Cumberland Mine

King County, WA

Traffic Impact Analysis

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FINDINGS/CONCLUSIONS

This Traffic Impact Analysis (TIA) has been prepared for the proposed Cumberland Mine project located along Cumberland Kanasket Road SE (approximately 33100 block) in unincorporated King County.

Project Proposal. The proposed Cumberland Mine project would include a surface mining (aggregate) and asphalt batch plant operation on a roughly 900-acre site with excepted operations for up to 30 years. The project would replace an existing operation in southeast Auburn that is ending its service life of aggregate production and would relocate both surface mining and the existing asphalt batch plant to this location (approximately 14 miles east) to the proposed location within unincorporated King County. Vehicular access to the site would be provided via Cumberland Kanasket Road SE.

Trip Generation. The proposed Cumberland Mine project is estimated to generate 668 weekday daily trips during the peak season (April to September) with 88 trips occurring during the weekday AM peak hour (62 in, 25 out) and 93 trips occurring during the weekday PM peak hour (25 in, 68 out). During the off-peak season (October to March), the proposed project is estimated to generate 298 weekday daily trips with 68 trips occurring during the weekday AM peak hour (53 in, 15 out) and 63 trips occurring during the weekday PM peak hour (10 in, 53 out).

Future Year LOS. Weekday AM and PM peak hour LOS analyses were conducted at five (5) off-site study intersections for future year 2030. Based on results of the analysis, the individual movements at each of the stop-controlled study intersections and both signalized study intersections are anticipated to operate at LOS D or better during the weekday AM and PM peak hours in 2030 without or with the proposed project with two exceptions. The SR 169/SE Kent Kangley Rd intersection is anticipated to operate at LOS F without or with the proposed project and the SR 169/SE 400th Street intersection is anticipated to operate at LOS E without or with the proposed project during the weekday PM peak hour. At both locations, the increased delay with the proposed project is less than five (5) seconds per vehicle. Additionally, the project share at each of these intersections is less than 1.5 percent of the total entering vehicles during the weekday PM peak hour.

Site Access Evaluation. Evaluation of the proposed site access to Cumberland Kanasket Rd SE was conducted including turn lane warrants, operations analysis, and sight distance. The turn lane warrants and operations analysis were evaluated for the weekday AM and PM peak hours.

Turn Lane Evaluation

Evaluation of the need for a southbound right-turn lane or a northbound left-turn lane was conducted at the proposed site access to Cumberland Kanasket Rd SE. Based on the results of the analysis, neither a southbound right-turn lane or a northbound left-turn lane into the site are warranted based on traffic volumes with adjustments for truck composition. However, given peak seasonal directional truck flow and likely distribution of traffic demands, it is recommended that a northbound left turn only lane with deceleration taper should be considered to provide maximum safety at the proposed site access roadway.

LOS and Queues

Operations analysis was conducted at the proposed site access to Cumberland Kanasket Rd SE including LOS and queues. Based on the results of the analysis, the individual movements entering and exiting the site at the proposed site access to Cumberland Kanasket Rd SE are anticipated to operate at LOS B or better in 2030 during the weekday AM and PM peak hours with minimal vehicle queuing.

Sight Distance

Both stopping sight distance and entering sight distance were evaluated at the proposed site access to Cumberland Kanasket Rd SE based on King County and AASHTO standards. Based on field measurements, both the existing available stopping sight distance and entering sight distance at the proposed site access to Cumberland Kanasket Rd SE were verified to exceed minimum requirements.

INTRODUCTION

This Traffic Impact Analysis (TIA) has been prepared for the proposed Cumberland Mine project located along Cumberland Kanasket Road SE (approximately 33100 block) in unincorporated King County as shown in the Figure 1 vicinity map.

Project Description

The proposed Cumberland Mine project would include a surface mining (aggregate) and asphalt batch plant operation on a roughly 900-acre site with excepted operations for up to 30 years. The project would replace an existing operation in southeast Auburn that is ending its service life of aggregate production and would relocate both surface mining and the existing asphalt batch plant to this location (approximately 14 miles east) to the proposed location within unincorporated King County. Vehicular access to the site would be provided via Cumberland Kanasket Road SE. A preliminary site plan is included in Figure 2.

Project Approach

To analyze the traffic impacts from the proposed Cumberland Mine project, the following tasks were undertaken:

- Assessed existing conditions through field reconnaissance and reviewed existing planning documents.
- Described and assessed existing transportation conditions in the area.
- Documented traffic collisions at the study intersections.
- Documented planned roadway improvements in the project vicinity based on King County and WSDOT planning documents.
- Estimated future peak hour traffic volumes at five (5) off-site study intersections.
- Estimated trip generation and documented trip distribution and assignment of project traffic at five (5) off-site study intersections.
- Documented traffic forecasts and assumptions for year 2030 conditions without and with the proposed development.
- Conducted weekday AM and PM peak hour level of service analyses at five (5) off-site study intersections.
- Evaluated the proposed site access including turn lane warrants, operations analysis, and sight distance.

Primary Data and Information Sources

- Weekday AM and PM Peak Hour traffic counts by All Traffic Data, 2021.
- *Highway Capacity Manual (HCM 6th Edition),* 2016.
- Washington State Department of Transportation (WSDOT) Collision Data, 2016-2020.
- WSDOT *2021-2024 Statewide Transportation Improvement Program (STIP).*
- King County *2020 Transportation Needs Report (TNR).*

- AASHTO – *A Policy on Geometric Design of Highways and Streets (7th Edition)*, 2018.
- King County *2016 Road Design and Construction Standards*.

Figure 1: Project Site Vicinity

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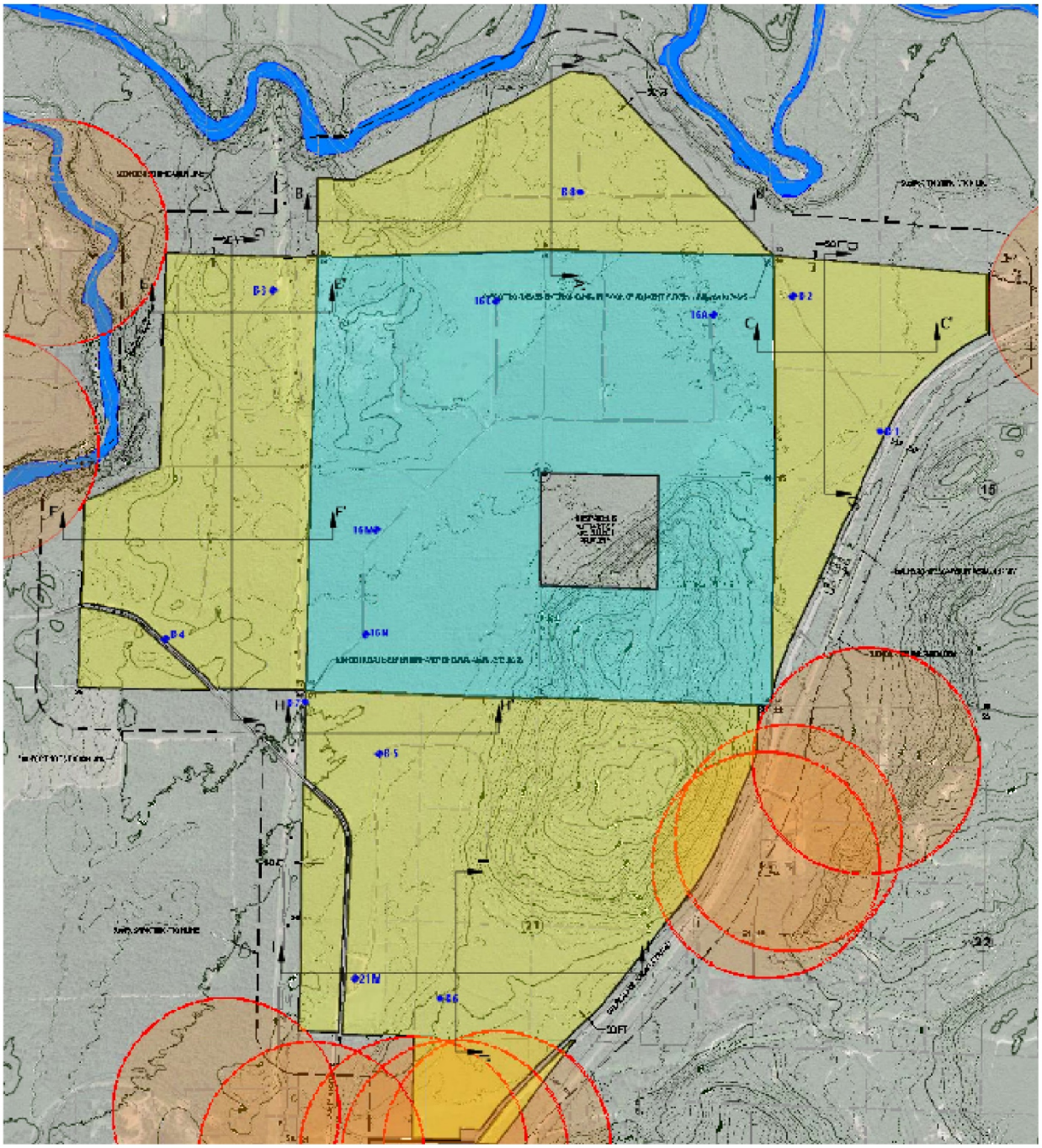

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Figure 2: Preliminary Site Plan

EXISTING CONDITIONS

This section describes existing transportation system conditions in the study area. Existing conditions described include an inventory of existing roadways, public transportation services, non-motorized transportation facilities, existing traffic volumes, intersection levels of service (LOS), and collision history.

Roadway Network

The primary travel routes to and from the site include SE Kent Kangley Road, Retreat Kanasket Road SE, and Cumberland Kanasket Road SE. The relationship of these roadways to the project site is shown in Figure 1. Descriptions of the streets are included in Table 1 below.

Table 1
Existing Roadway Network Summary – Project Site Vicinity

Roadway	Orientation	Classification	Speed Limit	Number of Travel Lanes	Street Parking	Sidewalks
SE Kent Kangley Road	East-West	Minor Arterial	45	2	None	None
Retreat Kanasket Road SE	North-South	Minor Arterial	45	2	None	None
Cumberland Kanasket Road SE	North-South	Minor Arterial	45	2	None	None

Transit Service

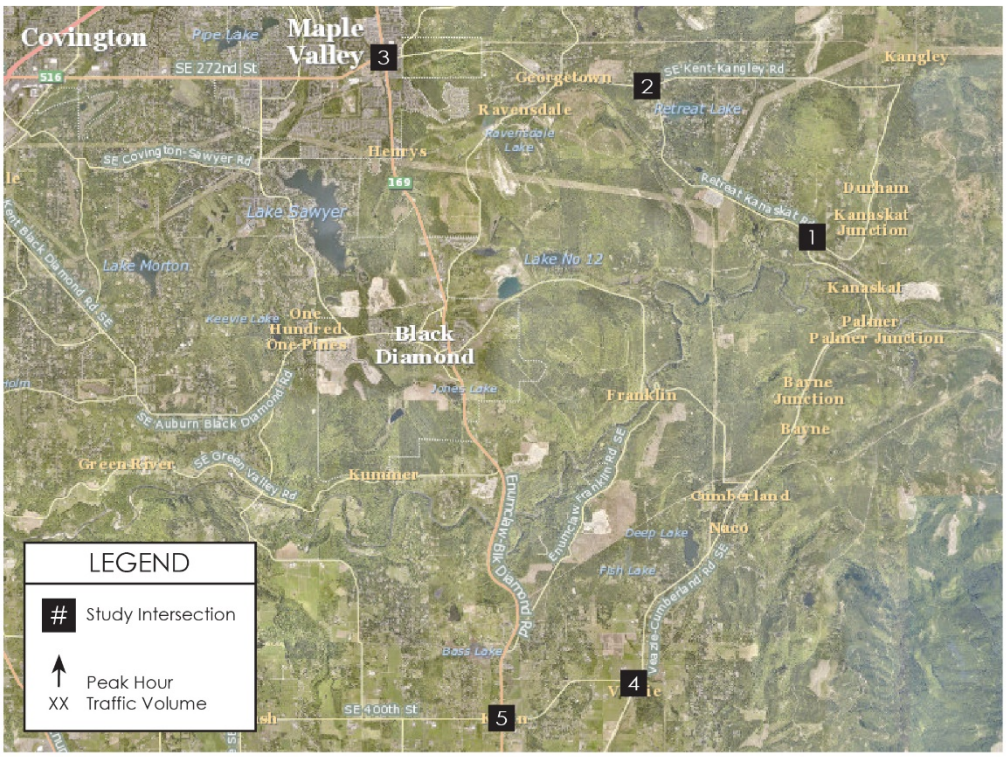
There is no existing transit service in the immediate vicinity of the proposed project. There are however, several established school bus pick-up/drop-off zones to the north of the site along Retreat-Kanasket Road that is served by the Tahoma School District.

Non-Motorized Transportation Facilities

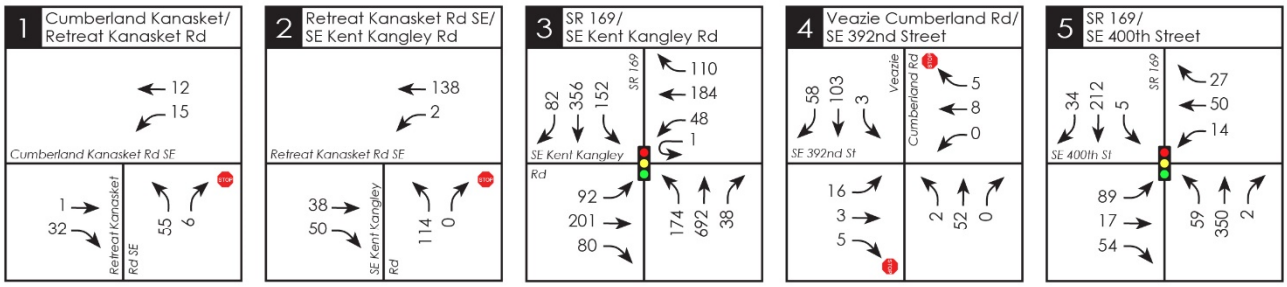
Non-motorized transportation facilities in the study area include paved shoulders on both sides of Cumberland Kanasket Rd SE.

Traffic Volumes

Existing weekday AM and PM peak hour traffic volumes at the five (5) off-site study intersections were based on counts collected by All Traffic Data in October 2021. The existing weekday AM and PM peak hour traffic volumes represent the highest hour of traffic between 6:00 and 8:00 a.m. and 3:00 and 5:00 p.m. respectively. Figure 3 illustrates the existing 2021 weekday AM and PM peak hour traffic volumes at the study intersections. The detailed peak hour turning movement count sheets are provided in Appendix B.



AM Peak Hour



PM Peak Hour

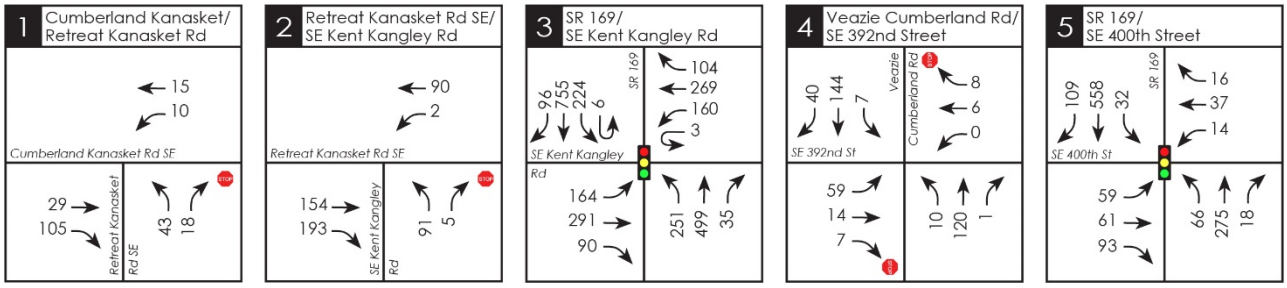


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Figure 3: 2021 Existing Weekday Peak Hour Traffic Volumes

Level of Service

Weekday AM and PM peak hour level of service (LOS) analyses were conducted at the following five (5) off-site study intersections:

1. Cumberland Kanasket Road/Retreat Kanasket Road (unsignalized)
2. Retreat Kanasket Road/SE Kent Kangley Road (unsignalized)
3. SR 169/SE Kent Kangley Road (signalized)
4. Veazie Cumberland Road/SE 392nd Street (unsignalized)
5. SR 169/SE 400th Street (signalized)

LOS generally refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS. At signalized intersections, LOS A represents free-flow conditions (motorists experience little or no delays), and LOS F represents forced-flow conditions where motorists experience an average delay in excess of 80 seconds per vehicle.

The LOS reported for signalized intersections represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only).

The LOS reported at stop-controlled intersections is based on the average control delay and can be reported for each controlled minor approach, controlled minor lane group, and controlled major-street movement (and for the overall intersection at all-way stop controlled intersections. Additional v/c ratio criteria apply to lane group or movement LOS only). Table 2 outlines the current HCM 6th Edition LOS criteria for signalized and stop-controlled intersections based on these methodologies.

Table 2
LOS Criteria for Signalized and Stop-Controlled Intersections[1]

SIGNALIZED INTERSECTIONS			UNSIGNALIZED INTERSECTIONS		
	LOS by Volume-to Capacity (V/C) Ratio[2]			LOS by Volume-to Capacity (V/C) Ratio[3]	
Control Delay (sec/veh)	≤ 1.0	> 1.0	Control Delay (sec/veh)	≤ 1.0	> 1.0
≤ 10	A	F	≤ 10	A	F
> 10 to ≤ 20	B	F	> 10 to ≤ 15	B	F
> 20 to ≤ 35	C	F	> 15 to ≤ 25	C	F
> 35 to ≤ 55	D	F	> 25 to ≤ 35	D	F
> 55 to ≤ 80	E	F	> 35 to ≤ 50	E	F
> 80	F	F	> 50	F	F

[1] Source: Highway Capacity Manual (6th Edition), Transportation Research Board, 2016.

[2] For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.

[3] For two-way stop controlled intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop controlled intersections. For approach-based and intersection-wide assessments at all-way stop controlled intersections, LOS is solely defined by control delay.

Intersection LOS were calculated using the methodology and procedures outlined in the latest edition of the Highway Capacity Manual (6th Edition) using the Synchro 10 software program. The LOS analyses at the study intersections on SR 169 were based on the current *WSDOT Synchro & SimTraffic Protocol*, dated August 2018. The 2021 existing AM and PM peak hour LOS analysis

results for the study intersections are summarized in Table 3. The 2021 existing LOS worksheets are included in Appendix B.

Table 3
2021 Existing AM and PM Peak Hour LOS Summary

	AM Peak Hour			PM Peak Hour		
Study Intersection	LOS[1]	Delay (sec)[2]	95th % Queue (ft)	LOS[1]	Delay (sec)[2]	95th % Queue (ft)
Unsignalized						
1. Cumberland Kanasket Rd SE/ Retreat Kanasket Rd SE						
Northbound Approach	A	8.8	< 25'	A	8.0	< 25'
Westbound Left-Turn	A	7.2	0'	A	7.3	0'
2. Retreat Kanasket Rd SE/ SE Kent Kangley Rd						
Northbound Approach	B	10.5	25'	B	11.7	25'
Westbound Left-Turn	A	7.3	0'	A	7.5	0'
4. Veazie Cumberland Rd SE/ SE 392nd Street						
Northbound Left-Turn	A	7.6	0'	A	7.6	0'
Eastbound Approach	B	10.1	< 25'	B	12.1	25'
Westbound Approach	A	9.9	< 25'	B	10.1	< 25'
Southbound Left-Turn	A	7.3	0'	A	7.5	0'
Signalized						
3. SR 169/SE Kent Kangley Rd	C	28.5	-	E	59.2	-
5. SR 169/SE 400th Street	B	14.0	-	B	19.6	-

1. LOS = Level of Service
2. Delay refers to average control delay, expressed in seconds per vehicle.

As shown in Table 3, the individual movements at each of the stop-controlled study intersections and both signalized study intersections currently operate at LOS D or better during the weekday AM and PM peak hours with one exception. The SR 169/SE Kent Kangley Rd intersection currently operates at LOS E during the weekday PM peak hour.

Collision History

Historic collisions at the study intersections were analyzed for the five-year period from 2016 to 2020. Collision data was provided by WSDOT. Summaries of the total and yearly average collisions during this period are provided in Table 4. Summaries of collisions by type over the five-year period are provided in Table 5.

Table 4
Collision Data Summary By Year, January 1, 2016 to December 31, 2020

Location	2016	2017	2018	2019	2020	Five-Year Total Collisions	Average Annual Collisions	Collisions per MEV[1]
1. Cumberland Kanasket Rd SE/Retreat Kanasket Rd SE	0	0	0	0	0	0	0.00	0.00
2. Retreat Kanasket Rd SE/SE Kent Kangley Rd	0	0	0	0	0	0	0.00	0.00
3. SR 169/SE Kent Kangley Rd	8	11	5	0	0	24	4.80	0.69
4. Veazie Cumberland Rd SE/SE 392nd Street	0	0	0	0	0	0	0.00	0.00
5. SR 169/SE 400th Street	0	0	0	0	0	0	0.00	0.00

Source: WSDOT Crash Data.

1. MEV = Million Entering Vehicles

Table 5
Collision Data Summary By Type, January 1, 2016 to December 31, 2020

				Collision Type				
Location	5-Year Total Collisions	Average Annual Collision Rate	Angle (Left/Right)	Sideswipe	Angle (T)	Rear-End	Parked Vehicle/ Fixed Object	Other
1. Cumberland Kanasket Rd SE/Retreat Kanasket Rd SE	0	0.00	0	0	0	0	0	0
2. Retreat Kanasket Rd SE/SE Kent Kangley Rd	0	0.00	0	0	0	0	0	0
3. SR 169/SE Kent Kangley Rd	24	4.80	2	3	3	16	0	0
4. Veazie Cumberland Rd SE/SE 392nd Street	0	0.00	0	0	0	0	0	0
5. SR 169/SE 400th Street	0	0.00	0	0	0	0	0	0

Source: WSDOT Crash Data.

