	0	906	0	16	0	5	3	928	0	0	0	0	1858
06:00 PM	0	163	2	2	0	0	0	202	0	0	0	0	369
06:15 PM	0	152	0	1	0	0	1	161	0	0	0	0	315
06:30 PM	0	115	0	1	0	0	0	133	0	0	0	0	249
06:45 PM	0	102	0	0	0	0	0	126	0	0	0	0	228
Total	0	532	2	4	0	0	1	622	0	0	0	0	1161
07:00 PM	0	101	1	2	0	0	0	117	0	0	0	0	221
07:15 PM	0	108	1	1	0	0	0	98	0	0	0	0	208
07:30 PM	0	93	0	0	0	0	0	93	0	0	0	0	186
07:45 PM	0	116	1	1	0	1	0	90	0	0	0	0	209
Total	0	418	3	4	0	1	0	398	0	0	0	0	824
08:00 PM	0	88	1	1	0	0	0	86	0	0	0	0	176
08:15 PM	0	83	0	1	0	1	0	88	0	0	0	0	173
08:30 PM	0	76	1	0	0	1	0	105	0	0	0	0	183
08:45 PM	0	81	0	1	0	0	0	63	0	0	0	0	145
Total	0	328	2	3	0	2	0	342	0	0	0	0	677
09:00 PM	0	69	0	0	0	0	0	72	0	0	0	0	141
09:15 PM	0	67	0	1	0	1	2	55	0	0	0	0	126
09:30 PM	0	57	1	2	0	0	0	67	0	0	0	0	127
09:45 PM	0	49	0	0	0	0	0	46	0	0	0	0	95
Total	0	242	1	3	0	1	2	240	0	0	0	0	489
10:00 PM	0	38	1	0	0	0	1	34	0	0	0	0	74
10:15 PM	0	47	0	2	0	2	1	49	0	0	0	0	101
10:30 PM	0	33	0	0	0	0	0	31	0	0	0	0	64
10:45 PM	0	33	1	2	0	0	0	26	0	0	0	0	62
Total	0	151	2	4	0	2	2	140	0	0	0	0	301
Grand Total	0	9408	222	258	0	155	161	9980	0	0	0	0	20184
Apprch %	0.0	97.7	2.3	62.5	0.0	37.5	1.6	98.4	0.0	0.0	0.0	0.0	
Total %	0.0	46.6	1.1	1.3	0.0	0.8	0.8	49.4	0.0	0.0	0.0	0.0	

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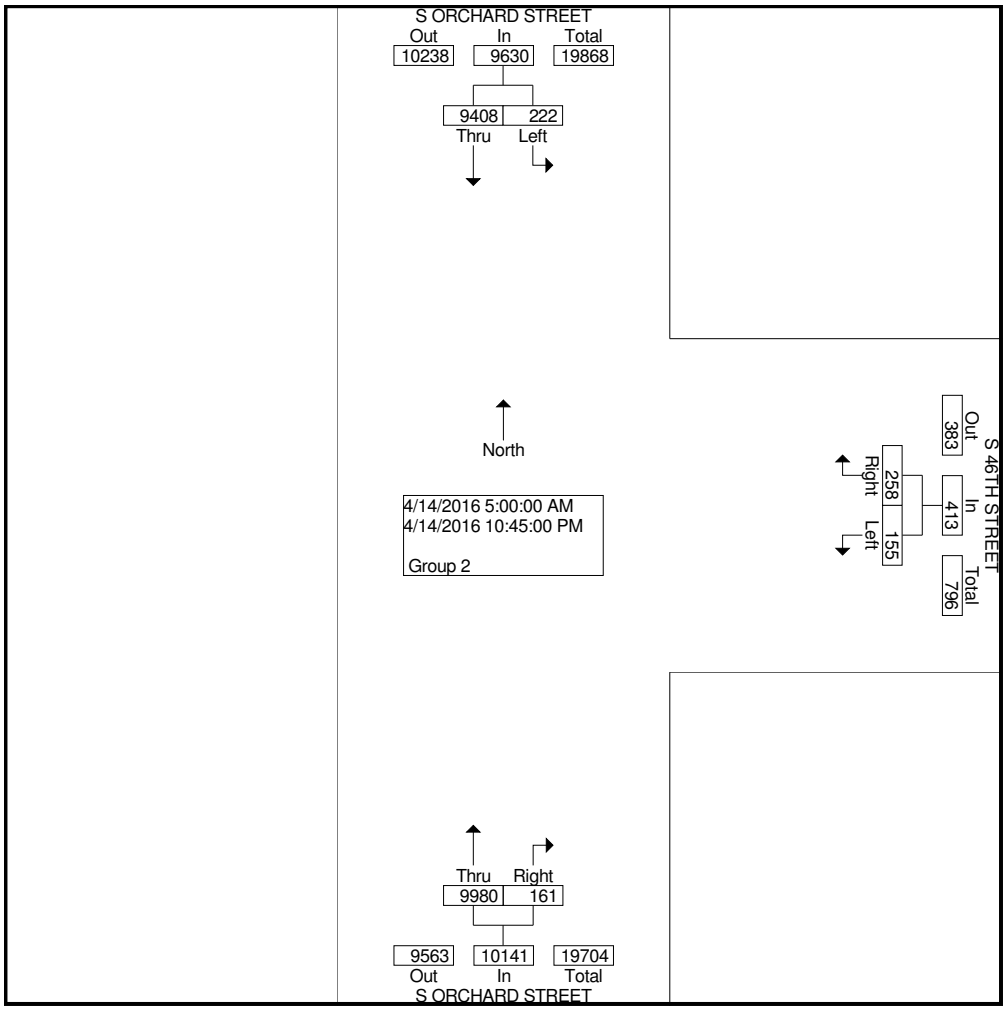

	S ORCHARD STREET Southbound				S 46TH STREET Westbound				S ORCHARD STREET Northbound				Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 05:00 AM to 10:45 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	921	3	924	36	0	25	61	4	911	0	915	0	0	0	0	1900
Percent	0.0	99.7	0.3		59.0	0.0	41.0		0.4	99.6	0.0		0.0	0.0	0.0		
05:00 Volume	0	249	0	249	2	0	1	3	0	260	0	260	0	0	0	0	512
Peak Factor																	0.928
High Int.	05:00 PM				04:30 PM				05:00 PM				4:45:00 AM				
Volume	0	249	0	249	26	0	20	46	0	260	0	260					
Peak Factor				0.928				0.332				0.880					

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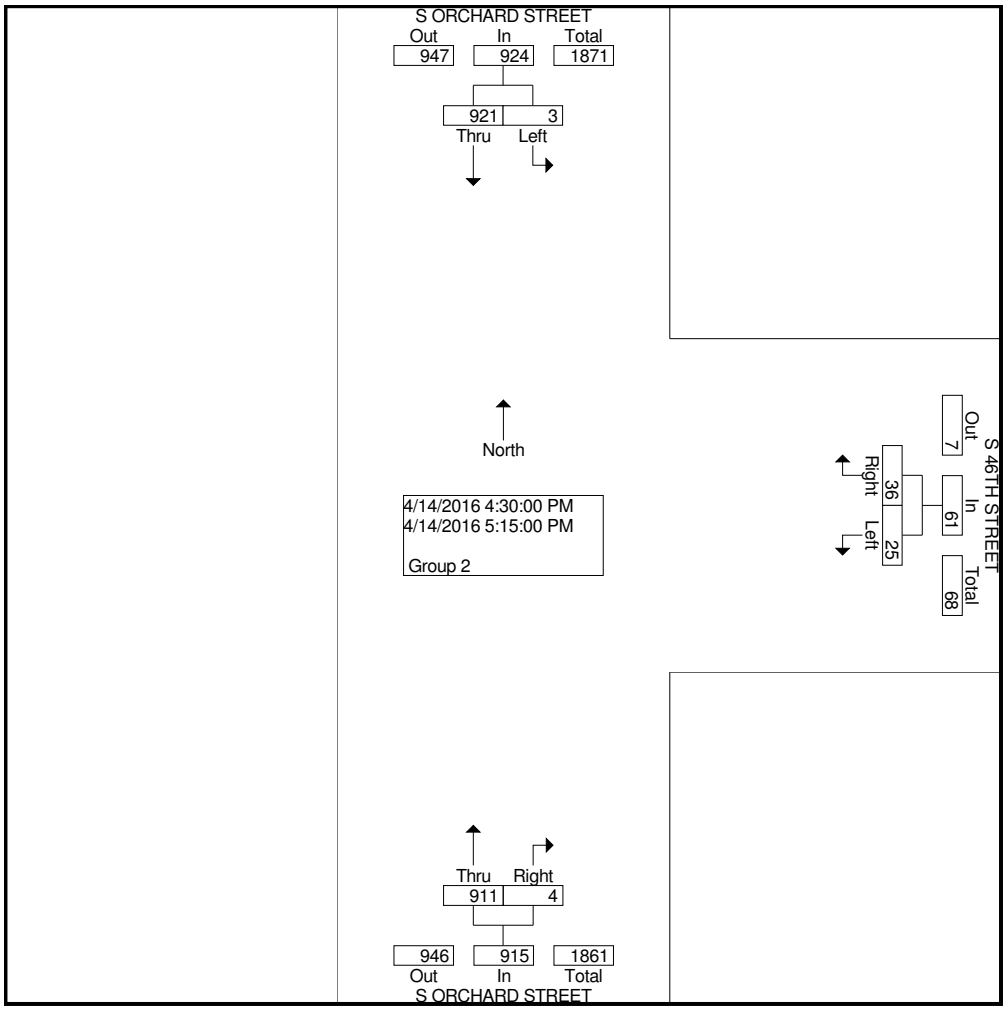

