SUNRISE TERRACE

LA CENTER, WASHINGTON

DATE:
July 7, 2015

PREPARED FOR:
RK Land Development LLC

PREPARED BY:
Max Scheideman
Daniel Stumpf, EI
Todd Mobley, PE, PTOE

7/7/15

LANCASTER
ENGINEERING

321 SW 4th Ave., Suite 400 | Portland, OR 97204 | 503.248.0313 | lancasterengineering.com

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. A proposed 120-lot residential subdivision is located west of NE 24th Avenue, south of NE 339th Street, and north of NE Lockwood Creek Road in La Center, Washington. The project site is comprised of three tax lots and part of a fourth, which total approximately 34 acres. Two of the tax lots are vacant while the other two are occupied by one single-family detached home and additional structures used for agricultural purposes.

2. The trip generation calculations show that the proposed development, minus the existing single-family home, will generate an estimated 89 trips during the morning peak hour with 23 trips entering and 66 trips exiting the site. During the evening peak hour, the property is projected to generate an estimated 119 trips with 75 entering and 44 exiting the site.

3. Left-turn lane warrants were not projected to be met for any of the site access study area intersections under any of the analysis scenarios.

4. Traffic signal warrants were examined for each of the applicable study intersections and were not found to be met for any of the analysis scenarios. No new traffic signals are recommended.

5. Based on the detailed analysis, adequate sight distance is available for the proposed new intersection access approaches to NE Lockwood Creek Road, NE 24th Avenue, and NE 339th Street. No sight distance mitigations are necessary or recommended.

6. A detailed examination of the crash history at the study intersections shows no significant safety hazards and no trends that are indicative of design deficiencies. No safety mitigations are recommended.

7. Each of the study intersections is projected to operate within the performance standards established by the City of La Center through the year 2017, either with or without the addition of site trips from the proposed development. No operational mitigations are recommended.

PROJECT DESCRIPTION

INTRODUCTION

This Transportation Impact Study (TIS) addresses the development of a proposed 120-lot residential subdivision located west of NE 24th Avenue, south of NE 339th Street, and north of NE Lockwood Creek Road in La Center, Washington. The project site is comprised of three tax lots and part of a fourth which total approximately 34 acres. Two of the tax lots are vacant while the other two are occupied by a single-family detached home and additional structures used for agricultural purposes.

This report addresses the traffic impacts of the proposed development on the transportation system in the vicinity of the site. Based on the scope of work provided by the City of La Center, the report includes safety and capacity/level-of-service analyses at the following intersections:

- NE 24th Avenue at NE 339th Street
- NE 24th Avenue at NE Lockwood Creek Road
- NE Lockwood Creek Road at NE Highland Avenue
- W 4th Street at Aspen Avenue
- NE Pacific Highway at W 4th Street

Upon development of the project site, the following site access intersections were analyzed:

- NE 24th Avenue at North Local Access Drive
- NE 24th Avenue at South Local Access Drive
- NE 339th Street at Local Access Drive
- NE Lockwood Creek Road at Local Access Drive

The purpose of the study is to determine whether the transportation system in the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses, and to determine any mitigation that might be necessary to do so.

All supporting data and calculations are included in the technical appendix to this report.

LOCATION DESCRIPTION

The project site is located west of and adjacent to NE 24th Avenue, south and adjacent to NE 339th Street, and north and adjacent to NE Lockwood Creek Road in La Center, Washington.

The subject site is located in a predominately agricultural area, with single-family detached homes and farmland to the north, south and east. A single-family detached housing subdivision is located southwest of the site and a La Center High School is located to the west.

VICINITY STREETS

NW Pacific Highway is classified as a Major Collector by the City of La Center. The roadway generally has one travel lane in each direction with a posted speed of 25 mph north of the East Fork Lewis River and a posted speed of 50 mph south of the river. Curbs and sidewalks are provided on both sides of the roadway north of the river.

W 4th Street, E 4th Street and NE Lockwood Creek Road are classified as Major Collectors by the City of La Center. W 4th Street has a three-lane cross-section and is located between NW Pacific Highway and Aspen Avenue. E 4th Street has a two-lane cross-section and is located between Aspen Avenue and E Ivy Avenue/NE Highland Avenue, where it then becomes NE Lockwood Creek Road. NE Lockwood Creek Road also has a two-lane cross-section with one travel lane in each direction. The posted speeds along this route, west and east of the proposed site access onto NE Lockwood Creek Road, are 25 mph and 35 mph, respectively. A school speed zone with a posted speed of 20 mph is in effect during school hours between E Cedar Avenue and NE John Storm Avenue. Bicycle lanes are provided for a short distance to the right of each directional outer travel lane of the roadway at the intersection of NE Lockwood Creek Road at NE Highland Avenue. On-street parking is partially allowed along W 4th Street and E 4th Street within the downtown area. Curbs and sidewalks are provided along both sides of the W 4th Street and generally on both sides of E 4th Street. NE Lockwood Creek Road has curbs and sidewalks along the roadway west of the proposed site access along NE Lockwood Creek Road.

Aspen Avenue is classified as a Minor Collector by the City of La Center. It has a two-lane cross-section with a posted speed limit of 25 mph. On-street parking is generally allowed on both sides of the roadway. Curbs and sidewalks are provided along both sides of the roadway.

NE Highland Avenue and NE 339th Street are classified as Minor Collectors by the City of La Center. NE Highland Avenue becomes NE 339th Street to the east of the intersection with NE 14th Avenue. Both roadways generally have a two-lane cross-section with one travel lane in each direction. NE Highland Avenue has a posted speed of 25 mph while NE 339th Street generally has a posted speed of 35 mph. A school speed zone with a posted speed of 20 mph is in effect during school hours between E 4th Street and the eastern edge of the school property line. Limited bicycle lanes are provided to the right of each directional outer travel lane along the route for a short distance north from the intersection of NE Lockwood Creek Road at NE Highland Avenue. Curbs and sidewalks partially provided along NE Highland Avenue.

NE 24th Avenue is classified as a Minor Collector by the City of La Center. The roadway has a two-lane cross-section without centerline striping. There is no posted speed limit; therefore a statutory speed of 25 mph is applied to the roadway. Curbs, sidewalks, and bicycle lanes are not provided and the roadway does not have enough width to allow for on-street parking.

STUDY INTERSECTIONS

The intersection of NE 24th Avenue at NE 339th Street is a four-legged intersection that is two-way stop controlled for the northbound approach of NE 24th Avenue and the southbound approach of NE 340th Circle. All four approaches have a single shared left-turn/through/right-turn lane.

The intersection of NE 24th Avenue at NE Lockwood Creek Road is a four-legged intersection, where the northbound approach is a local access driveway. The intersection is stop controlled along the southbound approach of NE 24th Avenue and while un-controlled traffic along the access driveway is expected to stop and yield to traffic along NE Lockwood Creek Road. All intersection approaches have a single full-movement turn lane.

The intersection of NE Lockwood Creek Road at NE Highland Avenue is a four-legged intersection and is two-way stop controlled for the northbound approach of E Ivy Avenue and the southbound approach of NE Highland Avenue. The all intersection approaches have one left-turn lane and one shared through/right-turn lane with a bicycle lane to the right of the outer travel lane. Intersection crosswalks are marked on all intersection legs.

The intersection of W 4th Street at Aspen Avenue is a three-legged intersection that is stop controlled for the southbound approach of Aspen Avenue. The southbound approach has one left-turn lane and one right-turn lane. The eastbound approach of W 4th Street has one left-turn lane and one through lane. The westbound approach of E 4th Street has a single shared through/right-turn lane. Intersection crosswalks are striped on the northern and western intersection legs.

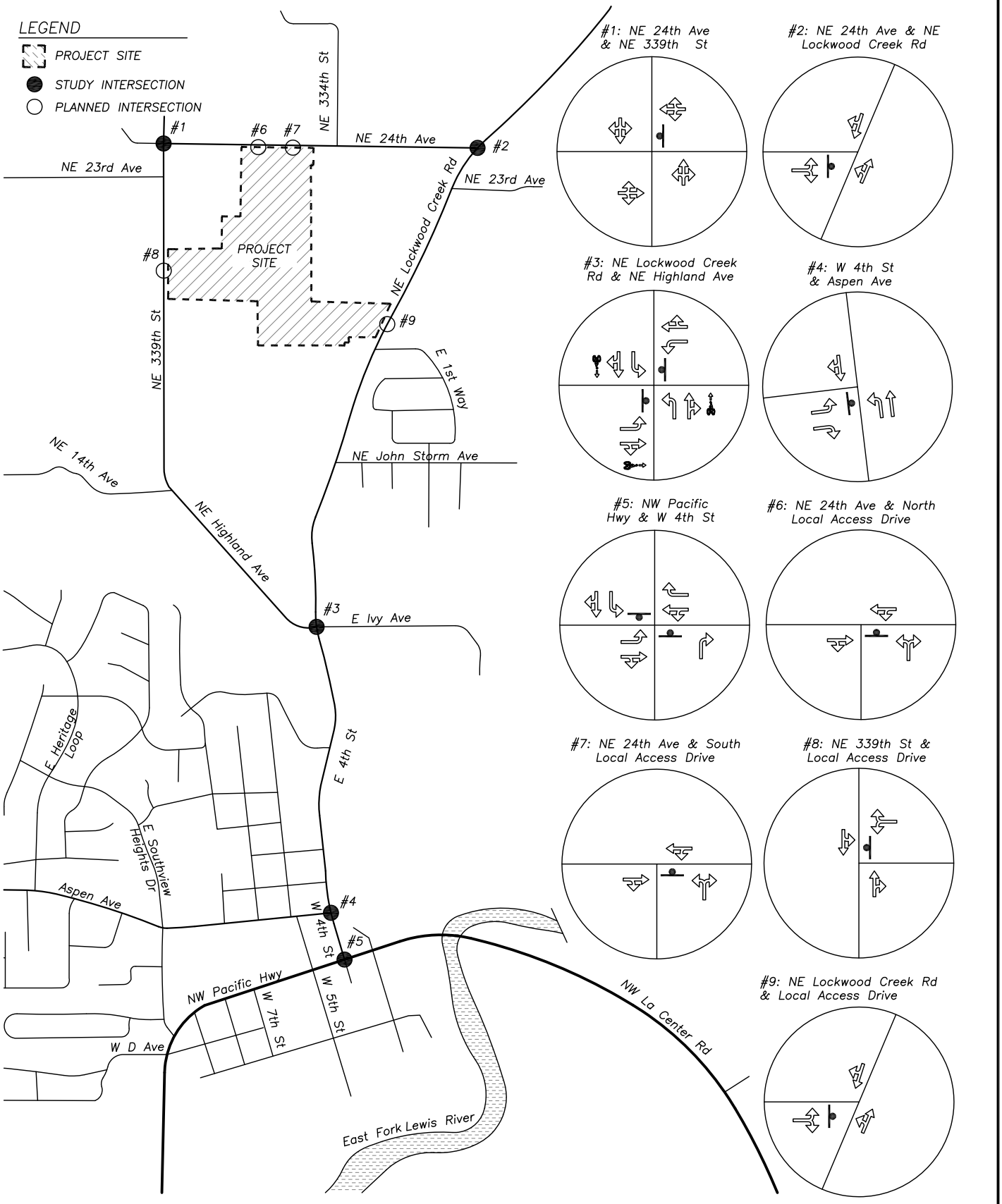
The intersection of NE Pacific Highway at W 4th Street is a four-legged intersection and is two-way stop controlled for the eastbound approach of the Chips Casino driveway access and the westbound approach of W 4th Street. The northbound approach has one right-turn lane and one shared left-turn/through lane. The southbound approach has one left-turn lane and one shared through/right-turn lane. The westbound approach has one left-turn and one right-turn lane. The eastbound approach is striped as having one right-turn lane, however this striping is not always observed and vehicles occasionally make through movements. Intersection crosswalks are marked on the northern, eastern, and western intersection legs. The southern leg of the intersection does not provide a marked crosswalk.

A vicinity map displaying the project site, vicinity streets, and the study area intersections with their associated lane configurations is shown in Figure 1 on page 7.

TRAFFIC COUNTS

Traffic counts were conducted at the study area intersections on Thursday, June 4th, 2015 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Data corresponding to each intersection's peak hour was used for analysis.

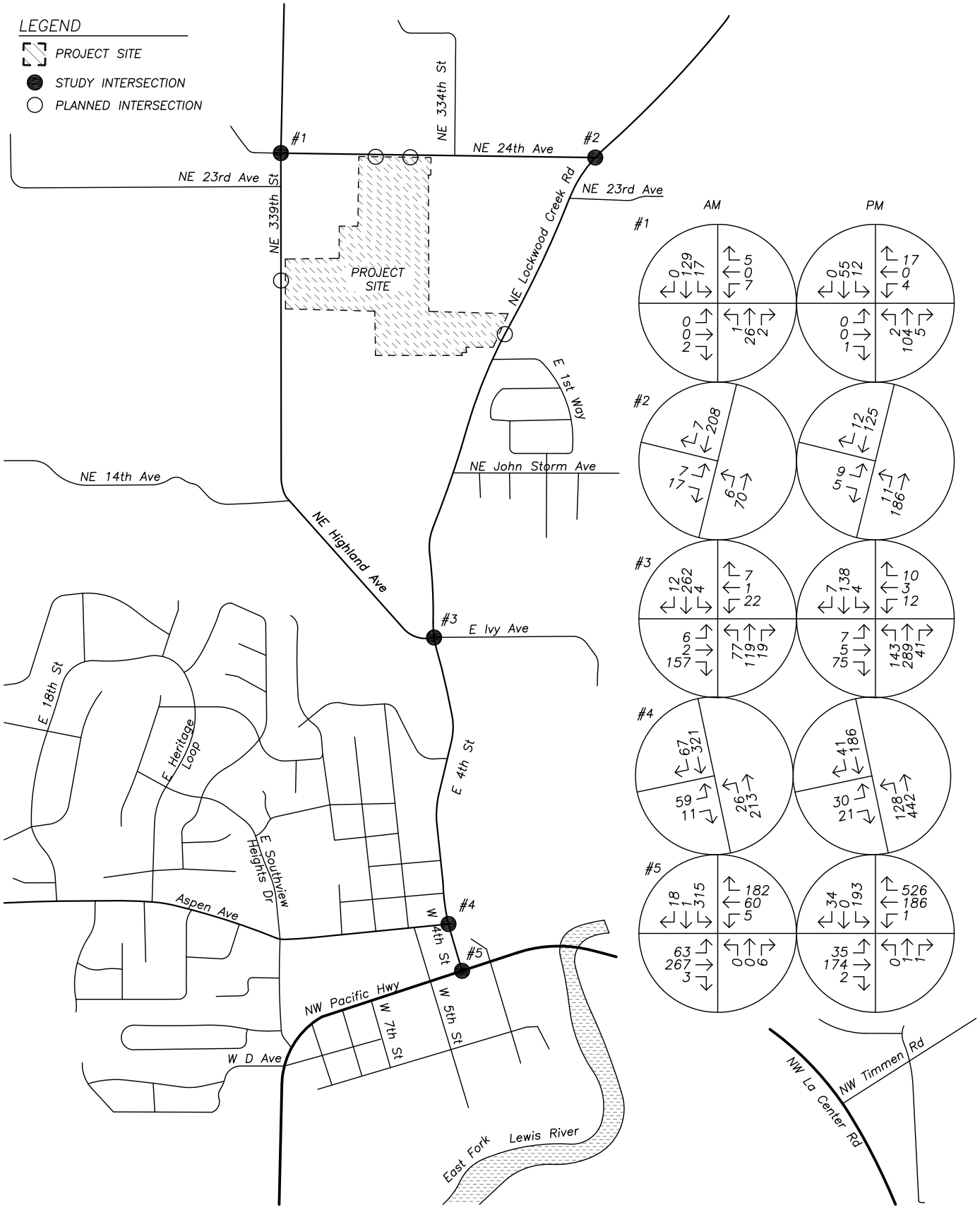
Figure 2 on page 8 shows the existing AM and PM peak hour traffic volumes for the study area intersections.



VICINITY MAP

no scale

FIGURE 1



TRAFFIC VOLUMES
Existing Conditions
AM & PM Peak Hours

no scale

FIGURE 2

TRIP GENERATION & DISTRIBUTION

TRIP GENERATION

The proposed development will construct 120 single-family detached houses and the remove one existing single-family detached home and existing farmland. To estimate the number of trips that will be generated by the proposed development, trip rates from the *TRIP GENERATION MANUAL*, Ninth Edition, published by the Institute of Transportation Engineers (ITE), were used. Data from land-use code 210, *Single-Family Detached Housing*, was used to estimate the proposed development's trip generation based on the number of dwelling units.