FUTURE CONDITIONS

The following section of the report describes the traffic impacts of the proposed Cumberland Mine project on the surrounding arterial network and identified study intersections in the project study area.

The analysis of traffic impacts includes identifying planned transportation improvements, estimated project trip generation, distribution and assignment of project trips, LOS evaluation at study intersections, and a site access evaluation. The analysis was conducted during the weekday AM and PM peak hours.

Planned Transportation Improvements

This section documents the known transportation improvements in the study area. Based on review of the WSDOT *2021-2024 Statewide Transportation Improvement Program (STIP)* and the King County *2020 Transportation Needs Report (TNR)*, there is one planned improvement in the study area:

- King County TNR Project #OP-INT-92 (SE Kent Kangley Rd/Retreat Kanasket Rd) – This project includes realignment of the existing unsignalized intersection and installation of turn lanes. The timing of this improvement is unknown.

Project Trip Generation

Vehicle trip generation estimates for the proposed uses would normally be based on the methodology published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition, 2021. However, given the type of activities proposed on-site, the varying degrees of employee shifts, truck transport of both aggregate and asphalt, as well as operational periods beyond typical commute periods, an activities-based trip generation approach has been applied to estimate new peak hour and daily traffic impacts during peak construction transport periods.

Generally, three primary types of trips would be generated by the project: truck hauling of aggregate produced from surface mining operations, truck hauling of asphalt from the proposed batch plant, and employee trips generated by on-site surface mining, on-site batch plant operations, truck driver trips, and on-site office trips. A more detailed analysis of trip generation of each trip type is provided below and includes:

- Truck material hauling of aggregate product.
- Truck material hauling of asphalt from batch plant.
- Miscellaneous truck hauling associated with delivery of asphalt oil/fuel for pit and batch plant operations.
- Employee and other miscellaneous business trips.

As provided in **Appendix C**, total vehicle and trip types are provided along with expected shifts and a detailed hourly breakdown of vehicle trip generation during Peak Summer and Off-Peak Season trips for the site as a whole. The restaurant vehicle trip generation during these primary construction seasons is provided in **Table 6**, estimated total site trip generation of the Cumberland Mine project at maximum production levels in with approximately 668 daily trips, 88 a.m. peak hour trips, and 93 p.m. peak hour trips during peak construction periods. During off-peak

construction seasons, approximately 298 daily trips are estimated, with approximately 68 a.m. peak hour trips and 63 p.m. peak hour trips expected.

Table 6
Cumberland Mine – Trip Generation (Peak & Off-Peak Construction Season)

Time Period	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Peak Season (April to September)	668	63	25	88	25	68	93
Off-Peak Season (October to March)	298	53	15	48	10	53	63

Project Trip Distribution and Assignment

The distribution of project trips generated by the propose Cumberland Mine project was estimated based on existing roadways in the vicinity of the site, the regional State Highway system, and four (4) primary destinations where expected distribution of aggregate and asphalt is provided today from the existing site in southeast Auburn. The new AM and PM peak hour project-generated trips were generally distributed to the vicinity street system as follows:

- 35 percent to/from the north on SR 169
- 25 percent to/from the west on SR 516
- 25 percent to/from the west on SE 400th Street
- 15 percent to/from the south on Cumberland Kanasket Rd

Figure 4 provides a graphical illustration of the assignment of the new weekday AM and PM peak hour project-generated traffic to the study intersections.

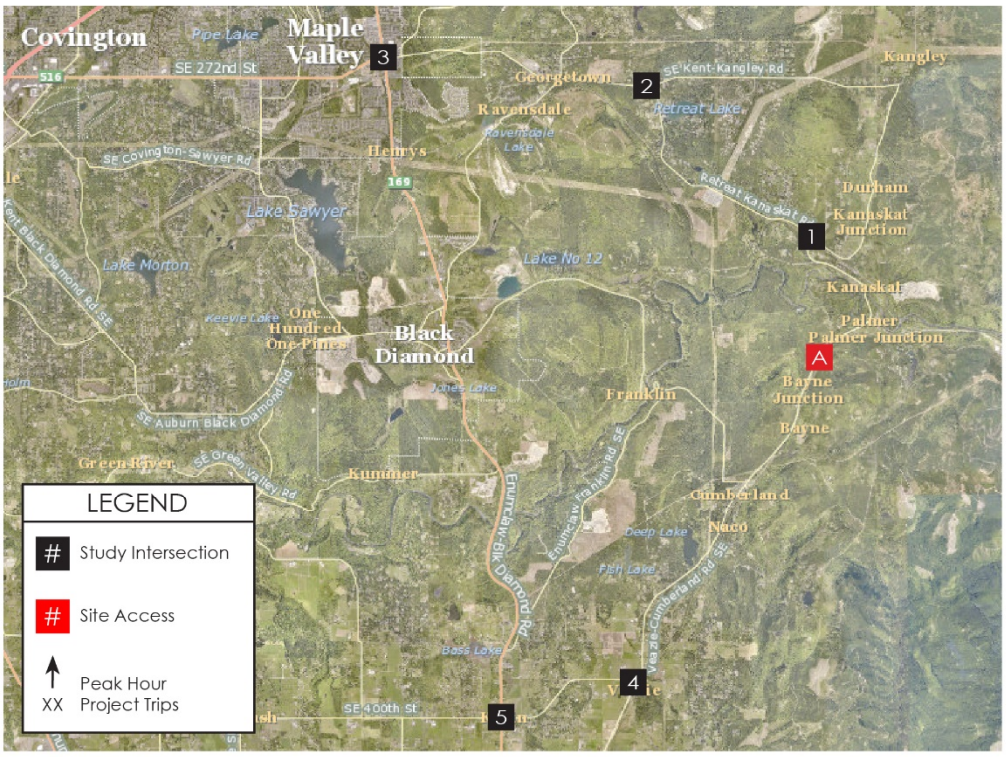
Future Traffic Volumes

Future year 2030 No Action (without project) AM and PM peak hour traffic volumes were estimated by applying a three (3) percent annual growth rate to the existing traffic counts.

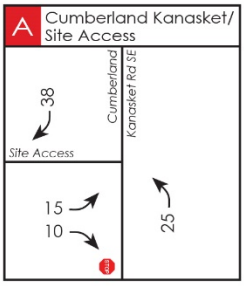
The resulting future 2030 No Action (without project) AM and PM peak hour traffic volumes at the study intersections are shown in Figure 5. The 2030 With Project traffic volumes were determined by adding the trip assignment from the proposed Cumberland Mine project (shown in Figure 4) to the future 2030 No Action (without project) traffic volumes (shown in Figure 5). The resulting 2030 With Project AM and PM peak hour traffic volumes are shown in Figure 6.

Future Level of Service

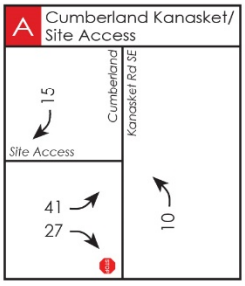
Future year 2030 LOS analyses were conducted at the study intersections for without and with project conditions during the weekday AM and PM peak hours. The LOS results at the study intersections without and with the proposed project are summarized in Table 7. The detailed LOS worksheets are included in Appendix B.



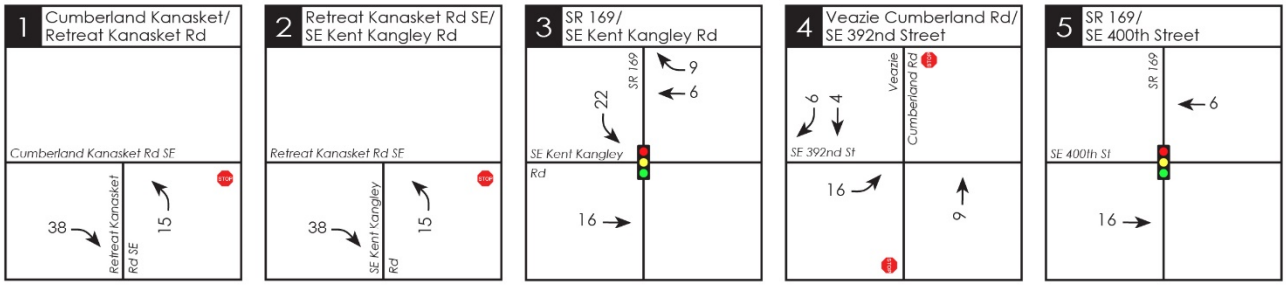
AM Peak Hour



PM Peak Hour



AM Peak Hour



PM Peak Hour

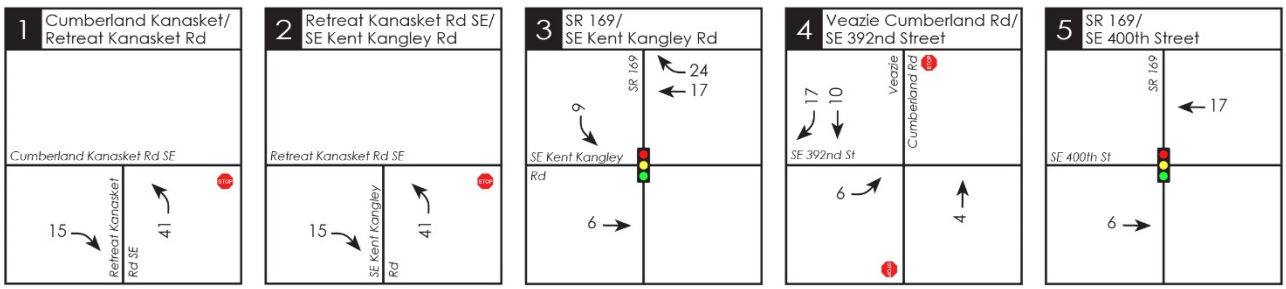


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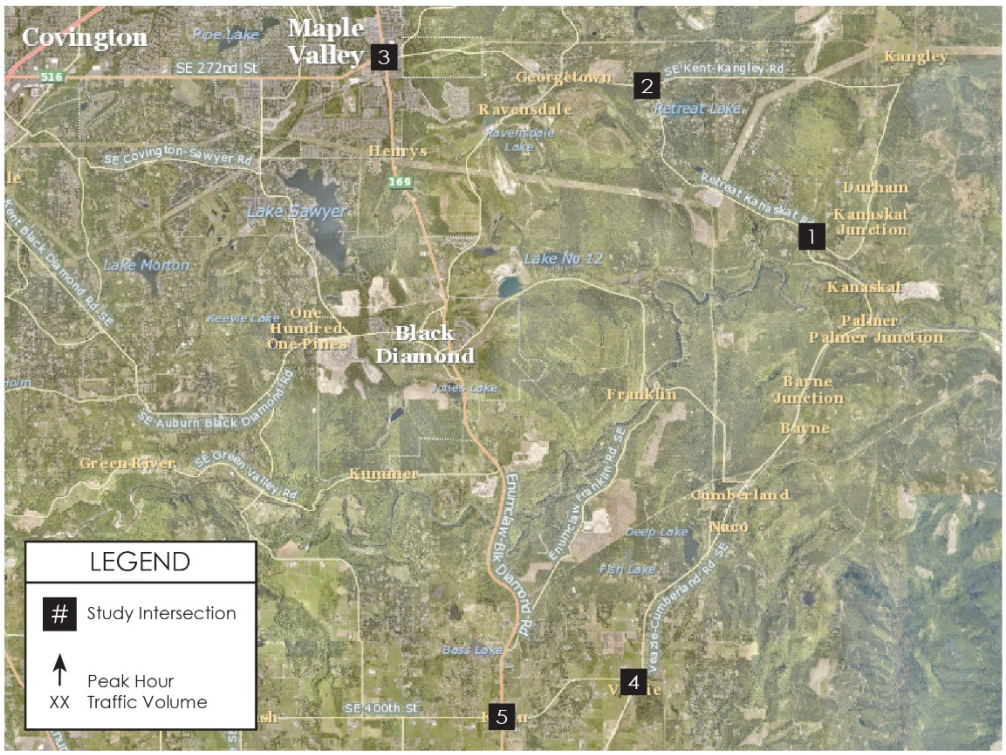
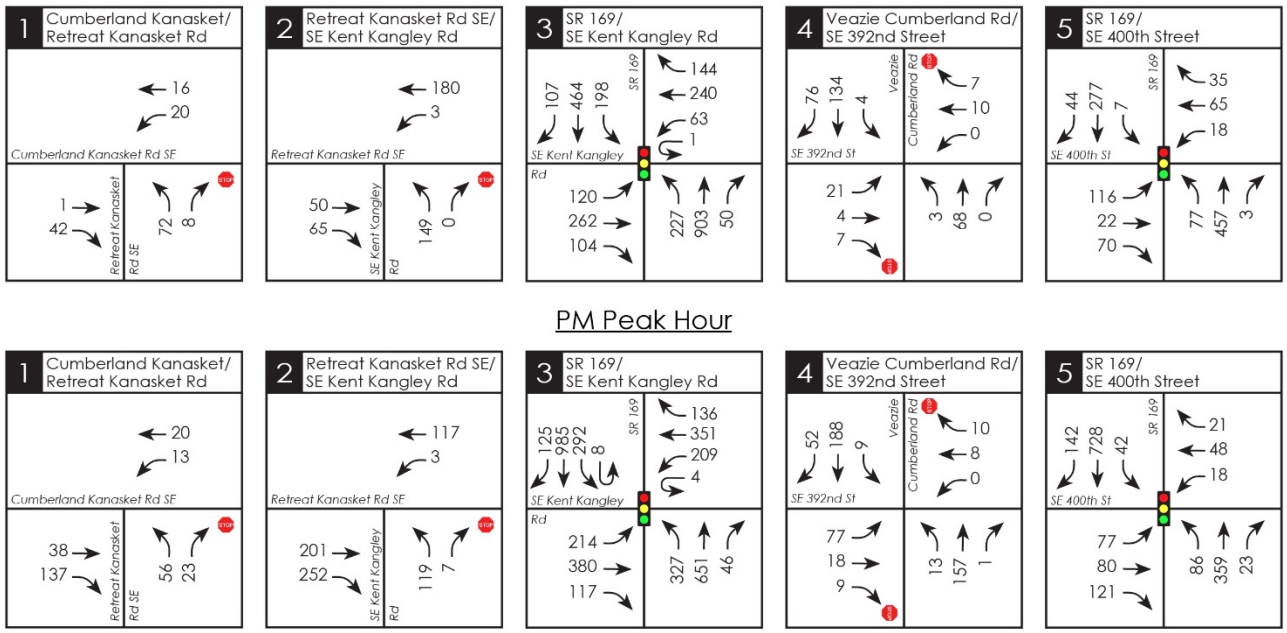
Figure 4: Weekday Peak Hour Project Trip Assignment



AM Peak Hour



PM Peak Hour

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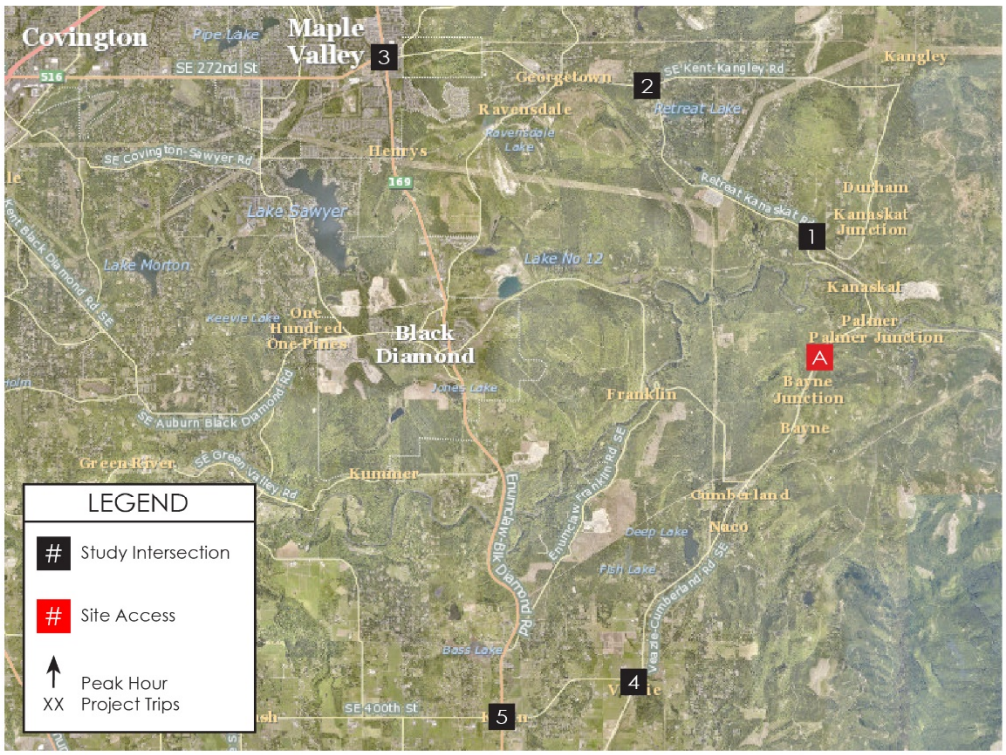
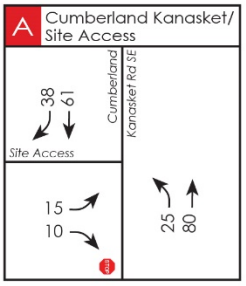
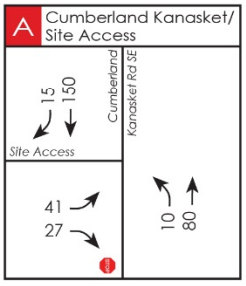
Figure 5: 2030 No Action Weekday Peak Hour Traffic Volumes



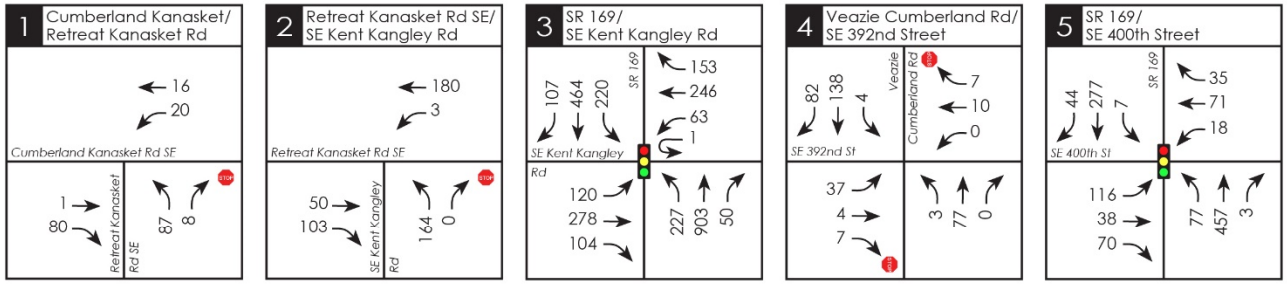
AM Peak Hour



PM Peak Hour



AM Peak Hour



PM Peak Hour

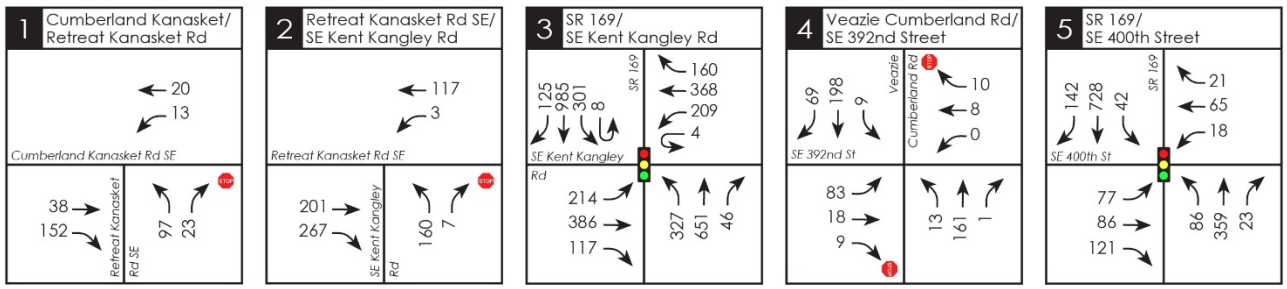


Figure 6: 2030 With Project Weekday Peak Hour Traffic Volumes

Table 7
Future 2030 AM and PM Peak Hour LOS Summary

Study Intersection	2030 No Action LOS[1]	2030 No Action Delay (sec)[2]	2030 No Action 95th % Queue (ft)	2030 With Project LOS[1]	2030 With Project Delay (sec)[2]	2030 With Project 95th % Queue (ft)
AM Peak Hour						
Unsignalized						
1. Cumberland Kanasket Rd SE/ Retreat Kanasket Rd SE						
Northbound Approach	A	9.0	< 25'	A	9.4	< 25'
Westbound Left-Turn	A	7.2	0'	A	7.2	0'
2. Retreat Kanasket Rd SE/ SE Kent Kangley Rd						
Northbound Approach	B	11.5	25'	B	12.1	25'
Westbound Left-Turn	A	7.3	0'	A	7.3	0'
4. Veazie Cumberland Rd SE/ SE 392nd Street						
Northbound Left-Turn	A	7.7	0'	A	7.7	0'
Eastbound Approach	B	10.8	< 25'	B	11.2	< 25'
Westbound Approach	B	10.3	< 25'	B	10.4	< 25'
Southbound Left-Turn	A	7.4	0'	A	7.4	0'
Signalized						
3. SR 169/SE Kent Kangley Rd	D	40.7	-	D	43.5	-
5. SR 169/SE 400th Street	B	16.5	-	B	16.7	-
PM Peak Hour						
Unsignalized						
1. Cumberland Kanasket Rd SE/ Retreat Kanasket Rd SE						
Northbound Approach	A	8.2	< 25'	A	8.8	< 25'
Westbound Left-Turn	A	7.3	0'	A	7.3	0'
2. Retreat Kanasket Rd SE/ SE Kent Kangley Rd						
Northbound Approach	B	13.6	25'	B	14.7	25'
Westbound Left-Turn	A	7.6	0'	A	7.6	0'
4. Veazie Cumberland Rd SE/ SE 392nd Street						
Northbound Left-Turn	A	7.8	0'	A	7.8	0'
Eastbound Approach	B	14.2	25'	C	15.1	25'
Westbound Approach	B	10.8	< 25'	B	11.0	< 25'
Southbound Left-Turn	A	7.6	0'	A	7.6	0'
Signalized						
3. SR 169/SE Kent Kangley Rd	F	82.3	-	F	84.4	-
5. SR 169/SE 400th Street	E	58.1	-	E	62.0	-

1. LOS = Level of Service
2. Delay refers to average control delay, expressed in seconds per vehicle.

As shown in Table 7, the individual movements at each of the stop-controlled study intersections and both signalized study intersections are anticipated to operate at LOS D or better during the weekday AM and PM peak hours in 2030 without or with the proposed project with two

exceptions. The SR 169/SE Kent Kangley Rd intersection is anticipated to operate at LOS F without or with the proposed project and the SR 169/SE 400th Street intersection is anticipated to operate at LOS E without or with the proposed project during the weekday PM peak hour. At both locations, the increased delay with the proposed project is less than five (5) seconds per vehicle. It should be noted that the project share at each of these intersections is less than 1.5 percent of the total entering vehicles during the weekday PM peak hour.

