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MEMORANDUM

Date: February 11, 2020 Project #: 24714

To: Mike Miller
City of Florence Public Works
250 Highway 101
Florence, OR 97439

From: Amy Griffiths & Diego Arguea, PE

Project: Florence Residential Subdivision

Subject: Traffic Impact Analysis Report

This traffic impact analysis (TIA) report has been prepared as part of the site plan application for the proposed residential development to be located on a vacant site in Florence, Oregon. A site vicinity map is shown in Figure 1. Based on the analysis provided and documented herein, the proposed residential development can be constructed while maintaining acceptable traffic operations at the study intersections. No capacity-based mitigation needs were identified at the study intersections. Additional details documenting the methodology, proposed development plan, operations results, and recommendations are provided herein.

INTRODUCTION

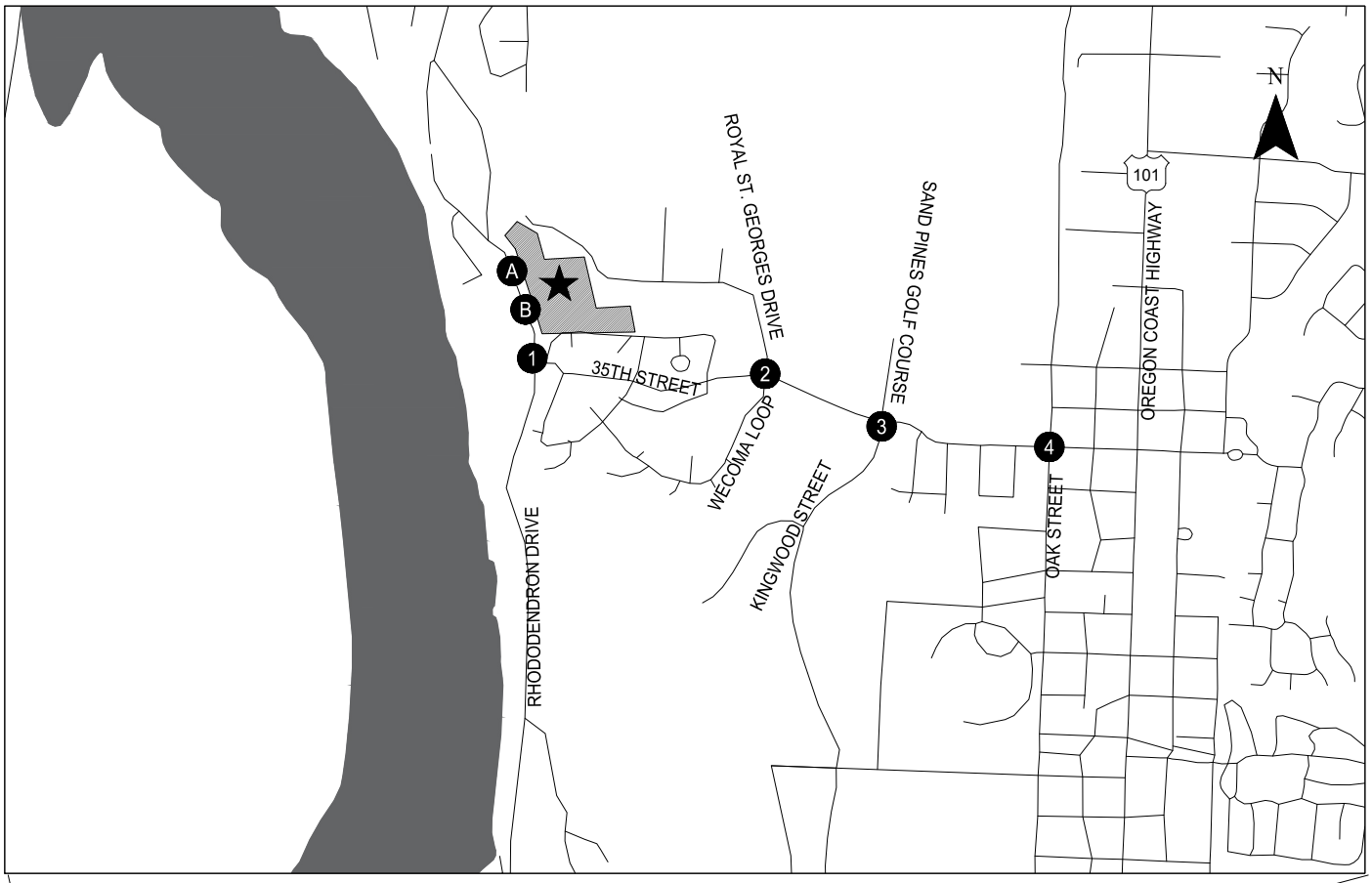
The applicant proposes development of up to 31 detached single-family homes and up to 101 low-rise multi-family homes to be located on a vacant site in north Florence. The site is bounded by Rhododendron Road to the west, 35th Street and Siano Loop Road to the south, and Royal Saint Georges Drive to the east and north. Access to the site is proposed via two full-movement new street connections, spaced approximately 340 feet and 610 feet north of 35th Street. The proposed development is expected to be constructed and occupied in 2021. A site plan is shown in Figure 2.

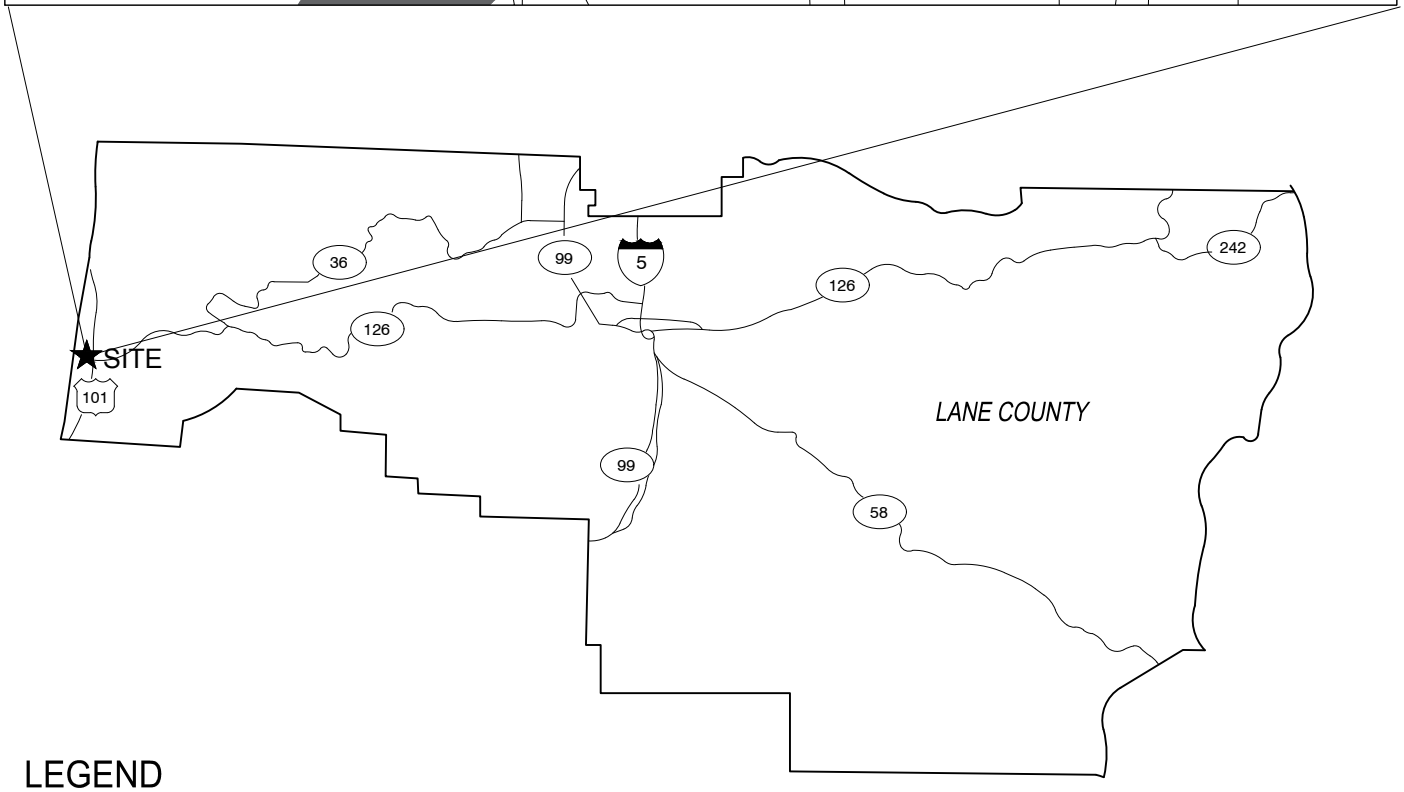
SCOPE OF WORK

This TIA has been prepared as part of the Florence Residential Subdivision development application. Pursuant to the methodology memorandum provided and the ODOT response (included in Attachment "A"), this report includes the following:

- Operational assessment of study intersections under existing traffic conditions;
- Review of latest five years of reported crash data at study intersections;

Exhibit G





LEGEND

★ - SITE LOCATION

- STUDY INTERSECTION

Site Vicinity Map
Florence, OR

Figure
1

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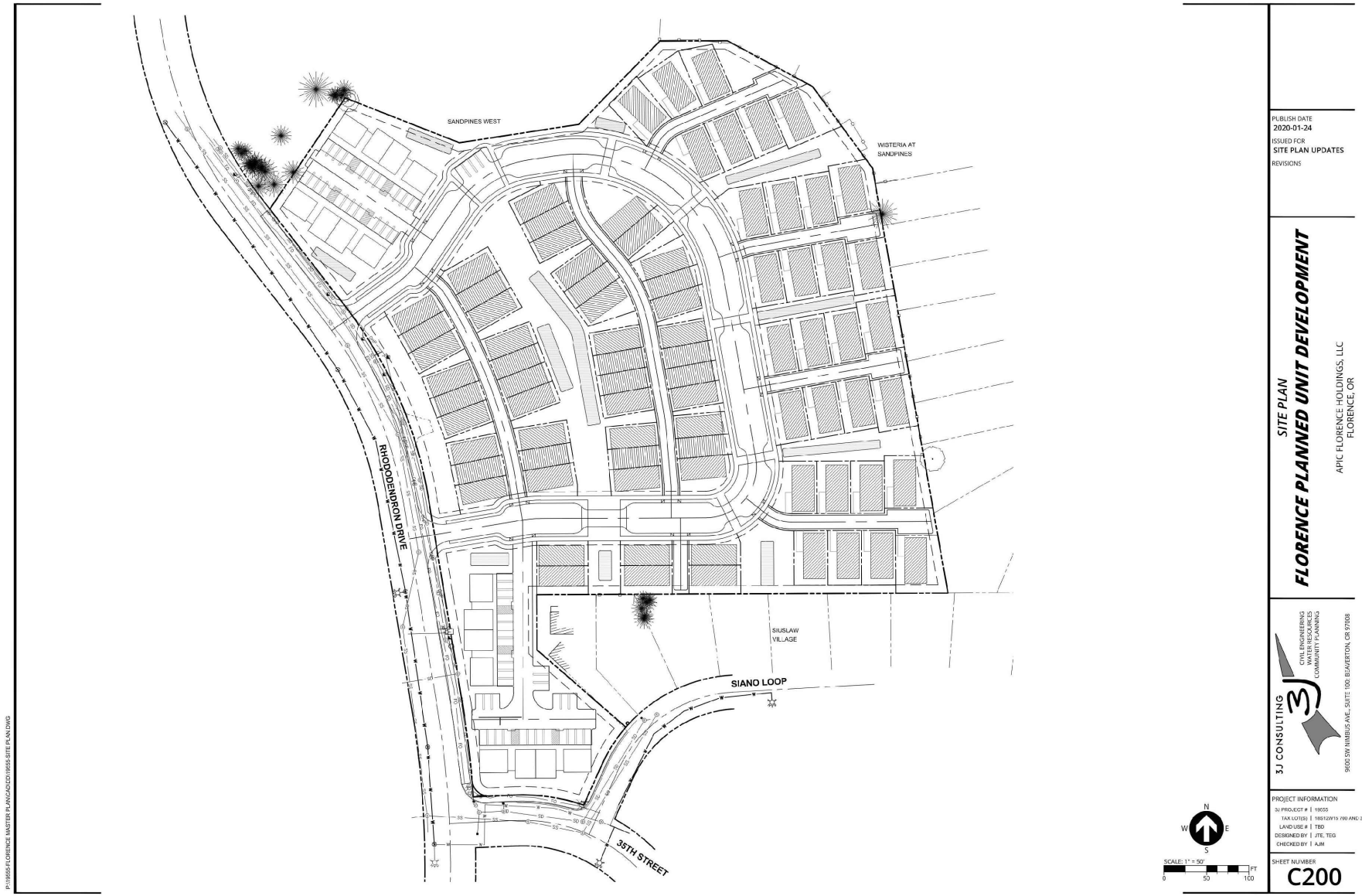

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Site Plan Provided by 3J Consulting January 24, 2020

Preliminary Proposed Site Plan
Florence, OR

Figure
2

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- Background traffic operations assessment for opening year 2021, not including the proposed development traffic volumes;
- Trip generation and trip distribution estimate for the proposed residential development;
- Total traffic operations assessment for opening year 2021, including the proposed development traffic volumes; and,
- Driveway operations and sight distance assessment.

Findings and recommendations are provided at the conclusion of the report.

The study intersections were identified based on the project's trip generation impact on adjacent intersections within the site vicinity and include the following (also shown in Figure 1):

- Site Driveway "A"/Rhododendron Drive
- Site Driveway "B"/Rhododendron Drive
- 35th Street/Rhododendron Drive
- 35th Street/Royal St. Georges Drive
- 35th Street/Kingwood Street
- 35th Street/Oak Street

ANALYSIS METHODOLOGY AND APPLICABLE STANDARDS

All operations analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual, 6th Edition* (HCM – Reference 1).

All intersection level-of-service evaluations used the peak 15-minute flow rate during the weekday morning and evening commuter peak hours. Using the peak 15-minute flow rate ensures that this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. *A description of level-of-service criteria is contained in Attachment "B".*

Operating Standards

The City of Florence has adopted level-of-service (LOS) and volume-to-capacity (V/C) ratio operating standards for signalized and unsignalized intersections as documented in the 2012 Transportation System Plan (TSP). The following operating standards apply to City intersections:

- LOS "D" is considered acceptable at signalized and all-way stop controlled intersections if the V/C ratio is not higher than 1.0 for the sum of critical movements.
- LOS "E" is considered acceptable for the poorest operating approach at two-way stop intersections. LOS "F" is allowed in situations where a traffic signal is not warranted.

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current physical and operational characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Kittelson & Associates, Inc. (Kittelson) staff visited and inventoried the proposed development site and surrounding study area in February 2020. At that time, Kittelson collected information regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The site is currently vacant. The land uses in the site vicinity include residential, community commercial, and recreational.

TRANSPORTATION FACILITIES

Table 1 summarizes the characteristics of the existing transportation facilities in the study area.

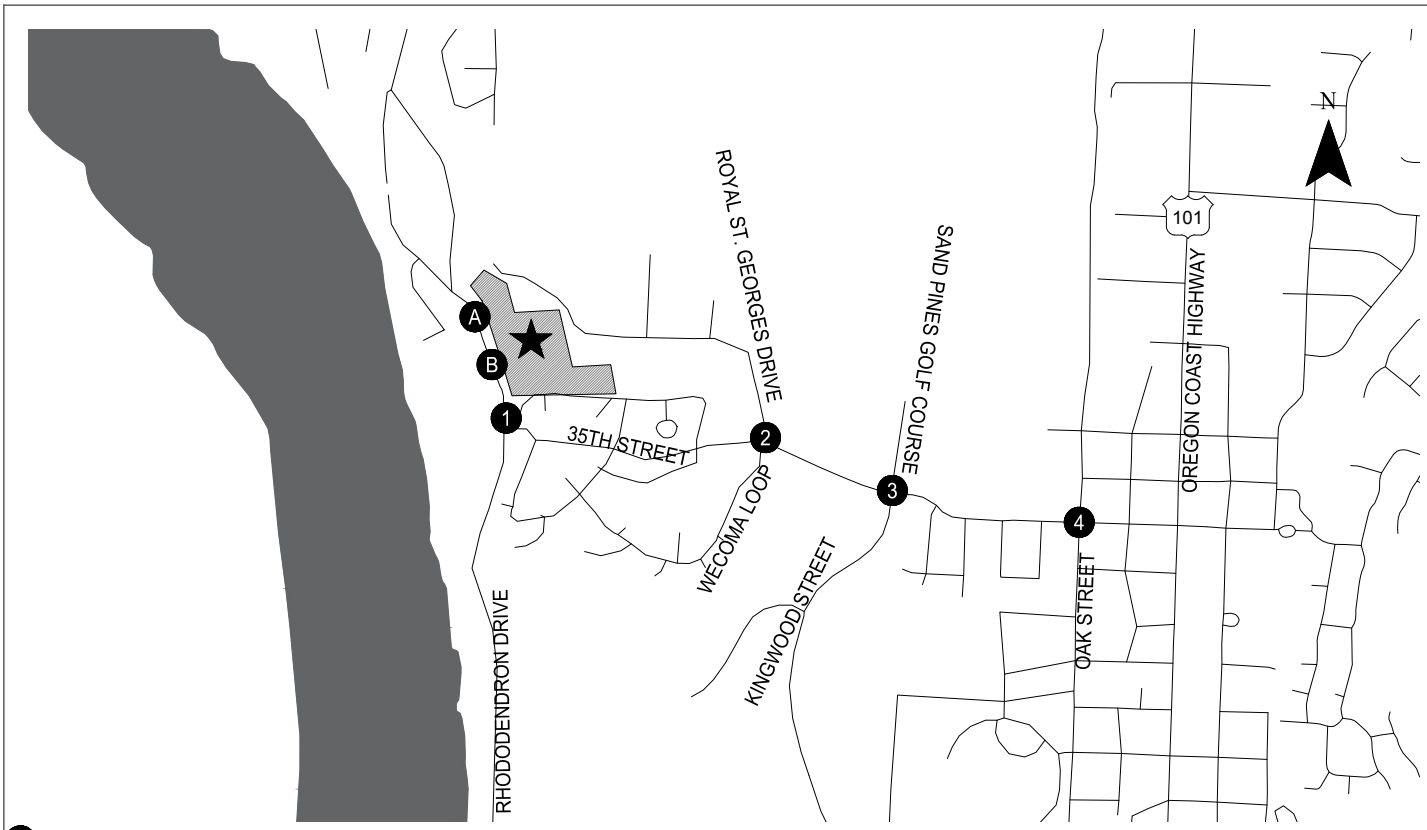
Table 1: Existing Transportation Facilities

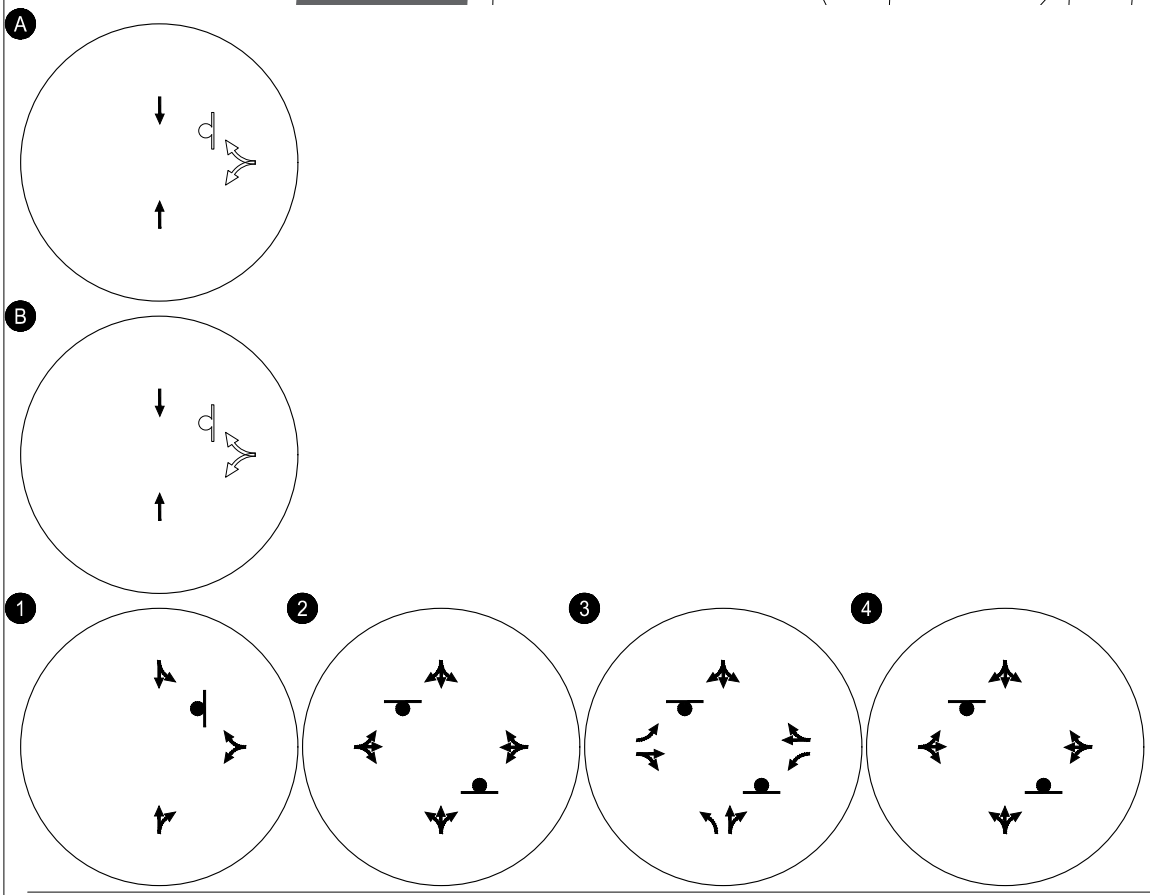
Roadway	Functional Classification[1]	Number of Lanes	Posted Speed (mph)	Sidewalks	Bicycle Lanes	On-Street Parking
Rhododendron Drive	Minor Arterial	2	40	No	No	No?
35th Street	Collector	2	25	No	Yes	No
Wecoma Loop – Royal Saint Georges Drive	Local	2	NP	No	No	Yes
Kingwood Street	Local	2	40	Yes	Yes	No
Oak Street	Collector	2	25	Yes	Yes	No

[1]Functional Classification from *Florence Transportation System Plan* (December, 2012, Reference 2).
NP: not posted

Roadway Facilities

Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections. All of the study intersections are two-way stop-controlled (TWSC).





LEGEND

- # - STUDY INTERSECTION
- - EXISTING LANE MOVEMENT
- - PROPOSED LANE MOVEMENT
- - EXISTING STOP SIGN
- - PROPOSED STOP SIGN

Existing and Proposed Lane Conditions & Traffic Control Devices
Florence, OR

Figure 3

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Pedestrian and Bicycle Facilities

There are sidewalks along Kingwood Street and Oak Street, but not along the rest of the study area. 35th Street, Kingwood Street, and Oak Street have on-street bike lanes.

Transit Facilities

The nearest transit stop is located at Lane Community College at Oak Street/32nd Street, approximately 1 mile away from the site. This stop serves the Rhody Express North Loop, which has 60-minute headways and provides connections to various schools and grocery stores in Florence.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Turning-movement counts were conducted at the study intersection in December 2019. The counts were conducted on a typical mid-week day during the morning (6:30 to 9:30 AM) and evening (3:30 to 6:30 PM) peak time periods.

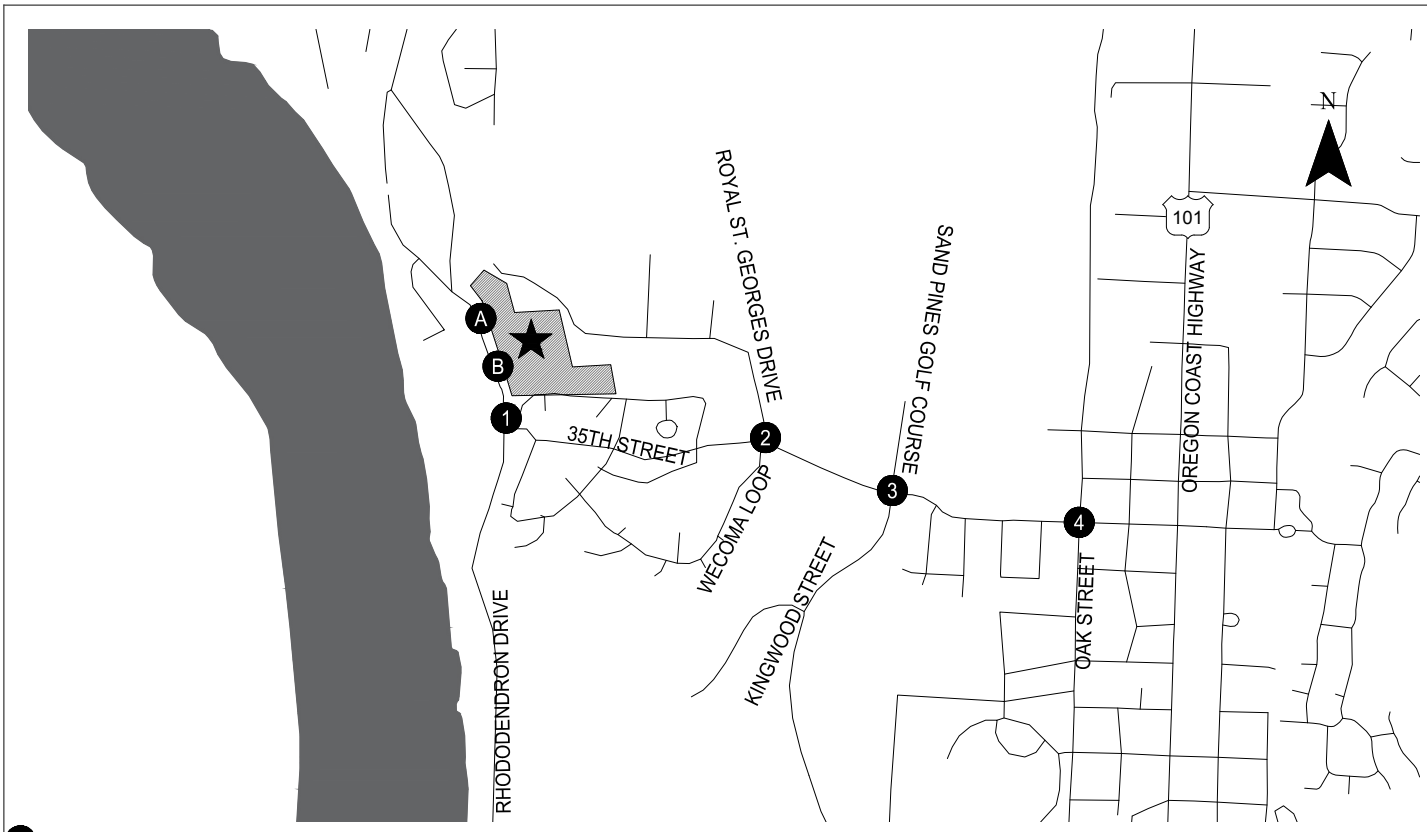
City of Florence engineering staff requested that a seasonal adjustment factor be applied to local street intersections to account for seasonal fluctuations in travel demand. As such, the traffic volumes on Rhododendron Drive and 35th Street were seasonally adjusted to 30th Highest Hour Volumes (30HV) in accordance with the Seasonal Trend Table methodology identified in the ODOT Analysis Procedures Manual (APM – Reference 3). As summarized in the methodology memorandum and ODOT response (Attachment "A"), the local street traffic volumes were increased by a factor of 1.76.

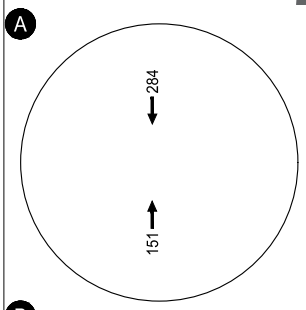
Figure 4 and Figure 5 summarize the year 2019 turning-movement counts after applying the seasonal adjustment factor.

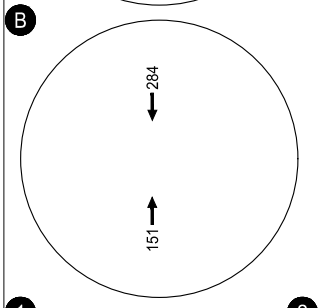
Attachment "C" contains the traffic count worksheets used in this study and details of the 30HV methodology and ODOT response are included in Attachment "A".

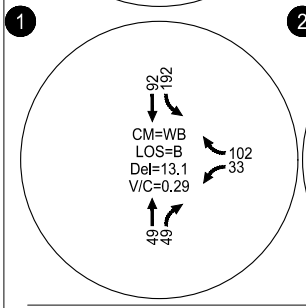
As shown in Figure 4 and Figure 5, traffic operations satisfy the City of Florence operating standards for unsignalized intersections.

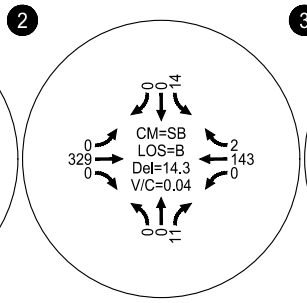
Attachment "D" contains the year 2019 existing traffic conditions worksheets.

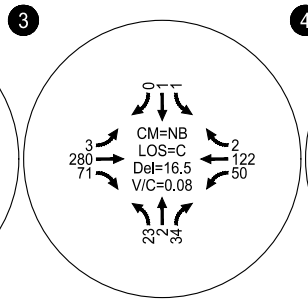


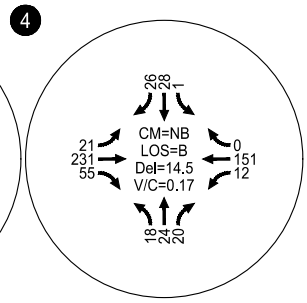












LEGEND

CM = CRITICAL MOVEMENT

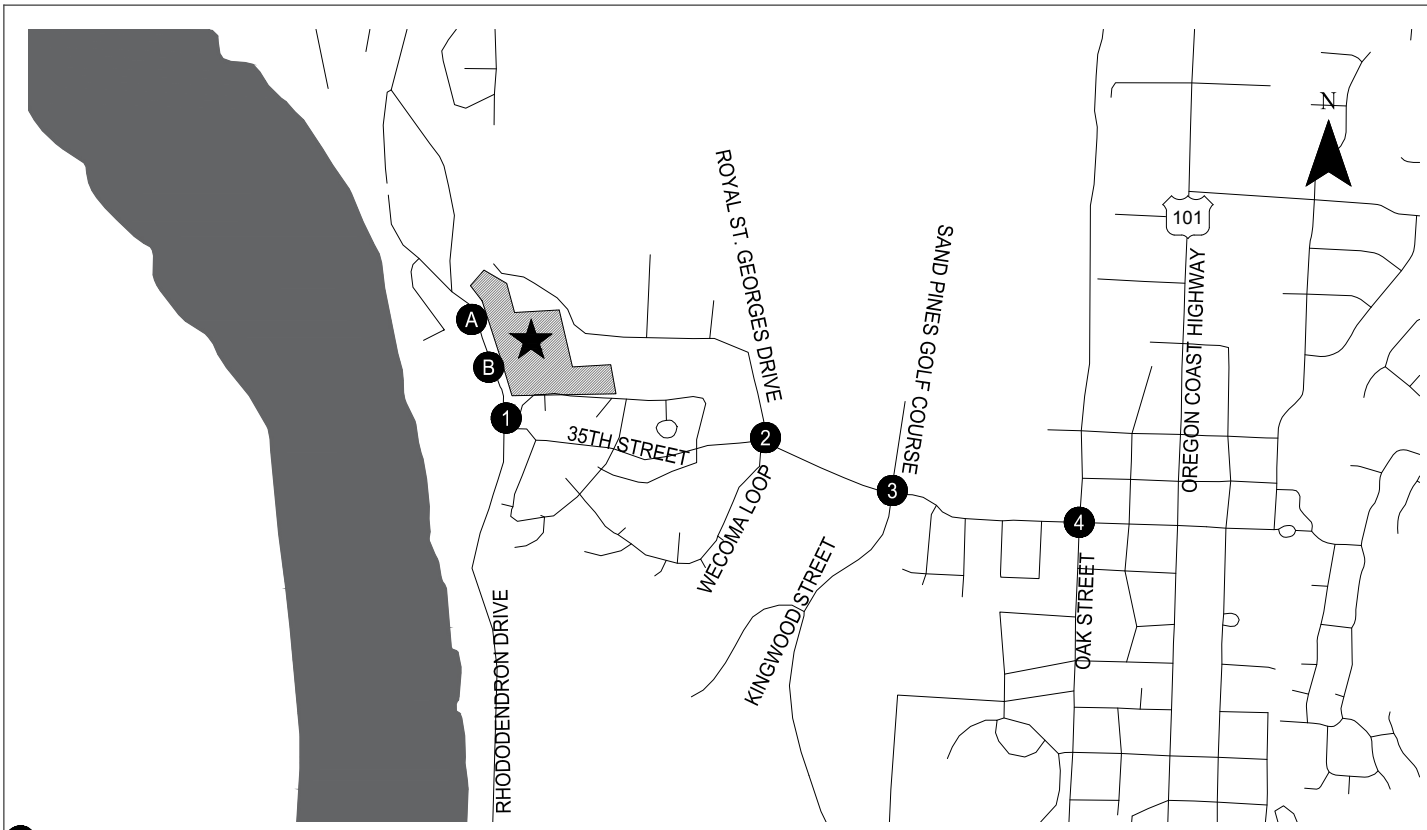
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE

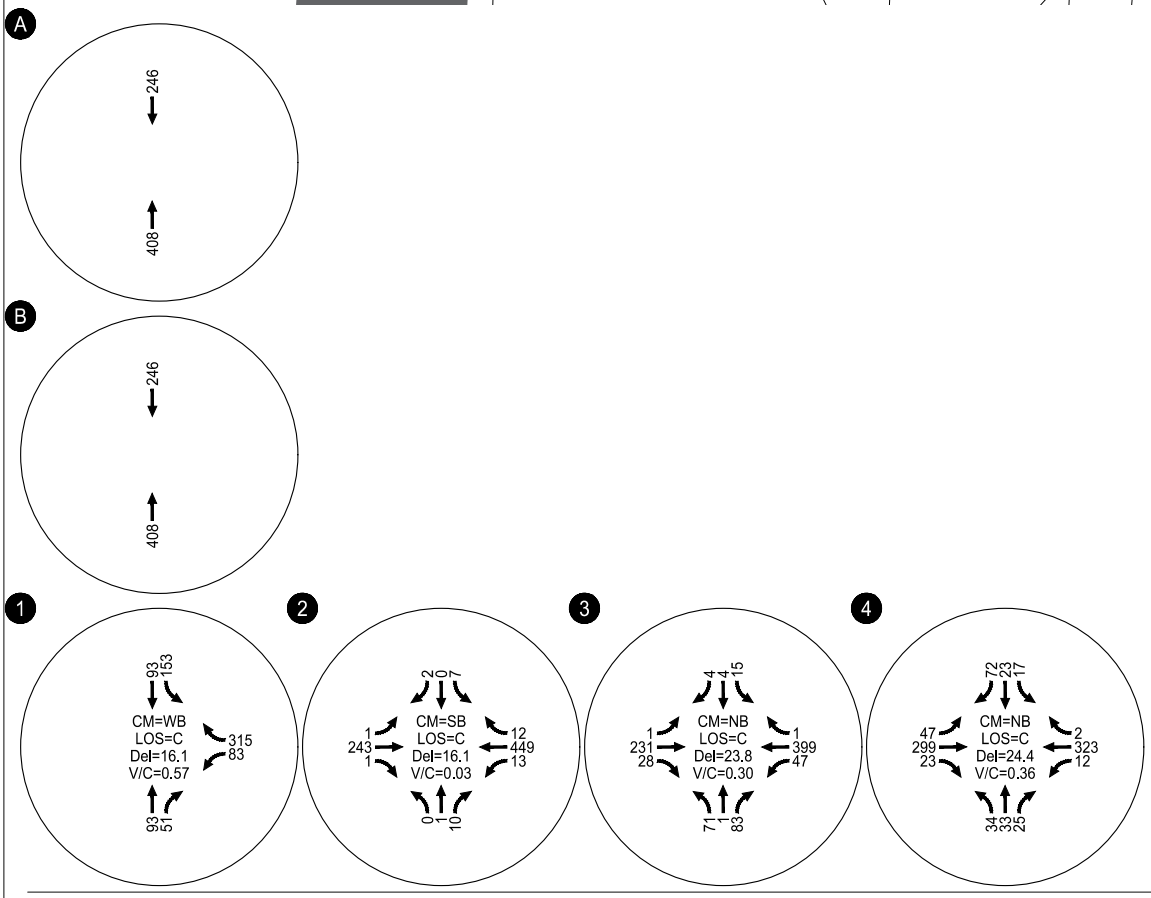
Del = CRITICAL MOVEMENT CONTROL DELAY

V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Existing Traffic Conditions
Weekday AM Peak Hour
Florence, OR

Figure
4





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Existing Traffic Conditions
Weekday PM Peak Hour
Florence, OR

Figure
5

Traffic Safety

The crash history of the study intersections was reviewed to identify crash patterns. ODOT provided five years of crash data available for the study intersections, which includes all reported crashes from January 1, 2013 through December 31, 2017. Table 2 summarizes the crash data provided by ODOT.

Table 2: Study Intersection Crash Summary (January 1, 2013 through December 31, 2017)

Intersection	Crash Type				Crash Severity			Total
	Rear-End	Turn	Angle	Ped	PDO	Injury	Fatal	
35th Street/ Rhododendron Drive	0	0	0	0	0	0	0	0
35th Street / Royal St. Georges Drive-Wecoma Loop	0	0	0	0	0	0	0	0
35th Street / Sand Pines Golf Course-Kingwood Street	0	0	0	0	0	0	0	0
35th Street / Oak Street	0	1	4	0	4	1	0	5

PDO=Property Damage Only

As shown in Table 2, the only intersection with crashes reported over the five-year period is the 35th Street/Oak Street intersection. At this intersection, angle crashes were the most common crash type. No other intersections in the study area had reported crashes in the most recent five years. No crash patterns were identified that would warrant mitigation as a result of the proposed development.

Attachment "E" contains the crash data provided by ODOT.

TRAFFIC IMPACT ANALYSIS

The TIA identifies how the study area's transportation system will operate in the year the proposed development is expected to be fully built, year 2021. The impact of traffic generated by the proposed residential subdivision during the typical weekday AM and PM peak hours was examined as follows:

- Developments and transportation improvements planned in the site vicinity were identified.
- Year 2021 and background traffic conditions were analyzed at the study intersection during the weekday AM and PM peak hours.
- Site-generated trips were estimated for build-out of the site.
- Site trip-distribution patterns were derived based on surrounding land uses.
- Year 2021 total traffic conditions were analyzed at the study intersections and site-access points during the weekday AM and PM peak hours.
- Driveway operations and sight distance were assessed.

YEAR 2021 BACKGROUND TRAFFIC CONDITIONS

The year 2021 background traffic conditions analysis identifies how the study area's transportation system will operate without the proposed residential subdivision. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from the proposed development.

Planned Developments and Transportation Improvements

Based on conversations and direction provided by City of Florence staff, no planned in-process developments in the area are included in the analysis. There are plans for a mixed-use path along 35th Street, however there are no expected changes to the study intersections.

Traffic Volumes

Regional traffic volume growth was evaluated based upon the ODOT Future Volume Tables which identify the average annual daily traffic (AADT). Two locations near the study area were identified on Oregon Coast Highway (US 101, ODOT Highway No. 009): 0.02 miles south of 36th Street and 0.02 miles south of 29th Street. Table 3 provides the base year (2018) and forecast year (2038) model AADTs for computation of the growth rate.

Table 3. ODOT Future Volume Table

Highway	Milepost	Description	Year 2018 AADT	Year 2038 AADT	R^2	Growth Rate
009	188.64	0.02 miles south of 36th Street	12,500	12,600	0.4298	0.00040
009	21.34	0.02 miles south of 29th Street	14,100	14,200	0.8050	0.00035

Growth rate calculation example: (12,600 / 12,500 – 1) / (2038 - 2018) = 0.00040

Based on the volumes in Table 3, traffic volumes along the state highway in the vicinity of the study area are anticipated to increase by approximately 100 daily vehicles over a period of 20 years. This growth is negligible, and no annual background growth rate is proposed to be applied to the existing volumes for the 2021 buildout year analysis. Similarly, no regional growth factor will be applied to local streets.

With no in-process developments and no regional growth factor, the 2021 background conditions are expected to reflect the same conditions presented in Figure 4 and Figure 5.

Intersection Operations

As stated previously, the 2021 background traffic intersection analysis is expected to be the same as the adjusted 2019 traffic operations. Therefore, the results of the analysis match that of the 2019 existing traffic analysis and the study intersections are forecast to satisfy the TSP operating standards during the weekday AM and PM peak hours. *Refer to Attachment "D" for the existing (and background) traffic operations worksheets.*

PROPOSED DEVELOPMENT PLAN

The applicant proposes to develop up to 31 detached single-family homes, 55 attached townhome-style cottages, and 46 apartments.

Trip Generation

A trip generation estimate was prepared for the proposed residential subdivision based on information provided in the standard reference manual, *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE – Reference 4). Based on the land use data provided by ITE, the proposed townhome-style cottages and the apartments are both classified as low-rise multi-family homes. As such, ITE Land Use Code 220 (Multifamily Housing – Low Rise) is applied for the combined 101 units. Land Use Code 210 (Single-Family Detached Housing) is applied for the 31 single-family homes. Table 4 summarizes the trip generation estimate for the weekday daily, morning, and evening peak hours.

Table 4. Land Use Trip Generation

Land Use	ITE Code	Units	Daily Trips	AM			PM		
				Total	In	Out	Total	In	Out
Single Family Detached Housing	210	31	354	27	7	20	33	21	12
Apartment	220	101	723	48	11	37	60	38	22
Total Net New			**1,077**	**75**	**18**	**57**	**93**	**59**	**34**

As shown in Table 4, the proposed development is estimated to generate approximately 1,077 net new weekday daily trips, with 75 net new trips (18 in, 57 out) occurring during the weekday AM peak hour and 93 net new trips (59 in, 34 out) occurring during the weekday PM peak hour.

Site Trip Distribution/Trip Assignment

A trip distribution pattern was developed for the proposed development based existing traffic patterns and the location of major trip origins and destinations in the Florence area. Figure 6 and Figure 7 illustrate the estimated trip distribution pattern and assignment for the site-generated trips shown in Table 4 during weekday AM and PM peak hours.