The trip generation calculations show that the proposed development, minus the existing single-family home, is projected to generate a total of 89 trips during the morning peak hour, with 23 trips entering and 66 trips exiting the site. During the evening peak hour, the property is projected to generate a total of 119 trips with 75 entering and 44 exiting the site. During a typical weekday, the site is projected to generate total of 1,132 daily trips, with half entering and half exiting the site.

The trip generation estimates are summarized in Table 1. Detailed trip generation calculations are included in the technical appendix to this report.

Table 1: Trip Generation Summary

	ITE Code	Size	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Weekday Total
Proposed									
Single-Family Detached Housing	210	120 units	23	67	90	76	44	120	1,142
Existing									
Single-Family Detached Housing	*210*	*(1 unit)*	*0*	*(1)*	*(1)*	*(1)*	*0*	*(1)*	*(10)*
Total New Trips		**119 units**	**23**	**66**	**89**	**75**	**44**	**119**	**1,132**

TRIP DISTRIBUTION

The directional distribution of site trips to and from the proposed development was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at study area intersections.

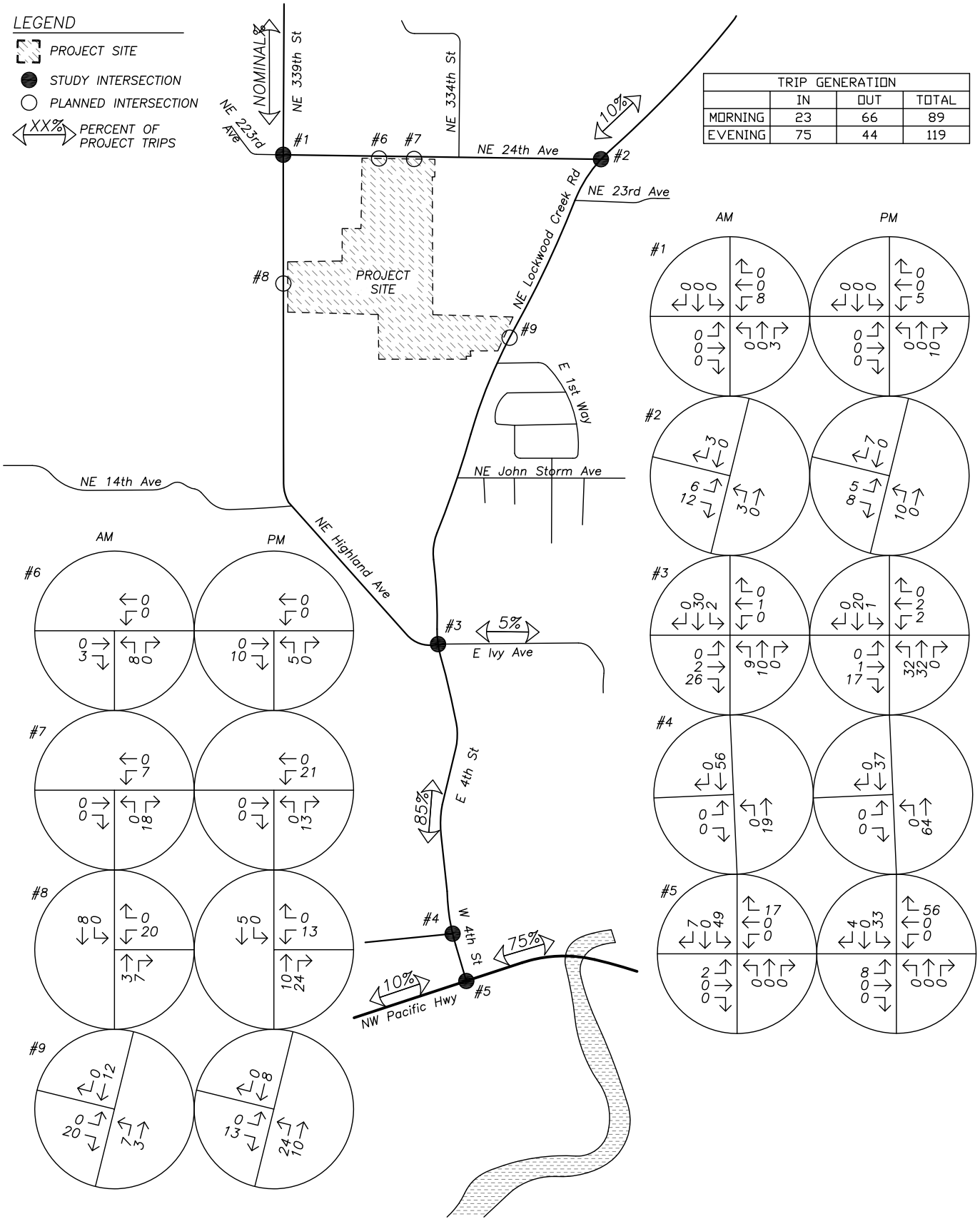
The following trip distribution was estimated and used for analysis:

- 75 percent to and from the south along NW Pacific Highway.
- 10 percent to and from the north along NW Pacific Highway.
- 10 percent to and from the east along NE Lockwood Creek Road.
- 5 percent to and from the south along E Ivy Avenue (primarily to schools).

The proposed development is planned to have four accesses connecting the project site to adjacent roadways; two accesses intersecting NE 24th Avenue, one access intersecting NE Lockwood Creek Road, and one access intersecting NE 339th Street. Based on the site layout and trip distribution, projected trips generated by the project site are anticipated to utilize site accesses accordingly:

- 37 percent of trips generated will utilize the access along NE Lockwood Creek Road.
- 30 percent of trips generated will utilize the access along NE 339th Street.
- 20 percent of trips generated will utilize the south access along NE 24th Avenue.
- 13 percent of trips generated will utilize the north access along NE 24th Avenue.

The trip distribution and assignment of site trips generated by the proposed development during the morning and evening peak hours is shown in Figure 3 on page 11.



TRIP GENERATION			
	IN	OUT	TOTAL
MORNING	23	66	89
EVENING	75	44	119

SITE TRIP DISTRIBUTION & ASSIGNMENT
AM & PM Peak Hours

no scale

FIGURE 3

OPERATIONAL ANALYSIS

BACKGROUND TRAFFIC

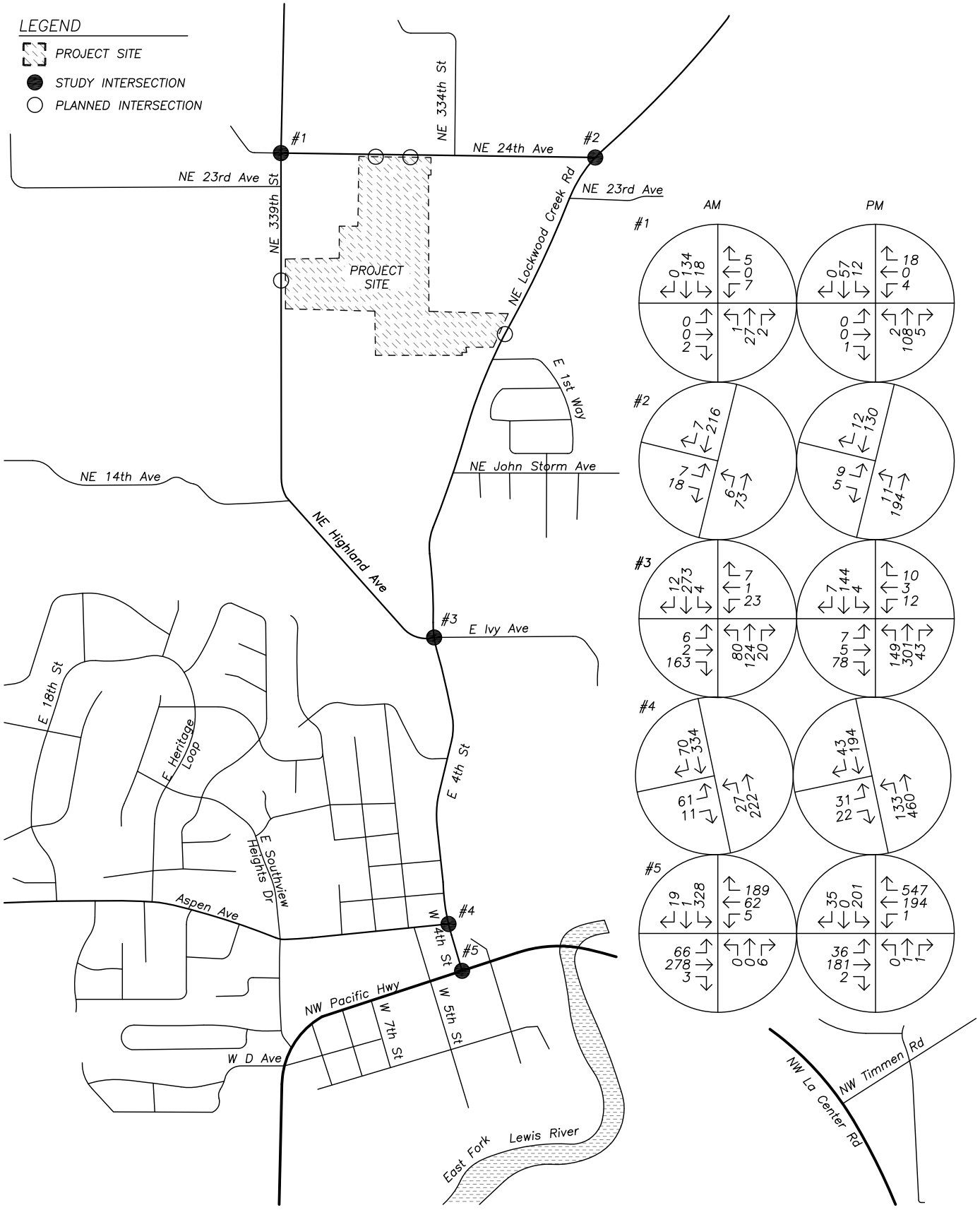
To provide analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. In order to calculate the future traffic volumes, a compounded growth rate of two percent per year for an assumed build-out condition of two years was applied to the measured existing traffic volumes to approximate year 2017 background conditions.

Figure 4 on page 13 shows the projected year 2017 background volumes for the morning and evening peak hour traffic volumes of the study area intersections.

BACKGROUND PLUS SITE TRIPS

Peak hour trips calculated to be generated form the proposed development, as described earlier within the Trip Generation section, were added to the project year 2017 background traffic volumes to obtain the projected 2017 background plus site trips.

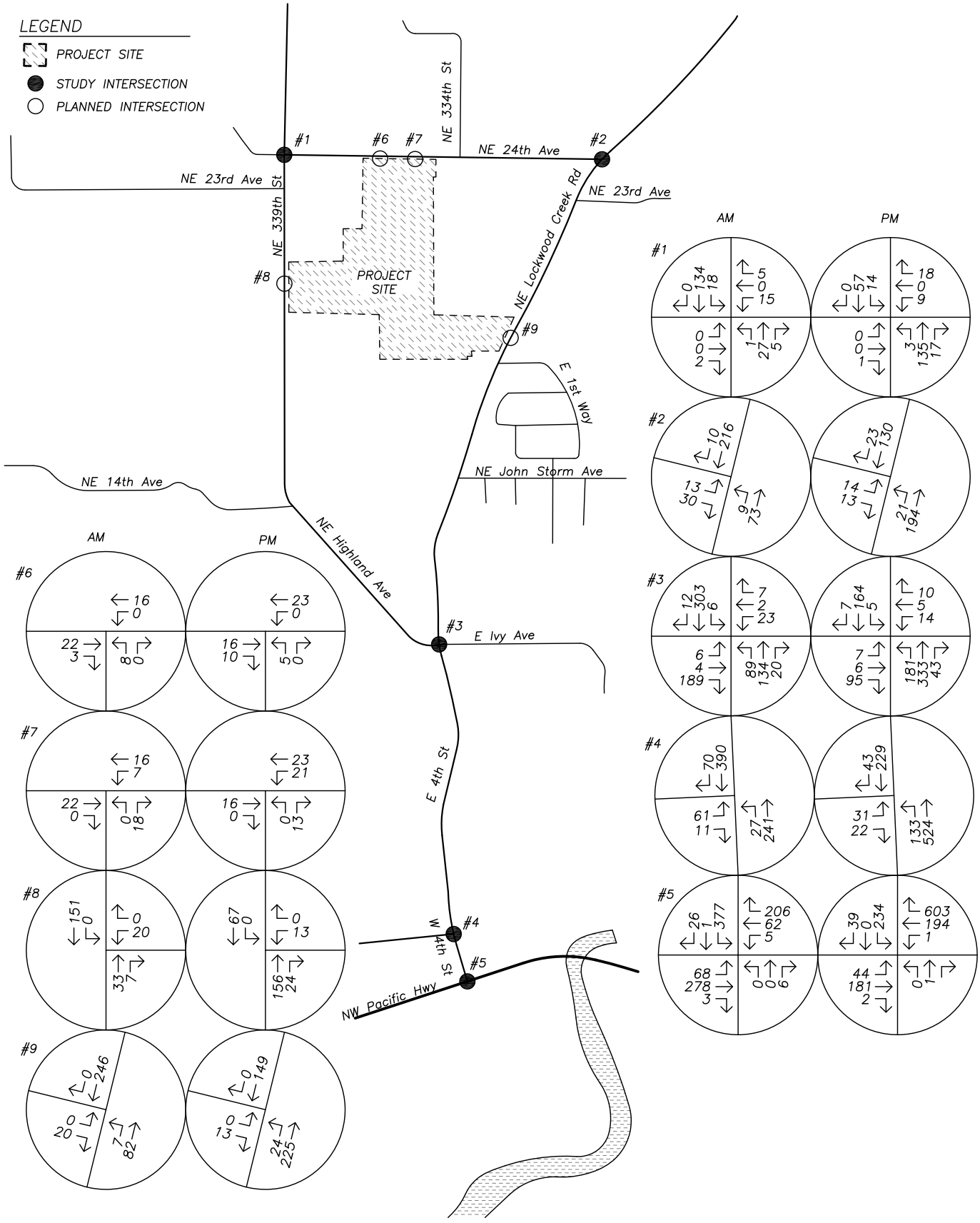
Figure 5 on page 14 shows the projected year 2017 peak hour background traffic volumes with the addition of site trips from the proposed development.



TRAFFIC VOLUMES
Year 2017 Background Conditions
AM & PM Peak Hours

no scale

FIGURE 4



TRAFFIC VOLUMES
2017 Background Conditions + Site Trips
AM & PM Peak Hours

no scale

FIGURE 5

INTERSECTION CAPACITY AND LEVEL OF SERVICE ANALYSIS

To determine the performance of the study intersections, a capacity analysis was conducted for the morning and evening peak hours for existing conditions, year 2017 background conditions, and year 2017 background plus site trips from the proposed development. The analysis was conducted according to the unsignalized intersection analysis methodology given in the *HIGHWAY CAPACITY MANUAL* (HCM) published by the Transportation Research Board.

Levels of service (LOS) can range from LOS A, which indicates very little or no delay experience by vehicles, to LOS F, which indicates a high degree of congestion and delay. The City of La Center's operating standards, outlined in the *La Center Urban Area Capital Facilities Plan (2008)*, require LOS D or better for signalized intersections and LOS E or better for unsignalized intersections. Intersections comprised of local streets do not have an LOS standard.

The intersection of NE 24th Avenue at NE 339th Street currently operates at LOS A during the morning and evening peak hours and is expected to remain LOS A for the morning and evening peak hours through year 2017. With added project trips, the intersection is expected to increase to LOS B during the morning peak hour and remain LOS A during the evening peak hour.

The intersection of NE 24th Avenue at NE Lockwood Creek Road currently operates at LOS B for morning and evening peak hours. The intersection is expected to remain LOS B during the morning and evening peak hours through year 2017, with or without added project trips.

The intersection of NE Lockwood Creek Road and NE Highland Avenue currently operates at LOS C during morning and evening peak hours. Under year 2017 background conditions, the intersection is projected to increase to LOS D during the morning peak hour and remain LOS C during the evening peak hour. Upon competition of the proposed development, the intersection is expected to increase to LOS E during the morning peak hour and remain at LOS C during the evening peak hour.

The intersection of W 4th Street at Aspen Avenue currently operates at LOS C for morning and evening peak hours. The intersection is expected to remain LOS C during the morning and evening peak hours through year 2017, with or without added project trips.