Site Access Evaluation

This section of the TIA includes evaluation of the proposed site access to Cumberland Kanasket Road SE including turn lane warrants, operations analysis, and sight distance. Analysis was completed for the weekday AM and PM peak hours in 2030.

Traffic Volumes

The future 2030 With Project weekday AM and PM peak hour traffic volumes at the driveways were shown previously in Figure 6.

Turn Lane Evaluation

Evaluation of the need for a southbound right-turn lane or northbound left-turn lane was conducted at the proposed site access to Cumberland Kanasket Road SE for the weekday AM and PM peak hour with project conditions. The potential need for a northbound left-turn lane was based on the WSDOT *Design Manual* Chapter 1310.03(2) Left-Turn Lanes and the Highway Research Record (HRR) 211. The potential need for a southbound right-turn lane was based on the WSDOT *Design Manual* Chapter 1310.03(3) Right-Turn Lanes.

Based on the results of the analysis, neither a southbound right-turn lane or northbound left-turn lane into the site would be warranted based on guidelines included in the WSDOT *Design Manual* and the HRR 211 as outlined below. However, given peak seasonal directional truck flow and likely distribution of traffic demands, it is recommended that a northbound left turn only lane with deceleration taper as well as a southbound deceleration lane should be considered to provide maximum safety at the proposed site access roadway. These are conceptually shown in Appendix E.

WSDOT *Design Manual*

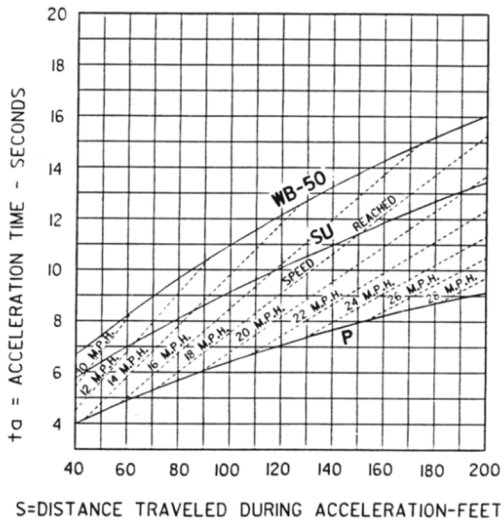
Based on future 2030 weekday AM and PM peak hour traffic volumes and Exhibits 1310-07 (Left-Turn Storage Guidelines) and 1310-11 (Right-Turn Lane Guidelines), neither a southbound right-turn lane or northbound left-turn lane into the site would be warranted at the proposed site access to Cumberland Kanasket Road SE based on forecasted traffic volumes of turning movements and opposing/advancing volumes. WSDOT turn lane exhibits used in the evaluation are included in Appendix D.

Highway Research Record (HRR) 211

Based on the estimated percent truck composition of northbound left-turns entering the project site, an increased truck composition from the baseline truck composition of 5 percent was assumed. Although a substantial adjustment accounting for truck composition within the HRR 211 document in the turn length was provided, a lower figure as a baseline was applied as a conservative approach.

For truck adjustment for critical headway values, TENW calculated a weighted average based on truck and passenger vehicle composition. The baseline vehicle composition within the HRR 211 applies an average critical gap of 5 seconds. This gap assumes a combination of both moving vehicles and vehicles that need to stop and yield for making left turns. Trucks were assumed to have an average critical headway gap of 7.5 seconds (50 percent higher) using adjustments by vehicle type for entering sight distance calculations (Source: Exhibit 1310-19a of the Washington State Department of Transportation (WSDOT) Design Manual). These sight distance values and adjustments are founded upon a combination of the HRR 211 original research and updated gap acceptance for left turns as published in *A Policy for Geometric Design of Highways and Roadways*, AASHTO. The base gap factor of 11.5 seconds is reduced by 3.0 seconds to account for the difference in gap acceptance between a sight distance case and a left turn from major street case for a passenger vehicle and to eliminate the primary "begin movement from stopped condition" time component, then another1.0 second is removed from this gap to account for the reduced maneuvering/turning distance required per the sight distance case, arriving at 7.5 seconds in total.

Values for average left turn time and time required for a left turn to clear the advancing lane were also adjusted for truck percentages using a weighted average derived from linear regression functions. Adjustments were based on the documented acceleration characteristics for trucks and passenger vehicles in a study titled *Truck Safety Considerations for Geometric Design and Traffic Operations* by researchers at the Pennsylvania State University. The nomograph shown below illustrates these relationships. For left-turning vehicles on a two-lane roadway, it was assumed that they would travel approximately 60 feet to complete a turning movement. As such, a ratio of 2.1:1 for WB-50 trucks or greater and passenger vehicle acceleration rates at this distance was derived from the nomograph. This ratio was used to calculate weighted average adjustments to the aforementioned left-turn parameters.



Acceleration Characteristics of Trucks and Passenger Vehicles

As noted above, truck composition factors were applied for three key components in the HRR 211 analysis, including average time to make a left-turn, critical gap, and average time of vehicle clearance. Based on the results of the analysis, a northbound left-turn into the site would not be

warranted both volumes and truck composition factors. The detailed HRR 211 calculations are included in Appendix D.

Level of Service (LOS) and Queues

LOS analyses were conducted at the proposed site access to Cumberland Kanasket Road SE during the weekday AM and PM peak hour with project conditions. The results of the analysis are summarized below in Table 8.

Table 8
Future 2030 Peak Hour Site Access Level of Service Summary

	AM Peak Hour			PM Peak Hour		
Site Access/Movement	LOS	Delay (sec)	95th % Queue (ft)	LOS	Delay (sec)	95th % Queue (ft)
Cumberland Kanasket Rd SE/Site Access						
Eastbound Approach	A	7.4	< 25'	A	8.7	0'
Northbound Left-Turn	B	10.9	< 25'	B	10.2	< 25'

As shown in Table 8, the individual movements entering and exiting the site at the proposed site access to Cumberland Kanasket Rd SE are anticipated to operate at LOS B or better in 2030 during the weekday AM and PM peak hours with minimal vehicle queuing.

Sight Distance

Both stopping sight distance and entering sight distance were evaluated at the proposed site access to Cumberland Kanasket Rd SE. Field measurements were based on King County and AASHTO standards. The posted speed limit on Cumberland Kanasket Rd SE in the vicinity of the proposed site access location is 45 MPH. For the purposes of this analysis, a design speed of 55 MPH was assumed (45 MPH posted speed + 10 MPH).

Stopping Sight Distance (SSD): Based on Table 2.1 (Arterial Roads, Rural Local and Commercial Access Roads and Streets Design Values) in the King County *2016 Road Design and Construction Standards*, the minimum required stopping sight distance for a 55 MPH design speed is 495 feet. No adjustments for grade were made, given that Cumberland Kanasket Rd SE in the vicinity of the proposed site access is generally flat. SSD was measured based on an approaching vehicle driver eye height of 3.5 feet and an object height of 2.0 feet.

Field measurements confirm the existing available SSD for a vehicle traveling northbound and southbound on Cumberland Kanasket Rd SE approaching the proposed site access location exceeds 495 feet, meeting minimum requirements.

Entering Sight Distance (ESD): Based on Table 2.1 (Arterial Roads, Rural Local and Commercial Access Roads and Streets Design Values) in the King County *2016 Road Design and Construction Standards*, the minimum required entering sight distance for a 55 MPH design speed is 610 feet. Given the industrial type use of the proposed project, the ESD value was adjusted to account for an increased time gap requirement for trucks based on AASHTO *A Policy on Geometric Design of Highways and Streets (7th Edition)*. The adjusted minimum required entering sight distance for a 55 MPH design speed, with an increased time gap for single-unit trucks, is 770 feet. ESD was measured based on an entering vehicle driver height 3.5 feet, measured 14.5 feet back from

edge of traveled way. With an increased time gap for combination trucks, the minimum required ESD is 930 feet.

Based on field measurements, the existing available ESD at the proposed site access to Cumberland Kanasket Rd SE looking north and south exceeds 930 feet, meeting minimum requirements.

Appendix A

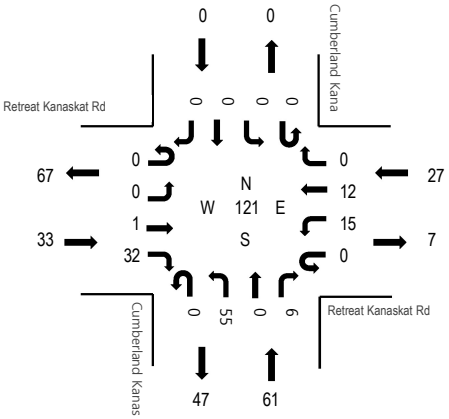
Existing Traffic Volume Data

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 Cumberland Kanaskat Rd & Retreat Kanaskat Rd AM
Date: Wednesday, October 27, 2021
Peak Hour: 06:30 AM - 07:30 AM

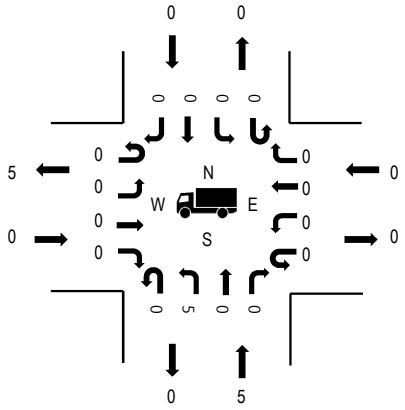
Peak Hour

Motorized Vehicles

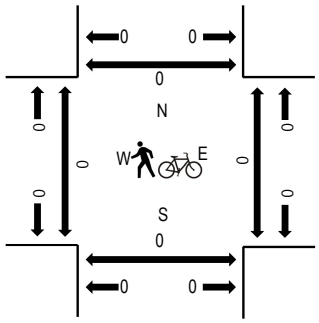


	HV%	PHF
EB	0.0%	0.69
WB	0.0%	0.75
NB	8.2%	0.76
SB	0.0%	0.00
All	4.1%	0.82

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Retreat Kanaskat Rd Eastbound				Retreat Kanaskat Rd Westbound				Cumberland Kanaskat Rd Northbound				Cumberland Kanaskat Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
6:00 AM	0	0	0	6	0	1	2	0	0	13	0	1	0	0	0	0	23	108
6:15 AM	0	0	1	4	0	3	3	0	0	14	0	1	0	0	0	0	26	110
6:30 AM	0	0	0	5	0	4	2	0	0	19	0	1	0	0	0	0	31	121
6:45 AM	0	0	0	8	0	3	4	0	0	10	0	3	0	0	0	0	28	118
7:00 AM	0	0	0	8	0	1	4	0	0	10	0	2	0	0	0	0	25	118
7:15 AM	0	0	1	11	0	7	2	0	0	16	0	0	0	0	0	0	37	
7:30 AM	0	0	1	9	0	3	2	0	0	13	0	0	0	0	0	0	28	
7:45 AM	0	0	1	8	0	2	3	0	0	13	0	1	0	0	0	0	28	
Count Total	0	0	4	59	0	24	22	0	0	108	0	9	0	0	0	0	226	
Peak Hour	0	0	1	32	0	15	12	0	0	55	0	6	0	0	0	0	121	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

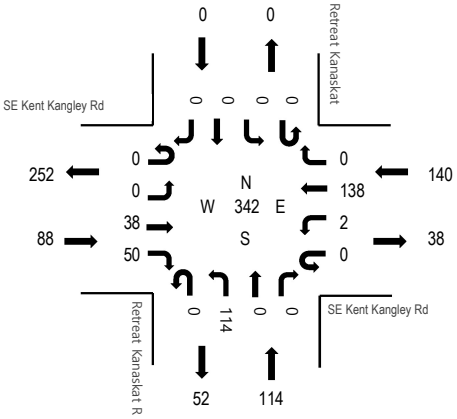
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:00 AM	0	1	0	0	1	6:00 AM	0	0	0	0	0
6:15 AM	1	0	0	0	1	6:15 AM	0	0	0	0	0
6:30 AM	0	2	0	0	2	6:30 AM	0	0	0	0	0
6:45 AM	0	1	0	0	1	6:45 AM	0	0	0	0	0
7:00 AM	0	2	0	0	2	7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:45 AM	1	2	0	0	3	7:45 AM	0	0	0	0	0
Count Total	2	8	0	0	10	Count Total	0	0	0	0	0
Peak Hour	0	5	0	0	5	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 Retreat Kanaskat Rd & SE Kent Kangley Rd AM
Date: Wednesday, October 27, 2021
Peak Hour: 07:00 AM - 08:00 AM

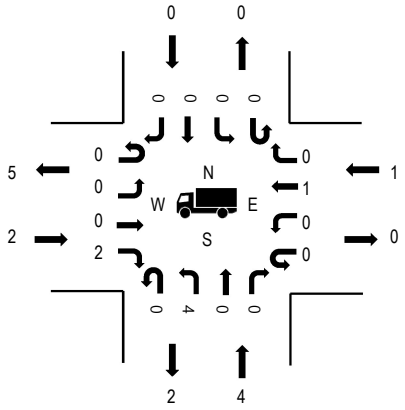
Peak Hour

Motorized Vehicles

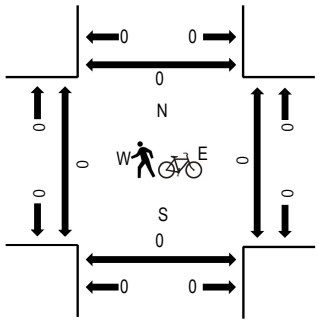


	HV%	PHF
EB	2.3%	0.71
WB	0.7%	0.76
NB	3.5%	0.79
SB	0.0%	0.00
All	2.0%	0.97

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	SE Kent Kangley Rd Eastbound				SE Kent Kangley Rd Westbound				Retreat Kanaskat Rd Northbound				Retreat Kanaskat Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
6:00 AM	0	0	2	2	0	0	26	0	0	27	0	0	0	0	0	0	57	271
6:15 AM	0	0	2	5	0	0	13	0	0	30	0	0	0	0	0	0	50	296
6:30 AM	0	0	5	6	0	0	36	0	0	33	0	0	0	0	0	0	80	333
6:45 AM	0	0	9	12	0	0	39	0	0	24	0	0	0	0	0	0	84	341
7:00 AM	0	0	6	9	0	1	45	0	0	21	0	0	0	0	0	0	82	342
7:15 AM	0	0	7	10	0	1	33	0	0	36	0	0	0	0	0	0	87	
7:30 AM	0	0	15	16	0	0	31	0	0	26	0	0	0	0	0	0	88	
7:45 AM	0	0	10	15	0	0	29	0	0	31	0	0	0	0	0	0	85	
Count Total	0	0	56	75	0	2	252	0	0	228	0	0	0	0	0	0	613	
Peak Hour	0	0	38	50	0	2	138	0	0	114	0	0	0	0	0	0	342	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

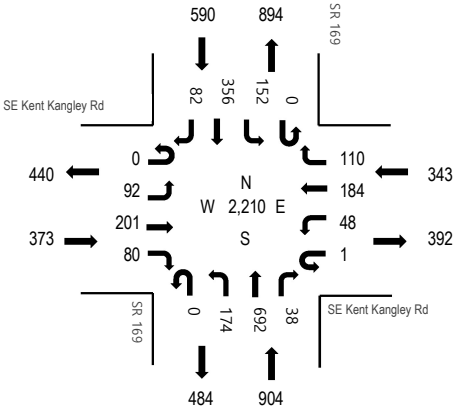
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:00 AM	1	1	0	0	2	6:00 AM	0	0	0	0	0
6:15 AM	0	0	0	0	0	6:15 AM	0	0	0	0	0
6:30 AM	0	1	0	0	1	6:30 AM	0	0	0	0	0
6:45 AM	0	2	0	0	2	6:45 AM	0	0	0	0	0
7:00 AM	0	1	0	0	1	7:00 AM	0	0	0	0	0
7:15 AM	0	1	1	0	2	7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:45 AM	2	2	0	0	4	7:45 AM	0	0	0	0	0
Count Total	3	8	1	0	12	Count Total	0	0	0	0	0
Peak Hour	2	4	1	0	7	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

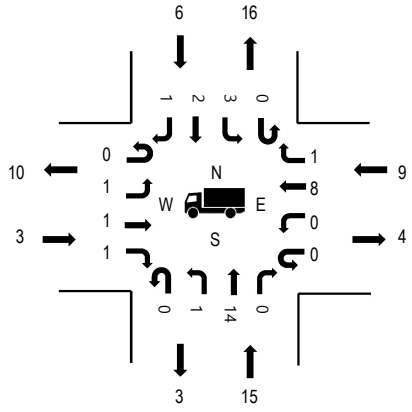
Location: 3 SR 169 & SE Kent Kangley Rd AM
Date: Wednesday, October 27, 2021
Peak Hour: 07:00 AM - 08:00 AM

Peak Hour

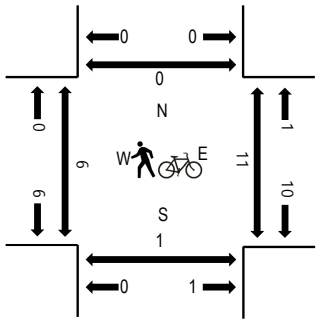
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.8%	0.84
WB	2.6%	0.75
NB	1.7%	0.84
SB	1.0%	0.69
All	1.5%	0.89

Traffic Counts - Motorized Vehicles

Interval Start Time	SE Kent Kangley Rd Eastbound				SE Kent Kangley Rd Westbound				SR 169 Northbound				SR 169 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
6:00 AM	0	6	16	4	0	4	17	14	1	27	137	6	0	10	20	4	266	1,235
6:15 AM	0	7	31	9	0	3	17	19	0	19	127	5	0	7	24	6	274	1,451
6:30 AM	0	20	30	9	0	4	24	19	0	17	129	6	0	8	38	7	311	1,798
6:45 AM	0	12	39	13	0	5	27	17	0	26	124	11	0	39	51	20	384	2,055
7:00 AM	0	18	54	19	0	9	42	21	0	34	139	5	0	25	80	36	482	2,210
7:15 AM	0	21	47	23	0	14	63	17	0	42	173	7	0	40	152	22	621	
7:30 AM	0	30	57	24	0	8	28	26	0	51	199	18	0	52	60	15	568	
7:45 AM	0	23	43	14	1	17	51	46	0	47	181	8	0	35	64	9	539	
Count Total	0	137	317	115	1	64	269	179	1	263	1,209	66	0	216	489	119	3,445	
Peak Hour	0	92	201	80	1	48	184	110	0	174	692	38	0	152	356	82	2,210	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

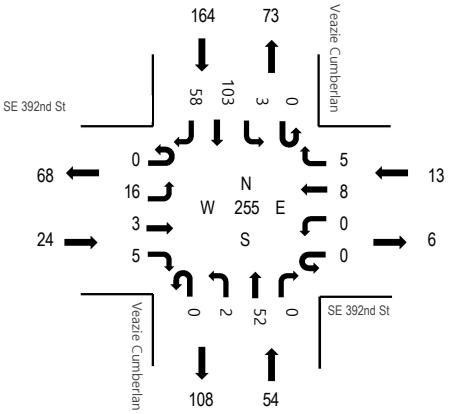
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:00 AM	0	1	0	2	3	6:00 AM	0	0	1	2	3
6:15 AM	3	2	0	2	7	6:15 AM	1	0	0	0	1
6:30 AM	1	2	2	2	7	6:30 AM	0	0	0	0	0
6:45 AM	0	1	1	3	5	6:45 AM	0	0	0	1	1
7:00 AM	1	6	0	1	8	7:00 AM	0	0	4	0	4
7:15 AM	2	3	7	2	14	7:15 AM	4	0	7	0	11
7:30 AM	0	3	1	1	5	7:30 AM	0	0	0	0	0
7:45 AM	0	3	1	2	6	7:45 AM	2	1	0	0	3
Count Total	7	21	12	15	55	Count Total	7	1	12	3	23
Peak Hour	3	15	9	6	33	Peak Hour	6	1	11	0	18

