## TRAFFIC ANALYSIS REPORT

FOR<br>LACAMAS HEIGHTS ELEMENTARY SCHOOL (w/Portables)<br>NE 232 ${ }^{\text {nd }}$ Avenue<br>CAMAS SCHOOL DISTRICT, CITY OF CAMAS<br>SUBMITTED BY

## TRAFFIC ANALYSIS REPORT

## FOR

# LACAMAS HEIGHTS ELEMENTARY SCHOOL (w/Portables) 

## NE 232 ${ }^{\text {nd }}$ Avenue

## CAMAS SCHOOL DISTRICT, CITY OF CAMAS

Prepared By

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## INTRODUCTION

This traffic study was performed to determine the impacts associated with the development of the new Lacamas Heights Elementary School in the Camas School District in the City of Camas. The impact area as defined based on input received from the City staff included the school's frontage area on NE $232^{\text {nd }}$ Avenue and several key intersections occurring along NE $232^{\text {nd }}$ Avenue, NE $28^{\text {th }}$ Street, and $267^{\text {th }}$ Avenue. The school property is situated north of $9^{\text {th }}$ Street on the east side of $232^{\text {nd }}$ Avenue. The site location is highlighted on the vicinity map (Figure ' $a$ ') in the appendix. Site layout including placement on the school building, future portable classroom units, parking lot, sports fields, and driveway location are shown on Figure 'b'.

The project proposes to construct a new elementary school to replace the existing Lacamas Heights Elementary School now located adjacent to the high school campus along SE $15^{\text {th }}$ Street. The new elementary school will serve a total of 696 students (includes 600 students in the main building and 96 students in the portables). The school will operate on a standard 180 day school year during the hours of 9:00 AM to 3:30 PM. Traffic access is being planned as shown on the site plan and will include a half-street alignment on the south side of the campus.

In the project scope established with the City of Camas a number of important elements were identified and considered in the study.

- Projecting site generated traffic for 696 students. This total includes the number of students that will use portable classroom units. Trip rates were applied from the ITE Trip Generation Manual (9 ${ }^{\text {th }}$ Edition, year 2012).
- Distribution of site generated trips was based on the District's service area and boundary information, traffic volume counts, circulation patterns, and engineering judgment.
- Background traffic was established from several in-process traffic projects identified by the City. Application of annual traffic growth was not necessary in the analysis as confirmed by staff.
- Documentation of pedestrian, bicycle, and transit facilities in the study area.
- Evaluation of sight distance at the new intersection of the site's connector road and $232^{\text {nd }}$ Avenue.
- Determination of left turn lane requirements and peak hour signal warrants.
- Capacity analysis of five study intersections including $232^{\text {nd }}$ Avenue at $9^{\text {th }}$ Street, $232^{\text {nd }}$ at the new school connector road, $232^{\text {nd }}$ at $28^{\text {th }}$ Street, $242^{\text {nd }}$ Avenue at $28^{\text {th }}$ Street, and $267^{\text {th }}$ Avenue at $19^{\text {th }}$ Street. The peak hour periods during the weekday AM, mid-afternoon, and PM were analyzed for the existing, background year 2018, and total traffic year 2018 scenarios.
- Review of the existing travel lane and traffic control conditions.
- Level of service analysis of the study intersections to confirm the locations not meeting the City's mobility standards and the required mitigation.
- Documentation of the study area streets and intersections included in the City's TIF Update (May 2012).
- Review of WSDOT furnished crash history data to assess if there have been safety issues that must be mitigated.

The Appendix to the report contains technical data including a vicinity map, site plan, traffic flow mapping, left turn lane \& signal warrants, lane and traffic control plan, and the capacity analysis outputs.

## SITE DESCRIPTION, STREETS, AND CRITICAL INTERSECTIONS

The project site is located in north Camas approximately a quarter-mile north of Lacamas Lake on the east side of $232^{\text {nd }}$ Avenue. The surrounding land is sparsely developed and consists mainly of
forested and farm property. The site is situated close to the District's west boundary with most of the service area extending to the east, south, and north.

Intersection sight distance at the future access road on $232^{\text {nd }}$ Avenue will need to meet AASHTO's standard based on the street's 35 MPH design speed. For 35 MPH the required intersection sight distance is 390 feet.

Northeast $232{ }^{\text {nd }}$ Avenue is classified as an arterial and currently provides one lane in each direction. There are minimal shoulders with approximately one to two feet of width and the travel speed is posted at 40 MPH. There is a moderate uphill grade to the north from the $9{ }^{\text {th }}$ Street intersection. Appropriate school zone signing will need to be posted including school symbol signs in advance of the site access points.

The intersection of $\mathbf{9}^{\text {th }}$ Street at $\mathbf{2 3 2}^{\text {nd }}$ Avenue is configured as a tee-shaped design with stop control on the $9^{\text {th }}$ Street approach. A dead-end sign is present on $9^{\text {th }}$ Street. There are no separate turn lanes at this location.

Northeast $232^{\text {nd }}$ Avenue at $28^{\text {th }}$ Street (classified as an arterial) is a four-way configuration controlled by stop signing on the northbound approach. The north leg is a private road serving several residences and is not signed for stop control. There are no separate turn lanes at the intersection. A large two-way arrow-board sign is posted on the north side of the intersection for northbound traffic.

Northeast $\mathbf{2 8}^{\text {th }}$ Street at $\mathbf{2 4 2}^{\text {nd }}$ Avenue is configured as a tee-shaped design with stop sign control established for southbound traffic. There is a private driveway approach on the south leg. There are no separate turn lanes at the intersection.

Northeast $\mathbf{1 9}^{\text {th }}$ Street at $267^{\text {nd }}$ Avenue is configured as a tee-shaped design with stop sign control established for eastbound traffic. There is a private driveway approach on the west side of the intersection. There are no separate turn lanes at the intersection.

The existing lane configuration and traffic control elements are shown on Figure 'c'.

## TRAFFIC OPERATIONAL ANALYSIS

Five intersections were analyzed for level of service (LOS) conditions as stipulated in the project scoping. LOS analyses were completed for the study intersections during the peak hour periods under several scenarios:

- Existing traffic year 2015
- Background traffic year 2018
- Total traffic year 2018

In order to perform the LOS analysis at the critical intersections video traffic counts were recorded during the AM peak (7:15-9:15 AM), mid-afternoon (1:45-3:45 PM), and PM peak (4:00-6:00 PM) traffic hours. The existing traffic volumes are shown on Figure 1 in the report's appendix.

Background traffic is comprised of the existing and the in-process traffic that was specified by the City. The in-process traffic is shown on Figure 2 and the year 2018 background traffic volumes are shown on Figure 3.

Figure 4 illustrates the trip distribution and Figure 5 shows the trip assignments for the school generated traffic in the study area covering the AM, mid-afternoon, and PM peak hours. Generated traffic was developed from the number of trips associated with 696 students.

The total traffic scenario was derived from the summation of the background and the school's site generated traffic. The total traffic scenario is depicted on Figure 6.

## VEHICLE TRIP GENERATION

Vehicle trip generation rates were calculated based on historical data contained in the ITE Trip Generation manual (9th Edition, 2012). Trip rates for the elementary school were applied from the manual using ITE code \#520 based on 696 students.

Over a 24 -hour weekday period a total of 898 trip ends are projected to occur when the school begins operation. During the AM, mid-afternoon, and PM peak hours a total of 313, 195, and 104 trips, respectively will be generated in the peak hours.

Table 1 Trip Generation Summary

| ITE Land Use | Units (Students) | Weekday |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | ADT | AM Peak Hour |  |  | Mid-Afternoon Peak Hour |  |  | PM Peak Hour |  |  |
|  |  |  | Total | Enter | Exit | Total | Enter | Exit | Total | Enter | Exit |
| Elementary School (\#520) | 696 |  |  |  |  |  |  |  |  |  |  |
| Generation Rate ${ }^{1}$ |  | 1.29 | 0.45 | 55\% | 45\% | 0.28 | 45\% | 55\% | 0.15 | 49\% | 51\% |
| Site Trips |  | 898 | 313 | 172 | 141 | 195 | 88 | 107 | 104 | 51 | 53 |

[^0]
## TRAFFIC FLOW AND CAPACITY ANALYSIS RESULTS

The traffic flow maps included in the appendix showing the traffic volume data and turning movements for the weekday peak hour conditions were used in the capacity analysis. The study intersections were evaluated for the existing, year 2018 background, and year 2018 total traffic scenarios during the AM, mid-afternoon, and PM peak hours. Synchro version \#9.1 software employing the year 2010 Highway Capacity Manual methodology was applied in performing the intersection capacity analyses.

The City's mobility standards require that a LOS 'D' and a volume to capacity ( $\mathrm{v} / \mathrm{c}$ ) ratio of 0.90 or better be maintained for all intersections. The standards are documented in the City of Camas Comprehensive Plan, Transportation Element, Policy TR-20 dated March 2004.

Table 2 presents a summary of the capacity analysis results determined in the study.

Table 2 Capacity Analysis Summary

| Intersection | Type of Control | Peak Hour | Traffic Scenario |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 2015 Existing |  |  |  | 2018 Background |  |  |  | 2018 Total |  |  |  |
|  |  |  | Crit. Mov't | LOS | Delay | v/c | Crit. <br> Mov't | LOS | Delay | v/c | Crit. <br> Mov't | LOS | Delay | v/c |
| NE 28th Street and NE 232nd Avenue | Two-way Stop | AM | NB | B | 12.3 | - | NB | C | 21.5 | - | NB | F | 89.2 | - |
|  |  | MidAfternoon | NB | B | 12.5 | - | NB | C | 17.2 | - | NB | C | 23.4 | - |
|  |  | PM |  | B | 13.2 | - | NB | E | 45.6 | - | NB | F | 62.7 | - |
| School Access and NE 232nd Avenue | Two-way Stop | AM | - | - | - | - | - | - | - | - | EB | B | 13.5 | - |
|  |  | MidAfternoon | - | - | - | - | - | - | - | - | EB | B | 10.9 | - |
|  |  | PM | - | - | - | - | - | - | - | - | EB | B | 10.9 | - |
| NE 9th Street and NE 232nd Avenue | Two-way Stop | AM | WB | A | 9.1 | - | WB | B | 10.1 | - | WB | B | 10.3 | - |
|  |  | MidAfternoon | WB | A | 0.0 | - | WB | A | 0.0 | - | WB | A | 0.0 | - |
|  |  | PM | WB | A | 8.5 | - | WB | A | 8.8 | - | WB | A | 8.8 | - |
| NE 242nd Avenue/ driveway and NE 28th Street/ Dresser Road | Two-way Stop | AM | SB | B | 12.3 | - | SB | C | 15.2 | - | SB | C | 25.3 | - |
|  |  | Mid- <br> Afternoon | SB | B | 13.2 | - | SB | C | 15.0 | - | SB | C | 17.8 | - |
|  |  | PM | SB | B | 13.2 | - | SB | C | 16.9 | - | SB | C | 17.1 | - |
| NE 267th Avenue and NE 19th Street | Two-way Stop | AM | WB | C | 16.4 | - | WB | C | 19.3 | - | WB | D | 29.3 | - |
|  |  | MidAfternoon | WB | B | 12.3 | - | WB | B | 12.8 | - | WB | B | 14.1 | - |
|  |  | PM | WB | B | 13.1 | - | WB | B | 14.7 | - | WB | C | 15.2 | - |

Notes: 2010 Highway Capacity Manual methodology used in analysis, Synchro v9.1. NB - Northbound, SB - Southbound, WB - Westbound, Crit. Mov't - Critical movement or critical approach.

With the exception of the intersection at $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue the study intersections will operate at acceptable LOS 'D' or better during the peak hours for the existing, year 2018 background, and year 2018 total traffic scenarios.

The school access connection to $232^{\text {nd }}$ Avenue will experience LOS ` ${ }^{\text {® }}$ ' in the year 2018 total traffic scenario.