The intersection of NE Pacific Highway and W 4th Street currently operates at LOS B during the morning peak hour and LOS C during the evening peak hour. Under year 2017 background conditions, the intersection is projected to increase to LOS C during the morning peak hour and remain LOS C during the evening peak hour. With added project trips in year 2017, the intersection is expected to remain at LOS C during the morning and evening peak hours.

Upon competition of the proposed development, four new site access intersections were analyzed. The intersection of NE 24th Avenue at the North Local Access Drive is projected to operate at LOS A during morning and evening peak hours. Likewise, the intersection of NE 24th Avenue at the South Local Access Drive is projected to operate at LOS A during morning and evening peak hours. The intersection of NE 339th Street at the Local Access Drive is projected to operate at LOS B during the morning and evening peak hours. The intersection of NE Lockwood Drive and Local Access Drive is expected to operate at LOS B during the morning peak hour and LOS A during the evening peak hour.

Based on the detailed analysis, all studied intersections are projected to operate within the performance standards established by the City of La Center through the year 2017, with or without the trips from the proposed development. Accordingly, no operational mitigations are required or recommended.

The results of the capacity analysis, along with the levels of service, delay, and v/c ratios are shown in Table 2 on the following page. Detailed calculations, as well as tables showing the relationships between delay and level of service are included in the technical appendix to this report.

Table 2: Capacity Analysis Summary

	AM			PM		
	LOS	Delay (s)	v / c	LOS	Delay (s)	v / c
NE 24th Ave at NE 339th St						
2015 Existing	A	10	0.02	A	9	0.03
2017 Background	A	10	0.02	A	9	0.03
2017 Background + Site	B	10	0.04	A	10	0.04
NE 24th Ave at NE Lockwood Creek Rd						
2015 Existing	B	11	0.19	B	10	0.09
2017 Background	B	11	0.19	B	10	0.09
2017 Background + Site	B	11	0.20	B	11	0.10
NE Lockwood Creek Rd at NE Highland Ave						
2015 Existing	C	23	0.39	C	18	0.22
2017 Background	D	26	0.42	C	19	0.22
2017 Background + Site	E	39	0.53	C	24	0.25
W 4th St at Aspen Ave						
2015 Existing	C	17	0.29	C	16	0.27
2017 Background	C	18	0.30	C	17	0.28
2017 Background + Site	C	20	0.34	C	19	0.32
NE Pacific Hwy at W 4th St						
2015 Existing	B	15	0.49	C	16	0.32
2017 Background	C	16	0.53	C	17	0.43
2017 Background + Site	C	18	0.61	C	19	0.51
NE 24th Ave at North Local Access Drive						
2017 Background + Site	A	9	0.02	A	9	0.02
NE 24th Ave at South Local Access Drive						
2017 Background + Site	A	9	0.02	A	9	0.02
NE 339th St at Local Access Drive						
2017 Background + Site	B	10	0.08	B	14	0.38
NE Lockwood Creek Rd at Local Access Drive						
2017 Background + Site	B	11	0.22	A	10	0.13

SAFETY ANALYSIS

WARRANT ANALYSIS

Left-turn lane and traffic signal warrants were examined for each of study intersections where such treatments would be applicable.

A left-turn refuge is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants used were developed from the National Cooperative Highway Research Project's (NCHRP) *Report 457*. The turn lane warrants were evaluated based on the number of advancing and opposing vehicles as well as the number of left-turning vehicles, the travel speed, and the number of through travel lanes.

Left-turn lane warrants were not projected to be met for any of the site access study area intersections under any of the analysis scenarios.

Traffic signal warrants were examined at study area intersection to determine whether the installation of a new traffic signal will be warranted at the intersection upon build-out of the proposed development. Due to insufficient main and side-street traffic volumes, traffic signal warrants are not met for any unsignalized study area intersections under any of the analysis scenarios. No new installations of traffic signals are recommended.

SIGHT DISTANCE

Intersection sight distance was evaluated at each of the proposed accesses for the proposed development. The minimum required intersection sight distance was determined in accordance with *A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS*, published in 2011 by the American Association of State Highway and Transportation Officials (AASHTO). Intersection sight distance measurements are based on an approaching driver's eye height of 3.5 feet above the road and an eye height of 3.5 feet with the opposing driver's eye 15 feet behind the edge of the near-side travel lane.

NE Lockwood Creek Road

The access on NE Lockwood Creek Road will be located approximately 100 feet east of the western edge of the project site that intersects NE Lockwood Creek Road. Based on the posted speed limit of 35 mph, a minimum of 390 feet of intersection sight distance is required in both directions of the access to ensure uninterrupted flow of through traffic. Intersection sight distance for vehicles turning right and left from the proposed site access are 890 feet to the east, limited by foliage along the roadway, and 1,490 feet to the west, limited by the crest of a hill, respectively. Left-turning vehicles from NE Lockwood Creek Road to the site access have a sight distance of 1,546 feet to the east, limited by a combination of roadside vegetation and a power pole.

NE 24th Avenue – South Access

The south access on NE 24th Avenue will be located approximately 125 feet north of the southern edge of the project site that intersects with NE 24th Avenue. The proposed access is situated on a

roadway sloping uphill to the north at a 6.25 percent grade. Based on the statutory residential speed limit of 25 mph, a minimum of 280 feet of intersection sight distance is required in both directions. Intersection sight distance for northbound vehicles is measured at 637 feet, limited by a tree along the western edge of NE 24th Avenue. For southbound vehicles intersection sight distance was measured to be 253 feet, where sight distance is obstructed by the crest of the vertical curve of a hill. Since 253 feet is less than the 280 feet required for intersection sight distance, stopping sight distance was investigated.

As explained in the AASHTO manual, stopping sight distance is considered the minimum requirement to ensure safe operation of the driveway. This is the distance that allows an oncoming driver to see a hazard n the roadway, react, and come to a complete stop if necessary to avoid a collision. Conversely, intersection sight distance is an operational measure, intended to provide sufficient line of sight along the major street so that a driver could turn from the driveway without impeding traffic flow.

In this case, stopping sight distance is the appropriate standard since NE 24th Avenue is a local rural street with features that already require the attention of drivers traveling the road, such as narrow driveways that are lined with natural vegetation.

Based on the posted speed limit of 25 mph and an upward grade of 6.25 percent to the north, a minimum of 165 feet of stopping sight distance is required for southbound vehicles and 143 feet for northbound vehicles. Since sight distance for northbound vehicles is measured at 637 feet and 253 feet for southbound vehicles, adequate stopping sight distance is available looking both to the north and the south from the subject access location.

NE 24th Avenue – North Access

The north access on NE 24th Avenue will be located approximately 500 feet south of NE 339th Street. Based on the posted speed limit of 25 mph, a minimum of 280 feet of intersection sight distance is required in both directions of the access. Intersection sight distance for vehicles turning right and left from the proposed site access are 533 feet to the north and 637 feet to the south, respectively. Left-turning vehicles from the NE 24th Avenue to the north site access have a sight distance of 1,369 feet to the north. Obstructions to sight distance in both the north and south directions are caused the crest of hills along NE 24th Avenue.

NE 339th Street

The access on NE 339th Street will be located approximately 145 feet east of the western property line of the project site. Based on the posted speed limit of 35 mph, a minimum of 390 feet of intersection sight distance is required in both directions of the access. Intersection sight distance for vehicles turning right and left from the proposed site access are 665 feet to the west and 671 feet to the east, respectively. Left-turning vehicles from the NE 339th Street to the site access have a sight distance of 665 feet to the west. Obstructions to sight distance in both directions are caused the crest of hills along NE 339th Street.

Based on the detailed analysis, adequate sight distance is available for the proposed new intersection access approaches to NE Lockwood Creek Road, NE 24th Avenue, and NE 339th Street. No sight distance mitigations are necessary or recommended.

CRASH DATA ANALYSIS

Using data obtained from WSDOT's Crash Data and Reporting Branch, a review was performed for the most recent five years of available crash data (January of 2010 through December of 2014) at each of the study area intersections. A crash rate was calculated under the common assumption that traffic counted during the evening peak period represents 10 percent of the average daily traffic (ADT) at the intersection. Crash rates greater than 1.0 crashes per million entering vehicles (CMEV) are generally indicative of a need for further investigation and possible mitigation.

The intersection of NE 24th Avenue at NE 339th Street had no reported crashes during the five year analysis period.

The intersection of NE 24th Avenue at NE Lockwood Creek Road had a total of two crashes during the analysis period. One of the crashes was a rear-end collision while the other was a fixed object collision, where the motorist drove off the road. One crash reported "property damage only" while the other crash reported "possible injury". The crash rate for the intersection was calculated to be 0.31 CMEV.

The intersection of NE Lockwood Creek Road at NE Highland Avenue reported four crashes during the analysis period. Two of the crashes were turning-type collisions, one was a rear-end collision, and one was a fixed object collision caused by speeding. All crashes reported "property damage only". The crash rate for the intersection was calculated to be 0.30 CMEV.

The intersection of W 4th Street at Aspen Avenue had a total of three crashes during the analysis period. There were two rear-end collisions and a fixed object collision, where an alcohol intoxicated driver crashed into a building. The two rear-end collisions resulted in "property damage only" while the fixed object collision resulted in "serious injuries". The crash rate for the intersection was calculated to be 0.19 CMEV.

The intersection of NE Pacific Highway at W 4th Street had a total of five crashes during the analysis period. Three of these crashes were turning-type collisions, one was a rear-end collision, and one was a collision with a pedestrian. Two of the crashes were resulted in "property damage only", two resulted in "possible injury", and one resulted in "serious injury". The crash resulting in "serious injury" involved a pedestrian crossing NE Pacific Highway whereby a northbound motorist failed to yield right-of-way to the pedestrian. The crash rate for the intersection was calculated to be 0.24 CMEV.

Based on detailed review of all crash data, no significant patterns are evident and the crash data does not appear to be indicative of a significant safety hazard. Accordingly, no safety mitigations are recommended.

CONCLUSIONS

Each of the study intersections is projected to operate within the performance standards established by the City of La Center through the year 2017, either with or without the addition of site trips from the proposed development. No operational mitigations are recommended.

A detailed examination of the crash history at the study intersections shows no significant patterns are evident and the crash data does not appear to be indicative of a significant safety hazard. No safety mitigations are recommended.

Sight distance was examined at the site access locations. All site access locations were determined to have acceptable intersection sight distance, with the exception of NE 24th Avenue at the South Local Access Drive, which was observed to have acceptable stopping sight distance.

Signal warrants were examined for all studied intersections and were not met under any of the analysis scenarios. Traffic volumes on the major and minor-street approaches at the remaining study intersections were too low to meet traffic signal warrants. No new traffic signals are recommended.

Left-turn lane warrants were examined at the site access locations and were not met under any of the analysis scenarios. No left-turn lane mitigation is recommended.

Based on the analysis, the transportation system in the site vicinity is capable of safely supporting the proposed development.

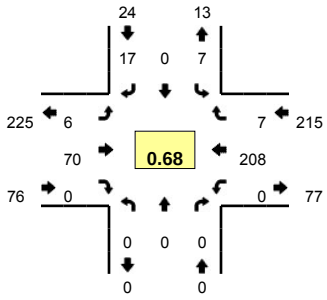
APPENDIX

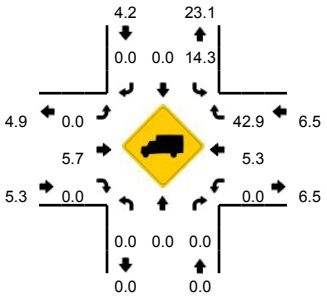
Preliminary Plat	*Sunrise Terrace* a Residential Subdivision City of La Center WA	Applicant: RK Land Development, LLC 1520 NW ... Battle Ground WA 98604 360... ...@gmail.com	**ED GREER** *Land Use Planning & Designs* 8002 NE Hwy 99 #548 Vancouver WA 98665 360.904.4964 ed@ed-greer.net	

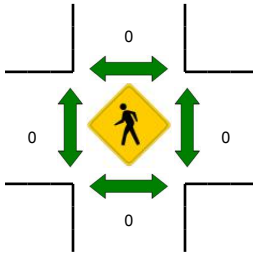
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

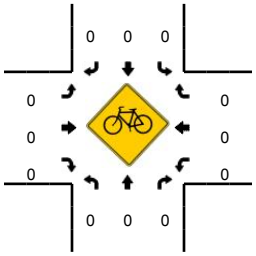
LOCATION: NE 24th Ave -- NE Lockwood Creek Rd | **QC JOB #:** 13416201
CITY/STATE: La Center, WA | **DATE:** Thu, Jun 04 2015

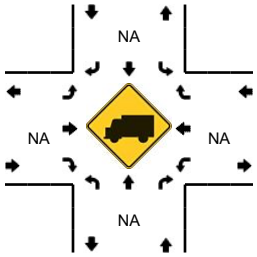
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:55 AM -- 8:10 AM

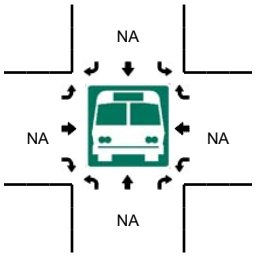












5-Min Count Period Beginning At	NE 24th Ave (Northbound)				NE 24th Ave (Southbound)				NE Lockwood Creek Rd (Eastbound)				NE Lockwood Creek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	10	0	0	14	
7:05 AM	0	0	0	0	0	0	0	0	0	9	0	0	0	12	0	0	21	
7:10 AM	0	0	0	0	0	0	1	0	1	9	0	0	0	11	0	0	22	
7:15 AM	0	0	0	0	1	0	0	0	1	5	0	0	0	19	0	0	26	
7:20 AM	0	0	0	0	1	0	0	0	0	4	0	0	0	12	0	0	17	
7:25 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	10	2	0	14	
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	16	0	0	19	
7:35 AM	0	0	0	0	1	0	1	0	0	4	0	0	0	16	1	0	23	
7:40 AM	0	0	0	0	2	0	0	0	0	4	0	0	0	15	1	0	22	
7:45 AM	0	0	0	0	1	0	5	0	0	2	0	0	0	17	0	0	25	
7:50 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	14	2	0	20	
7:55 AM	0	0	0	0	2	0	0	0	1	5	0	0	0	23	1	0	32	255
8:00 AM	0	0	0	0	0	0	4	0	1	7	0	0	0	34	2	0	48	289
8:05 AM	0	0	0	0	0	0	1	0	0	9	0	0	0	25	0	0	35	303
8:10 AM	0	0	0	0	1	0	0	0	2	6	0	0	0	15	0	0	24	305
8:15 AM	0	0	0	0	0	0	1	0	1	7	0	0	0	13	0	0	22	301
8:20 AM	0	0	0	0	0	0	1	0	1	11	0	0	0	13	0	0	26	310
8:25 AM	0	0	0	0	0	0	2	0	0	10	0	0	0	7	0	0	19	315
8:30 AM	0	0	0	0	1	0	1	0	0	4	0	0	0	10	1	0	17	313
8:35 AM	0	0	0	0	1	0	1	0	0	9	0	0	0	4	0	0	15	305
8:40 AM	0	0	0	0	1	0	0	0	0	6	0	0	0	4	1	0	12	295
8:45 AM	0	0	0	0	1	0	0	0	2	5	0	0	0	9	1	0	18	288
8:50 AM	0	0	0	0	1	0	1	0	0	5	0	0	0	8	0	0	15	283
8:55 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	3	1	0	9	260

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	8	0	20	0	8	84	0	0	0	328	12	0	460
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	8	4		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

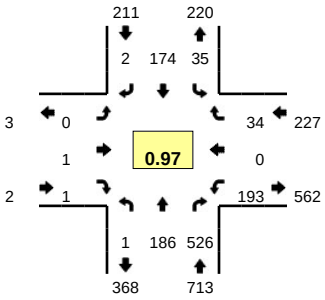
Type of peak hour being reported: Intersection Peak

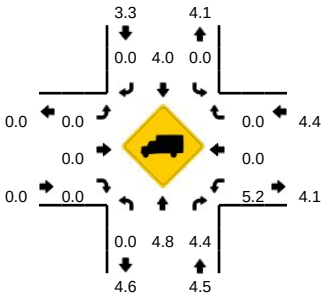
Method for determining peak hour: Total Entering Volume

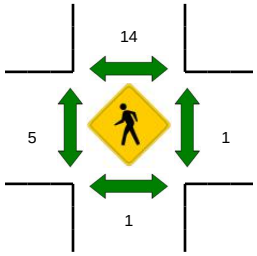
LOCATION: NW Pacific Hwy -- W 4th St
CITY/STATE: La Center, WA