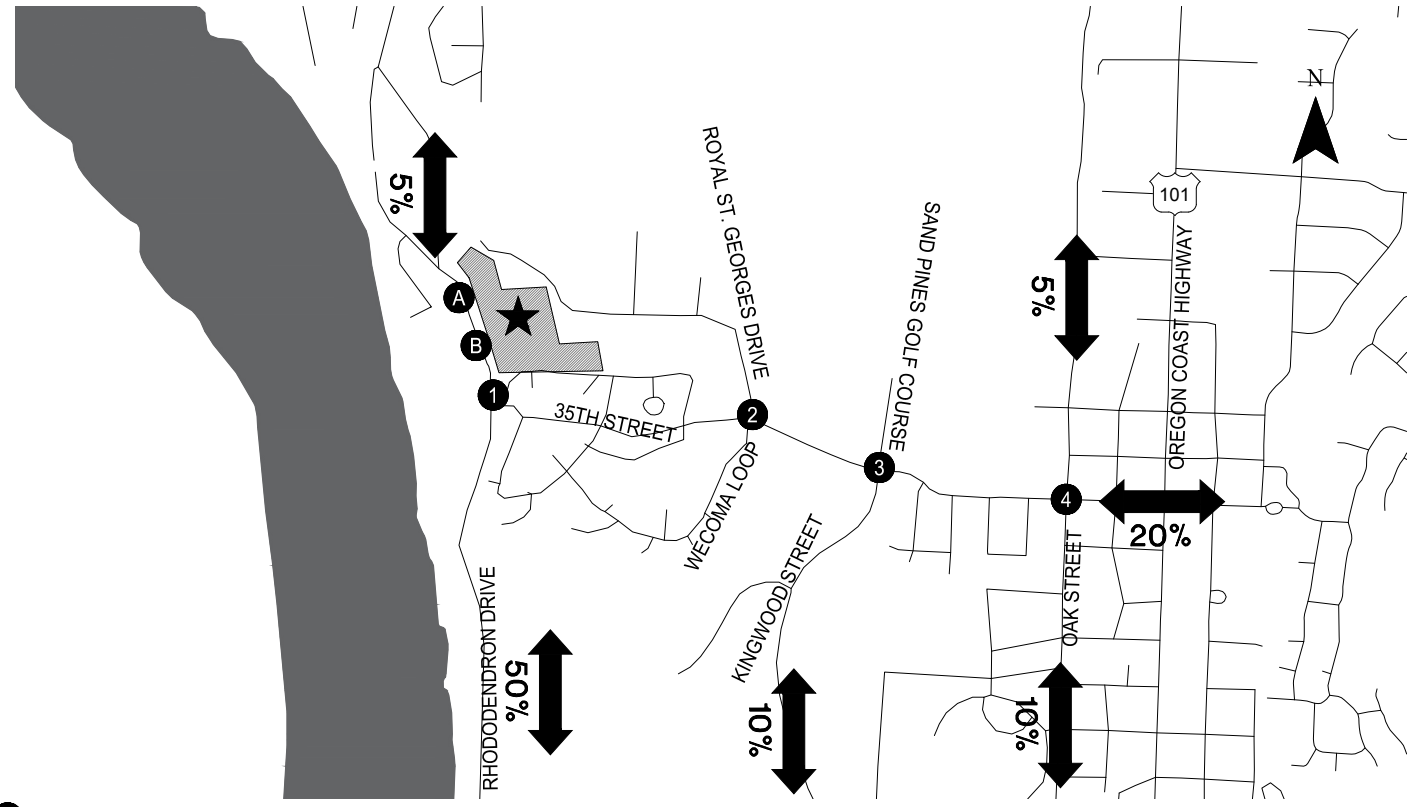
YEAR 2021 TOTAL TRAFFIC CONDITIONS

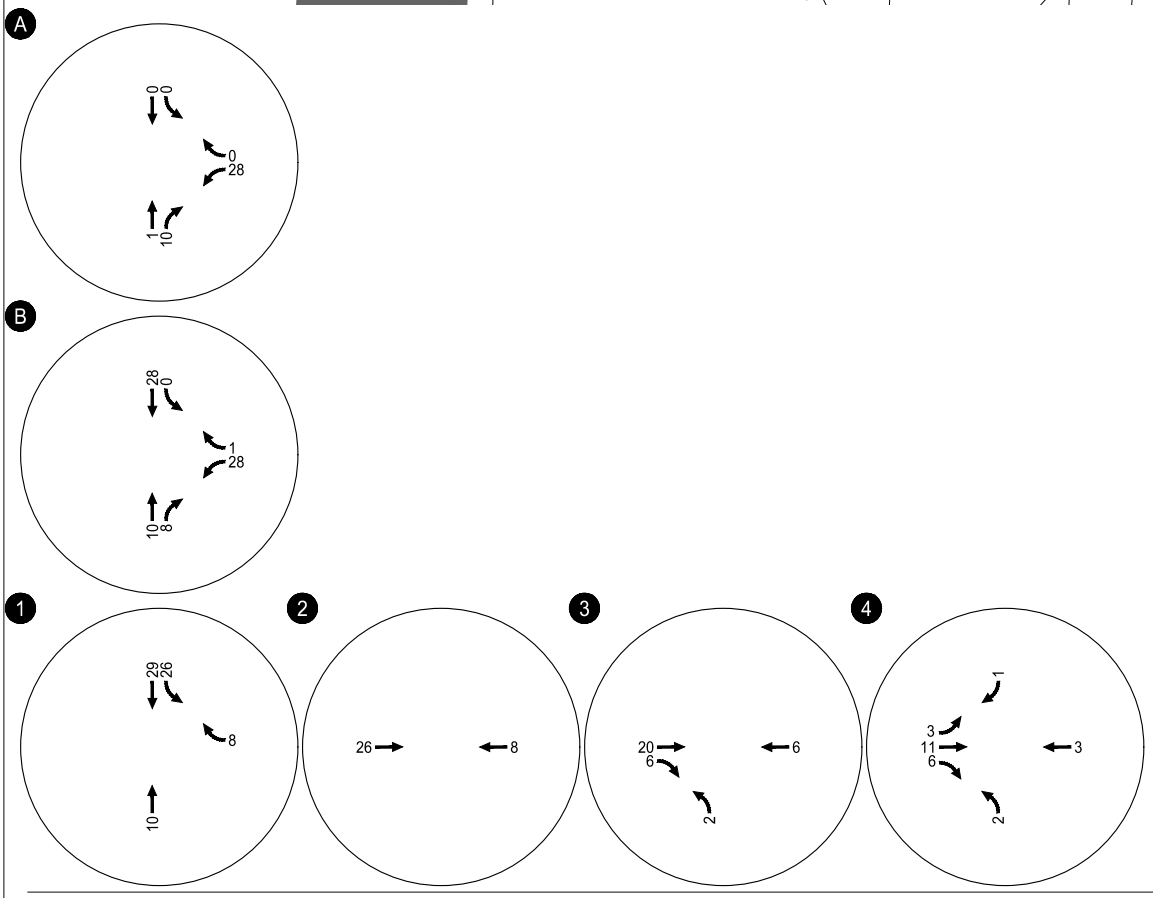
The year 2021 total traffic conditions analysis forecasts how the study area's transportation system will operate with the traffic generated by the proposed residential subdivision. The year 2021 background traffic volumes shown in Figure 4 and Figure 5 were added to the site-generated traffic shown in Figure 6 and Figure 7 to arrive at the total traffic volumes that are shown in Figure 8 and Figure 9.

Intersection Operations

The weekday AM and PM peak hour turning-movement volumes shown in Figure 8 and Figure 9 were used to conduct an operational analysis at the study intersections and site accesses to determine the year 2021 total traffic conditions. The results of the analysis indicate that the study intersections and site accesses are projected to continue to meet the City's TSP operating standards during the weekday AM and PM peak hours.

Attachment "F" contains the year 2021 total traffic conditions worksheets.





Estimated Trip Distribution Pattern & Trip Assignment
Weekday AM Peak Hour
Florence, OR

Figure
6

H:\24\24714 - Florence Residential Subdivision\report\figs\24714_Figures.dwg Feb 11, 2020 - 8:56am - agriffiths Layout Tab: AM Trip Distribution and Trip Assignment

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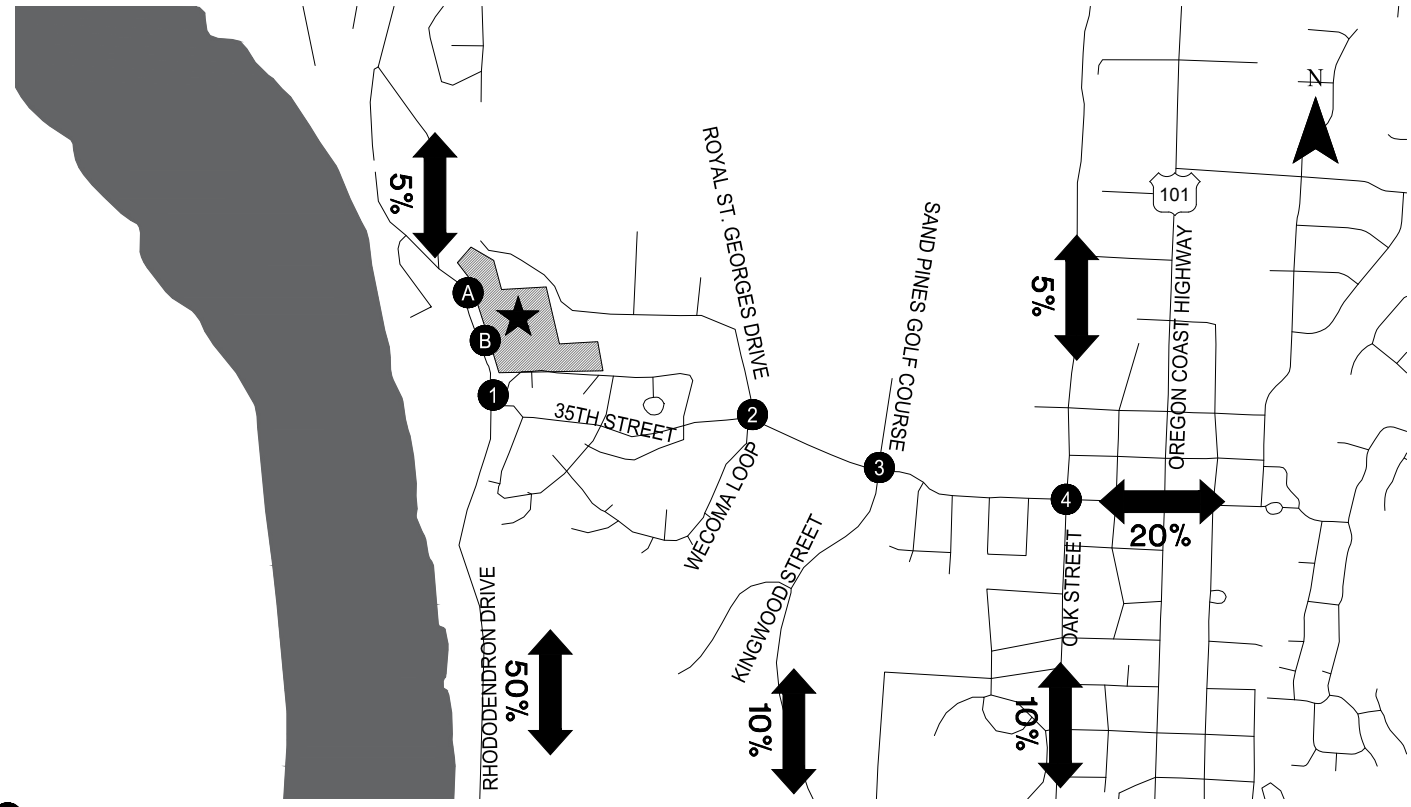
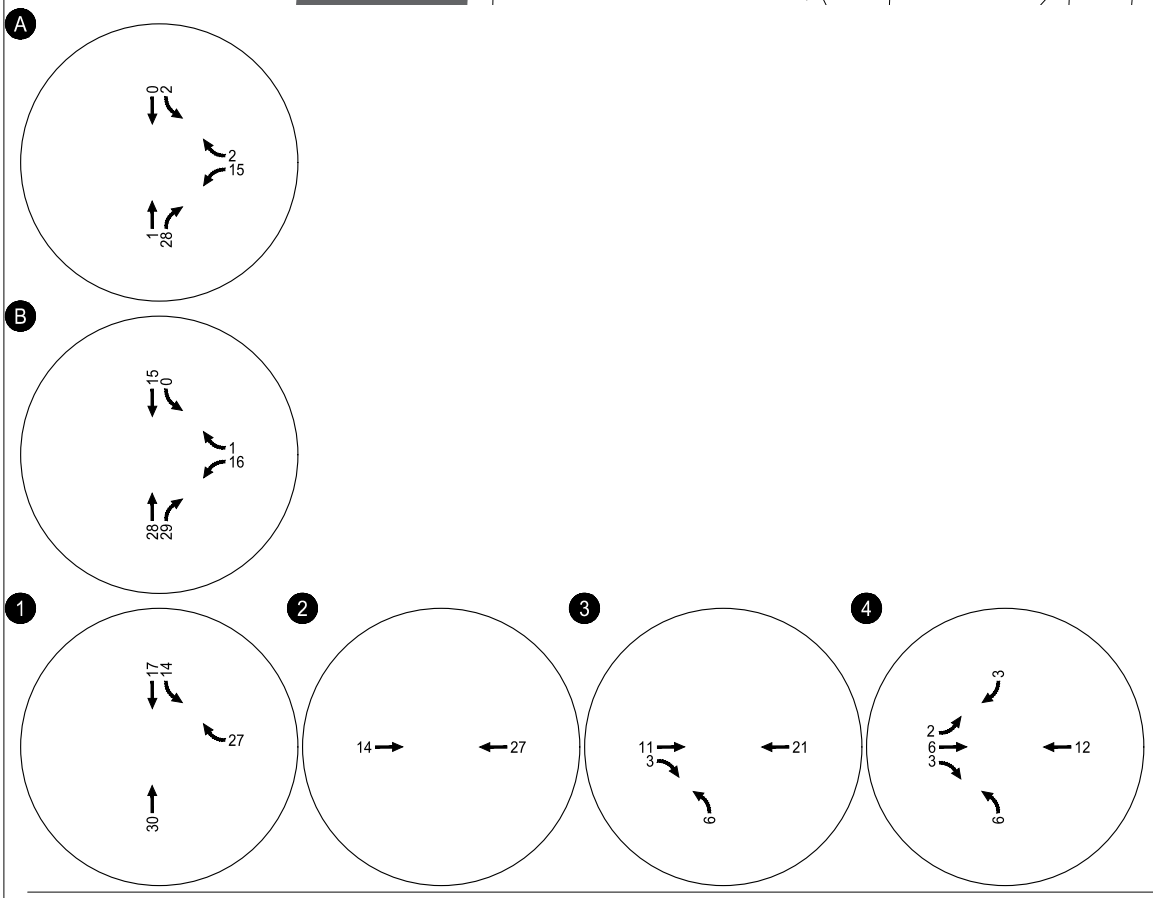
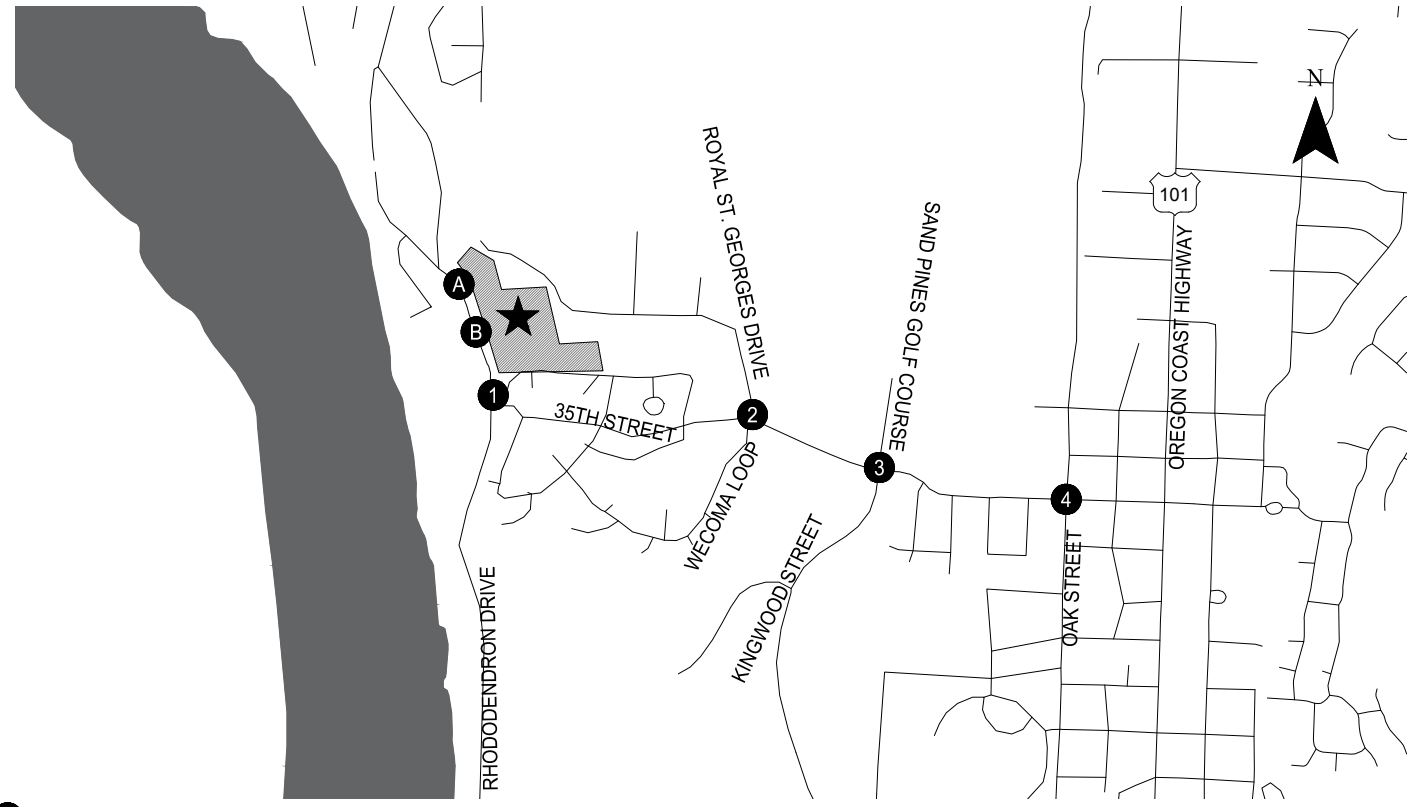
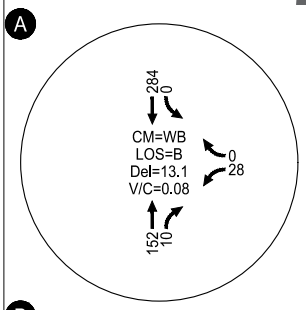


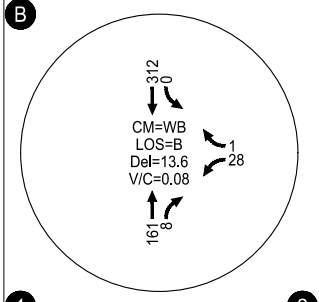


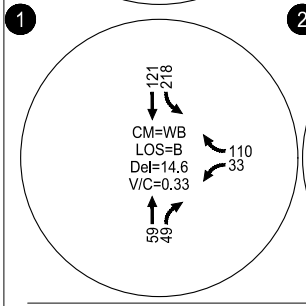
Estimated Trip Distribution Pattern & Trip Assignment
Weekday PM Peak Hour
Florence, OR

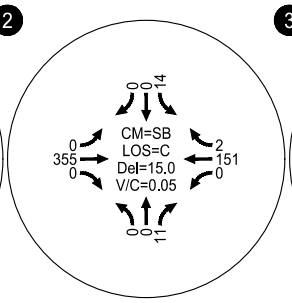
Figure
7

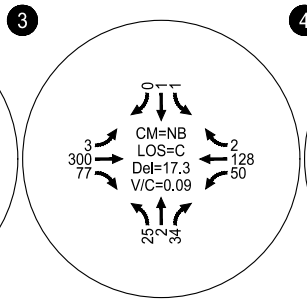


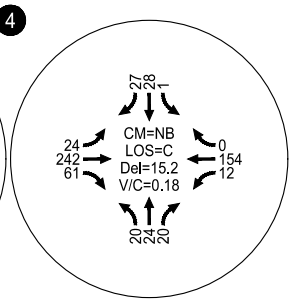












LEGEND

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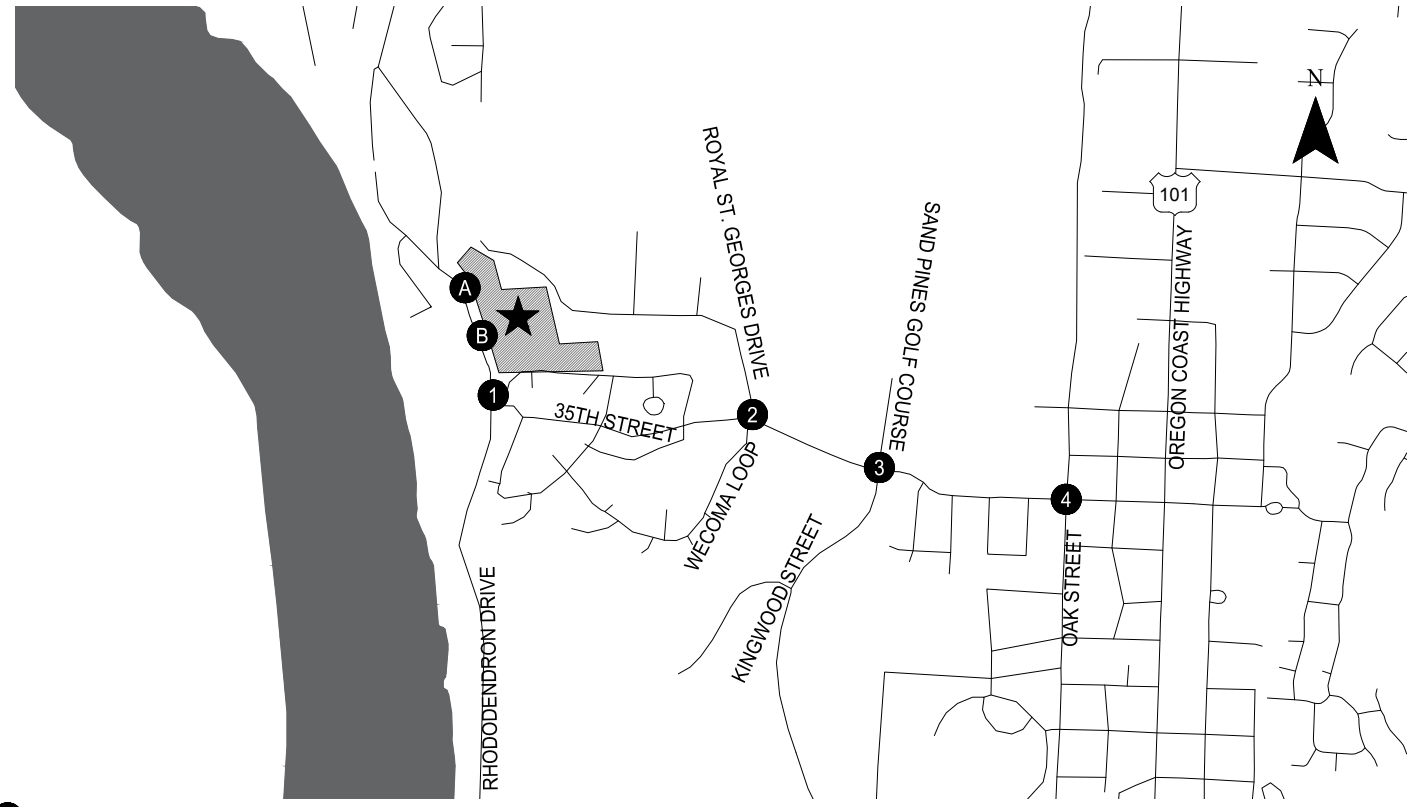
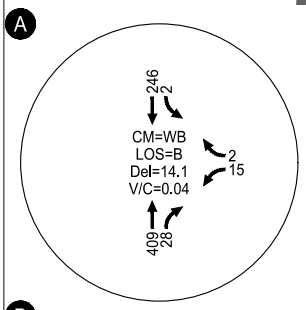
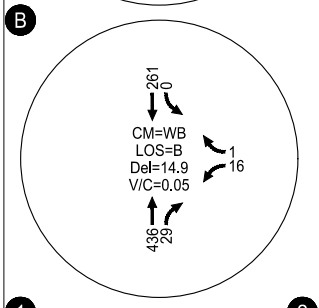
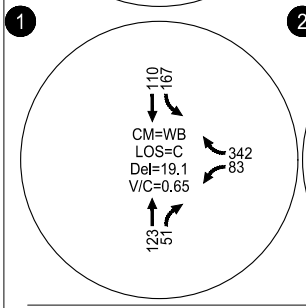
Total Traffic Conditions
Weekday AM Peak Hour
Florence, OR

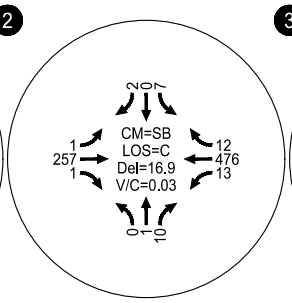
Figure
8

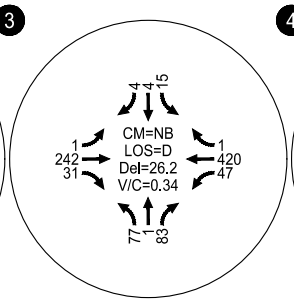


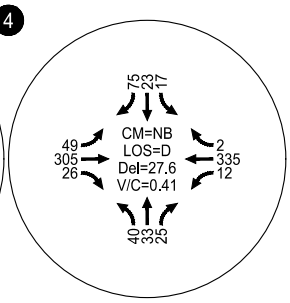












LEGEND

CM = CRITICAL MOVEMENT

LOS = CRITICAL MOVEMENT LEVEL OF SERVICE

Del = CRITICAL MOVEMENT CONTROL DELAY

V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Total Traffic Conditions
Weekday PM Peak Hour
Florence, OR

Figure
9

SIGHT DISTANCE ASSESSMENT

A preliminary sight distance analysis was conducted at the existing site accesses based on review of the proposed site plan. We recommend final sight distance certification be confirmed upon buildout. Preliminary site plan review of available sight distance indicates that both intersection and stopping sight distance (ISD and SSD) are expected to meet the design guidance presented in *A Policy on Geometric Design of Highways and Streets* (AASHTO, Reference 5) upon buildout.

AASHTO Design Guidelines

One of the primary inputs in determining safe sight distance metrics according to AASHTO guidelines is the design speed of the respective roadway. The posted speed along Rhododendron Drive is 40 miles per hour and the advisory speed along the frontage of the property is posted at 35 miles per hour.

For an assumed design speed of the 40 mile-per-hour facility, Table 5 below summarizes the recommended minimum design guidance.

Table 5. Sight Distance Summary (Case B1 – Left Turn from the Minor Road)

Access Locations	Direction of Travel	AASHTO Design Guideline (feet) (ISD / SSD)
Access A (north)	Northbound (facing south from access)	445 / 305
	Southbound (facing north from access)	445 / 305
Access B (south)	Northbound (facing south from access)	445 / 305
	Southbound (facing north from access)	445 / 305

ISD: Intersection Sight Distance
SSD: Stopping Sight Distance

The following Exhibit 1 and Exhibit 2 illustrate a preliminary sight distance triangle for up to 445 feet of intersection sight distance. The red lines indicate the sightline from a vehicle at each corresponding site access while the yellow line indicates the on-road distance (445 feet) recommended for a design speed of 40 miles per hour.

Exhibit 1 Sight Triangle for Driveway A (approximate)

Exhibit 2 Sight Triangle for Driveway B (approximate)

Based on the preliminary assessment in Exhibits 1 and 2, no vertical curvature or horizontal curvature of Rhododendron Drive is expected to limit sight distances. However, there may be some foliage and low hanging branches that may be partially obstructing sight lines within the right-of-way – we recommend these be cleared upon construction of the site. Site landscaping, signage or above-ground utilities along the site frontages should be installed and maintained to provide adequate sight distance per City requirements.

FINDINGS AND RECOMMENDATIONS

The results of this analysis indicate that the proposed residential subdivision can be constructed while maintaining acceptable traffic operations at the study intersections and site-accesses. The primary findings and recommendations of this study are summarized below.

- The proposed residential development is estimated to generate approximately 1,077 net new weekday daily trips, with 75 net new trips (18 in, 57 out) occurring during the weekday AM peak hour and 93 net new trips (59 in, 34 out) occurring during the weekday PM peak hour.
- All study intersections were found to operate acceptably under existing and forecast future conditions.
- No transportation capacity or safety-related mitigations are recommended as a result of the proposed development impacts.
- Landscaping, signage or above-ground utilities along the site frontages should be installed and maintained to provide adequate sight distance.

We trust this report adequately addresses the traffic impacts associated with the proposed residential subdivision. Please contact us if you have any questions.

REFERENCES

1. Transportation Research Board. *Highway Capacity Manual, 6th Edition*. 2019.
2. City of Florence, Oregon. *Florence Transportation System Plan*. 2012.
3. Oregon Department of Transportation. *Analysis Procedures Manual*. Updated in 2019.
4. Institute of Transportation Engineers. *Trip Generation, 10th Edition*, 2017.
5. American Association of State Highway and Transportation Officials. A Policy on Geometric Design of Highways and Streets. 2011 Edition.

ATTACHMENTS

A. Scoping Memorandum
B. Level-of-Service Criteria
C. Traffic Count Data
D. Existing Traffic Operations Worksheets
E. Crash Data
F. Year 2021 Total Traffic Operations Worksheets

Attachment A
Scoping Memorandum

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM - DRAFT

Date:	December 25, 2019	Project #: 24714
To:	Mike Miller, Public Works Director City of Florence Public Works 250 Highway 101 Florence, OR 97439	
Cc:	Matt Caswell, PE, ODOT	
From:	Diego Arguea, PE & Amy Griffiths	
Project:	Florence Residential Subdivision	
Subject:	Traffic Impact Study Scoping	

This memorandum documents the methodology and key assumptions to be used in preparation of the traffic impact analysis (TIA) for a residential development in Florence, Oregon.

PROPOSED DEVELOPMENT PLAN

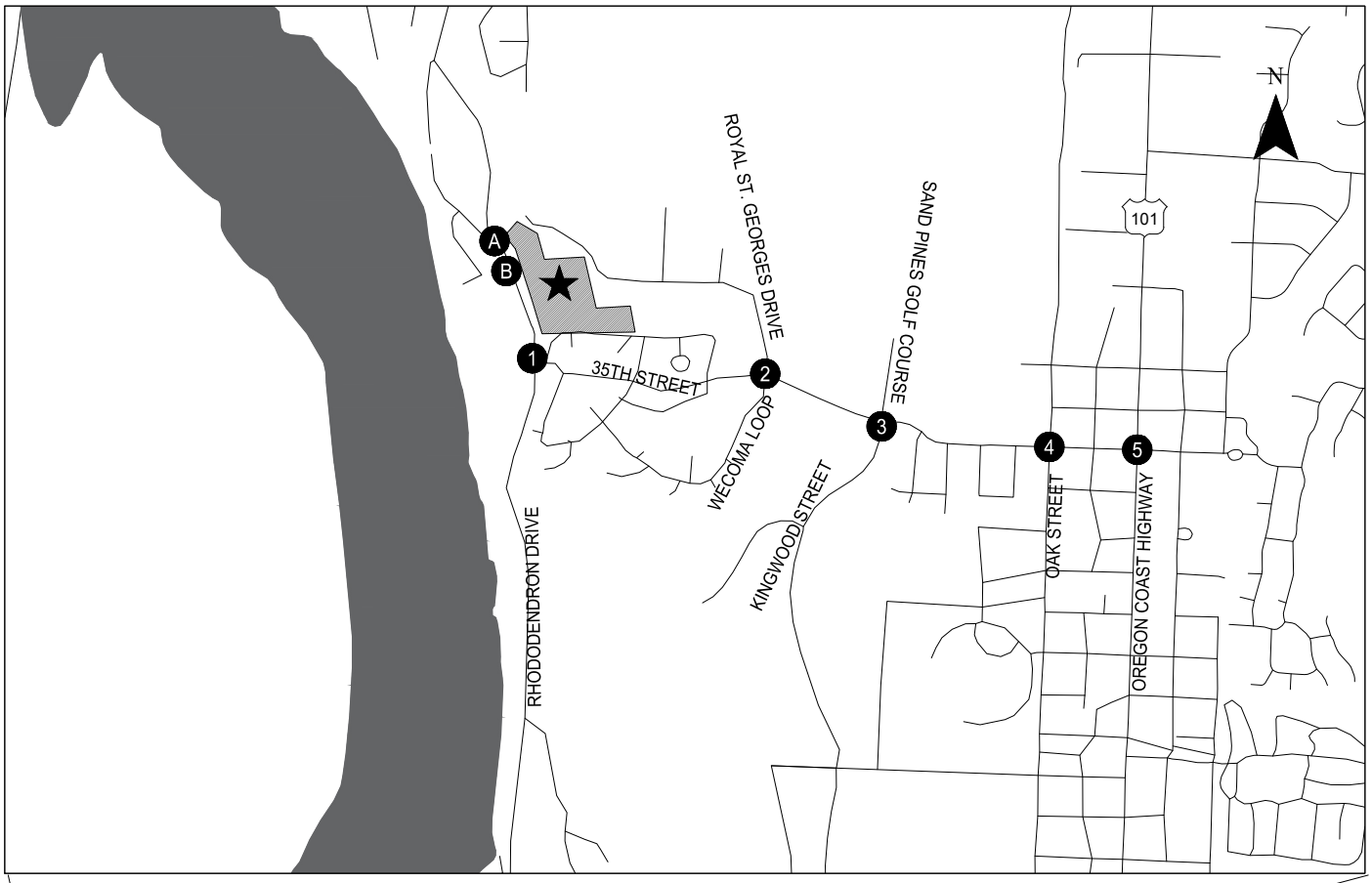
The applicant proposes development of 91 single-family homes and up to 48 low-rise[1] apartments to be located on a vacant site in north Florence, Oregon. The site is bounded by Rhododendron Road to the west, 35th Street and Siano Loop Road to the south, and Royal Saint Georges Drive to the east and north. Access to the site is proposed via two driveways, spaced at approximately 340 feet and 610 feet north of 35th Street. A site vicinity map is shown in Figure 1.

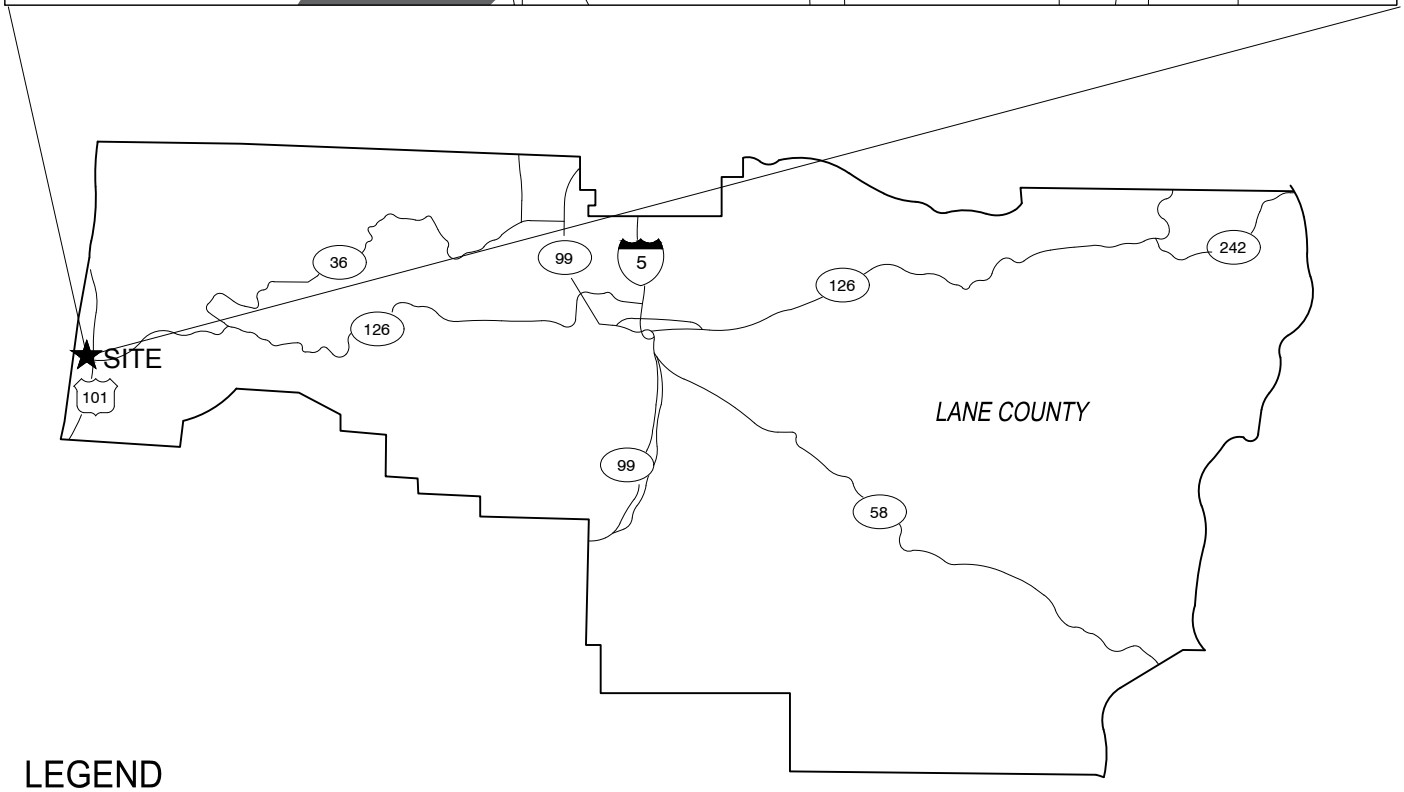
The proposed development is expected to be constructed in 2021. A site plan is shown in Figure 2.

TRIP GENERATION AND DISTRIBUTION

Table 1 summarizes the estimated site-generated trips for the proposed development. Trip generation rates for the single-family and apartment land uses are based on the standard reference *Trip Generation,* 10th Edition. For each land use, the regression equation is used to estimate trip generation if there are more than 20 data points and the coefficient of correlation (R^2 value) is 0.75 or higher. If these criteria are not met, the average rate is used.

[1] Defined by ITE *Trip Generation* as containing one or two floors of residential units.





LEGEND

★ - SITE LOCATION

- STUDY INTERSECTION

Site Vicinity Map
Florence, OR

Figure
1

KITTELSON & ASSOCIATES

Site Plan Provided by 3J Consulting November 19, 2019

Preliminary Proposed Site Plan
Florence, OR

Figure
2

C:\Users\agriffiths\appdata\local\temp\AcPublish_18212\24714_Figures.dwg Dec 20, 2019 - 4:52pm - agriffiths Layout Tab: Proposed Site Plan

KITTELSON & ASSOCIATES

Table 1. Proposed Land Use Trip Generation

Land Use	ITE Code	Units	Daily Trips	AM			PM		
				Total	In	Out	Total	In	Out
Single Family Detached Housing	210	91	953	69	17	52	93	59	34
Multifamily Housing (Low-Rise)	220	48	322	24	6	18	31	19	12
Total Net New			**1,275**	**93**	**23**	**70**	**124**	**78**	**46**

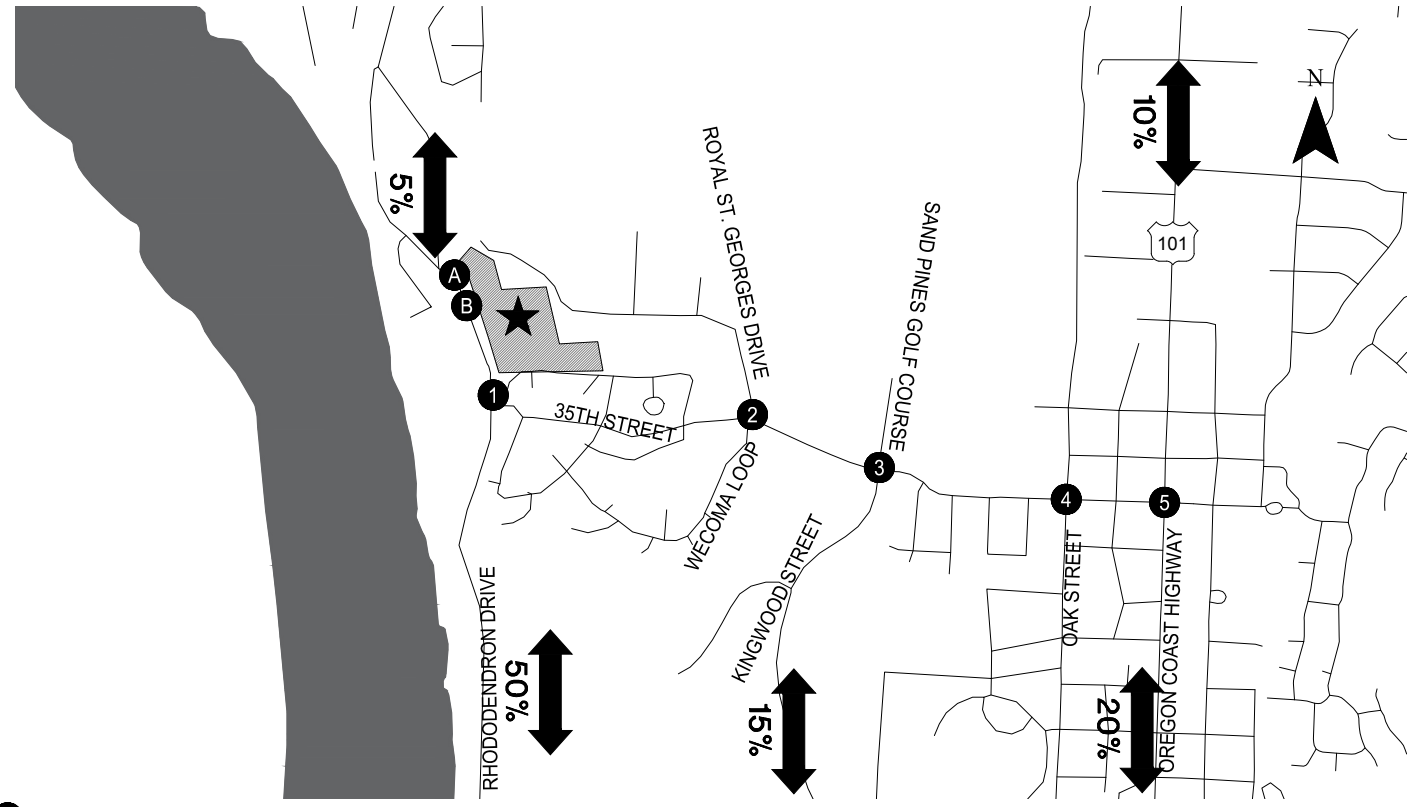
Figure 3 and Figure 4 display a preliminary trip distribution and assignment based on review of surrounding land uses and the roadway network. The trip distribution pattern used in the formal traffic impact analysis may be revised based on traffic volume data to be collected at the study intersections as well as agency review comments.

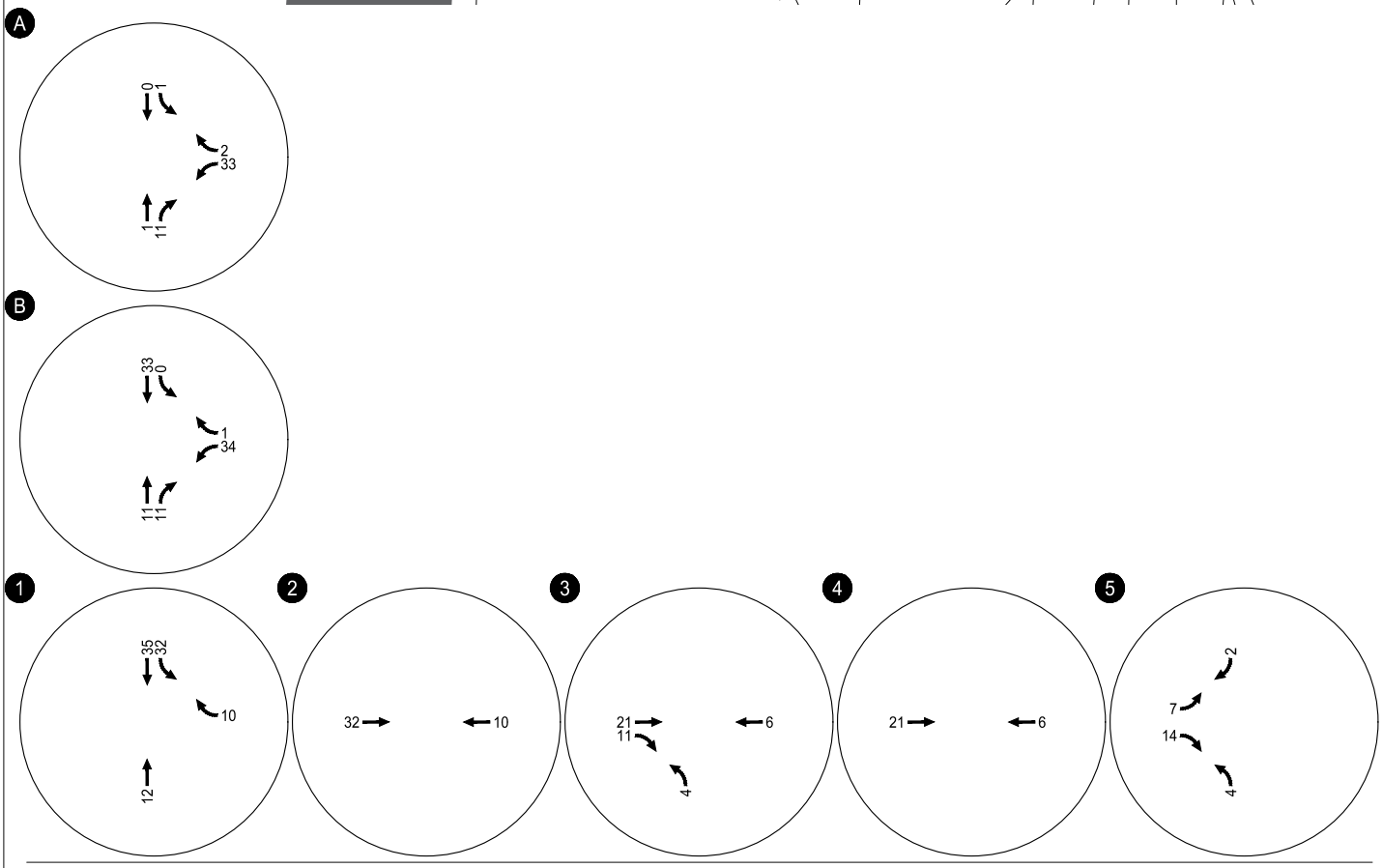
STUDY INTERSECTIONS

Proposed study intersections were identified based on the project's anticipated trip generation impact on adjacent intersections within the site vicinity. One intersection under ODOT[2] jurisdiction was identified to be impacted – however, under both weekday AM and PM peak hours, this intersection is forecast to be impacted by fewer than 50 trips (see Figures 3 and 4). As such, the intersection of 35th Avenue/Oregon Coast Highway (Hwy 101) has been included in the study area to address City requirements. All proposed study intersections are summarized below.