The northbound stop controlled movement at $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue is currently operating at LOS ' $B$ '. In the year 2018 background scenario the intersection will experience LOS ' $E$ ' in the PM peak hour. For the year 2018 total traffic scenario the intersection is projected to operate at LOS ' F ' in the AM and PM peak hours. However, based on Clark County Code section 40.350.020(G)(1)(c) the development shall not be required to mitigate the impacts at this location in order to obtain concurrency approval unless meeting all three of the following criteria:

1. The proposed development adds at least five (5) peak period trips to a failing intersection approach;
2. The projected volume to capacity ratio for the worst lane movement on the approach with the highest delay exceeds nine-tenths (0.9) during the peak traffic period; and
3. That same movement is worsened by the proposed development.

Criterion \#1 is not met as the proposed school will add only three vehicle trips to the northbound left turn movement in the AM peak hour and one trip in the PM peak hour.

Criterion \#2 pertaining to the volume to capacity ( $\mathrm{v} / \mathrm{c}$ ) ratio will not be met as the worst lane movement $\mathrm{v} / \mathrm{c}$ (northbound left turn) remains below 0.9 in the peak hours. In fact the $\mathrm{v} / \mathrm{c}$ equates to 0.54 for the year 2018 total traffic AM peak hour and 0.68 for the year 2018 total traffic PM peak hour. The ratios are summarized below using the LOS results contained in the Synchro v9.1 output files.

```
Year 2018 Total, AM Peak Hour
Left Turn Demand \(=179\)
Approach Capacity \(=331\)
    \(\mathrm{v} / \mathrm{c}=0.54\)
```

```
Year 2018 Total, PM Peak Hour
    Left Turn Demand \(=214\)
    Approach Capacity \(=313\)
    \(\mathrm{v} / \mathrm{c}=0.68\)
```

Other supporting factors to consider for not mitigating the intersection include;

- Crash history research based on WSDOT's latest database has confirmed that the intersection has not exceeded thresholds that would require safety improvements or warrant analysis.
- The City of Camas has identified a future TIF roadway and intersection project to install a roundabout at $232^{\text {nd }}$ Avenue $\& 22^{\text {nd }}$ Avenue. The future improvement will connect to Ingle Road and lessen the traffic volume on the northbound approach of $232^{\text {nd }}$ Avenue at $28^{\text {th }}$ Street.
- The School District would have to obtain right-of-way if additional lanes were added.

Based on these considerations it is recommended the County not require mitigation at the intersection of NE $232^{\text {nd }}$ Avenue and $28^{\text {th }}$ street in conjunction with the school development project.

Generally, LOS 'A', 'B', 'C', and 'D' are desirable service levels ranging from no vehicle delays to average or longer than average delays in the peak hours. Level ' $E$ ' represents long delays indicating signalization warrants need to be reviewed and signals considered only if warrants are met. Level ' $F$ ' indicates that intersection improvements, such as widening and signalization, may be required. By definition, and according to the Highway Capacity Manual (HCM), the following delay times are associated with the LOS at stop controlled (unsignalized) and signalized intersections.

Level of Service criteria defined in Highway Capacity Manual.

| Level of Service <br> (LOS) | Unsignalized Control <br> Stopped Delay (sec/veh) | Signalized Control <br> Stopped Delay (sec/veh) |
| :---: | :---: | :---: |
| A | $\leq 10$ | $\leq 10$ |
| B | $>10$ and $\leq 15$ | $>10$ and $\leq 20$ |
| C | $>15$ and $\leq 25$ | $>20$ and $\leq 35$ |
| D | $>25$ and $\leq 35$ | $>35$ and $\leq 55$ |
| E | $>35$ and $\leq 50$ | $>55$ and $\leq 80$ |
| F | $>50$ | $>80$ |

## LEFT TURN LANE REQUIREMENTS

A series of left turn lane warrant analyses were performed for the study intersections and the site access connector road at $232^{\text {nd }}$ Avenue. The study revealed that a westbound left turn lane is warranted for the year 2018 total traffic scenario at the intersection of $28^{\text {th }}$ Street at $232^{\text {nd }}$ Avenue. Installation of the westbound left turn lane is not recommended considering the peak hour LOS and queuing results (WB approach LOS ' $A$ ', 95 th percentile queue of one vehicle). It is also noted that with the future Ingle Road extension between $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue eastbound (opposing) traffic at 232nd Avenue $/ 28^{\text {th }}$ Street will decrease benefiting the westbound to southbound movement.

A northbound left turn lane on the school's access connector road at $232^{\text {nd }}$ Avenue is not warranted due to low left turn volume demand. During each of the peak hours including AM, mid-afternoon, and in the PM fewer than eight vehicles will be making the northwesterly to southwesterly left turn movement.

The left turn lane data and warrants are contained in the appendix.

## TRAFFIC SIGNAL WARRANTS

The study intersections were reviewed for signalization needs based on the peak hour signal warrant contained in the Manual on Uniform Traffic Control Devices (MUTCD). The peak hour warrant was met at the following locations.

- ${28^{\text {th }} \text { Street/232 }}^{\text {nd }}$ Avenue for the year 2018 background and total traffic scenarios the signal warrant is met. Installation is not recommended because mitigation for failing LOS conditions is not required by code. The City of Camas has identified a future TIF roadway and intersection project to install a roundabout at $232^{\text {nd }}$ Avenue \& $22^{\text {nd }}$ Avenue. The future improvement will connect to Ingle Road and lessen the traffic volume on the northbound approach of $232^{\text {nd }}$ Avenue at $28^{\text {th }}$ Street.
- $28^{\text {th }}$ Street/242 ${ }^{\text {nd }}$ Avenue for the year 2018 total traffic scenario (future signal planned as TIF project) signal not recommended in conjunction with new elementary school development as the current stop controlled intersection will experience LOS 'C' or better through the year 2018 total traffic periods and no crashes were reported within the last five years.
- $19^{\text {th }}$ Street $/ 267^{\text {th }}$ Avenue for the year 2018 total traffic scenario (signal not recommended as the current stop controlled intersection will experience LOS 'D' or better through the year 2018 total traffic periods and no reported crashes were reported within the last five years)


## PEDESTRIANS, BICYCLE, \& BUSSES

The project site is situated within a sparsely developed area that does not currently provide facilities for pedestrians, bicyclists, or transit. With the project development sidewalk will be provided on site and along the street frontage adjacent to the school. Appropriate school zone signing including advance symbol signs will be placed on $232^{\text {nd }}$ Avenue in conjunction with the project.

No bicycle lanes are present within the general area.
C-Tran does not provide transit service in this area of Camas.

## INTERSECTION SIGHT DISTANCE

Intersection sight distance at the future access road on $232^{\text {nd }}$ Avenue will need to meet AASHTO's standard based on the street's 35 MPH design speed. For 35 MPH the required intersection sight distance is 390 feet. The preliminary Design Summary memorandum dated November 10, 2016 prepared by Robertson Engineering has established that the intersection sight distance standards will be satisfied with available sightlines that exceed the minimum requirements.

## TRAFFIC SAFETY

Accident data for the study intersections was provided by WSDOT and reviewed to help identify any traffic safety problems. The data covered a five-year study period in the years 2010 through 2014 (reference appendix).

The crash rates are presented in Table 3 and are based on the number of accidents per million entering vehicles (MEV) per year. Typically, an intersection is not considered unsafe unless the accident rate exceeds the threshold of 1.0 accident per MEV per year.

None of the study intersections have experienced a crash rate of greater than 0.46 MEV per year and as a result no safety mitigation is necessary.

Table 3 Intersection Crash Rate Summary

| Intersection | Accident <br> History <br> (Years) | Number of <br> Accidents | Annual <br> per year | Traffic <br> Entering <br> (veh/yr) | Accident <br> rate per <br> M.E.V.* |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| NE 28th Street \& NE 232nd Avenue | 5 | 1 | 0.2 | 1654537 | $\mathbf{0 . 1 2}$ |
| NE 9th Street \& NE 232nd Avenue | 5 | 1 | 0.2 | 430983 | $\mathbf{0 . 4 6}$ |
| NE 242nd Avenue \& NE 28th St/Dresser Rd | 5 | 0 | 0.0 | 1614361 | $\mathbf{0 . 0 0}$ |
| NE 19th Street and NE 267th Avenue | 5 | 0 | 0.0 | 2038039 | $\mathbf{0 . 0 0}$ |

* M.E.V. - million entering vehicles.


## SUMMARY AND RECOMMENDATIONS

The development plan for Lacamas Heights Elementary School will construct a new 70,000 square foot building and two portable classroom units providing for a total of 696 students. The traffic impact area as defined based on input received from City of Camas transportation staff included the school's immediate frontage area and analysis of several off-site intersections including NE $232^{\text {nd }}$ Avenue at the future site access road, $28^{\text {th }}$ Street, $9^{\text {th }}$ Street and $28^{\text {th }}$ Street at $242^{\text {nd }}$ Avenue and $267^{\text {th }}$ Avenue at $19^{\text {th }}$ Street. The site location is shown on Figure 'a' in the report's appendix. Traffic access to the school will be provided on $232^{\text {nd }}$ Avenue with the new site access connector road which is illustrated on the site plan (Figure 'b').

The new elementary school is projected to generate 898 trips per day. A total of 313 trips will be generated in the AM peak hour, 195 trips generated in the mid-afternoon peak hour, and 104 trips generated in the PM peak hour.

The traffic analysis documented the impacts to the existing street system and the proposed connector road alignment at $232^{\text {nd }}$ Avenue and the site access. Traffic scenarios included the weekday peak traffic hours occurring during the AM, mid-afternoon, and PM periods. Year 2015 existing traffic, year 2018 background traffic, and year 2018 total traffic scenarios were evaluated in the study.

With the exception of the intersection at $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue the study intersections will operate at acceptable LOS 'D' or better during the peak hours for the existing, year 2018 background, and year 2018 total traffic scenarios. The school access connection to $232^{\text {nd }}$ Avenue will experience LOS `B` in the year 2018 total traffic scenario.

The northbound stop controlled movement at $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue is currently operating at LOS 'B'. In the year 2018 background scenario the intersection will experience LOS ' $E$ ' in the PM peak hour. For the year 2018 total traffic scenario the intersection is projected to operate at LOS ' $F$ ' in the AM and PM peak hours. Based on the adopted concurrency standards for unsignalized intersections and according to Clark County Code section 40.350 .020 (G)(1)(c) the development shall not be required to mitigate the impacts at this location in order to obtain concurrency approval unless meeting all three of the following criteria:

1. The proposed development adds at least five (5) peak period trips to a failing intersection approach;
2. The projected volume to capacity ratio for the worst lane movement on the approach with the highest delay exceeds nine-tenths (0.9) during the peak traffic period; and
3. That same movement is worsened by the proposed development.

Criterion \#1 is not met as the proposed school will add only three vehicle trips to the northbound left turn movement in the AM peak hour and one trip in the PM peak hour.

Criterion \#2 pertaining to the volume to capacity ( $\mathrm{v} / \mathrm{c}$ ) ratio will not be met as the worst lane movement v/c (northbound left turn) remains below 0.9 in the peak hours. In fact the v/c equates to 0.54 for the year 2018 total traffic AM peak hour and 0.68 for the year 2018 total traffic PM peak hour.

Other supporting factors to consider for not mitigating the intersection include;

- Crash history research based on WSDOT's latest database has confirmed that the intersection has not exceed thresholds that would require safety improvements.
- The City of Camas has identified a future TIF roadway and intersection project to install a roundabout at $232^{\text {nd }}$ Avenue $\& 22^{\text {nd }}$ Avenue. The future improvement will connect to Ingle Road and lessen the traffic volume on the northbound approach of $232^{\text {nd }}$ Avenue at $28^{\text {th }}$ Street.
- The School District would have to obtain right-of-way to widen the intersection if the northbound approach were to add another travel lane.

Based on these considerations it is recommended the County not require mitigation at the intersection of NE $232^{\text {nd }}$ Avenue and $28^{\text {th }}$ street in conjunction with the school development project.

The study revealed that a westbound left turn lane is warranted for the year 2018 total traffic scenario at the intersection of $28^{\text {th }}$ Street at $232^{\text {nd }}$ Avenue. Installation of the westbound left turn lane is not recommended considering the peak hour LOS and queuing results (WB approach LOS ' $A$ ', $95^{\text {th }}$ percentile queue of one vehicle). It is also noted that with the future Ingle Road extension between $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue eastbound (opposing) traffic at 232nd Avenue/28 ${ }^{\text {th }}$ Street will decrease benefiting the westbound to southbound movement.