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

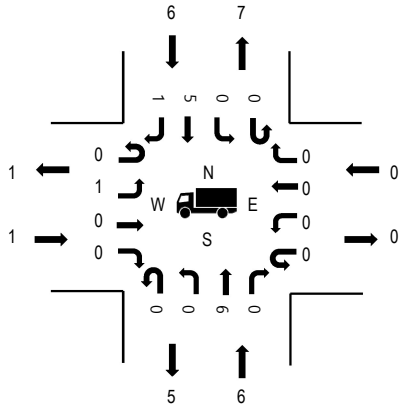
Location: 4 Veazie Cumberland Rd & SE 392nd St AM
Date: Wednesday, October 27, 2021
Peak Hour: 06:45 AM - 07:45 AM

Peak Hour

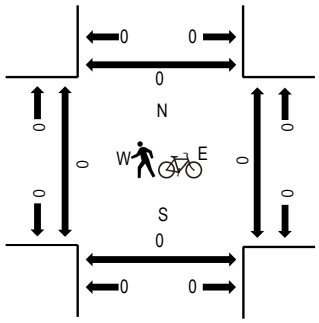
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	4.2%	0.86
WB	0.0%	0.65
NB	11.1%	0.84
SB	3.7%	0.82
All	5.1%	0.86

Traffic Counts - Motorized Vehicles

Interval Start Time	SE 392nd St Eastbound				SE 392nd St Westbound				Veazie Cumberland Rd Northbound				Veazie Cumberland Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
6:00 AM	0	1	0	1	0	0	3	0	0	0	8	0	0	0	13	14	40	201
6:15 AM	0	2	1	0	0	0	1	0	0	0	9	0	0	0	13	12	38	218
6:30 AM	0	1	0	1	0	0	4	1	0	1	10	0	0	1	17	13	49	237
6:45 AM	0	5	1	1	0	0	3	2	0	0	16	0	0	1	34	11	74	255
7:00 AM	0	4	1	1	0	0	2	1	0	0	16	0	0	2	19	11	57	254
7:15 AM	0	2	1	2	0	0	1	1	0	1	13	0	0	0	19	17	57	
7:30 AM	0	5	0	1	0	0	2	1	0	1	7	0	0	0	31	19	67	
7:45 AM	0	6	3	2	0	0	2	0	0	1	18	0	0	0	29	12	73	
Count Total	0	26	7	9	0	0	18	6	0	4	97	0	0	4	175	109	455	
Peak Hour	0	16	3	5	0	0	8	5	0	2	52	0	0	3	103	58	255	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

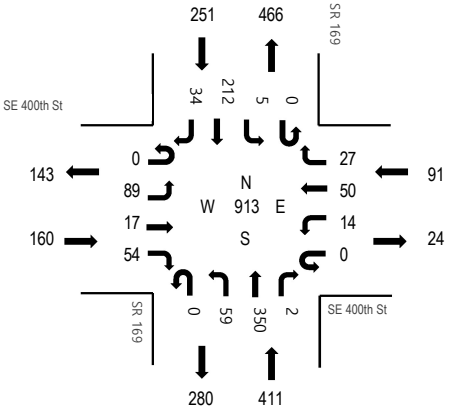
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:00 AM	0	0	0	1	1	6:00 AM	0	0	0	0	0
6:15 AM	0	2	0	0	2	6:15 AM	0	0	0	0	0
6:30 AM	0	0	0	0	0	6:30 AM	0	0	0	0	0
6:45 AM	0	3	0	1	4	6:45 AM	0	0	0	0	0
7:00 AM	1	0	0	2	3	7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:30 AM	0	3	0	3	6	7:30 AM	0	0	0	0	0
7:45 AM	1	0	0	0	1	7:45 AM	0	0	0	0	0
Count Total	2	8	0	7	17	Count Total	0	0	0	0	0
Peak Hour	1	6	0	6	13	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

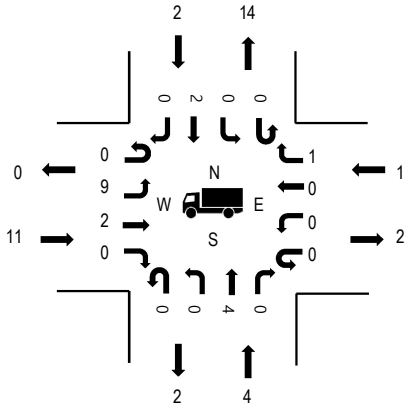
Location: 5 SR 169 & SE 400th St AM
Date: Wednesday, October 27, 2021
Peak Hour: 07:00 AM - 08:00 AM

Peak Hour

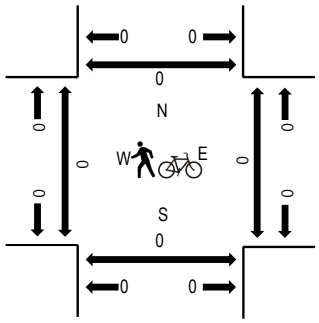
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	6.9%	0.73
WB	1.1%	0.69
NB	1.0%	0.86
SB	0.8%	0.71
All	2.0%	0.83

Traffic Counts - Motorized Vehicles

Interval Start Time	SE 400th St Eastbound				SE 400th St Westbound				SR 169 Northbound				SR 169 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
6:00 AM	0	16	1	3	0	0	13	2	0	7	86	0	0	0	20	4	152	782
6:15 AM	0	18	2	10	0	3	9	4	0	11	94	2	0	0	24	5	182	822
6:30 AM	0	14	2	7	0	3	14	7	0	8	118	2	0	1	26	5	207	832
6:45 AM	0	21	7	9	0	0	13	8	0	11	117	1	0	0	45	9	241	878
7:00 AM	0	26	4	7	0	1	7	8	0	11	101	0	0	0	25	2	192	913
7:15 AM	0	16	4	7	0	0	15	7	0	15	73	1	0	1	45	8	192	
7:30 AM	0	20	4	17	0	8	18	7	0	10	80	0	0	2	73	14	253	
7:45 AM	0	27	5	23	0	5	10	5	0	23	96	1	0	2	69	10	276	
Count Total	0	158	29	83	0	20	99	48	0	96	765	7	0	6	327	57	1,695	
Peak Hour	0	89	17	54	0	14	50	27	0	59	350	2	0	5	212	34	913	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

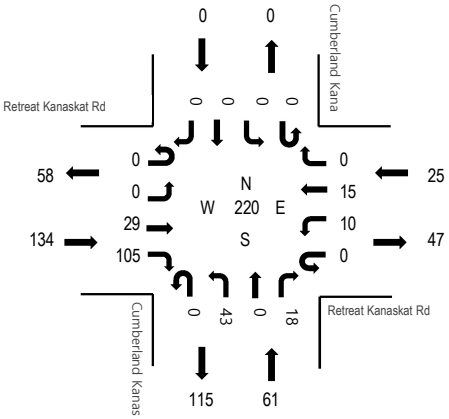
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
6:00 AM	0	0	1	0	1	6:00 AM	0	0	0	0	0
6:15 AM	0	2	0	1	3	6:15 AM	0	0	0	0	0
6:30 AM	0	0	0	0	0	6:30 AM	0	0	0	0	0
6:45 AM	2	2	0	2	6	6:45 AM	0	0	0	0	0
7:00 AM	3	0	0	1	4	7:00 AM	0	0	0	0	0
7:15 AM	0	2	0	0	2	7:15 AM	0	0	0	0	0
7:30 AM	3	2	1	0	6	7:30 AM	0	0	0	0	0
7:45 AM	5	0	0	1	6	7:45 AM	0	0	0	0	0
Count Total	13	8	2	5	28	Count Total	0	0	0	0	0
Peak Hour	11	4	1	2	18	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

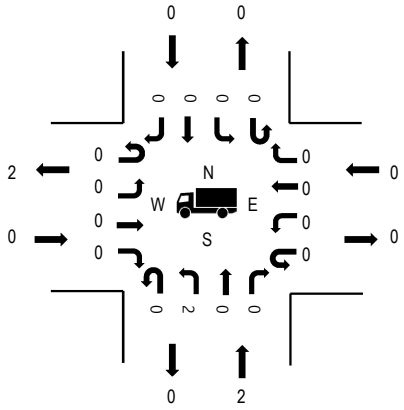
Location: 1 Cumberland Kanaskat Rd & Retreat Kanaskat Rd PM
Date: Wednesday, October 27, 2021
Peak Hour: 04:00 PM - 05:00 PM

Peak Hour

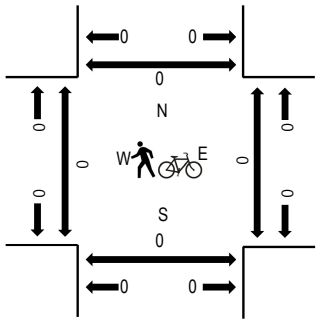
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.0%	0.88
WB	0.0%	0.89
NB	3.3%	0.80
SB	0.0%	0.00
All	0.9%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	Retreat Kanaskat Rd Eastbound				Retreat Kanaskat Rd Westbound				Cumberland Kanaskat Rd Northbound				Cumberland Kanaskat Rd Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
3:00 PM	0	0	6	28	0	5	3	0	0	15	0	2	0	0	0	0	59	206
3:15 PM	0	0	3	26	0	6	4	0	1	13	0	1	0	0	0	0	54	205
3:30 PM	0	0	4	28	0	0	3	0	0	9	0	2	0	0	0	0	46	205
3:45 PM	0	0	5	23	0	2	1	0	0	12	0	4	0	0	0	0	47	219
4:00 PM	0	0	7	25	0	1	6	0	0	14	0	5	0	0	0	0	58	220
4:15 PM	0	0	8	28	0	5	0	0	0	10	0	3	0	0	0	0	54	
4:30 PM	0	0	6	32	0	1	5	0	0	11	0	5	0	0	0	0	60	
4:45 PM	0	0	8	20	0	3	4	0	0	8	0	5	0	0	0	0	48	
Count Total	0	0	47	210	0	23	26	0	1	92	0	27	0	0	0	0	426	
Peak Hour	0	0	29	105	0	10	15	0	0	43	0	18	0	0	0	0	220	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

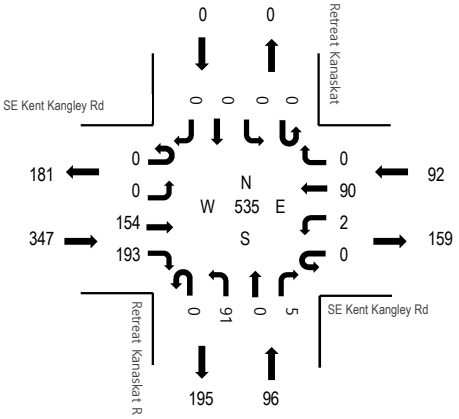
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	1	0	0	0	1	3:00 PM	0	0	0	0	0
3:15 PM	0	1	0	0	1	3:15 PM	0	0	0	0	0
3:30 PM	0	0	0	0	0	3:30 PM	0	0	0	0	0
3:45 PM	1	0	0	0	1	3:45 PM	0	0	0	0	0
4:00 PM	0	1	0	0	1	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0
Count Total	2	3	0	0	5	Count Total	0	0	0	0	0
Peak Hour	0	2	0	0	2	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

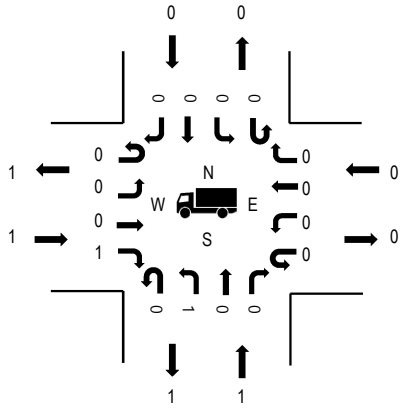
Location: 2 Retreat Kanaskat Rd & SE Kent Kangley Rd PM
Date: Wednesday, October 27, 2021
Peak Hour: 03:45 PM - 04:45 PM

Peak Hour

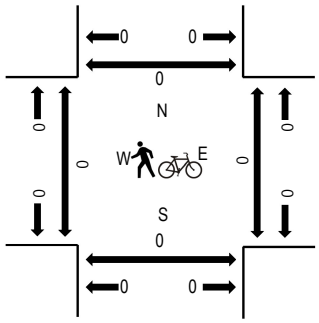
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.3%	0.87
WB	0.0%	0.77
NB	1.0%	0.80
SB	0.0%	0.00
All	0.4%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	SE Kent Kangley Rd Eastbound				SE Kent Kangley Rd Westbound				Retreat Kanaskat Rd Northbound				Retreat Kanaskat Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
3:00 PM	0	0	43	49	0	0	22	0	0	29	0	1	0	0	0	0	144	514
3:15 PM	0	0	33	35	0	1	28	0	0	26	0	0	0	0	0	0	123	501
3:30 PM	0	0	34	44	0	2	16	0	0	23	0	0	0	0	0	0	119	511
3:45 PM	0	0	38	51	0	1	21	0	0	16	0	1	0	0	0	0	128	535
4:00 PM	0	0	39	39	0	0	23	0	0	29	0	1	0	0	0	0	131	530
4:15 PM	0	0	30	50	0	1	29	0	0	22	0	1	0	0	0	0	133	
4:30 PM	0	0	47	53	0	0	17	0	0	24	0	2	0	0	0	0	143	
4:45 PM	0	0	38	46	0	0	24	0	0	13	0	2	0	0	0	0	123	
Count Total	0	0	302	367	0	5	180	0	0	182	0	8	0	0	0	0	1,044	
Peak Hour	0	0	154	193	0	2	90	0	0	91	0	5	0	0	0	0	535	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

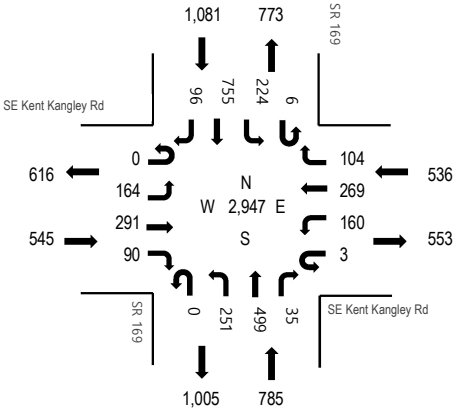
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	0	0	0	0	0	3:00 PM	0	0	0	0	0
3:15 PM	0	0	1	0	1	3:15 PM	0	0	0	0	0
3:30 PM	0	1	0	0	1	3:30 PM	0	0	0	0	0
3:45 PM	1	0	0	0	1	3:45 PM	0	0	0	0	0
4:00 PM	0	1	0	0	1	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
Count Total	1	2	1	0	4	Count Total	0	0	0	0	0
Peak Hour	1	1	0	0	2	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

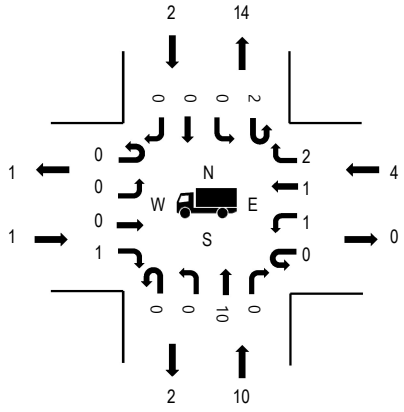
Location: 3 SR 169 & SE Kent Kangley Rd PM
Date: Wednesday, October 27, 2021
Peak Hour: 03:45 PM - 04:45 PM

Peak Hour

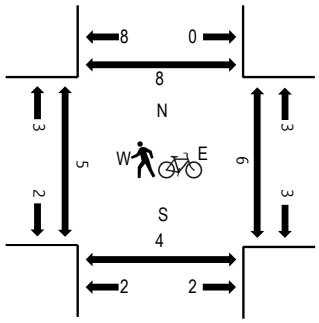
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.2%	0.90
WB	0.7%	0.94
NB	1.3%	0.90
SB	0.2%	0.97
All	0.6%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	SE Kent Kangley Rd Eastbound				SE Kent Kangley Rd Westbound				SR 169 Northbound				SR 169 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
3:00 PM	0	46	67	29	0	33	71	24	0	55	114	4	3	47	151	23	667	2,771
3:15 PM	0	50	52	25	0	26	59	29	0	63	111	6	3	55	156	31	666	2,861
3:30 PM	0	39	67	19	0	33	64	20	0	49	99	7	0	54	186	22	659	2,899
3:45 PM	0	47	84	20	0	36	67	30	0	67	142	8	3	49	205	21	779	2,947
4:00 PM	0	52	64	30	1	39	72	29	0	65	123	9	3	57	185	28	757	2,857
4:15 PM	0	27	57	21	1	43	74	24	0	58	115	13	0	58	190	23	704	
4:30 PM	0	38	86	19	1	42	56	21	0	61	119	5	0	60	175	24	707	
4:45 PM	0	0	72	26	0	38	63	26	0	65	120	6	0	53	191	29	689	
Count Total	0	299	549	189	3	290	526	203	0	483	943	58	12	433	1,439	201	5,628	
Peak Hour	0	164	291	90	3	160	269	104	0	251	499	35	6	224	755	96	2,947	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

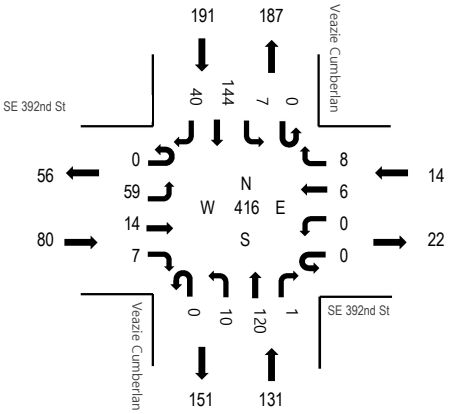
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	0	2	1	6	9	3:00 PM	5	2	3	5	15
3:15 PM	1	8	0	3	12	3:15 PM	1	0	4	2	7
3:30 PM	1	1	2	3	7	3:30 PM	4	0	1	5	10
3:45 PM	0	2	2	1	5	3:45 PM	1	1	3	3	8
4:00 PM	0	4	1	1	6	4:00 PM	0	0	1	4	5
4:15 PM	0	2	1	0	3	4:15 PM	4	2	0	0	6
4:30 PM	1	2	0	0	3	4:30 PM	0	1	2	1	4
4:45 PM	1	0	0	2	3	4:45 PM	1	1	2	2	6
Count Total	4	21	7	16	48	Count Total	16	7	16	22	61
Peak Hour	1	10	4	2	17	Peak Hour	5	4	6	8	23

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

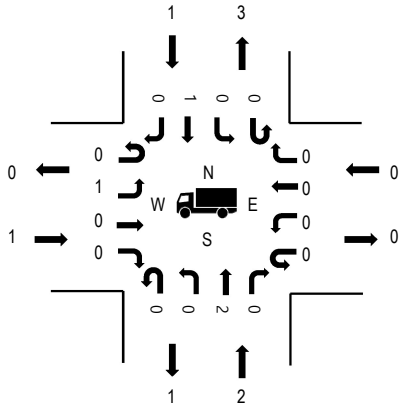
Location: 4 Veazie Cumberland Rd & SE 392nd St PM
Date: Wednesday, October 27, 2021
Peak Hour: 03:15 PM - 04:15 PM

Peak Hour

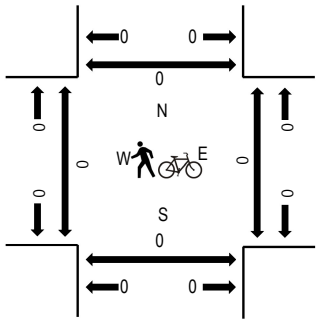
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	1.3%	0.59
WB	0.0%	0.70
NB	1.5%	0.84
SB	0.5%	0.70
All	1.0%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	SE 392nd St Eastbound				SE 392nd St Westbound				Veazie Cumberland Rd Northbound				Veazie Cumberland Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
3:00 PM	0	18	2	1	0	0	4	1	0	0	31	0	0	1	33	5	96	398
3:15 PM	0	11	0	2	0	0	0	4	0	3	23	1	0	4	51	13	112	416
3:30 PM	0	12	1	1	0	0	5	0	0	1	30	0	0	1	29	8	88	395
3:45 PM	0	24	8	2	0	0	0	2	0	4	30	0	0	1	22	9	102	400
4:00 PM	0	12	5	2	0	0	1	2	0	2	37	0	0	1	42	10	114	397
4:15 PM	0	13	5	1	0	0	3	2	0	0	30	0	0	1	28	8	91	
4:30 PM	0	6	1	1	0	0	0	1	0	4	35	0	0	0	31	14	93	
4:45 PM	0	13	2	6	0	0	2	0	0	5	39	0	0	0	24	8	99	
Count Total	0	109	24	16	0	0	15	12	0	19	255	1	0	9	260	75	795	
Peak Hour	0	59	14	7	0	0	6	8	0	10	120	1	0	7	144	40	416	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

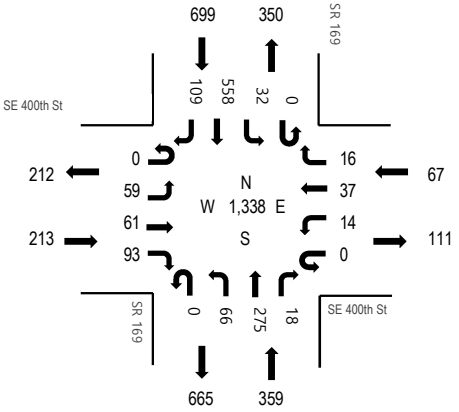
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	0	0	0	0	0	3:00 PM	0	0	0	0	0
3:15 PM	0	1	0	1	2	3:15 PM	0	0	0	0	0
3:30 PM	1	0	0	0	1	3:30 PM	0	0	0	0	0
3:45 PM	0	1	0	0	1	3:45 PM	0	0	0	0	0
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:30 PM	1	0	0	0	1	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
Count Total	2	2	0	2	6	Count Total	0	0	0	0	0
Peak Hour	1	2	0	1	4	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