- Site Driveway "A"/Rhododendron Drive
- Site Driveway "B"/Rhododendron Drive
- 35th Street/Rhododendron Drive
- 35th Street/Royal St. Georges Drive
- 35th Street/Kingwood Street
- 35th Street/Oak Street
- 35th Street/Oregon Coast Highway (Hwy 101)

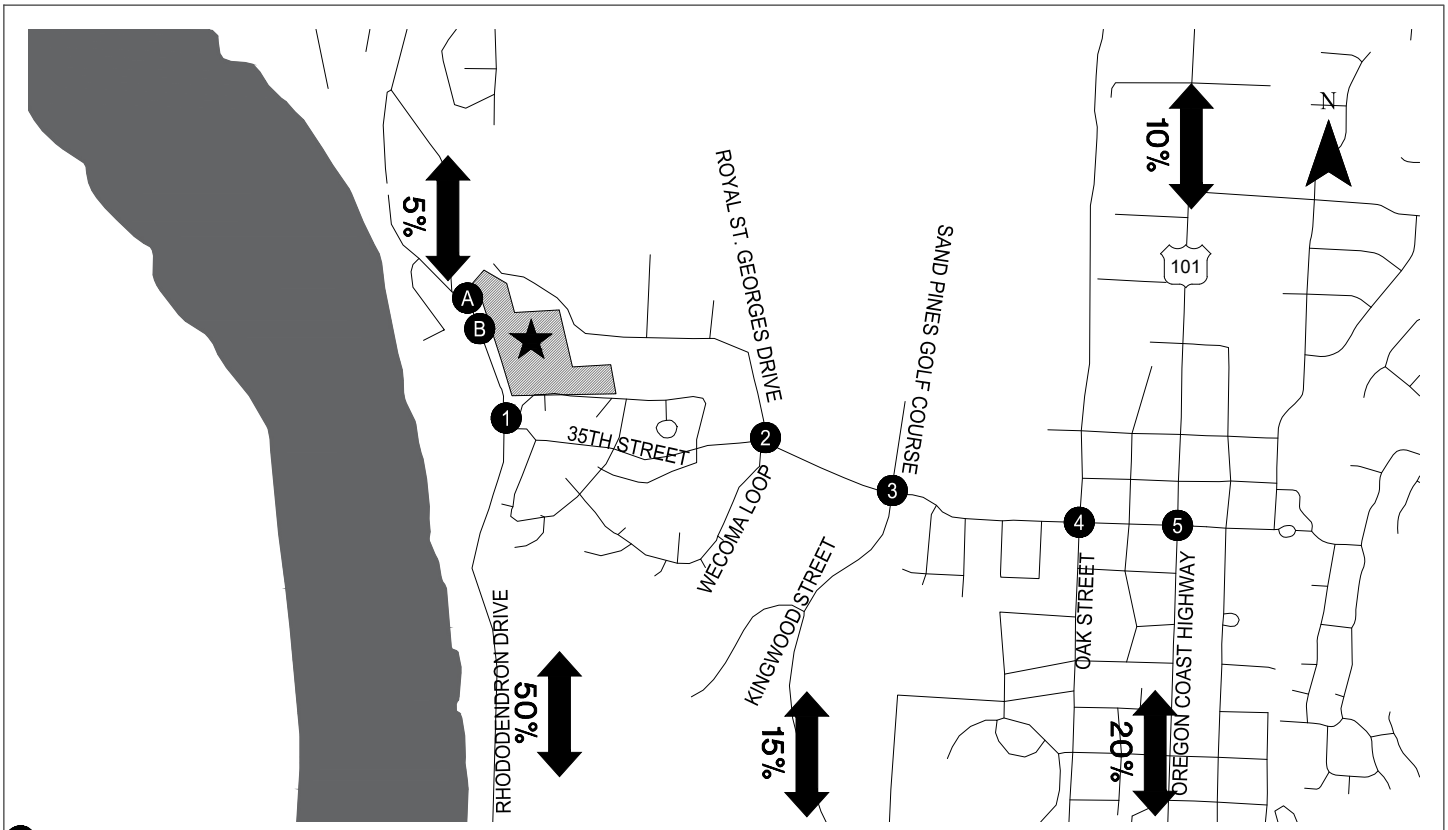
[2] Oregon Department of Transportation

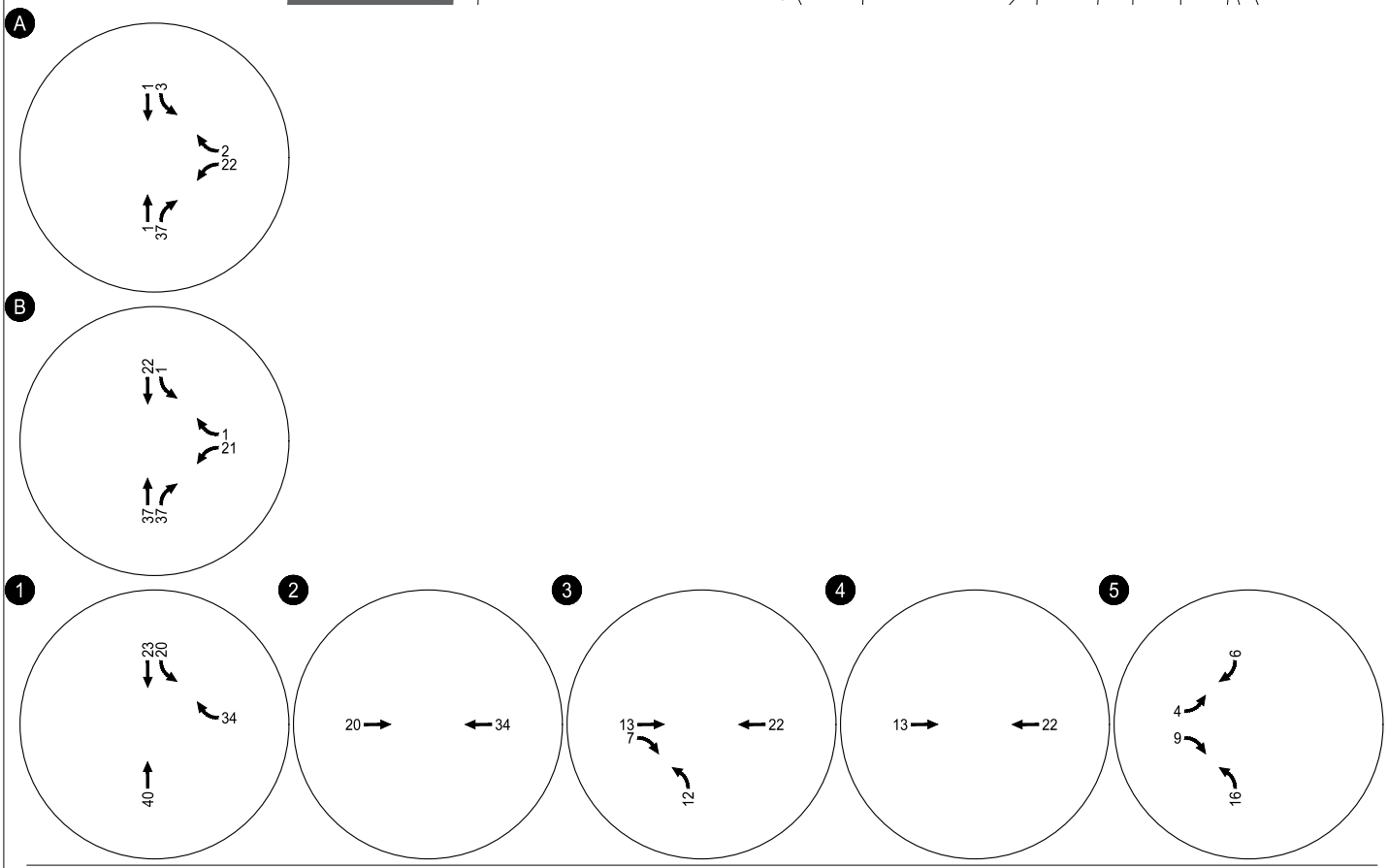




Estimated Trip Distribution Pattern & Trip Assignment
Weekday AM Peak Hour
Florence, OR

Figure
3





Estimated Trip Distribution Pattern & Trip Assignment
Weekday PM Peak Hour
Florence, OR

Figure
4

OPERATIONS ANALYSIS

The traffic operations analysis will include evaluation of the following performance measures for the study intersections:

- Turning movement counts;
- Volume-to-capacity (V/C) ratio;
- Level-of-service (LOS) and delay; and,
- 95th percentile queuing.

Individual study intersection performance will be documented in tables, figures, and/or technical appendices using the measures of effectiveness listed above. Study intersection performance will then be compared to applicable City and ODOT performance thresholds.

Analysis Years

We will report performance measures for the following analysis years:

- Existing year 2019 traffic analysis;
- Opening year 2021 background traffic analysis (without added trips from the proposed development); and,
- Forecast year 2021 total traffic analysis (including added trips from the proposed development).

Mobility Standards

ODOT assesses intersection operations based on v/c ratio. Table 6 of the *Oregon Highway Plan* (OHP) provides v/c ratio targets statewide. These OHP ratios are used to evaluate existing and future no-build conditions, and the mobility standard is based on characteristics of the state highway.

Within the study area, the Oregon Coast Highway (Hwy 101) is classified as a statewide highway (not a freight route), located within the urban growth boundary (non-MPO), and has a posted speed limit of 35 miles per hour. As such, the ODOT required mobility standard for the 35th Street/Oregon Coast Highway (Hwy 101) intersection is a v/c ratio of 0.90.

Table 6 of the *Oregon Highway Plan* (OHP) is shown on the following page.

VOLUME TO CAPACITY RATIO TARGETS OUTSIDE METRO[17A, B, C, D]							
Highway Category	**Inside Urban Growth Boundary**					**Outside Urban Growth Boundary**	
	STA[E]	**MPO**	**Non-MPO Outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA**	**Non-MPO outside of STAs where non-freeway speed > 35 mph but < 45 mph**	**Non-MPO where non-freeway speed limit >= 45 mph**	**Unincorporated Communities[F]**	**Rural Lands**
Interstate Highways	N/A	0.85	N/A	N/A	0.80	0.70	0.70
Statewide Expressways	N/A	0.85	0.85	0.80	0.80	0.70	0.70
Freight Route on a Statewide Highway	0.90	0.85	0.85	0.80	0.80	0.70	0.70
Statewide (not a Freight Route)	0.95	0.90	0.90	0.85	0.80	0.75	0.70
Freight Route on a regional or District Highway	0.95	0.90	0.90	0.85	0.85	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.90	N/A	0.85	0.85	0.75	0.70
Regional Highways	1.0	0.95	0.90	0.85	0.85	0.75	0.70
District/Local Interest Roads	1.0	0.95	0.95	0.90	0.90	0.80	0.75

Table 6: Volume to Capacity Ratio Targets for Peak Hour Operating Conditions

We request that the City of Florence provide us with the applicable mobility standards for the other study intersections.

SEASONAL ADJUSTMENT FACTOR

Peak hour traffic counts will be collected in December 2019 and will subsequently be adjusted to reflect 30th highest hour design volumes, based on applicable adjustment factors. Version 2 of the APM identifies three methods for identifying seasonal adjustment factors for highway traffic volumes:

- On-Site ATR Method
- ATR Characteristic Table Method
- Seasonal Trend Method

All three methods utilize information provided by Automatic Traffic Recorders (ATRs) situated in select locations throughout the State Highway System that collect traffic data 24-hours a day/365 days a year.

The On-Site ATR Method meets the criteria that the ATR be located within or near the project area. ATR Florence (20-026) was identified on Highway 101 and located 0.77 miles north of Heceta Beach Road, and 2.21 miles north of the 35th Street/Highway 101 study intersection. No major intersections that would impact seasonal trends are located between the study intersection and the ATR location. As such, we propose using ATR 20-026 data to seasonally adjust traffic volume data collected in December 2019.

Table 2 displays the ATR data used to develop the seasonal adjustment factor for the study area.

Table 2. Seasonal Adjustment Factor Calculation (weekday daily data)

Year	2014	2015	2016	2017	2018	Average
Peak Month (July) % of ADT	136%	136%	134%	142%	140%	137%
Month of Data Collection (December) % of ADT	76%	75%	78%	78%	77%	77%

Note: Shaded values removed from average calculation per ODOT methodology.

Cells highlighted in grey reflect the highest and lowest values and were excluded from the average per ODOT guidelines. From this data, the seasonal factor can be computed as 137% ÷ 77% = 1.78.

Based on direction provided in the ODOT Analysis Procedures Manual, a seasonal adjustment greater than 30% should not be used. To supplement the ATR methodology, the most up-to-date seasonal trend tables[3] were reviewed – for the count month December, the seasonal adjustments shown for the following routes are as follows:

- Coastal Destination: 1.1636
- Coastal Destination Route: 1.2836

Averaging the seasonal trend table values for December results in a 1.2236 seasonal adjustment.

We welcome you providing historic traffic count data that may be available for the study intersections that could help further inform the seasonal adjustment. If no additional data is available, and subject to ODOT and City feedback, we propose to adjust the through movements on Highway 101 by a factor of 1.22 to reflect the 30th highest hour volumes.

CRASH DATA REVIEW

The most-recent three-year period of reported crash data (January 1, 2016 through December 31, 2018) will be reviewed at the study intersections. Any study intersections that are identified as a Safety Priority Index System sites (top 5- or 10-percent) will be included in the crash data and highlighted in the analysis.

[3] Updated June 26, 2019

The data will be analyzed for a variety of factors to include type, severity, general conditions, and location to identify potential crash patterns or anomalies.

FORECAST YEAR VOLUME DEVELOPMENT

Growth rates for opening year background traffic volumes will be based upon the ODOT Future Volume Tables. Two locations near the study area were identified on Oregon Coast Highway (US 101, ODOT Highway No. 009): 0.02 miles south of 36th Street and 0.02 miles south of 29th Street. Table 3 provides the base year (2018) and forecast year (2038) model AADTs for computation of the growth rate.

Table 3. ODOT Future Volume Table

Highway	Milepost	Description	2018	2038	R^2	Growth Rate
009	188.64	0.02 miles south of 36th Street	12,500	12,600	0.4298	0.00040
009	21.34	0.02 miles south of 29th Street	14,100	14,200	0.8050	0.00035

Growth rate calculation example: (12,600 / 12,500 – 1) / (2038 - 2018) = 0.00040

Based on the volumes in Table 3, traffic volumes along the state highway in the vicinity of the study area are anticipated to increase by approximately 100 daily vehicles over a period of 20 years. This growth is negligible and suggests it may not be necessary to apply an annual background growth rate to the existing volumes for the 2021 buildout year analysis. We would appreciate receipt of in-process development and/or annual growth rate data that may be available. In the absence of additional data, we propose to not apply a regional growth factor to the local streets.

NEXT STEPS

Please review the information presented in this memorandum and provide us your feedback regarding the study assumptions and methodology. Please also provide confirmation of the City of Florence mobility standards. We would be pleased to schedule a conference call to discuss if desired.

Amy Griffiths

From: BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Sent: Friday, January 3, 2020 7:19 AM
To: BAUMGARTNER Douglas G; Diego Arguea
Cc: Mike.Miller@ci.florence.or.us; Amy Griffiths; UPTON Dorothy J; NELSON Brian S * Scott
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Doug and Diego:

Thank you for passing along this scoping letter. My comments are:

1. Traffic study should be consistent with ODOT's Analysis Procedures Manual (APM) https://www.oregon.gov/ODOT/Planning/Pages/APM.aspx
2. Does the City concur with the proposed Trip Distribution? It appears the assumed 30% (10% to/from north, 20% to/from south) of the total trips accessing the US-101/35th Street intersection is low, but I concur that it appears this intersection will not trigger ODOT's 50 peak hour net trip increase threshold to recommend study of the intersection. That said, I am still available and willing to review the draft traffic study as a resource for the City.
3. The OHP mobility target for the US-101/35th Street intersection is actually 0.85 rather than 0.90 as cited within the scoping letter (statewide highway, non-OHP freight route, 40 MPH).
4. The citation within ODOT's APM about avoiding the use of seasonal adjustments above 30% is not intended to limit the adjustment itself, but rather identify the least appropriate months during the year to conduct traffic counts. Due to the seasonal trending nature of the local transportation network, traffic counts at the US-101/35th Street intersection should be collected between March 1 and November 15. However, if the City will accept December counts for the purpose of this traffic study, Region Traffic recommends a seasonal adjustment of 1.76 for the US-101/35th Street intersection based on an average of the following trends:
    a. 1.84 using Florence ATR 20-026 and the Average Daily Traffic method (as opposed to the Average Weekday Traffic method)
    b. 1.49 using the Coastal Destination trend (the proposed calculation must have included an error)
    c. 1.96 using the Coastal Destination Route trend (the proposed calculation must have included an error)
5. Per Table 3.3 of ODOT's Development Review Guidelines, for a development of this size (1,000 – 2,999 ADT), Region Traffic recommends the following analysis scenario years:
    a. Existing (2019)
    b. Opening Year (2021)
        i. Background
        ii. Total
    c. Opening Year + 5 Years (2026)
        i. Background
        ii. Total

I hope the above information will help, but please let me know if there are any more questions or if I may be of any further assistance. Thanks!

Keith P. Blair, P.E.
Interim Traffic Analysis Engineer | ODOT Region 2

455 Airport Rd SE, Bldg. A | Salem, Oregon 97301
(503) 986-2857 | Keith.P.Blair@odot.state.or.us

ODOT's mission is to provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive.

From: Diego Arguea <darguea@kittelson.com>
Sent: Friday, December 27, 2019 3:24 PM
To: NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Cc: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>; Mike.Miller@ci.florence.or.us; Amy Griffiths <agriffiths@kittelson.com>; BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Hi Scott –

Thanks for email. I was also told that Keith Blair is someone who has been involved in development review? We are currently scoping, but we are on a fast track to deliver this project by end of January. I have included the scoping memorandum attached for your reference. Note that the only intersection under ODOT jurisdiction is 35th Ave/Hwy 101, but we do not estimate more than 50 peak hour trips to this intersection, so, ultimately, it may even not be required for study – I will defer to you. If it is required, please confirm the seasonal adjustment methodology.

Thanks!
Diego

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Sent: Thursday, December 26, 2019 2:57 PM
To: Diego Arguea <darguea@kittelson.com>
Cc: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>
Subject: Development Review Contact for ODOT Region 2 District 5

Hello Diego, I here you are working on a TIS in Florence. Doug Baumgartner is our development review coordinator for that area, however Doug is out until January 6th. In the meantime I can help you get started. Are you looking for a scope or are you beyond that?

thanks

B Scott Nelson, P.E.
Region 2 Access Management Engineer

Oregon Department of Transportation
455 Airport Rd SE, Bldg. B
Salem, OR 97301
Office 503.986.2882

Amy Griffiths

From: Mike Miller <mike.miller@ci.florence.or.us>
Sent: Thursday, January 9, 2020 9:49 AM
To: BLAIR Keith P; Diego Arguea
Cc: Amy Griffiths; BAUMGARTNER Douglas G; Wendy Farley-Campbell
Subject: RE: Florence - revision in site plan

Thanks Keith! I agree, since we know what the mix is using ITE codes 210 and 220 will be more accurate.

Mike

From: BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Sent: Thursday, January 9, 2020 9:07 AM
To: 'Diego Arguea' <darguea@kittelson.com>; Mike Miller <mike.miller@ci.florence.or.us>
Cc: Amy Griffiths <agriffiths@kittelson.com>; BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>
Subject: RE: Florence - revision in site plan

Diego and Mike:

My recommendation would be to utilize trip generation for land uses 210 and 220 as opposed to 270 for the combination of the following reasons:

- it appears the proposed land use mix is known, as opposed to a general PUD application
- ITE data sample sizes for land uses 210 and 220 are significantly larger than that for 270 and, as a result, likely more accurate
- trip generation results for land uses 210 and 220 are slightly larger (more conservative) for the daily and PM peak hour

Please let me know if I may be of further assistance. Thanks!

Keith Blair
(503) 986–2857

From: Diego Arguea <darguea@kittelson.com>
Sent: Wednesday, January 8, 2020 6:01 PM
To: Mike Miller <mike.miller@ci.florence.or.us>; BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Cc: Amy Griffiths <agriffiths@kittelson.com>
Subject: Florence - revision in site plan

Mike, Keith,

Thank you both for your time in coordination and working through the project assumptions. We have recently had a change (reduction) in the site plan units, and I wanted to share an updated trip generation prior to moving forward with our analysis. Please review and let us know if you are comfortable using the PUD trip generation rate.

In our scoping memorandum, the site plan identified 91 single family home lots and 48 apartments. The revised unit mix is as follows:

31 single family lots

46 apartments
55 attached townhome/cottage 2-story homes (owner occupied not rentals)
132 total units

The 9th edition of Trip Generation included a category for 'townhomes' which does not exist in the 10th edition. Rather, the townhome data has been lumped together with the rate in the Low Rise Residential data. As such, one potential trip generation estimate shown below includes 31 single family lots and 101 low rise residential (46 apartments + 55 attached homes).

Land Use	ITE Code	Units	Daily Trips	Weekday AM			Weekday PM		
				Total	In	Out	Total	In	Out
Residential									
Single-Family Detached Housing (AVG)	210	31	354	27	7	20	33	21	12
Internal Trips (0% Daily, 0% AM, Saturday 0%)			*0*	*0*	*0*	*0*	*0*	*0*	*0*
Multifamily Housing (Low-Rise)	220	101	723	48	11	37	60	38	22
Internal Trips (0% Daily, 0% AM, Saturday 0%)			*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net Trip Generation			**1,077**	**75**	**18**	**57**	**93**	**58**	**34**

Alternatively, the 10th edition also has a new land use category called PUD Residential (Land Use 270). This rate is intended for developments that are PUDs and the final land use mix may or may not be known. The second table represents the revised trip generation assuming all 132 units are run as PUD.

Land Use	ITE Code	Units	Daily Trips	Weekday AM			Weekday PM		
				Total	In	Out	Total	In	Out
Residential									
Planned Unit Development (PUD) *Average Rate*	270	132	974	75	17	59	91	59	32
Internal Trips (0% Daily, 0% AM, Saturday 0%)			*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net Trip Generation			**974**	**75**	**17**	**59**	**91**	**59**	**32**

As you'll note, the differences in net trip generation are very marginal – please review and let us know if you are both more comfortable with one over the other. Because this development application is going in as a PUD, I am comfortable with the trip generation and it seems appropriate to use this land use. But, given that we know the land use mix, I am open to either approach. Thanks in advance – please let us know your thoughts.

Thanks in advance,
Diego and Amy

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: Mike Miller <mike.miller@ci.florence.or.us>
Sent: Tuesday, January 07, 2020 10:21 AM
To: Diego Arguea <darguea@kittelson.com>
Cc: Amy Griffiths <agriffiths@kittelson.com>
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Hi Diego,

Just left you a message. Sorry that yesterday did not work. I was just stepping into a meeting when you called and then I had an executive session with City Council plus our regular Council meeting last night.

I will be on the road traveling to Eugene to meet with Lane County at 11am and will be back in Florence after 3:30pm. I have a meeting scheduled with the City Manager, but should be available later after 4:30pm today.

If that doesn't work, I do have time available after 10am Wednesday.

Thank you,

Mike

From: Diego Arguea <darguea@kittelson.com>
Sent: Monday, January 6, 2020 2:44 PM
To: Mike Miller <mike.miller@ci.florence.or.us>
Cc: Amy Griffiths <agriffiths@kittelson.com>
Subject: FW: Development Review Contact for ODOT Region 2 District 5

Hi Mike,

Just left a message with Sandy (receptionist?) regarding our transportation work in Florence. I am available the rest of the afternoon and have some flexibility tomorrow afternoon. Please let me know when is a good time to chat about the scope of the transportation work – thanks in advance!

Thanks,
Diego

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Sent: Friday, January 03, 2020 7:19 AM
To: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>; Diego Arguea <darguea@kittelson.com>
Cc: Mike.Miller@ci.florence.or.us; Amy Griffiths <agriffiths@kittelson.com>; UPTON Dorothy J <Dorothy.J.UPTON@odot.state.or.us>; NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Doug and Diego:

Thank you for passing along this scoping letter. My comments are:

1. Traffic study should be consistent with ODOT's Analysis Procedures Manual (APM) https://www.oregon.gov/ODOT/Planning/Pages/APM.aspx
2. Does the City concur with the proposed Trip Distribution? It appears the assumed 30% (10% to/from north, 20% to/from south) of the total trips accessing the US-101/35th Street intersection is low, but I concur that it appears this intersection will not trigger ODOT's 50 peak hour net trip increase threshold to recommend study of the intersection. That said, I am still available and willing to review the draft traffic study as a resource for the City.
3. The OHP mobility target for the US-101/35th Street intersection is actually 0.85 rather than 0.90 as cited within the scoping letter (statewide highway, non-OHP freight route, 40 MPH).
4. The citation within ODOT's APM about avoiding the use of seasonal adjustments above 30% is not intended to limit the adjustment itself, but rather identify the least appropriate months during the year to conduct traffic counts. Due to the seasonal trending nature of the local transportation network, traffic counts at the US-101/35th Street intersection should be collected between March 1 and November 15. However, if the City will accept December counts for the purpose of this traffic

study, Region Traffic recommends a seasonal adjustment of 1.76 for the US-101/35th Street intersection based on an average of the following trends:
    a. 1.84 using Florence ATR 20-026 and the Average Daily Traffic method (as opposed to the Average Weekday Traffic method)
    b. 1.49 using the Coastal Destination trend (the proposed calculation must have included an error)
    c. 1.96 using the Coastal Destination Route trend (the proposed calculation must have included an error)
5. Per Table 3.3 of ODOT's Development Review Guidelines, for a development of this size (1,000 – 2,999 ADT), Region Traffic recommends the following analysis scenario years:
    a. Existing (2019)
    b. Opening Year (2021)
        i. Background
        ii. Total
    c. Opening Year + 5 Years (2026)
        i. Background
        ii. Total

I hope the above information will help, but please let me know if there are any more questions or if I may be of any further assistance. Thanks!

Keith P. Blair, P.E.
Interim Traffic Analysis Engineer | **ODOT Region 2**
455 Airport Rd SE, Bldg. A | Salem, Oregon 97301
(503) 986-2857 | Keith.P.Blair@odot.state.or.us

ODOT's mission is to provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive.

From: Diego Arguea <darguea@kittelson.com>
Sent: Friday, December 27, 2019 3:24 PM
To: NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Cc: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>; Mike.Miller@ci.florence.or.us; Amy Griffiths <agriffiths@kittelson.com>; BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Hi Scott –

Thanks for email. I was also told that Keith Blair is someone who has been involved in development review? We are currently scoping, but we are on a fast track to deliver this project by end of January. I have included the scoping memorandum attached for your reference. Note that the only intersection under ODOT jurisdiction is 35th Ave/Hwy 101, but we do not estimate more than 50 peak hour trips to this intersection, so, ultimately, it may even not be required for study – I will defer to you. If it is required, please confirm the seasonal adjustment methodology.

Thanks!
Diego

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Sent: Thursday, December 26, 2019 2:57 PM
To: Diego Arguea <darguea@kittelson.com>
Cc: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>
Subject: Development Review Contact for ODOT Region 2 District 5

Hello Diego, I here you are working on a TIS in Florence. Doug Baumgartner is our development review coordinator for that area, however Doug is out until January 6th. In the meantime I can help you get started. Are you looking for a scope or are you beyond that?

thanks

B Scott Nelson, P.E.
Region 2 Access Management Engineer

Oregon Department of Transportation
455 Airport Rd SE, Bldg. B
Salem, OR 97301
Office 503.986.2882
Cell 503.602.0703

Attachment B

Level-of-Service Criteria

DESCRIPTION OF LEVEL OF SERVICE

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from "A" to "F".[1]

SIGNALIZED INTERSECTIONS

The six level-of-service grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service "D" is generally considered to represent the minimum acceptable design standard.

Table B1: Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is more than 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

[1] Most of the material in this appendix is adapted from the Transportation Research Board, *Highway Capacity Manual*, (2010).

Table B2: Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

UNSIGNALIZED INTERSECTIONS

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. *The Highway Capacity Manual, 6th edition* (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service "E" is generally considered to represent the minimum acceptable design standard.

Table B3: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	• Nearly all drivers find freedom of operation. • Very seldom is there more than one vehicle in queue.
B	• Some drivers begin to consider the delay an inconvenience. • Occasionally there is more than one vehicle in queue.
C	• Many times there is more than one vehicle in queue. • Most drivers feel restricted, but not objectionably so.
D	• Often there is more than one vehicle in queue. • Drivers feel quite restricted.
E	• Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. • There is almost always more than one vehicle in queue. • Drivers find the delays approaching intolerable levels.
F	• Forced flow. • Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table B4: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Attachment C
Traffic Count Data

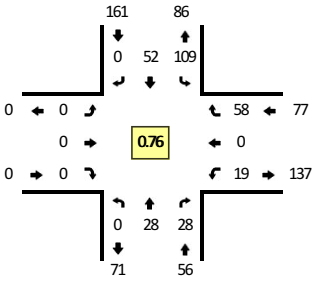
Type of peak hour being reported: Intersection Peak

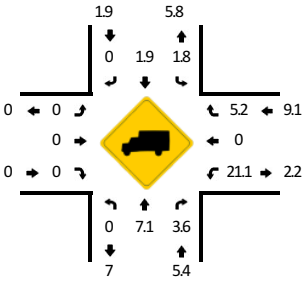
Method for determining peak hour: Total Entering Volume

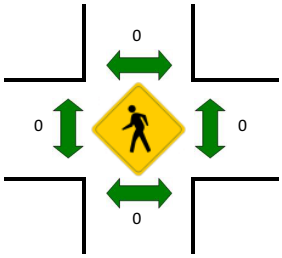
LOCATION: Rhododendron Dr -- 35th St
CITY/STATE: Lane, OR

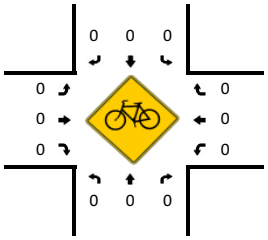
QC JOB #: 15139501
DATE: Wed, Dec 4 2019

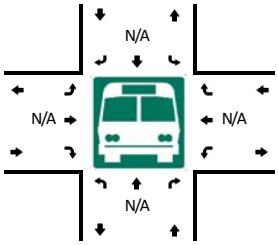
Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:40 AM -- 8:55 AM

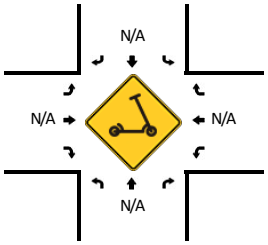












5-Min Count Period Beginning At	Rhododendron Dr (Northbound)				Rhododendron Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	6	3	0	0	0	0	0	0	3	0	2	0	14	
7:05 AM	0	2	0	0	3	3	0	0	0	0	0	0	0	0	2	0	10	
7:10 AM	0	0	1	0	2	4	0	0	0	0	0	0	0	0	2	0	9	
7:15 AM	0	1	0	0	3	1	0	0	0	0	0	0	1	0	1	0	7	
7:20 AM	0	1	0	0	6	0	0	0	0	0	0	0	2	0	2	0	11	
7:25 AM	0	6	0	0	1	1	0	0	0	0	0	0	0	0	3	0	11	
7:30 AM	0	3	1	0	5	2	0	0	0	0	0	0	3	0	3	0	17	
7:35 AM	0	1	3	0	7	1	0	0	0	0	0	0	1	0	3	0	16	
7:40 AM	0	1	1	0	13	6	0	0	0	0	0	0	0	0	3	0	24	
7:45 AM	0	0	0	0	8	5	0	0	0	0	0	0	3	0	7	0	23	
7:50 AM	0	2	4	0	12	7	0	0	0	0	0	0	2	0	6	0	33	
7:55 AM	0	1	6	0	12	7	0	0	0	0	0	0	2	0	4	0	32	207
8:00 AM	0	1	1	0	5	3	0	0	0	0	0	0	4	0	4	0	18	211
8:05 AM	0	2	0	0	9	3	0	0	0	0	0	0	1	0	6	0	21	222
8:10 AM	0	2	2	0	11	2	0	0	0	0	0	0	1	0	3	0	21	234
8:15 AM	0	2	2	0	9	2	0	0	0	0	0	0	2	0	2	0	19	246
8:20 AM	0	0	2	0	14	2	0	0	0	0	0	0	1	0	6	0	25	260
8:25 AM	0	4	1	0	9	3	0	0	0	0	0	0	0	0	3	0	20	269
8:30 AM	0	1	0	0	9	10	0	0	0	0	0	0	0	0	6	0	26	278
8:35 AM	0	2	2	0	4	3	0	0	0	0	0	0	0	0	4	0	15	277
8:40 AM	0	3	3	0	5	5	0	0	0	0	0	0	3	0	3	0	22	275
8:45 AM	0	5	3	0	10	5	0	0	0	0	0	0	1	0	11	0	35	287
8:50 AM	0	5	6	0	12	7	0	0	0	0	0	0	4	0	6	0	40	294
8:55 AM	0	3	3	0	9	5	0	0	0	0	0	0	4	0	3	0	27	289

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	52	48	0	108	68	0	0	0	0	0	0	32	0	80	0	388
Heavy Trucks	0	4	0		0	0	0		0	0	0		8	0	4		16
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

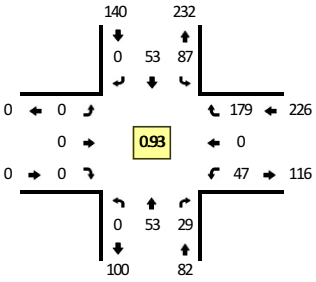
Type of peak hour being reported: Intersection Peak

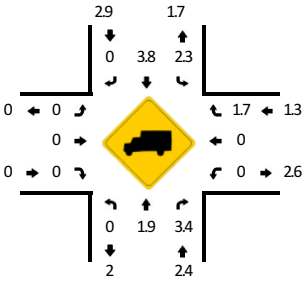
Method for determining peak hour: Total Entering Volume

LOCATION: Rhododendron Dr -- 35th St
CITY/STATE: Lane, OR

QC JOB #: 15139502
DATE: Wed, Dec 4 2019

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM





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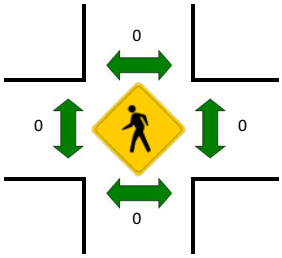
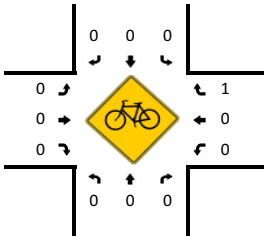
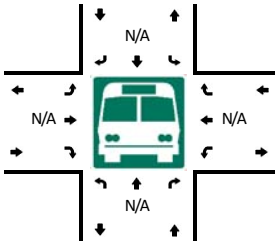
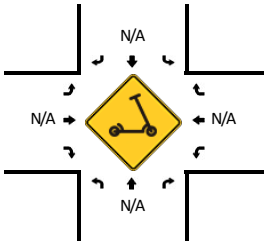








5-Min Count Period Beginning At	Rhododendron Dr (Northbound)				Rhododendron Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	3	3	0	6	5	0	0	0	0	0	0	5	0	13	0	35	
4:05 PM	0	5	5	0	8	5	0	0	0	0	0	0	6	0	16	0	45	
4:10 PM	0	7	2	0	8	1	0	0	0	0	0	0	1	0	22	0	41	
4:15 PM	0	2	0	0	7	7	0	0	0	0	0	0	5	0	13	0	34	
4:20 PM	0	4	1	0	8	0	0	0	0	0	0	0	4	0	14	0	31	
4:25 PM	0	6	4	0	9	10	0	0	0	0	0	0	5	0	13	0	47	
4:30 PM	0	3	3	0	6	5	0	0	0	0	0	0	1	0	20	0	38	
4:35 PM	0	5	2	0	4	4	0	0	0	0	0	0	3	0	11	0	29	
4:40 PM	0	7	2	0	7	5	0	0	0	0	0	0	4	0	14	0	39	
4:45 PM	0	2	1	0	5	5	0	0	0	0	0	0	6	0	15	0	34	
4:50 PM	0	4	3	0	9	3	0	0	0	0	0	0	6	0	19	0	44	
4:55 PM	0	5	3	0	10	3	0	0	0	0	0	0	1	0	9	0	31	448
5:00 PM	0	8	0	0	10	4	0	0	0	0	0	0	2	0	6	0	30	443
5:05 PM	0	5	5	0	8	1	0	0	0	0	0	0	1	0	8	0	28	426
5:10 PM	0	5	5	0	4	6	0	0	0	0	0	0	1	0	6	0	27	412
5:15 PM	0	5	4	0	10	3	0	0	0	0	0	0	4	0	10	0	36	414
5:20 PM	0	3	3	0	7	5	0	0	0	0	0	0	0	0	11	0	29	412
5:25 PM	0	2	1	0	7	2	0	0	0	0	0	0	3	0	9	0	24	389
5:30 PM	0	1	0	0	5	4	0	0	0	0	0	0	1	0	8	0	19	370
5:35 PM	0	7	3	0	6	1	0	0	0	0	0	0	1	0	7	0	25	366
5:40 PM	0	4	1	0	5	1	0	0	0	0	0	0	4	0	5	0	20	347
5:45 PM	0	2	0	0	3	2	0	0	0	0	0	0	5	0	8	0	20	333
5:50 PM	0	2	0	0	5	5	0	0	0	0	0	0	0	0	7	0	19	308
5:55 PM	0	2	2	0	3	3	0	0	0	0	0	0	1	0	7	0	18	295

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	60	40	0	88	44	0	0	0	0	0	0	48	0	204	0	484
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	4		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

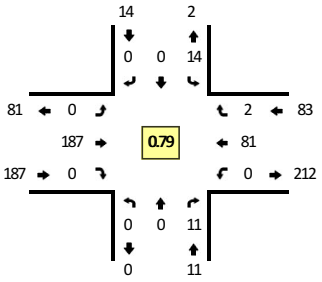
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

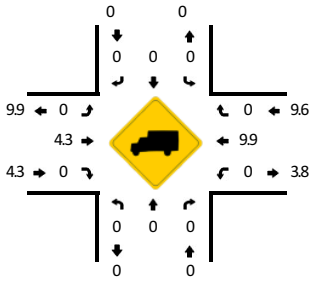
LOCATION: Royal St Georges Dr -- 35th St
CITY/STATE: Lane, OR

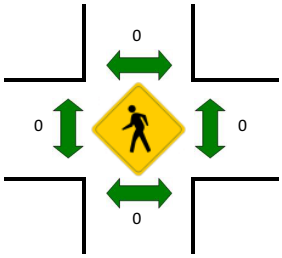
QC JOB #: 15139503
DATE: Wed, Dec 4 2019

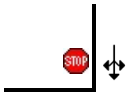
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

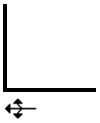


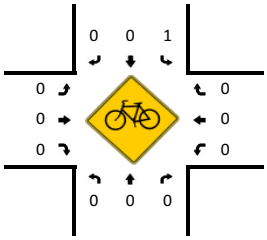
Quality Counts
DATA THAT DRIVES COMMUNITIES

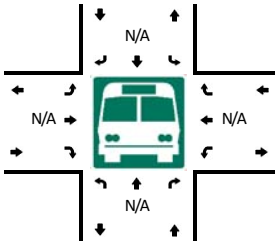


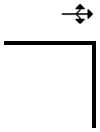


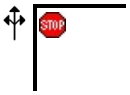


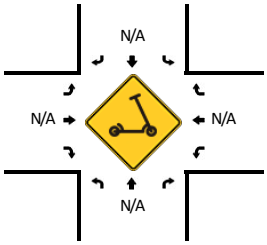












5-Min Count Period Beginning At	Royal St Georges Dr (Northbound)				Royal St Georges Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	0	4	0	0	0	4	0	0	9	
7:05 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8	
7:10 AM	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	0	9	
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5	
7:20 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	3	0	0	11	
7:25 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6	
7:30 AM	0	0	0	0	1	0	0	0	0	7	0	0	0	6	0	0	14	
7:35 AM	0	0	0	0	0	0	0	0	0	17	0	0	0	5	0	0	22	
7:40 AM	0	0	0	0	1	0	0	0	0	17	0	0	0	6	0	0	24	
7:45 AM	0	0	2	0	0	0	0	0	0	16	0	0	0	11	0	0	29	
7:50 AM	0	0	2	0	2	0	0	0	0	19	0	0	0	8	0	0	31	
7:55 AM	0	0	2	0	3	0	0	0	0	21	0	0	0	7	0	0	33	201
8:00 AM	0	0	0	0	3	0	0	0	0	10	0	0	0	10	0	0	23	215
8:05 AM	0	0	1	0	1	0	0	0	0	15	0	0	0	9	0	0	26	233
8:10 AM	0	0	1	0	0	0	0	0	0	15	0	0	0	3	0	0	19	243
8:15 AM	0	0	1	0	1	0	0	0	0	17	0	0	0	6	0	0	25	263
8:20 AM	0	0	1	0	1	0	0	0	0	17	0	0	0	9	1	0	29	281
8:25 AM	0	0	1	0	2	0	0	0	0	11	0	0	0	2	1	0	17	292
8:30 AM	0	0	0	0	0	0	0	0	0	12	0	0	0	5	0	0	17	295
8:35 AM	0	0	0	0	0	0	0	0	0	11	0	0	0	9	1	0	21	294
8:40 AM	0	0	1	0	0	0	0	0	0	9	0	0	0	7	1	0	18	288
8:45 AM	0	0	2	0	0	0	0	0	0	15	0	0	0	14	0	0	31	290
8:50 AM	0	0	0	0	2	0	1	0	1	20	0	0	1	10	0	0	35	294
8:55 AM	0	0	0	0	1	0	0	0	0	12	0	0	0	7	0	0	20	281

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	24	0	20	0	0	0	0	224	0	0	0	104	0	0	372
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	12	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

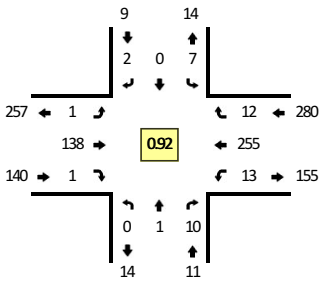
Type of peak hour being reported: User-Defined

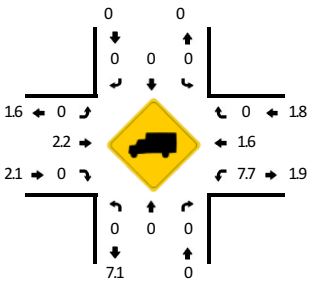
Method for determining peak hour: Total Entering Volume

LOCATION: Royal St Georges Dr -- 35th St
CITY/STATE: Lane, OR

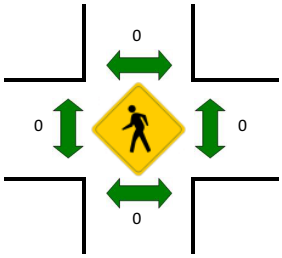
QC JOB #: 15139504
DATE: Wed, Dec 4 2019

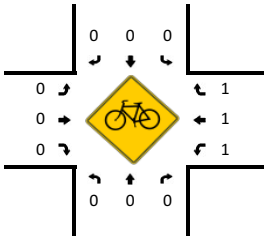
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