A northbound left turn lane on the school's access connector road at $232^{\text {nd }}$ Avenue is not warranted due to low left turn volume demand. During each of the peak hours fewer than eight vehicles will be making the northwesterly to southwesterly left turn movement.

At $28^{\text {th }}$ Street and $232^{\text {nd }}$ Avenue signalization is warranted for the year 2018 background and total traffic scenarios. Installation is not recommended because mitigation for failing LOS conditions is not required by code and the City of Camas has identified a future TIF roadway and intersection project to install a roundabout at $232^{\text {nd }}$ Avenue $\& 22^{\text {nd }}$ Avenue. Additionally a future road improvement project is proposed that will connect $232^{\text {nd }}$ Avenue to Ingle Road south of $28^{\text {th }}$ Street and will lessen the traffic volume on the northbound approach of $232^{\text {nd }}$ Avenue at $28^{\text {th }}$ Street.

At $28^{\text {th }}$ Street and $242^{\text {nd }}$ Avenue the signal warrant is met for the year 2018 total traffic scenario. The signal need has also been identified by the City as a future TIF project. However, signalization is not recommended in conjunction with new elementary school development as the intersection will experience LOS 'C' or better through the year 2018 total traffic period and no reported crashes have been reported within the last five years.

At $19^{\text {th }}$ Street and $267{ }^{\text {nd }}$ Avenue the signal warrant is met for the year 2018 total traffic scenario. However, signalization is not recommended in conjunction with development as the intersection will experience LOS 'D' or better through the year 2018 total traffic periods and no reported crashes have been reported within the last five years.

## APPENDIX

Vicinity Map<br>Figure 'a'<br>Site Plan<br>Lane Configuration \& Traffic Control<br>Traffic Flow Diagrams<br>Existing Traffic Year 2015 (AM, Mid, \& PM Peak Hours)<br>In-Process Traffic<br>Background Traffic Year 2018<br>Trip Distribution<br>Trip Assignment, (AM, Mid, \& PM Peak Hours)<br>Total Traffic Year 2018 (AM, Mid, \& PM Peak Hours)<br>Figure 'b`<br>Figure 'c'<br>Traffic Count Data<br>In-Process Traffic Data<br>Left Turn Lane Warrants<br>Peak Hour Signal Warrants<br>WSDOT Furnished Crash History Report<br>City TIF Projects Location Map<br>Capacity Analysis Printouts - Synchro v9 output (> 100 pages, furnished upon request)









AM PEAK, MID-AFTERNOON PEAK, \& PM PEAK




NE 232nd Ave \& NE 28th St
Tuesday, December 15, 2015
7:15 AM to 9:15 AM

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

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  |
| 7:15 AM | 11 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 20 | 17 | 0 | 5 | 69 | 0 | 0 | 124 |
| 7:30 AM | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 10 | 0 | 1 | 58 | 0 | 0 | 119 |
| 7:45 AM | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 9 | 0 | 2 | 68 | 0 | 0 | 124 |
| 8:00 AM | 16 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 17 | 9 | 0 | 0 | 38 | 0 | 0 | 86 |
| 8:15 AM | 8 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 19 | 8 | 0 | 0 | 58 | 0 | 0 | 98 |
| 8:30 AM | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 25 | 13 | 0 | 0 | 57 | 0 | 0 | 108 |
| 8:45 AM | 9 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 22 | 2 | 0 | 1 | 51 | 0 | 0 | 87 |
| 9:00 AM | 5 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 19 | 1 | 0 | 3 | 54 | 0 | 0 | 86 |
| Total Survey | 101 | 2 | 8 | 0 | 0 | 2 | 8 | 0 | 2 | 175 | 69 | 0 | 12 | 453 | 0 | 0 | 832 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

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

| By | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 73 | 53 | 126 | 0 | 4 | 0 | 4 | 0 | 135 | 305 | 440 | 0 | 241 | 95 | 336 | 0 | 453 |
| \%HV | 4.1\% |  |  |  | 0.0\% |  |  |  | 3.0\% |  |  |  | 1.2\% |  |  |  | 2.2\% |
| PHF | 0.70 |  |  |  | 0.33 |  |  |  | 0.89 |  |  |  | 0.81 |  |  |  | 0.91 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 68 | 0 | 5 | 73 | 0 | 0 | 4 | 4 | 0 | 90 | 45 | 135 | 8 | 233 | 0 | 241 | 453 |
| \%HV | 2.9\% | 0.0\% | 20.0\% | 4.1\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 2.2\% | 4.4\% | 3.0\% | 12.5\% | 0.9\% | 0.0\% | 1.2\% | 2.2\% |
| PHF | 0.65 | 0.00 | 0.42 | 0.70 | 0.00 | 0.00 | 0.33 | 0.33 | 0.00 | 0.78 | 0.66 | 0.89 | 0.40 | 0.84 | 0.00 | 0.81 | 0.91 |

## Rolling Hour Summary

7:15 AM to 9:15 AM

| $\begin{gathered} \hline \text { Interval } \\ \text { Start } \\ \text { Time } \\ \hline \end{gathered}$ | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total | Pedestrians Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  | North | South | East | West |
| 7:15 AM | 68 | 0 | 5 | 0 | 0 | 0 | 4 | 0 | 0 | 90 | 45 | 0 | 8 | 233 | 0 | 0 | 453 | 0 | 0 | 0 | 0 |
| 7:30 AM | 65 | 0 | 6 | 0 | 0 | 1 | 5 | 0 | 0 | 89 | 36 | 0 | 3 | 222 | 0 | 0 | 427 | 0 | 0 | 0 | 0 |
| 7:45 AM | 50 | 1 | 6 | 0 | 0 | 1 | 5 | 0 | 1 | 90 | 39 | 0 | 2 | 221 | 0 | 0 | 416 | 0 | 0 | 0 | 0 |
| 8:00 AM | 44 | 1 | 5 | 0 | 0 | 1 | 7 | 0 | 1 | 83 | 32 | 0 | 1 | 204 | 0 | 0 | 379 | 0 | 0 | 0 | 0 |
| 8:15 AM | 33 | 2 | 3 | 0 | 0 | 2 | 4 | 0 | 2 | 85 | 24 | 0 | 4 | 220 | 0 | 0 | 379 | 0 | 0 | 0 | 0 |

Out 4
In 4

NE 232nd Ave \& NE 28th St
Tuesday, December 15, 2015
7:15 AM to 9:15 AM


Heavy Vehicle 15-Minute Interval Summary
7:15 AM to 9:15 AM

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 1 | 3 |
| 7:30 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| 7:45 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 4 |
| 8:00 AM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:15 AM | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 2 | 0 | 2 | 6 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 9:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 1 | 4 |
| Total Survey | 3 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 1 | 10 | 2 | 13 | 1 | 8 | 0 | 9 | 27 |

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

| By <br> Approach | Northbound <br> NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound <br> NE 28th St |  |  | Westbound NE 28th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 3 | 3 | 6 | 0 | 0 | 0 | 4 | 4 | 8 | 3 | 3 | 6 | 10 |
| PHF | 0.19 |  |  | 0.00 |  |  | 0.11 |  |  | 0.15 |  |  | 0.19 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 2 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 1 | 2 | 0 | 3 | 10 |
| PHF | 0.25 | 0.00 | 0.13 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.25 | 0.11 | 0.25 | 0.10 | 0.00 | 0.15 | 0.19 |

Heavy Vehicle Rolling Hour Summary
7:15 AM to 9:15 AM

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval <br> Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 7:15 AM | 2 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 1 | 2 | 0 | 3 | 10 |
| 7:30 AM | 3 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 12 |
| 7:45 AM | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 6 | 0 | 6 | 16 |
| 8:00 AM | 1 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 5 | 0 | 5 | 14 |
| 8:15 AM | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 9 | 0 | 6 | 0 | 6 | 17 |

## Peak Hour Summary

## All Traffic Data

Clay Carney
(503) $833-2740$
NE 232nd Ave \& NE 28th St
7:15 AM to 8:15 AM
Tuesday, December 15, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.89 | $3.0 \%$ | 135 |
| WB | 0.81 | $1.2 \%$ | 241 |
| NB | 0.70 | $4.1 \%$ | 73 |
| SB | 0.33 | $0.0 \%$ | 4 |
| Intersection | 0.91 | $2.2 \%$ | 453 |

Total Vehicle Summary

## All Traffic Data <br> $\sim$ Services Inc. <br> Clay Carney <br> (503) 833-2740

NE 232nd Ave \& NE 9th St
Tuesday, December 15, 2015
7:15 AM to 9:15 AM

Out 0
In 0


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

| Interval Start Time | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  | Westbound NE 9th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Bikes | L | T | Bikes |  | Bikes | L | R | Bikes |  |
| 7:15 AM | 13 | 0 | 0 | 1 | 22 | 0 |  | 0 | 1 | 0 | 0 | 37 |
| 7:30 AM | 18 | 0 | 0 | 1 | 13 | 0 |  | 0 | 0 | 0 | 0 | 32 |
| 7:45 AM | 10 | 0 | 0 | 0 | 14 | 0 |  | 0 | 0 | 0 | 0 | 24 |
| 8:00 AM | 15 | 0 | 0 | 0 | 9 | 0 |  | 0 | 1 | 0 | 0 | 25 |
| 8:15 AM | 7 | 0 | 0 | 0 | 10 | 0 |  | 0 | 0 | 0 | 0 | 17 |
| 8:30 AM | 8 | 0 | 0 | 0 | 13 | 0 |  | 0 | 0 | 0 | 0 | 21 |
| 8:45 AM | 11 | 1 | 0 | 0 | 4 | 0 |  | 0 | 0 | 0 | 0 | 16 |
| 9:00 AM | 9 | 1 | 0 | 0 | 8 | 0 |  | 0 | 0 | 1 | 0 | 19 |
| Total Survey | 91 | 2 | 0 | 2 | 93 | 0 |  | 0 | 2 | 1 | 0 | 191 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

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

| By <br> Approach | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 9th St |  |  |  | Westbound NE 9th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 56 | 60 | 116 | 0 | 60 | 56 | 116 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 118 |
| \%HV | 1.8\% |  |  |  | 3.3\% |  |  |  | 0.0\% |  |  |  | 0.0\% |  |  |  | 2.5\% |
| PHF | 0.78 |  |  |  | 0.65 |  |  |  | 0.00 |  |  |  | 0.50 |  |  |  | 0.80 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 9th St |  |  |  | Westbound NE 9th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | T | R | Total | L | T |  | Total |  |  |  | Total | L |  | R | Total |  |
| Volume |  | 56 | 0 | 56 | 2 | 58 |  | 60 |  |  |  | 0 | 2 |  | 0 | 2 | 118 |
| \%HV | NA | 1.8\% | 0.0\% | 1.8\% | 0.0\% | 3.4\% | NA | 3.3\% | NA | NA | NA | 0.0\% | 0.0\% | NA | 0.0\% | 0.0\% | 2.5\% |
| PHF |  | 0.78 | 0.00 | 0.78 | 0.50 | 0.66 |  | 0.65 |  |  |  | 0.00 | 0.50 |  | 0.00 | 0.50 | 0.80 |

## Rolling Hour Summary

7:15 AM to 9:15 AM


| Pedestrians <br> Cossswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

Out 0
In 0

NE 232nd Ave \& NE 9th St
Tuesday, December 15, 2015


Heavy Vehicle 15-Minute Interval Summary
7:15 AM to 9:15 AM


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

| By <br> Approach | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  |  | Westbound NE 9th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 1 | 2 | 3 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| PHF | 0.08 |  |  | 0.25 |  |  | 0.00 |  |  | 0.00 |  |  | 0.25 |



Heavy Vehicle Rolling Hour Summary
7:15 AM to 9:15 AM


## Peak Hour Summary

## All Traffic Data

Clay Carney
(503) $833-2740$
NE 232nd Ave \& NE 9th St

7:15 AM to 8:15 AM
Tuesday, December 15, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.00 | $0.0 \%$ | 0 |
| WB | 0.50 | $0.0 \%$ | 2 |
| NB | 0.78 | $1.8 \%$ | 56 |
| SB | 0.65 | $3.3 \%$ | 60 |
| Intersection | 0.80 | $2.5 \%$ | 118 |