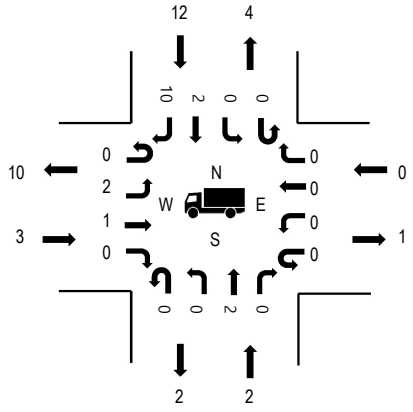
Location: 5 SR 169 & SE 400th St PM
Date: Wednesday, October 27, 2021
Peak Hour: 03:45 PM - 04:45 PM

Peak Hour

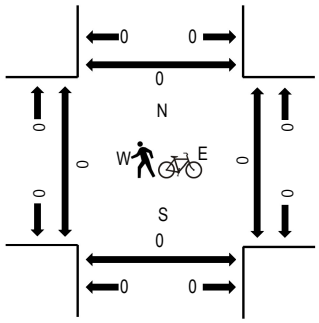
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	1.4%	0.81
WB	0.0%	0.80
NB	0.6%	0.88
SB	1.7%	0.93
All	1.3%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	SE 400th St Eastbound				SE 400th St Westbound				SR 169 Northbound				SR 169 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
3:00 PM	0	17	16	20	0	3	10	3	0	16	63	3	0	4	113	22	290	1,255
3:15 PM	0	14	6	17	0	4	11	4	0	21	53	2	0	6	121	23	282	1,282
3:30 PM	0	24	11	22	0	6	8	5	0	24	57	1	0	8	126	34	326	1,313
3:45 PM	0	21	22	23	0	0	11	5	0	13	64	10	0	19	145	24	357	1,338
4:00 PM	0	12	11	22	0	6	8	3	0	11	68	3	0	7	140	26	317	1,315
4:15 PM	0	11	18	19	0	2	8	3	0	20	66	2	0	3	133	28	313	
4:30 PM	0	15	10	29	0	6	10	5	0	22	77	3	0	3	140	31	351	
4:45 PM	0	13	23	33	0	10	10	3	0	27	58	2	0	8	123	24	334	
Count Total	0	127	117	185	0	37	76	31	0	154	506	26	0	58	1,041	212	2,570	
Peak Hour	0	59	61	93	0	14	37	16	0	66	275	18	0	32	558	109	1,338	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
3:00 PM	1	2	0	5	8	3:00 PM	0	0	0	0	0
3:15 PM	5	1	0	5	11	3:15 PM	0	0	0	0	0
3:30 PM	8	0	0	3	11	3:30 PM	0	0	0	0	0
3:45 PM	2	0	0	4	6	3:45 PM	0	0	0	0	0
4:00 PM	0	0	0	2	2	4:00 PM	0	0	0	0	0
4:15 PM	1	1	0	4	6	4:15 PM	0	0	0	0	0
4:30 PM	0	1	0	2	3	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
Count Total	17	5	0	25	47	Count Total	0	0	0	0	0
Peak Hour	3	2	0	12	17	Peak Hour	0	0	0	0	0

Appendix B

Level of Service (LOS) Calculations

2021 Existing

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1	32	15	12	55	6
Future Volume (vph)	1	32	15	12	55	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	5%			0%	-7%	
Link Speed (mph)	45			45	35	
Link Distance (ft)	626			668	555	
Travel Time (s)	9.5			10.1	10.8	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	9%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	32	15	12	55	6
Future Vol, veh/h	1	32	15	12	55	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	0	-7	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	9	0
Mvmt Flow	1	39	18	15	67	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	72	21
Stage 1	-	-	-	-	21	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	-	-	4.1	-	5.09	5.5
Critical Hdwy Stg 1	-	-	-	-	4.09	-
Critical Hdwy Stg 2	-	-	-	-	4.09	-
Follow-up Hdwy	-	-	2.2	-	3.581	3.3
Pot Cap-1 Maneuver	-	-	1635	-	941	1067
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	931	1067
Mov Cap-2 Maneuver	-	-	-	-	931	-
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1033	-	-	1635	-
HCM Lane V/C Ratio	0.072	-	-	0.011	-
HCM Control Delay (s)	8.8	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	38	50	2	138	114	0
Future Volume (vph)	38	50	2	138	114	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	45			45	45	
Link Distance (ft)	721			1061	827	
Travel Time (s)	10.9			16.1	12.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	4%	0%	1%	4%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	50	2	138	114	0
Future Vol, veh/h	38	50	2	138	114	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	4	0	1	4	0
Mvmt Flow	39	52	2	142	118	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	39	0	211	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	146	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1584	-	773	1005
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1584	-	772	1005
Mov Cap-2 Maneuver	-	-	-	-	772	-
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	875	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.5
HCM LOS			B

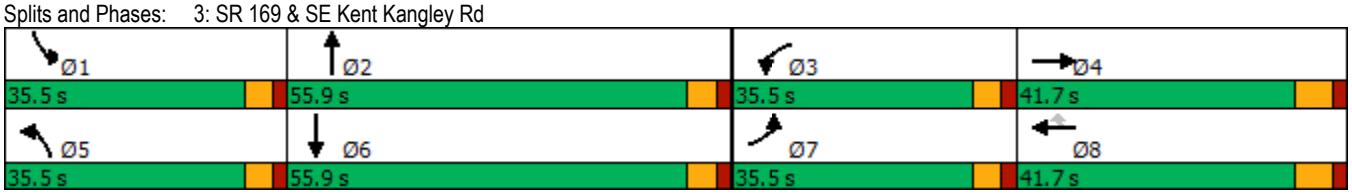
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	772	-	-	1584	-
HCM Lane V/C Ratio	0.152	-	-	0.001	-
HCM Control Delay (s)	10.5	-	-	7.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

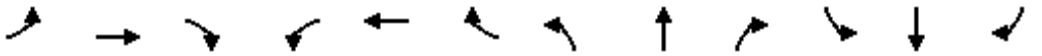
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	201	80	49	184	110	174	692	38	152	356	82
Future Volume (vph)	92	201	80	49	184	110	174	692	38	152	356	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		0	275		0	550		0	550		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		818			799			874			850	
Travel Time (s)		13.9			13.6			17.0			16.6	
Confl. Peds. (#/hr)			1						11			6
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	1%	0%	4%	1%	1%	2%	0%	2%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	5.0	3.0	7.0		3.0	7.0	
Minimum Split (s)	8.5	29.7		8.5	36.7	36.7	8.5	34.9		8.5	33.9	
Total Split (s)	35.5	41.7		35.5	41.7	41.7	35.5	55.9		35.5	55.9	
Total Split (%)	21.1%	24.7%		21.1%	24.7%	24.7%	21.1%	33.2%		21.1%	33.2%	
Yellow Time (s)	3.5	4.7		3.5	4.7	4.7	3.5	3.9		3.5	3.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	6.7		5.5	6.7	6.7	5.5	5.9		5.5	5.9	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 168.6
Actuated Cycle Length: 110.2
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: SR 169 & SE Kent Kangley Rd

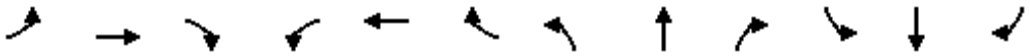




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	201	80	49	184	110	174	692	38	152	356	82
Future Volume (veh/h)	92	201	80	49	184	110	174	692	38	152	356	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1841	1885	1885	1870	1900	1870	1885	1885
Adj Flow Rate, veh/h	103	226	90	55	207	124	196	778	43	171	400	92
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	0	4	1	1	2	0	2	1	1
Cap, veh/h	134	478	185	71	284	246	244	1188	66	216	963	219
Arrive On Green	0.07	0.19	0.19	0.04	0.15	0.15	0.14	0.35	0.35	0.12	0.33	0.33
Sat Flow, veh/h	1795	2524	975	1810	1841	1598	1795	3422	189	1781	2894	659
Grp Volume(v), veh/h	103	158	158	55	207	124	196	404	417	171	246	246
Grp Sat Flow(s),veh/h/ln	1795	1791	1708	1810	1841	1598	1795	1777	1834	1781	1791	1762
Q Serve(g_s), s	4.4	6.1	6.4	2.3	8.4	5.5	8.3	15.0	15.0	7.3	8.3	8.4
Cycle Q Clear(g_c), s	4.4	6.1	6.4	2.3	8.4	5.5	8.3	15.0	15.0	7.3	8.3	8.4
Prop In Lane	1.00		0.57	1.00		1.00	1.00		0.10	1.00		0.37
Lane Grp Cap(c), veh/h	134	339	323	71	284	246	244	617	637	216	596	586
V/C Ratio(X)	0.77	0.47	0.49	0.77	0.73	0.50	0.80	0.65	0.65	0.79	0.41	0.42
Avail Cap(c_a), veh/h	691	804	767	696	826	717	691	1139	1176	685	1148	1130
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	28.1	28.2	37.1	31.4	30.2	32.7	21.5	21.5	33.3	20.1	20.2
Incr Delay (d2), s/veh	3.5	1.0	1.1	6.5	3.6	1.6	6.1	2.0	2.0	6.4	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.6	2.6	1.1	3.8	2.1	3.8	6.1	6.3	3.4	3.4	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	29.1	29.4	43.6	35.0	31.8	38.8	23.5	23.5	39.7	20.9	21.0
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	C	C
Approach Vol, veh/h		419			386			1017			663	
Approach Delay, s/veh		31.6			35.2			26.4			25.8	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	33.0	8.6	21.5	16.1	31.8	11.3	18.7
Change Period (Y+Rc), s	5.5	5.9	5.5	6.7	5.5	5.9	5.5	6.7
Max Green Setting (Gmax), s	30.0	50.0	30.0	35.0	30.0	50.0	30.0	35.0
Max Q Clear Time (g_c+I1), s	9.3	17.0	4.3	8.4	10.3	10.4	6.4	10.4
Green Ext Time (p_c), s	0.4	9.8	0.1	1.7	0.5	5.5	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	3	5	0	8	5	2	52	0	3	103	58
Future Volume (vph)	16	3	5	0	8	5	2	52	0	3	103	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			194			693			700	
Travel Time (s)		8.7			2.9			10.5			10.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	6%	0%	0%	0%	0%	0%	0%	12%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	3	5	0	8	5	2	52	0	3	103	58
Future Vol, veh/h	16	3	5	0	8	5	2	52	0	3	103	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	6	0	0	0	0	0	0	12	0	0	5	2
Mvmt Flow	19	3	6	0	9	6	2	60	0	3	120	67

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	232	224	154	228	257	60	187	0	0	60	0	0
Stage 1	160	160	-	64	64	-	-	-	-	-	-	-
Stage 2	72	64	-	164	193	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.16	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	714	678	897	731	651	1011	1399	-	-	1556	-	-
Stage 1	833	769	-	952	846	-	-	-	-	-	-	-
Stage 2	928	846	-	843	745	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	700	676	897	721	649	1011	1399	-	-	1556	-	-
Mov Cap-2 Maneuver	700	676	-	721	649	-	-	-	-	-	-	-
Stage 1	832	767	-	951	845	-	-	-	-	-	-	-
Stage 2	912	845	-	832	744	-	-	-	-	-	-	-

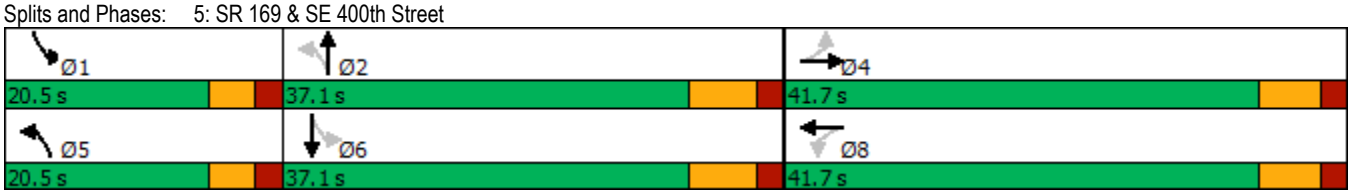
Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.9	0.3	0.1
HCM LOS	B	A		

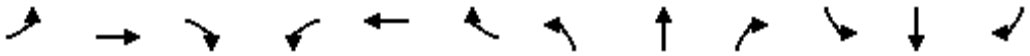
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1399	-	-	730	753	1556	-	-
HCM Lane V/C Ratio	0.002	-	-	0.038	0.02	0.002	-	-
HCM Control Delay (s)	7.6	0	-	10.1	9.9	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	17	54	14	50	27	59	350	2	5	212	34
Future Volume (vph)	89	17	54	14	50	27	59	350	2	5	212	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	275		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		1012			964			719			773	
Travel Time (s)		15.3			14.6			9.8			10.5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	10%	12%	0%	0%	0%	4%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		3.0	5.0		3.0	5.0	
Minimum Split (s)	29.7	29.7		31.7	31.7		8.5	27.1		8.5	28.1	
Total Split (s)	41.7	41.7		41.7	41.7		20.5	37.1		20.5	37.1	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		20.6%	37.4%		20.6%	37.4%	
Yellow Time (s)	4.7	4.7		4.7	4.7		3.5	5.1		3.5	5.1	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.7			6.7		5.5	7.1		5.5	7.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 99.3	
Actuated Cycle Length: 53.1	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 5: SR 169 & SE 400th Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	17	54	14	50	27	59	350	2	5	212	34
Future Volume (veh/h)	89	17	54	14	50	27	59	350	2	5	212	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1722	1900	1900	1900	1841	1900	1885	1900	1900	1885	1900
Adj Flow Rate, veh/h	107	20	65	17	60	33	71	422	2	6	255	41
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	10	12	0	0	0	4	0	1	0	0	1	0
Cap, veh/h	266	49	91	128	210	102	429	624	3	321	467	75
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.04	0.33	0.33	0.00	0.29	0.29
Sat Flow, veh/h	677	257	478	141	1104	533	1810	1875	9	1810	1585	255
Grp Volume(v), veh/h	192	0	0	110	0	0	71	0	424	6	0	296
Grp Sat Flow(s),veh/h/ln	1413	0	0	1778	0	0	1810	0	1884	1810	0	1839
Q Serve(g_s), s	2.8	0.0	0.0	0.0	0.0	0.0	1.1	0.0	7.9	0.1	0.0	5.5
Cycle Q Clear(g_c), s	5.0	0.0	0.0	2.2	0.0	0.0	1.1	0.0	7.9	0.1	0.0	5.5
Prop In Lane	0.56		0.34	0.15		0.30	1.00		0.00	1.00		0.14
Lane Grp Cap(c), veh/h	406	0	0	441	0	0	429	0	627	321	0	543
V/C Ratio(X)	0.47	0.00	0.00	0.25	0.00	0.00	0.17	0.00	0.68	0.02	0.00	0.55
Avail Cap(c_a), veh/h	1285	0	0	1569	0	0	1015	0	1381	975	0	1349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.3	0.0	0.0	14.3	0.0	0.0	9.7	0.0	11.8	10.6	0.0	12.1
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.3	0.0	0.0	0.1	0.0	2.2	0.0	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.7	0.0	0.0	0.3	0.0	2.4	0.0	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	0.0	0.0	14.6	0.0	0.0	9.8	0.0	13.9	10.6	0.0	13.6
LnGrp LOS	B	A	A	B	A	A	A	A	B	B	A	B
Approach Vol, veh/h		192			110			495			302	
Approach Delay, s/veh		16.2			14.6			13.4			13.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	20.7		14.5	7.2	19.2		14.5				
Change Period (Y+Rc), s	5.5	7.1		6.7	5.5	7.1		6.7				
Max Green Setting (Gmax), s	15.0	30.0		35.0	15.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	2.1	9.9		7.0	3.1	7.5		4.2				
Green Ext Time (p_c), s	0.0	3.7		1.1	0.0	2.5		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			14.0									
HCM 6th LOS			B									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	29	105	10	15	43	18
Future Volume (vph)	29	105	10	15	43	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	5%			0%	-7%	
Link Speed (mph)	45			45	35	
Link Distance (ft)	626			668	555	
Travel Time (s)	9.5			10.1	10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	5%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	105	10	15	43	18
Future Vol, veh/h	29	105	10	15	43	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	0	-7	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	5	0
Mvmt Flow	32	114	11	16	47	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	32	0	127	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	-	-	4.1	-	5.05	5.5
Critical Hdwy Stg 1	-	-	-	-	4.05	-
Critical Hdwy Stg 2	-	-	-	-	4.05	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.3
Pot Cap-1 Maneuver	-	-	1593	-	904	992
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	991	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1593	-	898	992
Mov Cap-2 Maneuver	-	-	-	-	898	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	984	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1274	-	-	1593	-
HCM Lane V/C Ratio	0.052	-	-	0.007	-
HCM Control Delay (s)	8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	154	193	2	90	91	5
Future Volume (vph)	154	193	2	90	91	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	45			45	45	
Link Distance (ft)	721			1061	827	
Travel Time (s)	10.9			16.1	12.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	154	193	2	90	91	5
Future Vol, veh/h	154	193	2	90	91	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	0	1	0
Mvmt Flow	164	205	2	96	97	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	164	0	367	267
Stage 1	-	-	-	-	267	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1427	-	635	777
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1427	-	634	777
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	926	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.7
HCM LOS			B

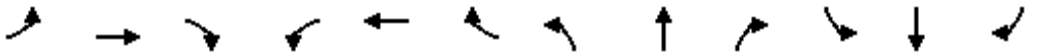
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	640	-	-	1427	-
HCM Lane V/C Ratio	0.16	-	-	0.001	-
HCM Control Delay (s)	11.7	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	291	90	163	269	104	251	499	35	230	755	96
Future Volume (vph)	164	291	90	163	269	104	251	499	35	230	755	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		0	275		0	550		0	550		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		818			799			874			850	
Travel Time (s)		13.9			13.6			17.0			16.6	
Confl. Peds. (#/hr)			4			8			6			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	1%	1%	1%	2%	0%	2%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	5.0	3.0	7.0		3.0	7.0	
Minimum Split (s)	8.5	29.7		8.5	36.7	36.7	8.5	34.9		8.5	33.9	
Total Split (s)	27.0	36.0		28.0	37.0	37.0	28.0	51.0		35.0	58.0	
Total Split (%)	18.0%	24.0%		18.7%	24.7%	24.7%	18.7%	34.0%		23.3%	38.7%	
Yellow Time (s)	3.5	4.7		3.5	4.7	4.7	3.5	3.9		3.5	3.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	6.7		5.5	6.7	6.7	5.5	5.9		5.5	5.9	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Red
Natural Cycle: 110
Control Type: Actuated-Coordinated

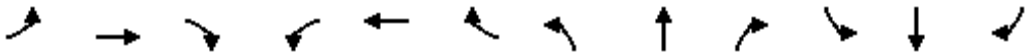
Splits and Phases: 3: SR 169 & SE Kent Kangley Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	291	90	163	269	104	251	499	35	230	755	96
Future Volume (veh/h)	164	291	90	163	269	104	251	499	35	230	755	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1885	1885	1870	1900	1870	1900	1885	1900	1900
Adj Flow Rate, veh/h	173	306	95	172	283	109	264	525	37	242	795	101
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	1	1	2	0	2	0	1	0	0
Cap, veh/h	196	472	144	195	327	271	271	1387	98	267	1323	168
Arrive On Green	0.11	0.17	0.17	0.11	0.17	0.17	0.15	0.41	0.41	0.15	0.41	0.41
Sat Flow, veh/h	1810	2720	829	1795	1885	1563	1810	3367	237	1795	3221	409
Grp Volume(v), veh/h	173	201	200	172	283	109	264	277	285	242	446	450
Grp Sat Flow(s),veh/h/ln	1810	1805	1744	1795	1885	1563	1810	1777	1827	1795	1805	1825
Q Serve(g_s), s	14.1	15.5	16.1	14.2	21.9	9.3	21.8	16.3	16.3	19.9	29.0	29.0
Cycle Q Clear(g_c), s	14.1	15.5	16.1	14.2	21.9	9.3	21.8	16.3	16.3	19.9	29.0	29.0
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.13	1.00		0.22
Lane Grp Cap(c), veh/h	196	313	302	195	327	271	271	732	753	267	741	750
V/C Ratio(X)	0.88	0.64	0.66	0.88	0.86	0.40	0.97	0.38	0.38	0.91	0.60	0.60
Avail Cap(c_a), veh/h	259	353	341	269	381	316	271	732	753	353	741	750
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.0	57.7	57.9	65.9	60.3	55.0	63.4	30.7	30.7	62.8	34.6	34.6
Incr Delay (d2), s/veh	19.7	3.3	4.0	17.6	16.5	1.0	46.9	1.5	1.5	21.8	3.6	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	7.3	7.4	7.4	11.9	3.7	13.5	7.3	7.5	10.7	13.4	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.6	61.0	61.9	83.5	76.7	56.0	110.4	32.2	32.2	84.7	38.2	38.1
LnGrp LOS	F	E	E	F	E	E	F	C	C	F	D	D
Approach Vol, veh/h		574			564			826			1138	
Approach Delay, s/veh		68.7			74.8			57.2			48.0	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.8	67.7	21.8	32.7	28.0	67.5	21.7	32.8
Change Period (Y+Rc), s	5.5	5.9	5.5	6.7	5.5	5.9	5.5	6.7
Max Green Setting (Gmax), s	29.5	45.1	22.5	29.3	22.5	52.1	21.5	30.3
Max Q Clear Time (g_c+I1), s	21.9	18.3	16.2	18.1	23.8	31.0	16.1	23.9
Green Ext Time (p_c), s	0.4	5.8	0.1	1.7	0.0	9.1	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	59.2
HCM 6th LOS	E