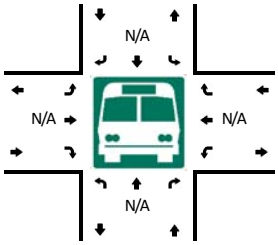


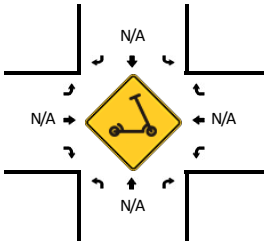


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Royal St Georges Dr (Northbound)				Royal St Georges Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	1	0	0	0	0	10	0	0	2	20	1	0	35	
4:05 PM	0	0	0	0	1	0	0	0	0	16	0	0	0	24	0	0	41	
4:10 PM	0	0	1	0	2	0	0	0	0	11	0	0	1	28	0	0	43	
4:15 PM	0	0	2	0	0	0	0	0	0	13	0	0	2	17	1	0	35	
4:20 PM	0	0	1	0	1	0	0	0	0	9	0	0	0	20	0	0	31	
4:25 PM	0	0	1	0	0	0	0	0	0	14	0	0	1	24	0	0	40	
4:30 PM	0	0	0	0	0	0	0	0	0	13	0	0	2	25	1	0	41	
4:35 PM	0	0	0	0	0	0	1	0	0	4	0	0	1	18	3	0	27	
4:40 PM	0	1	1	0	0	0	0	0	0	13	1	0	0	25	3	0	44	
4:45 PM	0	0	1	0	1	0	0	0	0	7	0	0	2	22	0	0	33	
4:50 PM	0	0	1	0	0	0	1	0	0	12	0	0	2	19	3	0	38	
4:55 PM	0	0	1	0	1	0	0	0	1	16	0	0	0	13	0	0	32	440
5:00 PM	0	0	0	0	1	0	0	0	0	18	0	0	1	15	1	0	36	441
5:05 PM	0	0	1	0	0	0	0	0	0	12	0	0	2	12	1	0	28	428
5:10 PM	0	0	0	0	0	0	0	0	0	11	0	0	1	11	1	0	24	409
5:15 PM	0	0	2	0	1	0	0	0	0	11	0	0	1	15	2	0	32	406
5:20 PM	0	0	1	0	0	0	0	0	0	15	0	0	0	14	0	0	30	405
5:25 PM	0	0	0	0	1	0	0	0	0	8	0	1	0	12	0	0	22	387
5:30 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	12	2	0	20	366
5:35 PM	0	0	2	0	0	0	0	0	0	7	0	0	4	15	0	0	28	367
5:40 PM	0	0	0	0	1	0	0	0	0	5	0	0	1	8	0	0	15	338
5:45 PM	0	0	1	0	1	0	0	0	0	8	0	0	1	14	0	0	25	330
5:50 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	13	0	0	17	309
5:55 PM	0	0	0	0	0	0	0	0	0	5	0	0	2	15	0	0	22	299

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	8	0	16	0	0	0	0	148	0	0	12	288	4	0	476
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	1		1
Scooters																	

Comments:

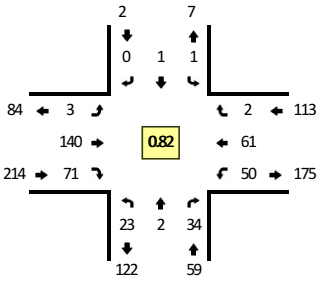
Report generated on 2/3/2020 3:47 PM

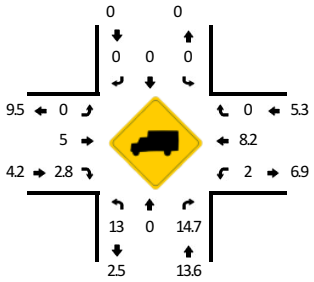
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

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

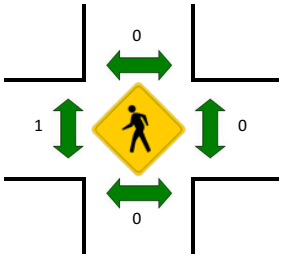
LOCATION: Kingwood St -- 35th St | **QC JOB #:** 15139505
CITY/STATE: Lane, OR | **DATE:** Wed, Dec 4 2019

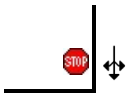
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

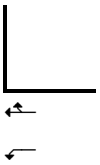


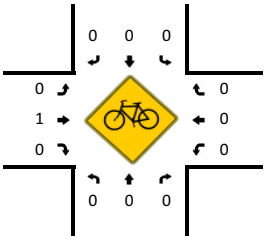


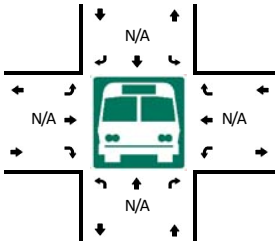
Quality Counts
DATA THAT DRIVES COMMUNITIES

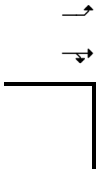


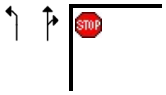


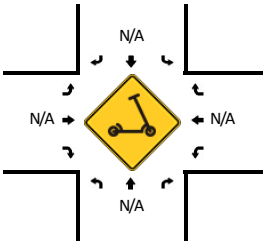












5-Min Count Period Beginning At	Kingwood St (Northbound)				Kingwood St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	2	0	0	0	0	0	1	4	0	0	4	1	0	0	14	
7:05 AM	1	0	2	0	0	0	0	0	0	3	2	0	1	1	0	0	10	
7:10 AM	0	0	2	0	0	0	0	0	0	6	0	0	2	3	0	0	13	
7:15 AM	2	0	3	0	0	0	0	0	0	2	1	0	0	1	0	0	9	
7:20 AM	0	1	0	0	0	0	0	0	0	7	1	0	5	3	1	0	18	
7:25 AM	0	0	0	0	0	0	0	0	0	2	1	0	2	3	0	0	8	
7:30 AM	1	0	3	0	0	0	0	0	0	6	1	0	4	6	1	0	22	
7:35 AM	0	0	0	0	0	0	0	0	0	9	7	0	4	4	0	0	24	
7:40 AM	3	0	0	0	0	0	0	0	1	12	7	0	7	3	0	0	33	
7:45 AM	2	0	3	0	0	0	0	0	0	13	5	0	6	14	0	0	43	
7:50 AM	1	1	4	0	0	0	0	0	0	14	9	0	4	3	0	0	36	
7:55 AM	2	0	1	0	0	1	0	0	0	16	9	0	5	6	0	0	40	270
8:00 AM	3	0	6	0	0	0	0	0	0	9	5	0	2	7	0	0	32	288
8:05 AM	2	0	4	0	0	0	0	0	0	12	4	0	2	6	0	0	30	308
8:10 AM	2	0	7	0	0	0	0	0	2	11	5	0	4	3	1	0	35	330
8:15 AM	2	0	1	0	0	0	0	0	0	10	6	0	3	4	0	0	26	347
8:20 AM	5	0	4	0	0	0	0	0	0	15	8	0	5	5	0	0	42	371
8:25 AM	0	0	0	0	1	0	0	0	0	9	3	0	3	3	0	0	19	382
8:30 AM	1	1	4	0	0	0	0	0	0	10	3	0	5	3	1	0	28	388
8:35 AM	4	0	1	0	0	0	0	0	1	6	5	0	0	5	1	0	23	387
8:40 AM	3	0	0	0	0	0	0	0	0	6	3	0	3	5	0	0	20	374
8:45 AM	9	0	2	0	0	0	0	0	0	16	2	0	1	6	1	0	37	368
8:50 AM	1	0	2	0	1	0	0	0	0	16	4	0	5	8	2	0	39	371
8:55 AM	4	0	1	0	0	0	0	0	0	11	1	0	0	5	0	0	22	353

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	4	32	0	0	4	0	0	0	172	92	0	60	92	0	0	476
Heavy Trucks	4	0	4		0	0	0		0	8	0		0	8	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

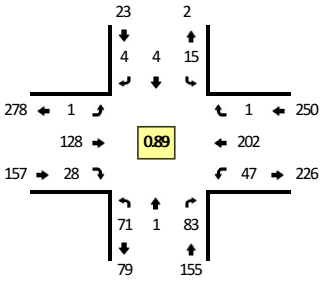
Type of peak hour being reported: Intersection Peak

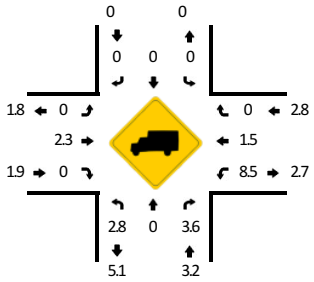
Method for determining peak hour: Total Entering Volume

LOCATION: Kingwood St -- 35th St
CITY/STATE: Lane, OR

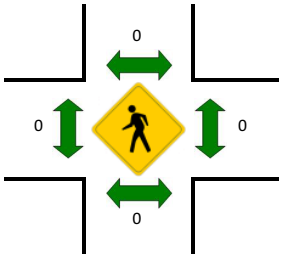
QC JOB #: 15139506
DATE: Wed, Dec 4 2019

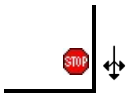
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:05 PM -- 4:20 PM

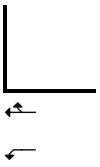


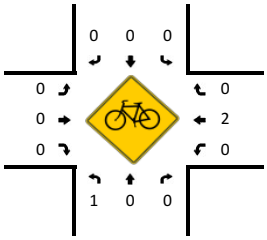


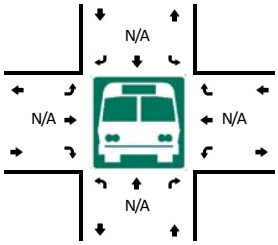
Quality Counts
DATA THAT DRIVES COMMUNITIES

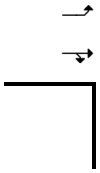


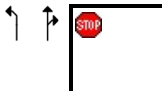


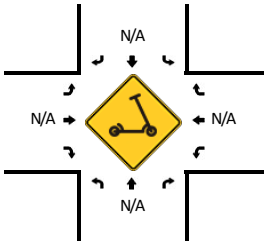












5-Min Count Period Beginning At	Kingwood St (Northbound)				Kingwood St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	0	6	0	0	0	0	0	0	8	4	0	4	18	0	0	43	
4:05 PM	5	0	9	0	2	2	1	0	0	15	2	0	5	18	0	0	59	
4:10 PM	11	0	7	0	4	0	0	0	0	11	3	0	2	18	1	0	57	
4:15 PM	6	0	10	0	1	0	0	0	0	13	3	0	3	13	0	0	49	
4:20 PM	3	0	5	0	1	0	0	0	0	7	4	0	5	20	0	0	45	
4:25 PM	2	0	11	0	2	0	0	0	0	9	2	0	4	23	0	0	53	
4:30 PM	11	0	9	0	2	0	0	0	0	15	0	0	4	14	0	0	55	
4:35 PM	5	0	7	0	0	0	0	0	0	4	1	0	5	18	0	0	40	
4:40 PM	7	0	4	0	2	1	3	0	0	11	4	0	5	18	0	0	55	
4:45 PM	6	0	3	0	0	0	0	0	0	8	1	0	6	18	0	0	42	
4:50 PM	7	1	4	0	0	1	0	0	0	12	1	0	3	16	0	0	45	
4:55 PM	5	0	8	0	1	0	0	0	0	15	3	1	1	8	0	0	42	585
5:00 PM	7	0	8	0	0	0	0	0	0	14	5	0	1	8	0	0	43	585
5:05 PM	2	0	14	0	1	0	0	0	1	9	2	0	5	13	0	0	47	573
5:10 PM	4	0	10	0	0	1	1	0	0	8	4	0	4	10	1	0	43	559
5:15 PM	3	0	10	0	0	0	0	0	0	13	2	0	2	14	0	0	44	554
5:20 PM	8	1	6	0	0	0	0	0	0	14	2	0	3	8	0	0	42	551
5:25 PM	1	0	5	0	0	0	0	0	0	8	1	0	2	10	0	0	27	525
5:30 PM	5	0	3	0	0	0	0	0	0	7	0	0	3	7	0	0	25	495
5:35 PM	5	0	2	0	0	0	0	0	0	9	0	0	2	14	0	0	32	487
5:40 PM	1	0	7	0	0	0	0	0	0	4	2	0	1	9	0	0	24	456
5:45 PM	3	0	4	0	0	0	0	0	0	10	0	0	2	11	0	0	30	444
5:50 PM	5	0	5	0	0	0	0	0	0	3	1	0	4	9	0	0	27	426
5:55 PM	2	0	3	0	0	0	0	0	0	4	1	0	1	16	0	0	27	411

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	88	0	104	0	28	8	4	0	0	156	32	0	40	196	4	0	660
Heavy Trucks	4	0	12		0	0	0		0	0	0		4	4	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	1	0	0		0	0	0		0	0	0		0	1	0		2
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

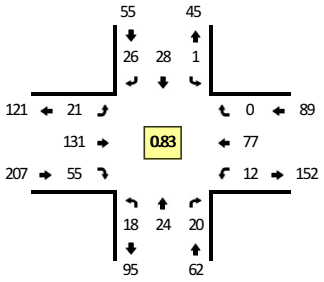
Type of peak hour being reported: Intersection Peak

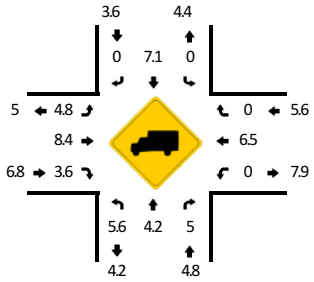
Method for determining peak hour: Total Entering Volume

LOCATION: Oak St -- 35th St
CITY/STATE: Lane, OR

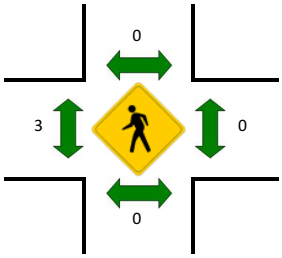
QC JOB #: 15139507
DATE: Wed, Dec 4 2019

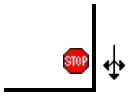
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:55 AM -- 8:10 AM

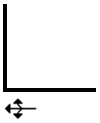


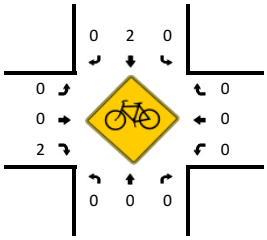


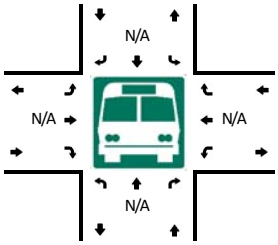
Quality Counts
DATA THAT DRIVES COMMUNITIES

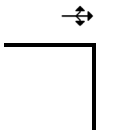


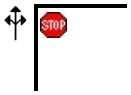


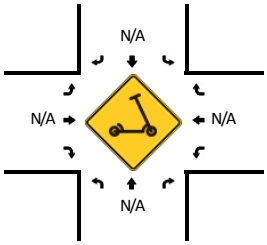












5-Min Count Period Beginning At	Oak St (Northbound)				Oak St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	1	6	1	0	0	4	0	0	13	
7:05 AM	1	0	0	0	0	0	0	0	1	5	0	0	0	1	0	0	8	
7:10 AM	0	0	0	0	0	1	2	0	4	3	0	0	0	4	0	0	14	
7:15 AM	1	0	0	0	0	0	0	0	0	6	1	0	0	2	0	0	10	
7:20 AM	0	0	0	0	0	1	1	0	4	6	1	0	0	8	0	0	21	
7:25 AM	1	0	2	0	0	2	3	0	0	2	1	0	0	7	0	0	18	
7:30 AM	0	1	0	0	0	2	2	0	1	7	0	0	2	5	0	0	20	
7:35 AM	1	4	0	0	0	1	2	0	1	7	3	0	1	7	0	0	27	
7:40 AM	0	1	1	0	0	2	1	0	1	8	3	0	1	7	0	0	25	
7:45 AM	4	1	0	0	0	1	1	0	3	11	7	0	3	14	0	0	45	
7:50 AM	0	2	1	0	0	2	1	0	4	9	3	0	2	6	0	0	30	
7:55 AM	1	2	1	0	1	2	7	0	0	17	8	0	1	4	0	0	44	275
8:00 AM	3	3	2	0	0	3	2	0	1	10	9	0	1	8	0	0	42	304
8:05 AM	1	4	3	0	0	4	2	0	2	9	8	0	0	5	0	0	38	334
8:10 AM	2	0	2	0	0	7	0	0	4	13	7	0	1	6	0	0	42	362
8:15 AM	0	2	2	0	0	3	1	0	0	8	3	0	1	7	0	0	27	379
8:20 AM	4	1	5	0	0	0	1	0	4	14	2	0	1	6	0	0	38	396
8:25 AM	2	1	2	0	0	1	4	0	1	9	1	0	0	1	0	0	22	400
8:30 AM	0	3	1	0	0	2	4	0	0	16	1	0	0	6	0	0	33	413
8:35 AM	0	1	1	0	0	0	2	0	3	8	0	0	0	6	0	0	21	407
8:40 AM	0	1	0	0	1	1	4	0	2	4	1	0	1	4	1	0	20	402
8:45 AM	1	1	0	0	1	1	0	0	1	14	1	0	0	5	0	0	25	382
8:50 AM	2	2	1	0	0	1	2	0	4	16	1	0	0	11	0	0	40	392
8:55 AM	1	1	1	0	0	2	0	0	2	11	1	0	2	3	0	0	24	372

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	36	24	0	4	36	44	0	12	144	100	0	8	68	0	0	496
Heavy Trucks	0	0	0		0	4	0		0	16	8		0	8	0		36
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

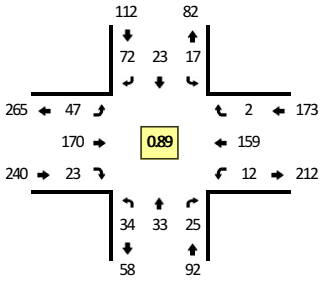
Type of peak hour being reported: Intersection Peak

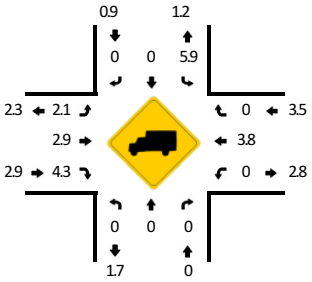
Method for determining peak hour: Total Entering Volume

LOCATION: Oak St -- 35th St
CITY/STATE: Lane, OR

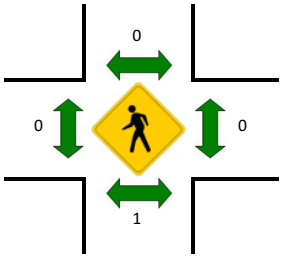
QC JOB #: 15139508
DATE: Wed, Dec 4 2019

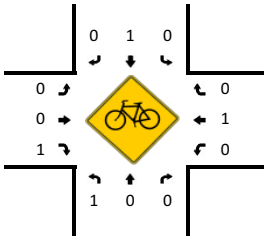
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:05 PM -- 4:20 PM

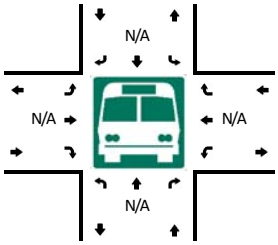


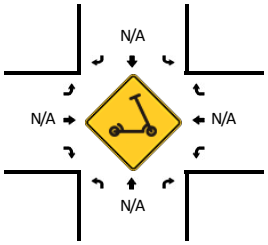


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Oak St (Northbound)				Oak St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	4	2	0	0	0	7	0	2	11	1	0	2	16	0	0	45	
4:05 PM	3	3	1	0	4	3	10	0	8	17	3	0	0	15	0	0	67	
4:10 PM	2	2	2	0	3	3	6	0	5	15	4	0	2	11	1	0	56	
4:15 PM	3	2	6	0	1	1	6	0	4	13	2	0	1	12	0	0	51	
4:20 PM	4	1	0	0	2	3	4	0	2	17	2	0	0	12	0	0	47	
4:25 PM	4	2	2	0	1	1	6	0	7	15	0	0	1	22	0	0	61	
4:30 PM	3	5	5	0	0	3	5	0	3	20	7	0	1	12	0	0	64	
4:35 PM	6	3	2	0	0	0	4	0	1	10	1	0	1	16	0	0	44	
4:40 PM	1	4	1	0	0	1	7	0	1	12	3	0	1	13	0	0	44	
4:45 PM	3	2	1	0	2	1	8	0	5	13	0	0	1	16	0	0	52	
4:50 PM	3	2	1	0	4	6	7	0	3	12	0	0	1	8	0	0	47	
4:55 PM	2	3	2	0	0	1	2	0	6	15	0	0	1	6	1	0	39	617
5:00 PM	0	1	0	0	1	1	2	0	8	11	4	0	0	9	0	0	37	609
5:05 PM	4	2	3	0	0	1	2	0	9	15	2	0	1	14	0	0	53	595
5:10 PM	2	2	0	0	0	2	4	0	6	10	2	0	1	12	0	0	41	580
5:15 PM	1	3	2	0	0	4	4	0	6	16	3	0	0	10	0	0	49	578
5:20 PM	4	1	3	0	3	2	5	0	4	16	1	0	2	10	0	0	51	582
5:25 PM	1	5	1	0	0	0	4	0	5	11	1	0	1	7	0	0	36	557
5:30 PM	0	4	4	0	0	3	4	0	2	8	3	0	0	6	1	0	35	528
5:35 PM	1	1	3	0	0	2	5	0	2	11	0	0	1	14	1	0	41	525
5:40 PM	1	2	3	0	1	4	4	0	4	6	0	0	1	10	0	0	36	517
5:45 PM	0	0	1	0	2	1	1	0	1	14	1	0	0	10	0	0	31	496
5:50 PM	3	2	3	0	2	0	2	0	1	6	3	0	0	9	2	0	33	482
5:55 PM	4	0	0	0	1	2	7	0	3	4	1	0	1	10	0	0	33	476

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	28	36	0	32	28	88	0	68	180	36	0	12	152	4	0	696
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	8	0		16
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

Attachment D
Existing Traffic Operations
Worksheets

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	102	49	49	192	92
Future Vol, veh/h	33	102	49	49	192	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	21	5	7	4	2	2
Mvmt Flow	43	134	64	64	253	121

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	723	96	0	0	128	0
Stage 1	96	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Critical Hdwy	6.61	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	366	952	-	-	1458	-
Stage 1	882	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	298	952	-	-	1458	-
Mov Cap-2 Maneuver	298	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	405	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	5.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	620	1458	-
HCM Lane V/C Ratio	-	-	0.287	0.173	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	329	0	0	143	2	0	0	11	14	0	0
Future Vol, veh/h	0	329	0	0	143	2	0	0	11	14	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	4	0	0	10	0	0	0	0	0	0	0
Mvmt Flow	0	416	0	0	181	3	0	0	14	18	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	184	0	0	416	0	0	599	600	416	606	599	183
Stage 1	-	-	-	-	-	-	416	416	-	183	183	-
Stage 2	-	-	-	-	-	-	183	184	-	423	416	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1403	-	-	1154	-	-	416	417	641	412	418	865
Stage 1	-	-	-	-	-	-	618	595	-	823	752	-
Stage 2	-	-	-	-	-	-	823	751	-	613	595	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1403	-	-	1154	-	-	416	417	641	403	418	865
Mov Cap-2 Maneuver	-	-	-	-	-	-	416	417	-	403	418	-
Stage 1	-	-	-	-	-	-	618	595	-	823	752	-
Stage 2	-	-	-	-	-	-	823	751	-	600	595	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.7	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	641	1403	-	-	1154	-	-	403
HCM Lane V/C Ratio	0.022	-	-	-	-	-	-	0.044
HCM Control Delay (s)	10.7	0	-	-	0	-	-	14.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	280	71	50	122	2	23	2	34	1	1	0
Future Vol, veh/h	3	280	71	50	122	2	23	2	34	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	3	2	8	0	13	0	15	0	0	0
Mvmt Flow	4	341	87	61	149	2	28	2	41	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	428	0	0	666	666	386	687	708	150
Stage 1	-	-	-	-	-	-	393	393	-	272	272	-
Stage 2	-	-	-	-	-	-	273	273	-	415	436	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.23	6.5	6.35	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.617	4	3.435	3.5	4	3.3
Pot Cap-1 Maneuver	1442	-	-	1131	-	-	358	383	634	364	362	902
Stage 1	-	-	-	-	-	-	610	609	-	738	688	-
Stage 2	-	-	-	-	-	-	710	688	-	619	583	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1442	-	-	1131	-	-	342	361	633	324	341	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	342	361	-	324	341	-
Stage 1	-	-	-	-	-	-	608	607	-	736	651	-
Stage 2	-	-	-	-	-	-	670	651	-	574	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.4	13.4	15.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	342	608	1442	-	-	1131	-	-	332
HCM Lane V/C Ratio	0.082	0.072	0.003	-	-	0.054	-	-	0.007
HCM Control Delay (s)	16.5	11.4	7.5	-	-	8.4	-	-	15.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	21	231	55	12	151	0	18	24	20	1	28	26
Future Vol, veh/h	21	231	55	12	151	0	18	24	20	1	28	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	8	4	0	6	0	6	4	5	0	7	0
Mvmt Flow	25	278	66	14	182	0	22	29	24	1	34	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	344	0	0	604	571	314	601	604	182
Stage 1	-	-	-	-	-	-	361	361	-	210	210	-
Stage 2	-	-	-	-	-	-	243	210	-	391	394	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.16	6.54	6.25	7.1	6.57	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.554	4.036	3.345	3.5	4.063	3.3
Pot Cap-1 Maneuver	1375	-	-	1226	-	-	405	428	719	415	406	866
Stage 1	-	-	-	-	-	-	649	622	-	797	719	-
Stage 2	-	-	-	-	-	-	752	725	-	637	597	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1375	-	-	1226	-	-	355	413	717	368	391	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	413	-	368	391	-
Stage 1	-	-	-	-	-	-	634	608	-	779	710	-
Stage 2	-	-	-	-	-	-	681	716	-	571	583	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.6	14.5	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	454	1375	-	-	1226	-	-	527
HCM Lane V/C Ratio	0.165	0.018	-	-	0.012	-	-	0.126
HCM Control Delay (s)	14.5	7.7	0	-	8	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	151	0	0	284
Future Vol, veh/h	0	0	151	0	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	199	0	0	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	573	199	0	0	199	0
Stage 1	199	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	484	847	-	-	1385	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	847	-	-	1385	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1385	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	151	0	0	284
Future Vol, veh/h	0	0	151	0	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	199	0	0	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	573	199	0	0	199	0
Stage 1	199	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	484	847	-	-	1385	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	847	-	-	1385	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1385	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	315	93	51	153	93
Future Vol, veh/h	83	315	93	51	153	93
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	2	3	2	4
Mvmt Flow	89	339	100	55	165	100

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	558	128	0	0	155	0
Stage 1	128	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	494	922	-	-	1425	-
Stage 1	903	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	433	922	-	-	1425	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	579	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	4.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	746	1425	-
HCM Lane V/C Ratio	-	-	0.574	0.115	-
HCM Control Delay (s)	-	-	16.1	7.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.7	0.4	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	243	1	13	449	12	0	1	10	7	0	2
Future Vol, veh/h	1	243	1	13	449	12	0	1	10	7	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	8	2	0	0	0	0	0	0	0
Mvmt Flow	1	264	1	14	488	13	0	1	11	8	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	501	0	0	265	0	0	791	796	265	796	790	495
Stage 1	-	-	-	-	-	-	267	267	-	523	523	-
Stage 2	-	-	-	-	-	-	524	529	-	273	267	-
Critical Hdwy	4.1	-	-	4.18	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1074	-	-	1265	-	-	310	322	779	307	325	579
Stage 1	-	-	-	-	-	-	743	692	-	541	534	-
Stage 2	-	-	-	-	-	-	540	530	-	737	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1074	-	-	1265	-	-	305	317	779	298	320	579
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	317	-	298	320	-
Stage 1	-	-	-	-	-	-	742	691	-	540	526	-
Stage 2	-	-	-	-	-	-	530	522	-	725	691	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	10.3	16.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	688	1074	-	-	1265	-	-	334
HCM Lane V/C Ratio	0.017	0.001	-	-	0.011	-	-	0.029
HCM Control Delay (s)	10.3	8.4	0	-	7.9	0	-	16.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	231	28	47	399	1	71	1	83	15	4	4
Future Vol, veh/h	1	231	28	47	399	1	71	1	83	15	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	0	9	1	0	3	0	4	0	0	0
Mvmt Flow	1	260	31	53	448	1	80	1	93	17	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	449	0	0	291	0	0	837	833	276	880	848	449
Stage 1	-	-	-	-	-	-	278	278	-	555	555	-
Stage 2	-	-	-	-	-	-	559	555	-	325	293	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.13	6.5	6.24	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.527	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	1122	-	-	1232	-	-	285	307	758	270	301	614
Stage 1	-	-	-	-	-	-	726	684	-	520	516	-
Stage 2	-	-	-	-	-	-	512	516	-	692	674	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1122	-	-	1232	-	-	270	293	758	228	288	614
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	293	-	228	288	-
Stage 1	-	-	-	-	-	-	725	683	-	519	494	-
Stage 2	-	-	-	-	-	-	482	494	-	605	673	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	16.6	19.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	270	744	1122	-	-	1232	-	-	267
HCM Lane V/C Ratio	0.295	0.127	0.001	-	-	0.043	-	-	0.097
HCM Control Delay (s)	23.8	10.5	8.2	-	-	8.1	-	-	19.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.2	0.4	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	47	299	23	12	323	2	34	33	25	17	23	72
Future Vol, veh/h	47	299	23	12	323	2	34	33	25	17	23	72
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	3	4	0	4	0	0	0	0	6	0	0
Mvmt Flow	53	336	26	13	363	2	38	37	28	19	26	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	362	0	0	899	847	349	879	859	365
Stage 1	-	-	-	-	-	-	455	455	-	391	391	-
Stage 2	-	-	-	-	-	-	444	392	-	488	468	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.16	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.554	4	3.3
Pot Cap-1 Maneuver	1193	-	-	1208	-	-	262	301	699	264	296	685
Stage 1	-	-	-	-	-	-	589	572	-	625	611	-
Stage 2	-	-	-	-	-	-	597	610	-	554	565	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1192	-	-	1208	-	-	203	280	699	216	275	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	280	-	216	275	-
Stage 1	-	-	-	-	-	-	556	540	-	589	602	-
Stage 2	-	-	-	-	-	-	497	601	-	467	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3	24.4	17.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	287	1192	-	-	1208	-	-	419
HCM Lane V/C Ratio	0.36	0.044	-	-	0.011	-	-	0.3
HCM Control Delay (s)	24.4	8.2	0	-	8	0	-	17.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-	-	1.2

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	408	0	0	246
Future Vol, veh/h	0	0	408	0	0	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	439	0	0	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	704	439	0	0	439	0
Stage 1	439	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	406	622	-	-	1132	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	622	-	-	1132	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1132	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	408	0	0	246
Future Vol, veh/h	0	0	408	0	0	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	439	0	0	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	704	439	0	0	439	0
Stage 1	439	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	406	622	-	-	1132	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	622	-	-	1132	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1132	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Attachment E
Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Rhododendron Dr
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Royal St Georges Dr / Wecoma Lp
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Kingwood St
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Oak St
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
ANGLE	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2016 TOTAL	0	0	2	2	0	0	0	1	1	1	1	2	0	0
YEAR: 2015														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2015 TOTAL	0	1	1	2	0	1	0	2	0	1	1	2	0	0
YEAR: 2013														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	4	5	0	1	0	4	1	3	2	5	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

CITY OF FLORENCE, LANE COUNTY

Intersectional Crashes at 35th St & Oak St
January 1, 2013 through December 31, 2017

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01512	N	N	N	N	N	05/20/2013	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT			N			Mon 11A	0	35TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	N S									015		00
																PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR<25		028	000		02
00239	N	N	N			01/17/2016	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											03
NONE			N			Sun 5P	0	35TH ST	CN		STOP SIGN	N	WET	ANGL		N/A	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	N S									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02805	N	N	N	N	N	08/21/2015	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY			N			Fri 4P	0	35TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	64	F	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	S N									015		00
																PSNGR CAR		01	DRVR	INJC	32	F	OR-Y OR<25		028	000		02
03091	N	N	N	N	N	09/12/2015	17	OAK ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE			N			Sat 9P	0	35TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	02	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	W N									000		00
																PSNGR CAR		01	DRVR	NONE	45	F	OR-Y OR<25		004,028	000		02
03164	N	N	N			08/24/2016	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											03
NO RPT			N			Wed 3P	0	35TH ST	CN		STOP SIGN	N	DRY	ANGL		N/A	S N									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	E W									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	N-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Attachment F

Year 2021 Total Traffic Operations Worksheets

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	110	59	49	218	121
Future Vol, veh/h	33	110	59	49	218	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	21	5	7	4	2	2
Mvmt Flow	43	145	78	64	287	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	843	110	0	0	142	0
Stage 1	110	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Critical Hdwy	6.61	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	310	935	-	-	1441	-
Stage 1	869	-	-	-	-	-
Stage 2	443	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	935	-	-	1441	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	346	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	563	1441	-
HCM Lane V/C Ratio	-	-	0.334	0.199	-
HCM Control Delay (s)	-	-	14.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.7	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	355	0	0	151	2	0	0	11	14	0	0
Future Vol, veh/h	0	355	0	0	151	2	0	0	11	14	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	4	0	0	10	0	0	0	0	0	0	0
Mvmt Flow	0	449	0	0	191	3	0	0	14	18	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	194	0	0	449	0	0	642	643	449	649	642	193
Stage 1	-	-	-	-	-	-	449	449	-	193	193	-
Stage 2	-	-	-	-	-	-	193	194	-	456	449	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1391	-	-	1122	-	-	390	394	614	386	395	854
Stage 1	-	-	-	-	-	-	593	576	-	813	745	-
Stage 2	-	-	-	-	-	-	813	744	-	588	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1391	-	-	1122	-	-	390	394	614	377	395	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	390	394	-	377	395	-
Stage 1	-	-	-	-	-	-	593	576	-	813	745	-
Stage 2	-	-	-	-	-	-	813	744	-	575	576	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11	15
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	614	1391	-	-	1122	-	-	377
HCM Lane V/C Ratio	0.023	-	-	-	-	-	-	0.047
HCM Control Delay (s)	11	0	-	-	0	-	-	15
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	300	77	50	128	2	25	2	34	1	1	0
Future Vol, veh/h	3	300	77	50	128	2	25	2	34	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	3	2	8	0	13	0	15	0	0	0
Mvmt Flow	4	366	94	61	156	2	30	2	41	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	158	0	0	460	0	0	701	701	414	723	747	157
Stage 1	-	-	-	-	-	-	421	421	-	279	279	-
Stage 2	-	-	-	-	-	-	280	280	-	444	468	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.23	6.5	6.35	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.617	4	3.435	3.5	4	3.3
Pot Cap-1 Maneuver	1434	-	-	1101	-	-	339	365	611	344	344	894
Stage 1	-	-	-	-	-	-	589	592	-	732	683	-
Stage 2	-	-	-	-	-	-	703	683	-	597	565	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1101	-	-	323	344	610	304	324	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	323	344	-	304	324	-
Stage 1	-	-	-	-	-	-	587	590	-	730	645	-
Stage 2	-	-	-	-	-	-	663	645	-	552	563	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.4	14	16.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	585	1434	-	-	1101	-	-	314
HCM Lane V/C Ratio	0.094	0.075	0.003	-	-	0.055	-	-	0.008
HCM Control Delay (s)	17.3	11.7	7.5	-	-	8.5	-	-	16.6
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	24	242	61	12	154	0	20	24	20	1	28	27
Future Vol, veh/h	24	242	61	12	154	0	20	24	20	1	28	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	8	4	0	6	0	6	4	5	0	7	0
Mvmt Flow	29	292	73	14	186	0	24	29	24	1	34	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	186	0	0	365	0	0	635	601	332	630	637	186
Stage 1	-	-	-	-	-	-	387	387	-	214	214	-
Stage 2	-	-	-	-	-	-	248	214	-	416	423	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.16	6.54	6.25	7.1	6.57	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.554	4.036	3.345	3.5	4.063	3.3
Pot Cap-1 Maneuver	1371	-	-	1205	-	-	386	411	703	397	388	861
Stage 1	-	-	-	-	-	-	629	606	-	793	716	-
Stage 2	-	-	-	-	-	-	747	722	-	618	579	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1371	-	-	1205	-	-	335	395	701	350	372	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	335	395	-	350	372	-
Stage 1	-	-	-	-	-	-	612	590	-	772	707	-
Stage 2	-	-	-	-	-	-	676	713	-	551	563	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.6	15.2	13.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	430	1371	-	-	1205	-	-	511
HCM Lane V/C Ratio	0.179	0.021	-	-	0.012	-	-	0.132
HCM Control Delay (s)	15.2	7.7	0	-	8	0	-	13.1
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	0	152	10	0	284
Future Vol, veh/h	28	0	152	10	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	0	200	13	0	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	581	207	0	0	213	0
Stage 1	207	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	479	839	-	-	1369	-
Stage 1	832	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	479	839	-	-	1369	-
Mov Cap-2 Maneuver	479	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	479	1369	-
HCM Lane V/C Ratio	-	-	0.077	-	-
HCM Control Delay (s)	-	-	13.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	1	161	8	0	312
Future Vol, veh/h	28	1	161	8	0	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	1	212	11	0	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	629	218	0	0	223	0
Stage 1	218	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	449	827	-	-	1358	-
Stage 1	823	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	449	827	-	-	1358	-
Mov Cap-2 Maneuver	449	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	674	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	456	1358	-
HCM Lane V/C Ratio	-	-	0.084	-	-
HCM Control Delay (s)	-	-	13.6	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	10.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	342	123	51	167	110
Future Vol, veh/h	83	342	123	51	167	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	2	3	2	4
Mvmt Flow	89	368	132	55	180	118

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	638	160	0	0	187	0
Stage 1	160	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	444	885	-	-	1387	-
Stage 1	874	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	382	885	-	-	1387	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.1	0	4.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	704	1387	-
HCM Lane V/C Ratio	-	-	0.649	0.129	-
HCM Control Delay (s)	-	-	19.1	8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	4.8	0.4	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	257	1	13	476	12	0	1	10	7	0	2
Future Vol, veh/h	1	257	1	13	476	12	0	1	10	7	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	8	2	0	0	0	0	0	0	0
Mvmt Flow	1	279	1	14	517	13	0	1	11	8	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	530	0	0	280	0	0	835	840	280	840	834	524
Stage 1	-	-	-	-	-	-	282	282	-	552	552	-
Stage 2	-	-	-	-	-	-	553	558	-	288	282	-
Critical Hdwy	4.1	-	-	4.18	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1048	-	-	1249	-	-	289	304	764	287	306	557
Stage 1	-	-	-	-	-	-	729	681	-	522	518	-
Stage 2	-	-	-	-	-	-	521	515	-	724	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1048	-	-	1249	-	-	284	299	764	278	301	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	299	-	278	301	-
Stage 1	-	-	-	-	-	-	728	680	-	521	510	-
Stage 2	-	-	-	-	-	-	511	507	-	712	680	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	10.5	16.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	669	1048	-	-	1249	-	-	313
HCM Lane V/C Ratio	0.018	0.001	-	-	0.011	-	-	0.031
HCM Control Delay (s)	10.5	8.4	0	-	7.9	0	-	16.9
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	242	31	47	420	1	77	1	83	15	4	4
Future Vol, veh/h	1	242	31	47	420	1	77	1	83	15	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	0	9	1	0	3	0	4	0	0	0
Mvmt Flow	1	272	35	53	472	1	87	1	93	17	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	473	0	0	307	0	0	875	871	290	918	888	473
Stage 1	-	-	-	-	-	-	292	292	-	579	579	-
Stage 2	-	-	-	-	-	-	583	579	-	339	309	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.13	6.5	6.24	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.527	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	1099	-	-	1215	-	-	269	291	744	254	285	595
Stage 1	-	-	-	-	-	-	714	675	-	504	504	-
Stage 2	-	-	-	-	-	-	496	504	-	680	663	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1099	-	-	1215	-	-	255	278	744	214	272	595
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	278	-	214	272	-
Stage 1	-	-	-	-	-	-	713	674	-	503	482	-
Stage 2	-	-	-	-	-	-	466	482	-	593	662	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	18.1	21
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	255	729	1099	-	-	1215	-	-	251
HCM Lane V/C Ratio	0.339	0.129	0.001	-	-	0.043	-	-	0.103
HCM Control Delay (s)	26.2	10.7	8.3	-	-	8.1	-	-	21
HCM Lane LOS	D	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.4	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	49	305	26	12	335	2	40	33	25	17	23	75
Future Vol, veh/h	49	305	26	12	335	2	40	33	25	17	23	75
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	3	4	0	4	0	0	0	0	6	0	0
Mvmt Flow	55	343	29	13	376	2	45	37	28	19	26	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	379	0	0	372	0	0	926	873	358	904	886	378
Stage 1	-	-	-	-	-	-	468	468	-	404	404	-
Stage 2	-	-	-	-	-	-	458	405	-	500	482	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.16	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.554	4	3.3
Pot Cap-1 Maneuver	1179	-	-	1198	-	-	251	291	691	254	286	673
Stage 1	-	-	-	-	-	-	579	565	-	615	603	-
Stage 2	-	-	-	-	-	-	587	602	-	546	557	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1178	-	-	1198	-	-	192	270	691	206	265	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	270	-	206	265	-
Stage 1	-	-	-	-	-	-	545	532	-	578	594	-
Stage 2	-	-	-	-	-	-	484	593	-	459	524	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.3	27.6	17.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	267	1178	-	-	1198	-	-	409
HCM Lane V/C Ratio	0.412	0.047	-	-	0.011	-	-	0.316
HCM Control Delay (s)	27.6	8.2	0	-	8	0	-	17.8
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	2	409	28	2	246
Future Vol, veh/h	15	2	409	28	2	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	2	440	30	2	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	724	455	0	0	470	0
Stage 1	455	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	396	609	-	-	1102	-
Stage 1	643	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	395	609	-	-	1102	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	412	1102	-
HCM Lane V/C Ratio	-	-	0.044	0.002	-
HCM Control Delay (s)	-	-	14.1	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	1	436	29	0	261
Future Vol, veh/h	16	1	436	29	0	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	1	469	31	0	281

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	766	485	0	0	500	0
Stage 1	485	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	374	586	-	-	1075	-
Stage 1	623	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	374	586	-	-	1075	-
Mov Cap-2 Maneuver	374	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	1075	-
HCM Lane V/C Ratio	-	-	0.048	-	-
HCM Control Delay (s)	-	-	14.9	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: February 11, 2020 (revised August 2020) Project #: 24714

To: Mike Miller
City of Florence Public Works
250 Highway 101
Florence, OR 97439

From: Amy Griffiths & Diego Arguea, PE

Project: Florence Residential Subdivision

Subject: Traffic Impact Analysis Report

This traffic impact analysis (TIA) report has been prepared as part of the site plan application for the proposed residential development to be located on a vacant site in Florence, Oregon. A site vicinity map is shown in Figure 1. Based on the analysis provided and documented herein, the proposed residential development can be constructed while maintaining acceptable traffic operations at the study intersections. No capacity-based mitigation needs were identified at the study intersections. Additional details documenting the methodology, proposed development plan, operations results, and recommendations are provided herein.