NE 242nd Ave \& NE 28th St
Tuesday, December 15, 2015
7:15 AM to 9:15 AM

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


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

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

| By <br> Approach | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 0 | 0 | 0 | 0 | 102 | 68 | 170 | 0 | 92 | 237 | 329 | 0 | 248 | 137 | 385 | 0 | 442 |
| \%HV | 0.0\% |  |  |  | 7.8\% |  |  |  | 6.5\% |  |  |  | 2.0\% |  |  |  | 4.3\% |
| PHF | 0.00 |  |  |  | 0.73 |  |  |  | 0.77 |  |  |  | 0.81 |  |  |  | 0.83 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Total | L |  | R | Total | L | T |  | Total |  | T | R | Total |  |
| Volume |  |  |  | 0 | 60 |  | 42 | 102 | 15 | 77 |  | 92 |  | 195 | 53 | 248 | 442 |
| \%HV | NA | NA | NA | 0.0\% | 13.3\% | NA | 0.0\% | 7.8\% | 20.0\% | 3.9\% | NA | 6.5\% | NA | 1.0\% | 5.7\% | 2.0\% | 4.3\% |
| PHF |  |  |  | 0.00 | 0.71 |  | 0.75 | 0.73 | 0.75 | 0.74 |  | 0.77 |  | 0.81 | 0.78 | 0.81 | 0.83 |

## Rolling Hour Summary

7:15 AM to 9:15 AM


Out 2
In 6

NE 242nd Ave \& NE 28th St
Tuesday, December 15, 2015


7:15 AM to 9:15 AM


Heavy Vehicle 15-Minute Interval Summary
7:15 AM to 9:15 AM

| Interval Start | Northbound NE 242nd Ave |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  | Westbound NE 28th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  |  | Total | L |  | R | Total | L | T | Total | T | R | Total |  |
| 7:15 AM |  |  | 0 | 3 |  | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 4 |
| 7:30 AM |  |  | 0 | 0 |  | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 2 |
| 7:45 AM |  |  | 0 | 2 |  | 0 | 2 | 2 | 2 | 4 | 1 | 2 | 3 | 9 |
| 8:00 AM |  |  | 0 | 3 |  | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 4 |
| 8:15 AM |  |  | 0 |  |  | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 2 | 5 |
| 8:30 AM |  |  | 0 | 3 |  | 2 | 5 | 2 | 2 | 4 | 0 | 0 | 0 | 9 |
| 8:45 AM |  |  | 0 | 0 |  | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 9:00 AM |  |  | 0 | 0 |  | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 3 |
| Total Survey |  |  | 0 | 12 |  | 4 | 16 | 6 | 8 | 14 | 4 | 4 | 8 | 38 |

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

| By <br> Approach | Northbound NE 242nd Ave |  |  | Southbound NE 242nd Ave |  |  | Eastbound NE 28th St |  |  | Westbound NE 28th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 0 | 0 | 0 | 8 | 6 | 14 | 6 | 2 | 8 | 5 | 11 | 16 | 19 |
| PHF | 0.00 |  |  | 0.20 |  |  | 0.21 |  |  | 0.25 |  |  | 0.26 |



Heavy Vehicle Rolling Hour Summary
7:15 AM to 9:15 AM



Total Vehicle Summary

## All Traffic Data <br> $\sim$ Services Inc. <br> Clay Carney <br> (503) 833-2740

NE 267th Ave \& NE 19th St
Tuesday, December 15, 2015
7:15 AM to 9:15 AM

Out 0
In 0


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


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

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

| By <br> Approach | Northbound NE 267th Ave |  |  |  | Southbound NE 267th Ave |  |  |  | Eastbound NE 19th St |  |  |  | Westbound NE 19th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 142 | 237 | 379 | 0 | 142 | 232 | 374 | 0 | 0 | 0 | 0 | 0 | 274 | 89 | 363 | 0 | 558 |
| \%HV | 7.0\% |  |  |  | 6.3\% |  |  |  | 0.0\% |  |  |  | 4.0\% |  |  |  | 5.4\% |
| PHF | 0.85 |  |  |  | 0.72 |  |  |  | 0.00 |  |  |  | 0.68 |  |  |  | 0.73 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 267th Ave |  |  |  | Southbound NE 267th Ave |  |  |  | Eastbound NE 19th St |  |  |  | Westbound NE 19th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | T | R | Total | L | T |  | Total |  |  |  | Total | L |  | R | Total |  |
| Volume |  | 95 | 47 | 142 | 42 | 100 |  | 142 |  |  |  | 0 | 137 |  | 137 | 274 | 558 |
| \%HV | NA | 4.2\% | 12.8\% | 7.0\% | 9.5\% | 5.0\% | NA | 6.3\% | NA | NA | NA | 0.0\% | 4.4\% | NA | 3.6\% | 4.0\% | 5.4\% |
| PHF |  | 0.66 | 0.69 | 0.85 | 0.70 | 0.69 |  | 0.72 |  |  |  | 0.00 | 0.54 |  | 0.84 | 0.68 | 0.73 |

## Rolling Hour Summary

7:15 AM to 9:15 AM


Out 0
In 0

NE 267th Ave \& NE 19th St
Tuesday, December 15, 2015


Heavy Vehicle 15-Minute Interval Summary
7:15 AM to 9:15 AM

| Interval Start Time | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| 7:15 AM | 2 | 0 | 2 | 2 | 1 | 3 |  | 0 | 5 | 0 | 5 | 10 |
| 7:30 AM | 1 | 1 | 2 | 0 | 2 | 2 |  | 0 | 0 | 1 | 1 | 5 |
| 7:45 AM | 0 | 2 | 2 | 1 | 1 | 2 |  | 0 | 1 | 2 | 3 | 7 |
| 8:00 AM | 1 | 3 | 4 | 1 | 1 | 2 |  | 0 | 0 | 2 | 2 | 8 |
| 8:15 AM | 1 | 1 | 2 | 0 | 1 | 1 |  | 0 | 0 | 1 | 1 | 4 |
| 8:30 AM | 0 | 1 | 1 | 3 | 2 | 5 |  | 0 | 3 | 0 | 3 | 9 |
| 8:45 AM | 0 | 0 | 0 | 1 | 2 | 3 |  | 0 | 2 | 0 | 2 | 5 |
| 9:00 AM | 1 | 1 | 2 | 1 | 1 | 2 |  | 0 | 0 | 0 | 0 | 4 |
| Total Survey | 6 | 9 | 15 | 9 | 11 | 20 |  | 0 | 11 | 6 | 17 | 52 |

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

| By <br> Approach | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  |  | Westbound NE 19th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 10 | 11 | 21 | 9 | 9 | 18 | 0 | 0 | 0 | 11 | 10 | 21 | 30 |
| PHF | 0.31 |  |  | 0.23 |  |  | 0.00 |  |  | 0.31 |  |  | 0.34 |


| By <br> Movement | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| Volume | 4 | 6 | 10 | 4 | 5 | 9 |  | 0 | 6 | 5 | 11 | 30 |
| PHF | 0.33 | 0.25 | 0.31 | 0.20 | 0.25 | 0.23 |  | 0.00 | 0.25 | 0.25 | 0.31 | 0.34 |

Heavy Vehicle Rolling Hour Summary
7:15 AM to 9:15 AM


## Peak Hour Summary

## All Traffic Data

Clay Carney (503) 833-2740

NE 267th Ave \& NE 19th St
7:15 AM to 8:15 AM
Tuesday, December 15, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.00 | $0.0 \%$ | 0 |
| WB | 0.68 | $4.0 \%$ | 274 |
| NB | 0.85 | $7.0 \%$ | 142 |
| SB | 0.72 | $6.3 \%$ | 142 |
| Intersection | 0.73 | $5.4 \%$ | 558 |

NE 232nd Ave \& NE 28th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM

| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

Peak Hour Summary
2:45 PM to 3:45 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 49 | 38 | 87 | 0 | 4 | 4 | 8 | 0 | 256 | 182 | 438 | 0 | 143 | 228 | 371 | 0 | 452 |
| \%HV | 4.1\% |  |  |  | 25.0\% |  |  |  | 3.5\% |  |  |  | 4.2\% |  |  |  | 4.0\% |
| PHF | 0.77 |  |  |  | 0.50 |  |  |  | 0.85 |  |  |  | 0.76 |  |  |  | 0.86 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 41 | 1 | 7 | 49 | 1 | 0 | 3 | 4 | 3 | 220 | 33 | 256 | 5 | 138 | 0 | 143 | 452 |
| \%HV | 4.9\% | 0.0\% | 0.0\% | 4.1\% | 0.0\% | 0.0\% | 33.3\% | 25.0\% | 33.3\% | 3.6\% | 0.0\% | 3.5\% | 20.0\% | 3.6\% | 0.0\% | 4.2\% | 4.0\% |
| PHF | 0.73 | 0.25 | 0.58 | 0.77 | 0.25 | 0.00 | 0.38 | 0.50 | 0.38 | 0.83 | 0.83 | 0.85 | 0.31 | 0.75 | 0.00 | 0.76 | 0.86 |

Rolling Hour Summary
1:45 PM to 3:45 PM

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total | Pedestrians Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  | North | South | East | West |
| 1:45 PM | 38 | 1 | 4 | 0 | 1 | 1 | 1 | 0 | 5 | 178 | 36 | 0 | 3 | 142 | 0 | 0 | 410 | 0 | 0 | 0 | 0 |
| 2:00 PM | 39 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 4 | 187 | 36 | 0 | 2 | 124 | 0 | 0 | 396 | 0 | 0 | 0 | 0 |
| 2:15 PM | 43 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 187 | 34 | 0 | 1 | 124 | 0 | 0 | 398 | 0 | 0 | 0 | 0 |
| 2:30 PM | 52 | 1 | 4 | 0 | 0 | 0 | 2 | 0 | 4 | 211 | 32 | 0 | 2 | 132 | 0 | 0 | 440 | 0 | 0 | 0 | 0 |
| 2:45 PM | 41 | 1 | 7 | 0 | 1 | 0 | 3 | 0 | 3 | 220 | 33 | 0 | 5 | 138 | 0 | 0 | 452 | 0 | 0 | 0 | 0 |

Out 8
In 9

NE 232nd Ave \& NE 28th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM

Heavy Vehicle 15-Minute Interval Summary
1:45 PM to 3:45 PM

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 1:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 1 | 0 | 1 | 4 |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 1 | 5 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 1 | 4 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 1 | 0 | 1 | 5 |
| 3:00 PM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 3 | 6 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | 1 | 3 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 4 |
| Total Survey | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 2 | 17 | 3 | 22 | 1 | 8 | 0 | 9 | 35 |

Heavy Vehicle Peak Hour Summary
2:45 PM to 3:45 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 28th St |  |  | Westbound NE 28th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 2 | 1 | 3 | 1 | 1 | 2 | 9 | 8 | 17 | 6 | 8 | 14 | 18 |
| PHF | 0.25 |  |  | 0.25 |  |  | 0.20 |  |  | 0.30 |  |  | 0.30 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 8 | 0 | 9 | 1 | 5 | 0 | 6 | 18 |
| PHF | 0.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 0.25 | 0.25 | 0.25 | 0.20 | 0.00 | 0.20 | 0.25 | 0.25 | 0.00 | 0.30 | 0.30 |

Heavy Vehicle Rolling Hour Summary
1:45 PM to 3:45 PM

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 1:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 9 | 3 | 13 | 0 | 3 | 0 | 3 | 17 |
| 2:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 11 | 2 | 14 | 0 | 3 | 0 | 3 | 18 |
| 2:15 PM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 11 | 0 | 12 | 0 | 5 | 0 | 5 | 19 |
| 2:30 PM | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 10 | 0 | 6 | 0 | 6 | 18 |
| 2:45 PM | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 8 | 0 | 9 | 1 | 5 | 0 | 6 | 18 |