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	14	7	0	6	8	10	120	1	7	144	40
Future Volume (vph)	59	14	7	0	6	8	10	120	1	7	144	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			194			693			700	
Travel Time (s)		8.7			2.9			10.5			10.6	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	59	14	7	0	6	8	10	120	1	7	144	40
Future Vol, veh/h	59	14	7	0	6	8	10	120	1	7	144	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	65	15	8	0	7	9	11	132	1	8	158	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	359	351	180	363	373	133	202	0	0	133	0	0
Stage 1	196	196	-	155	155	-	-	-	-	-	-	-
Stage 2	163	155	-	208	218	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	596	577	868	597	561	922	1382	-	-	1464	-	-
Stage 1	806	742	-	852	773	-	-	-	-	-	-	-
Stage 2	839	773	-	799	726	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	578	568	868	573	553	922	1382	-	-	1464	-	-
Mov Cap-2 Maneuver	578	568	-	573	553	-	-	-	-	-	-	-
Stage 1	799	738	-	844	766	-	-	-	-	-	-	-
Stage 2	816	766	-	771	722	-	-	-	-	-	-	-

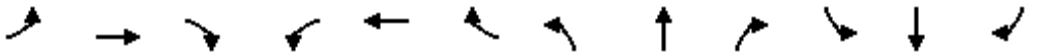
Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	10.1	0.6	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1382	-	-	594	717	1464	-	-
HCM Lane V/C Ratio	0.008	-	-	0.148	0.021	0.005	-	-
HCM Control Delay (s)	7.6	0	-	12.1	10.1	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	61	93	14	37	16	66	275	18	32	558	109
Future Volume (vph)	59	61	93	14	37	16	66	275	18	32	558	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	275		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		1012			964			719			773	
Travel Time (s)		15.3			14.6			9.8			10.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	2%	0%	0%	0%	0%	0%	1%	0%	0%	1%	9%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		3.0	5.0		3.0	5.0	
Minimum Split (s)	29.7	29.7		31.7	31.7		8.5	27.1		8.5	28.1	
Total Split (s)	41.7	41.7		41.7	41.7		20.5	37.1		20.5	37.1	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		20.6%	37.4%		20.6%	37.4%	
Yellow Time (s)	4.7	4.7		4.7	4.7		3.5	5.1		3.5	5.1	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.7			6.7		5.5	7.1		5.5	7.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 99.3	
Actuated Cycle Length: 68.8	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 5: SR 169 & SE 400th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	61	93	14	37	16	66	275	18	32	558	109
Future Volume (veh/h)	59	61	93	14	37	16	66	275	18	32	558	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1900	1900	1900	1900	1900	1885	1900	1900	1885	1767
Adj Flow Rate, veh/h	63	65	99	15	39	17	70	293	19	34	594	116
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	0	0	0	0	0	1	0	0	1	9
Cap, veh/h	141	106	130	109	217	79	265	812	53	548	686	134
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.04	0.46	0.46	0.02	0.45	0.45
Sat Flow, veh/h	336	574	704	185	1171	427	1810	1751	114	1810	1532	299
Grp Volume(v), veh/h	227	0	0	71	0	0	70	0	312	34	0	710
Grp Sat Flow(s),veh/h/ln	1614	0	0	1783	0	0	1810	0	1865	1810	0	1831
Q Serve(g_s), s	5.2	0.0	0.0	0.0	0.0	0.0	1.2	0.0	6.3	0.6	0.0	20.5
Cycle Q Clear(g_c), s	7.7	0.0	0.0	1.9	0.0	0.0	1.2	0.0	6.3	0.6	0.0	20.5
Prop In Lane	0.28		0.44	0.21		0.24	1.00		0.06	1.00		0.16
Lane Grp Cap(c), veh/h	377	0	0	405	0	0	265	0	865	548	0	820
V/C Ratio(X)	0.60	0.00	0.00	0.18	0.00	0.00	0.26	0.00	0.36	0.06	0.00	0.87
Avail Cap(c_a), veh/h	1026	0	0	1082	0	0	659	0	954	972	0	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	0.0	20.2	0.0	0.0	12.0	0.0	10.1	8.7	0.0	14.6
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.4	0.0	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	0.7	0.0	0.0	0.3	0.0	2.0	0.2	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.1	0.0	0.0	20.5	0.0	0.0	12.2	0.0	10.6	8.7	0.0	23.2
LnGrp LOS	C	A	A	C	A	A	B	A	B	A	A	C
Approach Vol, veh/h		227			71			382			744	
Approach Delay, s/veh		24.1			20.5			10.9			22.6	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	34.3		17.6	7.7	33.4		17.6				
Change Period (Y+Rc), s	5.5	7.1		6.7	5.5	7.1		6.7				
Max Green Setting (Gmax), s	15.0	30.0		35.0	15.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	2.6	8.3		9.7	3.2	22.5		3.9				
Green Ext Time (p_c), s	0.0	2.6		1.2	0.0	3.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		19.6	
HCM 6th LOS		B	

2030 No Action

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1	42	20	16	72	8
Future Volume (vph)	1	42	20	16	72	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	5%			0%	-7%	
Link Speed (mph)	45			45	35	
Link Distance (ft)	626			668	555	
Travel Time (s)	9.5			10.1	10.8	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	9%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	42	20	16	72	8
Future Vol, veh/h	1	42	20	16	72	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	0	-7	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	9	0
Mvmt Flow	1	51	24	20	88	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	95	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	-	-	4.1	-	5.09	5.5
Critical Hdwy Stg 1	-	-	-	-	4.09	-
Critical Hdwy Stg 2	-	-	-	-	4.09	-
Follow-up Hdwy	-	-	2.2	-	3.581	3.3
Pot Cap-1 Maneuver	-	-	1635	-	921	1060
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	907	1060
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1008	-	-	1635	-
HCM Lane V/C Ratio	0.097	-	-	0.015	-
HCM Control Delay (s)	9	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	50	65	3	180	149	0
Future Volume (vph)	50	65	3	180	149	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	45			45	45	
Link Distance (ft)	721			1061	827	
Travel Time (s)	10.9			16.1	12.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	4%	0%	1%	4%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	65	3	180	149	0
Future Vol, veh/h	50	65	3	180	149	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	4	0	1	4	0
Mvmt Flow	52	67	3	186	154	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	278	86
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	192	-
Critical Hdwy	-	-	4.1	-	6.44	6.2
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.2	-	3.536	3.3
Pot Cap-1 Maneuver	-	-	1567	-	708	978
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	836	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1567	-	707	978
Mov Cap-2 Maneuver	-	-	-	-	707	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	834	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.5
HCM LOS			B

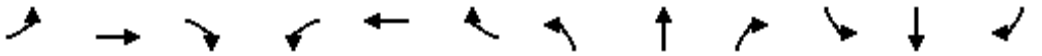
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	707	-	-	1567	-
HCM Lane V/C Ratio	0.217	-	-	0.002	-
HCM Control Delay (s)	11.5	-	-	7.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	262	104	64	240	144	227	903	50	198	464	107
Future Volume (vph)	120	262	104	64	240	144	227	903	50	198	464	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		0	275		0	550		0	550		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		818			799			874			850	
Travel Time (s)		13.9			13.6			17.0			16.6	
Confl. Peds. (#/hr)			1						11			6
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	1%	0%	4%	1%	1%	2%	0%	2%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	5.0	3.0	7.0		3.0	7.0	
Minimum Split (s)	8.5	29.7		8.5	36.7	36.7	8.5	34.9		8.5	33.9	
Total Split (s)	35.5	41.7		35.5	41.7	41.7	35.5	55.9		35.5	55.9	
Total Split (%)	21.1%	24.7%		21.1%	24.7%	24.7%	21.1%	33.2%		21.1%	33.2%	
Yellow Time (s)	3.5	4.7		3.5	4.7	4.7	3.5	3.9		3.5	3.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	6.7		5.5	6.7	6.7	5.5	5.9		5.5	5.9	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 168.6
Actuated Cycle Length: 137.5
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

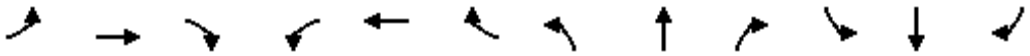
Splits and Phases: 3: SR 169 & SE Kent Kangley Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	262	104	64	240	144	227	903	50	198	464	107
Future Volume (veh/h)	120	262	104	64	240	144	227	903	50	198	464	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1841	1885	1885	1870	1900	1870	1885	1885
Adj Flow Rate, veh/h	135	294	117	72	270	162	255	1015	56	222	521	120
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	0	4	1	1	2	0	2	1	1
Cap, veh/h	165	547	213	93	326	283	291	1280	71	257	1030	236
Arrive On Green	0.09	0.22	0.22	0.05	0.18	0.18	0.16	0.37	0.37	0.14	0.36	0.36
Sat Flow, veh/h	1795	2518	980	1810	1841	1598	1795	3422	189	1781	2890	663
Grp Volume(v), veh/h	135	207	204	72	270	162	255	527	544	222	322	319
Grp Sat Flow(s),veh/h/ln	1795	1791	1707	1810	1841	1598	1795	1777	1834	1781	1791	1762
Q Serve(g_s), s	8.2	11.4	11.8	4.4	15.7	10.3	15.4	29.3	29.3	13.5	15.7	15.8
Cycle Q Clear(g_c), s	8.2	11.4	11.8	4.4	15.7	10.3	15.4	29.3	29.3	13.5	15.7	15.8
Prop In Lane	1.00		0.57	1.00		1.00	1.00		0.10	1.00		0.38
Lane Grp Cap(c), veh/h	165	389	371	93	326	283	291	665	686	257	638	628
V/C Ratio(X)	0.82	0.53	0.55	0.77	0.83	0.57	0.88	0.79	0.79	0.86	0.50	0.51
Avail Cap(c_a), veh/h	485	565	538	489	580	504	485	800	826	481	807	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	38.4	38.6	52.0	44.0	41.8	45.4	30.9	30.9	46.4	28.0	28.1
Incr Delay (d2), s/veh	3.8	1.1	1.3	4.9	5.3	1.8	9.7	5.6	5.4	8.4	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	5.0	4.9	2.1	7.5	4.1	7.5	13.1	13.5	6.5	6.8	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.3	39.6	39.9	56.9	49.4	43.6	55.1	36.5	36.3	54.8	29.1	29.2
LnGrp LOS	D	D	D	E	D	D	E	D	D	D	C	C
Approach Vol, veh/h		546			504			1326			863	
Approach Delay, s/veh		43.1			48.6			40.0			35.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	47.4	11.2	30.8	23.5	45.5	15.7	26.4
Change Period (Y+Rc), s	5.5	5.9	5.5	6.7	5.5	5.9	5.5	6.7
Max Green Setting (Gmax), s	30.0	50.0	30.0	35.0	30.0	50.0	30.0	35.0
Max Q Clear Time (g_c+I1), s	15.5	31.3	6.4	13.8	17.4	17.8	10.2	17.7
Green Ext Time (p_c), s	0.5	10.2	0.1	2.2	0.6	7.3	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	4	7	0	10	7	3	68	0	4	134	76
Future Volume (vph)	21	4	7	0	10	7	3	68	0	4	134	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			194			693			700	
Travel Time (s)		8.7			2.9			10.5			10.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	6%	0%	0%	0%	0%	0%	0%	12%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	4	7	0	10	7	3	68	0	4	134	76
Future Vol, veh/h	21	4	7	0	10	7	3	68	0	4	134	76
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	6	0	0	0	0	0	0	12	0	0	5	2
Mvmt Flow	24	5	8	0	12	8	3	79	0	5	156	88

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	305	295	200	302	339	79	244	0	0	79	0	0
Stage 1	210	210	-	85	85	-	-	-	-	-	-	-
Stage 2	95	85	-	217	254	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.16	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	640	620	846	654	586	987	1334	-	-	1532	-	-
Stage 1	783	732	-	928	828	-	-	-	-	-	-	-
Stage 2	902	828	-	790	701	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	622	616	846	641	582	987	1334	-	-	1532	-	-
Mov Cap-2 Maneuver	622	616	-	641	582	-	-	-	-	-	-	-
Stage 1	781	729	-	926	826	-	-	-	-	-	-	-
Stage 2	880	826	-	774	698	-	-	-	-	-	-	-

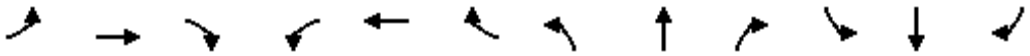
Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	10.3	0.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1334	-	-	659	700	1532	-	-
HCM Lane V/C Ratio	0.003	-	-	0.056	0.028	0.003	-	-
HCM Control Delay (s)	7.7	0	-	10.8	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	22	70	18	65	35	77	457	3	7	277	44
Future Volume (vph)	116	22	70	18	65	35	77	457	3	7	277	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	275		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		1012			964			719			773	
Travel Time (s)		15.3			14.6			9.8			10.5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	10%	12%	0%	0%	0%	4%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		3.0	5.0		3.0	5.0	
Minimum Split (s)	29.7	29.7		31.7	31.7		8.5	27.1		8.5	28.1	
Total Split (s)	41.7	41.7		41.7	41.7		20.5	37.1		20.5	37.1	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		20.6%	37.4%		20.6%	37.4%	
Yellow Time (s)	4.7	4.7		4.7	4.7		3.5	5.1		3.5	5.1	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.7			6.7		5.5	7.1		5.5	7.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 99.3	
Actuated Cycle Length: 64.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 5: SR 169 & SE 400th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	22	70	18	65	35	77	457	3	7	277	44
Future Volume (veh/h)	116	22	70	18	65	35	77	457	3	7	277	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1722	1900	1900	1900	1841	1900	1885	1900	1900	1885	1900
Adj Flow Rate, veh/h	140	27	84	22	78	42	93	551	4	8	334	53
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	10	12	0	0	0	4	0	1	0	0	1	0
Cap, veh/h	270	54	107	114	256	121	402	719	5	264	535	85
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.05	0.38	0.38	0.01	0.34	0.34
Sat Flow, veh/h	697	237	470	140	1119	529	1810	1869	14	1810	1588	252
Grp Volume(v), veh/h	251	0	0	142	0	0	93	0	555	8	0	387
Grp Sat Flow(s),veh/h/ln	1405	0	0	1788	0	0	1810	0	1883	1810	0	1840
Q Serve(g_s), s	4.9	0.0	0.0	0.0	0.0	0.0	1.7	0.0	13.0	0.1	0.0	9.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	3.3	0.0	0.0	1.7	0.0	13.0	0.1	0.0	9.0
Prop In Lane	0.56		0.33	0.15		0.30	1.00		0.01	1.00		0.14
Lane Grp Cap(c), veh/h	432	0	0	491	0	0	402	0	724	264	0	620
V/C Ratio(X)	0.58	0.00	0.00	0.29	0.00	0.00	0.23	0.00	0.77	0.03	0.00	0.62
Avail Cap(c_a), veh/h	1032	0	0	1271	0	0	840	0	1114	787	0	1088
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	16.4	0.0	0.0	10.8	0.0	13.6	12.1	0.0	14.1
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.3	0.0	0.0	0.1	0.0	2.9	0.0	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0	1.2	0.0	0.0	0.5	0.0	4.4	0.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	0.0	16.7	0.0	0.0	10.9	0.0	16.6	12.1	0.0	15.9
LnGrp LOS	B	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h		251			142			648			395	
Approach Delay, s/veh		19.3			16.7			15.8			15.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	26.6		18.3	8.2	24.2		18.3				
Change Period (Y+Rc), s	5.5	7.1		6.7	5.5	7.1		6.7				
Max Green Setting (Gmax), s	15.0	30.0		35.0	15.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	2.1	15.0		10.2	3.7	11.0		5.3				
Green Ext Time (p_c), s	0.0	4.5		1.4	0.1	3.3		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			16.5									
HCM 6th LOS			B									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	38	137	13	20	56	23
Future Volume (vph)	38	137	13	20	56	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	5%			0%	-7%	
Link Speed (mph)	45			45	35	
Link Distance (ft)	626			668	555	
Travel Time (s)	9.5			10.1	10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	5%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	137	13	20	56	23
Future Vol, veh/h	38	137	13	20	56	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	0	-7	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	5	0
Mvmt Flow	41	149	14	22	61	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	41	0	166	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	-	-	4.1	-	5.05	5.5
Critical Hdwy Stg 1	-	-	-	-	4.05	-
Critical Hdwy Stg 2	-	-	-	-	4.05	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.3
Pot Cap-1 Maneuver	-	-	1581	-	872	963
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1581	-	864	963
Mov Cap-2 Maneuver	-	-	-	-	864	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	975	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	8.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1219	-	-	1581	-
HCM Lane V/C Ratio	0.07	-	-	0.009	-
HCM Control Delay (s)	8.2	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	201	252	3	117	119	7
Future Volume (vph)	201	252	3	117	119	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	45			45	45	
Link Distance (ft)	721			1061	827	
Travel Time (s)	10.9			16.1	12.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	201	252	3	117	119	7
Future Vol, veh/h	201	252	3	117	119	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	0	1	0
Mvmt Flow	214	268	3	124	127	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	478	348
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1368	-	548	700
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1368	-	547	700
Mov Cap-2 Maneuver	-	-	-	-	547	-
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.6
HCM LOS			B

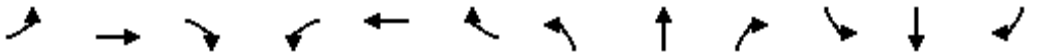
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	554	-	-	1368	-
HCM Lane V/C Ratio	0.242	-	-	0.002	-
HCM Control Delay (s)	13.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	380	117	213	351	136	327	651	46	300	985	125
Future Volume (vph)	214	380	117	213	351	136	327	651	46	300	985	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		0	275		0	550		0	550		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		818			799			874			850	
Travel Time (s)		13.9			13.6			17.0			16.6	
Confl. Peds. (#/hr)			4			8			6			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	1%	1%	1%	2%	0%	2%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	5.0	3.0	7.0		3.0	7.0	
Minimum Split (s)	8.5	29.7		8.5	36.7	36.7	8.5	34.9		8.5	33.9	
Total Split (s)	27.0	36.0		28.0	37.0	37.0	28.0	51.0		35.0	58.0	
Total Split (%)	18.0%	24.0%		18.7%	24.7%	24.7%	18.7%	34.0%		23.3%	38.7%	
Yellow Time (s)	3.5	4.7		3.5	4.7	4.7	3.5	3.9		3.5	3.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	6.7		5.5	6.7	6.7	5.5	5.9		5.5	5.9	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Red
Natural Cycle: 140
Control Type: Actuated-Coordinated

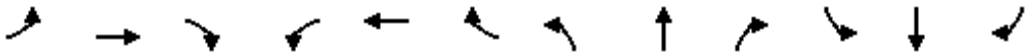
Splits and Phases: 3: SR 169 & SE Kent Kangley Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	380	117	213	351	136	327	651	46	300	985	125
Future Volume (veh/h)	214	380	117	213	351	136	327	651	46	300	985	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1885	1885	1870	1900	1870	1900	1885	1900	1900
Adj Flow Rate, veh/h	225	400	123	224	369	143	344	685	48	316	1037	132
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	1	1	2	0	2	0	1	0	0
Cap, veh/h	247	548	167	246	381	316	271	1066	75	337	1141	145
Arrive On Green	0.14	0.20	0.20	0.14	0.20	0.20	0.15	0.32	0.32	0.19	0.35	0.35
Sat Flow, veh/h	1810	2723	828	1795	1885	1566	1810	3367	236	1795	3220	409
Grp Volume(v), veh/h	225	264	259	224	369	143	344	361	372	316	581	588
Grp Sat Flow(s),veh/h/ln	1810	1805	1745	1795	1885	1566	1810	1777	1826	1795	1805	1824
Q Serve(g_s), s	18.4	20.5	20.9	18.5	29.1	12.0	22.5	26.2	26.2	26.0	46.0	46.1
Cycle Q Clear(g_c), s	18.4	20.5	20.9	18.5	29.1	12.0	22.5	26.2	26.2	26.0	46.0	46.1
Prop In Lane	1.00		0.47	1.00		1.00	1.00		0.13	1.00		0.22
Lane Grp Cap(c), veh/h	247	364	352	246	381	316	271	562	578	337	640	647
V/C Ratio(X)	0.91	0.73	0.74	0.91	0.97	0.45	1.27	0.64	0.64	0.94	0.91	0.91
Avail Cap(c_a), veh/h	259	364	352	269	381	316	271	562	578	353	640	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.9	56.0	56.2	63.8	59.4	52.6	63.7	44.0	44.0	60.0	46.1	46.1
Incr Delay (d2), s/veh	31.9	7.0	8.0	29.9	37.9	1.0	146.2	5.6	5.4	31.4	19.0	19.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	9.9	9.9	10.4	17.7	4.8	21.3	12.4	12.7	14.7	23.8	24.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.8	63.0	64.1	93.7	97.2	53.6	209.9	49.5	49.4	91.4	65.1	65.2
LnGrp LOS	F	E	E	F	F	D	F	D	D	F	E	E
Approach Vol, veh/h		748			736			1077			1485	
Approach Delay, s/veh		73.3			87.7			100.7			70.8	
Approach LOS		E			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.7	53.4	26.0	36.9	28.0	59.1	25.9	37.0
Change Period (Y+Rc), s	5.5	5.9	5.5	6.7	5.5	5.9	5.5	6.7
Max Green Setting (Gmax), s	29.5	45.1	22.5	29.3	22.5	52.1	21.5	30.3
Max Q Clear Time (g_c+I1), s	28.0	28.2	20.5	22.9	24.5	48.1	20.4	31.1
Green Ext Time (p_c), s	0.2	6.4	0.1	1.6	0.0	3.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	82.3
HCM 6th LOS	F