INTRODUCTION

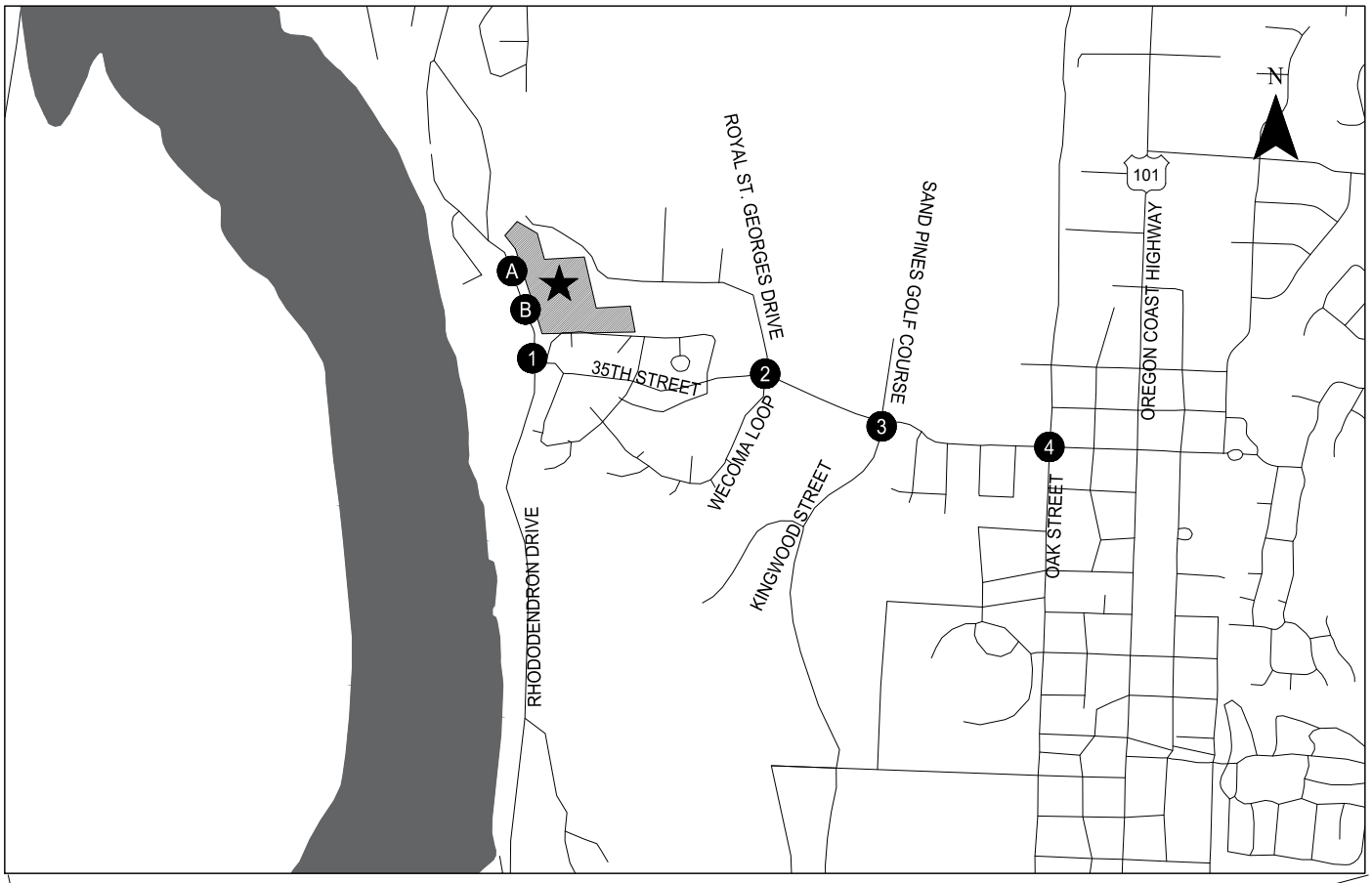
The applicant proposes development of up to 31 detached single-family homes and up to 101 low-rise multi-family homes to be located on a vacant site in north Florence. The site is bounded by Rhododendron Road to the west, 35th Street and Siano Loop Road to the south, and Royal Saint Georges Drive to the east and north. Access to the site is proposed via two full-movement new street connections, spaced approximately 340 feet and 610 feet north of 35th Street. The proposed development is expected to be constructed and occupied in 2021. A site plan is shown in Figure 2.

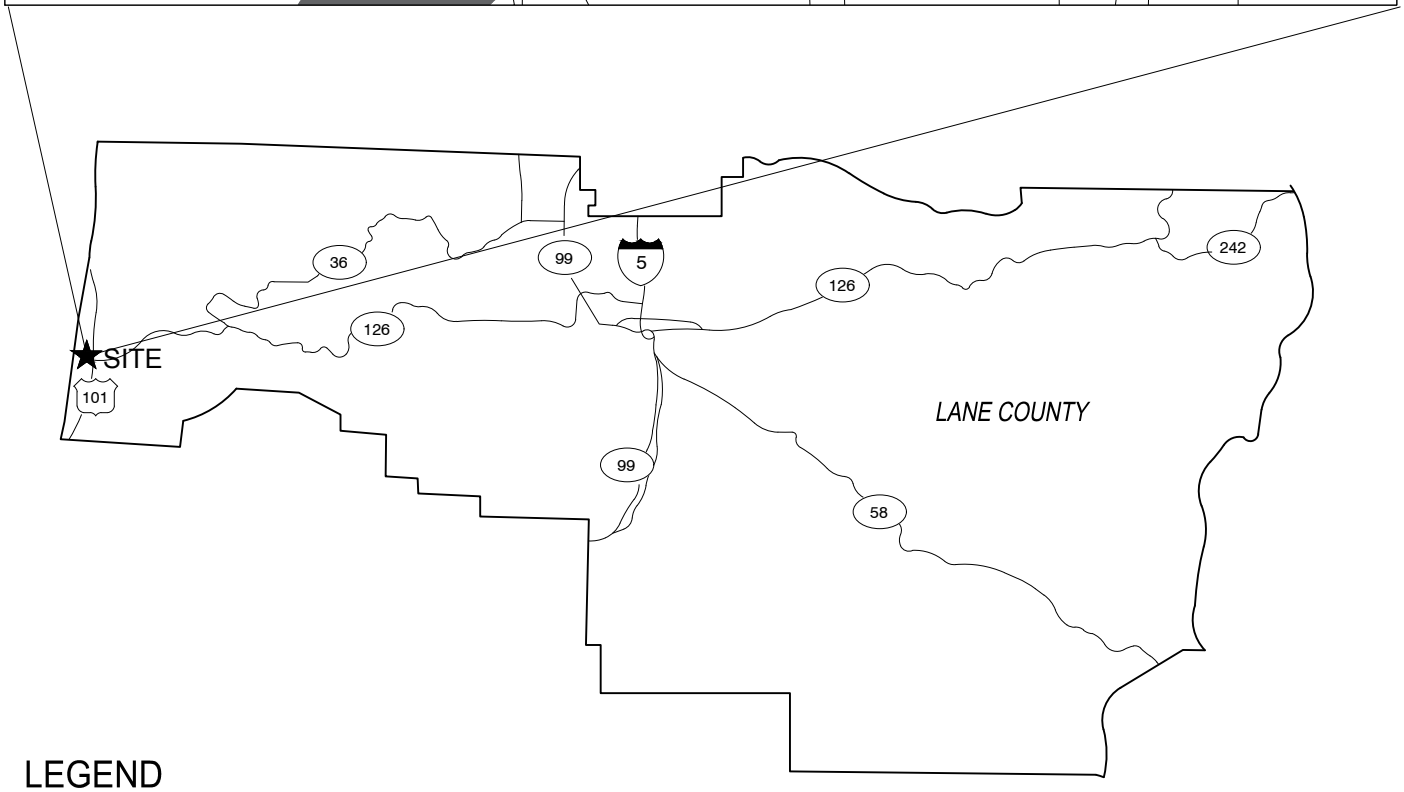
SCOPE OF WORK

This TIA has been prepared as part of the Florence Residential Subdivision development application. Pursuant to the methodology memorandum provided and the ODOT (Oregon Department of Transportation) response (included in Attachment "A"), this report includes the following:

- Operational assessment of study intersections under existing traffic conditions;
- Review of latest five years of reported crash data at study intersections;

Exhibit G1





LEGEND

★ - SITE LOCATION

- STUDY INTERSECTION

Site Vicinity Map
Florence, OR

Figure
1

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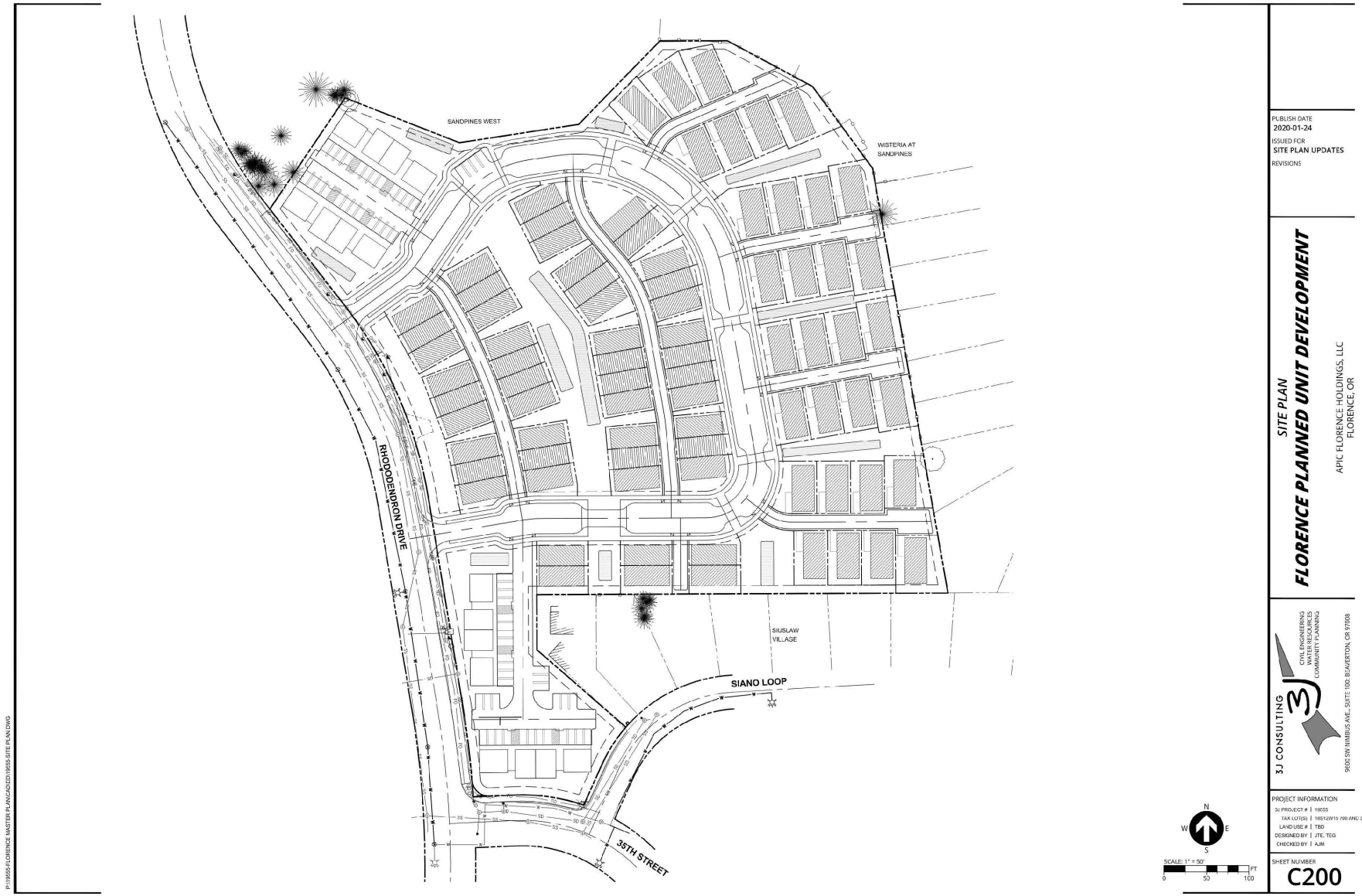

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Site Plan Provided by 3J Consulting January 24, 2020

Preliminary Proposed Site Plan
Florence, OR

Figure
2

KITTELSON & ASSOCIATES

- Background traffic operations assessment for opening year 2021, not including the proposed development traffic volumes;
- Trip generation and trip distribution estimate for the proposed residential development;
- Total traffic operations assessment for opening year 2021, including the proposed development traffic volumes; and,
- Driveway operations and sight distance assessment.

The scope of work in Attachment "A" was confirmed by City of Florence and ODOT staff, which included validation of the traffic data collection methodology, timing of traffic count data, and relevant adjustments to the traffic count data. Additional detail to the methodology is provided in the following sections.

The study intersections were identified based on the project's trip generation impact on adjacent intersections within the site vicinity and include the following (also shown in Figure 1):

- Site Driveway "A"/Rhododendron Drive
- Site Driveway "B"/Rhododendron Drive
- 35th Street/Rhododendron Drive
- 35th Street/Royal St. Georges Drive
- 35th Street/Kingwood Street
- 35th Street/Oak Street

Findings and recommendations are provided at the conclusion of the report.

ANALYSIS METHODOLOGY AND APPLICABLE STANDARDS

All operations analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual, 6th Edition* (HCM – Reference 1).

All intersection level-of-service evaluations used the peak 15-minute flow rate during the weekday morning and evening commuter peak hours. Using the peak 15-minute flow rate ensures that this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. *A description of level-of-service criteria is contained in Attachment "B".*

The City of Florence has adopted level-of-service (LOS) and volume-to-capacity (V/C) ratio operating standards for signalized and unsignalized intersections as documented in the 2012 Transportation System Plan (TSP). The following operating standards apply to City intersections:

- LOS "D" is considered acceptable at signalized and all-way stop controlled intersections if the V/C ratio is not higher than 1.0 for the sum of critical movements.
- LOS "E" is considered acceptable for the poorest operating approach at two-way stop intersections. LOS "F" is allowed in situations where a traffic signal is not warranted.

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current physical and operational characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Kittelson & Associates, Inc. (Kittelson) staff inventoried the proposed development site and surrounding study area in February 2020. At that time, Kittelson collected information regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The site is currently vacant. The land uses in the site vicinity include residential, community commercial, and recreational.

TRANSPORTATION FACILITIES

Table 1 summarizes the characteristics of the existing transportation facilities in the study area.

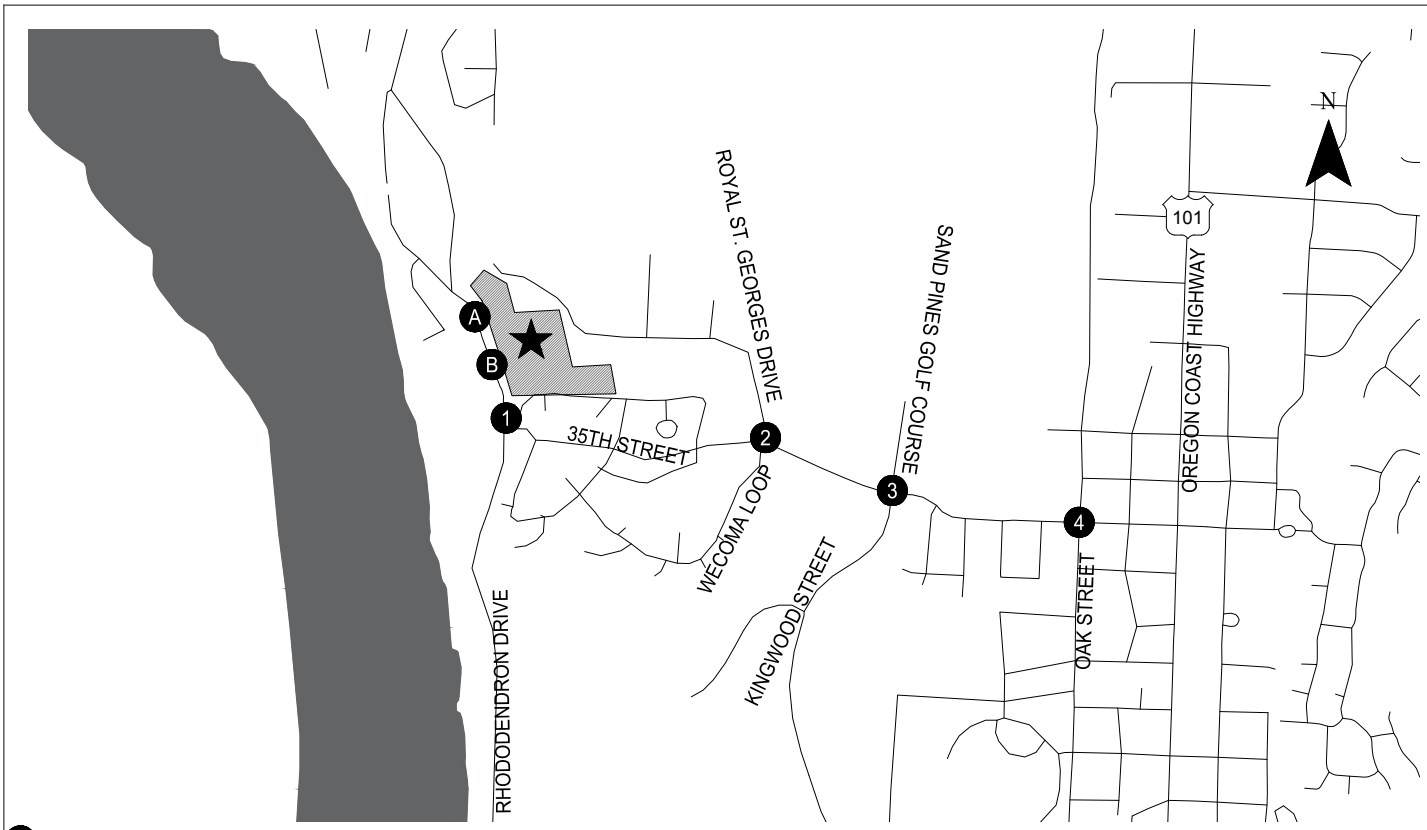
Table 1: Existing Transportation Facilities

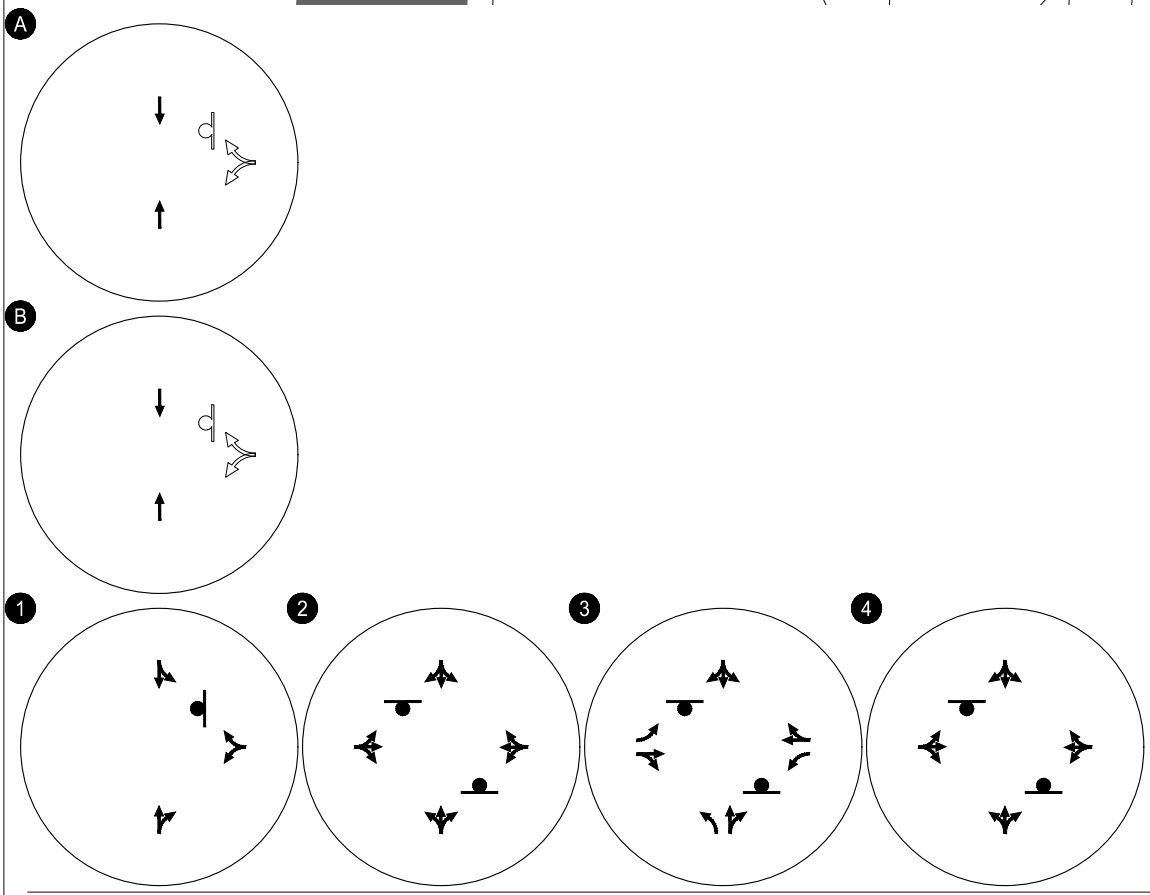
Roadway	Functional Classification[1]	Number of Lanes	Posted Speed (mph)	Sidewalks	Bicycle Lanes	On-Street Parking
Rhododendron Drive	Minor Arterial	2	40	No	No	No?
35th Street	Collector	2	25	No	Yes	No
Wecoma Loop – Royal Saint Georges Drive	Local	2	NP	No	No	Yes
Kingwood Street	Local	2	40	Yes	Yes	No
Oak Street	Collector	2	25	Yes	Yes	No

[1]Functional Classification from *Florence Transportation System Plan* (December, 2012, Reference 2).
NP: not posted

Roadway Facilities

Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections. All of the study intersections are two-way stop-controlled (TWSC).





LEGEND

- # - STUDY INTERSECTION
- - EXISTING LANE MOVEMENT
- - PROPOSED LANE MOVEMENT
- - EXISTING STOP SIGN
- - PROPOSED STOP SIGN

Existing and Proposed Lane Conditions & Traffic Control Devices
Florence, OR

Figure 3

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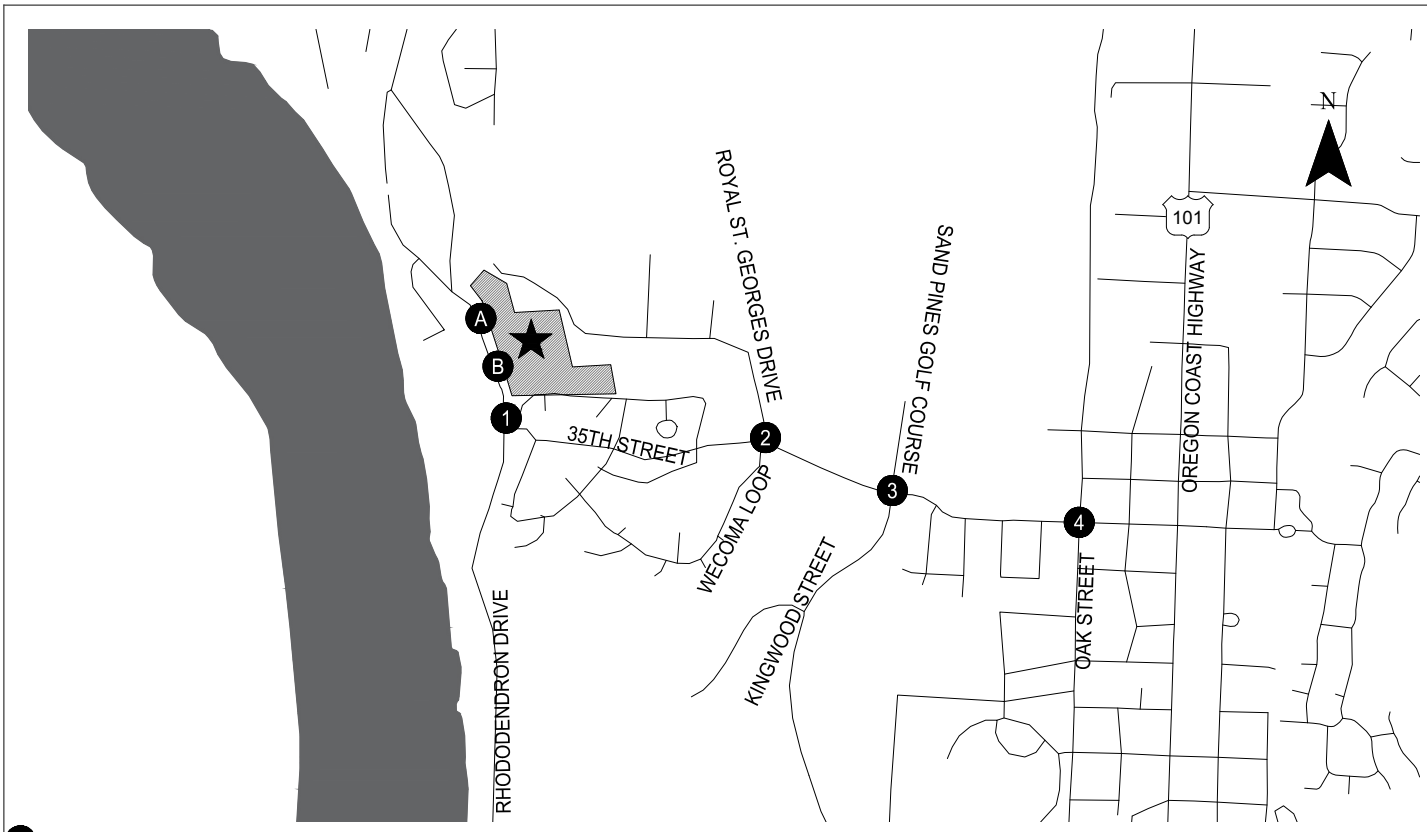
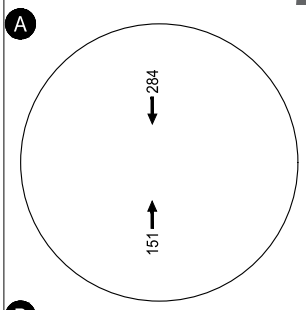
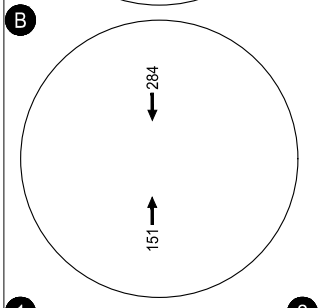
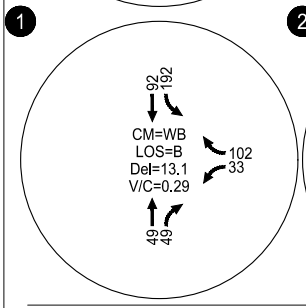
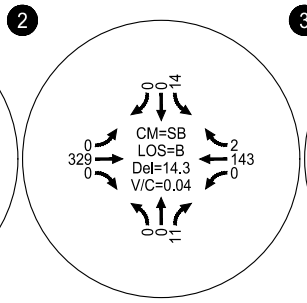
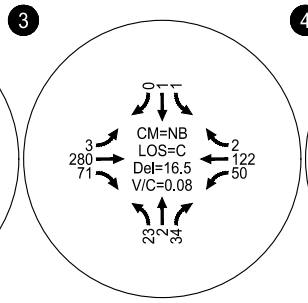


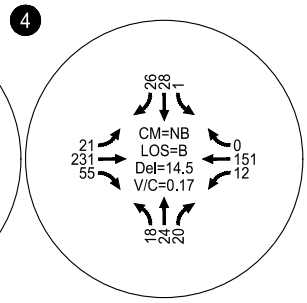












LEGEND

CM = CRITICAL MOVEMENT

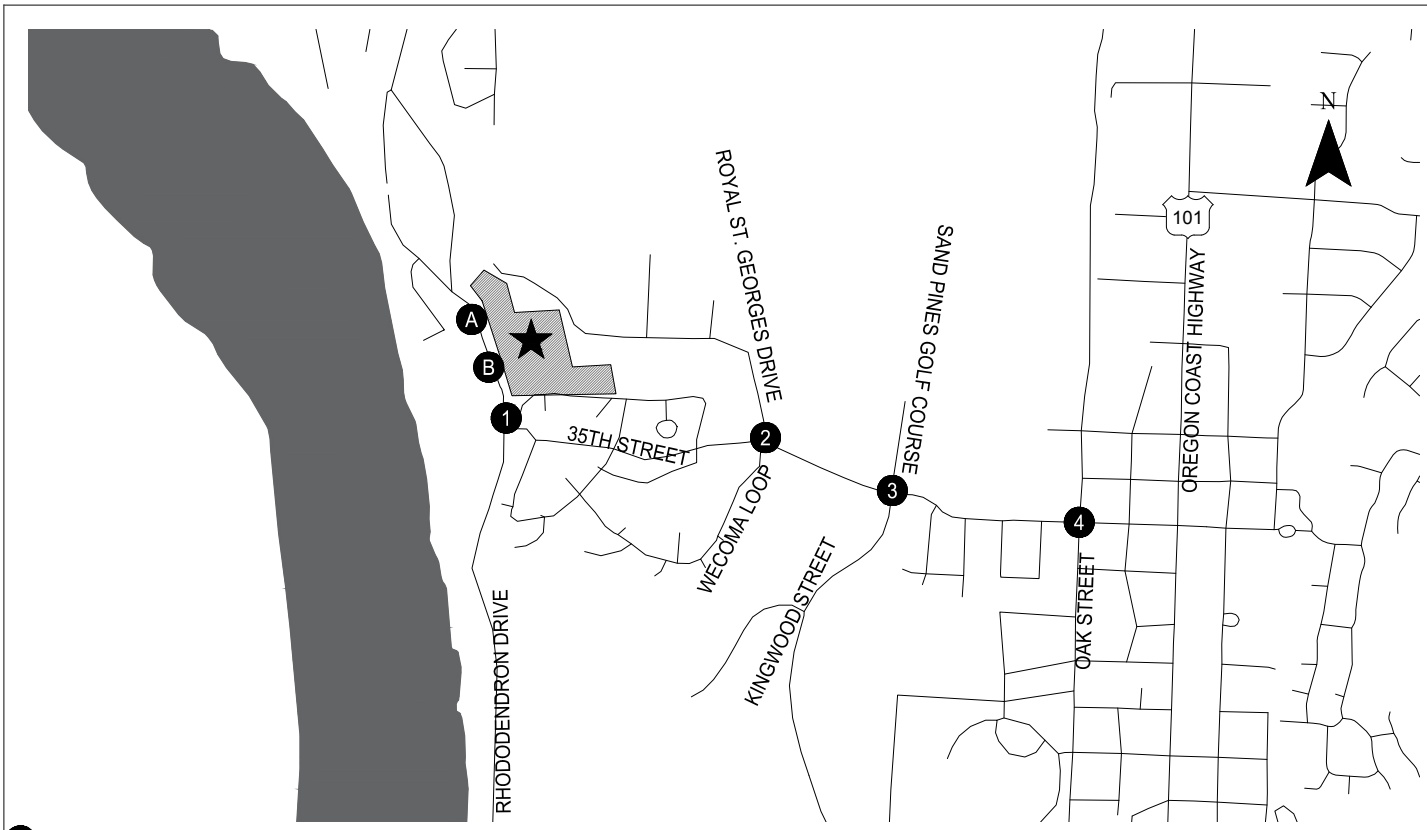
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE

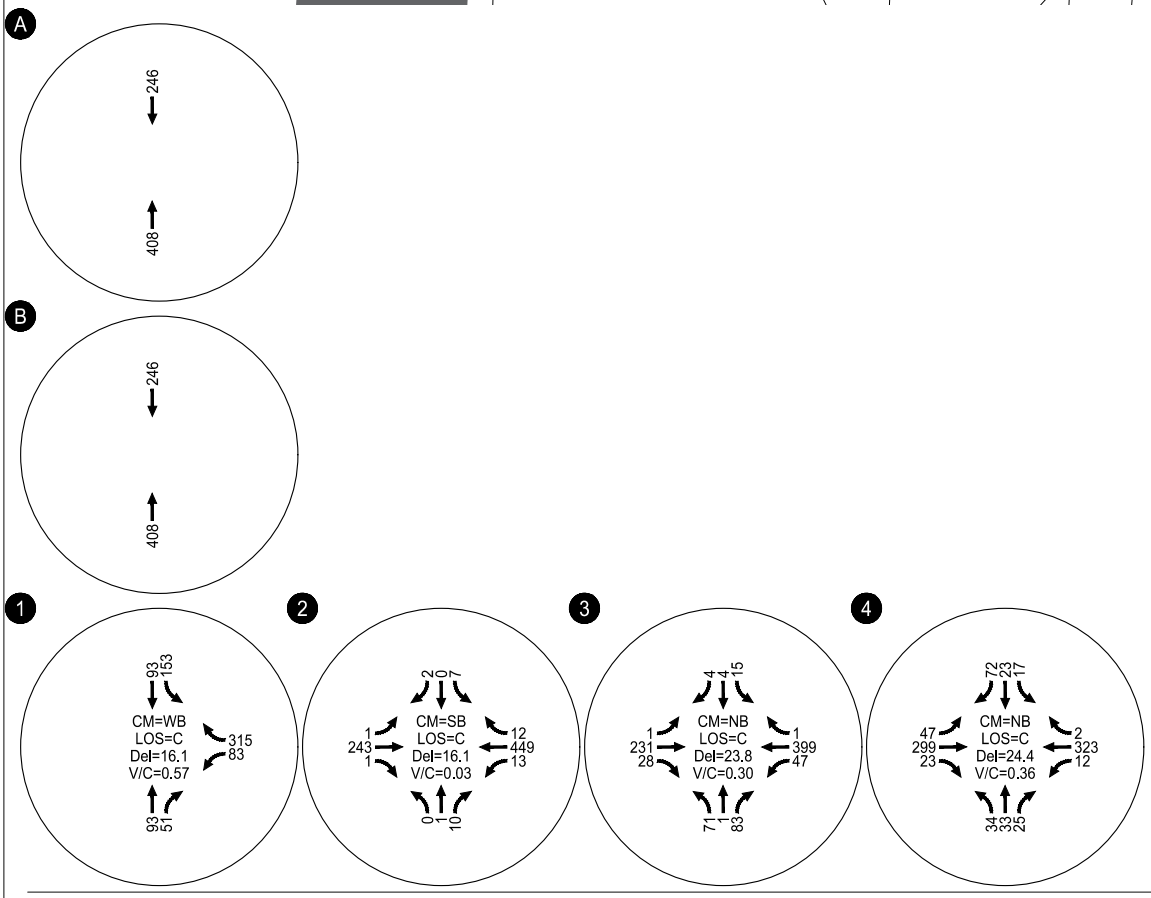
Del = CRITICAL MOVEMENT CONTROL DELAY

V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Existing Traffic Conditions
Weekday AM Peak Hour
Florence, OR

Figure
4





LEGEND

CM = CRITICAL MOVEMENT

LOS = CRITICAL MOVEMENT LEVEL OF SERVICE

Del = CRITICAL MOVEMENT CONTROL DELAY

V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Existing Traffic Conditions
Weekday PM Peak Hour
Florence, OR

Figure
5

As shown in Figure 4 and Figure 5, traffic operations satisfy the City of Florence operating standards for unsignalized intersections.

Attachment "D" contains the year 2019 existing traffic conditions worksheets.

TRAFFIC SAFETY

The crash history of the study intersections was reviewed to identify crash patterns. ODOT provided five years of crash data available for the study intersections, which includes all reported crashes from January 1, 2013 through December 31, 2017. Table 2 summarizes the crash data provided by ODOT.

Table 2: Study Intersection Crash Summary (January 1, 2013 through December 31, 2017)

Intersection	Crash Type				Crash Severity			Total
	Rear-End	Turn	Angle	Ped	PDO	Injury	Fatal	
35th Street/ Rhododendron Drive	0	0	0	0	0	0	0	0
35th Street / Royal St. Georges Drive-Wecoma Loop	0	0	0	0	0	0	0	0
35th Street / Sand Pines Golf Course-Kingwood Street	0	0	0	0	0	0	0	0
35th Street / Oak Street	0	1	4	0	4	1	0	5

PDO=Property Damage Only

As shown in Table 2, the only intersection with crashes in the study area reported over the five-year period is the 35th Street/Oak Street intersection. At this intersection, angle crashes were the most common crash type. No other intersections in the study area had reported crashes in the most recent five years. No crash patterns were identified that would warrant mitigation as a result of the proposed development.

Attachment "E" contains the crash data provided by ODOT.

TRAFFIC IMPACT ANALYSIS

The TIA identifies how the study area's transportation system will operate in the year the proposed development is expected to be fully built, year 2021. The impact of traffic generated by the proposed residential subdivision during the typical weekday AM and PM peak hours was examined as follows:

- Developments and transportation improvements planned in the site vicinity were identified.
- Year 2021 and background traffic conditions were analyzed at the study intersection during the weekday AM and PM peak hours.
- Site-generated trips were estimated for build-out of the site.
- Site trip-distribution patterns were derived based on surrounding land uses.
- Year 2021 total traffic conditions were analyzed at the study intersections and site-access points during the weekday AM and PM peak hours.
- Driveway operations and sight distance were assessed.

YEAR 2021 BACKGROUND TRAFFIC CONDITIONS

The year 2021 background traffic conditions analysis identifies how the study area's transportation system will operate without the proposed residential subdivision. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from the proposed development.

Planned Developments and Transportation Improvements

Planned, in-process traffic volumes include any developments not yet built that have completed the land use application process, have been issued conditions of approval, and are expected to be constructed and occupied prior to the completion of the proposed Florence Residential Subdivision project. Based on conversations and direction provided by City of Florence staff, no planned in-process developments in the area are included in the analysis. There are plans for a mixed-use path along 35th Street, however there are no expected changes to the study intersections.

Traffic Volumes

Regional traffic volume growth was evaluated based upon the ODOT Future Volume Tables which identify the average annual daily traffic (AADT). Two locations near the study area were identified on Oregon Coast Highway (US 101, ODOT Highway No. 009): 0.02 miles south of 36th Street and 0.02 miles south of 29th Street. Table 3 provides the base year (2018) and forecast year (2038) model AADTs for computation of the growth rate.

Table 3. ODOT Future Volume Table

Highway	Milepost	Description	Year 2018 AADT	Year 2038 AADT	R^2	Growth Rate
009	188.64	0.02 miles south of 36th Street	12,500	12,600	0.4298	0.00040
009	21.34	0.02 miles south of 29th Street	14,100	14,200	0.8050	0.00035

Growth rate calculation example: (12,600 / 12,500 – 1) / (2038 - 2018) = 0.00040

Based on the volumes in Table 3, traffic volumes along the state highway in the vicinity of the study area are anticipated to increase by approximately 100 daily vehicles over a period of 20 years. This growth is negligible, and no annual background growth rate is proposed to be applied to the existing volumes for the 2021 buildout year analysis. Similarly, no regional growth factor will be applied to local streets.

With no in-process developments and no regional growth factor, the 2021 background conditions are expected to reflect the same conditions presented in Figure 4 and Figure 5.

Intersection Operations

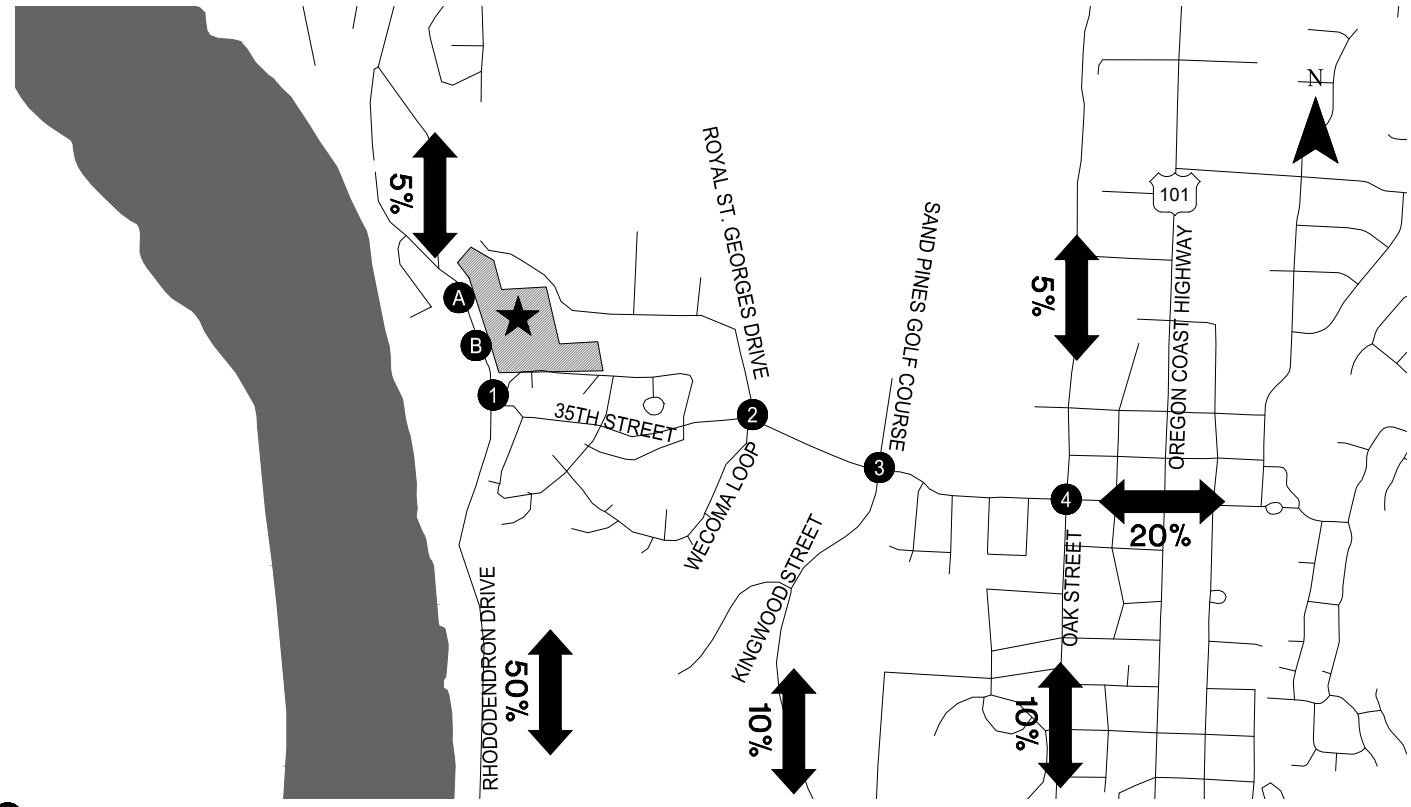
As stated previously, the 2021 background traffic intersection analysis is expected to be the same as the adjusted 2019 traffic operations. Therefore, the results of the analysis match that of the 2019 existing traffic analysis and the study intersections are forecast to satisfy the TSP operating standards during the weekday AM and PM peak hours. *Refer to Attachment "D" for the existing (and background) traffic operations worksheets.*

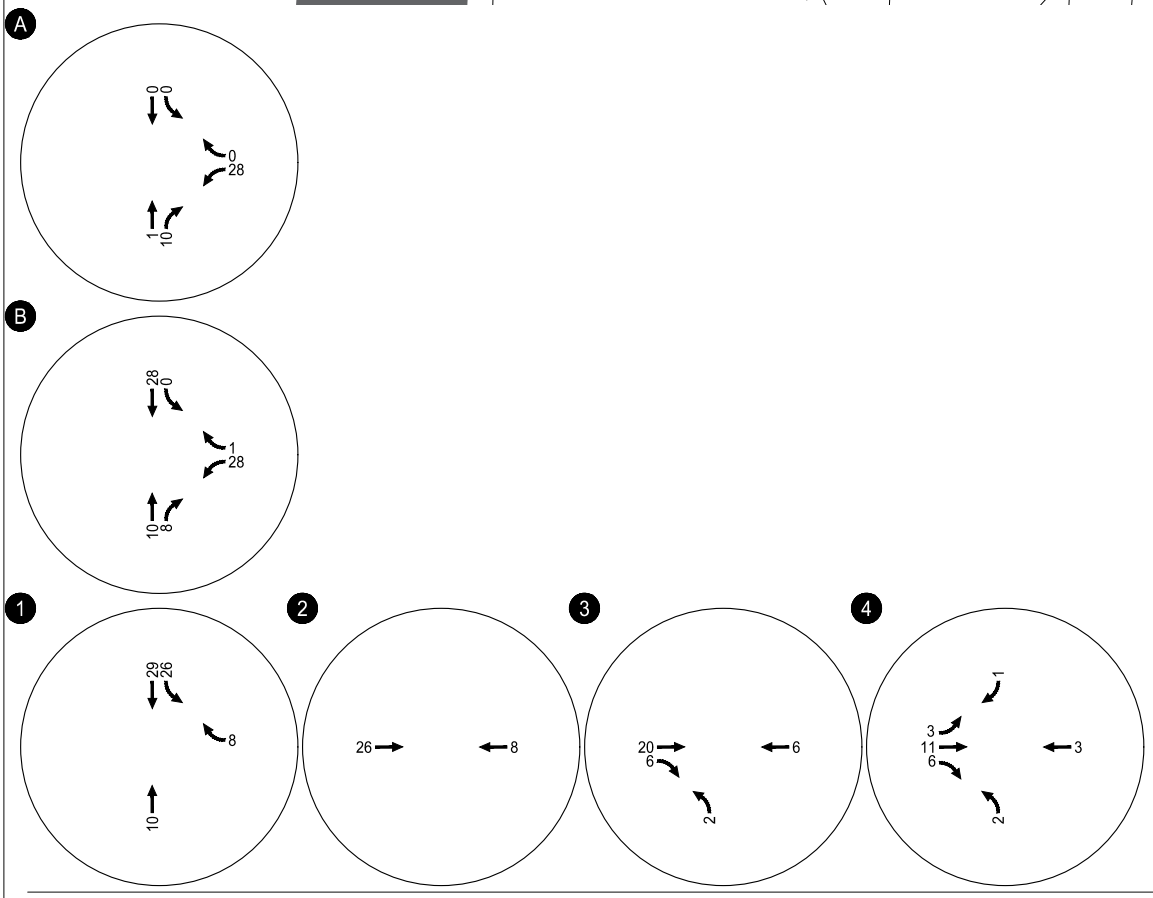
PROPOSED DEVELOPMENT PLAN

The applicant proposes to develop up to 31 detached single-family homes, 55 attached townhome-style cottages, and 46 apartments.