## Peak Hour Summary

## All Traffic Data

Clay Carney
(503) $833-2740$
NE 232nd Ave \& NE 28th St
2:45 PM to 3:45 PM
Tuesday, December 08, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.85 | $3.5 \%$ | 256 |
| WB | 0.76 | $4.2 \%$ | 143 |
| NB | 0.77 | $4.1 \%$ | 49 |
| SB | 0.50 | $25.0 \%$ | 4 |
| Intersection | 0.86 | $4.0 \%$ | 452 |

Total Vehicle Summary

## All Traffic Data <br> $\longrightarrow$ Services Inc. <br> Clay Carney (503) 833-2740 <br> Clay Carney (503) $833-2740$

Out 0
In 0


15-Minute Interval Summary
1:45 PM to 3:45 PM

| Interval Start Time | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  | Westbound NE 9th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Bikes | L | T | Bikes |  | Bikes | L | R | Bikes |  |
| 1:45 PM | 9 | 0 | 0 | 0 | 2 | 0 |  | 0 | 0 | 0 | 0 | 11 |
| 2:00 PM | 6 | 0 | 0 | 1 | 8 | 0 |  | 0 | 0 | 0 | 0 | 15 |
| 2:15 PM | 6 | 1 | 0 | 0 | 11 | 0 |  | 0 | 0 | 0 | 0 | 18 |
| 2:30 PM | 17 | 0 | 0 | 0 | 8 | 0 |  | 0 | 0 | 0 | 0 | 25 |
| 2:45 PM | 11 | 1 | 0 | 0 | 6 | 0 |  | 0 | 0 | 0 | 0 | 18 |
| 3:00 PM | 11 | 0 | 0 | 0 | 3 | 0 |  | 0 | 0 | 0 | 0 | 14 |
| 3:15 PM | 14 | 0 | 0 | 0 | 9 | 0 |  | 0 | 0 | 0 | 0 | 23 |
| 3:30 PM | 15 | 0 | 0 | 0 | 8 | 0 |  | 0 | 2 | 0 | 0 | 25 |
| Total Survey | 89 | 2 | 0 | 1 | 55 | 0 |  | 0 | 2 | 0 | 0 | 149 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

NE 232nd Ave \& NE 9th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM

| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |

2:30 PM to 3:30 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 9th St |  |  |  | Westbound NE 9th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 54 | 26 | 80 | 0 | 26 | 53 | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 80 |
| \%HV | 3.7\% |  |  |  | 0.0\% |  |  |  | 0.0\% |  |  |  | 0.0\% |  |  |  | 2.5\% |
| PHF | 0.79 |  |  |  | 0.72 |  |  |  | 0.00 |  |  |  | 0.00 |  |  |  | 0.80 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 9th St |  |  |  | Westbound NE 9th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | T | R | Total | L | T |  | Total |  |  |  | Total | L |  | R | Total |  |
| Volume |  | 53 | 1 | 54 | 0 | 26 |  | 26 |  |  |  | 0 | 0 |  | 0 | 0 | 80 |
| \%HV | NA | 3.8\% | 0.0\% | 3.7\% | 0.0\% | 0.0\% | NA | 0.0\% | NA | NA | NA | 0.0\% | 0.0\% | NA | 0.0\% | 0.0\% | 2.5\% |
| PHF |  | 0.78 | 0.25 | 0.79 | 0.00 | 0.72 |  | 0.72 |  |  |  | 0.00 | 0.00 |  | 0.00 | 0.00 | 0.80 |

## Rolling Hour Summary

1:45 PM to 3:45 PM


Out 0
In 0

NE 232nd Ave \& NE 9th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM


Heavy Vehicle 15-Minute Interval Summary
1:45 PM to 3:45 PM

| Interval Start Time | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  | Westbound NE 9th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| 1:45 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 2:00 PM | 0 | 0 | 0 | 0 | 2 | 2 |  | 0 | 0 | 0 | 0 | 2 |
| 2:15 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 2:30 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 2:45 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 2 | 0 | 2 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 2 |
| 3:15 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 3:30 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| Total Survey | 2 | 0 | 2 | 0 | 2 | 2 |  | 0 | 0 | 0 | 0 | 4 |

Heavy Vehicle Peak Hour Summary
2:30 PM to 3:30 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  |  | Westbound NE 9th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 2 | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| PHF | 0.25 |  |  | 0.00 |  |  | 0.00 |  |  | 0.00 |  |  | 0.25 |



Heavy Vehicle Rolling Hour Summary
1:45 PM to 3:45 PM


## Peak Hour Summary

## All Traffic Data

Clay Carney
(503) $833-2740$
NE 232nd Ave \& NE 9th St

2:30 PM to 3:30 PM
Tuesday, December 08, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.00 | $0.0 \%$ | 0 |
| WB | 0.00 | $0.0 \%$ | 0 |
| NB | 0.79 | $3.7 \%$ | 54 |
| SB | 0.72 | $0.0 \%$ | 26 |
| Intersection | 0.80 | $2.5 \%$ | 80 |

Count Period: 1:45 PM to $3: 45$ PM

NE 242nd Ave \& NE 28th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM

| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |

Peak Hour Summary
2:45 PM to 3:45 PM

| By <br> Approach | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 0 | 0 | 0 | 0 | 74 | 105 | 179 | 0 | 220 | 142 | 362 | 0 | 177 | 224 | 401 | 0 | 471 |
| \%HV | 0.0\% |  |  |  | 10.8\% |  |  |  | 2.7\% |  |  |  | 5.1\% |  |  |  | 4.9\% |
| PHF | 0.00 |  |  |  | 0.80 |  |  |  | 0.80 |  |  |  | 0.79 |  |  |  | 0.82 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Total | L |  | R | Total | L | T |  | Total |  | T | R | Total |  |
| Volume |  |  |  | 0 | 50 |  | 24 | 74 | 46 | 174 |  | 220 |  | 118 | 59 | 177 | 471 |
| \%HV | NA | NA | NA | 0.0\% | 14.0\% | NA | 4.2\% | 10.8\% | 0.0\% | 3.4\% | NA | 2.7\% | NA | 2.5\% | 10.2\% | 5.1\% | 4.9\% |
| PHF |  |  |  | 0.00 | 0.83 |  | 0.67 | 0.80 | 0.72 | 0.82 |  | 0.80 |  | 0.74 | 0.92 | 0.79 | 0.82 |

## Rolling Hour Summary

1:45 PM to 3:45 PM

| Interval Start | Northbound NE 242nd Ave |  | Southbound NE 242nd Ave |  |  | Eastbound NE 28th St |  |  | Westbound NE 28th St |  |  | Interval Total | Pedestrians Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | Bikes | L | R | Bikes | L | T | Bikes | T | R | Bikes |  | North | South | East | West |
| 1:45 PM |  | 0 | 45 | 28 | 0 | 50 | 133 | 0 | 116 | 36 | 0 | 408 | 0 | 0 | 1 | 0 |
| 2:00 PM |  | 0 | 43 | 28 | 0 | 43 | 136 | 0 | 95 | 47 | 0 | 392 | 0 | 0 | 1 | 0 |
| 2:15 PM |  | 0 | 43 | 21 | 0 | 47 | 139 | 0 | 100 | 54 | 0 | 404 | 0 | 0 | 1 | 0 |
| 2:30 PM |  | 0 | 43 | 27 | 0 | 48 | 160 | 0 | 106 | 54 | 0 | 438 | 0 | 0 | 1 | 0 |
| 2:45 PM |  | 0 | 50 | 24 | 0 | 46 | 174 | 0 | 118 | 59 | 0 | 471 | 0 | 0 | 0 | 0 |

Out 4
In 6

NE 242nd Ave \& NE 28th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM



Heavy Vehicle 15-Minute Interval Summary
1:45 PM to 3:45 PM


Heavy Vehicle Peak Hour Summary
2:45 PM to 3:45 PM

| By <br> Approach | Northbound NE 242nd Ave |  |  | Southbound NE 242nd Ave |  |  | Eastbound NE 28th St |  |  | Westbound NE 28th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 0 | 0 | 0 | 8 | 6 | 14 | 6 | 4 | 10 | 9 | 13 | 22 | 23 |
| PHF | 0.00 |  |  | 0.33 |  |  | 0.17 |  |  | 0.20 |  |  | 0.29 |



Heavy Vehicle Rolling Hour Summary
1:45 PM to 3:45 PM



Total Vehicle Summary

## All Traffic Data <br> $\longrightarrow$ Services Inc. <br> Clay Carney <br> (503) 833-2740

NE 267th Ave \& NE 19th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM

Out 0
In 0


15-Minute Interval Summary
1:45 PM to 3:45 PM

| Interval Start | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | T | R | Bikes | L | T | Bikes |  | Bikes | L | R | Bikes |  |
| 1:45 PM | 26 | 18 | 0 | 18 | 15 | 0 |  | 0 | 12 | 14 | 0 | 103 |
| 2:00 PM | 10 | 12 | 0 | 19 | 21 | 0 |  | 0 | 14 | 16 | 0 | 92 |
| 2:15 PM | 26 | 20 | 0 | 17 | 22 | 0 |  | 0 | 19 | 18 | 0 | 122 |
| 2:30 PM | 17 | 37 | 0 | 27 | 18 | 0 |  | 0 | 13 | 13 | 0 | 125 |
| 2:45 PM | 17 | 31 | 0 | 16 | 27 | 0 |  | 0 | 19 | 13 | 0 | 123 |
| 3:00 PM | 26 | 27 | 0 | 28 | 21 | 0 |  | 0 | 10 | 14 | 0 | 126 |
| 3:15 PM | 39 | 19 | 0 | 27 | 28 | 0 |  | 0 | 16 | 20 | 0 | 149 |
| 3:30 PM | 24 | 32 | 0 | 26 | 24 | 0 |  | 0 | 10 | 21 | 0 | 137 |
| Total Survey | 185 | 196 | 0 | 178 | 176 | 0 |  | 0 | 113 | 129 | 0 | 977 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

Peak Hour Summary
2:45 PM to 3:45 PM

| By <br> Approach | Northbound NE 267th Ave |  |  |  | Southbound NE 267th Ave |  |  |  | Eastbound NE 19th St |  |  |  | Westbound NE 19th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 215 | 155 | 370 | 0 | 197 | 174 | 371 | 0 | 0 | 0 | 0 | 0 | 123 | 206 | 329 | 0 | 535 |
| \%HV | 5.1\% |  |  |  | 4.1\% |  |  |  | 0.0\% |  |  |  | 7.3\% |  |  |  | 5.2\% |
| PHF | 0.93 |  |  |  | 0.90 |  |  |  | 0.00 |  |  |  | 0.85 |  |  |  | 0.90 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 267th Ave |  |  |  | Southbound NE 267th Ave |  |  |  | Eastbound NE 19th St |  |  |  | Westbound NE 19th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | T | R | Total | L | T |  | Total |  |  |  | Total | L |  | R | Total |  |
| Volume |  | 106 | 109 | 215 | 97 | 100 |  | 197 |  |  |  | 0 | 55 |  | 68 | 123 | 535 |
| \%HV | NA | 3.8\% | 6.4\% | 5.1\% | 3.1\% | 5.0\% | NA | 4.1\% | NA | NA | NA | 0.0\% | 9.1\% | NA | 5.9\% | 7.3\% | 5.2\% |
| PHF |  | 0.68 | 0.85 | 0.93 | 0.87 | 0.89 |  | 0.90 |  |  |  | 0.00 | 0.72 |  | 0.81 | 0.85 | 0.90 |

## Rolling Hour Summary

1:45 PM to 3:45 PM


Out 0
In 0

NE 267th Ave \& NE 19th St
Tuesday, December 08, 2015 1:45 PM to 3:45 PM


Heavy Vehicle 15-Minute Interval Summary
1:45 PM to 3:45 PM


Heavy Vehicle Peak Hour Summary
2:45 PM to 3:45 PM

| By <br> Approach | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound <br> NE 19th St |  |  | Westbound NE 19th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 11 | 10 | 21 | 8 | 8 | 16 | 0 | 0 | 0 | 9 | 10 | 19 | 28 |
| PHF | 0.28 |  |  | 0.29 |  |  | 0.00 |  |  | 0.28 |  |  | 0.32 |


| By <br> Movement | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| Volume | 4 | 7 | 11 | 3 | 5 | 8 |  | 0 | 5 | 4 | 9 | 28 |
| PHF | 0.25 | 0.25 | 0.28 | 0.19 | 0.42 | 0.29 |  | 0.00 | 0.31 | 0.25 | 0.28 | 0.32 |