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Site Code : 00003395
Start Date : 3/7/2013
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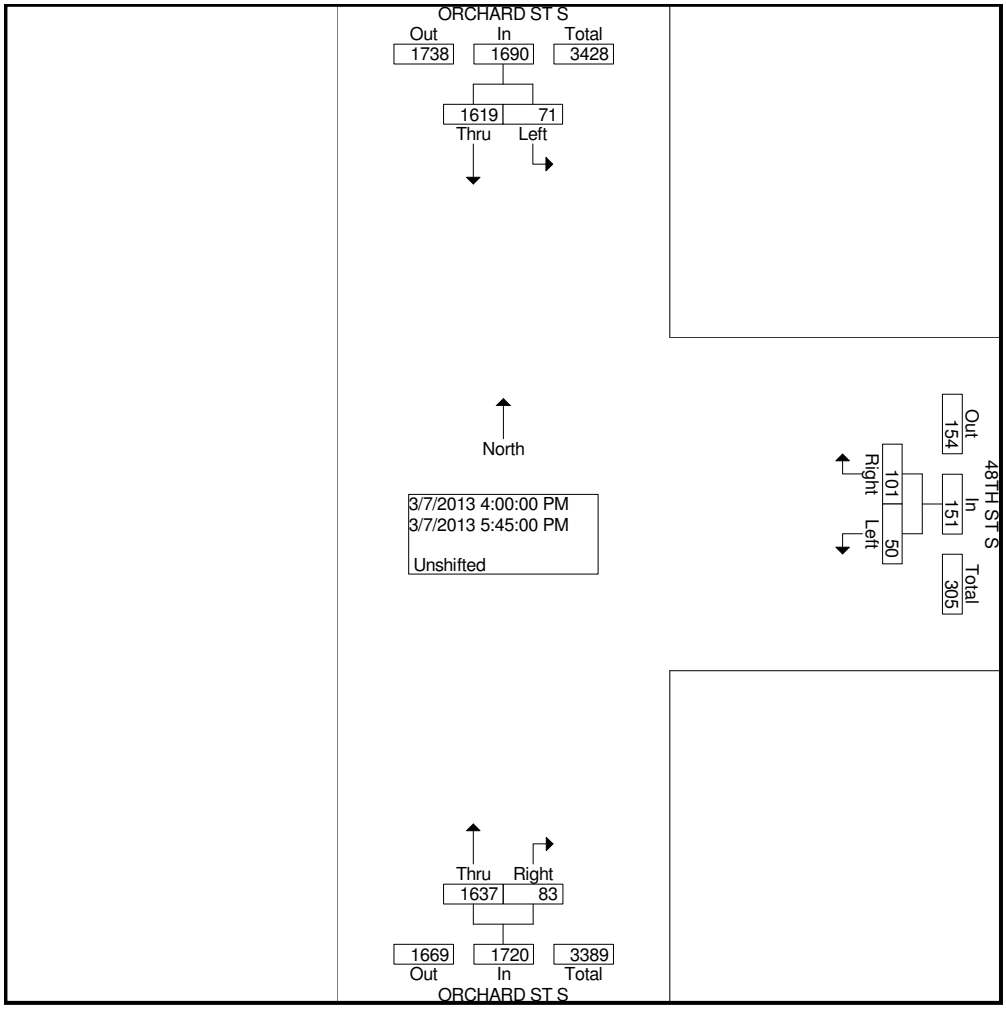
Groups Printed- Unshifted

	ORCHARD ST S Southbound			48TH ST S Westbound			ORCHARD ST S Northbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	223	10	11	0	6	10	188	0	448
04:15 PM	0	202	11	15	0	7	14	207	0	456
04:30 PM	0	199	6	13	0	8	6	213	0	445
04:45 PM	0	214	9	9	0	8	3	219	0	462
Total	0	838	36	48	0	29	33	827	0	1811
05:00 PM	0	207	8	17	0	10	19	244	0	505
05:15 PM	0	203	9	10	0	6	12	235	0	475
05:30 PM	0	183	7	14	0	3	10	182	0	399
05:45 PM	0	188	11	12	0	2	9	149	0	371
Total	0	781	35	53	0	21	50	810	0	1750
Grand Total	0	1619	71	101	0	50	83	1637	0	3561
Apprch %	0.0	95.8	4.2	66.9	0.0	33.1	4.8	95.2	0.0	
Total %	0.0	45.5	2.0	2.8	0.0	1.4	2.3	46.0	0.0	



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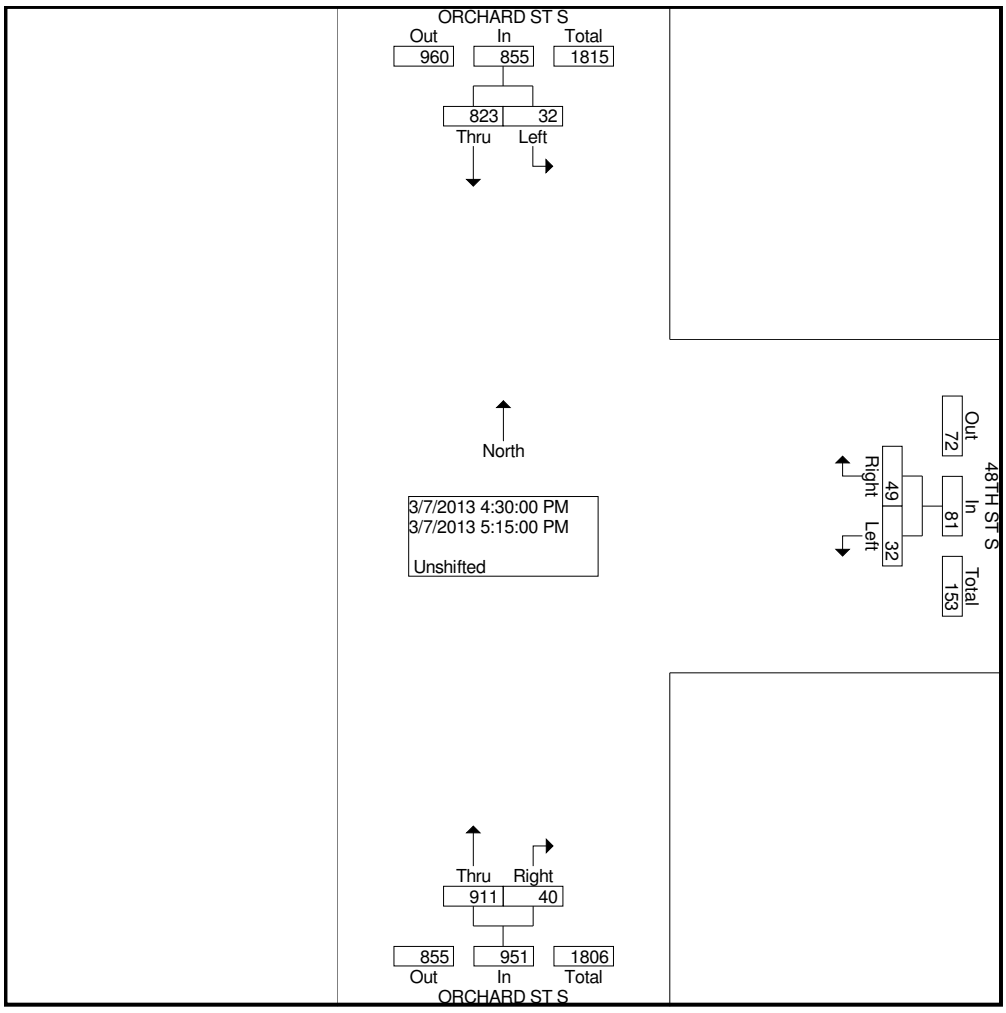
	ORCHARD ST S Southbound				48TH ST S Westbound				ORCHARD ST S Northbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1													
Intersection	04:30 PM												
Volume	0	823	32	855	49	0	32	81	40	911	0	951	1887
Percent	0.0	96.3	3.7		60.5	0.0	39.5		4.2	95.8	0.0		
05:00 Volume	0	207	8	215	17	0	10	27	19	244	0	263	505
Peak Factor													0.934
High Int.	04:45 PM				05:00 PM				05:00 PM				
Volume	0	214	9	223	17	0	10	27	19	244	0	263	
Peak Factor				0.959				0.750				0.904	



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File Name : 3395d
Site Code : 00003395
Start Date : 6/18/2013
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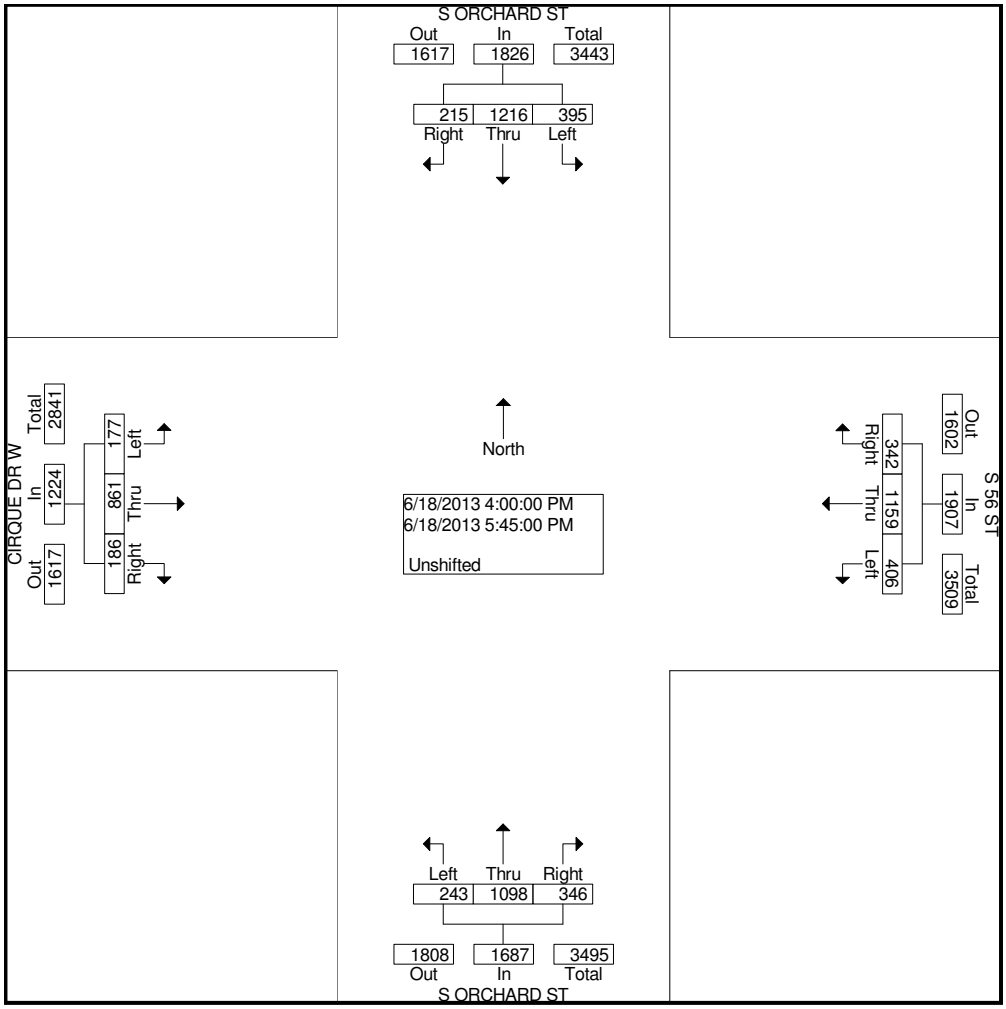
Groups Printed- Unshifted