Trip Generation

A trip generation estimate was prepared for the proposed residential subdivision based on information provided in the standard reference manual, *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE – Reference 4). Based on the land use data provided by ITE, the proposed townhome-style cottages and the apartments are both classified as low-rise multi-family homes. As such, ITE Land Use Code 220 (Multifamily Housing – Low Rise) is applied for the combined 101 units. Land Use Code 210 (Single-Family Detached Housing) is applied for the 31 single-family homes. Table 4 summarizes the trip generation estimate for the weekday daily, morning, and evening peak hours.





Estimated Trip Distribution Pattern & Trip Assignment
Weekday AM Peak Hour
Florence, OR

Figure
6

H:\24\24714 - Florence Residential Subdivision\report\figs\24714_Figures.dwg Feb 11, 2020 - 8:56am - agriffiths Layout Tab: AM Trip Distribution and Trip Assignment

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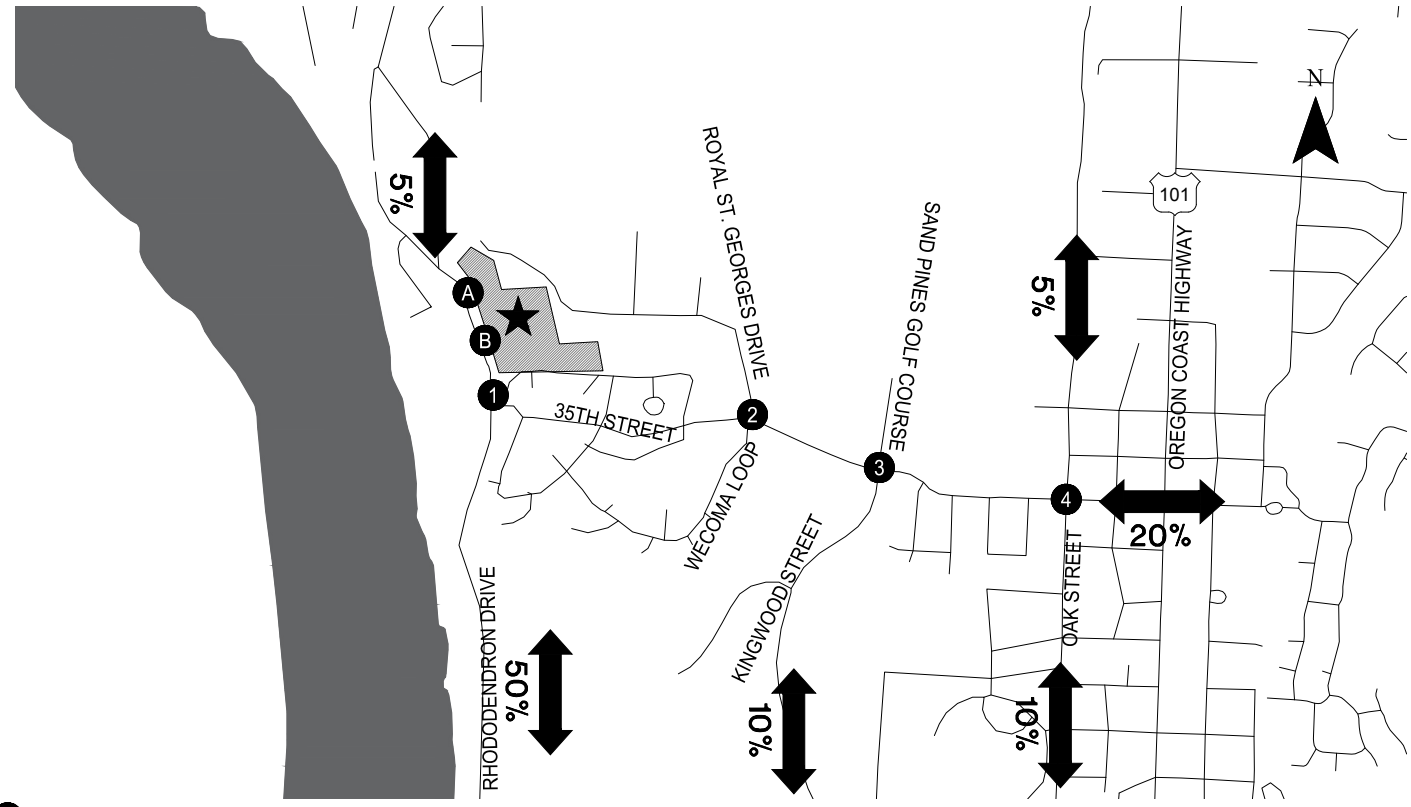
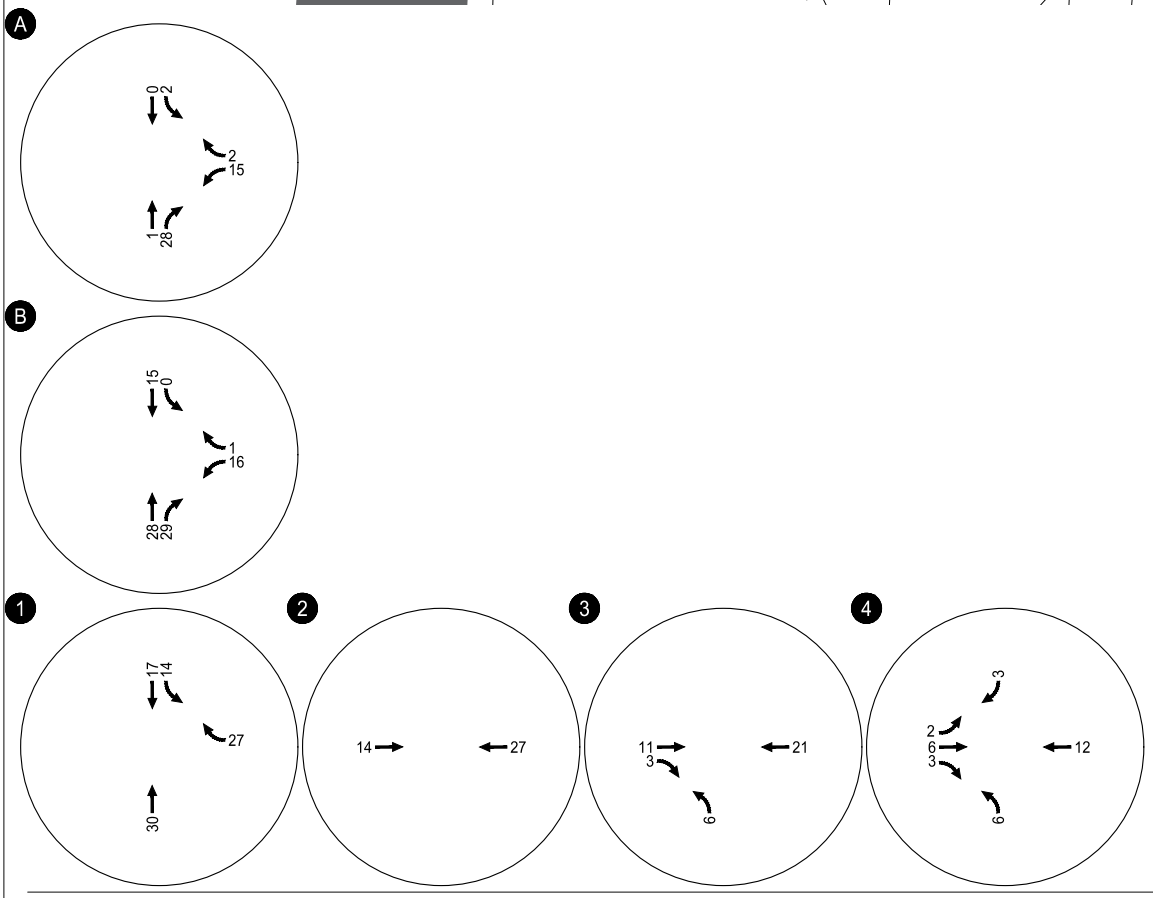
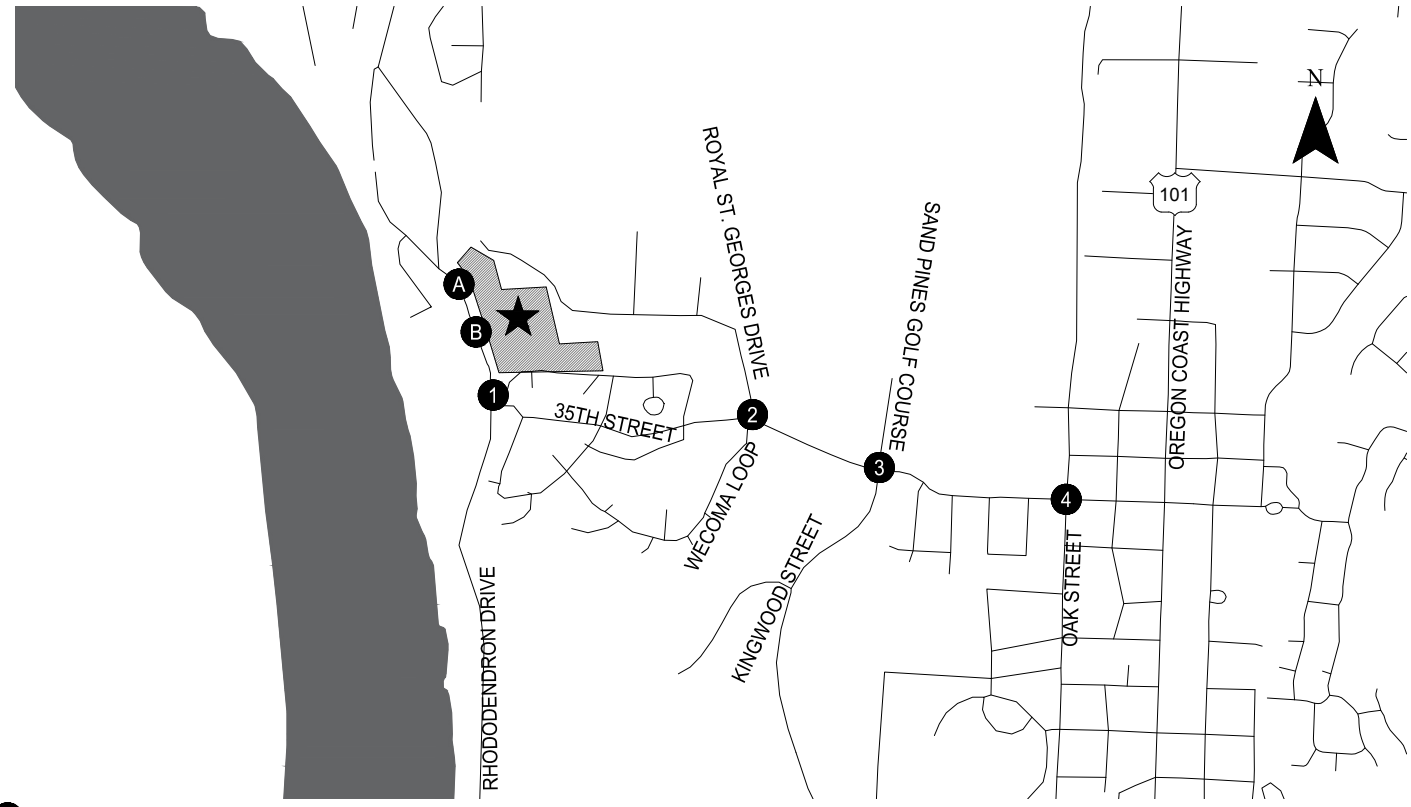
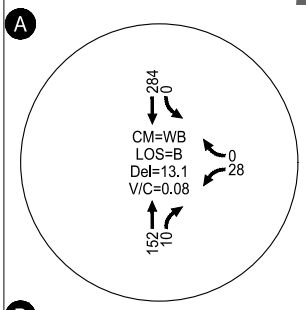


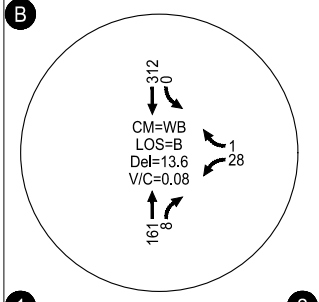


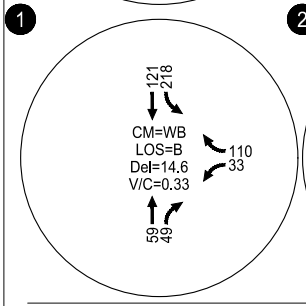
Estimated Trip Distribution Pattern & Trip Assignment
Weekday PM Peak Hour
Florence, OR

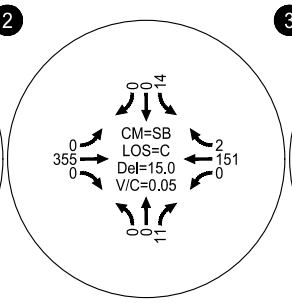
Figure
7

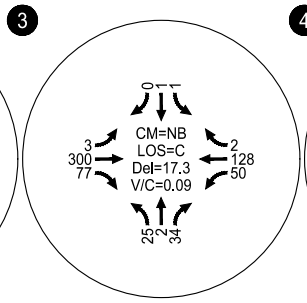


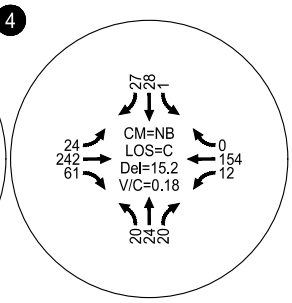












LEGEND

CM = CRITICAL MOVEMENT

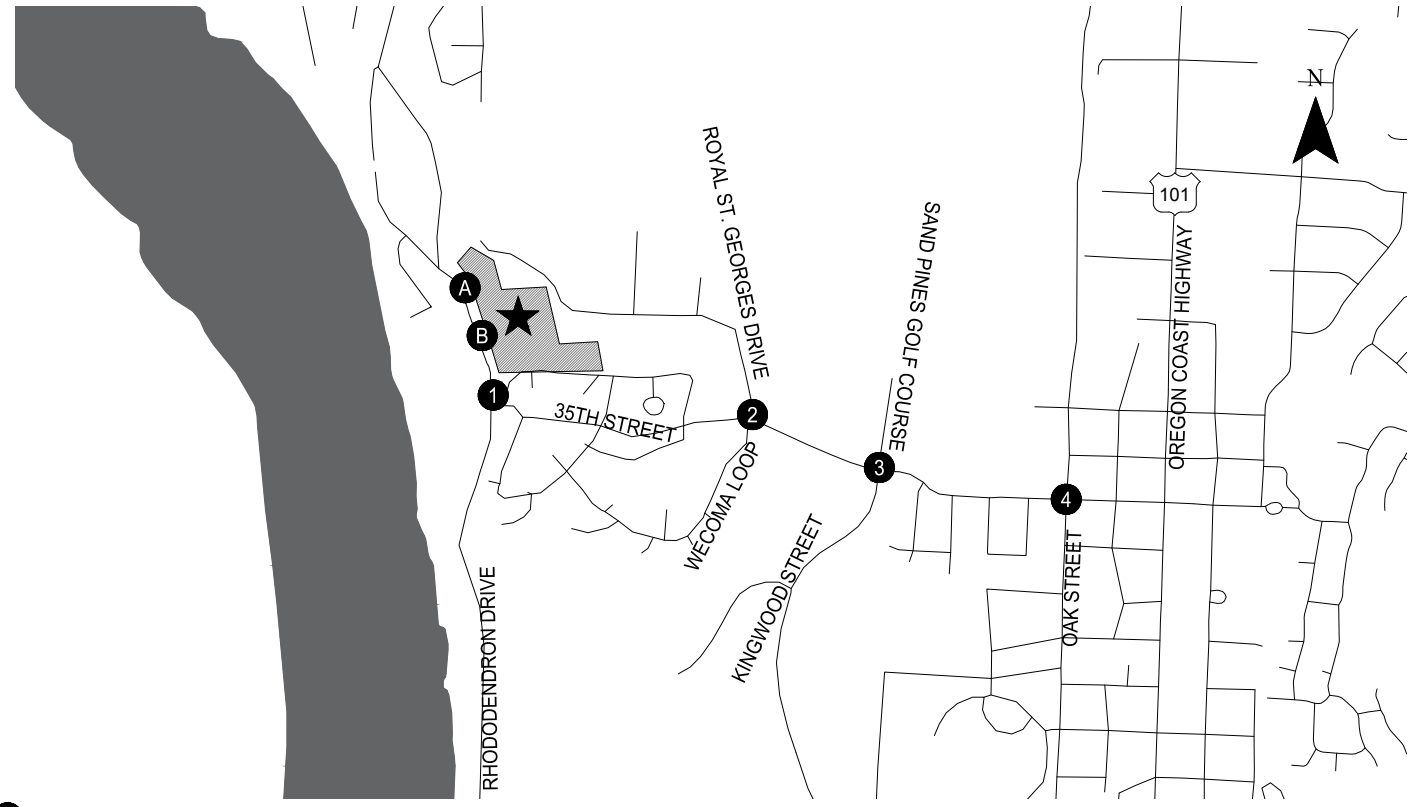
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE

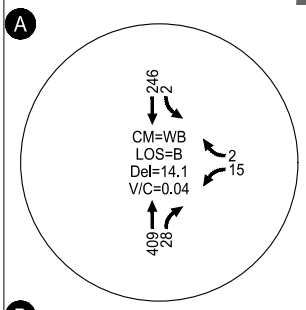
Del = CRITICAL MOVEMENT CONTROL DELAY

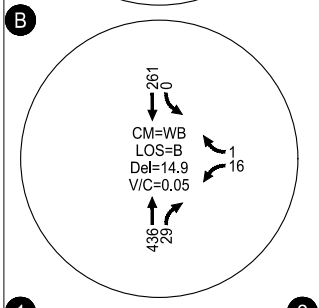
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

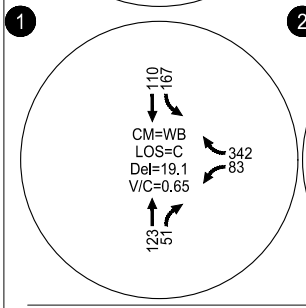
Total Traffic Conditions
Weekday AM Peak Hour
Florence, OR

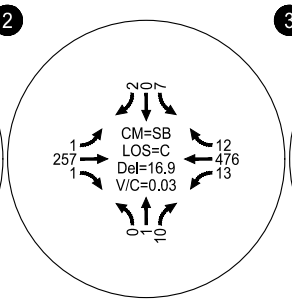
Figure
8

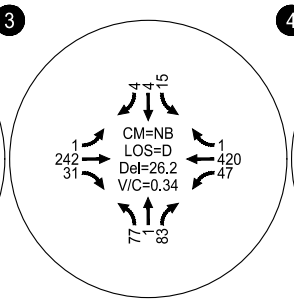


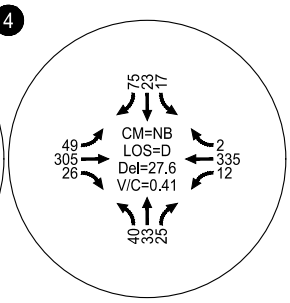












LEGEND

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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Total Traffic Conditions
Weekday PM Peak Hour
Florence, OR

Figure
9

RHODODENDRON DRIVE/35TH STREET INTERSECTION TRAFFIC SIGNAL WARRANT ANALYSIS

As shown in the traffic operations analysis findings, the average weekday PM peak hour westbound delay at the 35th Street/Rhododendron Drive is forecast to increase by approximately three seconds (16.1 to 19.1 seconds) as a result of the added site traffic. The delay and intersection operations are expected to continue to meet City of Florence operational standards. However, to further address the intersection operations, based on a request from City of Florence staff, a signal warrant analysis was prepared for the Rhododendron Drive/35th Street intersection.

The traffic signal warrant analysis was conducted consistent with ODOT requirements outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD, Reference 6), and the ODOT *Analysis Procedures Manual* (Reference 3). The MUTCD identifies nine traffic signal warrants and notes "The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal."[1] The first two volume-based warrants (#1-Eight Hour and #2-Four Hour) were evaluated based on the existing and future traffic volumes at the intersection[2].

The weekday PM peak hour volumes were used to prepare a peak hour warrant analysis, and an assumed daily profile was assumed for the peak 4-hour and peak 8-hour signal warrant analyses. Based on the analysis results, signal warrants are not forecast to be met for the peak, 4-, or 8-hour warrants. As such,

[1] ODOT's *Analysis Procedures Manual* similarly states "Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway. However, approval of a signal depends on more than just a warrant analysis. Meeting a warrant is necessary to install a signal, but it does not mean a signal should be recommended or guarantee its installation. Considerations to be evaluated include safety concerns, alternatives to signalization, signal systems, delay, queuing, bike and pedestrian needs, railroads, access, consistency with local plans, local agency support and others."

[2] All eight warrants were considered but only Warrants 1 and 2 and 3 are described in full detail in this report. Warrant 4 involves pedestrian volumes and is not met based on local pedestrian volumes. Warrant 5 is intended for application where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal and is not appliable at the intersection. Warrant 6 is intended to facilitate progressed traffic flow within a coordinated traffic signal and is not applicable. Warrant 7 is intended for application where the severity and frequency of crashes are the principal reasons to consider traffic signal installation. Amongst other considerations, the warrant requires five or more reported crashes of a type susceptible to correction by a traffic control signal within a 12-month period. As shown in Table 2, there were no recorded crashes at the intersection. Warrant 8 involves installing a traffic signal at an intersection to encourage concentration and organization of traffic flow on a roadway network and is not applicable. Warrant 9 is intended for use at a location where Warrants 1 – 8 are not shown to be met but where the proximity of the intersection to a railroad grade crossing would be the principal reason to consider installing a traffic signal. Warrant 9 is not appliable.

signalization is not recommended at this time based on the impacts of the proposed development. *The traffic signal warrant worksheets are included in Attachment "F."*

SIGHT DISTANCE ASSESSMENT

A preliminary sight distance analysis was conducted at the existing site accesses based on review of the proposed site plan. We recommend final sight distance certification be confirmed upon buildout. Preliminary site plan review of available sight distance indicates that both intersection and stopping sight distance (ISD and SSD) are expected to meet the design guidance presented in *A Policy on Geometric Design of Highways and Streets* (AASHTO, Reference 5) upon buildout.

AASHTO Design Guidelines

One of the primary inputs in determining safe sight distance metrics according to AASHTO guidelines is the design speed of the respective roadway. The posted speed along Rhododendron Drive is 40 miles per hour and the advisory speed along the frontage of the property is posted at 35 miles per hour.

For an assumed design speed of the 40 mile-per-hour facility, Table 5 below summarizes the recommended minimum design guidance.

Table 5. Sight Distance Summary (Case B1 – Left Turn from the Minor Road)

Access Locations	Direction of Travel	AASHTO Design Guideline (feet) (ISD / SSD)
Access A (north)	Northbound (facing south from access)	445 / 305
	Southbound (facing north from access)	445 / 305
Access B (south)	Northbound (facing south from access)	445 / 305
	Southbound (facing north from access)	445 / 305

ISD: Intersection Sight Distance
SSD: Stopping Sight Distance

The following Exhibit 1 and Exhibit 2 illustrate a preliminary sight distance triangle for up to 445 feet of intersection sight distance. The red lines indicate the sightline from a vehicle at each corresponding site access while the yellow line indicates the on-road distance (445 feet) recommended for a design speed of 40 miles per hour.

Exhibit 1 Sight Triangle for Driveway A (approximate)

Exhibit 2 Sight Triangle for Driveway B (approximate)

Based on the preliminary assessment in Exhibits 1 and 2, no vertical curvature or horizontal curvature of Rhododendron Drive is expected to limit sight distances. However, there may be some foliage and low hanging branches that may be partially obstructing sight lines within the right-of-way – we recommend these be cleared upon construction of the site. Site landscaping, signage or above-ground utilities along the site frontages should be installed and maintained to provide adequate sight distance per City requirements.

FINDINGS AND RECOMMENDATIONS

The results of this analysis indicate that the proposed residential subdivision can be constructed while maintaining acceptable traffic operations at the study intersections and site-accesses. The primary findings and recommendations of this study are summarized below.

- The proposed residential development is estimated to generate approximately 1,077 net new weekday daily trips, with 75 net new trips (18 in, 57 out) occurring during the weekday AM peak hour and 93 net new trips (59 in, 34 out) occurring during the weekday PM peak hour.
- All study intersections were found to operate acceptably under existing and forecast future conditions.
- No transportation capacity or safety-related mitigations are recommended as a result of the proposed development impacts.
- Landscaping, signage or above-ground utilities along the site frontages should be installed and maintained to provide adequate sight distance.

We trust this report adequately addresses the traffic impacts associated with the proposed residential subdivision. Please contact us if you have any questions.

REFERENCES

1. Transportation Research Board. *Highway Capacity Manual, 6th Edition*. 2019.
2. City of Florence, Oregon. *Florence Transportation System Plan*. 2012.
3. Oregon Department of Transportation. *Analysis Procedures Manual*. Updated in 2019.
4. Institute of Transportation Engineers. *Trip Generation, 10th Edition*, 2017.
5. American Association of State Highway and Transportation Officials. A Policy on Geometric Design of Highways and Streets. 2011 Edition.
6. US Department of Transportation Federal Highway Administration. *Manual on Uniform Traffic Control Devices.* Updated December 2019.

ATTACHMENTS

A. Scoping Memorandum
B. Level-of-Service Criteria
C. Traffic Count Data
D. Existing Traffic Operations Worksheets
E. Crash Data
F. Year 2021 Total Traffic Operations Worksheets

Attachment A
Scoping Memorandum

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851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM - DRAFT

Date:	December 25, 2019	Project #: 24714
To:	Mike Miller, Public Works Director City of Florence Public Works 250 Highway 101 Florence, OR 97439	
Cc:	Matt Caswell, PE, ODOT	
From:	Diego Arguea, PE & Amy Griffiths	
Project:	Florence Residential Subdivision	
Subject:	Traffic Impact Study Scoping	

This memorandum documents the methodology and key assumptions to be used in preparation of the traffic impact analysis (TIA) for a residential development in Florence, Oregon.

PROPOSED DEVELOPMENT PLAN

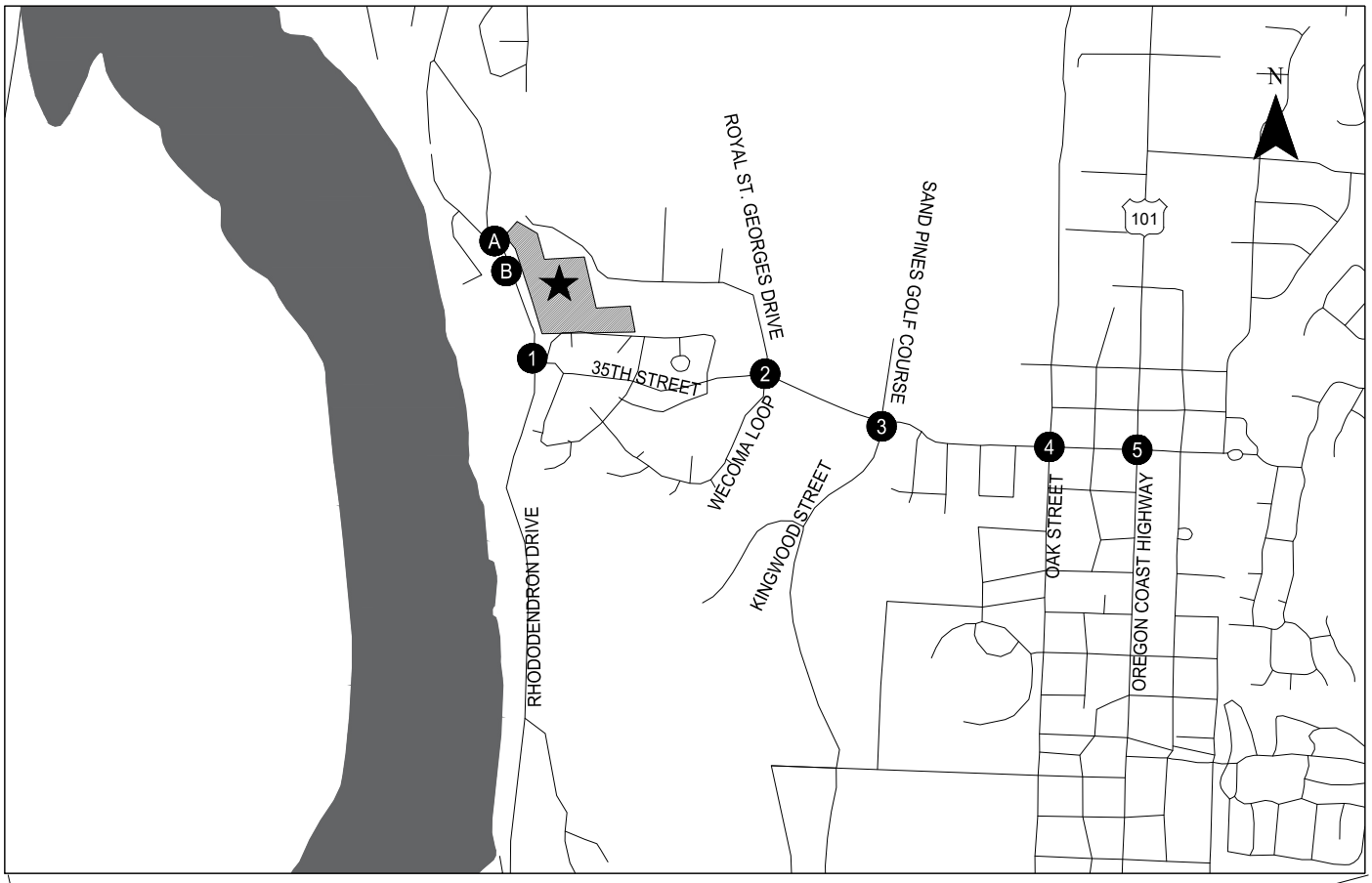
The applicant proposes development of 91 single-family homes and up to 48 low-rise[1] apartments to be located on a vacant site in north Florence, Oregon. The site is bounded by Rhododendron Road to the west, 35th Street and Siano Loop Road to the south, and Royal Saint Georges Drive to the east and north. Access to the site is proposed via two driveways, spaced at approximately 340 feet and 610 feet north of 35th Street. A site vicinity map is shown in Figure 1.

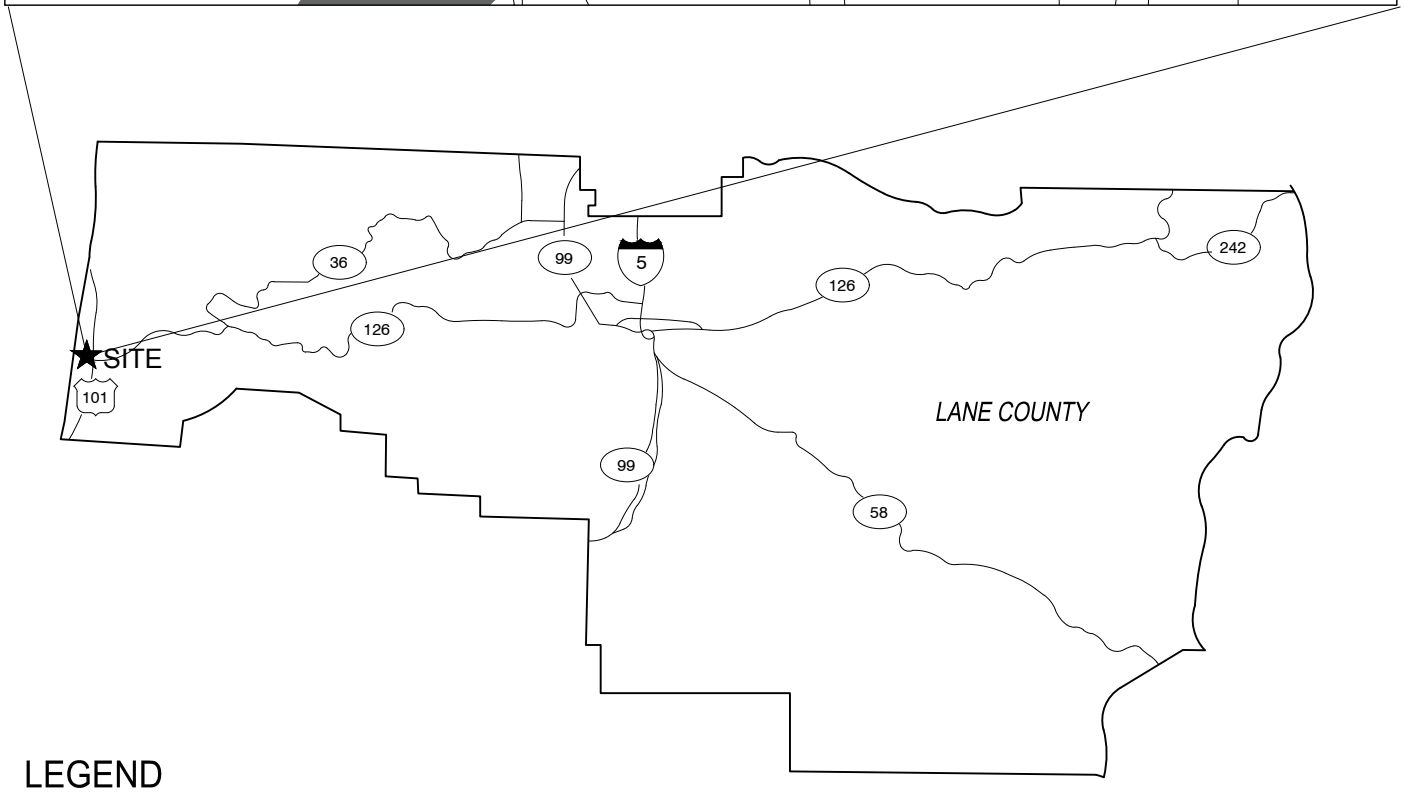
The proposed development is expected to be constructed in 2021. A site plan is shown in Figure 2.

TRIP GENERATION AND DISTRIBUTION

Table 1 summarizes the estimated site-generated trips for the proposed development. Trip generation rates for the single-family and apartment land uses are based on the standard reference *Trip Generation,* 10th Edition. For each land use, the regression equation is used to estimate trip generation if there are more than 20 data points and the coefficient of correlation (R^2 value) is 0.75 or higher. If these criteria are not met, the average rate is used.

[1] Defined by ITE *Trip Generation* as containing one or two floors of residential units.





LEGEND

★ - SITE LOCATION

- STUDY INTERSECTION

Site Vicinity Map
Florence, OR

Figure
1

KITTELSON & ASSOCIATES

Site Plan Provided by 3J Consulting November 19, 2019

Preliminary Proposed Site Plan
Florence, OR

Figure
2

C:\Users\agriffiths\appdata\local\temp\AcPublish_18212\24714_Figures.dwg Dec 20, 2019 - 4:52pm - agriffiths Layout Tab: Proposed Site Plan

KITTELSON & ASSOCIATES

Table 1. Proposed Land Use Trip Generation

Land Use	ITE Code	Units	Daily Trips	AM			PM		
				Total	In	Out	Total	In	Out
Single Family Detached Housing	210	91	953	69	17	52	93	59	34
Multifamily Housing (Low-Rise)	220	48	322	24	6	18	31	19	12
Total Net New			**1,275**	**93**	**23**	**70**	**124**	**78**	**46**

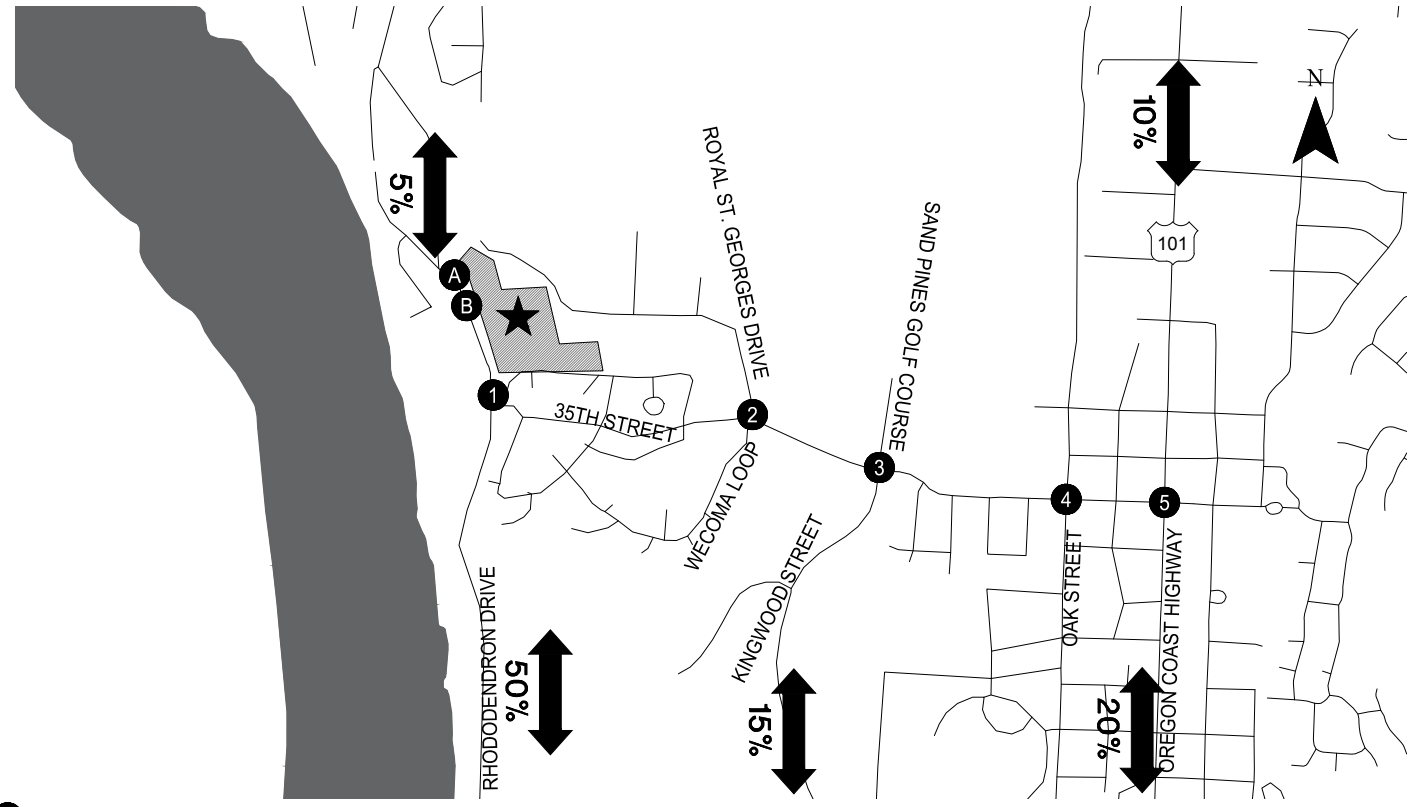
Figure 3 and Figure 4 display a preliminary trip distribution and assignment based on review of surrounding land uses and the roadway network. The trip distribution pattern used in the formal traffic impact analysis may be revised based on traffic volume data to be collected at the study intersections as well as agency review comments.

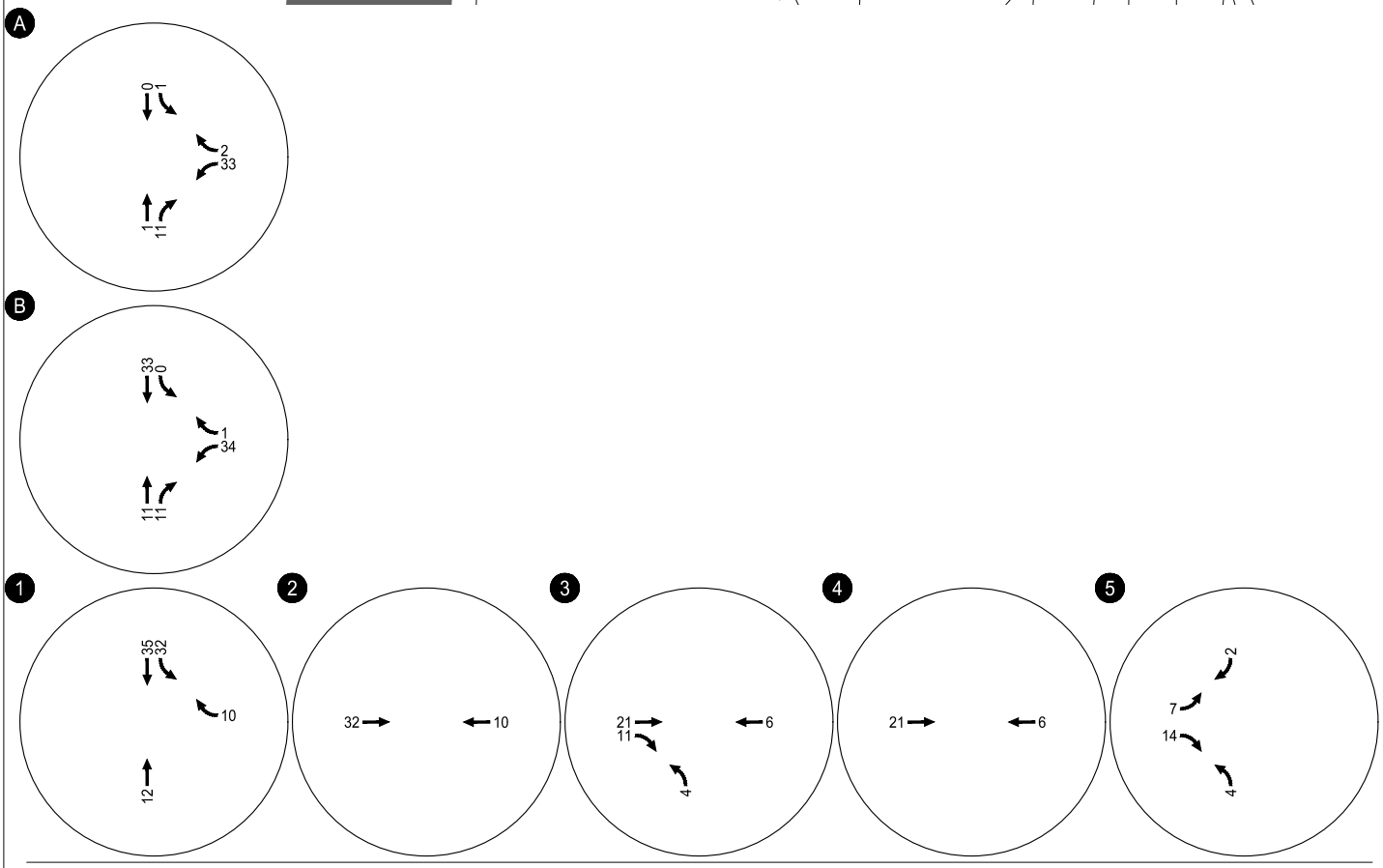
STUDY INTERSECTIONS

Proposed study intersections were identified based on the project's anticipated trip generation impact on adjacent intersections within the site vicinity. One intersection under ODOT[2] jurisdiction was identified to be impacted – however, under both weekday AM and PM peak hours, this intersection is forecast to be impacted by fewer than 50 trips (see Figures 3 and 4). As such, the intersection of 35th Avenue/Oregon Coast Highway (Hwy 101) has been included in the study area to address City requirements. All proposed study intersections are summarized below.