Heavy Vehicle Rolling Hour Summary
1:45 PM to 3:45 PM


## Peak Hour Summary

## All Traffic Data

Clay Carney (503) 833-2740

NE 267th Ave \& NE 19th St
2:45 PM to 3:45 PM
Tuesday, December 08, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.00 | $0.0 \%$ | 0 |
| WB | 0.85 | $7.3 \%$ | 123 |
| NB | 0.93 | $5.1 \%$ | 215 |
| SB | 0.90 | $4.1 \%$ | 197 |
| Intersection | 0.90 | $5.2 \%$ | 535 |



NE 232nd Ave \& NE 28th St
Tuesday, December 08, 2015 4:00 PM to 6:00 PM

Out 169
Clay Carney
(503) 833-2740

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

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  |
| 4:00 PM | 19 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 59 | 10 | 0 | 2 | 34 | 0 | 0 | 129 |
| 4:15 PM | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 51 | 8 | 0 | 1 | 30 | 0 | 0 | 105 |
| 4:30 PM | 5 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 82 | 7 | 0 | 0 | 38 | 0 | 0 | 138 |
| 4:45 PM | 10 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 71 | 15 | 0 | 4 | 37 | 0 | 0 | 140 |
| 5:00 PM | 6 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 72 | 11 | 0 | 1 | 30 | 0 | 0 | 122 |
| 5:15 PM | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 87 | 21 | 0 | 0 | 28 | 0 | 0 | 147 |
| 5:30 PM | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 69 | 19 | 0 | 1 | 40 | 0 | 0 | 139 |
| 5:45 PM | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 10 | 0 | 1 | 22 | 0 | 0 | 127 |
| Total Survey | 80 | 1 | 7 | 0 | 0 | 2 | 5 | 0 | 9 | 573 | 101 | 0 | 10 | 259 | 0 | 0 | 1,047 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

Peak Hour Summary
4:45 PM to 5:45 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 35 | 72 | 107 | 0 | 2 | 5 | 7 | 0 | 370 | 169 | 539 | 0 | 141 | 302 | 443 | 0 | 548 |
| \%HV | 0.0\% |  |  |  | 0.0\% |  |  |  | 0.3\% |  |  |  | 2.8\% |  |  |  | 0.9\% |
| PHF | 0.80 |  |  |  | 0.50 |  |  |  | 0.85 |  |  |  | 0.86 |  |  |  | 0.93 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 32 | 0 | 3 | 35 | 0 | 0 | 2 | 2 | 5 | 299 | 66 | 370 | 6 | 135 | 0 | 141 | 548 |
| \%HV | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 1.5\% | 0.3\% | 0.0\% | 3.0\% | 0.0\% | 2.8\% | 0.9\% |
| PHF | 0.80 | 0.00 | 0.75 | 0.80 | 0.00 | 0.00 | 0.50 | 0.50 | 0.42 | 0.86 | 0.79 | 0.85 | 0.38 | 0.84 | 0.00 | 0.86 | 0.93 |

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

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total | Pedestrians Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  | North | South | East | West |
| 4:00 PM | 47 | 1 | 4 | 0 | 0 | 2 | 4 | 0 | 5 | 263 | 40 | 0 | 7 | 139 | 0 | 0 | 512 | 0 | 0 | 0 | 0 |
| 4:15 PM | 34 | 1 | 3 | 0 | 0 | 1 | 3 | 0 | 5 | 276 | 41 | 0 | 6 | 135 | 0 | 0 | 505 | 0 | 0 | 0 | 0 |
| 4:30 PM | 31 | 1 | 3 | 0 | 0 | 1 | 3 | 0 | 4 | 312 | 54 | 0 | 5 | 133 | 0 | 0 | 547 | 0 | 0 | 0 | 0 |
| 4:45 PM | 32 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 5 | 299 | 66 | 0 | 6 | 135 | 0 | 0 | 548 | 0 | 0 | 0 | 0 |
| 5:00 PM | 33 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 4 | 310 | 61 | 0 | 3 | 120 | 0 | 0 | 535 | 0 | 0 | 0 | 0 |

Out 4
In 1

NE 232nd Ave \& NE 28th St
Tuesday, December 08, 2015 4:00 PM to 6:00 PM


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

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 2 | 4 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 2 | 3 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | O | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total Survey | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 7 | 1 | 5 | 0 | 6 | 13 |

Heavy Vehicle Peak Hour Summary
4:45 PM to 5:45 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 28th St |  |  | Westbound NE 28th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 4 | 5 | 4 | 0 | 4 | 5 |
| PHF | 0.00 |  |  | 0.00 |  |  | 0.05 |  |  | 0.25 |  |  | 0.16 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 5 |
| PHF | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.05 | 0.00 | 0.33 | 0.00 | 0.25 | 0.16 |

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

| Interval Start Time | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 1 | 3 | 0 | 4 | 10 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 1 | 4 | 0 | 5 | 9 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 0 | 3 | 5 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 4 | 5 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 3 |

## Peak Hour Summary

## All Traffic Data



| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.85 | $0.3 \%$ | 370 |
| WB | 0.86 | $2.8 \%$ | 141 |
| NB | 0.80 | $0.0 \%$ | 35 |
| SB | 0.50 | $0.0 \%$ | 2 |
| Intersection | 0.93 | $0.9 \%$ | 548 |

Total Vehicle Summary

## All Traffic Data <br> $\sim$ Services Inc. <br> Clay Carney <br> (503) 833-2740

NE 232nd Ave \& NE 9th St
Tuesday, December 08, 2015
4:00 PM to 6:00 PM
Out 0
In 0


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

| Interval Start Time | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  | Westbound NE 9th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Bikes | L | T | Bikes |  | Bikes | L | R | Bikes |  |
| 4:00 PM | 15 | 0 | 0 | , | 7 | 0 |  | 0 | 0 | 1 | 0 | 24 |
| 4:15 PM | 9 | 0 | 0 | 0 | 7 | 0 |  | 0 | 1 | 0 | 0 | 17 |
| 4:30 PM | 8 | 0 | 0 | 0 | 8 | 0 |  | 0 | 0 | 0 | 0 | 16 |
| 4:45 PM | 14 | 0 | 0 | 0 | 10 | 0 |  | 0 | 0 | 0 | 0 | 24 |
| 5:00 PM | 7 | 0 | 0 | 0 | 11 | 0 |  | 0 | 0 | 0 | 0 | 18 |
| 5:15 PM | 6 | 0 | 0 | 0 | 11 | 0 |  | 0 | 0 | 0 | 0 | 17 |
| 5:30 PM | 8 | 0 | 0 | 1 | 13 | 0 |  | 0 | 0 | 2 | 0 | 24 |
| 5:45 PM | 12 | 1 | 0 | 0 | 8 | 0 |  | 0 | 0 | 0 | 0 | 21 |
| Total Survey | 79 | 1 | 0 | 2 | 75 | 0 |  | 0 | 1 | 3 | 0 | 161 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

Peak Hour Summary
4:45 PM to 5:45 PM

| By <br> Approach | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 9th St |  |  |  | Westbound NE 9th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 35 | 45 | 80 | 0 | 46 | 37 | 83 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 0 | 83 |
| \%HV | 0.0\% |  |  |  | 2.2\% |  |  |  | 0.0\% |  |  |  | 0.0\% |  |  |  | 1.2\% |
| PHF | 0.63 |  |  |  | 0.82 |  |  |  | 0.00 |  |  |  | 0.25 |  |  |  | 0.86 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 232nd Ave |  |  |  | Southbound NE 232nd Ave |  |  |  | Eastbound NE 9th St |  |  |  | Westbound NE 9th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | T | R | Total | L | T |  | Total |  |  |  | Total | L |  | R | Total |  |
| Volume |  | 35 | 0 | 35 | 1 | 45 |  | 46 |  |  |  | 0 | 0 |  | 2 | 2 | 83 |
| \%HV | NA | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 2.2\% | NA | 2.2\% | NA | NA | NA | 0.0\% | 0.0\% | NA | 0.0\% | 0.0\% | 1.2\% |
| PHF |  | 0.63 | 0.00 | 0.63 | 0.25 | 0.87 |  | 0.82 |  |  |  | 0.00 | 0.00 |  | 0.25 | 0.25 | 0.86 |

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

| Interval Start Time | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  | Westbound NE 9th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Bikes | L | T | Bikes |  | Bikes | L | R | Bikes |  |
| 4:00 PM | 46 | 0 | 0 | 1 | 32 | 0 |  | 0 | 1 | 1 | 0 | 81 |
| 4:15 PM | 38 | 0 | 0 | 0 | 36 | 0 |  | 0 | 1 | 0 | 0 | 75 |
| 4:30 PM | 35 | 0 | 0 | 0 | 40 | 0 |  | 0 | 0 | 0 | 0 | 75 |
| 4:45 PM | 35 | 0 | 0 | 1 | 45 | 0 |  | 0 | 0 | 2 | 0 | 83 |
| 5:00 PM | 33 | 1 | 0 | 1 | 43 | 0 |  | 0 | 0 | 2 | 0 | 80 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |

Out 0
In 0

NE 232nd Ave \& NE 9th St
Tuesday, December 08, 2015
4:00 PM to 6:00 PM


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


Heavy Vehicle Peak Hour Summary
4:45 PM to 5:45 PM

| By <br> Approach | Northbound <br> NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  |  | Westbound NE 9th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| PHF | 0.00 |  |  | 0.25 |  |  | 0.00 |  |  | 0.00 |  |  | 0.25 |


| By <br> Movement | Northbound NE 232nd Ave |  |  | Southbound NE 232nd Ave |  |  | Eastbound NE 9th St |  | Westbound NE 9th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| Volume | 0 | 0 | 0 | 0 | 1 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| PHF | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.25 |  | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 |

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


## Peak Hour Summary

## All Traffic Data

Clay Carney
(503) $833-2740$
NE 232nd Ave \& NE 9th St
4:45 PM to 5:45 PM
Tuesday, December 08, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.00 | $0.0 \%$ | 0 |
| WB | 0.25 | $0.0 \%$ | 2 |
| NB | 0.63 | $0.0 \%$ | 35 |
| SB | 0.82 | $2.2 \%$ | 46 |
| Intersection | 0.86 | $1.2 \%$ | 83 |

NE 242nd Ave \& NE 28th St
Tuesday, December 08, 2015
4:00 PM to 6:00 PM

| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |

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

| Interval Start Time | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  |
| 4:00 PM | 0 | 0 | 0 | 0 | 16 | 0 | 11 | 0 | 15 | 55 | 0 | 0 | 0 | 23 | 14 | 0 | 134 |
| 4:15 PM | 0 | 0 | 0 | 0 | 20 | 0 | 7 | 0 | 8 | 45 | 0 | 0 | 0 | 27 | 14 | 0 | 121 |
| 4:30 PM | 0 | 0 | 0 | 0 | 10 | 0 | 5 | 0 | 22 | 59 | 0 | 0 | 0 | 36 | 18 | 0 | 150 |
| 4:45 PM | 1 | 0 | 0 | 0 | 16 | 0 | 10 | 0 | 18 | 53 | 0 | 0 | 0 | 29 | 16 | 0 | 143 |
| 5:00 PM | 0 | 0 | 1 | 0 | 13 | 0 | 5 | 0 | 13 | 65 | 0 | 0 | 0 | 27 | 10 | 0 | 134 |
| 5:15 PM | 0 | 0 | 0 | 0 | 15 | 0 | 10 | 0 | 16 | 63 | 1 | 0 | 0 | 19 | 11 | 0 | 135 |
| 5:30 PM | 0 | 0 | 1 | 0 | 14 | 0 | 4 | 0 | 18 | 51 | 1 | 0 | 0 | 36 | 16 | 0 | 141 |
| 5:45 PM | 1 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 13 | 67 | 0 | 0 | 0 | 20 | 11 | 0 | 121 |
| Total Survey | 2 | 0 | 2 | 0 | 111 | 0 | 54 | 0 | 123 | 458 | 2 | 0 | 0 | 217 | 110 | 0 | 1,079 |