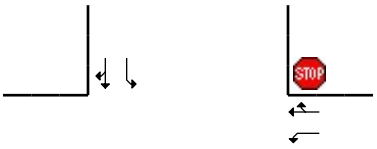
QC JOB #: 13416210
DATE: Thu, Jun 04 2015

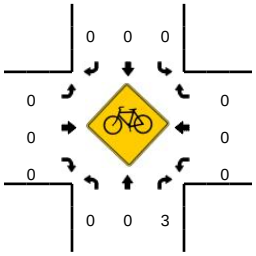
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

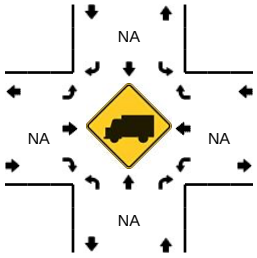


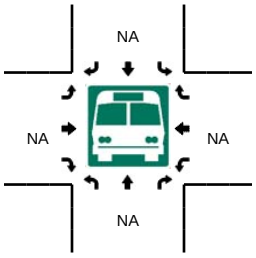












5-Min Count Period Beginning At	NW Pacific Hwy (Northbound)				NW Pacific Hwy (Southbound)				W 4th St (Eastbound)				W 4th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	12	41	0	2	18	1	0	0	0	0	0	17	1	3	0	95	
4:05 PM	0	7	39	0	0	19	0	0	0	0	0	0	20	0	2	0	87	
4:10 PM	0	18	43	0	3	11	0	0	0	0	2	0	17	0	3	0	97	
4:15 PM	0	15	34	0	4	12	0	0	0	0	0	0	16	0	3	0	84	
4:20 PM	0	23	34	0	0	11	0	0	0	0	2	0	24	0	1	0	95	
4:25 PM	0	9	39	0	3	11	0	0	0	0	0	0	14	0	4	0	80	
4:30 PM	0	9	29	0	2	8	0	0	0	1	1	0	23	0	3	0	76	
4:35 PM	0	8	39	0	6	3	0	0	0	0	0	0	19	0	1	0	76	
4:40 PM	0	13	20	0	6	5	0	0	0	1	1	0	21	0	2	0	69	
4:45 PM	0	12	45	0	3	11	0	0	0	0	0	0	11	0	3	0	85	
4:50 PM	0	15	40	0	6	9	0	0	0	0	0	0	14	0	3	0	87	
4:55 PM	0	18	44	0	4	8	0	0	0	0	0	0	19	0	1	0	94	1025
5:00 PM	1	17	53	0	3	25	0	0	0	0	0	0	17	0	2	0	118	1048
5:05 PM	0	18	31	0	3	9	1	0	0	0	0	0	18	0	2	0	82	1043
5:10 PM	0	13	37	0	2	19	1	0	0	0	0	0	18	0	4	0	94	1040
5:15 PM	0	15	48	0	5	14	0	0	0	0	0	0	13	0	5	0	100	1056
5:20 PM	0	16	49	0	3	22	0	0	0	1	0	0	9	0	2	0	102	1063
5:25 PM	0	13	30	0	3	14	0	0	0	0	0	0	22	0	1	0	83	1066
5:30 PM	0	18	41	0	3	16	0	0	0	0	1	0	14	0	6	0	99	1089
5:35 PM	0	13	60	0	2	13	0	0	0	0	0	0	16	0	1	0	105	1118
5:40 PM	0	13	47	0	4	12	0	0	0	0	0	0	12	0	2	0	90	1139
5:45 PM	0	16	40	0	0	11	0	0	0	0	0	0	18	0	5	0	90	1144
5:50 PM	0	16	46	0	3	11	0	0	0	0	0	0	17	0	3	0	96	1153
5:55 PM	1	15	42	0	5	8	1	0	0	1	0	0	12	0	5	0	90	1149

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	176	536	0	40	220	4	0	0	4	0	0	160	0	44	0	1184
Heavy Trucks	0	8	44		0	4	0		0	0	0		4	0	0		60
Pedestrians		0				8				4				0			12
Bicycles	0	0	2		0	0	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

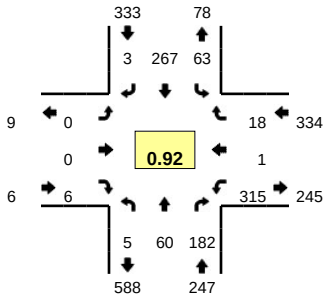
Type of peak hour being reported: Intersection Peak

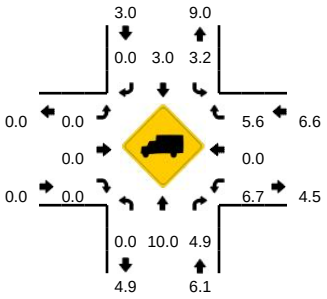
Method for determining peak hour: Total Entering Volume

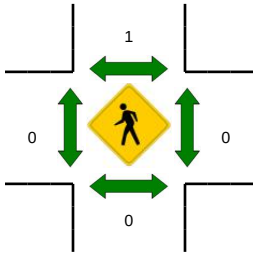
LOCATION: NW Pacific Hwy -- W 4th St
CITY/STATE: La Center, WA

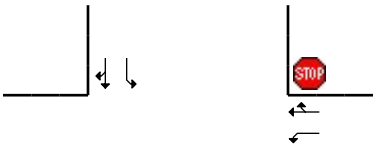
QC JOB #: 13416209
DATE: Thu, Jun 04 2015

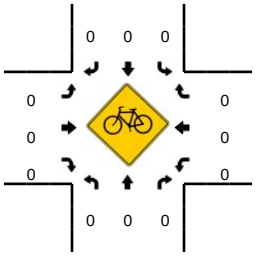
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

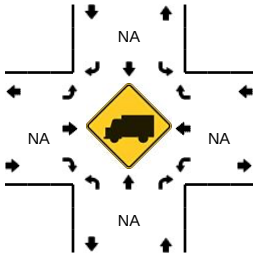


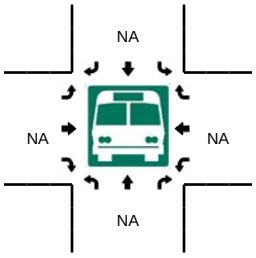












5-Min Count Period Beginning At	NW Pacific Hwy (Northbound)				NW Pacific Hwy (Southbound)				W 4th St (Eastbound)				W 4th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	6	5	0	2	22	0	0	0	0	1	0	25	0	0	0	61	
7:05 AM	1	6	16	0	1	25	0	0	0	0	0	0	30	0	1	0	80	
7:10 AM	0	7	12	0	4	25	2	0	0	0	0	0	37	0	1	0	88	
7:15 AM	0	5	6	0	1	30	2	0	0	0	1	0	18	0	0	0	63	
7:20 AM	1	6	10	0	4	27	0	0	0	0	2	0	32	0	2	0	84	
7:25 AM	0	5	9	0	1	21	0	0	0	0	0	0	28	0	0	0	64	
7:30 AM	0	5	7	0	0	24	0	0	0	0	1	0	28	0	0	0	65	
7:35 AM	0	6	13	0	2	23	0	0	0	0	0	0	27	1	0	0	72	
7:40 AM	2	3	19	0	1	15	0	0	0	0	0	0	27	0	1	0	68	
7:45 AM	2	12	17	0	4	23	0	0	0	0	0	0	21	0	1	0	80	
7:50 AM	0	5	26	0	6	19	0	0	0	0	0	0	23	0	2	0	81	
7:55 AM	0	4	21	0	9	23	1	0	0	0	0	0	14	0	2	0	74	880
8:00 AM	0	3	16	0	7	18	1	0	0	0	0	0	36	0	5	0	86	905
8:05 AM	0	2	14	0	10	22	1	0	0	0	3	0	20	0	0	0	72	897
8:10 AM	0	7	15	0	13	30	0	0	0	0	0	0	26	0	0	0	91	900
8:15 AM	0	2	15	0	6	22	0	0	0	0	0	0	33	0	5	0	83	920
8:20 AM	0	4	9	0	1	18	0	0	0	0	0	0	27	0	2	0	61	897
8:25 AM	1	7	7	0	1	25	0	0	0	0	1	0	31	0	1	0	74	907
8:30 AM	0	3	9	0	4	16	0	0	0	0	0	0	23	0	0	0	55	897
8:35 AM	1	8	8	0	3	15	0	0	0	0	0	0	21	0	5	0	61	886
8:40 AM	0	6	12	0	1	16	0	0	0	0	0	0	17	0	3	0	55	873
8:45 AM	0	2	8	0	1	8	0	0	0	0	0	0	13	0	0	0	32	825
8:50 AM	0	8	12	0	3	8	0	0	0	0	0	0	18	1	2	0	52	796
8:55 AM	0	4	10	0	3	11	0	0	0	0	0	0	23	0	2	0	53	775

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	48	180	0	120	280	8	0	0	0	12	0	328	0	20	0	996
Heavy Trucks	0	8	4		0	24	0		0	0	0		32	0	0		68
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Aspen Ave -- E 4th St

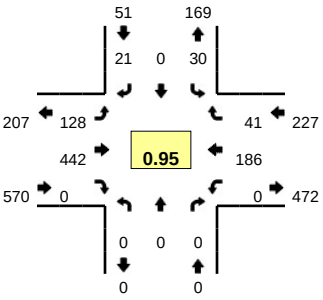
CITY/STATE: La Center , WA

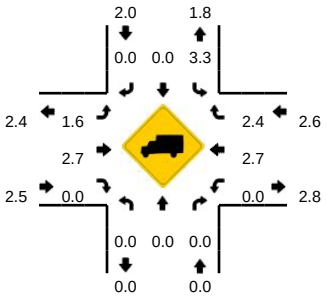
QC JOB #: 13416208

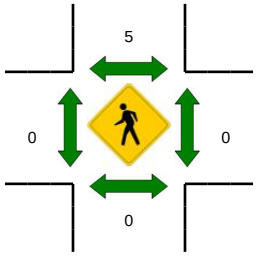
DATE: Thu, Jun 04 2015

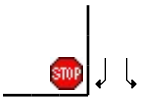
Peak-Hour: 4:55 PM -- 5:55 PM

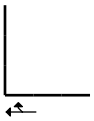
Peak 15-Min: 5:30 PM -- 5:45 PM

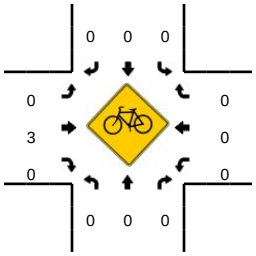


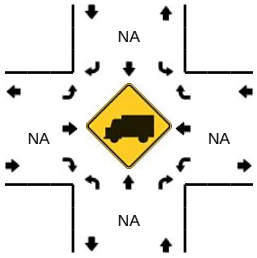


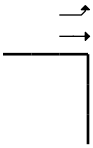


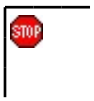


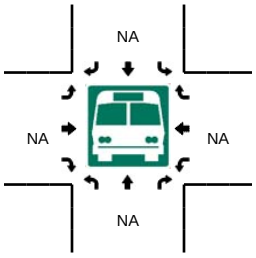












5-Min Count Period Beginning At	Aspen Ave (Northbound)				Aspen Ave (Southbound)				E 4th St (Eastbound)				E 4th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	2	0	10	27	0	0	0	20	2	0	63	
4:05 PM	0	0	0	0	3	0	5	0	13	30	0	0	0	13	4	0	68	
4:10 PM	0	0	0	0	2	0	1	0	12	34	0	0	0	19	6	0	74	
4:15 PM	0	0	0	0	1	0	2	0	11	26	0	0	0	12	4	0	56	
4:20 PM	0	0	0	0	1	0	5	0	13	20	0	0	0	18	5	0	62	
4:25 PM	0	0	0	0	2	0	4	0	15	27	0	0	0	14	2	0	64	
4:30 PM	0	0	0	0	2	0	5	0	7	26	0	0	0	19	4	0	63	
4:35 PM	0	0	0	0	3	0	4	0	11	33	0	0	0	13	6	0	70	
4:40 PM	0	0	0	0	0	0	0	0	3	24	0	0	0	21	3	0	51	
4:45 PM	0	0	0	0	5	0	1	0	17	30	0	0	0	12	0	0	65	
4:50 PM	0	0	0	0	2	0	0	0	11	37	0	0	0	18	4	0	72	
4:55 PM	0	0	0	0	3	0	0	0	10	37	0	0	0	15	6	0	71	779
5:00 PM	0	0	0	0	5	0	4	0	7	45	0	0	0	18	6	0	85	801
5:05 PM	0	0	0	0	0	0	0	0	8	29	0	0	0	15	1	0	53	786
5:10 PM	0	0	0	0	2	0	4	0	13	29	0	0	0	14	4	0	66	778
5:15 PM	0	0	0	0	4	0	2	0	11	41	0	0	0	15	3	0	76	798
5:20 PM	0	0	0	0	3	0	0	0	16	40	0	0	0	12	0	0	71	807
5:25 PM	0	0	0	0	0	0	3	0	6	28	0	0	0	17	1	0	55	798
5:30 PM	0	0	0	0	4	0	2	0	13	31	0	0	0	20	6	0	76	811
5:35 PM	0	0	0	0	3	0	0	0	9	50	0	0	0	15	3	0	80	821
5:40 PM	0	0	0	0	0	0	1	0	10	41	0	0	0	14	2	0	68	838
5:45 PM	0	0	0	0	2	0	3	0	11	33	0	0	0	16	4	0	69	842
5:50 PM	0	0	0	0	4	0	2	0	14	38	0	0	0	15	5	0	78	848
5:55 PM	0	0	0	0	1	0	2	0	7	39	0	0	0	16	5	0	70	847

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	12	0	128	488	0	0	0	196	44	0	896
Heavy Trucks	0	0	0		4	0	0		0	16	0		0	8	4		32
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

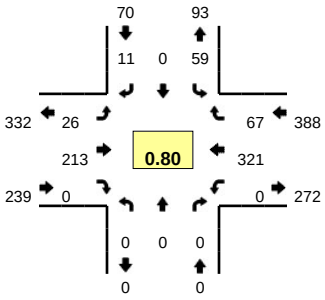
Type of peak hour being reported: Intersection Peak

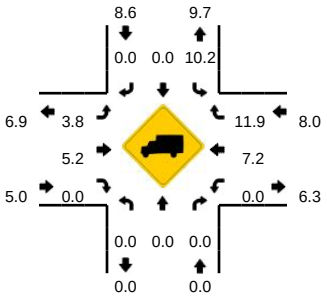
Method for determining peak hour: Total Entering Volume

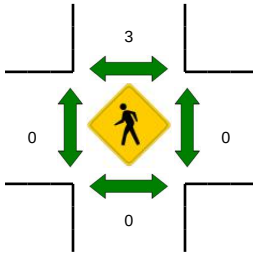
LOCATION: Aspen Ave -- E 4th St
CITY/STATE: La Center , WA

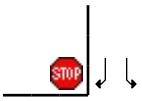
QC JOB #: 13416207
DATE: Thu, Jun 04 2015

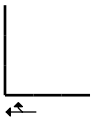
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