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	18	9	0	8	10	13	157	1	9	188	52
Future Volume (vph)	77	18	9	0	8	10	13	157	1	9	188	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			194			693			700	
Travel Time (s)		8.7			2.9			10.5			10.6	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	77	18	9	0	8	10	13	157	1	9	188	52
Future Vol, veh/h	77	18	9	0	8	10	13	157	1	9	188	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	85	20	10	0	9	11	14	173	1	10	207	57

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	468	458	236	473	486	174	264	0	0	174	0	0
Stage 1	256	256	-	202	202	-	-	-	-	-	-	-
Stage 2	212	202	-	271	284	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	505	502	808	505	484	875	1312	-	-	1415	-	-
Stage 1	749	699	-	805	738	-	-	-	-	-	-	-
Stage 2	790	738	-	739	680	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	484	492	808	476	474	875	1312	-	-	1415	-	-
Mov Cap-2 Maneuver	484	492	-	476	474	-	-	-	-	-	-	-
Stage 1	740	693	-	795	729	-	-	-	-	-	-	-
Stage 2	761	729	-	703	675	-	-	-	-	-	-	-

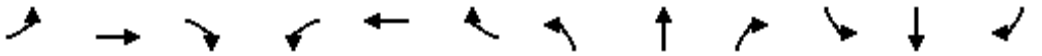
Approach	EB	WB	NB	SB
HCM Control Delay, s	14.2	10.8	0.6	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1312	-	-	503	636	1415	-	-
HCM Lane V/C Ratio	0.011	-	-	0.227	0.031	0.007	-	-
HCM Control Delay (s)	7.8	0	-	14.2	10.8	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	80	121	18	48	21	86	359	23	42	728	142
Future Volume (vph)	77	80	121	18	48	21	86	359	23	42	728	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	275		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		1012			964			719			773	
Travel Time (s)		15.3			14.6			9.8			10.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	2%	0%	0%	0%	0%	0%	1%	0%	0%	1%	9%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		3.0	5.0		3.0	5.0	
Minimum Split (s)	29.7	29.7		31.7	31.7		8.5	27.1		8.5	28.1	
Total Split (s)	41.7	41.7		41.7	41.7		20.5	37.1		20.5	37.1	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		20.6%	37.4%		20.6%	37.4%	
Yellow Time (s)	4.7	4.7		4.7	4.7		3.5	5.1		3.5	5.1	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.7			6.7		5.5	7.1		5.5	7.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 99.3	
Actuated Cycle Length: 71.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 5: SR 169 & SE 400th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	80	121	18	48	21	86	359	23	42	728	142
Future Volume (veh/h)	77	80	121	18	48	21	86	359	23	42	728	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1870	1900	1900	1900	1900	1900	1885	1900	1900	1885	1767
Adj Flow Rate, veh/h	82	85	129	19	51	22	91	382	24	45	774	151
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	0	0	0	0	0	1	0	0	1	9
Cap, veh/h	147	125	158	111	256	95	191	814	51	465	677	132
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.05	0.46	0.46	0.03	0.44	0.44
Sat Flow, veh/h	351	552	698	206	1128	419	1810	1755	110	1810	1532	299
Grp Volume(v), veh/h	296	0	0	92	0	0	91	0	406	45	0	925
Grp Sat Flow(s),veh/h/ln	1601	0	0	1753	0	0	1810	0	1865	1810	0	1831
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	0.0	1.8	0.0	10.1	0.9	0.0	30.0
Cycle Q Clear(g_c), s	11.8	0.0	0.0	2.8	0.0	0.0	1.8	0.0	10.1	0.9	0.0	30.0
Prop In Lane	0.28		0.44	0.21		0.24	1.00		0.06	1.00		0.16
Lane Grp Cap(c), veh/h	431	0	0	462	0	0	191	0	865	465	0	809
V/C Ratio(X)	0.69	0.00	0.00	0.20	0.00	0.00	0.48	0.00	0.47	0.10	0.00	1.14
Avail Cap(c_a), veh/h	884	0	0	931	0	0	506	0	865	819	0	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	0.0	21.4	0.0	0.0	16.0	0.0	12.5	10.5	0.0	19.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.2	0.0	0.0	0.7	0.0	0.7	0.0	0.0	78.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	1.1	0.0	0.0	0.6	0.0	3.4	0.3	0.0	27.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	0.0	0.0	21.6	0.0	0.0	16.6	0.0	13.2	10.5	0.0	97.9
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	F
Approach Vol, veh/h		296			92			497			970	
Approach Delay, s/veh		26.7			21.6			13.8			93.8	
Approach LOS		C			C			B			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	38.6		22.1	8.7	37.1		22.1				
Change Period (Y+Rc), s	5.5	7.1		6.7	5.5	7.1		6.7				
Max Green Setting (Gmax), s	15.0	30.0		35.0	15.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	2.9	12.1		13.8	3.8	32.0		4.8				
Green Ext Time (p_c), s	0.0	3.3		1.6	0.1	0.0		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	58.1
HCM 6th LOS	E

2030 With Project

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1	80	20	16	87	8
Future Volume (vph)	1	80	20	16	87	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	5%			0%	-7%	
Link Speed (mph)	45			45	35	
Link Distance (ft)	626			668	555	
Travel Time (s)	9.5			10.1	10.8	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	25%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1	80	20	16	87	8
Future Vol, veh/h	1	80	20	16	87	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	0	-7	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	25	0
Mvmt Flow	1	98	24	20	106	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	118	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	-	-	4.1	-	5.25	5.5
Critical Hdwy Stg 1	-	-	-	-	4.25	-
Critical Hdwy Stg 2	-	-	-	-	4.25	-
Follow-up Hdwy	-	-	2.2	-	3.725	3.3
Pot Cap-1 Maneuver	-	-	1635	-	864	1034
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	851	1034
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	929	-	-	1635	-
HCM Lane V/C Ratio	0.125	-	-	0.015	-
HCM Control Delay (s)	9.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	50	103	3	180	164	0
Future Volume (vph)	50	103	3	180	164	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	45			45	45	
Link Distance (ft)	721			1061	827	
Travel Time (s)	10.9			16.1	12.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	0%	1%	12%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	103	3	180	164	0
Future Vol, veh/h	50	103	3	180	164	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	0	1	12	0
Mvmt Flow	52	106	3	186	169	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	52	0	297	105
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	192	-
Critical Hdwy	-	-	4.1	-	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	-	-	2.2	-	3.608	3.3
Pot Cap-1 Maneuver	-	-	1567	-	674	955
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	817	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1567	-	673	955
Mov Cap-2 Maneuver	-	-	-	-	673	-
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.1
HCM LOS			B

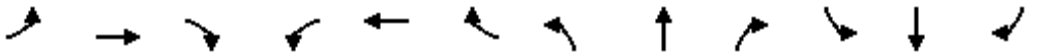
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	1567	-
HCM Lane V/C Ratio	0.251	-	-	0.002	-
HCM Control Delay (s)	12.1	-	-	7.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	278	104	64	246	153	227	903	50	220	464	107
Future Volume (vph)	120	278	104	64	246	153	227	903	50	220	464	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		0	275		0	550		0	550		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		818			799			874			850	
Travel Time (s)		13.9			13.6			17.0			16.6	
Confl. Peds. (#/hr)			1						11			6
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	1%	0%	7%	7%	1%	2%	0%	2%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	5.0	3.0	7.0		3.0	7.0	
Minimum Split (s)	8.5	29.7		8.5	36.7	36.7	8.5	34.9		8.5	33.9	
Total Split (s)	35.5	41.7		35.5	41.7	41.7	35.5	55.9		35.5	55.9	
Total Split (%)	21.1%	24.7%		21.1%	24.7%	24.7%	21.1%	33.2%		21.1%	33.2%	
Yellow Time (s)	3.5	4.7		3.5	4.7	4.7	3.5	3.9		3.5	3.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	6.7		5.5	6.7	6.7	5.5	5.9		5.5	5.9	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	Min		None	Min	

Intersection Summary

Area Type: Other
Cycle Length: 168.6
Actuated Cycle Length: 141.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

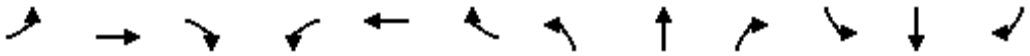
Splits and Phases: 3: SR 169 & SE Kent Kangley Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	278	104	64	246	153	227	903	50	220	464	107
Future Volume (veh/h)	120	278	104	64	246	153	227	903	50	220	464	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1900	1796	1796	1885	1870	1900	1870	1885	1885
Adj Flow Rate, veh/h	135	312	117	72	276	172	255	1015	56	247	521	120
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	1	0	7	7	1	2	0	2	1	1
Cap, veh/h	164	570	209	93	328	278	289	1254	69	280	1049	240
Arrive On Green	0.09	0.22	0.22	0.05	0.18	0.18	0.16	0.37	0.37	0.16	0.36	0.36
Sat Flow, veh/h	1795	2563	942	1810	1796	1522	1795	3422	189	1781	2890	663
Grp Volume(v), veh/h	135	216	213	72	276	172	255	527	544	247	322	319
Grp Sat Flow(s),veh/h/ln	1795	1791	1714	1810	1796	1522	1795	1777	1834	1781	1791	1762
Q Serve(g_s), s	8.6	12.4	12.9	4.6	17.3	12.1	16.2	31.1	31.1	15.8	16.3	16.4
Cycle Q Clear(g_c), s	8.6	12.4	12.9	4.6	17.3	12.1	16.2	31.1	31.1	15.8	16.3	16.4
Prop In Lane	1.00		0.55	1.00		1.00	1.00		0.10	1.00		0.38
Lane Grp Cap(c), veh/h	164	398	381	93	328	278	289	651	672	280	650	639
V/C Ratio(X)	0.82	0.54	0.56	0.77	0.84	0.62	0.88	0.81	0.81	0.88	0.50	0.50
Avail Cap(c_a), veh/h	462	538	515	466	539	457	462	762	787	459	768	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	40.1	40.2	54.6	46.0	43.9	47.8	33.3	33.3	48.0	28.8	28.9
Incr Delay (d2), s/veh	4.0	1.2	1.3	5.0	6.3	2.2	11.5	6.7	6.5	10.9	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	5.5	5.4	2.2	8.1	4.7	8.1	14.2	14.7	7.8	7.1	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.0	41.2	41.5	59.6	52.3	46.1	59.3	39.9	39.7	58.9	29.8	29.9
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	C	C
Approach Vol, veh/h		564			520			1326			888	
Approach Delay, s/veh		44.9			51.3			43.6			38.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	48.6	11.5	32.6	24.2	48.2	16.1	28.0
Change Period (Y+Rc), s	5.5	5.9	5.5	6.7	5.5	5.9	5.5	6.7
Max Green Setting (Gmax), s	30.0	50.0	30.0	35.0	30.0	50.0	30.0	35.0
Max Q Clear Time (g_c+I1), s	17.8	33.1	6.6	14.9	18.2	18.4	10.6	19.3
Green Ext Time (p_c), s	0.5	9.5	0.1	2.3	0.6	7.2	0.1	1.8

Intersection Summary	
HCM 6th Ctrl Delay	43.5
HCM 6th LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	4	7	0	10	7	3	77	0	4	138	82
Future Volume (vph)	37	4	7	0	10	7	3	77	0	4	138	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			194			693			700	
Travel Time (s)		8.7			2.9			10.5			10.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	0%	10%	0%	0%	8%	9%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	4	7	0	10	7	3	77	0	4	138	82
Future Vol, veh/h	37	4	7	0	10	7	3	77	0	4	138	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	0	0	0	0	0	0	10	0	0	8	9
Mvmt Flow	43	5	8	0	12	8	3	90	0	5	160	95

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	324	314	208	320	361	90	255	0	0	90	0	0
Stage 1	218	218	-	96	96	-	-	-	-	-	-	-
Stage 2	106	96	-	224	265	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.527	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	627	605	837	637	569	973	1322	-	-	1518	-	-
Stage 1	782	726	-	916	819	-	-	-	-	-	-	-
Stage 2	897	819	-	783	693	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	609	601	837	624	566	973	1322	-	-	1518	-	-
Mov Cap-2 Maneuver	609	601	-	624	566	-	-	-	-	-	-	-
Stage 1	780	723	-	914	817	-	-	-	-	-	-	-
Stage 2	875	817	-	767	690	-	-	-	-	-	-	-

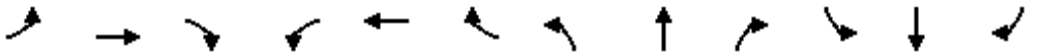
Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.4	0.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	633	684	1518	-	-
HCM Lane V/C Ratio	0.003	-	-	0.088	0.029	0.003	-	-
HCM Control Delay (s)	7.7	0	-	11.2	10.4	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	38	70	18	71	35	77	457	3	7	277	44
Future Volume (vph)	116	38	70	18	71	35	77	457	3	7	277	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	275		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		1012			964			719			773	
Travel Time (s)		15.3			14.6			9.8			10.5	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	10%	8%	0%	0%	9%	3%	0%	1%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		3.0	5.0		3.0	5.0	
Minimum Split (s)	29.7	29.7		31.7	31.7		8.5	27.1		8.5	28.1	
Total Split (s)	41.7	41.7		41.7	41.7		20.5	37.1		20.5	37.1	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		20.6%	37.4%		20.6%	37.4%	
Yellow Time (s)	4.7	4.7		4.7	4.7		3.5	5.1		3.5	5.1	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.7			6.7		5.5	7.1		5.5	7.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 99.3	
Actuated Cycle Length: 66.3	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

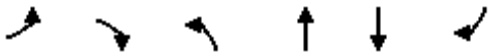
Splits and Phases: 5: SR 169 & SE 400th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	38	70	18	71	35	77	457	3	7	277	44
Future Volume (veh/h)	116	38	70	18	71	35	77	457	3	7	277	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1781	1900	1900	1767	1856	1900	1885	1900	1900	1885	1900
Adj Flow Rate, veh/h	140	46	84	22	86	42	93	551	4	8	334	53
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	10	8	0	0	9	3	0	1	0	0	1	0
Cap, veh/h	266	79	107	109	251	109	399	717	5	261	533	85
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.05	0.38	0.38	0.01	0.34	0.34
Sat Flow, veh/h	681	338	460	123	1077	466	1810	1869	14	1810	1588	252
Grp Volume(v), veh/h	270	0	0	150	0	0	93	0	555	8	0	387
Grp Sat Flow(s),veh/h/ln	1479	0	0	1666	0	0	1810	0	1883	1810	0	1840
Q Serve(g_s), s	4.6	0.0	0.0	0.0	0.0	0.0	1.7	0.0	13.2	0.1	0.0	9.1
Cycle Q Clear(g_c), s	8.4	0.0	0.0	3.8	0.0	0.0	1.7	0.0	13.2	0.1	0.0	9.1
Prop In Lane	0.52		0.31	0.15		0.28	1.00		0.01	1.00		0.14
Lane Grp Cap(c), veh/h	452	0	0	469	0	0	399	0	722	261	0	618
V/C Ratio(X)	0.60	0.00	0.00	0.32	0.00	0.00	0.23	0.00	0.77	0.03	0.00	0.63
Avail Cap(c_a), veh/h	1066	0	0	1179	0	0	832	0	1103	780	0	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	0.0	16.5	0.0	0.0	10.9	0.0	13.8	12.3	0.0	14.3
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.4	0.0	0.0	0.1	0.0	3.0	0.0	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	1.3	0.0	0.0	0.5	0.0	4.5	0.0	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	0.0	16.9	0.0	0.0	11.0	0.0	16.8	12.3	0.0	16.1
LnGrp LOS	B	A	A	B	A	A	B	A	B	B	A	B
Approach Vol, veh/h		270			150			648			395	
Approach Delay, s/veh		19.3			16.9			16.0			16.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	26.7		18.6	8.3	24.3		18.6				
Change Period (Y+Rc), s	5.5	7.1		6.7	5.5	7.1		6.7				
Max Green Setting (Gmax), s	15.0	30.0		35.0	15.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	2.1	15.2		10.4	3.7	11.1		5.8				
Green Ext Time (p_c), s	0.0	4.4		1.5	0.1	3.3		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		16.7	
HCM 6th LOS		B	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	10	25	80	61	38
Future Volume (vph)	15	10	25	80	61	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			35	35	
Link Distance (ft)	677			900	841	
Travel Time (s)	15.4			17.5	16.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	100%	0%	9%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	25	80	61	38
Future Vol, veh/h	15	10	25	80	61	38
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	92	92	92	92	92	92
Heavy Vehicles, %	100	100	0	9	0	0
Mvmt Flow	16	11	27	87	66	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	228	87	107	0	-	0
Stage 1	87	-	-	-	-	-
Stage 2	141	-	-	-	-	-
Critical Hdwy	7.4	7.2	4.1	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	4.2	2.2	-	-	-
Pot Cap-1 Maneuver	587	757	1497	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	576	757	1497	-	-	-
Mov Cap-2 Maneuver	576	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	693	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1497	-	637	-	-
HCM Lane V/C Ratio	0.018	-	0.043	-	-
HCM Control Delay (s)	7.4	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	38	152	13	20	97	23
Future Volume (vph)	38	152	13	20	97	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	5%			0%	-7%	
Link Speed (mph)	45			45	35	
Link Distance (ft)	626			668	555	
Travel Time (s)	9.5			10.1	10.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	10%	0%	0%	3%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	152	13	20	97	23
Future Vol, veh/h	38	152	13	20	97	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	0	-7	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	0	0	3	0
Mvmt Flow	41	165	14	22	105	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	41	0	174	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	-	-	4.1	-	5.03	5.5
Critical Hdwy Stg 1	-	-	-	-	4.03	-
Critical Hdwy Stg 2	-	-	-	-	4.03	-
Follow-up Hdwy	-	-	2.2	-	3.527	3.3
Pot Cap-1 Maneuver	-	-	1581	-	871	955
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1581	-	863	955
Mov Cap-2 Maneuver	-	-	-	-	863	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	980	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1068	-	-	1581	-
HCM Lane V/C Ratio	0.122	-	-	0.009	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	201	267	3	117	160	7
Future Volume (vph)	201	267	3	117	160	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	45			45	45	
Link Distance (ft)	721			1061	827	
Travel Time (s)	10.9			16.1	12.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	6%	0%	0%	1%	0%
Shared Lane Traffic (%)						
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	201	267	3	117	160	7
Future Vol, veh/h	201	267	3	117	160	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	6	0	0	1	0
Mvmt Flow	214	284	3	124	170	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	486	356
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	-	-	4.1	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1368	-	542	693
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1368	-	541	693
Mov Cap-2 Maneuver	-	-	-	-	541	-
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.7
HCM LOS			B

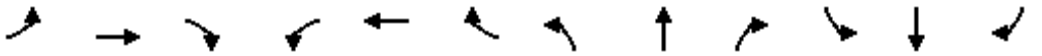
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	546	-	-	1368	-
HCM Lane V/C Ratio	0.325	-	-	0.002	-
HCM Control Delay (s)	14.7	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	386	117	213	368	160	327	651	46	309	985	125
Future Volume (vph)	214	386	117	213	368	160	327	651	46	309	985	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		0	275		0	550		0	550		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			35			35	
Link Distance (ft)		818			799			874			850	
Travel Time (s)		13.9			13.6			17.0			16.6	
Confl. Peds. (#/hr)			4			8			6			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	1%	1%	1%	2%	0%	2%	0%	6%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	5.0	3.0	7.0		3.0	7.0	
Minimum Split (s)	8.5	29.7		8.5	36.7	36.7	8.5	34.9		8.5	33.9	
Total Split (s)	27.0	36.0		28.0	37.0	37.0	28.0	51.0		35.0	58.0	
Total Split (%)	18.0%	24.0%		18.7%	24.7%	24.7%	18.7%	34.0%		23.3%	38.7%	
Yellow Time (s)	3.5	4.7		3.5	4.7	4.7	3.5	3.9		3.5	3.9	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	6.7		5.5	6.7	6.7	5.5	5.9		5.5	5.9	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Red
Natural Cycle: 140
Control Type: Actuated-Coordinated

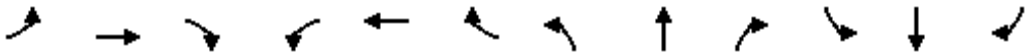
Splits and Phases: 3: SR 169 & SE Kent Kangley Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	386	117	213	368	160	327	651	46	309	985	125
Future Volume (veh/h)	214	386	117	213	368	160	327	651	46	309	985	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1885	1885	1885	1870	1900	1870	1900	1811	1900	1900
Adj Flow Rate, veh/h	225	406	123	224	387	168	344	685	48	325	1037	132
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	1	1	1	2	0	2	0	6	0	0
Cap, veh/h	247	542	162	246	381	316	271	1036	73	339	1141	145
Arrive On Green	0.14	0.20	0.20	0.14	0.20	0.20	0.15	0.31	0.31	0.20	0.35	0.35
Sat Flow, veh/h	1810	2690	806	1795	1885	1566	1810	3367	236	1725	3220	409
Grp Volume(v), veh/h	225	267	262	224	387	168	344	361	372	325	581	588
Grp Sat Flow(s),veh/h/ln	1810	1777	1720	1795	1885	1566	1810	1777	1826	1725	1805	1824
Q Serve(g_s), s	18.4	21.1	21.6	18.5	30.3	14.4	22.5	26.5	26.5	28.0	46.0	46.1
Cycle Q Clear(g_c), s	18.4	21.1	21.6	18.5	30.3	14.4	22.5	26.5	26.5	28.0	46.0	46.1
Prop In Lane	1.00		0.47	1.00		1.00	1.00		0.13	1.00		0.22
Lane Grp Cap(c), veh/h	247	358	346	246	381	316	271	547	562	339	640	647
V/C Ratio(X)	0.91	0.74	0.76	0.91	1.02	0.53	1.27	0.66	0.66	0.96	0.91	0.91
Avail Cap(c_a), veh/h	259	358	346	269	381	316	271	547	562	339	640	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.9	56.3	56.4	63.8	59.8	53.5	63.7	45.1	45.1	59.6	46.1	46.1
Incr Delay (d2), s/veh	31.9	8.2	9.3	29.9	50.3	1.7	146.2	6.2	6.0	37.8	19.0	19.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	10.2	10.2	10.4	19.6	5.8	21.3	12.6	13.0	15.7	23.8	24.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	95.8	64.5	65.7	93.7	110.1	55.2	209.9	51.3	51.1	97.4	65.1	65.2
LnGrp LOS	F	E	E	F	F	E	F	D	D	F	E	E
Approach Vol, veh/h		754			779			1077			1494	
Approach Delay, s/veh		74.3			93.6			101.9			72.2	
Approach LOS		E			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.0	52.1	26.0	36.9	28.0	59.1	25.9	37.0
Change Period (Y+Rc), s	5.5	5.9	5.5	6.7	5.5	5.9	5.5	6.7
Max Green Setting (Gmax), s	29.5	45.1	22.5	29.3	22.5	52.1	21.5	30.3
Max Q Clear Time (g_c+I1), s	30.0	28.5	20.5	23.6	24.5	48.1	20.4	32.3
Green Ext Time (p_c), s	0.0	6.3	0.1	1.5	0.0	3.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	84.4
HCM 6th LOS	F