	S ORCHARD ST Southbound			S 56 ST Westbound			S ORCHARD ST Northbound			CIRQUE DR W Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	33	131	49	55	142	44	35	109	32	22	100	25	777
04:15 PM	38	176	46	45	128	51	45	136	29	21	83	26	824
04:30 PM	23	162	43	39	140	44	39	128	28	23	127	20	816
04:45 PM	21	161	42	38	147	61	47	150	32	27	118	21	865
Total	115	630	180	177	557	200	166	523	121	93	428	92	3282
05:00 PM	25	143	52	42	122	58	33	159	27	18	87	21	787
05:15 PM	23	169	57	42	141	47	47	168	24	19	111	17	865
05:30 PM	23	132	47	51	181	55	51	132	36	33	121	23	885
05:45 PM	29	142	59	30	158	46	49	116	35	23	114	24	825
Total	100	586	215	165	602	206	180	575	122	93	433	85	3362
Grand Total	215	1216	395	342	1159	406	346	1098	243	186	861	177	6644
Apprch %	11.8	66.6	21.6	17.9	60.8	21.3	20.5	65.1	14.4	15.2	70.3	14.5	
Total %	3.2	18.3	5.9	5.1	17.4	6.1	5.2	16.5	3.7	2.8	13.0	2.7	



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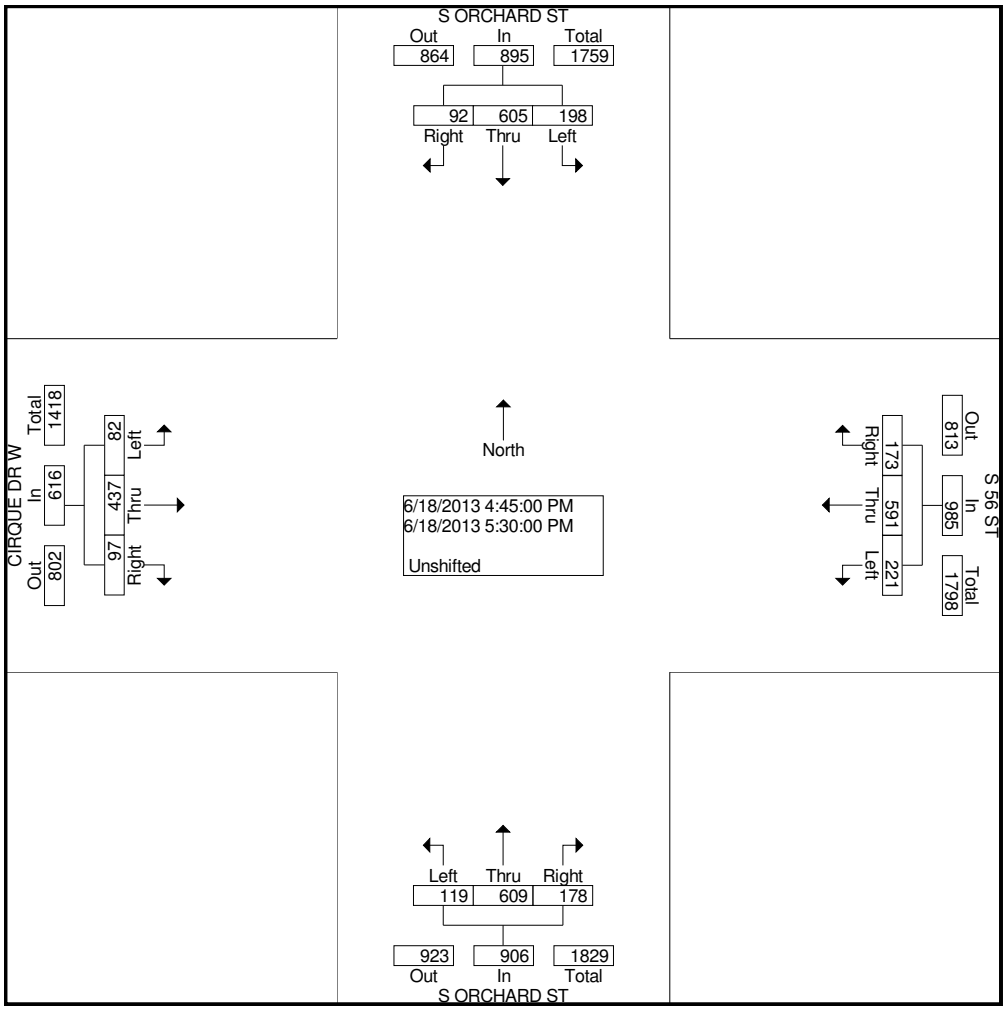
	S ORCHARD ST Southbound				S 56 ST Westbound				S ORCHARD ST Northbound				CIRQUE DR W Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	92	605	198	895	173	591	221	985	178	609	119	906	97	437	82	616	3402
Percent	10.3	67.6	22.1		17.6	60.0	22.4		19.6	67.2	13.1		15.7	70.9	13.3		
05:30 Volume	23	132	47	202	51	181	55	287	51	132	36	219	33	121	23	177	885
Peak Factor																	0.961
High Int.	05:15 PM				05:30 PM				05:15 PM				05:30 PM				
Volume	23	169	57	249	51	181	55	287	47	168	24	239	33	121	23	177	
Peak Factor				0.899				0.858				0.948				0.870	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	306	181	231	692	796	555
Future Volume (veh/h)	306	181	231	692	796	555
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	333	197	251	752	865	0
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	547	528	310	2436	1547	692
Arrive On Green	0.16	0.16	0.17	0.69	0.44	0.00
Sat Flow, veh/h	3442	1583	1774	3632	3632	1583
Grp Volume(v), veh/h	333	197	251	752	865	0
Grp Sat Flow(s),veh/h/ln	1721	1583	1774	1770	1770	1583
Q Serve(g_s), s	4.7	5.0	7.1	4.4	9.5	0.0
Cycle Q Clear(g_c), s	4.7	5.0	7.1	4.4	9.5	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	547	528	310	2436	1547	692
V/C Ratio(X)	0.61	0.37	0.81	0.31	0.56	0.00
Avail Cap(c_a), veh/h	1053	761	441	2436	1547	692
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.5	13.3	20.7	3.2	11.0	0.0
Incr Delay (d2), s/veh	1.1	0.4	7.4	0.3	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.8	4.1	2.2	4.9	0.0
LnGrp Delay(d),s/veh	21.6	13.7	28.1	3.6	12.4	0.0
LnGrp LOS	C	B	C	A	B	
Approach Vol, veh/h	530			1003	865	
Approach Delay, s/veh	18.7			9.7	12.4	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.0		12.3	13.1	26.9		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		36.0		16.0	13.0	19.0		
Max Q Clear Time (g_c+I1), s		6.4		7.0	9.1	11.5		
Green Ext Time (p_c), s		14.4		1.4	0.3	5.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	25	36	911	4	3	921
Future Vol, veh/h	25	36	911	4	3	921
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	88	88	93	93
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	76	109	1035	5	3	990

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1540	520	0	0	1040	0
Stage 1	1038	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	108	506	-	-	676	-
Stage 1	307	-	-	-	-	-
Stage 2	579	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	108	506	-	-	676	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	307	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	676	-
HCM Lane V/C Ratio	-	-	0.55	0.005	-
HCM Control Delay (s)	-	-	28.1	10.4	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	3.1	0	-

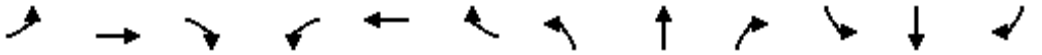
Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	33	51	948	42	33	856
Future Vol, veh/h	33	51	948	42	33	856
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	90	90	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	44	68	1053	47	34	892