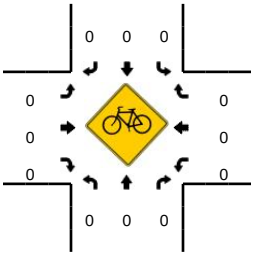


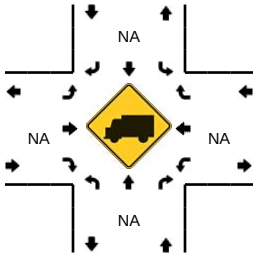


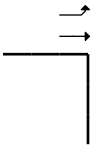


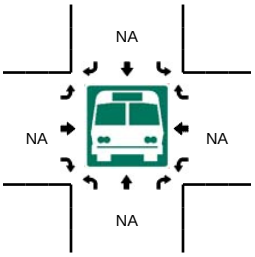












5-Min Count Period Beginning At	Aspen Ave (Northbound)				Aspen Ave (Southbound)				E 4th St (Eastbound)				E 4th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	1	0	0	7	0	0	0	23	2	0	34	
7:05 AM	0	0	0	0	4	0	1	0	2	15	0	0	0	37	0	0	59	
7:10 AM	0	0	0	0	3	0	1	0	1	15	0	0	0	30	2	0	52	
7:15 AM	0	0	0	0	1	0	0	0	1	4	0	0	0	23	1	0	30	
7:20 AM	0	0	0	0	3	0	0	0	5	9	0	0	0	30	3	0	50	
7:25 AM	0	0	0	0	0	0	0	0	0	12	0	0	0	25	2	0	39	
7:30 AM	0	0	0	0	2	0	1	0	2	4	0	0	0	35	5	0	49	
7:35 AM	0	0	0	0	1	0	2	0	1	15	0	0	0	17	1	0	37	
7:40 AM	0	0	0	0	3	0	2	0	3	15	0	0	0	25	1	0	49	
7:45 AM	0	0	0	0	5	0	0	0	0	21	0	0	0	20	3	0	49	
7:50 AM	0	0	0	0	7	0	2	0	5	27	0	0	0	22	8	0	71	
7:55 AM	0	0	0	0	7	0	1	0	2	29	0	0	0	19	3	0	61	580
8:00 AM	0	0	0	0	9	0	0	0	3	19	0	0	0	36	6	0	73	619
8:05 AM	0	0	0	0	9	0	0	0	3	23	0	0	0	28	6	0	69	629
8:10 AM	0	0	0	0	4	0	1	0	4	23	0	0	0	27	17	0	76	653
8:15 AM	0	0	0	0	6	0	0	0	0	21	0	0	0	35	10	0	72	695
8:20 AM	0	0	0	0	3	0	0	0	0	10	0	0	0	32	6	0	51	696
8:25 AM	0	0	0	0	3	0	2	0	3	6	0	0	0	25	1	0	40	697
8:30 AM	0	0	0	0	1	0	4	0	1	11	0	0	0	24	1	0	42	690
8:35 AM	0	0	0	0	0	0	2	0	1	11	0	0	0	16	1	0	31	684
8:40 AM	0	0	0	0	3	0	1	0	3	11	0	0	0	17	1	0	36	671
8:45 AM	0	0	0	0	0	0	0	0	2	6	0	0	0	12	2	0	22	644
8:50 AM	0	0	0	0	0	0	0	0	3	12	0	0	0	19	1	0	35	608
8:55 AM	0	0	0	0	2	0	1	0	2	11	0	0	0	25	1	0	42	589

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	88	0	4	0	40	260	0	0	0	364	116	0	872
Heavy Trucks	0	0	0		8	0	0		0	4	0		0	28	8		48
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

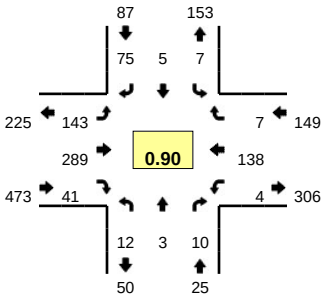
LOCATION: NE Highland Ave -- E 4th St

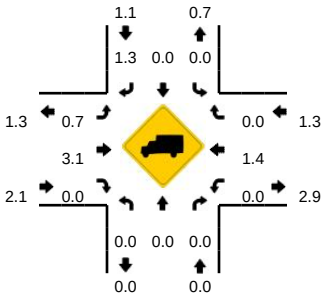
QC JOB #: 13416206

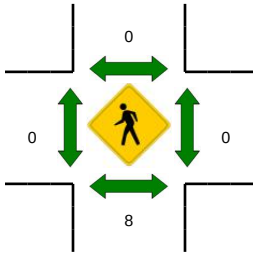
CITY/STATE: La Center, WA

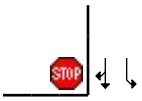
DATE: Thu, Jun 04 2015

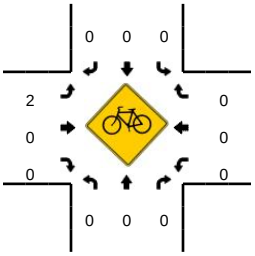
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

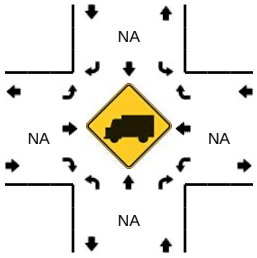


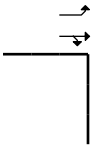


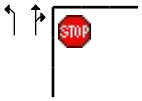


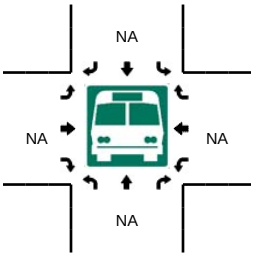












5-Min Count Period Beginning At	NE Highland Ave (Northbound)				NE Highland Ave (Southbound)				E 4th St (Eastbound)				E 4th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	1	7	0	8	16	1	0	0	10	1	0	45	
4:05 PM	0	0	0	0	1	0	1	0	7	24	0	0	0	15	0	0	48	
4:10 PM	0	1	0	0	2	0	5	0	10	19	1	0	2	12	1	0	53	
4:15 PM	0	0	1	0	1	0	8	0	7	10	2	0	0	8	1	0	38	
4:20 PM	1	0	0	0	1	1	3	0	7	10	1	0	0	6	1	0	31	
4:25 PM	2	0	0	0	0	1	11	0	5	27	1	0	0	10	1	0	58	
4:30 PM	2	1	1	0	0	0	6	0	9	12	0	0	0	13	1	0	45	
4:35 PM	0	0	0	0	0	0	10	0	8	24	0	0	0	10	1	0	53	
4:40 PM	1	1	0	0	0	0	5	0	5	20	1	0	0	9	1	0	43	
4:45 PM	0	0	0	0	0	0	6	0	8	19	0	0	1	8	0	1	43	
4:50 PM	1	1	1	0	1	1	4	0	12	23	5	0	1	23	1	0	74	
4:55 PM	1	1	0	0	1	0	5	0	12	27	1	0	1	9	0	0	58	589
5:00 PM	1	0	0	0	0	0	6	0	15	36	1	0	0	16	0	0	75	619
5:05 PM	1	0	0	0	0	0	7	0	7	24	0	0	1	14	1	0	55	626
5:10 PM	2	0	0	0	0	1	1	0	8	25	3	0	0	10	1	0	51	624
5:15 PM	1	0	0	0	1	1	3	0	11	12	6	0	0	16	0	0	51	637
5:20 PM	0	1	0	0	0	0	4	0	15	23	4	0	0	11	1	0	59	665
5:25 PM	1	0	2	0	0	0	12	0	8	13	3	0	0	12	1	0	52	659
5:30 PM	2	0	0	0	0	1	1	0	15	21	3	0	0	16	1	0	60	674
5:35 PM	0	0	0	0	0	2	5	0	12	32	5	0	0	11	2	0	69	690
5:40 PM	0	0	0	0	3	0	10	0	19	29	6	0	1	6	0	0	74	721
5:45 PM	0	0	1	0	2	0	9	0	14	19	4	0	1	5	0	0	55	733
5:50 PM	2	2	4	0	1	0	9	0	7	24	4	0	0	8	0	0	61	720
5:55 PM	2	0	3	0	0	0	8	0	12	31	2	0	1	13	0	0	72	734

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	0	0	0	12	12	64	0	184	328	56	0	4	132	12	0	812
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	4	0		16
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

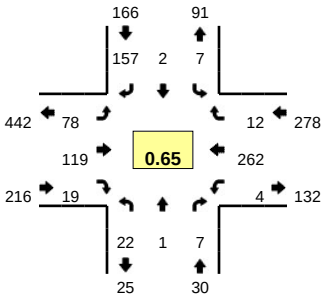
LOCATION: NE Highland Ave -- E 4th St

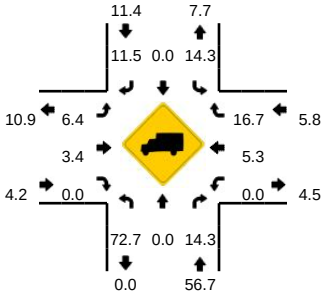
CITY/STATE: La Center, WA

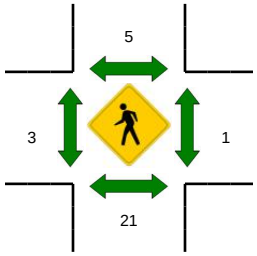
QC JOB #: 13416205

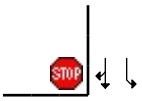
DATE: Thu, Jun 04 2015

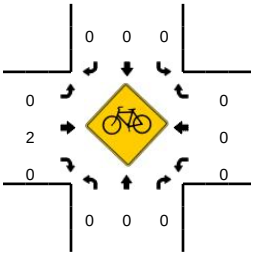
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

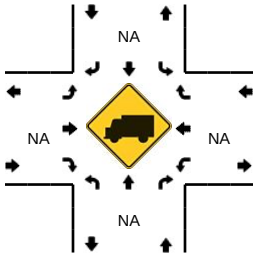


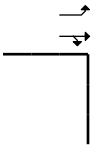


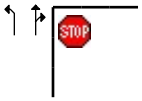


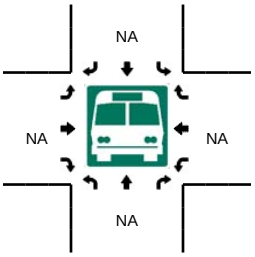












5-Min Count Period Beginning At	NE Highland Ave (Northbound)				NE Highland Ave (Southbound)				E 4th St (Eastbound)				E 4th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	6	0	3	3	0	0	0	10	0	0	22	
7:05 AM	0	0	0	0	0	0	10	0	4	11	0	0	0	18	2	0	45	
7:10 AM	1	0	0	0	0	0	14	0	5	12	0	0	1	18	0	0	51	
7:15 AM	0	0	0	0	0	1	7	0	4	4	0	0	0	26	1	0	43	
7:20 AM	0	0	0	0	0	0	16	0	8	2	0	0	0	17	0	0	43	
7:25 AM	1	0	0	0	0	0	10	0	4	3	0	0	0	8	1	0	27	
7:30 AM	0	0	0	0	0	0	11	0	3	5	0	0	0	24	0	0	43	
7:35 AM	0	0	0	0	0	0	5	0	1	6	0	0	0	19	1	0	32	
7:40 AM	0	0	0	0	0	0	7	0	5	6	0	0	0	17	0	0	35	
7:45 AM	0	0	0	0	0	0	11	0	8	4	0	0	0	13	1	0	37	
7:50 AM	0	0	0	0	1	0	6	0	11	8	0	1	0	20	3	0	50	
7:55 AM	1	0	0	0	1	1	23	0	11	14	1	0	0	23	1	0	76	504
8:00 AM	3	0	0	0	1	0	26	0	11	11	0	0	0	27	2	0	81	563
8:05 AM	8	0	0	0	3	1	19	0	12	17	3	0	2	36	2	0	103	621
8:10 AM	5	0	1	0	0	0	22	0	6	9	4	0	2	31	0	0	80	650
8:15 AM	0	0	2	0	0	0	11	1	5	13	6	0	0	19	1	0	58	665
8:20 AM	5	1	3	0	0	0	12	0	0	14	5	0	0	23	1	0	64	686
8:25 AM	0	0	1	0	0	0	4	0	4	12	0	0	0	10	0	0	31	690
8:30 AM	2	0	0	0	2	0	9	0	5	7	0	0	0	14	0	0	39	686
8:35 AM	0	0	0	0	0	0	6	0	2	6	0	0	0	5	0	0	19	673
8:40 AM	0	0	1	0	0	0	4	0	2	10	0	0	0	12	0	0	29	667
8:45 AM	0	0	0	0	1	0	8	0	3	5	0	0	0	11	1	0	29	659
8:50 AM	4	0	0	0	0	0	6	0	0	9	0	0	0	8	1	0	28	637
8:55 AM	2	0	0	0	1	0	3	0	2	7	0	0	0	9	1	0	25	586

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	0	4	0	16	4	268	0	116	148	28	0	16	376	16	0	1056
Heavy Trucks	52	0	0		0	0	40		4	4	0		0	12	0		112
Pedestrians		12				4				4				4			24
Bicycles	0	0	0		0	0	0		0	2	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 24th Ave -- NE 339th St

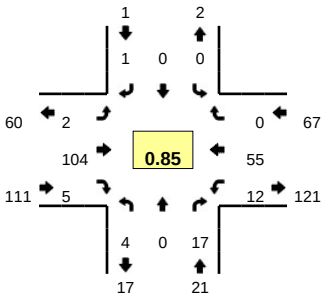
CITY/STATE: La Center, WA

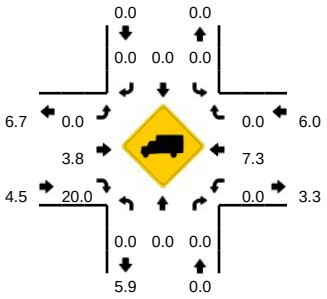
QC JOB #: 13416204

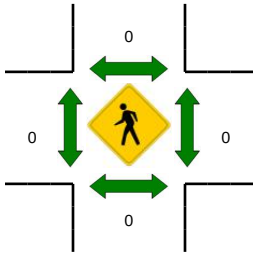
DATE: Thu, Jun 04 2015

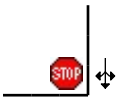
Peak-Hour: 4:50 PM -- 5:50 PM

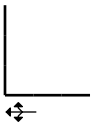
Peak 15-Min: 5:15 PM -- 5:30 PM

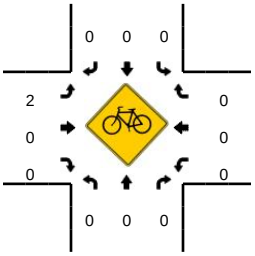


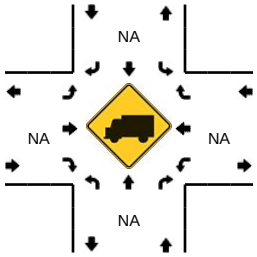


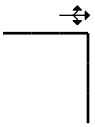


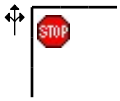


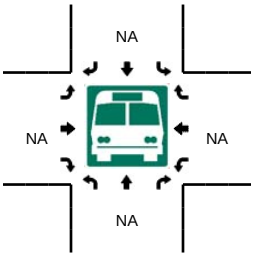












5-Min Count Period Beginning At	NE 24th Ave (Northbound)				NE 24th Ave (Southbound)				NE 339th St (Eastbound)				NE 339th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	1	0	0	0	0	0	0	7	1	0	2	4	0	0	16	
4:05 PM	0	0	2	0	0	0	0	0	0	11	0	0	0	2	0	0	15	
4:10 PM	0	0	5	0	0	0	0	0	0	7	0	0	1	3	0	0	16	
4:15 PM	1	0	3	0	0	0	1	0	0	5	0	0	1	3	0	0	14	
4:20 PM	0	0	1	0	0	0	0	0	0	9	1	0	1	6	0	0	18	
4:25 PM	0	0	1	0	0	0	0	0	0	1	0	0	1	7	0	0	10	
4:30 PM	0	0	3	0	0	0	0	0	0	6	0	0	0	3	0	0	12	
4:35 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	7	0	0	13	
4:40 PM	1	0	2	0	0	0	0	0	0	6	0	0	0	7	0	0	16	
4:45 PM	0	0	1	0	0	0	0	0	0	3	0	0	0	3	0	0	7	
4:50 PM	1	0	4	0	0	0	0	0	1	8	0	0	2	3	0	0	19	
4:55 PM	0	0	0	0	0	0	1	0	1	9	1	0	0	3	0	0	15	171
5:00 PM	0	0	2	0	0	0	0	0	0	11	0	0	1	3	0	0	17	172
5:05 PM	1	0	1	0	0	0	0	0	0	7	0	0	0	3	0	0	12	169
5:10 PM	0	0	1	0	0	0	0	0	0	5	1	0	1	5	0	0	13	166
5:15 PM	0	0	2	0	0	0	0	0	0	8	1	0	0	1	0	0	12	164
5:20 PM	1	0	0	0	0	0	0	0	0	8	0	0	2	7	0	0	18	164
5:25 PM	1	0	3	0	0	0	0	0	0	10	0	0	3	12	0	0	29	183
5:30 PM	0	0	1	0	0	0	0	0	0	6	0	0	1	3	0	0	11	182
5:35 PM	0	0	2	0	0	0	0	0	0	9	0	0	2	4	0	0	17	186
5:40 PM	0	0	1	0	0	0	0	0	0	13	0	0	0	7	0	0	21	191
5:45 PM	0	0	0	0	0	0	0	0	0	10	2	0	0	4	0	0	16	200
5:50 PM	2	0	2	0	0	0	0	0	0	7	0	0	1	0	0	0	12	193
5:55 PM	0	0	1	0	0	0	0	0	0	10	2	0	0	2	0	0	15	193