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

| By <br> Approach | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 2 | 1 | 3 | 0 | 84 | 124 | 208 | 0 | 310 | 142 | 452 | 0 | 166 | 295 | 461 | 0 | 562 |
| \%HV | 0.0\% |  |  |  | 1.2\% |  |  |  | 0.0\% |  |  |  | 1.2\% |  |  |  | 0.5\% |
| PHF | 0.50 |  |  |  | 0.81 |  |  |  | 0.96 |  |  |  | 0.77 |  |  |  | 0.94 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |


| By <br> Movement | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 1 | 0 | 1 | 2 | 54 | 0 | 30 | 84 | 69 | 240 | 1 | 310 | 0 | 111 | 55 | 166 | 562 |
| \%HV | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 1.9\% | 0.0\% | 0.0\% | 1.2\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 1.8\% | 0.0\% | 1.2\% | 0.5\% |
| PHF | 0.25 | 0.00 | 0.25 | 0.50 | 0.84 | 0.00 | 0.75 | 0.81 | 0.78 | 0.92 | 0.25 | 0.96 | 0.00 | 0.77 | 0.76 | 0.77 | 0.94 |

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

| Interval Start Time | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total | Pedestrians Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes | L | T | R | Bikes |  | North | South | East | West |
| 4:00 PM | 1 | 0 | 0 | 0 | 62 | 0 | 33 | 0 | 63 | 212 | 0 | 0 | 0 | 115 | 62 | 0 | 548 | 0 | 0 | 1 | 0 |
| 4:15 PM | 1 | 0 | 1 | 0 | 59 | 0 | 27 | 0 | 61 | 222 | 0 | 0 | 0 | 119 | 58 | 0 | 548 | 0 | 0 | 0 | 0 |
| 4:30 PM | 1 | 0 | 1 | 0 | 54 | 0 | 30 | 0 | 69 | 240 | 1 | 0 | 0 | 111 | 55 | 0 | 562 | 0 | 0 | 0 | 0 |
| 4:45 PM | 1 | 0 | 2 | 0 | 58 | 0 | 29 | 0 | 65 | 232 | 2 | 0 | 0 | 111 | 53 | 0 | 553 | 0 | 0 | 0 | 0 |
| 5:00 PM | 1 | 0 | 2 | 0 | 49 | 0 | 21 | 0 | 60 | 246 | 2 | 0 | 0 | 102 | 48 | 0 | 531 | 0 | 0 | 0 | 0 |

Out 2
In 0

NE 242nd Ave \& NE 28th St
Tuesday, December 08, 2015 4:00 PM to 6:00 PM


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

| Interval Start Time | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 1 | 1 | 0 | 2 | 0 | 1 | 3 | 4 | 9 |
| 4:30 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | O | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total Survey | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 1 | 4 | 0 | 5 | 0 | 3 | 3 | 6 | 15 |

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

| By <br> Approach | Northbound NE 242nd Ave |  |  | Southbound NE 242nd Ave |  |  | Eastbound <br> NE 28th St |  |  | Westbound NE 28th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 2 | 1 | 3 | 3 |
| PHF | 0.00 |  |  | 0.06 |  |  | 0.00 |  |  | 0.08 |  |  | 0.06 |


| By <br> Movement | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| Volume | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| PHF | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.08 | 0.06 |

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

| Interval Start Time | Northbound NE 242nd Ave |  |  |  | Southbound NE 242nd Ave |  |  |  | Eastbound NE 28th St |  |  |  | Westbound NE 28th St |  |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | L | T | R | Total | L | T | R | Total | L | T | R | Total | L | T | R | Total |  |
| 4:00 PM | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 1 | 3 | 0 | 4 | 0 | 3 | 3 | 6 | 14 |
| 4:15 PM | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 1 | 1 | 0 | 2 | 0 | 3 | 3 | 6 | 12 |
| 4:30 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 3 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 2 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |

## Peak Hour Summary

## All Traffic Data


4:30 PM to 5:30 PM
Tuesday, December 08, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.96 | $0.0 \%$ | 310 |
| WB | 0.77 | $1.2 \%$ | 166 |
| NB | 0.50 | $0.0 \%$ | 2 |
| SB | 0.81 | $1.2 \%$ | 84 |
| Intersection | 0.94 | $0.5 \%$ | 562 |

Total Vehicle Summary

## All Traffic Data <br> $\sim$ Services Inc. <br> Clay Carney (503) 833-2740 <br> Clay Carney (503) 833-2740

NE 267th Ave \& NE 19th St
Tuesday, December 08, 2015
4:00 PM to 6:00 PM
Out 0
In 0


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

| Interval Start Time | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Bikes | L | T | Bikes |  | Bikes | L | R | Bikes |  |
| 4:00 PM | 25 | 26 | 0 | 28 | 32 | 0 |  | 0 | 8 | 14 | 0 | 133 |
| 4:15 PM | 24 | 24 | 0 | 25 | 34 | 0 |  | 0 | 17 | 19 | 0 | 143 |
| 4:30 PM | 36 | 28 | 0 | 41 | 19 | 0 |  | 0 | 10 | 19 | 0 | 153 |
| 4:45 PM | 35 | 29 | 0 | 26 | 25 | 0 |  | 0 | 16 | 11 | 0 | 142 |
| 5:00 PM | 15 | 22 | 0 | 43 | 33 | 0 |  | 0 | 6 | 12 | 0 | 131 |
| 5:15 PM | 32 | 21 | 0 | 44 | 27 | 0 |  | 0 | 15 | 11 | 0 | 150 |
| 5:30 PM | 21 | 27 | 0 | 32 | 25 | 0 |  | 0 | 15 | 16 | 0 | 136 |
| 5:45 PM | 13 | 23 | 0 | 37 | 26 | 0 |  | 0 | 12 | 12 | 0 | 123 |
| Total Survey | 201 | 200 | 0 | 276 | 221 | 0 |  | 0 | 99 | 114 | 0 | 1,111 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 |

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

| By <br> Approach | Northbound NE 267th Ave |  |  |  | Southbound NE 267th Ave |  |  |  | Eastbound NE 19th St |  |  |  | Westbound NE 19th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes | In | Out | Total | Bikes |  |
| Volume | 218 | 151 | 369 | 0 | 258 | 171 | 429 | 0 | 0 | 0 | 0 | 0 | 100 | 254 | 354 | 0 | 576 |
| \%HV | 0.5\% |  |  |  | 0.4\% |  |  |  | 0.0\% |  |  |  | 4.0\% |  |  |  | 1.0\% |
| PHF | 0.85 |  |  |  | 0.85 |  |  |  | 0.00 |  |  |  | 0.86 |  |  |  | 0.94 |


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 1 | 0 | 0 |


| By <br> Movement | Northbound NE 267th Ave |  |  |  | Southbound NE 267th Ave |  |  |  | Eastbound NE 19th St |  |  |  | Westbound NE 19th St |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | T | R | Total | L | T |  | Total |  |  |  | Total | L |  | R | Total |  |
| Volume |  | 118 | 100 | 218 | 154 | 104 |  | 258 |  |  |  | 0 | 47 |  | 53 | 100 | 576 |
| \%HV | NA | 0.0\% | 1.0\% | 0.5\% | 0.6\% | 0.0\% | NA | 0.4\% | NA | NA | NA | 0.0\% | 4.3\% | NA | 3.8\% | 4.0\% | 1.0\% |
| PHF |  | 0.82 | 0.86 | 0.85 | 0.88 | 0.79 |  | 0.85 |  |  |  | 0.00 | 0.73 |  | 0.70 | 0.86 | 0.94 |

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


| Pedestrians <br> Crosswalk |  |  |  |
| :---: | :---: | :---: | :---: |
| North | South | East | West |
| 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 0 |

Heavy Vehicle Summary

NE 267th Ave \& NE 19th St
Tuesday, December 08, 2015
4:00 PM to 6:00 PM
Out 0
In 0


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

| Interval Start Time | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Interval Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| 4:00 PM | 1 | 0 | 1 | 1 | 1 | 2 |  | 0 | 0 | 1 | 1 | 4 |
| 4:15 PM | 0 | 0 | 0 | 0 | 2 | 2 |  | 0 | 3 | 3 | 6 | 8 |
| 4:30 PM | 0 | 0 | 0 | 1 | 0 | 1 |  | 0 | 1 | 0 | 1 | 2 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 1 | 0 | 1 | 1 |
| 5:00 PM | 0 | 1 | 1 | 0 | 0 | 0 |  | 0 | 0 | 2 | 2 | 3 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 1 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| Total Survey | 1 | 1 | 2 | 2 | 4 | 6 |  | 0 | 5 | 6 | 11 | 19 |

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

| By <br> Approach | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound <br> NE 19th St |  |  | Westbound NE 19th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | In | Out | Total | In | Out | Total | In | Out | Total | In | Out | Total |  |
| Volume | 1 | 2 | 3 | 1 | 2 | 3 | 0 | 0 | 0 | 4 | 2 | 6 | 6 |
| PHF | 0.25 |  |  | 0.05 |  |  | 0.00 |  |  | 0.13 |  |  | 0.11 |


| By <br> Movement | Northbound NE 267th Ave |  |  | Southbound NE 267th Ave |  |  | Eastbound NE 19th St |  | Westbound NE 19th St |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | T | R | Total | L | T | Total |  | Total | L | R | Total |  |
| Volume | 0 | 1 | 1 | 1 | 0 | 1 |  | 0 | 2 | 2 | 4 | 6 |
| PHF | 0.00 | 0.25 | 0.25 | 0.13 | 0.00 | 0.05 |  | 0.00 | 0.10 | 0.13 | 0.13 | 0.11 |

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


## Peak Hour Summary

## All Traffic Data

Clay Carney
(503) $833-2740$
NE 267th Ave \& NE 19th St
4:30 PM to 5:30 PM
Tuesday, December 08, 2015


| Approach | PHF | HV\% | Volume |
| :---: | :---: | :---: | :---: |
| EB | 0.00 | $0.0 \%$ | 0 |
| WB | 0.86 | $4.0 \%$ | 100 |
| NB | 0.85 | $0.5 \%$ | 218 |
| SB | 0.85 | $0.4 \%$ | 258 |
| Intersection | 0.94 | $1.0 \%$ | 576 |






Table 4: Trip Generation Estimate - Phase 1

| tand Use |  | Size | Daily | Weethey AM Peak Hodr |  |  | Weeldray PM Peak Hour |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | code |  |  | Total | 19 | 024 | rotal | Ih | Out |
| Single-Family Detached Housing | 210 | 215 units | 2,050 | 160 | 40 | 120 | 215 | 135 | 80 |

Table 5: Trip Generation Estimate - Build-out (Includes Phase 1)

|  |  |  |  | We | AM | four | Wee | 2MI | Hour |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| tand Use | Code | Size | Daly | Totet | 15 | Ont | Totil | 17. | out |
| Apartment | 220 | 536 units | 3,570 | 275 | 55 | 220 | 330 | 215 | 115 |
| Single-Family Detached Housing | 210 | 764 units | 7,270 | 575 | 145 | 430 | 765 | 480 | 285 |
| Total Residential (1,300 units) |  |  | 10,840 | 850 | 200 | 650 | 1,095 | 695 | 400 |
| Internalization (6\% Daily, 5\% PM) |  |  | 630 | 0 | 0 | 0 | 60 | 30 | 30 |
| Shopping Center <br> Internalization (10\% Daily, 11\% PM) <br> Pass-By Trips (34\%) | 820 | 90,000 square feet | $\begin{gathered} \hline 6,340 \\ 630 \\ 1,940 \end{gathered}$ | $\begin{gathered} \hline 145 \\ 0 \\ 50 \end{gathered}$ | $\begin{gathered} 90 \\ 0 \\ 25 \end{gathered}$ | 55 0 25 | $\begin{gathered} 560 \\ 60 \\ 170 \end{gathered}$ | 270 30 85 | 290 30 85 |
| Total Trips |  |  | 17,180 | 995 | 290 | 705 | 1,655 | 965 | 690 |
| Less Internalization |  |  | 1,260 | 0 | 0 | 0 | 120 | 60 | 60 |
| Less Pass-by trips |  |  | 1,940 | 50 | 25 | 25 | 170 | 85 | 85 |
| Net New Trips for Full Build-out |  |  | 13,980 | 945 | 265 | 680 | 1,365 | 820 | 545 |

## Trip Distribution

The distribution of site-generated trips onto the study area roadway system was estimated based on a review of surrounding roadway characteristics, existing uses, the 2035 travel demand model maintained by the Southwest Washington Regional Transportation Council (RTC), and review agency guidance. Trip distribution patterns were developed separately for the residential and retail trips. Figure 6 illustrates the trip distribution patterns for the residential and retail trips.