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1592	550	0	0	1100	0
Stage 1	1077	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	99	481	-	-	636	-
Stage 1	290	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	94	481	-	-	636	-
Mov Cap-2 Maneuver	210	-	-	-	-	-
Stage 1	290	-	-	-	-	-
Stage 2	537	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	319	636	-
HCM Lane V/C Ratio	-	-	0.351	0.054	-
HCM Control Delay (s)	-	-	22.3	11	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	455	101	230	615	180	124	634	185	206	629	96
Future Volume (veh/h)	85	455	101	230	615	180	124	634	185	206	629	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	92	495	110	250	668	196	135	689	201	224	684	104
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	623	138	258	796	233	170	746	218	232	957	145
Arrive On Green	0.07	0.22	0.22	0.15	0.29	0.29	0.10	0.28	0.28	0.13	0.31	0.31
Sat Flow, veh/h	1774	2883	637	1774	2701	792	1774	2704	789	1774	3082	468
Grp Volume(v), veh/h	92	303	302	250	438	426	135	451	439	224	393	395
Grp Sat Flow(s),veh/h/ln	1774	1770	1750	1774	1770	1723	1774	1770	1724	1774	1770	1780
Q Serve(g_s), s	3.5	11.1	11.3	9.7	16.0	16.0	5.1	17.0	17.1	8.7	13.5	13.6
Cycle Q Clear(g_c), s	3.5	11.1	11.3	9.7	16.0	16.0	5.1	17.0	17.1	8.7	13.5	13.6
Prop In Lane	1.00		0.36	1.00		0.46	1.00		0.46	1.00		0.26
Lane Grp Cap(c), veh/h	118	382	378	258	522	508	170	488	475	232	549	553
V/C Ratio(X)	0.78	0.79	0.80	0.97	0.84	0.84	0.79	0.92	0.92	0.97	0.71	0.72
Avail Cap(c_a), veh/h	155	411	407	258	522	508	206	488	475	232	549	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	25.5	25.6	29.3	22.8	22.8	30.5	24.2	24.2	29.8	21.0	21.1
Incr Delay (d2), s/veh	17.0	9.6	10.2	47.8	11.6	11.9	15.8	25.5	26.1	49.5	7.7	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.4	6.5	8.1	9.5	9.3	3.3	11.7	11.5	7.4	7.7	7.8
LnGrp Delay(d),s/veh	48.6	35.1	35.8	77.1	34.3	34.7	46.3	49.8	50.3	79.3	28.8	28.8
LnGrp LOS	D	D	D	E	C	C	D	D	D	E	C	C
Approach Vol, veh/h		697			1114			1025			1012	
Approach Delay, s/veh		37.2			44.1			49.5			40.0	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	23.0	14.0	18.9	10.6	25.4	8.6	24.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	19.0	10.0	16.0	8.0	20.0	6.0	20.0
Max Q Clear Time (g_c+I1), s	10.7	19.1	11.7	13.3	7.1	15.6	5.5	18.0
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	3.4	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	43.2
HCM 2010 LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	318	207	252	742	867	577
Future Volume (veh/h)	318	207	252	742	867	577
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	346	225	274	807	942	0
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	587	567	333	2401	1471	658
Arrive On Green	0.17	0.17	0.19	0.68	0.42	0.00
Sat Flow, veh/h	3442	1583	1774	3632	3632	1583
Grp Volume(v), veh/h	346	225	274	807	942	0
Grp Sat Flow(s),veh/h/ln	1721	1583	1774	1770	1770	1583
Q Serve(g_s), s	4.9	5.6	7.9	5.0	11.2	0.0
Cycle Q Clear(g_c), s	4.9	5.6	7.9	5.0	11.2	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	587	567	333	2401	1471	658
V/C Ratio(X)	0.59	0.40	0.82	0.34	0.64	0.00
Avail Cap(c_a), veh/h	1038	774	435	2401	1471	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.3	12.7	20.7	3.6	12.3	0.0
Incr Delay (d2), s/veh	0.9	0.5	9.5	0.4	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	5.5	4.7	2.5	5.9	0.0
LnGrp Delay(d),s/veh	21.2	13.2	30.2	3.9	14.5	0.0
LnGrp LOS	C	B	C	A	B	
Approach Vol, veh/h	571			1081	942	
Approach Delay, s/veh	18.1			10.6	14.5	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.0		13.1	13.9	26.1		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		36.0		16.0	13.0	19.0		
Max Q Clear Time (g_c+I1), s		7.0		7.6	9.9	13.2		
Green Ext Time (p_c), s		15.6		1.4	0.3	4.6		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	25	36	980	4	3	1014
Future Vol, veh/h	25	36	980	4	3	1014
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	88	88	93	93
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	76	109	1114	5	3	1090

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1668	559	0	0	1118	0
Stage 1	1116	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	89	478	-	-	632	-
Stage 1	279	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	89	478	-	-	632	-
Mov Cap-2 Maneuver	204	-	-	-	-	-
Stage 1	279	-	-	-	-	-
Stage 2	543	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.8	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	308	632	-
HCM Lane V/C Ratio	-	-	0.6	0.005	-
HCM Control Delay (s)	-	-	32.8	10.7	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	3.6	0	-

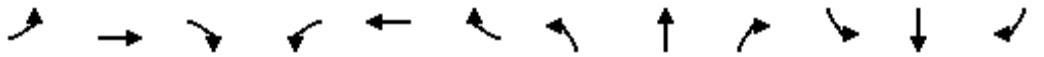
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	15	0	8	33	0	51	13	1004	42	33	924	28
Future Vol, veh/h	15	0	8	33	0	51	13	1004	42	33	924	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	90	90	90	96	96	96
Heavy Vehicles, %	0	0	0	1	1	1	0	1	1	1	1	0
Mvmt Flow	20	0	11	44	0	68	14	1116	47	34	963	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1633	2237	496	1718	2228	581	992	0	0	1162	0	0
Stage 1	1046	1046	-	1168	1168	-	-	-	-	-	-	-
Stage 2	587	1191	-	550	1060	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.52	6.52	6.92	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.2	-	-	2.21	-	-
Pot Cap-1 Maneuver	68	43	525	58	43	460	705	-	-	603	-	-
Stage 1	248	308	-	207	268	-	-	-	-	-	-	-
Stage 2	468	263	-	489	301	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	55	40	525	54	40	460	705	-	-	603	-	-
Mov Cap-2 Maneuver	156	133	-	147	140	-	-	-	-	-	-	-
Stage 1	243	291	-	203	263	-	-	-	-	-	-	-
Stage 2	391	258	-	452	284	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.5	30.6	0.1	0.4
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	705	-	-	206	250	603	-	-
HCM Lane V/C Ratio	0.02	-	-	0.149	0.448	0.057	-	-
HCM Control Delay (s)	10.2	-	-	25.5	30.6	11.3	-	-
HCM Lane LOS	B	-	-	D	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	2.2	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	473	105	239	640	196	129	678	192	231	674	102
Future Volume (veh/h)	93	473	105	239	640	196	129	678	192	231	674	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	101	514	114	260	696	213	140	737	209	251	733	111
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	634	140	256	779	238	176	748	212	231	941	142
Arrive On Green	0.07	0.22	0.22	0.14	0.29	0.29	0.10	0.27	0.27	0.13	0.31	0.31
Sat Flow, veh/h	1774	2883	637	1774	2671	817	1774	2724	772	1774	3083	467
Grp Volume(v), veh/h	101	315	313	260	461	448	140	479	467	251	421	423
Grp Sat Flow(s),veh/h/ln	1774	1770	1750	1774	1770	1719	1774	1770	1726	1774	1770	1780
Q Serve(g_s), s	3.9	11.7	11.8	10.0	17.3	17.3	5.3	18.6	18.6	9.0	15.0	15.0
Cycle Q Clear(g_c), s	3.9	11.7	11.8	10.0	17.3	17.3	5.3	18.6	18.6	9.0	15.0	15.0
Prop In Lane	1.00		0.36	1.00		0.48	1.00		0.45	1.00		0.26
Lane Grp Cap(c), veh/h	129	389	385	256	516	501	176	486	474	231	540	544
V/C Ratio(X)	0.78	0.81	0.81	1.01	0.89	0.89	0.80	0.99	0.99	1.09	0.78	0.78
Avail Cap(c_a), veh/h	154	409	405	256	516	501	205	486	474	231	540	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	25.6	25.7	29.6	23.5	23.5	30.5	25.0	25.0	30.1	21.9	21.9
Incr Delay (d2), s/veh	19.4	11.0	11.6	60.0	17.7	18.2	16.9	37.5	38.0	84.8	10.6	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.9	6.9	9.1	11.0	10.7	3.4	14.1	13.8	9.8	8.8	8.9
LnGrp Delay(d),s/veh	50.9	36.6	37.3	89.7	41.2	41.7	47.4	62.5	63.0	114.9	32.5	32.5
LnGrp LOS	D	D	D	F	D	D	D	E	E	F	C	C
Approach Vol, veh/h		729			1169			1086			1095	
Approach Delay, s/veh		38.9			52.2			60.8			51.4	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	23.0	14.0	19.2	10.9	25.1	9.0	24.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	19.0	10.0	16.0	8.0	20.0	6.0	20.0
Max Q Clear Time (g_c+I1), s	11.0	20.6	12.0	13.8	7.3	17.0	5.9	19.3
Green Ext Time (p_c), s	0.0	0.0	0.0	1.4	0.0	2.5	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	51.9
HCM 2010 LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	318	207	254	762	885	577
Future Volume (veh/h)	318	207	254	762	885	577
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	346	225	276	828	962	0
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	587	569	335	2402	1467	656
Arrive On Green	0.17	0.17	0.19	0.68	0.41	0.00
Sat Flow, veh/h	3442	1583	1774	3632	3632	1583
Grp Volume(v), veh/h	346	225	276	828	962	0
Grp Sat Flow(s),veh/h/ln	1721	1583	1774	1770	1770	1583
Q Serve(g_s), s	4.9	5.6	7.9	5.2	11.6	0.0
Cycle Q Clear(g_c), s	4.9	5.6	7.9	5.2	11.6	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	587	569	335	2402	1467	656
V/C Ratio(X)	0.59	0.40	0.82	0.34	0.66	0.00
Avail Cap(c_a), veh/h	1038	776	435	2402	1467	656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.3	12.7	20.7	3.6	12.5	0.0
Incr Delay (d2), s/veh	0.9	0.4	9.6	0.4	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.1	4.7	2.7	6.1	0.0
LnGrp Delay(d),s/veh	21.2	13.1	30.3	4.0	14.8	0.0
LnGrp LOS	C	B	C	A	B	
Approach Vol, veh/h	571			1104	962	
Approach Delay, s/veh	18.0			10.6	14.8	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.0		13.0	14.0	26.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		36.0		16.0	13.0	19.0		
Max Q Clear Time (g_c+I1), s		7.2		7.6	9.9	13.6		
Green Ext Time (p_c), s		16.0		1.4	0.3	4.4		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	37	53	985	16	20	1015
Future Vol, veh/h	37	53	985	16	20	1015
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	45	45	88	88	93	93
Heavy Vehicles, %	50	50	1	0	50	1
Mvmt Flow	82	118	1119	18	22	1091