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	0	20	0	0	0	0	0	0	104	4	0	20	80	0	0	236
Heavy Trucks	0	0	0		0	0	0		0	12	4		0	16	0		32
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 24th Ave -- NE 339th St

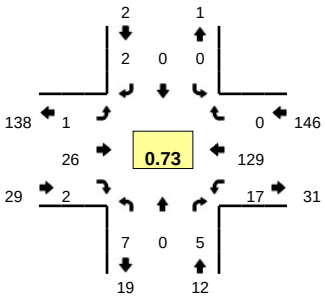
CITY/STATE: La Center, WA

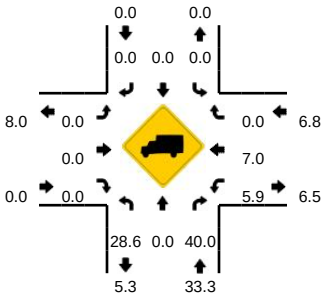
QC JOB #: 13416203

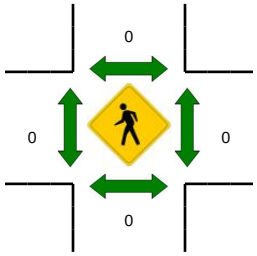
DATE: Thu, Jun 04 2015

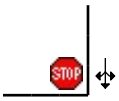
Peak-Hour: 7:20 AM -- 8:20 AM

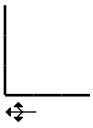
Peak 15-Min: 7:50 AM -- 8:05 AM

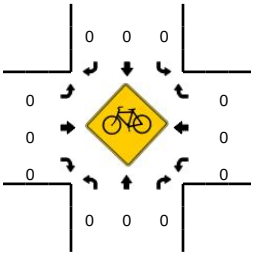


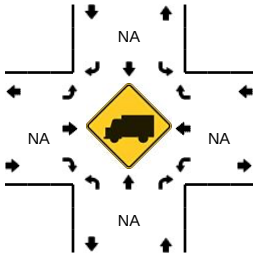


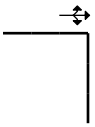


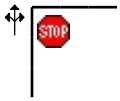


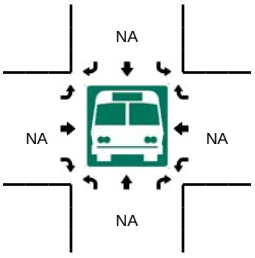












5-Min Count Period Beginning At	NE 24th Ave (Northbound)				NE 24th Ave (Southbound)				NE 339th St (Eastbound)				NE 339th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	0	7	
7:05 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	11	0	0	14	
7:10 AM	0	0	1	0	0	0	0	0	0	1	0	0	1	8	0	0	11	
7:15 AM	1	0	0	0	0	0	0	0	0	2	0	0	1	9	0	0	13	
7:20 AM	0	0	0	0	0	0	0	0	0	2	0	0	1	12	0	0	15	
7:25 AM	1	0	1	0	0	0	0	0	0	2	0	0	0	10	0	0	14	
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	8	0	0	10	
7:35 AM	0	0	1	0	0	0	0	0	0	0	0	0	3	2	0	0	6	
7:40 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	9	0	0	11	
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	5	9	0	0	15	
7:50 AM	1	0	0	0	0	0	0	0	0	4	0	0	2	13	0	0	20	
7:55 AM	2	0	1	0	0	0	0	0	0	2	1	0	2	19	0	0	27	163
8:00 AM	2	0	1	0	0	0	0	0	0	2	0	0	2	11	0	0	18	174
8:05 AM	0	0	0	0	0	0	1	0	0	4	0	0	0	13	0	0	18	178
8:10 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	10	0	0	14	181
8:15 AM	0	0	0	0	0	0	1	0	1	5	0	0	1	13	0	0	21	189
8:20 AM	0	0	2	0	0	0	1	0	0	2	1	0	1	7	0	0	14	188
8:25 AM	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	6	180
8:30 AM	1	0	0	0	0	0	1	0	0	4	0	0	2	6	0	0	14	184
8:35 AM	0	0	0	0	0	0	0	0	0	2	0	0	1	3	0	0	6	184
8:40 AM	0	0	1	0	0	0	0	0	1	2	1	0	0	6	0	0	11	184
8:45 AM	0	0	1	0	0	0	0	0	0	1	1	0	0	5	0	0	8	177
8:50 AM	0	0	1	0	0	0	1	0	0	1	0	0	2	3	0	0	8	165
8:55 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	4	142

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	0	8	0	0	0	0	0	0	32	4	0	24	172	0	0	260
Heavy Trucks	8	0	0		0	0	0		0	0	0		0	20	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

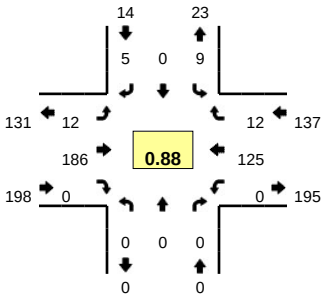
Method for determining peak hour: Total Entering Volume

LOCATION: NE 24th Ave -- NE Lockwood Creek Rd

QC JOB #: 13416202

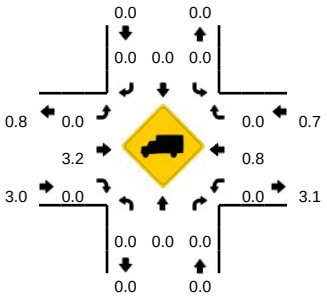
CITY/STATE: La Center, WA

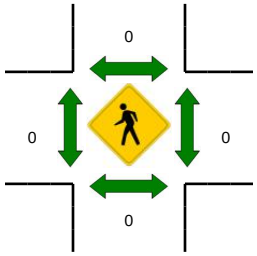
DATE: Thu, Jun 04 2015

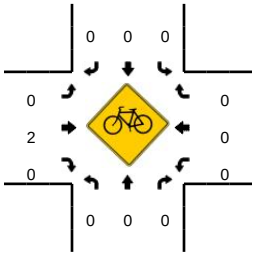


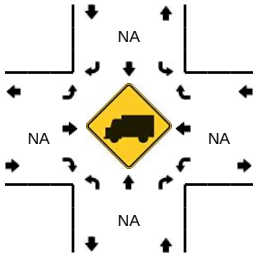
Peak-Hour: 4:40 PM -- 5:40 PM

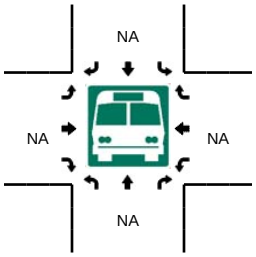
Peak 15-Min: 4:40 PM -- 4:55 PM











5-Min Count Period Beginning At	NE 24th Ave (Northbound)				NE 24th Ave (Southbound)				NE Lockwood Creek Rd (Eastbound)				NE Lockwood Creek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	2	0	2	16	0	0	0	5	1	0	28	
4:05 PM	0	0	0	0	0	0	1	0	1	11	0	0	0	11	3	0	27	
4:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	2	0	27	
4:15 PM	0	0	0	0	0	0	1	0	3	12	0	0	0	5	1	0	22	
4:20 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	3	0	0	12	
4:25 PM	0	0	0	0	0	0	1	0	1	19	0	0	0	11	1	0	33	
4:30 PM	0	0	0	0	0	0	0	0	3	9	0	0	0	7	0	0	19	
4:35 PM	0	0	0	0	0	0	0	0	1	12	0	0	0	11	0	0	24	
4:40 PM	0	0	0	0	0	0	0	0	1	18	0	0	0	9	1	0	29	
4:45 PM	0	0	0	0	0	0	0	0	1	12	0	0	0	18	1	0	32	
4:50 PM	0	0	0	0	0	0	2	0	3	14	0	0	0	18	1	0	38	
4:55 PM	0	0	0	0	1	0	0	0	1	13	0	0	0	8	0	0	23	314
5:00 PM	0	0	0	0	1	0	0	0	0	25	0	0	0	6	1	0	33	319
5:05 PM	0	0	0	0	0	0	0	0	1	17	0	0	0	7	1	0	26	318
5:10 PM	0	0	0	0	1	0	1	0	2	13	0	0	0	9	1	0	27	318
5:15 PM	0	0	0	0	0	0	0	0	0	13	0	1	0	11	0	0	25	321
5:20 PM	0	0	0	0	2	0	0	0	0	16	0	0	0	10	2	0	30	339
5:25 PM	0	0	0	0	2	0	0	0	1	10	0	0	0	9	0	0	22	328
5:30 PM	0	0	0	0	1	0	1	0	1	13	0	0	0	12	1	0	29	338
5:35 PM	0	0	0	0	1	0	1	0	0	22	0	0	0	8	3	0	35	349
5:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	8	0	0	24	344
5:45 PM	0	0	0	0	1	0	0	0	0	18	0	0	0	5	0	0	24	336
5:50 PM	0	0	0	0	3	0	0	0	4	11	0	0	0	10	2	0	30	328
5:55 PM	0	0	0	0	1	0	0	0	0	15	0	0	0	7	1	0	24	329

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	8	0	20	176	0	0	0	180	12	0	396
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/11/2015 12:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Variable: Dwelling Units
Variable Value: 119

AM PEAK HOUR

Trip Rate: 0.75

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	**22**	**67**	**89**

PM PEAK HOUR

Trip Rate: 1.00

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	**75**	**44**	**119**

WEEKDAY

Trip Rate: 9.52

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**566**	**566**	**1,132**

SATURDAY

Trip Rate: 9.91

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	**590**	**590**	**1,180**

Source: TRIP GENERATION, Ninth Edition

LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

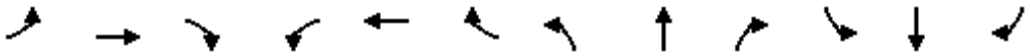
Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

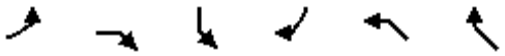
LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	27	5	18	134	0	15	0	5	0	0	2
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	1	39	7	26	191	0	21	0	7	0	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	191			46			291	288	42	295	291	191
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	191			46			291	288	42	295	291	191
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			97	100	99	100	100	100
cM capacity (veh/h)	1382			1562			650	611	1029	644	608	850

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	47	217	29	3
Volume Left	1	26	21	0
Volume Right	7	0	7	3
cSH	1382	1562	716	850
Volume to Capacity	0.00	0.02	0.04	0.00
Queue Length 95th (ft)	0	1	3	0
Control Delay (s)	0.2	1.0	10.2	9.2
Lane LOS	A	A	B	A
Approach Delay (s)	0.2	1.0	10.2	9.2
Approach LOS			B	A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Volume (veh/h)	9	73	13	30	216	10
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	13	107	19	44	318	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	332		459	325		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	332		459	325		
tC, single (s)	4.1		6.4	6.2		
tC, 2 stage (s)						
tF (s)	2.2		3.5	3.3		
p0 queue free %	99		97	94		
cM capacity (veh/h)	1227		554	716		

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	121	63	332
Volume Left	13	19	0
Volume Right	0	44	15
cSH	1227	658	1700
Volume to Capacity	0.01	0.10	0.20
Queue Length 95th (ft)	1	8	0
Control Delay (s)	1.0	11.1	0.0
Lane LOS	A	B	
Approach Delay (s)	1.0	11.1	0.0
Approach LOS		B	

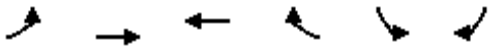
Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	89	134	20	6	303	12	23	2	7	6	4	189
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	137	206	31	9	466	18	35	3	11	9	6	291
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	485			237			1274	998	222	986	1005	475
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	485			237			1274	998	222	986	1005	475
tC, single (s)	4.1			4.1			*6.0	*6.0	*6.0	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			*2.5	*2.5	*2.5	3.5	4.0	3.3
p0 queue free %	87			99			69	99	99	95	97	50
cM capacity (veh/h)	1078			1330			114	328	1074	198	207	583

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	137	237	9	485	35	14	9	297
Volume Left	137	0	9	0	35	0	9	0
Volume Right	0	31	0	18	0	11	0	291
cSH	1078	1700	1330	1700	114	713	198	562
Volume to Capacity	0.13	0.14	0.01	0.29	0.31	0.02	0.05	0.53
Queue Length 95th (ft)	11	0	1	0	30	1	4	77
Control Delay (s)	8.8	0.0	7.7	0.0	50.0	10.1	24.1	18.3
Lane LOS	A		A		F	B	C	C
Approach Delay (s)	3.2		0.1		38.8		18.5	
Approach LOS					E		C	

Intersection Summary				
Average Delay	7.2			
Intersection Capacity Utilization	50.2%	ICU Level of Service		A
Analysis Period (min)	15			

* User Entered Value



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	27	241	390	70	61	11
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	34	301	488	88	76	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	575				900	531
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	575				900	531
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				74	97
cM capacity (veh/h)	998				299	548

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	34	301	575	76	14
Volume Left	34	0	0	76	0
Volume Right	0	0	88	0	14
cSH	998	1700	1700	299	548
Volume to Capacity	0.03	0.18	0.34	0.26	0.03
Queue Length 95th (ft)	3	0	0	25	2
Control Delay (s)	8.7	0.0	0.0	21.1	11.7
Lane LOS	A			C	B
Approach Delay (s)	0.9		0.0	19.7	
Approach LOS				C	

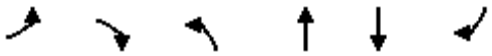
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	6	377	1	26	5	62	206	68	278	3
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
Hourly flow rate (vph)	0	0	7	410	1	28	5	67	224	74	302	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	559	754	304	535	532	67	305			291		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	559	754	304	535	532	67	305			291		
tC, single (s)	7.1	6.5	6.2	*6.0	*6.0	*6.0	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	*2.5	*2.5	*2.5	2.2			2.2		
p0 queue free %	100	100	99	39	100	98	100			94		
cM capacity (veh/h)	409	317	736	667	666	1317	1238			1270		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	7	410	29	73	224	74	305
Volume Left	0	410	0	5	0	74	0
Volume Right	7	0	28	0	224	0	3
cSH	736	667	1271	1238	1700	1270	1700
Volume to Capacity	0.01	0.61	0.02	0.00	0.13	0.06	0.18
Queue Length 95th (ft)	1	105	2	0	0	5	0
Control Delay (s)	9.9	18.6	7.9	0.6	0.0	8.0	0.0
Lane LOS	A	C	A	A		A	
Approach Delay (s)	9.9	17.9		0.2		1.6	
Approach LOS	A	C					

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	49.0%	ICU Level of Service	A	
Analysis Period (min)	15			

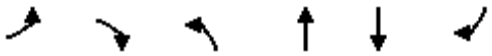
* User Entered Value



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	8	0	0	16	22	3
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	11	0	0	23	31	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	56	34	36			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56	34	36			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	951	1040	1575			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	23	36
Volume Left	11	0	0
Volume Right	0	0	4
cSH	951	1575	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	18	7	16	22	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	26	10	23	31	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	74	31	31			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	74	31	31			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	923	1043	1581			

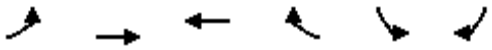
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	26	33	31
Volume Left	0	10	0
Volume Right	26	0	0
cSH	1043	1581	1700
Volume to Capacity	0.02	0.01	0.02
Queue Length 95th (ft)	2	0	0
Control Delay (s)	8.5	2.3	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	2.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	17.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	33	7	0	151	20	0
Peak Hour Factor	0.25	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	8	0	164	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			140		300	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		300	136
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1444		692	913

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	140	164	22
Volume Left	0	0	22
Volume Right	8	0	0
cSH	1700	1444	692
Volume to Capacity	0.08	0.00	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

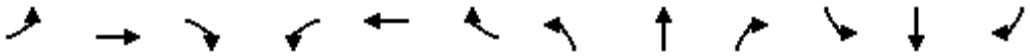
Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		17.9%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	7	82	246	0	0	20
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	10	122	367	0	0	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	367				510	367
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	367				510	367
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	96
cM capacity (veh/h)	1191				518	678

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	133	367	30
Volume Left	10	0	0
Volume Right	0	0	30
cSH	1191	1700	678
Volume to Capacity	0.01	0.22	0.04
Queue Length 95th (ft)	1	0	3
Control Delay (s)	0.7	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.7	0.0	10.6
Approach LOS			B

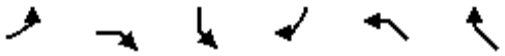
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	135	17	14	57	0	9	0	18	0	0	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	159	20	16	67	0	11	0	21	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	67			179			277	276	169	297	286	67
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	67			179			277	276	169	297	286	67
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	100	98	100	100	100
cM capacity (veh/h)	1534			1397			667	623	875	632	615	996