- Site Driveway "A"/Rhododendron Drive
- Site Driveway "B"/Rhododendron Drive
- 35th Street/Rhododendron Drive
- 35th Street/Royal St. Georges Drive
- 35th Street/Kingwood Street
- 35th Street/Oak Street
- 35th Street/Oregon Coast Highway (Hwy 101)

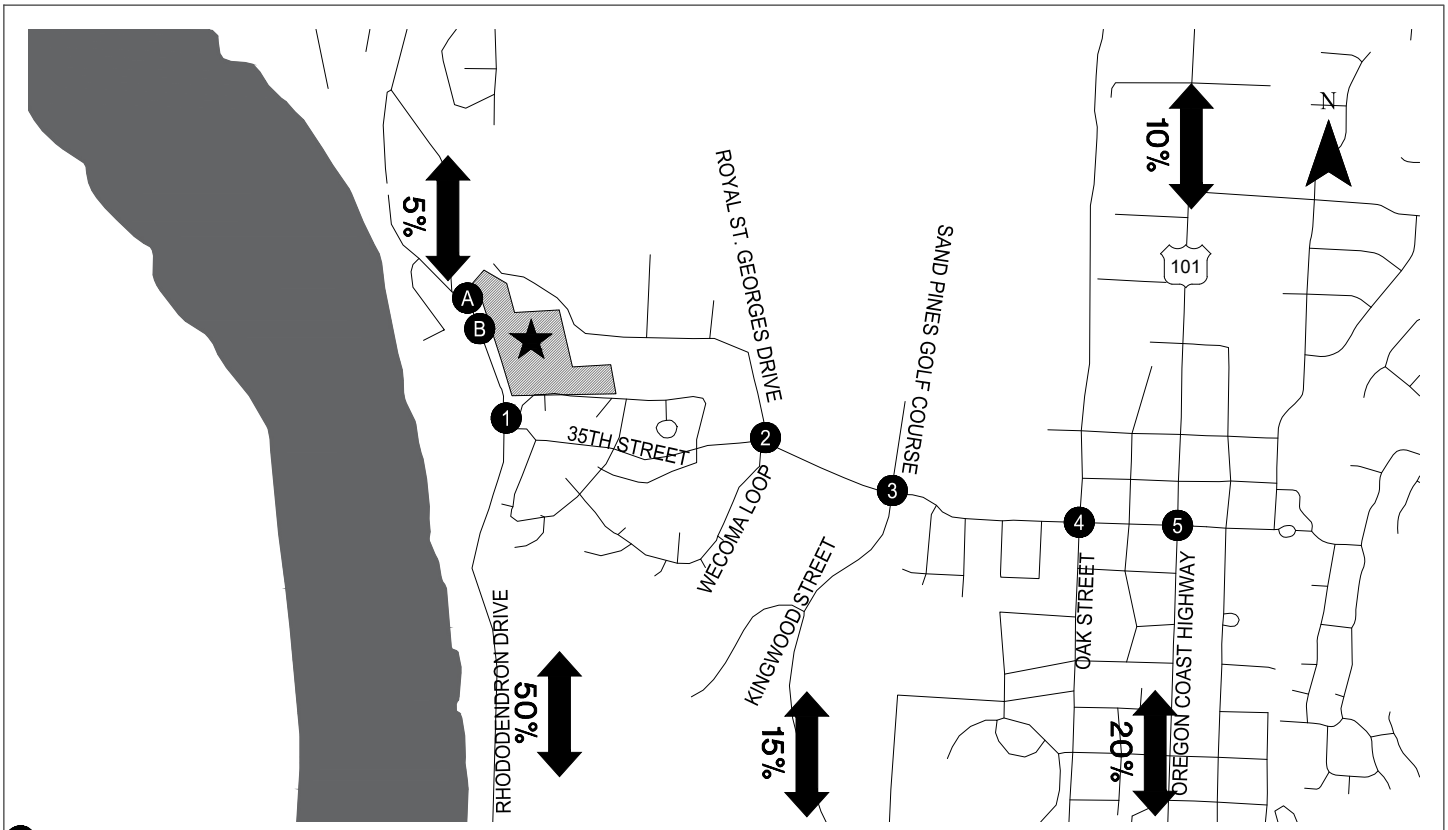
[2] Oregon Department of Transportation

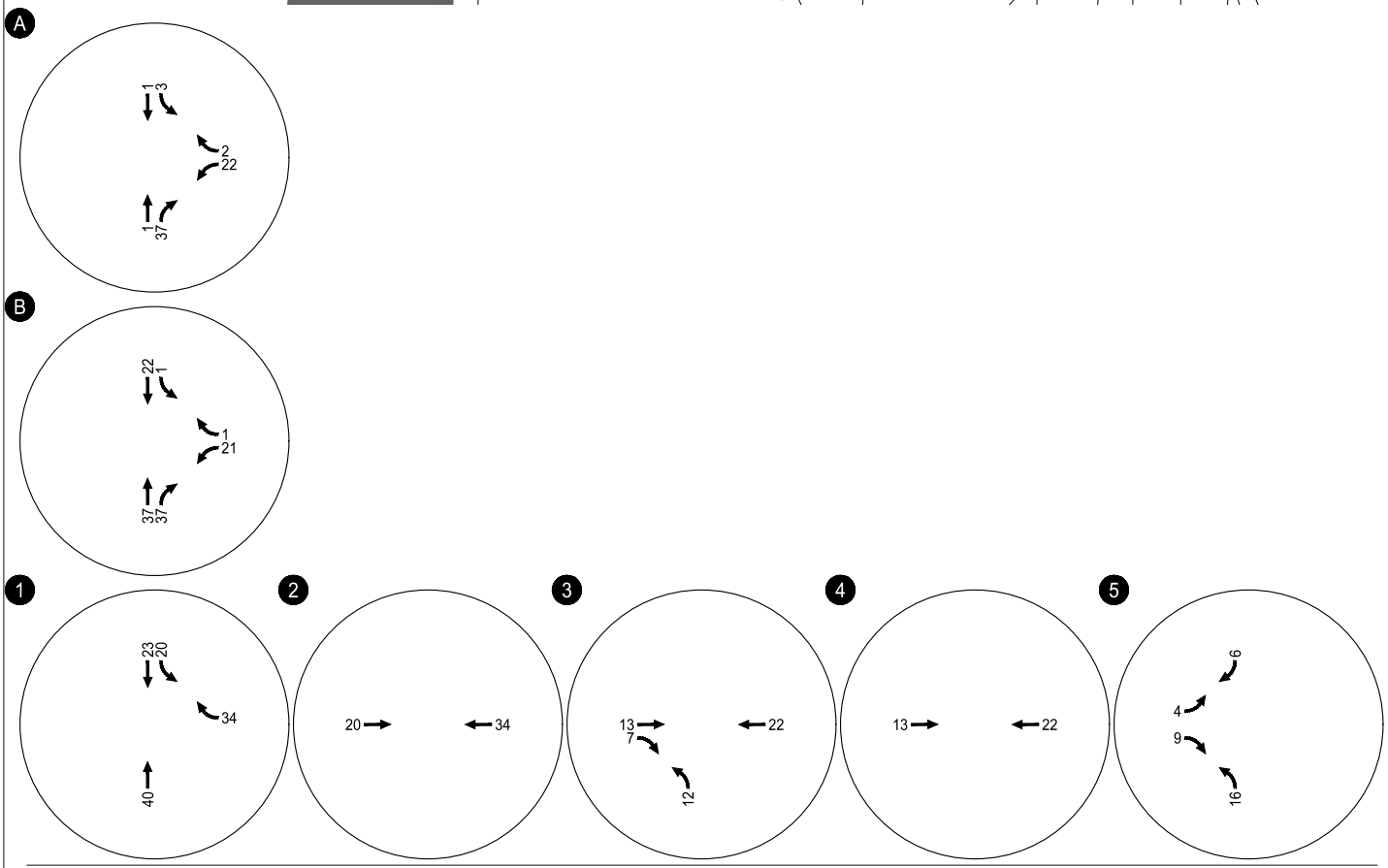




Estimated Trip Distribution Pattern & Trip Assignment
Weekday AM Peak Hour
Florence, OR

Figure
3





Estimated Trip Distribution Pattern & Trip Assignment
Weekday PM Peak Hour
Florence, OR

Figure
4

OPERATIONS ANALYSIS

The traffic operations analysis will include evaluation of the following performance measures for the study intersections:

- Turning movement counts;
- Volume-to-capacity (V/C) ratio;
- Level-of-service (LOS) and delay; and,
- 95th percentile queuing.

Individual study intersection performance will be documented in tables, figures, and/or technical appendices using the measures of effectiveness listed above. Study intersection performance will then be compared to applicable City and ODOT performance thresholds.

Analysis Years

We will report performance measures for the following analysis years:

- Existing year 2019 traffic analysis;
- Opening year 2021 background traffic analysis (without added trips from the proposed development); and,
- Forecast year 2021 total traffic analysis (including added trips from the proposed development).

Mobility Standards

ODOT assesses intersection operations based on v/c ratio. Table 6 of the *Oregon Highway Plan* (OHP) provides v/c ratio targets statewide. These OHP ratios are used to evaluate existing and future no-build conditions, and the mobility standard is based on characteristics of the state highway.

Within the study area, the Oregon Coast Highway (Hwy 101) is classified as a statewide highway (not a freight route), located within the urban growth boundary (non-MPO), and has a posted speed limit of 35 miles per hour. As such, the ODOT required mobility standard for the 35th Street/Oregon Coast Highway (Hwy 101) intersection is a v/c ratio of 0.90.

Table 6 of the *Oregon Highway Plan* (OHP) is shown on the following page.

VOLUME TO CAPACITY RATIO TARGETS OUTSIDE METRO[17A, B, C, D]							
Highway Category	**Inside Urban Growth Boundary**					**Outside Urban Growth Boundary**	
	STA[E]	**MPO**	**Non-MPO Outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA**	**Non-MPO outside of STAs where non-freeway speed > 35 mph but < 45 mph**	**Non-MPO where non-freeway speed limit >= 45 mph**	**Unincorporated Communities[F]**	**Rural Lands**
Interstate Highways	N/A	0.85	N/A	N/A	0.80	0.70	0.70
Statewide Expressways	N/A	0.85	0.85	0.80	0.80	0.70	0.70
Freight Route on a Statewide Highway	0.90	0.85	0.85	0.80	0.80	0.70	0.70
Statewide (not a Freight Route)	0.95	0.90	0.90	0.85	0.80	0.75	0.70
Freight Route on a regional or District Highway	0.95	0.90	0.90	0.85	0.85	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.90	N/A	0.85	0.85	0.75	0.70
Regional Highways	1.0	0.95	0.90	0.85	0.85	0.75	0.70
District/Local Interest Roads	1.0	0.95	0.95	0.90	0.90	0.80	0.75

Table 6: Volume to Capacity Ratio Targets for Peak Hour Operating Conditions

We request that the City of Florence provide us with the applicable mobility standards for the other study intersections.

SEASONAL ADJUSTMENT FACTOR

Peak hour traffic counts will be collected in December 2019 and will subsequently be adjusted to reflect 30th highest hour design volumes, based on applicable adjustment factors. Version 2 of the APM identifies three methods for identifying seasonal adjustment factors for highway traffic volumes:

- On-Site ATR Method
- ATR Characteristic Table Method
- Seasonal Trend Method

All three methods utilize information provided by Automatic Traffic Recorders (ATRs) situated in select locations throughout the State Highway System that collect traffic data 24-hours a day/365 days a year.

The On-Site ATR Method meets the criteria that the ATR be located within or near the project area. ATR Florence (20-026) was identified on Highway 101 and located 0.77 miles north of Heceta Beach Road, and 2.21 miles north of the 35th Street/Highway 101 study intersection. No major intersections that would impact seasonal trends are located between the study intersection and the ATR location. As such, we propose using ATR 20-026 data to seasonally adjust traffic volume data collected in December 2019.

Table 2 displays the ATR data used to develop the seasonal adjustment factor for the study area.

Table 2. Seasonal Adjustment Factor Calculation (weekday daily data)

Year	2014	2015	2016	2017	2018	Average
Peak Month (July) % of ADT	136%	136%	134%	142%	140%	137%
Month of Data Collection (December) % of ADT	76%	75%	78%	78%	77%	77%

Note: Shaded values removed from average calculation per ODOT methodology.

Cells highlighted in grey reflect the highest and lowest values and were excluded from the average per ODOT guidelines. From this data, the seasonal factor can be computed as 137% ÷ 77% = 1.78.

Based on direction provided in the ODOT Analysis Procedures Manual, a seasonal adjustment greater than 30% should not be used. To supplement the ATR methodology, the most up-to-date seasonal trend tables[3] were reviewed – for the count month December, the seasonal adjustments shown for the following routes are as follows:

- Coastal Destination: 1.1636
- Coastal Destination Route: 1.2836

Averaging the seasonal trend table values for December results in a 1.2236 seasonal adjustment.

We welcome you providing historic traffic count data that may be available for the study intersections that could help further inform the seasonal adjustment. If no additional data is available, and subject to ODOT and City feedback, we propose to adjust the through movements on Highway 101 by a factor of 1.22 to reflect the 30th highest hour volumes.

CRASH DATA REVIEW

The most-recent three-year period of reported crash data (January 1, 2016 through December 31, 2018) will be reviewed at the study intersections. Any study intersections that are identified as a Safety Priority Index System sites (top 5- or 10-percent) will be included in the crash data and highlighted in the analysis.

[3] Updated June 26, 2019

The data will be analyzed for a variety of factors to include type, severity, general conditions, and location to identify potential crash patterns or anomalies.

FORECAST YEAR VOLUME DEVELOPMENT

Growth rates for opening year background traffic volumes will be based upon the ODOT Future Volume Tables. Two locations near the study area were identified on Oregon Coast Highway (US 101, ODOT Highway No. 009): 0.02 miles south of 36th Street and 0.02 miles south of 29th Street. Table 3 provides the base year (2018) and forecast year (2038) model AADTs for computation of the growth rate.

Table 3. ODOT Future Volume Table

Highway	Milepost	Description	2018	2038	R^2	Growth Rate
009	188.64	0.02 miles south of 36th Street	12,500	12,600	0.4298	0.00040
009	21.34	0.02 miles south of 29th Street	14,100	14,200	0.8050	0.00035

Growth rate calculation example: (12,600 / 12,500 – 1) / (2038 - 2018) = 0.00040

Based on the volumes in Table 3, traffic volumes along the state highway in the vicinity of the study area are anticipated to increase by approximately 100 daily vehicles over a period of 20 years. This growth is negligible and suggests it may not be necessary to apply an annual background growth rate to the existing volumes for the 2021 buildout year analysis. We would appreciate receipt of in-process development and/or annual growth rate data that may be available. In the absence of additional data, we propose to not apply a regional growth factor to the local streets.

NEXT STEPS

Please review the information presented in this memorandum and provide us your feedback regarding the study assumptions and methodology. Please also provide confirmation of the City of Florence mobility standards. We would be pleased to schedule a conference call to discuss if desired.

Amy Griffiths

From: BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Sent: Friday, January 3, 2020 7:19 AM
To: BAUMGARTNER Douglas G; Diego Arguea
Cc: Mike.Miller@ci.florence.or.us; Amy Griffiths; UPTON Dorothy J; NELSON Brian S * Scott
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Doug and Diego:

Thank you for passing along this scoping letter. My comments are:

1. Traffic study should be consistent with ODOT's Analysis Procedures Manual (APM) https://www.oregon.gov/ODOT/Planning/Pages/APM.aspx
2. Does the City concur with the proposed Trip Distribution? It appears the assumed 30% (10% to/from north, 20% to/from south) of the total trips accessing the US-101/35th Street intersection is low, but I concur that it appears this intersection will not trigger ODOT's 50 peak hour net trip increase threshold to recommend study of the intersection. That said, I am still available and willing to review the draft traffic study as a resource for the City.
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    a. 1.84 using Florence ATR 20-026 and the Average Daily Traffic method (as opposed to the Average Weekday Traffic method)
    b. 1.49 using the Coastal Destination trend (the proposed calculation must have included an error)
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5. Per Table 3.3 of ODOT's Development Review Guidelines, for a development of this size (1,000 – 2,999 ADT), Region Traffic recommends the following analysis scenario years:
    a. Existing (2019)
    b. Opening Year (2021)
        i. Background
        ii. Total
    c. Opening Year + 5 Years (2026)
        i. Background
        ii. Total

I hope the above information will help, but please let me know if there are any more questions or if I may be of any further assistance. Thanks!

Keith P. Blair, P.E.
Interim Traffic Analysis Engineer | ODOT Region 2

455 Airport Rd SE, Bldg. A | Salem, Oregon 97301
(503) 986-2857 | Keith.P.Blair@odot.state.or.us

ODOT's mission is to provide a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive.

From: Diego Arguea <darguea@kittelson.com>
Sent: Friday, December 27, 2019 3:24 PM
To: NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Cc: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>; Mike.Miller@ci.florence.or.us; Amy Griffiths <agriffiths@kittelson.com>; BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Hi Scott –

Thanks for email. I was also told that Keith Blair is someone who has been involved in development review? We are currently scoping, but we are on a fast track to deliver this project by end of January. I have included the scoping memorandum attached for your reference. Note that the only intersection under ODOT jurisdiction is 35th Ave/Hwy 101, but we do not estimate more than 50 peak hour trips to this intersection, so, ultimately, it may even not be required for study – I will defer to you. If it is required, please confirm the seasonal adjustment methodology.

Thanks!
Diego

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
Sent: Thursday, December 26, 2019 2:57 PM
To: Diego Arguea <darguea@kittelson.com>
Cc: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>
Subject: Development Review Contact for ODOT Region 2 District 5

Hello Diego, I here you are working on a TIS in Florence. Doug Baumgartner is our development review coordinator for that area, however Doug is out until January 6th. In the meantime I can help you get started. Are you looking for a scope or are you beyond that?

thanks

B Scott Nelson, P.E.
Region 2 Access Management Engineer

Oregon Department of Transportation
455 Airport Rd SE, Bldg. B
Salem, OR 97301
Office 503.986.2882

Amy Griffiths

From: Mike Miller <mike.miller@ci.florence.or.us>
Sent: Thursday, January 9, 2020 9:49 AM
To: BLAIR Keith P; Diego Arguea
Cc: Amy Griffiths; BAUMGARTNER Douglas G; Wendy Farley-Campbell
Subject: RE: Florence - revision in site plan

Thanks Keith! I agree, since we know what the mix is using ITE codes 210 and 220 will be more accurate.

Mike

From: BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Sent: Thursday, January 9, 2020 9:07 AM
To: 'Diego Arguea' <darguea@kittelson.com>; Mike Miller <mike.miller@ci.florence.or.us>
Cc: Amy Griffiths <agriffiths@kittelson.com>; BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>
Subject: RE: Florence - revision in site plan

Diego and Mike:

My recommendation would be to utilize trip generation for land uses 210 and 220 as opposed to 270 for the combination of the following reasons:

- it appears the proposed land use mix is known, as opposed to a general PUD application
- ITE data sample sizes for land uses 210 and 220 are significantly larger than that for 270 and, as a result, likely more accurate
- trip generation results for land uses 210 and 220 are slightly larger (more conservative) for the daily and PM peak hour

Please let me know if I may be of further assistance. Thanks!

Keith Blair
(503) 986–2857

From: Diego Arguea <darguea@kittelson.com>
Sent: Wednesday, January 8, 2020 6:01 PM
To: Mike Miller <mike.miller@ci.florence.or.us>; BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Cc: Amy Griffiths <agriffiths@kittelson.com>
Subject: Florence - revision in site plan

Mike, Keith,

Thank you both for your time in coordination and working through the project assumptions. We have recently had a change (reduction) in the site plan units, and I wanted to share an updated trip generation prior to moving forward with our analysis. Please review and let us know if you are comfortable using the PUD trip generation rate.

In our scoping memorandum, the site plan identified 91 single family home lots and 48 apartments. The revised unit mix is as follows:

31 single family lots

46 apartments
55 attached townhome/cottage 2-story homes (owner occupied not rentals)
132 total units

The 9th edition of Trip Generation included a category for 'townhomes' which does not exist in the 10th edition. Rather, the townhome data has been lumped together with the rate in the Low Rise Residential data. As such, one potential trip generation estimate shown below includes 31 single family lots and 101 low rise residential (46 apartments + 55 attached homes).

Land Use	ITE Code	Units	Daily Trips	Weekday AM			Weekday PM		
				Total	In	Out	Total	In	Out
Residential									
Single-Family Detached Housing (AVG)	210	31	354	27	7	20	33	21	12
Internal Trips (0% Daily, 0% AM, Saturday 0%)			*0*	*0*	*0*	*0*	*0*	*0*	*0*
Multifamily Housing (Low-Rise)	220	101	723	48	11	37	60	38	22
Internal Trips (0% Daily, 0% AM, Saturday 0%)			*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net Trip Generation			**1,077**	**75**	**18**	**57**	**93**	**58**	**34**

Alternatively, the 10th edition also has a new land use category called PUD Residential (Land Use 270). This rate is intended for developments that are PUDs and the final land use mix may or may not be known. The second table represents the revised trip generation assuming all 132 units are run as PUD.

Land Use	ITE Code	Units	Daily Trips	Weekday AM			Weekday PM		
				Total	In	Out	Total	In	Out
Residential									
Planned Unit Development (PUD) *Average Rate*	270	132	974	75	17	59	91	59	32
Internal Trips (0% Daily, 0% AM, Saturday 0%)			*0*	*0*	*0*	*0*	*0*	*0*	*0*
Net Trip Generation			**974**	**75**	**17**	**59**	**91**	**59**	**32**

As you'll note, the differences in net trip generation are very marginal – please review and let us know if you are both more comfortable with one over the other. Because this development application is going in as a PUD, I am comfortable with the trip generation and it seems appropriate to use this land use. But, given that we know the land use mix, I am open to either approach. Thanks in advance – please let us know your thoughts.

Thanks in advance,
Diego and Amy

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: Mike Miller <mike.miller@ci.florence.or.us>
Sent: Tuesday, January 07, 2020 10:21 AM
To: Diego Arguea <darguea@kittelson.com>
Cc: Amy Griffiths <agriffiths@kittelson.com>
Subject: RE: Development Review Contact for ODOT Region 2 District 5

Hi Diego,

Just left you a message. Sorry that yesterday did not work. I was just stepping into a meeting when you called and then I had an executive session with City Council plus our regular Council meeting last night.

I will be on the road traveling to Eugene to meet with Lane County at 11am and will be back in Florence after 3:30pm. I have a meeting scheduled with the City Manager, but should be available later after 4:30pm today.

If that doesn't work, I do have time available after 10am Wednesday.

Thank you,

Mike

From: Diego Arguea <darguea@kittelson.com>
Sent: Monday, January 6, 2020 2:44 PM
To: Mike Miller <mike.miller@ci.florence.or.us>
Cc: Amy Griffiths <agriffiths@kittelson.com>
Subject: FW: Development Review Contact for ODOT Region 2 District 5

Hi Mike,

Just left a message with Sandy (receptionist?) regarding our transportation work in Florence. I am available the rest of the afternoon and have some flexibility tomorrow afternoon. Please let me know when is a good time to chat about the scope of the transportation work – thanks in advance!

Thanks,
Diego

Diego Arguea, P.E. | Associate Engineer | Kittelson & Associates, Inc.
d: 503.535.7462 - 1462 (ext) | o: 503.228.5230 | c: 503.334.3183

From: BLAIR Keith P <Keith.P.BLAIR@odot.state.or.us>
Sent: Friday, January 03, 2020 7:19 AM
To: BAUMGARTNER Douglas G <Douglas.G.BAUMGARTNER@odot.state.or.us>; Diego Arguea <darguea@kittelson.com>
Cc: Mike.Miller@ci.florence.or.us; Amy Griffiths <agriffiths@kittelson.com>; UPTON Dorothy J <Dorothy.J.UPTON@odot.state.or.us>; NELSON Brian S * Scott <Brian.S.NELSON@odot.state.or.us>
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455 Airport Rd SE, Bldg. A | Salem, Oregon 97301
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B Scott Nelson, P.E.
Region 2 Access Management Engineer

Oregon Department of Transportation
455 Airport Rd SE, Bldg. B
Salem, OR 97301
Office 503.986.2882
Cell 503.602.0703

Attachment B

Level-of-Service Criteria

DESCRIPTION OF LEVEL OF SERVICE

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from "A" to "F".[1]

SIGNALIZED INTERSECTIONS

The six level-of-service grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service "D" is generally considered to represent the minimum acceptable design standard.

Table B1: Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is more than 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

[1] Most of the material in this appendix is adapted from the Transportation Research Board, *Highway Capacity Manual*, (2010).

Table B2: Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

UNSIGNALIZED INTERSECTIONS

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. *The Highway Capacity Manual, 6th edition* (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service "E" is generally considered to represent the minimum acceptable design standard.

Table B3: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	• Nearly all drivers find freedom of operation. • Very seldom is there more than one vehicle in queue.
B	• Some drivers begin to consider the delay an inconvenience. • Occasionally there is more than one vehicle in queue.
C	• Many times there is more than one vehicle in queue. • Most drivers feel restricted, but not objectionably so.
D	• Often there is more than one vehicle in queue. • Drivers feel quite restricted.
E	• Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. • There is almost always more than one vehicle in queue. • Drivers find the delays approaching intolerable levels.
F	• Forced flow. • Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table B4: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Attachment C
Traffic Count Data

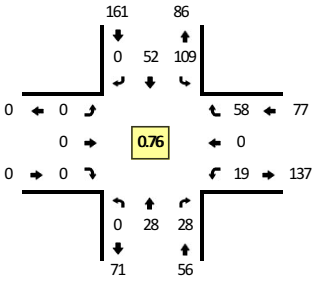
Type of peak hour being reported: Intersection Peak

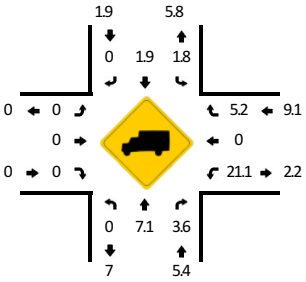
Method for determining peak hour: Total Entering Volume

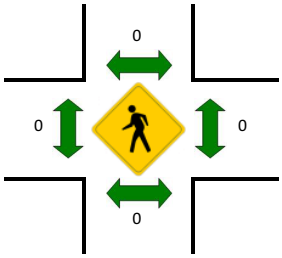
LOCATION: Rhododendron Dr -- 35th St
CITY/STATE: Lane, OR

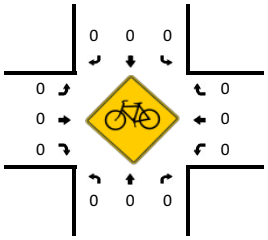
QC JOB #: 15139501
DATE: Wed, Dec 4 2019

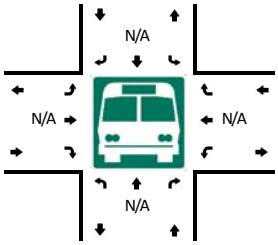
Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:40 AM -- 8:55 AM

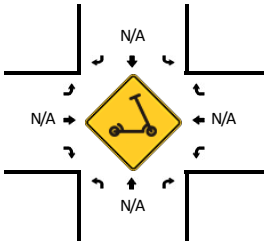












5-Min Count Period Beginning At	Rhododendron Dr (Northbound)				Rhododendron Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	6	3	0	0	0	0	0	0	3	0	2	0	14	
7:05 AM	0	2	0	0	3	3	0	0	0	0	0	0	0	0	2	0	10	
7:10 AM	0	0	1	0	2	4	0	0	0	0	0	0	0	0	2	0	9	
7:15 AM	0	1	0	0	3	1	0	0	0	0	0	0	1	0	1	0	7	
7:20 AM	0	1	0	0	6	0	0	0	0	0	0	0	2	0	2	0	11	
7:25 AM	0	6	0	0	1	1	0	0	0	0	0	0	0	0	3	0	11	
7:30 AM	0	3	1	0	5	2	0	0	0	0	0	0	3	0	3	0	17	
7:35 AM	0	1	3	0	7	1	0	0	0	0	0	0	1	0	3	0	16	
7:40 AM	0	1	1	0	13	6	0	0	0	0	0	0	0	0	3	0	24	
7:45 AM	0	0	0	0	8	5	0	0	0	0	0	0	3	0	7	0	23	
7:50 AM	0	2	4	0	12	7	0	0	0	0	0	0	2	0	6	0	33	
7:55 AM	0	1	6	0	12	7	0	0	0	0	0	0	2	0	4	0	32	207
8:00 AM	0	1	1	0	5	3	0	0	0	0	0	0	4	0	4	0	18	211
8:05 AM	0	2	0	0	9	3	0	0	0	0	0	0	1	0	6	0	21	222
8:10 AM	0	2	2	0	11	2	0	0	0	0	0	0	1	0	3	0	21	234
8:15 AM	0	2	2	0	9	2	0	0	0	0	0	0	2	0	2	0	19	246
8:20 AM	0	0	2	0	14	2	0	0	0	0	0	0	1	0	6	0	25	260
8:25 AM	0	4	1	0	9	3	0	0	0	0	0	0	0	0	3	0	20	269
8:30 AM	0	1	0	0	9	10	0	0	0	0	0	0	0	0	6	0	26	278
8:35 AM	0	2	2	0	4	3	0	0	0	0	0	0	0	0	4	0	15	277
8:40 AM	0	3	3	0	5	5	0	0	0	0	0	0	3	0	3	0	22	275
8:45 AM	0	5	3	0	10	5	0	0	0	0	0	0	1	0	11	0	35	287
8:50 AM	0	5	6	0	12	7	0	0	0	0	0	0	4	0	6	0	40	294
8:55 AM	0	3	3	0	9	5	0	0	0	0	0	0	4	0	3	0	27	289

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	52	48	0	108	68	0	0	0	0	0	0	32	0	80	0	388
Heavy Trucks	0	4	0		0	0	0		0	0	0		8	0	4		16
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

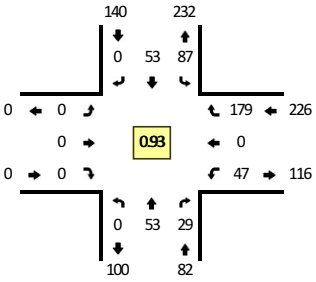
Type of peak hour being reported: Intersection Peak

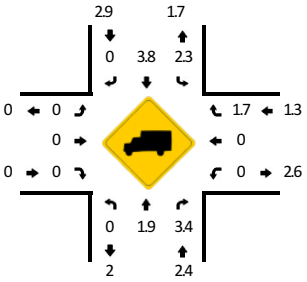
Method for determining peak hour: Total Entering Volume

LOCATION: Rhododendron Dr -- 35th St
CITY/STATE: Lane, OR

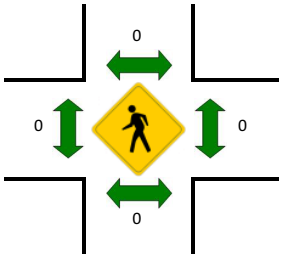
QC JOB #: 15139502
DATE: Wed, Dec 4 2019

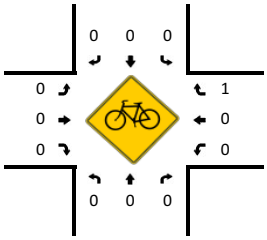
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

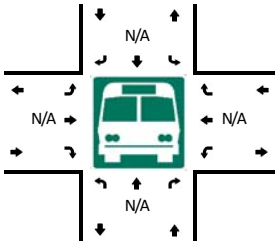


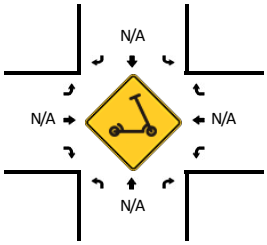


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Rhododendron Dr (Northbound)				Rhododendron Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	3	3	0	6	5	0	0	0	0	0	0	5	0	13	0	35	
4:05 PM	0	5	5	0	8	5	0	0	0	0	0	0	6	0	16	0	45	
4:10 PM	0	7	2	0	8	1	0	0	0	0	0	0	1	0	22	0	41	
4:15 PM	0	2	0	0	7	7	0	0	0	0	0	0	5	0	13	0	34	
4:20 PM	0	4	1	0	8	0	0	0	0	0	0	0	4	0	14	0	31	
4:25 PM	0	6	4	0	9	10	0	0	0	0	0	0	5	0	13	0	47	
4:30 PM	0	3	3	0	6	5	0	0	0	0	0	0	1	0	20	0	38	
4:35 PM	0	5	2	0	4	4	0	0	0	0	0	0	3	0	11	0	29	
4:40 PM	0	7	2	0	7	5	0	0	0	0	0	0	4	0	14	0	39	
4:45 PM	0	2	1	0	5	5	0	0	0	0	0	0	6	0	15	0	34	
4:50 PM	0	4	3	0	9	3	0	0	0	0	0	0	6	0	19	0	44	
4:55 PM	0	5	3	0	10	3	0	0	0	0	0	0	1	0	9	0	31	448
5:00 PM	0	8	0	0	10	4	0	0	0	0	0	0	2	0	6	0	30	443
5:05 PM	0	5	5	0	8	1	0	0	0	0	0	0	1	0	8	0	28	426
5:10 PM	0	5	5	0	4	6	0	0	0	0	0	0	1	0	6	0	27	412
5:15 PM	0	5	4	0	10	3	0	0	0	0	0	0	4	0	10	0	36	414
5:20 PM	0	3	3	0	7	5	0	0	0	0	0	0	0	0	11	0	29	412
5:25 PM	0	2	1	0	7	2	0	0	0	0	0	0	3	0	9	0	24	389
5:30 PM	0	1	0	0	5	4	0	0	0	0	0	0	1	0	8	0	19	370
5:35 PM	0	7	3	0	6	1	0	0	0	0	0	0	1	0	7	0	25	366
5:40 PM	0	4	1	0	5	1	0	0	0	0	0	0	4	0	5	0	20	347
5:45 PM	0	2	0	0	3	2	0	0	0	0	0	0	5	0	8	0	20	333
5:50 PM	0	2	0	0	5	5	0	0	0	0	0	0	0	0	7	0	19	308
5:55 PM	0	2	2	0	3	3	0	0	0	0	0	0	1	0	7	0	18	295

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	60	40	0	88	44	0	0	0	0	0	0	48	0	204	0	484
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	4		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

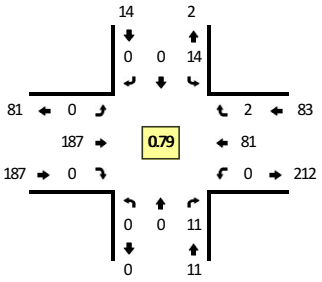
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

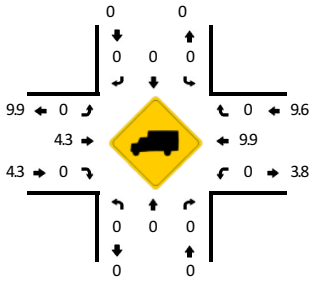
LOCATION: Royal St Georges Dr -- 35th St
CITY/STATE: Lane, OR

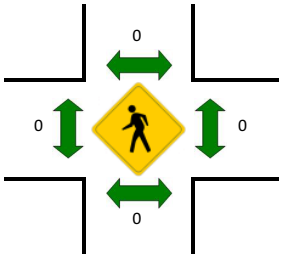
QC JOB #: 15139503
DATE: Wed, Dec 4 2019

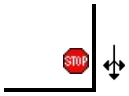
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

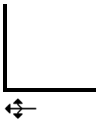


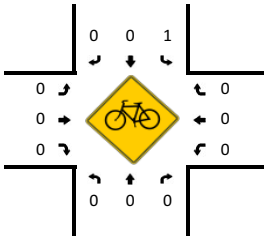
Quality Counts
DATA THAT DRIVES COMMUNITIES

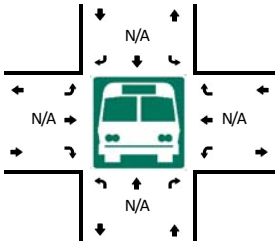


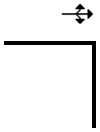


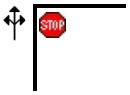


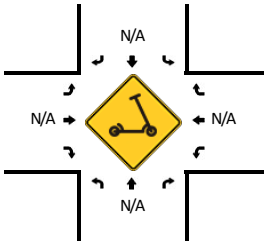












5-Min Count Period Beginning At	Royal St Georges Dr (Northbound)				Royal St Georges Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	0	4	0	0	0	4	0	0	9	
7:05 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8	
7:10 AM	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	0	9	
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5	
7:20 AM	0	0	0	0	0	0	0	0	0	8	0	0	0	3	0	0	11	
7:25 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6	
7:30 AM	0	0	0	0	1	0	0	0	0	7	0	0	0	6	0	0	14	
7:35 AM	0	0	0	0	0	0	0	0	0	17	0	0	0	5	0	0	22	
7:40 AM	0	0	0	0	1	0	0	0	0	17	0	0	0	6	0	0	24	
7:45 AM	0	0	2	0	0	0	0	0	0	16	0	0	0	11	0	0	29	
7:50 AM	0	0	2	0	2	0	0	0	0	19	0	0	0	8	0	0	31	
7:55 AM	0	0	2	0	3	0	0	0	0	21	0	0	0	7	0	0	33	201
8:00 AM	0	0	0	0	3	0	0	0	0	10	0	0	0	10	0	0	23	215
8:05 AM	0	0	1	0	1	0	0	0	0	15	0	0	0	9	0	0	26	233
8:10 AM	0	0	1	0	0	0	0	0	0	15	0	0	0	3	0	0	19	243
8:15 AM	0	0	1	0	1	0	0	0	0	17	0	0	0	6	0	0	25	263
8:20 AM	0	0	1	0	1	0	0	0	0	17	0	0	0	9	1	0	29	281
8:25 AM	0	0	1	0	2	0	0	0	0	11	0	0	0	2	1	0	17	292
8:30 AM	0	0	0	0	0	0	0	0	0	12	0	0	0	5	0	0	17	295
8:35 AM	0	0	0	0	0	0	0	0	0	11	0	0	0	9	1	0	21	294
8:40 AM	0	0	1	0	0	0	0	0	0	9	0	0	0	7	1	0	18	288
8:45 AM	0	0	2	0	0	0	0	0	0	15	0	0	0	14	0	0	31	290
8:50 AM	0	0	0	0	2	0	1	0	1	20	0	0	1	10	0	0	35	294
8:55 AM	0	0	0	0	1	0	0	0	0	12	0	0	0	7	0	0	20	281

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	24	0	20	0	0	0	0	224	0	0	0	104	0	0	372
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	12	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

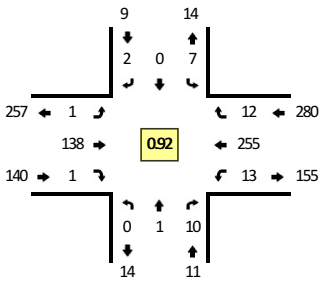
Type of peak hour being reported: User-Defined

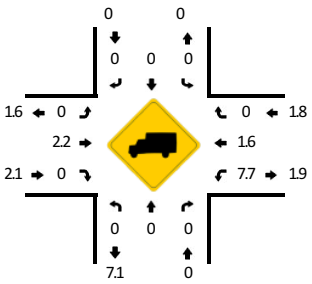
Method for determining peak hour: Total Entering Volume

LOCATION: Royal St Georges Dr -- 35th St
CITY/STATE: Lane, OR

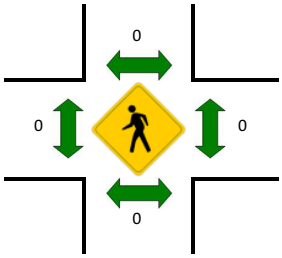
QC JOB #: 15139504
DATE: Wed, Dec 4 2019

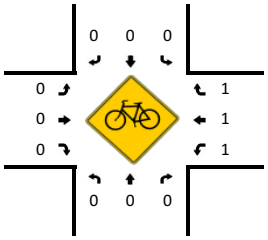
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

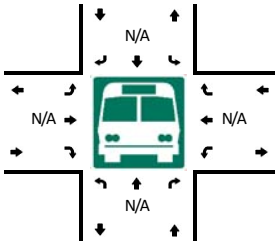


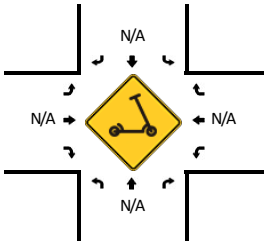


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Royal St Georges Dr (Northbound)				Royal St Georges Dr (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	1	0	0	0	0	10	0	0	2	20	1	0	35	
4:05 PM	0	0	0	0	1	0	0	0	0	16	0	0	0	24	0	0	41	
4:10 PM	0	0	1	0	2	0	0	0	0	11	0	0	1	28	0	0	43	
4:15 PM	0	0	2	0	0	0	0	0	0	13	0	0	2	17	1	0	35	
4:20 PM	0	0	1	0	1	0	0	0	0	9	0	0	0	20	0	0	31	
4:25 PM	0	0	1	0	0	0	0	0	0	14	0	0	1	24	0	0	40	
4:30 PM	0	0	0	0	0	0	0	0	0	13	0	0	2	25	1	0	41	
4:35 PM	0	0	0	0	0	0	1	0	0	4	0	0	1	18	3	0	27	
4:40 PM	0	1	1	0	0	0	0	0	0	13	1	0	0	25	3	0	44	
4:45 PM	0	0	1	0	1	0	0	0	0	7	0	0	2	22	0	0	33	
4:50 PM	0	0	1	0	0	0	1	0	0	12	0	0	2	19	3	0	38	
4:55 PM	0	0	1	0	1	0	0	0	1	16	0	0	0	13	0	0	32	440
5:00 PM	0	0	0	0	1	0	0	0	0	18	0	0	1	15	1	0	36	441
5:05 PM	0	0	1	0	0	0	0	0	0	12	0	0	2	12	1	0	28	428
5:10 PM	0	0	0	0	0	0	0	0	0	11	0	0	1	11	1	0	24	409
5:15 PM	0	0	2	0	1	0	0	0	0	11	0	0	1	15	2	0	32	406
5:20 PM	0	0	1	0	0	0	0	0	0	15	0	0	0	14	0	0	30	405
5:25 PM	0	0	0	0	1	0	0	0	0	8	0	1	0	12	0	0	22	387
5:30 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	12	2	0	20	366
5:35 PM	0	0	2	0	0	0	0	0	0	7	0	0	4	15	0	0	28	367
5:40 PM	0	0	0	0	1	0	0	0	0	5	0	0	1	8	0	0	15	338
5:45 PM	0	0	1	0	1	0	0	0	0	8	0	0	1	14	0	0	25	330
5:50 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	13	0	0	17	309
5:55 PM	0	0	0	0	0	0	0	0	0	5	0	0	2	15	0	0	22	299

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	8	0	16	0	0	0	0	148	0	0	12	288	4	0	476
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	1		1
Scooters																	

Comments:

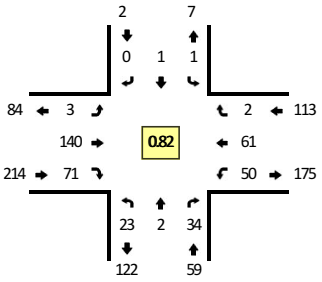
Report generated on 2/3/2020 3:47 PM

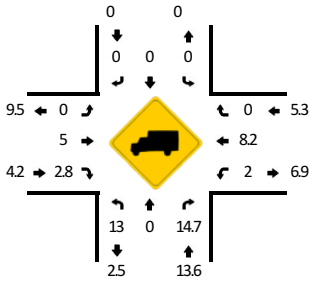
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

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

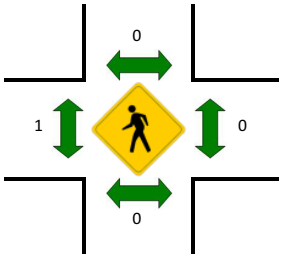
LOCATION: Kingwood St -- 35th St | **QC JOB #:** 15139505
CITY/STATE: Lane, OR | **DATE:** Wed, Dec 4 2019

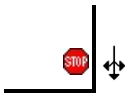
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

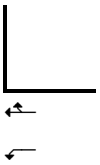


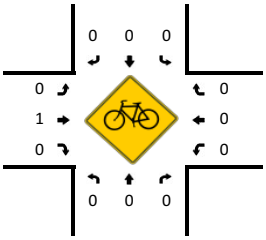


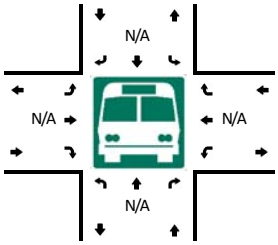
Quality Counts
DATA THAT DRIVES COMMUNITIES