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1717	569	0	0	1138	0
Stage 1	1128	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Critical Hdwy	7.8	7.9	-	-	5.1	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	-	-	2.7	-
Pot Cap-1 Maneuver	~ 49	362	-	-	395	-
Stage 1	188	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 46	362	-	-	395	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	188	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.7	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	133	362	395	-
HCM Lane V/C Ratio	-	-	0.618	0.325	0.054	-
HCM Control Delay (s)	-	-	68.3	19.7	14.6	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	3.2	1.4	0.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	15	0	8	38	0	56	13	1016	43	34	936	28
Future Vol, veh/h	15	0	8	38	0	56	13	1016	43	34	936	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	90	90	90	96	96	96
Heavy Vehicles, %	0	0	0	1	1	1	0	1	1	1	1	0
Mvmt Flow	20	0	11	51	0	75	14	1129	48	35	975	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1653	2266	502	1740	2257	588	1004	0	0	1177	0	0
Stage 1	1060	1060	-	1182	1182	-	-	-	-	-	-	-
Stage 2	593	1206	-	558	1075	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.52	6.52	6.92	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.2	-	-	2.21	-	-
Pot Cap-1 Maneuver	66	41	520	56	41	455	698	-	-	595	-	-
Stage 1	243	303	-	203	264	-	-	-	-	-	-	-
Stage 2	464	259	-	484	296	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	52	38	520	52	38	455	698	-	-	595	-	-
Mov Cap-2 Maneuver	151	130	-	144	137	-	-	-	-	-	-	-
Stage 1	238	285	-	199	259	-	-	-	-	-	-	-
Stage 2	380	254	-	446	279	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.2	34.6	0.1	0.4
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	698	-	-	200	243	595	-	-
HCM Lane V/C Ratio	0.021	-	-	0.153	0.516	0.06	-	-
HCM Control Delay (s)	10.3	-	-	26.2	34.6	11.4	-	-
HCM Lane LOS	B	-	-	D	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	2.7	0.2	-	-

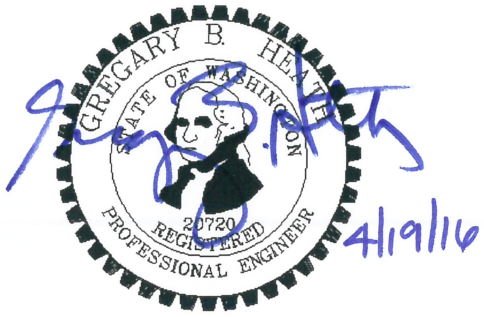
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	473	105	239	640	208	129	678	192	243	677	104
Future Volume (veh/h)	94	473	105	239	640	208	129	678	192	243	677	104
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	102	514	114	260	696	226	140	737	209	264	736	113
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	635	140	256	766	249	176	747	212	231	939	144
Arrive On Green	0.07	0.22	0.22	0.14	0.29	0.29	0.10	0.27	0.27	0.13	0.31	0.31
Sat Flow, veh/h	1774	2883	637	1774	2628	853	1774	2724	772	1774	3077	472
Grp Volume(v), veh/h	102	315	313	260	469	453	140	479	467	264	423	426
Grp Sat Flow(s),veh/h/ln	1774	1770	1750	1774	1770	1712	1774	1770	1726	1774	1770	1779
Q Serve(g_s), s	3.9	11.7	11.8	10.0	17.7	17.7	5.3	18.6	18.6	9.0	15.1	15.1
Cycle Q Clear(g_c), s	3.9	11.7	11.8	10.0	17.7	17.7	5.3	18.6	18.6	9.0	15.1	15.1
Prop In Lane	1.00		0.36	1.00		0.50	1.00		0.45	1.00		0.27
Lane Grp Cap(c), veh/h	130	390	386	256	515	499	176	485	474	231	540	543
V/C Ratio(X)	0.78	0.81	0.81	1.02	0.91	0.91	0.80	0.99	0.99	1.15	0.78	0.78
Avail Cap(c_a), veh/h	154	409	404	256	515	499	205	485	474	231	540	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	25.6	25.6	29.6	23.7	23.7	30.5	25.0	25.0	30.1	22.0	22.0
Incr Delay (d2), s/veh	19.6	10.9	11.5	60.1	20.1	20.6	16.9	37.6	38.1	104.0	10.9	10.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.9	6.9	9.1	11.5	11.2	3.4	14.1	13.8	11.0	9.0	9.1
LnGrp Delay(d),s/veh	51.2	36.5	37.2	89.9	43.7	44.3	47.4	62.6	63.1	134.2	32.9	32.8
LnGrp LOS	D	D	D	F	D	D	D	E	E	F	C	C
Approach Vol, veh/h		730			1182			1086			1113	
Approach Delay, s/veh		38.9			54.1			60.9			56.9	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	23.0	14.0	19.3	10.9	25.1	9.1	24.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	19.0	10.0	16.0	8.0	20.0	6.0	20.0
Max Q Clear Time (g_c+I1), s	11.0	20.6	12.0	13.8	7.3	17.1	5.9	19.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.5	0.0	2.4	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	53.9
HCM 2010 LOS	D

NEW COLD TACOMA
SIGNAL WARRANT ANALYSIS
S ORCHARD STREET & S 46TH STREET

CITY OF TACOMA, WA



Prepared for: c/o Chris Cole
AECOM
1501 4th Avenue, Suite 1400
Seattle, WA 98101

April 2016

Warrant Analysis for S Orchard Street & S 46th Street
Tacoma, WA

The warrant analysis for the intersection of S Orchard Street & S 46th Street has been performed assuming future 2018 PM peak hour volumes with New Cold Tacoma project traffic included. 18 hour traffic volumes at the intersection legs were acquired for use in analysis based on the warrant criteria found in the Manual of Uniform Traffic Control Devices (MUTCD). For peak hour volumes and delay, associated for use with Warrant 3, the 4-6 PM intersection data was used in the original New Cold Tacoma Traffic Impact Analysis (Figure 7). Project trips were based on information provided by the user who has developed detailed traffic patterns for the project. The spread sheet used presenting the site operation from a traffic standpoint has been added to the appendix.

The following information is attached.

1. Field count information for S Orchard Street & S 46th Street.
2. Employee data provided by use
3. A warrant 1 analysis by Excel spreadsheet.
4. The LOS analysis prepared for the intersection of S Orchard Street & S 46th Street.
5. Figure 7 from New Cold Traffic Impact Analysis – 2018 PM peak volumes.

The 85th percentile speed on Orchard Street was not taken but is assumed to be approximately 35 mph. The number of lanes for moving traffic is "2 or more" on the major street (Orchard Street) and 2 lane on the minor street (46th Street) as project mitigations plan to widen and re-stripe to provide separate right and left turn lanes.

Based on this analysis a signal will not be warranted with none of the following MUTCD warrants being met.

S ORCHARD STREET & S 46TH STREET
TRAFFIC SIGNAL WARRANT EVALUATION

TABLE OF CONTENTS

S ORCHARD STREET & S 46TH STREET
TRAFFIC SIGNAL WARRANT EVALUATION

WARRANT 1, EIGHT HOUR VEHICULAR VOLUME

The installation of a traffic signal may be necessary to control an intersection with large volumes of conflicting traffic. The required traffic volumes must be present for at least 8 hours of an average weekday. The minimum volumes vary according to the number of lanes on the intersecting streets, the speed of traffic on the main street, and the community size. The warrant is split with Condition A for Minimum Vehicular Volume, while Condition B is for Interruption of Continuous Traffic. Condition A is met with 8 hours supporting 600 major roadway trips and 150 minor roadway trips. Condition B is met with the major roadway supporting 900 trips and the minor roadway supporting 100 trips during any 8 hours of the day. See attached Excel spreadsheet for input volumes.

Warrant Condition	*With Project*
Warrant 1A: Number of hours meeting requirements	0
Warrant 1B: Number of hours meeting requirements	4

Warrant 1 is NOT SATISFIED

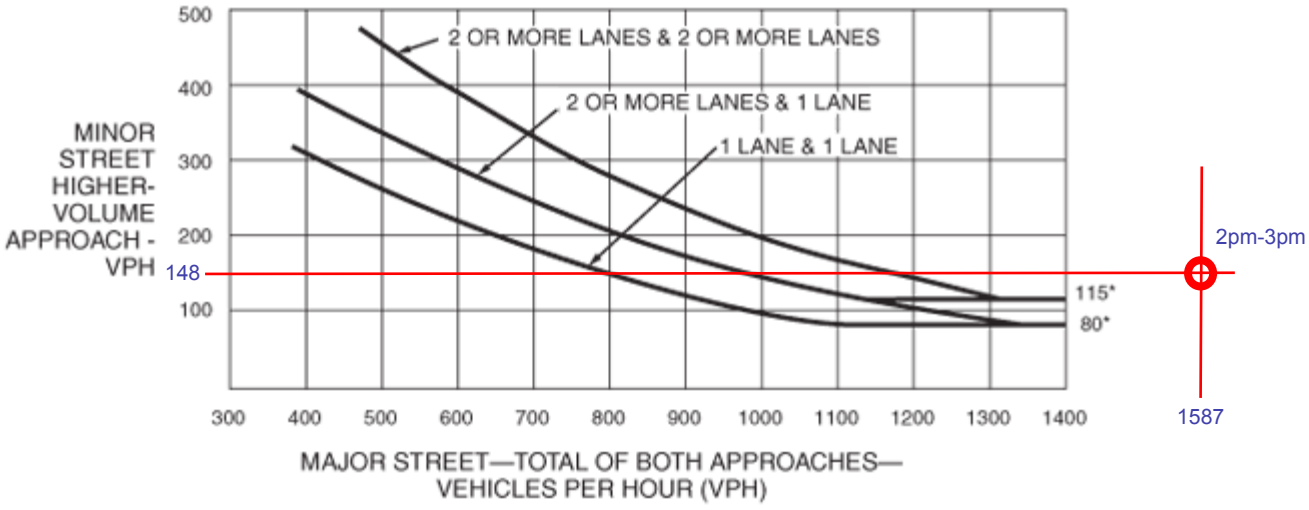
WARRANT 2, FOUR HOUR VEHICULAR VOLUME

This warrant is similar to warrant 1, except that the required traffic volumes must be present for at least four hours of an average weekday. The traffic volumes required are based on the curve (Figure 4C-1) shown in the MUTCD. See attached Figure 4C-1 and PM peak hour input values in the appendix.