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	182	84	32	1
Volume Left	4	16	11	0
Volume Right	20	0	21	1
cSH	1534	1397	793	996
Volume to Capacity	0.00	0.01	0.04	0.00
Queue Length 95th (ft)	0	1	3	0
Control Delay (s)	0.2	1.6	9.7	8.6
Lane LOS	A	A	A	A
Approach Delay (s)	0.2	1.6	9.7	8.6
Approach LOS			A	A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Free		Stop		Free	
Grade	0%		0%		0%	
Volume (veh/h)	21	194	14	13	130	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	24	220	16	15	148	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174		429	161		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174		429	161		
tC, single (s)	4.1		6.4	6.2		
tC, 2 stage (s)						
tF (s)	2.2		3.5	3.3		
p0 queue free %	98		97	98		
cM capacity (veh/h)	1403		573	884		

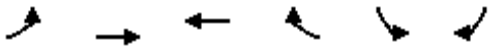
Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	244	31	174
Volume Left	24	16	0
Volume Right	0	15	26
cSH	1403	690	1700
Volume to Capacity	0.02	0.04	0.10
Queue Length 95th (ft)	1	3	0
Control Delay (s)	0.9	10.5	0.0
Lane LOS	A	B	
Approach Delay (s)	0.9	10.5	0.0
Approach LOS		B	

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	181	333	43	5	164	7	14	5	10	7	6	95
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	201	370	48	6	182	8	16	6	11	8	7	106
Pedestrians								8				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	190			426			1106	1005	402	983	1025	186
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	190			426			1106	1005	402	983	1025	186
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			99			89	97	98	96	97	88
cM capacity (veh/h)	1366			1110			140	203	644	193	198	856

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	201	418	6	190	16	17	8	112
Volume Left	201	0	6	0	16	0	8	0
Volume Right	0	48	0	8	0	11	0	106
cSH	1366	1700	1110	1700	140	374	193	715
Volume to Capacity	0.15	0.25	0.01	0.11	0.11	0.04	0.04	0.16
Queue Length 95th (ft)	13	0	0	0	9	3	3	14
Control Delay (s)	8.1	0.0	8.3	0.0	33.9	15.1	24.5	11.0
Lane LOS	A		A		D	C	C	B
Approach Delay (s)	2.6		0.2		24.1		11.8	
Approach LOS					C		B	

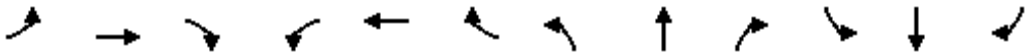
Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	41.0%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	133	524	229	43	31	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	140	552	241	45	33	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	286				1095	264
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286				1095	264
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				84	97
cM capacity (veh/h)	1276				210	775

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	140	552	286	33	23
Volume Left	140	0	0	33	0
Volume Right	0	0	45	0	23
cSH	1276	1700	1700	210	775
Volume to Capacity	0.11	0.32	0.17	0.16	0.03
Queue Length 95th (ft)	9	0	0	13	2
Control Delay (s)	8.2	0.0	0.0	25.2	9.8
Lane LOS	A			D	A
Approach Delay (s)	1.7		0.0	18.8	
Approach LOS				C	

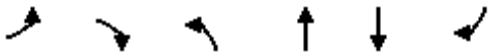
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	1	234	0	39	1	194	603	44	181	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	1	241	0	40	1	200	622	45	187	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	521	1102	188	480	481	200	189			822		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	521	1102	188	480	481	200	189			822		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	49	100	95	100			94		
cM capacity (veh/h)	425	200	854	471	454	836	1368			808		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	1	241	40	201	622	45	189
Volume Left	0	241	0	1	0	45	0
Volume Right	1	0	40	0	622	0	2
cSH	854	471	836	1368	1700	808	1700
Volume to Capacity	0.00	0.51	0.05	0.00	0.37	0.06	0.11
Queue Length 95th (ft)	0	72	4	0	0	4	0
Control Delay (s)	9.2	20.4	9.5	0.0	0.0	9.7	0.0
Lane LOS	A	C	A	A		A	
Approach Delay (s)	9.2	18.9		0.0		1.9	
Approach LOS	A	C					

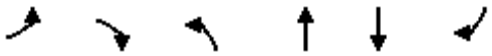
Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	53.7%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	5	0	0	23	16	10
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	7	0	0	33	23	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	63	30	37			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63	30	37			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	943	1044	1573			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	7	33	37
Volume Left	7	0	0
Volume Right	0	0	14
cSH	943	1573	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	13	21	23	16	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	19	30	33	23	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	116	23	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	116	23	23			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	98			
cM capacity (veh/h)	864	1054	1592			

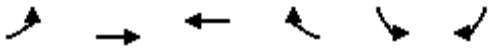
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	19	63	23
Volume Left	0	30	0
Volume Right	19	0	0
cSH	1054	1592	1700
Volume to Capacity	0.02	0.02	0.01
Queue Length 95th (ft)	1	1	0
Control Delay (s)	8.5	3.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	3.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	156	24	0	67	13	0
Peak Hour Factor	0.25	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	624	26	0	73	14	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			650		710	637
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			650		710	637
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			936		400	477

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	650	73	14
Volume Left	0	0	14
Volume Right	26	0	0
cSH	1700	936	400
Volume to Capacity	0.38	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	14.3
Lane LOS			B
Approach Delay (s)	0.0	0.0	14.3
Approach LOS			B

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		19.7%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	24	225	149	0	0	13
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Hourly flow rate (vph)	36	336	222	0	0	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	222				630	222
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222				630	222
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				100	98
cM capacity (veh/h)	1347				434	817

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	372	222	19
Volume Left	36	0	0
Volume Right	0	0	19
cSH	1347	1700	817
Volume to Capacity	0.03	0.13	0.02
Queue Length 95th (ft)	2	0	2
Control Delay (s)	1.0	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	1.0	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: Site Access at NE 339th Street
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - AM Peak Hour

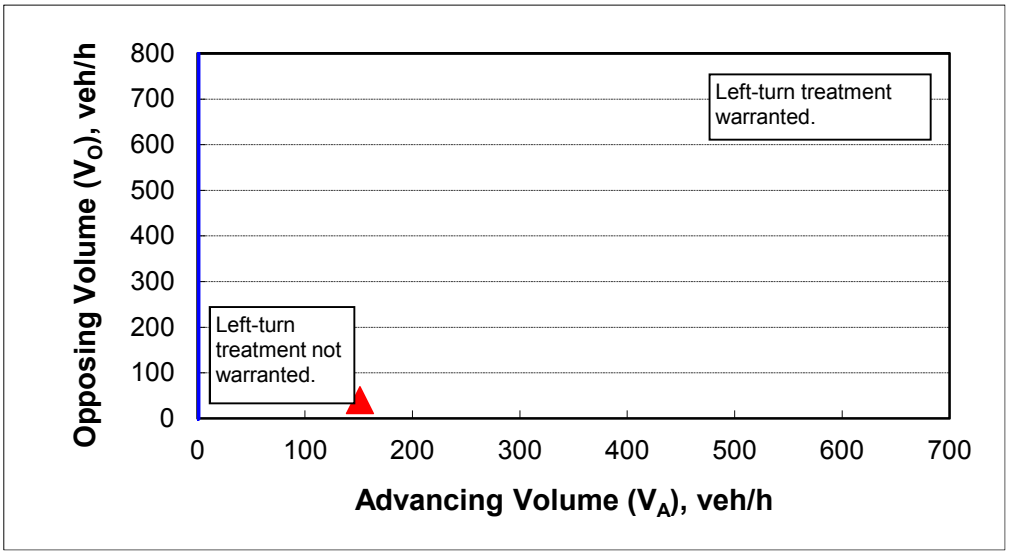
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	151
Opposing volume (V_O), veh/h:	40

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	#DIV/0!
Guidance for determining the need for a major-road left-turn bay:	
#DIV/0!	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: Site Access at NE 339th Street
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - PM Peak Hour

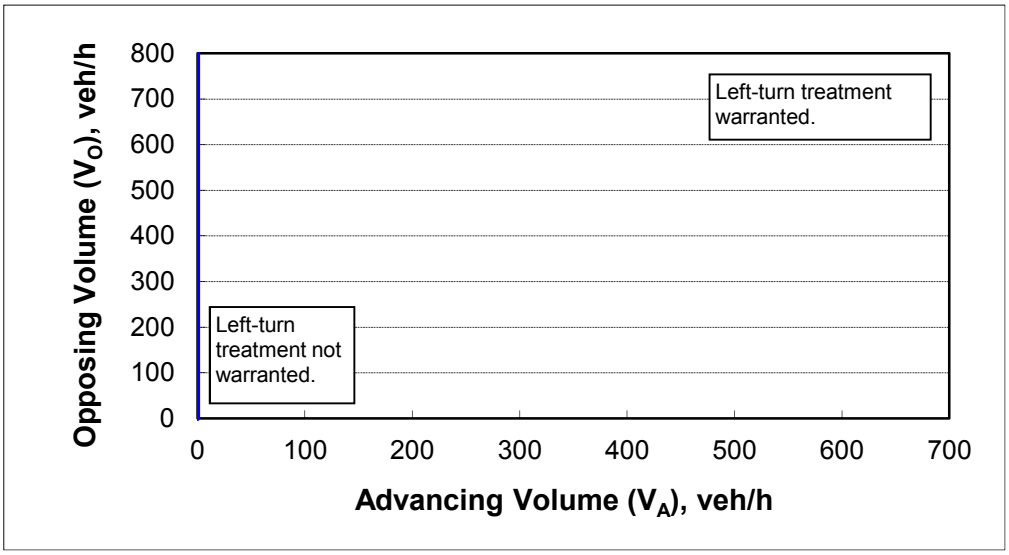
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	67
Opposing volume (V_O), veh/h:	147

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	#DIV/0!
Guidance for determining the need for a major-road left-turn bay:	
#DIV/0!	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: North Site Access at NE 24th Avenue
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - AM Peak Hour

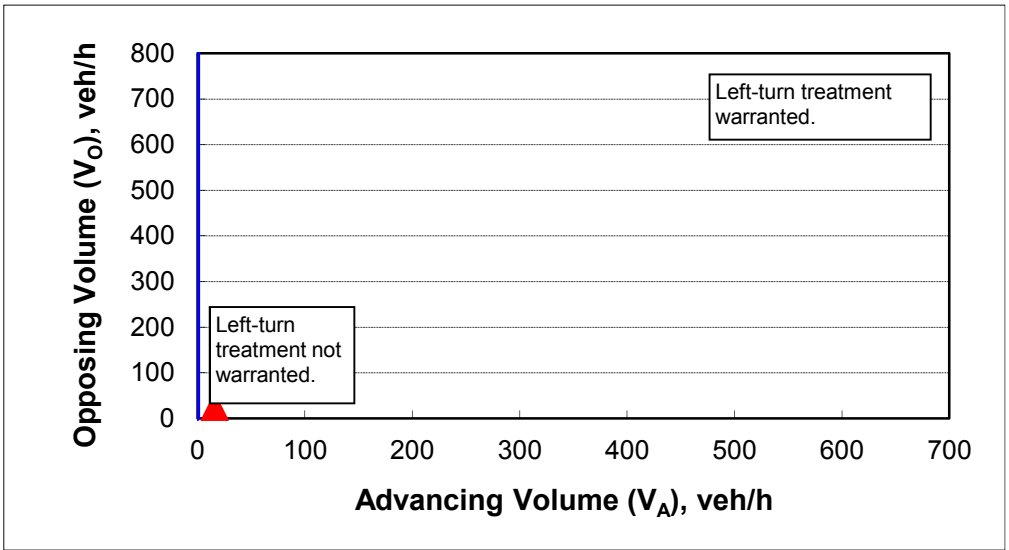
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	16
Opposing volume (V_O), veh/h:	25

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	#DIV/0!
Guidance for determining the need for a major-road left-turn bay:	
#DIV/0!	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: North Site Access at NE 24th Avenue
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - PM Peak Hour

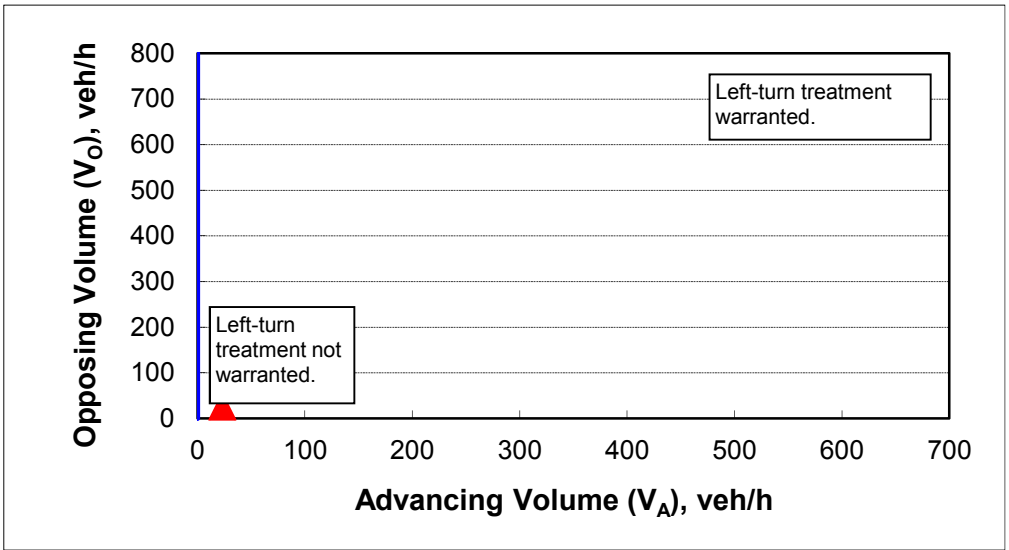
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	23
Opposing volume (V_O), veh/h:	26

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	#DIV/0!
Guidance for determining the need for a major-road left-turn bay:	
#DIV/0!	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: South Site Access at NE 24th Avenue
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - AM Peak Hour

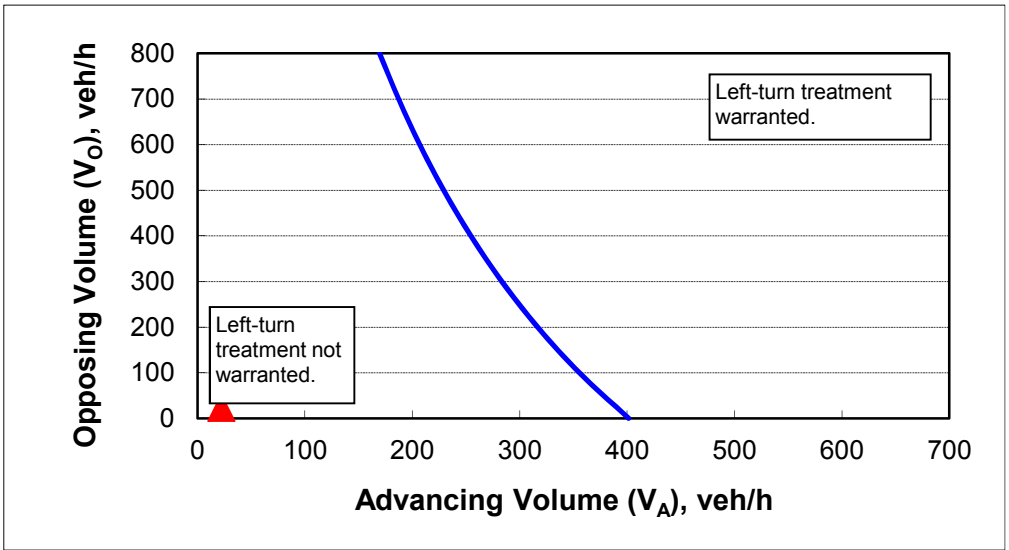
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	30%
Advancing volume (V_A), veh/h:	22
Opposing volume (V_O), veh/h:	23

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	390
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: South Site Access at NE 24th Avenue
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - PM Peak Hour