## Trip Assignment

The weekday a.m. and p.m. peak hour site trips shown in Tables 4 and 5 were assigned to the roadway network based on the trip distribution patterns shown in Figure 6. Figures 7 through 10 show the assignment of site-generated trips during the weekday a.m. and p.m. peak hours for Phase 1 and at Build-out. Note that the site-generated build-out volumes shown in Figures 9 and 10 include the Phase 1 site-generated trips and thus reflect the total number of trips generated. $A$ figure showing the assignment of pass-by trips is provided in Appendix " $E$ ".
Grean Mountain Master Plan
if
if



[^1]
## Traffic Volumes

The traffic counts in this report were conducted from 7:00 to 9:00 am and 4:00 to 6:00 pm during February 2014. The AM peak hour occurred between approximately $7: 15$ to $8: 15$ am and the PM peak hour occurred between approximately $4: 30$ to $5: 30 \mathrm{pm}$. The peak hour is the one-hour time period when traffic volumes are the highest and congestion on the adjacent streets is most likely to occur. The existing traffic volumes are shown in Figures 3a and 3b. The raw traffic count data is shown in Appendix A.

## Trip Generation/Distribution

The Green Mountain Estates subdivision could generate approximately 3,779 new trips per day, ITE Trip Generation Manual, $9^{\text {th }}$ edition. A trip is a one-directional vehicle movement. Two hundred ninety-eight new trips could occur during the AM peak hour and 397 new trips could occur during the PM peak hour. The trip generation rates are shown in Table 1.

Table 1, Site Traffic Generation

| Land Use | $\begin{aligned} & \text { ITE } \\ & \text { code } \end{aligned}$ | Trip Generation | Units * | Trips/ Day | Trips/ <br> AM <br> Peak | Trips/ <br> PM <br> Peak |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Single-Family Detached Homes | 210 | 9.52/dwell unit-Day <br> 0.75/dwell unit-AM Peak Hour <br> 1.00/dwell unit-PM Peak Hour | $\begin{gathered} 400-3 \text { existing }= \\ 397 \text { new } \end{gathered}$ | 3,779 | $\begin{gathered} 298 \\ \text { (in-74, } \\ \text { out-224) } \end{gathered}$ | $\begin{gathered} 397 \\ \text { (in-250, } \\ \text { out-147) } \end{gathered}$ |

* credit for the 3 existing homes was accounted for in the existing traffic volumes

The directional distribution of traffic generated by the development was assigned to the study area intersections. This distribution was based on the existing traffic volumes and discussions with staff from the City of Camas. The site traffic distribution and assignment are shown in Figures 7a through 7d.

## Year 2019 Traffic Volumes

The year 2019 traffic volumes at the study area intersections included in-process traffic from the Lacamas Prairie Estates PUD development. The Lacamas Prairie Estates PUD is a 176 -lot development located at the NE $25^{\text {th }}$ Street/NE $187^{\text {th }}$ Avenue intersection in Clark County. The inprocess traffic is shown in Figures 5 a and 5 b and was included to provide an analysis for build-out of the Green Mountain Estates subdivision, forecast year 2019 traffic conditions.


GREEN MOUNTAIN ESTATES

FIGURE 7c SITE TRAFFIC DISTRIBUTION/ ASSIGNMENT, PM PEAK HOUR

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316 e Fourth Plain, A-2, Vancouver, W $\$ 98633$ Phone: 360-433-7530



|  | LEGEND <br> $100 / 128$ | AM/PM Peak Hour <br> Traffic Volumes <br> Inbound Peak Hour Trip Distribution |
| :--- | :--- | :--- |
| FIGURE 6 |  |  |



LEGEND

A.M. and P.M. Peak Hour Traffic Volumes
A.M. and P.M. Peak Hour Trip Distribution

Figure 4 provides a summary of the existing turning-movement counts, which are rounded to the nearest five vehicles per hour for the weekday a.m. and p.m. peak hours, respectively. Appendix "B" contains the traffic count worksheets used in this study.

As shown in Figure 4, the study intersections operate acceptably during both study periods. Appendix " $C$ " contains the existing conditions traffic operations worksheets.

## DEVELOPMENT TRIP GENERATION

As discussed above, the proposed development includes 179 single family units, which is a reduction of 25 units compared to the plan approved in 2006. Trip generation estimates for the currently proposed development were generated based on information provided in the standard reference manual Trip Generation, $9^{\text {th }}$ Edition published by the Institute of Transportation Engineers (ITE - Reference 3). In the 2006 TIA, rates from the $7^{\text {th }}$ Edition of the Trip Generation manual were utilized, which are slightly higher than those from the $9^{\text {th }}$ Edition. Table 1 compares the trip generation from the current site plan with that previously proposed.

Table 1: Trip Generation Comparison

| Scenario | 116 <br> code | Size | Dall | Weekday AM Pedk Hour $1 n$ Out <br> Total |  |  | Weakday RMPeak Hour <br> In <br> Out <br> Tota |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Current Site Plan | 210 | 179 units | 1,704 | 34 | 101 | 135 | 113 | 66 | 179 |
| 2006 TIA | 210 | 204 units | 2,004 | 38 | 114 | 152 | 128 | 75 | 203 |
| Difference | - | -25 units | -300 | -4 | -13 | -17 | -15 | -9 | -24 |

As seen in the table, the current proposal results in 17 fewer trips during the a.m. peak hour and 24 fewer trips during the p.m. peak hour.

## Trip Distribution

The distribution of site-generated trips onto the study area roadway system was estimated using the trip distribution pattern utilized in the 2006 TIA, accounting for the change in trip generation and new proposed access routes. The weekday a.m. and p.m. peak hour site trips shown in Table 1 were assigned to the roadway network based on the trip distribution pattern. Figure 5 shows the assignment of site-generated trips during the weekday a.m. and p.m. peak hours.

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Figure 2. Warrant for left-turn storage lanes on two-lane highways.

Storage requirements for critical left-turn movements at unsignalized intersections on 2-lane roads.

| Intersection | Mov't | Analysis Period | $\begin{gathered} \text { Speed } \\ V \\ (\mathrm{mph}) \end{gathered}$ | Left Turns in Advancing Volume (vph) | Advancing Volume $V_{A}$ (vph) | Opposing Volume $V_{0}(\mathrm{vph})$ | \% Left Turns in Advancing Volume L | Storage Req'd (ft) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NE 28th Street and NE 232nd Ave. | $\begin{gathered} \text { WB } \\ \text { LT } \end{gathered}$ | 2018 Background - AM Peak <br> 2018 Total - AM Peak <br> 2018 Bkgd. - Mid. Afternoon Peal <br> 2018 Total - Mid. Afternoon Pk <br> 2018 Bkgd. - PM Peak <br> 2018 Total - PM Peak | 50 | 12 | 307 | 331 | 4\% $\rightarrow$ 5\% | None |
|  |  |  |  | 172 | 467 | 334 | 37\% $\rightarrow$ 40\% | 100' |
|  |  |  |  | 7 | 183 | 378 | 4\% $\rightarrow$ 5\% | None |
|  |  |  |  | 89 | 265 | 380 | $33 \% \rightarrow 30 \%$ | 75' |
|  |  |  |  | 14 | 256 | 585 | 5\% | None |
|  |  |  |  | 61 | 303 | 586 | 20\% | 75' |
| School Access and NE 232nd Ave. | $\begin{aligned} & \text { NB } \\ & \text { LT } \end{aligned}$ | 2018 Total - AM Peak | 45 | 7 | 141 | 307 | 5\% | None |
|  |  | 2018 Total - Mid. Afternoon Pk |  | 5 | 107 | 170 | 5\% | None |
|  |  | 2018 Total - PM Peak |  | 3 | 53 | 215 | 6\% $\rightarrow 5 \%$ | None |

Source: Highway Research Record \#211, Harmelink, M. D.



Figure 11. Warrant for left-turn storage lanes on two-lane highways.


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Figure 4C-4. Warrant 3, Peak Hour (70\% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE $70 \mathrm{~km} / \mathrm{h}$ OR ABOVE 40 mph ON MAJOR STREET)


Peak hour volume warrant for signalization data.

| Intersection | Analysis Period | Major <br> Street <br> Speed <br> (mph) | Major Street |  | Minor Street High Volume Approach |  | Signal Warranted? |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Volume (vph) | Lanes <br> (\#) | Volume (vph) | Lanes <br> (\#) |  |
| NE 28th Street and NE 232nd Avenue | 2018 Extg. AM Peak | 50 | 376 | 1 | 73 | 1 | No |
|  | 2018 Bkgd. - AM Peak |  | 638 |  | 171 |  | Yes |
|  | 2018 Total - AM Peak |  | 801 |  | 305 |  | Yes |
|  | 2018 Bkgd. - Mid. Afternoon Peak |  | 561 |  | 110 |  | No |
|  | 2018 Total - Mid. Afternoon Peak |  | 645 |  | 212 |  | Yes |
|  | 2018 Extg. PM Peak |  | 511 |  | 35 |  | No |
|  | 2018 Bkgd. - PM Peak |  | 841 |  | 207 |  | Yes |
|  | 2018 Total - PM Peak |  | 889 |  | 257 |  | Yes |
| NE 9th Street and NE 232nd Avenue | 2018 Total - AM Peak | 45 | 244 | 1 | 2 | 1 | No |
|  | 2018 Total - Mid. Afternoon Peak |  | 159 |  | 0 |  | No |
|  | 2018 Total - PM Peak |  | 227 |  | 2 |  | No |
| NE 28th Street/ Dresser Road and NE 242nd Avenue | 2018 Bkgd. - AM Peak | 50 | 484 | 1 | 121 | 1 | No |
|  | 2018 Total - AM Peak |  | 672 |  | 224 |  | Yes |
|  | 2018 Total - Mid. Afternoon Peak |  | 615 |  | 139 |  | No |
|  | 2018 Bkgd. - PM Peak |  | 662 |  | 115 |  | No |
|  | 2018 Total - PM Peak |  | 728 |  | 145 |  | Yes |
| NE 19th Street and NE 267th Avenue | 2018 Bkgd. - AM Peak | 50 | 343 | 1 | 279 | 1 | No |
|  | 2018 Total - AM Peak |  | 394 |  | 322 |  | Yes |
|  | 2018 Total - Mid. Afternoon Peak |  | 485 |  | 148 |  | No |
|  | 2018 Total - PM Peak |  | 619 |  | 136 |  | No |

Source: Manual on Uniform Traffic Control Devices (MUTCD), 2003 Edition.
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## OFFICER REPORTED CRASHES THAT OCCURRED ON ALL ROADS IN THE CITY OF CAMAS

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

| PRIMARY TRAFFICWAY |  |  |  |  | CITY OR MISC REFERENCE POINT NAME | $\begin{aligned} & \text { REPORT } \\ & \text { NUMBER } \end{aligned}$ | DATE | \# | H | FIRST COLLISION <br> TYPE/OBJECT STRUCK | VEH 1 ACTION | MV DRIVER CONT CIRC 1 (UNIT 1) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NE 232ND AVE | 1000 | 200 | F | N | NE 9TH ST | E213264 | 12/09/2012 | 0 | 1 | Over Embankment No Guardrail Present | Going Straight Ahead | Exceeding Reas. <br> Safe Speed | North | South |
| NE 28TH ST | 22800 | 0.19 | M | W | NE 232ND AVE | 3252967 | 09/21/2012 | 0 | 1 | Domestic animal (horse, cow, sheep, | Going Straight Ahead | Other | West | East |




[^0]:    Source: Trip Generation, 9th Edition, ITE, 2012, average rates.

[^1]:    KiTrELSON \& ASSOCIATES:INC,