Warrant Condition	*With Project*
Warrant 2: Number of hours meeting requirements	1

Warrant 2 is NOT SATISFIED

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR

This warrant is intended for application where traffic conditions will cause undue delay to traffic entering or crossing the main street during the peak hour. The peak hour delay warrant is satisfied when (A) ALL three of the following conditions exist for one hour (any four consecutive 15-minute periods) of an average day,

(A)

1. The total delay by the traffic on a side street controlled by a stop sign equals or exceeds five vehicle-hours for a two-lane approach; and

   WB: [(37 + 53) * 39.7]/3600 = 1.0 < 5.0 NOT MET

2. The volume on the side street equals or exceeds 150 VPH for two moving lanes of traffic; and

   WB: 37 + 53 = 90 NOT MET

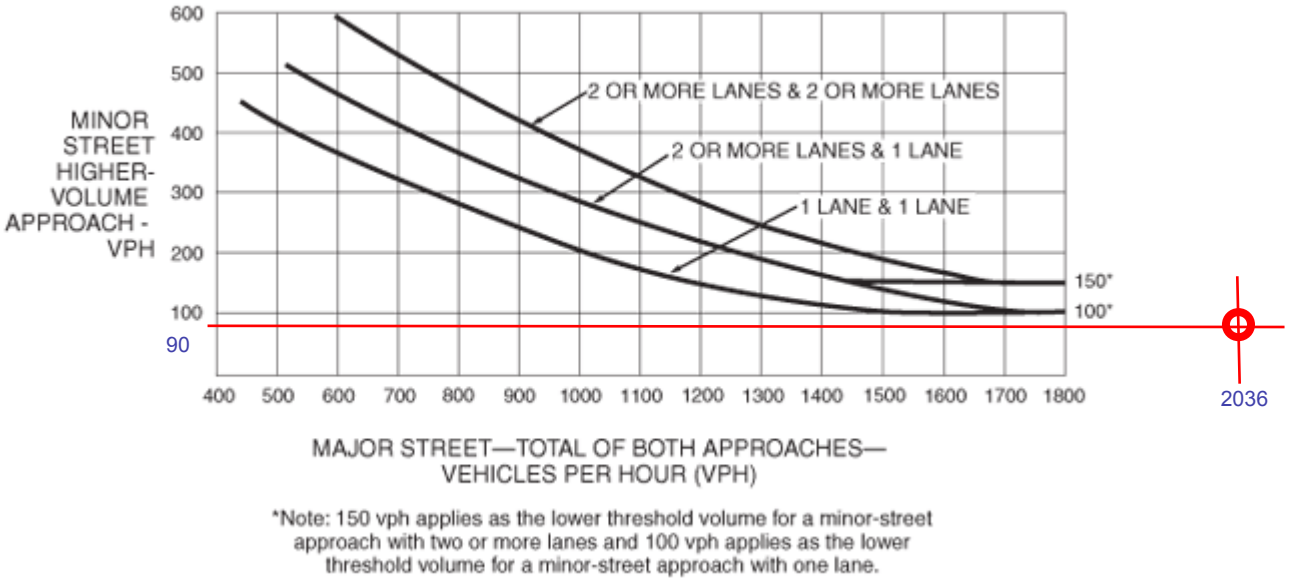
3. The total traffic volume serviced during 1 hour equals or exceeds 650 VPH for an intersection with three approaches.

   2,126 > 650 MET

or (B)

The plotted point for the vehicles per hour for the major street and high volume minor street falls above the applicable curve in Figure 4C-4

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 3 is NOT SATISFIED

WARRANT 4, PEDESTRIAN VOLUME

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience delay in crossing the major street. This warrant is not applicable due to mild pedestrian traffic in the area.

Warrant 4 is NOT APPLICABLE

WARRANT 5, SCHOOL CROSSING

This warrant is intended for application where the fact that school children cross the street is the principal reason to consider installing a traffic control signal.

Warrant 5 is NOT APPLICABLE

WARRANT 6, COORDINATED SIGNAL SYSTEM

This warrant is intended to identify if a signal is required on a corridor with a coordinated signal system in order to ensure progressive movement and proper platooning of vehicles. The warrant is met if either (A) on a street that has volumes predominantly in one direction, the adjacent signals are too far apart to provide the necessary degree of platooning, or (B) on a two-way street, adjacent signals do not provide the necessary degree of platooning and the proposed and adjacent signals will collectively provide a progressive operation.

Warrant 6 is NOT APPLICABLE

WARRANT 7, CRASH EXPERIENCE

This warrant is satisfied when:

1. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
2. There has been five or more accidents of types preventable by traffic signals within a 12 month period; and
3. Eighty percent of volumes for Warrants 1A or 1B are met.

Accident data has NOT been requested for this intersection. Point 3 of this warrant is not met, with 0 hours met for Condition A and 4 hours met for Condition B.

Warrant 7 is NOT APPLICABLE

WARRANT 8, ROADWAY NETWORK

This warrant is intended for application when installing a traffic control signal at the intersection is justified in order to encourage concentration and organization of traffic flow on a roadway network.

Warrant 8 is NOT APPLICABLE

C. Conclusions

Based on acceptable level of service levels and the results of this signal warrant assessment, the intersection of S Orchard Street & S 46th Street has the available capacity to support New Cold Tacoma traffic as stop controlled.

NEW COLD TACOMA
SIGNAL WARRANT ANALYSIS
S ORCHARD STREET & S 46TH STREET

APPENDIX

Heath & Associates, Inc.
2214 Tacoma Road
Puyallup, WA 98371

File Name : 3713a
Site Code : 00003713
Start Date : 4/14/2016
Page No : 1

Groups Printed- Group 2

	S ORCHARD STREET Southbound			S 46TH STREET Westbound			S ORCHARD STREET Northbound			Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
05:00 AM	0	17	0	0	0	1	1	35	0	0	0	0	54
05:15 AM	0	23	3	0	0	1	3	36	0	0	0	0	66
05:30 AM	0	36	3	0	0	1	4	57	0	0	0	0	101
05:45 AM	0	57	2	1	0	0	4	73	0	0	0	0	137
Total	0	133	8	1	0	3	12	201	0	0	0	0	358
06:00 AM	0	62	3	1	0	3	7	55	0	0	0	0	131
06:15 AM	0	67	3	0	0	0	4	90	0	0	0	0	164
06:30 AM	0	119	1	0	0	0	7	107	0	0	0	0	234
06:45 AM	0	114	4	1	0	2	7	130	0	0	0	0	258
Total	0	362	11	2	0	5	25	382	0	0	0	0	787
07:00 AM	0	139	9	0	0	1	5	153	0	0	0	0	307
07:15 AM	0	156	20	3	0	5	11	149	0	0	0	0	344
07:30 AM	0	204	5	2	0	0	3	165	0	0	0	0	379
07:45 AM	0	194	3	3	0	2	4	216	0	0	0	0	422
Total	0	693	37	8	0	8	23	683	0	0	0	0	1452
08:00 AM	0	183	3	2	0	1	1	185	0	0	0	0	375
08:15 AM	0	143	4	2	0	2	1	200	0	0	0	0	352
08:30 AM	0	165	6	5	0	0	0	174	0	0	0	0	350
08:45 AM	0	155	1	2	0	1	6	188	0	0	0	0	353
Total	0	646	14	11	0	4	8	747	0	0	0	0	1430
09:00 AM	0	115	6	2	0	2	5	132	0	0	0	0	262
09:15 AM	0	110	6	6	0	2	1	154	0	0	0	0	279
09:30 AM	0	146	7	5	0	1	1	129	0	0	0	0	289
09:45 AM	0	140	2	3	0	2	1	138	0	0	0	0	286
Total	0	511	21	16	0	7	8	553	0	0	0	0	1116
10:00 AM	0	127	1	6	0	1	3	130	0	0	0	0	268
10:15 AM	0	116	8	8	0	3	1	143	0	0	0	0	279
10:30 AM	0	139	4	4	0	1	1	135	0	0	0	0	284
10:45 AM	0	121	5	5	0	1	4	140	0	0	0	0	276
Total	0	503	18	23	0	6	9	548	0	0	0	0	1107
11:00 AM	0	112	6	3	0	6	6	139	0	0	0	0	272
11:15 AM	0	130	8	4	0	3	3	153	0	0	0	0	301
11:30 AM	0	135	4	8	0	1	1	136	0	0	0	0	285
11:45 AM	0	142	5	9	0	1	3	141	0	0	0	0	301
Total	0	519	23	24	0	11	13	569	0	0	0	0	1159
12:00 PM	0	132	3	20	0	7	3	151	0	0	0	0	316
12:15 PM	0	114	9	4	0	4	5	125	0	0	0	0	261
12:30 PM	0	178	13	3	0	2	8	130	0	0	0	0	334
12:45 PM	0	149	12	5	0	4	5	160	0	0	0	0	335
Total	0	573	37	32	0	17	21	566	0	0	0	0	1246
01:00 PM	0	133	5	6	0	1	3	146	0	0	0	0	294
01:15 PM	0	123	1	5	0	5	5	149	0	0	0	0	288
01:30 PM	0	166	3	5	0	2	2	181	0	0	0	0	359
01:45 PM	0	178	3	2	0	2	1	175	0	0	0	0	361
Total	0	600	12	18	0	10	11	651	0	0	0	0	1302
02:00 PM	0	148	4	7	0	4	4	188	0	0	0	0	355
02:15 PM	0	175	4	2	0	1	1	179	0	0	0	0	362
02:30 PM	0	192	6	1	0	5	0	212	0	0	0	0	416
02:45 PM	0	184	2	2	0	5	2	195	0	0	0	0	390
Total	0	699	16	12	0	15	7	774	0	0	0	0	1523

Heath & Associates, Inc.
2214 Tacoma Road
Puyallup, WA 98371

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Site Code : 00003713
Start Date : 4/14/2016
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Groups Printed- Group 2