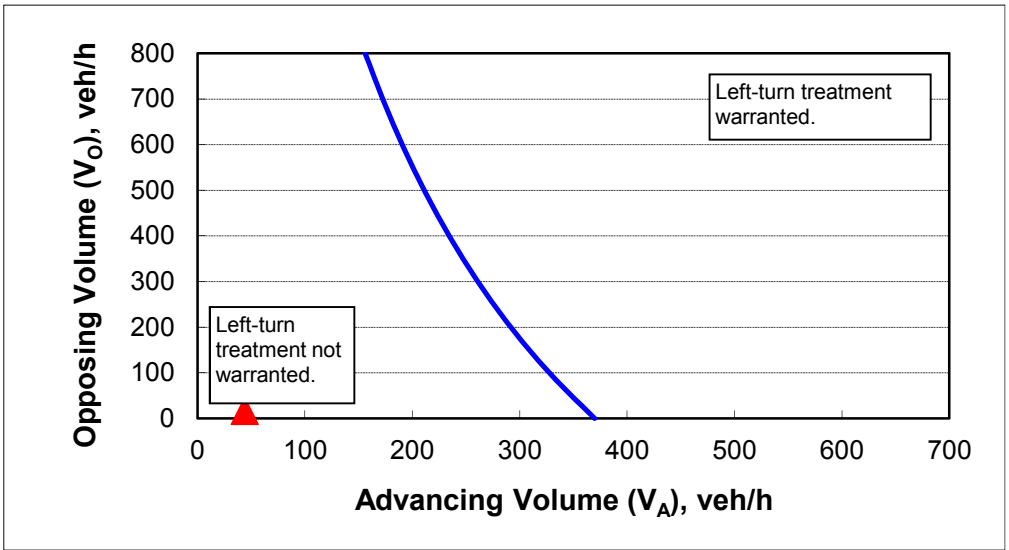
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	48%
Advancing volume (V_A), veh/h:	44
Opposing volume (V_O), veh/h:	16

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	362
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: Site Access at NE Lockwood Creek Road
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - AM Peak Hour

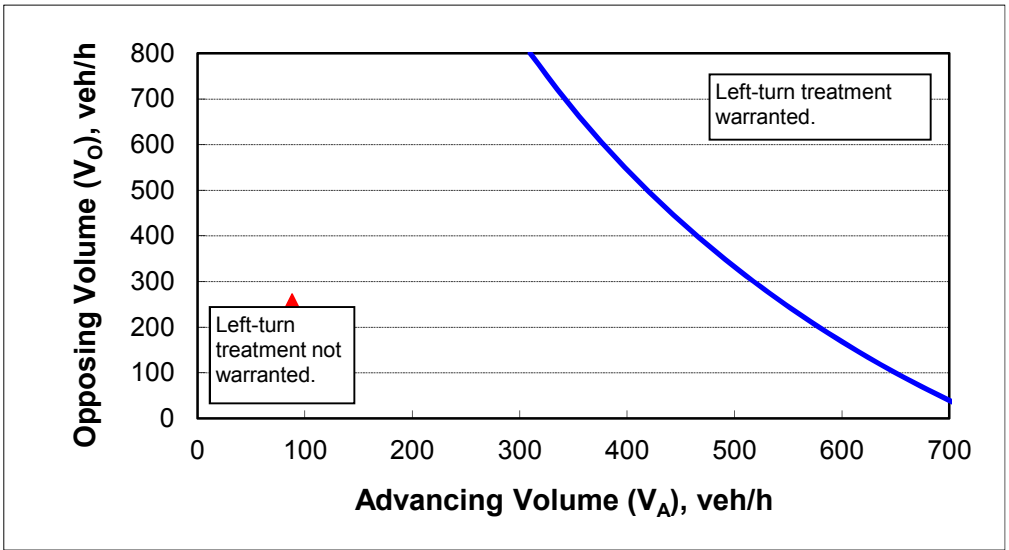
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	7%
Advancing volume (V_A), veh/h:	88
Opposing volume (V_O), veh/h:	243

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	551
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 15089 - Sunrise Terrace
Intersection: Site Access at NE Lockwood Creek Road
Date: 7/7/2015
Scenario: 2017 Background + Site Conditions - PM Peak Hour

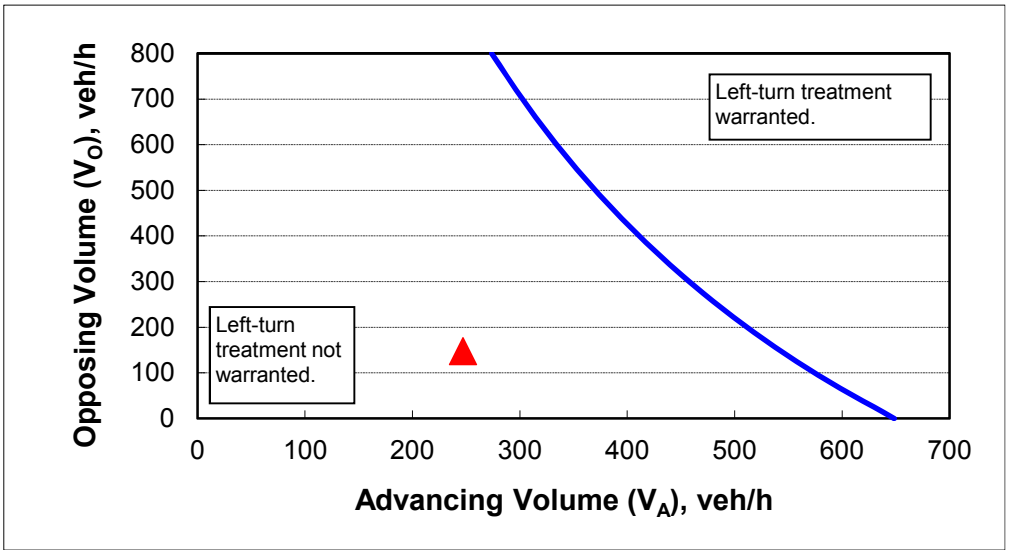
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	35
Percent of left-turns in advancing volume (V_A), %:	9%
Advancing volume (V_A), veh/h:	247
Opposing volume (V_O), veh/h:	147

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	543
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NW Pacific Highway	Minor Street:	W 4th Street
Number of Lanes:	2	Number of Lanes:	2
PM Peak Hour Volumes:	1021	PM Peak Hour Volumes:	271

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	10,210	10,600	
Minor Street*	2,710	3,550	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	10,210	15,900	
Minor Street*	2,710	1,750	**No**
Combination Warrant			
Major Street	10,210	12,720	
Minor Street*	2,710	2,840	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	E 4th Street	Minor Street:	Aspen Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	925	PM Peak Hour Volumes:	53

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	9,250	8,850	
Minor Street*	530	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	9,250	13,300	
Minor Street*	530	1,350	**No**
Combination Warrant			
Major Street	9,250	10,640	
Minor Street*	530	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	E 4th Street	Minor Street:	NE Highland Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	727	PM Peak Hour Volumes:	108

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	7,270	8,850	
Minor Street*	1,080	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	7,270	13,300	
Minor Street*	1,080	1,350	**No**
Combination Warrant			
Major Street	7,270	10,640	
Minor Street*	1,080	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NE Lockwood Creek Road	Minor Street:	NE 24th Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	368	PM Peak Hour Volumes:	27

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	3,680	8,850	
Minor Street*	270	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	3,680	13,300	
Minor Street*	270	1,350	**No**
Combination Warrant			
Major Street	3,680	10,640	
Minor Street*	270	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NE 339th Street	Minor Street:	NE 24th Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	226	PM Peak Hour Volumes:	27

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	2,260	8,850	
Minor Street*	270	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	2,260	13,300	
Minor Street*	270	1,350	**No**
Combination Warrant			
Major Street	2,260	10,640	
Minor Street*	270	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NE 24th Avenue	Minor Street:	North Access
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	49	PM Peak Hour Volumes:	5

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	490	8,850	
Minor Street*	50	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	490	13,300	
Minor Street*	50	1,350	**No**
Combination Warrant			
Major Street	490	10,640	
Minor Street*	50	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NE 24th Avenue	Minor Street:	North Access
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	60	PM Peak Hour Volumes:	13

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	600	8,850	
Minor Street*	130	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	600	13,300	
Minor Street*	130	1,350	**No**
Combination Warrant			
Major Street	600	10,640	
Minor Street*	130	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NE Lockwood Creek Road	Minor Street:	Access
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	394	PM Peak Hour Volumes:	13

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	3,940	8,850	
Minor Street*	130	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	3,940	13,300	
Minor Street*	130	1,350	**No**
Combination Warrant			
Major Street	3,940	10,640	
Minor Street*	130	2,120	**No**

* Right-turning traffic volumes reduced by 50%

Traffic Signal Warrant Analysis

Project: 15089 - Sunrise Terrace
Date: 6/26/2015
Scenario: Background plus Site Conditions

Major Street:	NE 339th Street	Minor Street:	Access
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	245	PM Peak Hour Volumes:	13

Warrant Used:

X 100 percent of standard warrants used

_____ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	2,450	8,850	
Minor Street*	130	2,650	**No**
Condition B: Interruption of Continuous Traffic			
Major Street	2,450	13,300	
Minor Street*	130	1,350	**No**
Combination Warrant			
Major Street	2,450	10,640	
Minor Street*	130	2,120	**No**

* Right-turning traffic volumes reduced by 50%

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

1/1/2010 - 12/31/2014

UNDER 23 UNITED STATES CODE – SECTION 409, THIS DATA CANNOT BE USED IN DISCOVERY OR AS EVIDENCE AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE WSDOT, OR ANY JURISDICTIONS INVOLVED IN THE DATA

JURISDICTION	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILE POST	A / B	REPORT NUMBER
City Street	ASPEN AVE	900	W 10TH ST							2427340
City Street	ASPEN AVE	300	W 4TH ST							E379622
City Street	E 4TH ST	100		109	F	E	ASPEN AVE			2427349
City Street	E 4TH ST	1000		30	F	W	NE LOCKWOOD CREEK RD			2737465
City Street	E 4TH ST	900	NE HIGHLAND AVE							E354317
City Street	NE HIGHLAND AVE	400	E 4TH ST							2427331
City Street	NE HIGHLAND AVE	400	E 4TH ST							E237901
City Street	NE LOCKWOOD CREEK RD	2300		81	F	NW	NE 24TH AVE			2427339
City Street	NE LOCKWOOD CREEK RD	2300		300	F	NW	NE 24TH AVE			E331937
City Street	NW PACIFIC HWY	400	W 4TH ST							E367326
City Street	NW PACIFIC HWY	400	W 4TH ST							E358151
City Street	NW PACIFIC HWY	400	W 4TH ST							2427345
City Street	W 4TH ST	200	ASPEN AVE							E390572
City Street	W 4TH ST	200	NW PACIFIC HWY							2427295
City Street	W 4TH ST	200	NW PACIFIC HWY							E230384

DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# PEDAL	VEHICLE 1 TYPE	VEHICLE 2 TYPE
9/11/2010	12:40	No Injury	0	0	2	0	0	Passenger Car	Passenger Car
11/29/2014	22:50	Serious Injury	1	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	
8/18/2011	18:19	No Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car
2/3/2012	10:48	No Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car
9/2/2014	8:05	No Injury	0	0	2	0	0	Passenger Car	Passenger Car
3/24/2010	14:50	No Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car
4/14/2013	11:30	No Injury	0	0	1	0	0	Passenger Car	
9/4/2010	21:26	No Injury	0	0	1	0	0	Passenger Car	
6/1/2014	8:48	Possible Injury	1	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car
10/18/2014	20:00	Possible Injury	1	0	2	0	0	Passenger Car	Passenger Car
9/12/2014	7:45	No Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb
12/14/2010	17:09	Serious Injury	1	0	1	1	0	Pickup,Panel Truck or Vanette under 10,000 lb	
12/20/2014	11:30	No Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car
7/18/2012	7:25	No Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb
3/1/2013	8:02	Possible Injury	2	0	2	0	0	Passenger Car	Passenger Car

JUNCTION RELATIONSHIP	ROADWAY SURFACE CONDITIONS	LIGHTING CONDITIONS
At Intersection and Related	Dry	Daylight
At Intersection and Not Related	Dry	Dark-Street Lights On
Not at Intersection and Not Related	Dry	Daylight
At Driveway	Dry	Daylight
At Intersection and Related	Dry	Daylight
At Intersection and Related	Dry	Daylight
At Intersection and Related	Dry	Daylight
Not at Intersection and Not Related	Dry	Dark-No Street Lights
Not at Intersection and Not Related	Dry	Daylight
At Intersection and Related	Dry	Dark-Street Lights On
At Intersection and Related	Dry	Daylight
At Intersection and Related	Wet	Dark-Street Lights On
At Intersection and Not Related	Wet	Daylight
At Intersection and Related	Dry	Daylight
At Intersection and Related	Wet	Daylight

FIRST COLLISION TYPE / OBJECT STRUCK	VEH 1 ACTION	VEH 2 ACTION
Entering at angle	Making Left Turn	Going Straight Ahead
Building	Going Straight Ahead	
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic
Entering at angle	Going Straight Ahead	Making Left Turn
Entering at angle	Making Left Turn	Making Left Turn
From same direction - both going straight - one stopped - rear-end	Stopped at Signal or Stop Sign	Going Straight Ahead
Street Light Pole or Base	Going Straight Ahead	
Over Embankment - No Guardrail Present	Going Straight Ahead	
From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead
Entering at angle	Stopped at Signal or Stop Sign	Making Right Turn
Entering at angle	Making Left Turn	Going Straight Ahead
Vehicle going straight hits pedestrian	Going Straight Ahead	
From same direction - both going straight - one stopped - rear-end	Stopped for Traffic	Going Straight Ahead
From same direction - both going straight - one stopped - rear-end	Stopped at Signal or Stop Sign	Going Straight Ahead
Entering at angle	Making Left Turn	Going Straight Ahead

MV DRIVER CONT CIRC 1 (UNIT 1)	MV DRIVER CONT CIRC 1 (UNIT 2)	VEH 1 COMP DIR FROM	VEH 1 COMP DIR TO
None	Disregard Stop Sign - Flashing Red	East	South
Under Influence of Alcohol		North	South
Follow Too Closely	None	East	West
None	Did Not Grant RW to Vehicle	West	East
Driver Not Distracted	Did Not Grant RW to Vehicle	West	Northeast
None	Follow Too Closely	North	Vehicle Stopped
Exceeding Stated Speed Limit		North	South
Over Center Line		East	West
None	Apparently Asleep	West	East
None	Under Influence of Alcohol	Vehicle Stopped	Vehicle Stopped
Did Not Grant RW to Vehicle	Driver Not Distracted	East	South
Fail to Yield Row to Pedestrian		South	North
None	Inattention	Vehicle Stopped	Vehicle Stopped
None	Inattention	East	Vehicle Stopped
Did Not Grant RW to Vehicle	None	East	South

VEH 2 COMP DIR FROM	VEH 2 COMP DIR TO	IMPACT LOCATION (Effective for City, County & Misc 1/1/2010; SR's indefinite)
North	South	Lane of Primary Trafficway
		Past the Outside Shoulder of Primary Trafficway
East	Vehicle Stopped	Lane of Primary Trafficway
South	West	Lane of Primary Trafficway
North	Southeast	Lane of Primary Trafficway
North	South	Lane of Primary Trafficway
		Past the Outside Shoulder of Primary Trafficway
		Past the Outside Shoulder of Primary Trafficway
West	East	Lane of Primary Trafficway
South	East	Intersecting Trafficway (WITH Intent to Access)
South	North	Lane of Primary Trafficway
		Lane of Primary Trafficway
East	West	Lane of Primary Trafficway
East	West	Lane of Primary Trafficway
South	North	Lane of Primary Trafficway

AASHTO Intersection Sight Distance

Design Speed	ISD for Cars
15	170
20	225
25	280
30	335
35	390
40	445
45	500
50	555
55	610
60	665
65	720
70	775
75	830
80	885

ISD = 1.47*Vmajor*tg

Vmajor = Design Speed on major road
tg = time gap for minor road

Speed? 25
Time Gap? 7.5
ISD 280

Washington County Intersection Sight Distance

Design Speed	ISD for Cars
15	150
20	200
25	250
30	300
35	350
40	400
45	450
50	500
55	550
60	600
65	650
70	700
75	750
80	800

ISD = 10*Vmajor

Vmajor = Design Speed on major road

AASHTO Stopping Sight Distance

Design Speed	SSD for Cars
15	80
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

$SSD = 1.47*V*t + V^2/(30(a/32.2)\pm G)$

V = Design Speed
t = 2.5 s (brake reaction time)
a = deceleration rate (11.2 ft/s^2)

G = Grade of approach (+ up, - down)

Vmajor = Design Speed on major road
tg = time gap for minor road

Vmajor = Design Speed on major road

Speed?	25	G =	-6.3
Time Gap?	2.5		
A?	11.2		
SSD	165		