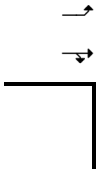


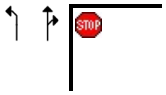


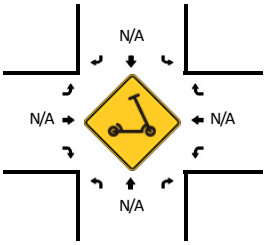












5-Min Count Period Beginning At	Kingwood St (Northbound)				Kingwood St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	2	0	0	0	0	0	1	4	0	0	4	1	0	0	14	
7:05 AM	1	0	2	0	0	0	0	0	0	3	2	0	1	1	0	0	10	
7:10 AM	0	0	2	0	0	0	0	0	0	6	0	0	2	3	0	0	13	
7:15 AM	2	0	3	0	0	0	0	0	0	2	1	0	0	1	0	0	9	
7:20 AM	0	1	0	0	0	0	0	0	0	7	1	0	5	3	1	0	18	
7:25 AM	0	0	0	0	0	0	0	0	0	2	1	0	2	3	0	0	8	
7:30 AM	1	0	3	0	0	0	0	0	0	6	1	0	4	6	1	0	22	
7:35 AM	0	0	0	0	0	0	0	0	0	9	7	0	4	4	0	0	24	
7:40 AM	3	0	0	0	0	0	0	0	1	12	7	0	7	3	0	0	33	
7:45 AM	2	0	3	0	0	0	0	0	0	13	5	0	6	14	0	0	43	
7:50 AM	1	1	4	0	0	0	0	0	0	14	9	0	4	3	0	0	36	
7:55 AM	2	0	1	0	0	1	0	0	0	16	9	0	5	6	0	0	40	270
8:00 AM	3	0	6	0	0	0	0	0	0	9	5	0	2	7	0	0	32	288
8:05 AM	2	0	4	0	0	0	0	0	0	12	4	0	2	6	0	0	30	308
8:10 AM	2	0	7	0	0	0	0	0	2	11	5	0	4	3	1	0	35	330
8:15 AM	2	0	1	0	0	0	0	0	0	10	6	0	3	4	0	0	26	347
8:20 AM	5	0	4	0	0	0	0	0	0	15	8	0	5	5	0	0	42	371
8:25 AM	0	0	0	0	1	0	0	0	0	9	3	0	3	3	0	0	19	382
8:30 AM	1	1	4	0	0	0	0	0	0	10	3	0	5	3	1	0	28	388
8:35 AM	4	0	1	0	0	0	0	0	1	6	5	0	0	5	1	0	23	387
8:40 AM	3	0	0	0	0	0	0	0	0	6	3	0	3	5	0	0	20	374
8:45 AM	9	0	2	0	0	0	0	0	0	16	2	0	1	6	1	0	37	368
8:50 AM	1	0	2	0	1	0	0	0	0	16	4	0	5	8	2	0	39	371
8:55 AM	4	0	1	0	0	0	0	0	0	11	1	0	0	5	0	0	22	353

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	4	32	0	0	4	0	0	0	172	92	0	60	92	0	0	476
Heavy Trucks	4	0	4		0	0	0		0	8	0		0	8	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

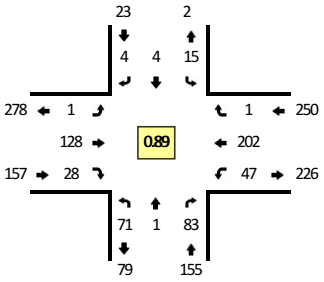
Type of peak hour being reported: Intersection Peak

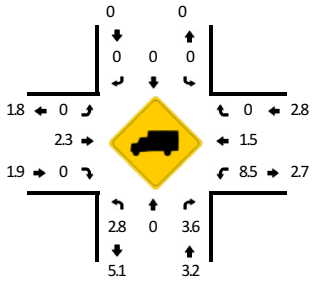
Method for determining peak hour: Total Entering Volume

LOCATION: Kingwood St -- 35th St
CITY/STATE: Lane, OR

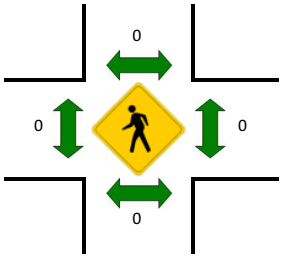
QC JOB #: 15139506
DATE: Wed, Dec 4 2019

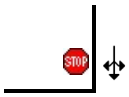
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:05 PM -- 4:20 PM

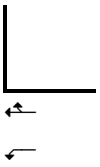


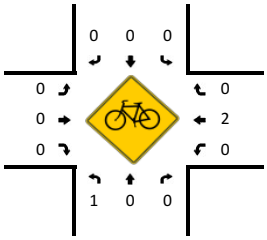


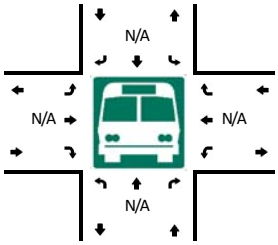
Quality Counts
DATA THAT DRIVES COMMUNITIES

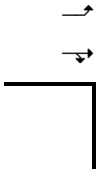


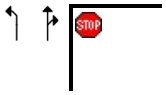


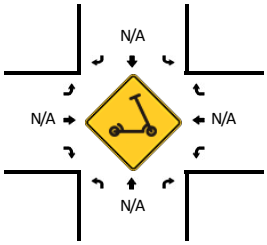












5-Min Count Period Beginning At	Kingwood St (Northbound)				Kingwood St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	0	6	0	0	0	0	0	0	8	4	0	4	18	0	0	43	
4:05 PM	5	0	9	0	2	2	1	0	0	15	2	0	5	18	0	0	59	
4:10 PM	11	0	7	0	4	0	0	0	0	11	3	0	2	18	1	0	57	
4:15 PM	6	0	10	0	1	0	0	0	0	13	3	0	3	13	0	0	49	
4:20 PM	3	0	5	0	1	0	0	0	0	7	4	0	5	20	0	0	45	
4:25 PM	2	0	11	0	2	0	0	0	0	9	2	0	4	23	0	0	53	
4:30 PM	11	0	9	0	2	0	0	0	0	15	0	0	4	14	0	0	55	
4:35 PM	5	0	7	0	0	0	0	0	0	4	1	0	5	18	0	0	40	
4:40 PM	7	0	4	0	2	1	3	0	0	11	4	0	5	18	0	0	55	
4:45 PM	6	0	3	0	0	0	0	0	0	8	1	0	6	18	0	0	42	
4:50 PM	7	1	4	0	0	1	0	0	0	12	1	0	3	16	0	0	45	
4:55 PM	5	0	8	0	1	0	0	0	0	15	3	1	1	8	0	0	42	585
5:00 PM	7	0	8	0	0	0	0	0	0	14	5	0	1	8	0	0	43	585
5:05 PM	2	0	14	0	1	0	0	0	1	9	2	0	5	13	0	0	47	573
5:10 PM	4	0	10	0	0	1	1	0	0	8	4	0	4	10	1	0	43	559
5:15 PM	3	0	10	0	0	0	0	0	0	13	2	0	2	14	0	0	44	554
5:20 PM	8	1	6	0	0	0	0	0	0	14	2	0	3	8	0	0	42	551
5:25 PM	1	0	5	0	0	0	0	0	0	8	1	0	2	10	0	0	27	525
5:30 PM	5	0	3	0	0	0	0	0	0	7	0	0	3	7	0	0	25	495
5:35 PM	5	0	2	0	0	0	0	0	0	9	0	0	2	14	0	0	32	487
5:40 PM	1	0	7	0	0	0	0	0	0	4	2	0	1	9	0	0	24	456
5:45 PM	3	0	4	0	0	0	0	0	0	10	0	0	2	11	0	0	30	444
5:50 PM	5	0	5	0	0	0	0	0	0	3	1	0	4	9	0	0	27	426
5:55 PM	2	0	3	0	0	0	0	0	0	4	1	0	1	16	0	0	27	411

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	88	0	104	0	28	8	4	0	0	156	32	0	40	196	4	0	660
Heavy Trucks	4	0	12		0	0	0		0	0	0		4	4	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	1	0	0		0	0	0		0	0	0		0	1	0		2
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

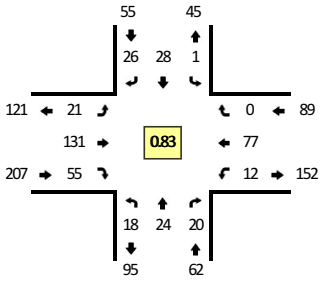
Type of peak hour being reported: Intersection Peak

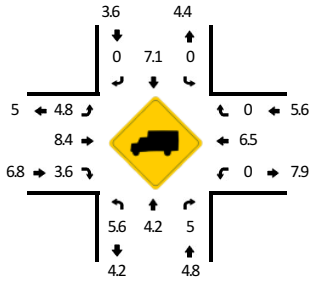
Method for determining peak hour: Total Entering Volume

LOCATION: Oak St -- 35th St
CITY/STATE: Lane, OR

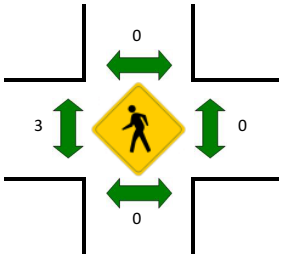
QC JOB #: 15139507
DATE: Wed, Dec 4 2019

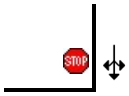
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:55 AM -- 8:10 AM

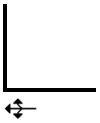


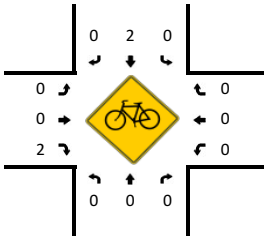


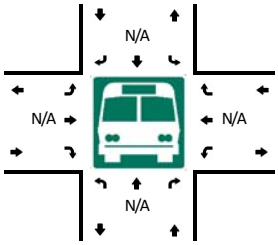
Quality Counts
DATA THAT DRIVES COMMUNITIES

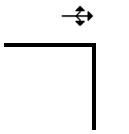


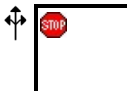


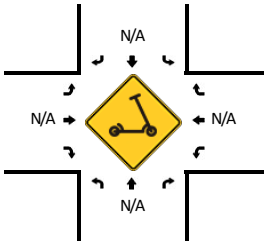












5-Min Count Period Beginning At	Oak St (Northbound)				Oak St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	1	6	1	0	0	4	0	0	13	
7:05 AM	1	0	0	0	0	0	0	0	1	5	0	0	0	1	0	0	8	
7:10 AM	0	0	0	0	0	1	2	0	4	3	0	0	0	4	0	0	14	
7:15 AM	1	0	0	0	0	0	0	0	0	6	1	0	0	2	0	0	10	
7:20 AM	0	0	0	0	0	1	1	0	4	6	1	0	0	8	0	0	21	
7:25 AM	1	0	2	0	0	2	3	0	0	2	1	0	0	7	0	0	18	
7:30 AM	0	1	0	0	0	2	2	0	1	7	0	0	2	5	0	0	20	
7:35 AM	1	4	0	0	0	1	2	0	1	7	3	0	1	7	0	0	27	
7:40 AM	0	1	1	0	0	2	1	0	1	8	3	0	1	7	0	0	25	
7:45 AM	4	1	0	0	0	1	1	0	3	11	7	0	3	14	0	0	45	
7:50 AM	0	2	1	0	0	2	1	0	4	9	3	0	2	6	0	0	30	
7:55 AM	1	2	1	0	1	2	7	0	0	17	8	0	1	4	0	0	44	275
8:00 AM	3	3	2	0	0	3	2	0	1	10	9	0	1	8	0	0	42	304
8:05 AM	1	4	3	0	0	4	2	0	2	9	8	0	0	5	0	0	38	334
8:10 AM	2	0	2	0	0	7	0	0	4	13	7	0	1	6	0	0	42	362
8:15 AM	0	2	2	0	0	3	1	0	0	8	3	0	1	7	0	0	27	379
8:20 AM	4	1	5	0	0	0	1	0	4	14	2	0	1	6	0	0	38	396
8:25 AM	2	1	2	0	0	1	4	0	1	9	1	0	0	1	0	0	22	400
8:30 AM	0	3	1	0	0	2	4	0	0	16	1	0	0	6	0	0	33	413
8:35 AM	0	1	1	0	0	0	2	0	3	8	0	0	0	6	0	0	21	407
8:40 AM	0	1	0	0	1	1	4	0	2	4	1	0	1	4	1	0	20	402
8:45 AM	1	1	0	0	1	1	0	0	1	14	1	0	0	5	0	0	25	382
8:50 AM	2	2	1	0	0	1	2	0	4	16	1	0	0	11	0	0	40	392
8:55 AM	1	1	1	0	0	2	0	0	2	11	1	0	2	3	0	0	24	372

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	36	24	0	4	36	44	0	12	144	100	0	8	68	0	0	496
Heavy Trucks	0	0	0		0	4	0		0	16	8		0	8	0		36
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Scooters																	

Comments:

Report generated on 1/10/2020 1:37 PM

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

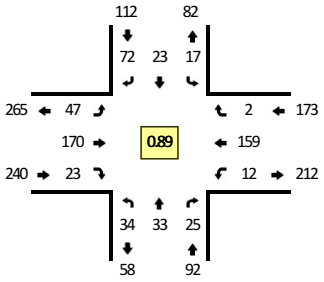
Type of peak hour being reported: Intersection Peak

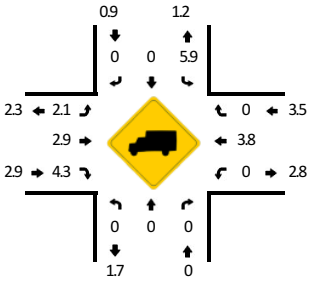
Method for determining peak hour: Total Entering Volume

LOCATION: Oak St -- 35th St
CITY/STATE: Lane, OR

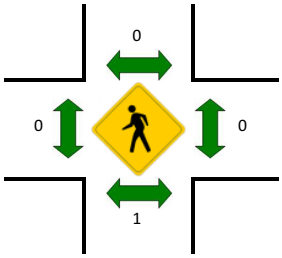
QC JOB #: 15139508
DATE: Wed, Dec 4 2019

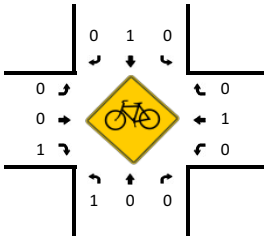
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:05 PM -- 4:20 PM

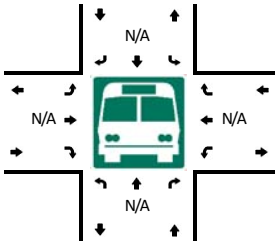


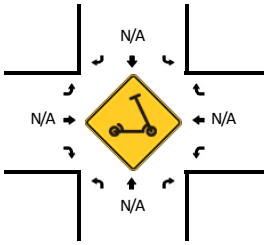


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Oak St (Northbound)				Oak St (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	4	2	0	0	0	7	0	2	11	1	0	2	16	0	0	45	
4:05 PM	3	3	1	0	4	3	10	0	8	17	3	0	0	15	0	0	67	
4:10 PM	2	2	2	0	3	3	6	0	5	15	4	0	2	11	1	0	56	
4:15 PM	3	2	6	0	1	1	6	0	4	13	2	0	1	12	0	0	51	
4:20 PM	4	1	0	0	2	3	4	0	2	17	2	0	0	12	0	0	47	
4:25 PM	4	2	2	0	1	1	6	0	7	15	0	0	1	22	0	0	61	
4:30 PM	3	5	5	0	0	3	5	0	3	20	7	0	1	12	0	0	64	
4:35 PM	6	3	2	0	0	0	4	0	1	10	1	0	1	16	0	0	44	
4:40 PM	1	4	1	0	0	1	7	0	1	12	3	0	1	13	0	0	44	
4:45 PM	3	2	1	0	2	1	8	0	5	13	0	0	1	16	0	0	52	
4:50 PM	3	2	1	0	4	6	7	0	3	12	0	0	1	8	0	0	47	
4:55 PM	2	3	2	0	0	1	2	0	6	15	0	0	1	6	1	0	39	617
5:00 PM	0	1	0	0	1	1	2	0	8	11	4	0	0	9	0	0	37	609
5:05 PM	4	2	3	0	0	1	2	0	9	15	2	0	1	14	0	0	53	595
5:10 PM	2	2	0	0	0	2	4	0	6	10	2	0	1	12	0	0	41	580
5:15 PM	1	3	2	0	0	4	4	0	6	16	3	0	0	10	0	0	49	578
5:20 PM	4	1	3	0	3	2	5	0	4	16	1	0	2	10	0	0	51	582
5:25 PM	1	5	1	0	0	0	4	0	5	11	1	0	1	7	0	0	36	557
5:30 PM	0	4	4	0	0	3	4	0	2	8	3	0	0	6	1	0	35	528
5:35 PM	1	1	3	0	0	2	5	0	2	11	0	0	1	14	1	0	41	525
5:40 PM	1	2	3	0	1	4	4	0	4	6	0	0	1	10	0	0	36	517
5:45 PM	0	0	1	0	2	1	1	0	1	14	1	0	0	10	0	0	31	496
5:50 PM	3	2	3	0	2	0	2	0	1	6	3	0	0	9	2	0	33	482
5:55 PM	4	0	0	0	1	2	7	0	3	4	1	0	1	10	0	0	33	476

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	28	36	0	32	28	88	0	68	180	36	0	12	152	4	0	696
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	8	0		16
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

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

Attachment D
Existing Traffic Operations
Worksheets

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	102	49	49	192	92
Future Vol, veh/h	33	102	49	49	192	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	21	5	7	4	2	2
Mvmt Flow	43	134	64	64	253	121

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	723	96	0	0	128	0
Stage 1	96	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Critical Hdwy	6.61	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	366	952	-	-	1458	-
Stage 1	882	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	298	952	-	-	1458	-
Mov Cap-2 Maneuver	298	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	405	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	5.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	620	1458	-
HCM Lane V/C Ratio	-	-	0.287	0.173	-
HCM Control Delay (s)	-	-	13.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	329	0	0	143	2	0	0	11	14	0	0
Future Vol, veh/h	0	329	0	0	143	2	0	0	11	14	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	4	0	0	10	0	0	0	0	0	0	0
Mvmt Flow	0	416	0	0	181	3	0	0	14	18	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	184	0	0	416	0	0	599	600	416	606	599	183
Stage 1	-	-	-	-	-	-	416	416	-	183	183	-
Stage 2	-	-	-	-	-	-	183	184	-	423	416	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1403	-	-	1154	-	-	416	417	641	412	418	865
Stage 1	-	-	-	-	-	-	618	595	-	823	752	-
Stage 2	-	-	-	-	-	-	823	751	-	613	595	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1403	-	-	1154	-	-	416	417	641	403	418	865
Mov Cap-2 Maneuver	-	-	-	-	-	-	416	417	-	403	418	-
Stage 1	-	-	-	-	-	-	618	595	-	823	752	-
Stage 2	-	-	-	-	-	-	823	751	-	600	595	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.7	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	641	1403	-	-	1154	-	-	403
HCM Lane V/C Ratio	0.022	-	-	-	-	-	-	0.044
HCM Control Delay (s)	10.7	0	-	-	0	-	-	14.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	280	71	50	122	2	23	2	34	1	1	0
Future Vol, veh/h	3	280	71	50	122	2	23	2	34	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	3	2	8	0	13	0	15	0	0	0
Mvmt Flow	4	341	87	61	149	2	28	2	41	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	428	0	0	666	666	386	687	708	150
Stage 1	-	-	-	-	-	-	393	393	-	272	272	-
Stage 2	-	-	-	-	-	-	273	273	-	415	436	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.23	6.5	6.35	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.617	4	3.435	3.5	4	3.3
Pot Cap-1 Maneuver	1442	-	-	1131	-	-	358	383	634	364	362	902
Stage 1	-	-	-	-	-	-	610	609	-	738	688	-
Stage 2	-	-	-	-	-	-	710	688	-	619	583	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1442	-	-	1131	-	-	342	361	633	324	341	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	342	361	-	324	341	-
Stage 1	-	-	-	-	-	-	608	607	-	736	651	-
Stage 2	-	-	-	-	-	-	670	651	-	574	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.4	13.4	15.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	342	608	1442	-	-	1131	-	-	332
HCM Lane V/C Ratio	0.082	0.072	0.003	-	-	0.054	-	-	0.007
HCM Control Delay (s)	16.5	11.4	7.5	-	-	8.4	-	-	15.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	21	231	55	12	151	0	18	24	20	1	28	26
Future Vol, veh/h	21	231	55	12	151	0	18	24	20	1	28	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	8	4	0	6	0	6	4	5	0	7	0
Mvmt Flow	25	278	66	14	182	0	22	29	24	1	34	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	344	0	0	604	571	314	601	604	182
Stage 1	-	-	-	-	-	-	361	361	-	210	210	-
Stage 2	-	-	-	-	-	-	243	210	-	391	394	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.16	6.54	6.25	7.1	6.57	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.554	4.036	3.345	3.5	4.063	3.3
Pot Cap-1 Maneuver	1375	-	-	1226	-	-	405	428	719	415	406	866
Stage 1	-	-	-	-	-	-	649	622	-	797	719	-
Stage 2	-	-	-	-	-	-	752	725	-	637	597	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1375	-	-	1226	-	-	355	413	717	368	391	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	413	-	368	391	-
Stage 1	-	-	-	-	-	-	634	608	-	779	710	-
Stage 2	-	-	-	-	-	-	681	716	-	571	583	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.6	14.5	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	454	1375	-	-	1226	-	-	527
HCM Lane V/C Ratio	0.165	0.018	-	-	0.012	-	-	0.126
HCM Control Delay (s)	14.5	7.7	0	-	8	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	151	0	0	284
Future Vol, veh/h	0	0	151	0	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	199	0	0	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	573	199	0	0	199	0
Stage 1	199	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	484	847	-	-	1385	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	847	-	-	1385	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1385	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	151	0	0	284
Future Vol, veh/h	0	0	151	0	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	199	0	0	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	573	199	0	0	199	0
Stage 1	199	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	484	847	-	-	1385	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	847	-	-	1385	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1385	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	315	93	51	153	93
Future Vol, veh/h	83	315	93	51	153	93
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	2	3	2	4
Mvmt Flow	89	339	100	55	165	100

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	558	128	0	0	155	0
Stage 1	128	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	494	922	-	-	1425	-
Stage 1	903	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	433	922	-	-	1425	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	579	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	4.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	746	1425	-
HCM Lane V/C Ratio	-	-	0.574	0.115	-
HCM Control Delay (s)	-	-	16.1	7.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.7	0.4	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	243	1	13	449	12	0	1	10	7	0	2
Future Vol, veh/h	1	243	1	13	449	12	0	1	10	7	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	8	2	0	0	0	0	0	0	0
Mvmt Flow	1	264	1	14	488	13	0	1	11	8	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	501	0	0	265	0	0	791	796	265	796	790	495
Stage 1	-	-	-	-	-	-	267	267	-	523	523	-
Stage 2	-	-	-	-	-	-	524	529	-	273	267	-
Critical Hdwy	4.1	-	-	4.18	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1074	-	-	1265	-	-	310	322	779	307	325	579
Stage 1	-	-	-	-	-	-	743	692	-	541	534	-
Stage 2	-	-	-	-	-	-	540	530	-	737	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1074	-	-	1265	-	-	305	317	779	298	320	579
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	317	-	298	320	-
Stage 1	-	-	-	-	-	-	742	691	-	540	526	-
Stage 2	-	-	-	-	-	-	530	522	-	725	691	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	10.3	16.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	688	1074	-	-	1265	-	-	334
HCM Lane V/C Ratio	0.017	0.001	-	-	0.011	-	-	0.029
HCM Control Delay (s)	10.3	8.4	0	-	7.9	0	-	16.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	231	28	47	399	1	71	1	83	15	4	4
Future Vol, veh/h	1	231	28	47	399	1	71	1	83	15	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	0	9	1	0	3	0	4	0	0	0
Mvmt Flow	1	260	31	53	448	1	80	1	93	17	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	449	0	0	291	0	0	837	833	276	880	848	449
Stage 1	-	-	-	-	-	-	278	278	-	555	555	-
Stage 2	-	-	-	-	-	-	559	555	-	325	293	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.13	6.5	6.24	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.527	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	1122	-	-	1232	-	-	285	307	758	270	301	614
Stage 1	-	-	-	-	-	-	726	684	-	520	516	-
Stage 2	-	-	-	-	-	-	512	516	-	692	674	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1122	-	-	1232	-	-	270	293	758	228	288	614
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	293	-	228	288	-
Stage 1	-	-	-	-	-	-	725	683	-	519	494	-
Stage 2	-	-	-	-	-	-	482	494	-	605	673	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	16.6	19.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	270	744	1122	-	-	1232	-	-	267
HCM Lane V/C Ratio	0.295	0.127	0.001	-	-	0.043	-	-	0.097
HCM Control Delay (s)	23.8	10.5	8.2	-	-	8.1	-	-	19.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.2	0.4	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	47	299	23	12	323	2	34	33	25	17	23	72
Future Vol, veh/h	47	299	23	12	323	2	34	33	25	17	23	72
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	3	4	0	4	0	0	0	0	6	0	0
Mvmt Flow	53	336	26	13	363	2	38	37	28	19	26	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	362	0	0	899	847	349	879	859	365
Stage 1	-	-	-	-	-	-	455	455	-	391	391	-
Stage 2	-	-	-	-	-	-	444	392	-	488	468	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.16	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.554	4	3.3
Pot Cap-1 Maneuver	1193	-	-	1208	-	-	262	301	699	264	296	685
Stage 1	-	-	-	-	-	-	589	572	-	625	611	-
Stage 2	-	-	-	-	-	-	597	610	-	554	565	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1192	-	-	1208	-	-	203	280	699	216	275	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	280	-	216	275	-
Stage 1	-	-	-	-	-	-	556	540	-	589	602	-
Stage 2	-	-	-	-	-	-	497	601	-	467	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3	24.4	17.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	287	1192	-	-	1208	-	-	419
HCM Lane V/C Ratio	0.36	0.044	-	-	0.011	-	-	0.3
HCM Control Delay (s)	24.4	8.2	0	-	8	0	-	17.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-	-	1.2

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	408	0	0	246
Future Vol, veh/h	0	0	408	0	0	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	439	0	0	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	704	439	0	0	439	0
Stage 1	439	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	406	622	-	-	1132	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	622	-	-	1132	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1132	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	408	0	0	246
Future Vol, veh/h	0	0	408	0	0	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	439	0	0	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	704	439	0	0	439	0
Stage 1	439	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	406	622	-	-	1132	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	622	-	-	1132	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	784	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1132	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Attachment E
Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Rhododendron Dr
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Royal St Georges Dr / Wecoma Lp
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Kingwood St
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at 35th St & Oak St
January 1, 2013 through December 31, 2017

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
ANGLE	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2016 TOTAL	0	0	2	2	0	0	0	1	1	1	1	2	0	0
YEAR: 2015														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2015 TOTAL	0	1	1	2	0	1	0	2	0	1	1	2	0	0
YEAR: 2013														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	4	5	0	1	0	4	1	3	2	5	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

CITY OF FLORENCE, LANE COUNTY

Intersectional Crashes at 35th St & Oak St
January 1, 2013 through December 31, 2017

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01512	N	N	N	N	N	05/20/2013	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT			N			Mon 11A	0	35TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	N S									015		00
																PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR<25		028	000		02
00239	N	N	N			01/17/2016	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											03
NONE			N			Sun 5P	0	35TH ST	CN		STOP SIGN	N	WET	ANGL		N/A	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	N S									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02805	N	N	N	N	N	08/21/2015	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY			N			Fri 4P	0	35TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	64	F	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	S N									015		00
																PSNGR CAR		01	DRVR	INJC	32	F	OR-Y OR<25		028	000		02
03091	N	N	N	N	N	09/12/2015	17	OAK ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE			N			Sat 9P	0	35TH ST	CN		STOP SIGN	N	DRY	TURN		PRVTE	E W									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	02	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	W N									000		00
																PSNGR CAR		01	DRVR	NONE	45	F	OR-Y OR<25		004,028	000		02
03164	N	N	N			08/24/2016	17	OAK ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											03
NO RPT			N			Wed 3P	0	35TH ST	CN		STOP SIGN	N	DRY	ANGL		N/A	S N									000		00
No	*43 59 48.92*		*-124 6 14.29*					1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	E W									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	N-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Attachment F

Year 2021 Total Traffic Operations Worksheets

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	110	59	49	218	121
Future Vol, veh/h	33	110	59	49	218	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	21	5	7	4	2	2
Mvmt Flow	43	145	78	64	287	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	843	110	0	0	142	0
Stage 1	110	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Critical Hdwy	6.61	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	310	935	-	-	1441	-
Stage 1	869	-	-	-	-	-
Stage 2	443	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	935	-	-	1441	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	346	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	563	1441	-
HCM Lane V/C Ratio	-	-	0.334	0.199	-
HCM Control Delay (s)	-	-	14.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.7	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	355	0	0	151	2	0	0	11	14	0	0
Future Vol, veh/h	0	355	0	0	151	2	0	0	11	14	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	0	4	0	0	10	0	0	0	0	0	0	0
Mvmt Flow	0	449	0	0	191	3	0	0	14	18	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	194	0	0	449	0	0	642	643	449	649	642	193
Stage 1	-	-	-	-	-	-	449	449	-	193	193	-
Stage 2	-	-	-	-	-	-	193	194	-	456	449	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1391	-	-	1122	-	-	390	394	614	386	395	854
Stage 1	-	-	-	-	-	-	593	576	-	813	745	-
Stage 2	-	-	-	-	-	-	813	744	-	588	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1391	-	-	1122	-	-	390	394	614	377	395	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	390	394	-	377	395	-
Stage 1	-	-	-	-	-	-	593	576	-	813	745	-
Stage 2	-	-	-	-	-	-	813	744	-	575	576	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11	15
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	614	1391	-	-	1122	-	-	377
HCM Lane V/C Ratio	0.023	-	-	-	-	-	-	0.047
HCM Control Delay (s)	11	0	-	-	0	-	-	15
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	300	77	50	128	2	25	2	34	1	1	0
Future Vol, veh/h	3	300	77	50	128	2	25	2	34	1	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	5	3	2	8	0	13	0	15	0	0	0
Mvmt Flow	4	366	94	61	156	2	30	2	41	1	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	158	0	0	460	0	0	701	701	414	723	747	157
Stage 1	-	-	-	-	-	-	421	421	-	279	279	-
Stage 2	-	-	-	-	-	-	280	280	-	444	468	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.23	6.5	6.35	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.617	4	3.435	3.5	4	3.3
Pot Cap-1 Maneuver	1434	-	-	1101	-	-	339	365	611	344	344	894
Stage 1	-	-	-	-	-	-	589	592	-	732	683	-
Stage 2	-	-	-	-	-	-	703	683	-	597	565	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1101	-	-	323	344	610	304	324	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	323	344	-	304	324	-
Stage 1	-	-	-	-	-	-	587	590	-	730	645	-
Stage 2	-	-	-	-	-	-	663	645	-	552	563	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.4	14	16.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	585	1434	-	-	1101	-	-	314
HCM Lane V/C Ratio	0.094	0.075	0.003	-	-	0.055	-	-	0.008
HCM Control Delay (s)	17.3	11.7	7.5	-	-	8.5	-	-	16.6
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	24	242	61	12	154	0	20	24	20	1	28	27
Future Vol, veh/h	24	242	61	12	154	0	20	24	20	1	28	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	8	4	0	6	0	6	4	5	0	7	0
Mvmt Flow	29	292	73	14	186	0	24	29	24	1	34	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	186	0	0	365	0	0	635	601	332	630	637	186
Stage 1	-	-	-	-	-	-	387	387	-	214	214	-
Stage 2	-	-	-	-	-	-	248	214	-	416	423	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.16	6.54	6.25	7.1	6.57	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.54	-	6.1	5.57	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.554	4.036	3.345	3.5	4.063	3.3
Pot Cap-1 Maneuver	1371	-	-	1205	-	-	386	411	703	397	388	861
Stage 1	-	-	-	-	-	-	629	606	-	793	716	-
Stage 2	-	-	-	-	-	-	747	722	-	618	579	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1371	-	-	1205	-	-	335	395	701	350	372	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	335	395	-	350	372	-
Stage 1	-	-	-	-	-	-	612	590	-	772	707	-
Stage 2	-	-	-	-	-	-	676	713	-	551	563	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.6	15.2	13.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	430	1371	-	-	1205	-	-	511
HCM Lane V/C Ratio	0.179	0.021	-	-	0.012	-	-	0.132
HCM Control Delay (s)	15.2	7.7	0	-	8	0	-	13.1
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	0	152	10	0	284
Future Vol, veh/h	28	0	152	10	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	0	200	13	0	374

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	581	207	0	0	213	0
Stage 1	207	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	479	839	-	-	1369	-
Stage 1	832	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	479	839	-	-	1369	-
Mov Cap-2 Maneuver	479	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	479	1369	-
HCM Lane V/C Ratio	-	-	0.077	-	-
HCM Control Delay (s)	-	-	13.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	1	161	8	0	312
Future Vol, veh/h	28	1	161	8	0	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	1	212	11	0	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	629	218	0	0	223	0
Stage 1	218	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	449	827	-	-	1358	-
Stage 1	823	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	449	827	-	-	1358	-
Mov Cap-2 Maneuver	449	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	674	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	456	1358	-
HCM Lane V/C Ratio	-	-	0.084	-	-
HCM Control Delay (s)	-	-	13.6	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	10.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	342	123	51	167	110
Future Vol, veh/h	83	342	123	51	167	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	2	3	2	4
Mvmt Flow	89	368	132	55	180	118

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	638	160	0	0	187	0
Stage 1	160	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	444	885	-	-	1387	-
Stage 1	874	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	382	885	-	-	1387	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.1	0	4.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	704	1387	-
HCM Lane V/C Ratio	-	-	0.649	0.129	-
HCM Control Delay (s)	-	-	19.1	8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	4.8	0.4	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	257	1	13	476	12	0	1	10	7	0	2
Future Vol, veh/h	1	257	1	13	476	12	0	1	10	7	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	8	2	0	0	0	0	0	0	0
Mvmt Flow	1	279	1	14	517	13	0	1	11	8	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	530	0	0	280	0	0	835	840	280	840	834	524
Stage 1	-	-	-	-	-	-	282	282	-	552	552	-
Stage 2	-	-	-	-	-	-	553	558	-	288	282	-
Critical Hdwy	4.1	-	-	4.18	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.272	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1048	-	-	1249	-	-	289	304	764	287	306	557
Stage 1	-	-	-	-	-	-	729	681	-	522	518	-
Stage 2	-	-	-	-	-	-	521	515	-	724	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1048	-	-	1249	-	-	284	299	764	278	301	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	299	-	278	301	-
Stage 1	-	-	-	-	-	-	728	680	-	521	510	-
Stage 2	-	-	-	-	-	-	511	507	-	712	680	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	10.5	16.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	669	1048	-	-	1249	-	-	313
HCM Lane V/C Ratio	0.018	0.001	-	-	0.011	-	-	0.031
HCM Control Delay (s)	10.5	8.4	0	-	7.9	0	-	16.9
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	242	31	47	420	1	77	1	83	15	4	4
Future Vol, veh/h	1	242	31	47	420	1	77	1	83	15	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	2	0	9	1	0	3	0	4	0	0	0
Mvmt Flow	1	272	35	53	472	1	87	1	93	17	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	473	0	0	307	0	0	875	871	290	918	888	473
Stage 1	-	-	-	-	-	-	292	292	-	579	579	-
Stage 2	-	-	-	-	-	-	583	579	-	339	309	-
Critical Hdwy	4.1	-	-	4.19	-	-	7.13	6.5	6.24	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.281	-	-	3.527	4	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	1099	-	-	1215	-	-	269	291	744	254	285	595
Stage 1	-	-	-	-	-	-	714	675	-	504	504	-
Stage 2	-	-	-	-	-	-	496	504	-	680	663	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1099	-	-	1215	-	-	255	278	744	214	272	595
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	278	-	214	272	-
Stage 1	-	-	-	-	-	-	713	674	-	503	482	-
Stage 2	-	-	-	-	-	-	466	482	-	593	662	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	18.1	21
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	255	729	1099	-	-	1215	-	-	251
HCM Lane V/C Ratio	0.339	0.129	0.001	-	-	0.043	-	-	0.103
HCM Control Delay (s)	26.2	10.7	8.3	-	-	8.1	-	-	21
HCM Lane LOS	D	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.4	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	49	305	26	12	335	2	40	33	25	17	23	75
Future Vol, veh/h	49	305	26	12	335	2	40	33	25	17	23	75
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	3	4	0	4	0	0	0	0	6	0	0
Mvmt Flow	55	343	29	13	376	2	45	37	28	19	26	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	379	0	0	372	0	0	926	873	358	904	886	378
Stage 1	-	-	-	-	-	-	468	468	-	404	404	-
Stage 2	-	-	-	-	-	-	458	405	-	500	482	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.16	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.16	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.554	4	3.3
Pot Cap-1 Maneuver	1179	-	-	1198	-	-	251	291	691	254	286	673
Stage 1	-	-	-	-	-	-	579	565	-	615	603	-
Stage 2	-	-	-	-	-	-	587	602	-	546	557	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1178	-	-	1198	-	-	192	270	691	206	265	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	270	-	206	265	-
Stage 1	-	-	-	-	-	-	545	532	-	578	594	-
Stage 2	-	-	-	-	-	-	484	593	-	459	524	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.3	27.6	17.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	267	1178	-	-	1198	-	-	409
HCM Lane V/C Ratio	0.412	0.047	-	-	0.011	-	-	0.316
HCM Control Delay (s)	27.6	8.2	0	-	8	0	-	17.8
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	2	409	28	2	246
Future Vol, veh/h	15	2	409	28	2	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	2	440	30	2	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	724	455	0	0	470	0
Stage 1	455	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	396	609	-	-	1102	-
Stage 1	643	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	395	609	-	-	1102	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	412	1102	-
HCM Lane V/C Ratio	-	-	0.044	0.002	-
HCM Control Delay (s)	-	-	14.1	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	1	436	29	0	261
Future Vol, veh/h	16	1	436	29	0	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	1	469	31	0	281

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	766	485	0	0	500	0
Stage 1	485	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	374	586	-	-	1075	-
Stage 1	623	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	374	586	-	-	1075	-
Mov Cap-2 Maneuver	374	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	0
HCM LOS	B		

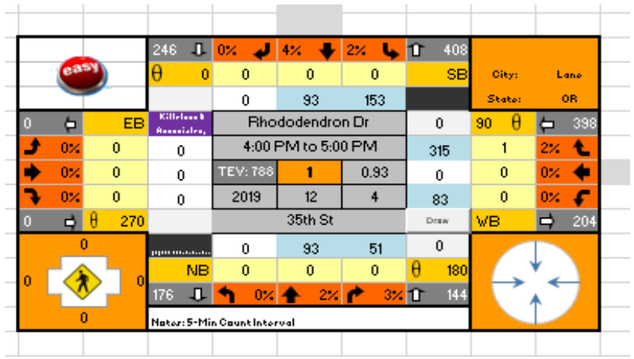
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	1075	-
HCM Lane V/C Ratio	-	-	0.048	-	-
HCM Control Delay (s)	-	-	14.9	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Signal Warrant Assessment

Based on 2009 Edition of the MUTCD

Project #:	24714
Project Name:	Florence Residential Subdivision
Analyst:	AEG
Date:	8/6/2020
Intersection:	Rhododendron Drive/35th Street
Scenario:	2021 Future PM

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour



Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Highest	Yes	No
#2	Four-Hour	Yes	No
#3	Peak Hour	Yes	No

Select Type Of Major Street Approach From Dropdown Menu — Rural Minor Arterial

Select Type Of Minor Street Approach From Dropdown Menu — Rural Major Collector

Note: traffic volume profile for weekday (if weekend is desired, tab "vol profile" needs to be adjusted)

Traffic Volumes

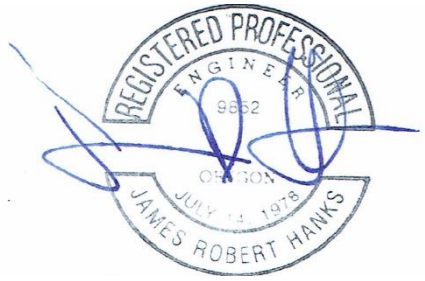
Hour		Major Street		Minor Street		Major St. Adj. Factor	Minor St. Adj. Factor
Begin	End	NB	SB	EB	WB		
4:00 PM	5:00 PM	144	246	0	398	1.00	1.00
2nd Highest Hour		142	243	0	355	0.99	0.89
3rd Highest Hour		129	221	0	308	0.90	0.77
4th Highest Hour		116	199	0	304	0.81	0.76
5th Highest Hour		97	166	0	270	0.67	0.68
6th Highest Hour		95	163	0	265	0.66	0.67
7th Highest Hour		91	155	0	257	0.63	0.65
8th Highest Hour		81	138	0	235	0.56	0.59
9th Highest Hour		79	135	0	223	0.55	0.56
10th Highest Hour		78	133	0	214	0.54	0.54
11th Highest Hour		74	127	0	210	0.52	0.53
12th Highest Hour		73	124	0	210	0.51	0.53
13th Highest Hour		71	122	0	205	0.49	0.52
14th Highest Hour		71	122	0	171	0.49	0.43
15th Highest Hour		58	100	0	167	0.40	0.42
16th Highest Hour		50	86	0	120	0.35	0.30
17th Highest Hour		42	72	0	120	0.29	0.30
18th Highest Hour		32	55	0	81	0.22	0.20
19th Highest Hour		29	50	0	51	0.20	0.13
20th Highest Hour		19	33	0	43	0.13	0.11
21st Highest Hour		10	17	0	21	0.07	0.05
22nd Highest Hour		8	14	0	17	0.06	0.04
23rd Highest Hour		5	8	0	17	0.03	0.04
24th Highest Hour		5	8	0	13	0.03	0.03

Table 1: Existing Transportation Facilities

Roadway	Functional Classification[1]	Number of Lanes	Posted Speed (mph)
Rhododendron Drive	Minor Arterial	2	40
35th Street	Collector	2	25

Data Input

July 7, 2020



RENEWAL DATE 6/30/21

Wendy FarleyCampbell
Planning Director, City of Florence
250 Highway 101
Florence, Oregon 97439

Subject: Review of Rhododendron Drive – 35th Street PUD Traffic Impact Analysis Report

Dear Ms. FarleyCampbell**:**

At your request, I have completed a review of the Traffic Impact Analysis (TIA) for the for the Rhododendron Drive – 35 Street Planned Unit Development (PUD). I recommend that further analysis be completed, as described below, to assure that the TIA accurately describes the impacts of the development.

Estimation of Future Background Traffic:

Background Traffic in the TIA is based on an ODOT projection that, between now and the year 2035, there will be virtually no traffic growth on Highway 101 near the 35th Street intersection. In discussions with ODOT Staff, they stated that their projections are not indicative of traffic on nearby local streets.

The ODOT traffic projections used in the TIA are not intended to project for traffic growth on other facilities. They do not use land-use growth but rather rely on historic traffic trends. In newly developing areas, such as north Florence, historical data does not apply. In these newly developing areas, a no growth history is not an indicator of future growth. Even zero traffic growth on Highway 101 does not seem to be credible. There are projects under construction or approved that would increase traffic on Highway 101 beyond their projection for 2035.

Roads do not generate traffic. Development does. The model used for the ODOT projections do include growth or development input. The City has a number of approved

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541 953-65474

Exhibit K

projects that affect the TIA analysis area. Florence has been growing at a rate of about 40 homes a year. The City's 2017 Buildable Lands Inventory projects that there will be about 1024 additional building units in the City by the year 2035. A significant portion of this growth will occur in the vacant land near the PUD. All of this development will affect traffic.

On the other hand, future traffic volumes projected in the Florence Transportation System Plan (TSP) take planned future development into account. The TSP is based directly on growth potential, what size developments will be, and when they will happen.

The TIA should be revised to reflect expected background growth. In the absence of anything else, the consultants preparing the TIA should review Traffic Impact Studies of projects near-by and use growth rates that are more plausible that zero. Traffic from approved, but not yet constructed should be added.

Use of December Counts for Traffic Analysis:

Intersection counts in the TIA were taken in early December of 2019 and then seasonally adjusted to reflect peak traffic – known by traffic engineers as the 30th hour volume. In Florence, this peak volume occurs in the summer. Traffic counts taken between Thanksgiving and the first full week in January are generally inappropriate for use in TIA's unless holiday traffic itself is the subject for analysis. Traffic fluctuates from day to day differently in the holiday season than in other times of the year, so turning movements and traffic flows vary unpredictably and cannot be accurately seasonally adjusted. It would be useful for the consultants preparing the Rhododendron Drive – 35th Street TIA to compare their counts with other TIA's covering the same locations to see if adjustments to their seasonal adjustments are appropriate.

Right and Left Turn Lanes:

All right and left turns onto and off of Rhododendron Drive and 35th Street should be evaluated for the need for right and left turn lanes.

Additional Analysis May Be Needed:

Depending of the extent of changes in background or peak traffic discussed above, Signal warrant analysis may be needed.

A related, but slightly different, issue involves meeting the City's Level-of-Service (LOS) standard. Additional traffic may result in a different LOS. In the TIA technical modeling analysis, there are a number of intersection approaches that are projected to operate at LOS "D". LOS on minor-street left-turns is very sensitive to traffic volumes.

LOS “E” is the adopted standard for those approaches; however, they can exceed LOS “F” (this actually means that there is no standard) if the intersection does not warrant a signal. This means that if an approach is projected to exceed LOS “F” a signal warrant study will be required to see if it is acceptable or mitigation is required.

Closure:

Thank you for asking me to perform this review. I would be happy to answer any questions or provide additional information you may request.

Very truly yours,

James R, Hanks, PE