	S ORCHARD STREET Southbound			S 46TH STREET Westbound			S ORCHARD STREET Northbound			Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
03:00 PM	0	188	2	6	0	6	3	185	0	0	0	0	390
03:15 PM	0	190	1	4	0	4	2	188	0	0	0	0	389
03:30 PM	0	196	2	24	0	15	1	186	0	0	0	0	424
03:45 PM	0	201	1	3	0	3	2	217	0	0	0	0	427
Total	0	775	6	37	0	28	8	776	0	0	0	0	1630
04:00 PM	0	196	2	8	0	6	2	220	0	0	0	0	434
04:15 PM	0	179	4	4	0	2	3	221	0	0	0	0	413
04:30 PM	0	223	1	26	0	20	2	204	0	0	0	0	476
04:45 PM	0	219	2	2	0	2	1	215	0	0	0	0	441
Total	0	817	9	40	0	30	8	860	0	0	0	0	1764
05:00 PM	0	249	0	2	0	1	0	260	0	0	0	0	512
05:15 PM	0	230	0	6	0	2	1	232	0	0	0	0	471
05:30 PM	0	236	0	1	0	0	1	238	0	0	0	0	476
05:45 PM	0	191	0	7	0	2	1	198	0	0	0	0	399
Total	0	906	0	16	0	5	3	928	0	0	0	0	1858
06:00 PM	0	163	2	2	0	0	0	202	0	0	0	0	369
06:15 PM	0	152	0	1	0	0	1	161	0	0	0	0	315
06:30 PM	0	115	0	1	0	0	0	133	0	0	0	0	249
06:45 PM	0	102	0	0	0	0	0	126	0	0	0	0	228
Total	0	532	2	4	0	0	1	622	0	0	0	0	1161
07:00 PM	0	101	1	2	0	0	0	117	0	0	0	0	221
07:15 PM	0	108	1	1	0	0	0	98	0	0	0	0	208
07:30 PM	0	93	0	0	0	0	0	93	0	0	0	0	186
07:45 PM	0	116	1	1	0	1	0	90	0	0	0	0	209
Total	0	418	3	4	0	1	0	398	0	0	0	0	824
08:00 PM	0	88	1	1	0	0	0	86	0	0	0	0	176
08:15 PM	0	83	0	1	0	1	0	88	0	0	0	0	173
08:30 PM	0	76	1	0	0	1	0	105	0	0	0	0	183
08:45 PM	0	81	0	1	0	0	0	63	0	0	0	0	145
Total	0	328	2	3	0	2	0	342	0	0	0	0	677
09:00 PM	0	69	0	0	0	0	0	72	0	0	0	0	141
09:15 PM	0	67	0	1	0	1	2	55	0	0	0	0	126
09:30 PM	0	57	1	2	0	0	0	67	0	0	0	0	127
09:45 PM	0	49	0	0	0	0	0	46	0	0	0	0	95
Total	0	242	1	3	0	1	2	240	0	0	0	0	489
10:00 PM	0	38	1	0	0	0	1	34	0	0	0	0	74
10:15 PM	0	47	0	2	0	2	1	49	0	0	0	0	101
10:30 PM	0	33	0	0	0	0	0	31	0	0	0	0	64
10:45 PM	0	33	1	2	0	0	0	26	0	0	0	0	62
Total	0	151	2	4	0	2	2	140	0	0	0	0	301
Grand Total	0	9408	222	258	0	155	161	9980	0	0	0	0	20184
Apprch %	0.0	97.7	2.3	62.5	0.0	37.5	1.6	98.4	0.0	0.0	0.0	0.0	
Total %	0.0	46.6	1.1	1.3	0.0	0.8	0.8	49.4	0.0	0.0	0.0	0.0	

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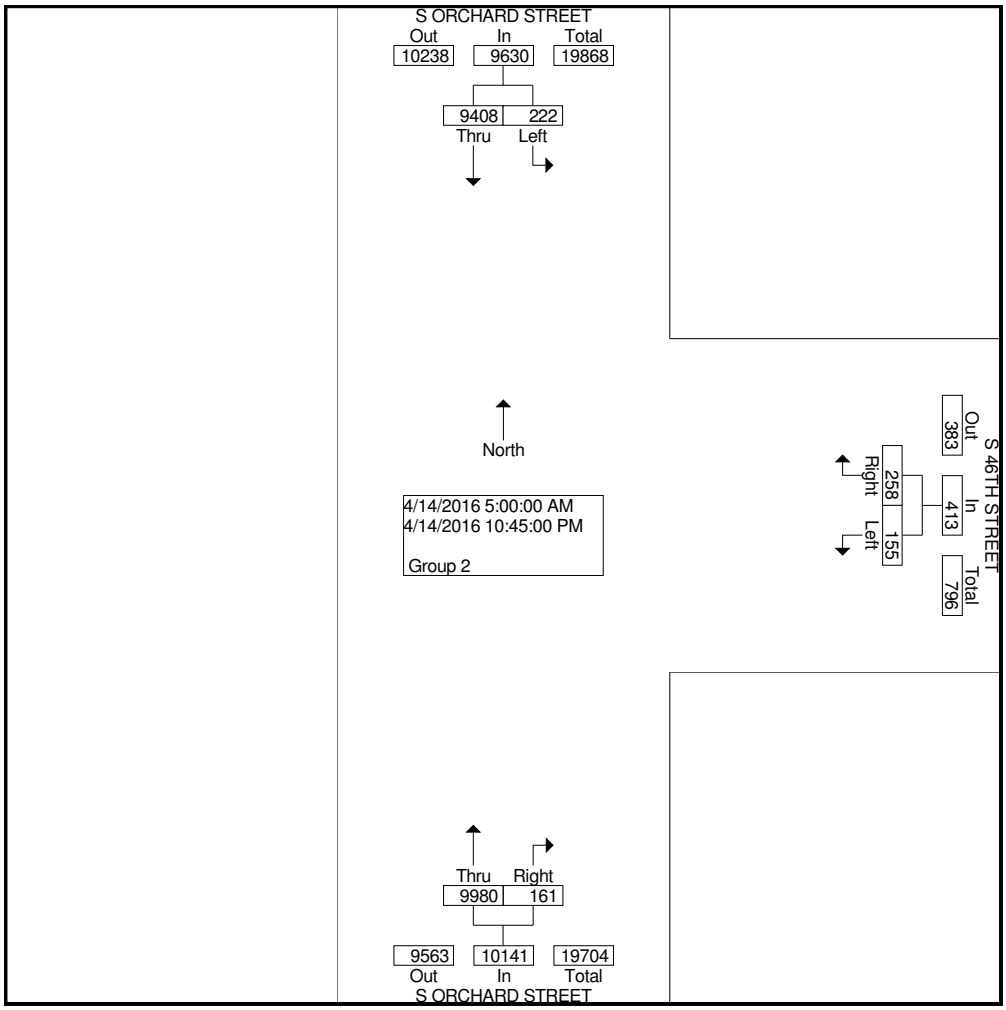

	S ORCHARD STREET Southbound				S 46TH STREET Westbound				S ORCHARD STREET Northbound				Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 05:00 AM to 10:45 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	921	3	924	36	0	25	61	4	911	0	915	0	0	0	0	1900
Percent	0.0	99.7	0.3		59.0	0.0	41.0		0.4	99.6	0.0		0.0	0.0	0.0		
05:00 Volume	0	249	0	249	2	0	1	3	0	260	0	260	0	0	0	0	512
Peak Factor																	0.928
High Int.	05:00 PM				04:30 PM				05:00 PM				4:45:00 AM				
Volume	0	249	0	249	26	0	20	46	0	260	0	260					
Peak Factor				0.928				0.332				0.880					

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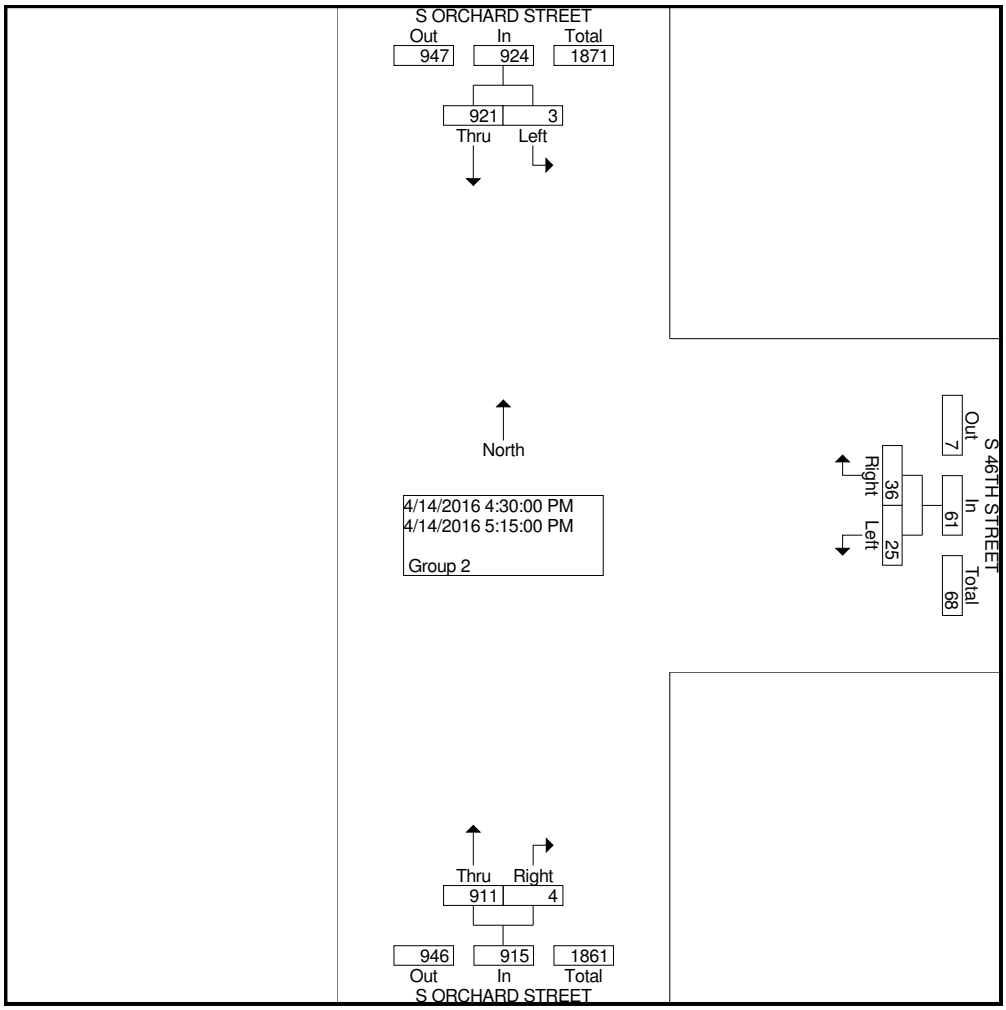


SE01: Traffic Flows based on BEA Seattle

date 6-Jan version NewCold

Note: Phase 1 volumes indicate full Phase 1 operation, expected to be reached in 2019. go-live and ramp-up starts June 2017
Note: Phase 2 volumes indicate estimated Phase 2 operation. Go-live of this operation is currently unknown. Expected after 2019.

Yellow colors --> Peak operating hours assuming all peak trucks volumes are handled. (mitigation is likely due to spreading voumes throughout the day)

						Warehouse shifts:						Shift 1: 06:00 AM - 02:00 PM							Shift 2: 02:00 PM - 10:00 PM							Shift 3	
												PEAK TRAFFIC in neighborhood									PEAK TRAFFIC in neighborhood								
Customer	**Flow**	**Vehicle type**	**# vehicles on peak day**	**hours of operation per flow**	**# vehicles per hour**	**0:00**	**1:00**	**2:00**	**3:00**	**4:00**	**5:00**	**6:00**	**7:00**	**8:00**	**9:00**	**10:00**	**11:00**	**12:00**	**13:00**	**14:00**	**15:00**	**16:00**	**17:00**	**18:00**	**19:00**	**20:00**	**21:00**	**22:00**	**23:00**
PHASE 1 - TRUCKS (volumes based on business case volumes)																													
Customer A (Phase 1)	In from Port	heavy truck	50	12	4.2							*4.2*	*4.2*	*4.2*	*4.2*	*4.2*	*4.2*	*4.2*	*4.2*	*4.2*	*4.2*	*4.2*							
Customer A (Phase 1)	In from Plant	heavy truck	10	16	0.6							*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*		
Customer A (Phase 1)	Outbound	heavy truck	32.3	16	2.0							*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		
Customer B (Phase 1)	Inbound	heavy truck	27.7	16	1.7							*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		
Customer B (Phase 1)	Outbound	heavy truck	26	12	2.2							*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*1*	*1*	*1*	*1*		
Customers C (Phase 1)	Inbound	heavy truck	31.9	16	2.0							*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		
Customers C (Phase 1)	Outbound	heavy truck	32	16	2.0							*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*	*2*		
TOTAL # Trucks			**210**		**15**								***15***	***15***	***15***							***15***	***15***	***10***					
TOTAL # Truck movements (movement = truck entering OR leav			**420**		**29**								***30***	***30***	***30***							***30***	***30***	***20***					
PHASE 2 - TRUCKS (est volumes based on phase 1 volumes. Note: these volumes are IN ADDITION TO THE PHASE 1 VOLUMES)																													
Customer D (Phase 2)	Inbound	heavy truck	119.6	16	7.5							8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		
Customer D (Phase 2)	Outbound	heavy truck	90.3	16	5.6							6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
TOTAL # Trucks			**210**		**13**								14	14	14							14	14	14					
TOTAL # Truck movements (movement = truck entering OR leav			**420**		**26**								28	28	28							28	28	28					
PHASE 1 - CARS (volumes based on business case volumes)			*FTE*																										
Management Newcold (phase 1)	IN	car	*10*										5	5															
	OUT	car	*10*																				5	5					
Employees Operation (phase 1)	IN	car	*90*								45								45								*10*		
	OUT	car	*90*									*10*								45								45	
Customer Employees (phase 1)	IN	car	*10*										5	5										5	5				
	OUT	car	*10*																										
Visitors (phase 1)	IN	car	*10*												2		2		2		2		2						
	OUT	car	*10*														2		2		2		2		2				
TOTAL # Cars (on a peak day)			**120**																										
TOTAL # Car movements (movement = car entering OR leaving)			**260**										10	10	2							0	9	10					
PHASE 2 - CARS (est volumes based on phase 1 volumes. Note: these volumes are IN ADDITION TO THE PHASE 1 VOLUMES)																													
Management NewCold (phase 2)	IN	car	*7*										3	4															
	OUT	car	*7*																				3	4					
Employees Operation (phase 2)	IN	car	*90*								45								45								10		
	OUT	car	*90*									10								45								45	
Visitors (phase 2)	IN	car	*10*											2		2		2		2		2							
	OUT	car	*10*													2		2		2		2		2					
Other (phase 2)	IN	car	*10*										5	5															
	OUT	car	*10*																				5	5					
TOTAL # Cars (on a peak day)			**117**																										
TOTAL # Car movements (movement = car entering OR leaving)			**254**										8	11	0							4	8	11					

S Orchard Street & S 46th Street

WARRANT 1 - 2018 PM Peak Hour Volumes With Project

	Southbound	Northbound			Westbound			Condition A		Condition B	
Time Begin	S Orchard St		Project Trips		S 46th St	Project Trips		Major	Minor	Major	Minor
	Major	Major	Major	Major Total	Minor	Minor	Minor Total	600	200	900	100
5:00	147	222	90	458	4	0	4				
6:00	388	423	29	841	7	49	56	X			
7:00	759	735	47	1,541	16	29	45	X		X	
8:00	687	786	50	1,522	15	29	44	X		X	
9:00	553	584	31	1,168	23	29	52	X		X	
10:00	542	580	31	1,153	29	31	60	X		X	
11:00	564	606	31	1,200	34	31	65	X		X	
12:00	635	611	31	1,276	49	31	80	X		X	X
13:00	637	689	121	1,446	28	31	59	X		X	
14:00	744	813	31	1,587	27	121	148	X		X	X
15:00	813	816	31	1,659	65	31	96	X		X	X
16:00	859	903	31	1,793	70	31	101	X		X	X
17:00	943	969	31	1,942	21	44	65	X		X	
18:00	556	648	29	1,233	4	40	44	X		X	
19:00	438	414	29	881	5	26	31	X			
20:00	343	356	24	723	5	24	29	X			
21:00	253	252	44	549	4	24	28				
22:00	159	148	0	307	6	90	96				X

Intersection	
Int Delay, s/veh	3.4

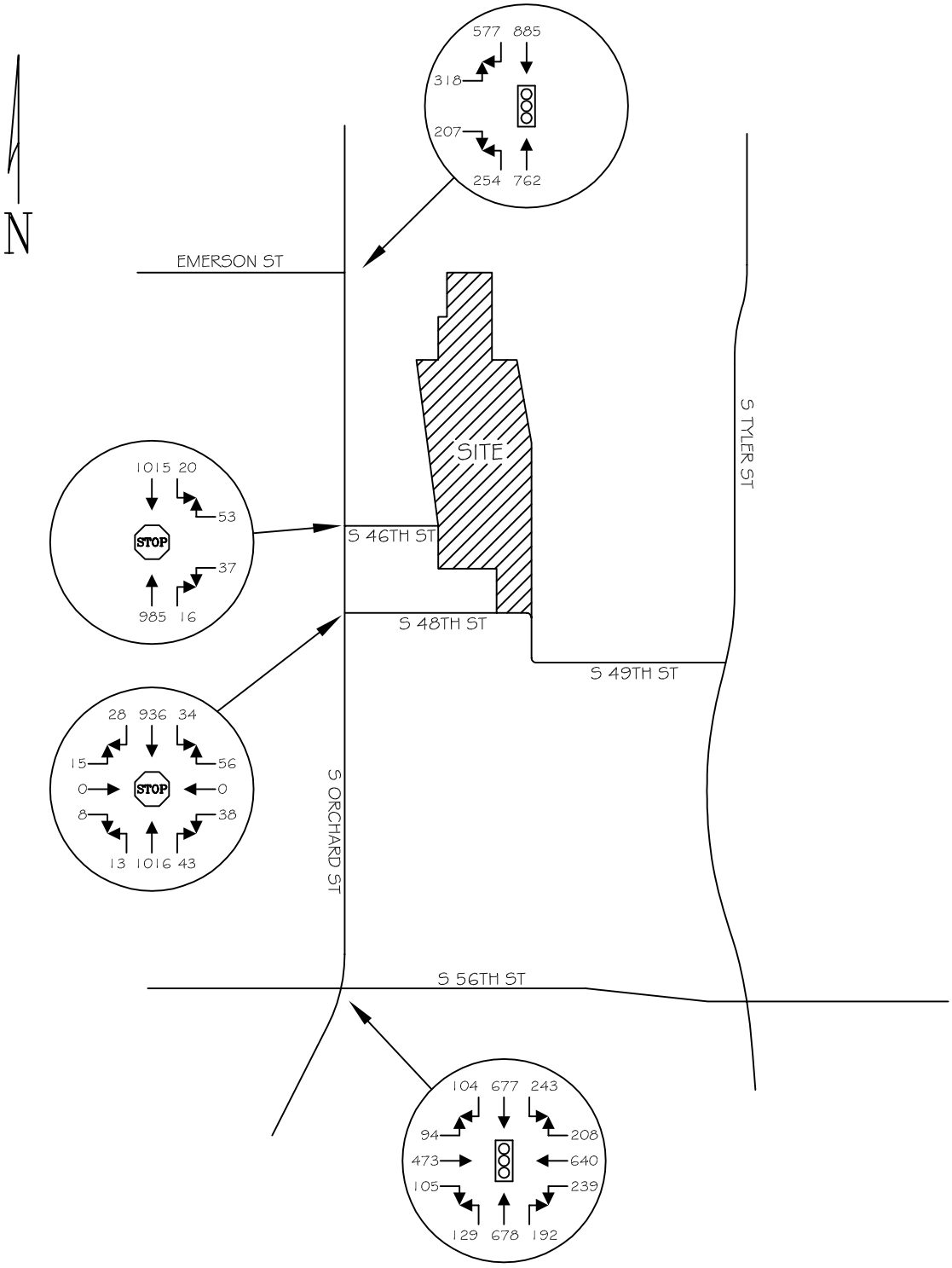
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	37	53	985	16	20	1015
Future Vol, veh/h	37	53	985	16	20	1015
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	45	45	88	88	93	93
Heavy Vehicles, %	50	50	1	0	50	1
Mvmt Flow	82	118	1119	18	22	1091

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1717	569	0	0	1138	0
Stage 1	1128	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Critical Hdwy	7.8	7.9	-	-	5.1	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4	3.8	-	-	2.7	-
Pot Cap-1 Maneuver	~ 49	362	-	-	395	-
Stage 1	188	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 46	362	-	-	395	-
Mov Cap-2 Maneuver	133	-	-	-	-	-
Stage 1	188	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.7	0	0.3
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	133	362	395	-
HCM Lane V/C Ratio	-	-	0.618	0.325	0.054	-
HCM Control Delay (s)	-	-	68.3	19.7	14.6	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	3.2	1.4	0.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



NEW COLD TACOMA

HEATH & ASSOCIATES, INC
Transportation and Civil Engineering

2018 PM PEAK HOUR VOLUMES WITH PROJECT

FIGURE 7