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	18	9	0	8	10	13	161	1	9	198	69
Future Volume (vph)	83	18	9	0	8	10	13	161	1	9	198	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		575			194			693			700	
Travel Time (s)		8.7			2.9			10.5			10.6	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	8%	0%	0%	0%	0%	0%	0%	4%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	83	18	9	0	8	10	13	161	1	9	198	69
Future Vol, veh/h	83	18	9	0	8	10	13	161	1	9	198	69
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	8	0	0	0	0	0	0	4	0	0	1	0
Mvmt Flow	91	20	10	0	9	11	14	177	1	10	218	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	492	482	256	497	520	178	294	0	0	178	0	0
Stage 1	276	276	-	206	206	-	-	-	-	-	-	-
Stage 2	216	206	-	291	314	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	477	487	788	487	463	870	1279	-	-	1410	-	-
Stage 1	717	685	-	801	735	-	-	-	-	-	-	-
Stage 2	773	735	-	721	660	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	456	477	788	458	453	870	1279	-	-	1410	-	-
Mov Cap-2 Maneuver	456	477	-	458	453	-	-	-	-	-	-	-
Stage 1	708	679	-	791	726	-	-	-	-	-	-	-
Stage 2	745	726	-	685	654	-	-	-	-	-	-	-

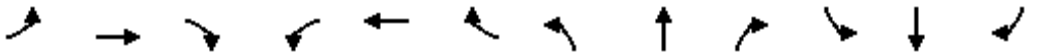
Approach	EB	WB	NB	SB
HCM Control Delay, s	15.1	11	0.6	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1279	-	-	476	617	1410	-	-
HCM Lane V/C Ratio	0.011	-	-	0.254	0.032	0.007	-	-
HCM Control Delay (s)	7.8	0	-	15.1	11	7.6	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	0.1	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	86	121	18	65	21	86	359	23	42	728	142
Future Volume (vph)	77	86	121	18	65	21	86	359	23	42	728	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	275		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			50			50	
Link Distance (ft)		1012			964			719			773	
Travel Time (s)		15.3			14.6			9.8			10.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	8%	0%	0%	0%	0%	0%	1%	0%	0%	1%	9%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		3.0	5.0		3.0	5.0	
Minimum Split (s)	29.7	29.7		31.7	31.7		8.5	27.1		8.5	28.1	
Total Split (s)	41.7	41.7		41.7	41.7		20.5	37.1		20.5	37.1	
Total Split (%)	42.0%	42.0%		42.0%	42.0%		20.6%	37.4%		20.6%	37.4%	
Yellow Time (s)	4.7	4.7		4.7	4.7		3.5	5.1		3.5	5.1	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.7			6.7		5.5	7.1		5.5	7.1	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	Min		None	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 99.3	
Actuated Cycle Length: 72.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

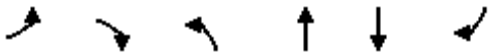
Splits and Phases: 5: SR 169 & SE 400th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	86	121	18	65	21	86	359	23	42	728	142
Future Volume (veh/h)	77	86	121	18	65	21	86	359	23	42	728	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1781	1900	1900	1900	1900	1900	1885	1900	1900	1885	1767
Adj Flow Rate, veh/h	82	91	129	19	69	22	91	382	24	45	774	151
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	8	0	0	0	0	0	1	0	0	1	9
Cap, veh/h	144	131	156	100	302	85	190	801	50	454	666	130
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.05	0.46	0.46	0.03	0.43	0.43
Sat Flow, veh/h	325	548	652	162	1263	356	1810	1755	110	1810	1532	299
Grp Volume(v), veh/h	302	0	0	110	0	0	91	0	406	45	0	925
Grp Sat Flow(s),veh/h/ln	1525	0	0	1781	0	0	1810	0	1865	1810	0	1831
Q Serve(g_s), s	9.5	0.0	0.0	0.0	0.0	0.0	1.9	0.0	10.4	1.0	0.0	30.0
Cycle Q Clear(g_c), s	12.9	0.0	0.0	3.4	0.0	0.0	1.9	0.0	10.4	1.0	0.0	30.0
Prop In Lane	0.27		0.43	0.17		0.20	1.00		0.06	1.00		0.16
Lane Grp Cap(c), veh/h	431	0	0	487	0	0	190	0	852	454	0	796
V/C Ratio(X)	0.70	0.00	0.00	0.23	0.00	0.00	0.48	0.00	0.48	0.10	0.00	1.16
Avail Cap(c_a), veh/h	830	0	0	932	0	0	497	0	852	801	0	796
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	0.0	21.3	0.0	0.0	16.3	0.0	13.0	10.9	0.0	19.5
Incr Delay (d2), s/veh	2.1	0.0	0.0	0.2	0.0	0.0	0.7	0.0	0.7	0.0	0.0	86.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	1.3	0.0	0.0	0.6	0.0	3.6	0.3	0.0	29.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	0.0	21.5	0.0	0.0	17.0	0.0	13.7	11.0	0.0	106.4
LnGrp LOS	C	A	A	C	A	A	B	A	B	B	A	F
Approach Vol, veh/h		302			110			497			970	
Approach Delay, s/veh		26.9			21.5			14.3			102.0	
Approach LOS		C			C			B			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	38.6		23.2	8.8	37.1		23.2				
Change Period (Y+Rc), s	5.5	7.1		6.7	5.5	7.1		6.7				
Max Green Setting (Gmax), s	15.0	30.0		35.0	15.0	30.0		35.0				
Max Q Clear Time (g_c+I1), s	3.0	12.4		14.9	3.9	32.0		5.4				
Green Ext Time (p_c), s	0.0	3.3		1.6	0.1	0.0		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		62.0	
HCM 6th LOS		E	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	27	10	80	150	15
Future Volume (vph)	41	27	10	80	150	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			35	35	
Link Distance (ft)	677			900	841	
Travel Time (s)	15.4			17.5	16.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	100%	4%	0%	100%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	27	10	80	150	15
Future Vol, veh/h	41	27	10	80	150	15
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	100	4	0	100
Mvmt Flow	45	29	11	87	163	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	280	171	179	0	-	0
Stage 1	171	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.4	6.2	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	3.1	-	-	-
Pot Cap-1 Maneuver	714	878	972	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	705	878	972	-	-	-
Mov Cap-2 Maneuver	705	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	921	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	972	-	765	-	-
HCM Lane V/C Ratio	0.011	-	0.097	-	-
HCM Control Delay (s)	8.7	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Appendix C

Trip Generation Calculations

Description	Quantity of Trucks/Vehicles (estimated)	Day or Night Shift	Arrival Period	Departure Period
Total Trucks Returning to Site During PM Peak Hours (counted as part of 550 trips)	20	Day	3 - 6 pm	N/A
Asphalt Night Haul **Going to make 50 trips total during that time period** (counted as part of 550 trips)	15	Night	**Asphalt Night Haul Hours of Operation** 7-9 pm --> 2 - 4 am	
Employee Information:				
Pit Operations	30	Day	6 - 6:30 am	3:30 - 4 pm
Asphalt Plant Operations	3	Day	6 - 6:30 am	3:30 - 4 pm
Administration	5	Day	6 - 6:30 am	3:30 - 4 pm
On-Site Aggregate/Asphalt Truck Drivers	25	Day	6 - 6:30 am	3:30 - 4 pm
Maintenance Operations	5	Night	3 - 4 pm	12:00 AM
Truck Maintenance	5	Night	3 - 4 pm	12:00 AM
Asphalt Plant Operations	5	Night	5:30 - 6:30 pm	3:00 AM
Asphalt Truck Drivers	15	Night	6 - 7 pm	2 - 4 am
Misc. Additional Trips:				
Asphalt Oil/Fuel Supply	5	Day	6 - 6:30 am --> 3:30 - 4 pm	
General Operations/Maintenance Deliveries	15	Day	7 am --> 3 pm	
	148			

Additional Notes:

The overall trip split between aggregates and asphalt is 80% aggregate, 20% asphalt

There is no asphalt plant night operations in the off-peak season

Cumberland Mine Trip Generation Summary

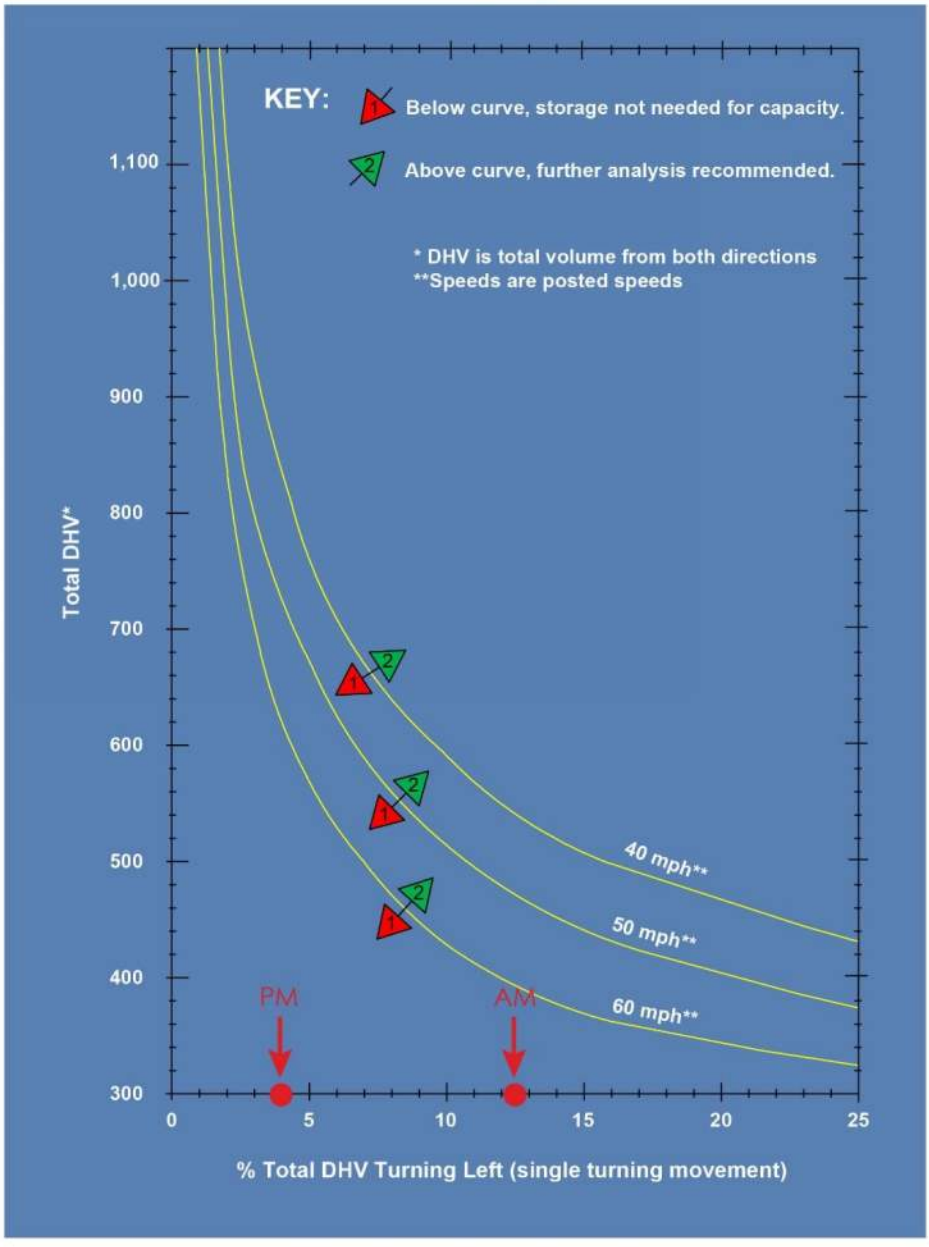
	Peak Summer	Off-Peak
ADT	550	200
Employees/Misc	118	98
Truck - Material	110	40
Truck - BP	440	160

	Peak Summer		Off-Peak	
	Enter	**Exit**	**Enter**	**Exit**
5:00 AM	4	2		
6:00 AM	63	25	53	15
7:00 AM	6	1	6	1
8:00 AM	25	25	15	15
9:00 AM	5	5	5	5
10:00 AM	25	25	15	15
11:00 AM	5	5	5	5
12:00 PM	25	25	15	15
1:00 PM	5	5	5	5
2:00 PM	25	25	15	15
3:00 PM	35	25	5	5
4:00 PM	25	68	10	53
5:00 PM	11	10		
6:00 PM	20	5		
7:00 PM	25	63		
8:00 PM	10	10		
9:00 PM	10	5		
10:00 PM	10	5		
11:00 PM	10	10		
12:00 AM	10	5		
1:00 AM	10	10		
2:00 AM	10	5		
3:00 AM	10	10		
4:00 AM	10	5		
DAILY	**334**	**334**	**149**	**149**
	668		298	

Appendix D

WSDOT Turn Lane Figures and HRR 211 Analysis

Exhibit 1310-7 Left-Turn Storage Guidelines: Two-Lane, Unsignalized

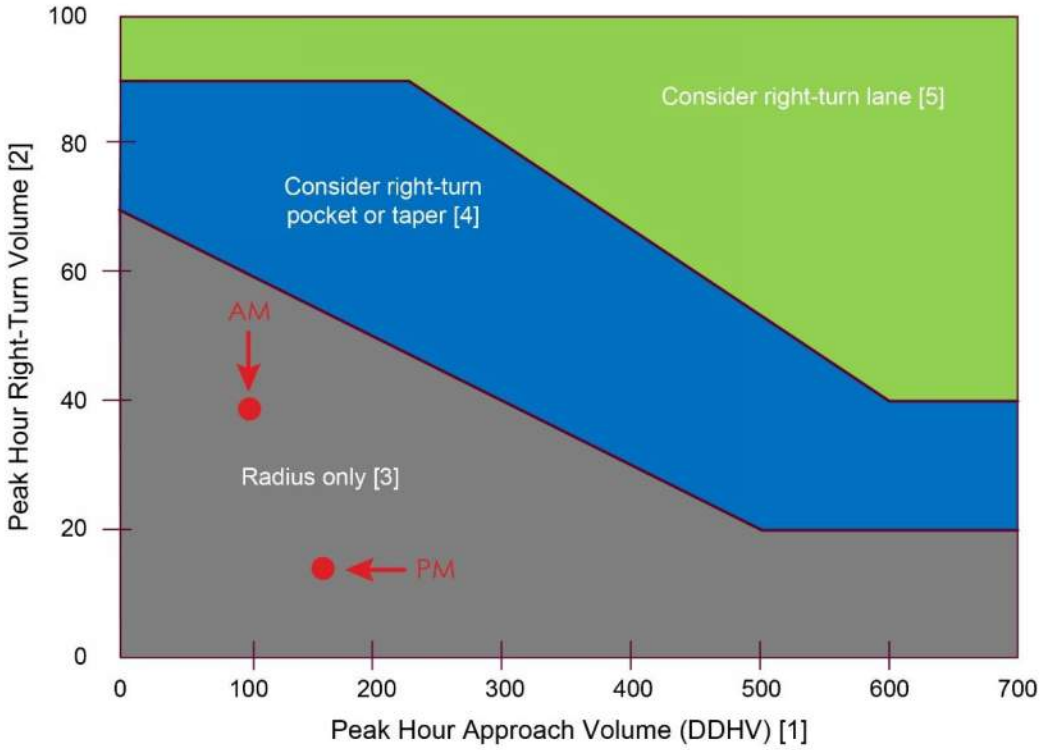


AM Peak Hour
DHV = 204, % LT = 12.3%

PM Peak Hour
DHV = 255, % LT = 3.9%

Appendix D1: WSDOT Left-Turn Lane Guidelines

Exhibit 1310-19 Right-Turn Lane Guidelines



Notes:

[1] For two-lane highways, use the peak hour DDHV (through + right-turn). For multilane, highways (posted speed 45 mph or above), use the right-lane peak hour approach volume (through + right-turn).

[2] When all three of the following conditions are met, reduce the right-turn DDHV by 20:
- The posted speed is 45 mph or below
- The right-turn volume is greater than 40 VPH
- The peak hour approach volume (DDHV) is less than 300 VPH

[3] For right-turn corner design, see Exhibit 1310-6.

[4] For right-turn pocket or taper design, see Exhibit 1310-20.

[5] For right-turn lane design, see Exhibit 1310-21.

AM Peak Hour	PM Peak Hour
DDHV = 99, RT = 38	DDHV = 165, RT = 15

Appendix D2: WSDOT Right-Turn Lane Guidelines

HR 211 Volume Warrant for Left-Turn Storage Lane on a Two-Lane Highway (AM Peak Hour)

T1	Average time to make left turn	2.835	secs
Vl	Left-turn volume	25	vph
Va	Advancing volume	105	vph
Vo	Opposing volume	99	vph
Gc	Critical headway	4.875	secs
Tw	Avg time a LT can wait for suitable gap	0.34	secs
Te	Avg time a LT vehicle clears lane	1.68	secs
Tmed	Median headway between advancing vehicles (2/3 TA)	22.86	secs
L	Proportion of left turns	0.238	
λ1	Mean # of arrivals/hour of THRU vehicles behind a LT	1.684902543	vph
λ0	# of opposing vehicles per sec	0.03	veh/sec
A	Total time per hour in opposing stream with headways less than Gc	117	secs
B	Total time per hour when LT vehicle is less than Gc from opposing stream with headways greater than Gc	58	secs
μ	Mean service rate or the avg # of LT possible in an hour	1208.17	
ρ	Utilization factor; ratio of arrival to service rate	**0.0014**	

Probabilty that a THRU Veh arriving behind a LT veh should not exceed 0.02 for 40 mph	NOT MET
Probabilty that a THRU Veh arriving behind a LT veh should not exceed 0.015 for 50 mph	NOT MET
Probabilty that a THRU Veh arriving behind a LT veh should not exceed 0.01 for 60 mph	NOT MET

NOTE: Spreadsheet currently configured for analyzing two-lane highways **only**. Modifications will be required to analyze a four-lane highway.

User Input
Formula
Constant

%HV Base:	5%
%HV Project:	0%

Gc Truck	7.5	secs
Gc Base	5	secs
Gc Project	4.875	secs

HV/PV Ratio	2.1
Avg LT Base	3
Avg LT Project	2.835
Avg LT Clr Base	1.9
Avg LT Clr Project	1.68

Advancing Total	105
LT Percentage	24%
Opposing Total	99

HR 211 Base Constant Parameters

Assume 5% HVs in base model

Average time to make a left turn (T)

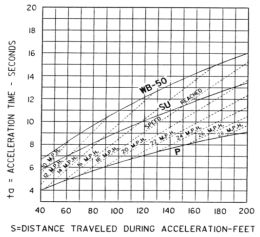
Four-lane highway	4	sec
Two-lane highway	3	sec

Critical Headway (Gc)

Four-lane highway	6	sec
Two-lane highway	5	sec

Avg time a LT vehicle clears lane (Te)

Two-lane highway	1.9	sec



HV/PV Ratio Reference (Figure 2, Page 3)

Assumed 60 ft to complete LT movement. Ratio based on values taken from nomograph at this point.

HV = Heavy Vehicle, PV = Passenger Vehicle

HR 211 Volume Warrant for Left-Turn Storage Lane on a Two-Lane Highway (PM Peak Hour)

T1	Average time to make left turn	6.135	secs
Vl	Left-turn volume	10	vph
Va	Advancing volume	90	vph
Vo	Opposing volume	165	vph
Gc	Critical headway	7.375	secs
Tw	Avg time a LT can wait for suitable gap	1.40	secs
Te	Avg time a LT vehicle clears lane	6.08	secs
Tmed	Median headway between advancing vehicles (2/3 TA)	26.67	secs
L	Proportion of left turns	0.111	
λ1	Mean # of arrivals/hour of THRU vehicles behind a LT	2.493203988	vph
λ0	# of opposing vehicles per sec	0.05	veh/sec
A	Total time per hour in opposing stream with headways less than Gc	192	secs
B	Total time per hour when LT vehicle is less than Gc from opposing stream with headways greater than Gc	96	secs
μ	Mean service rate or the avg # of LT possible in an hour	539.96	
ρ	Utilization factor; ratio of arrival to service rate	**0.0046**	

Probabilty that a THRU Veh arriving behind a LT veh should not exceed 0.02 for 40 mph	NOT MET
Probabilty that a THRU Veh arriving behind a LT veh should not exceed 0.015 for 50 mph	NOT MET
Probabilty that a THRU Veh arriving behind a LT veh should not exceed 0.01 for 60 mph	NOT MET

NOTE: Spreadsheet currently configured for analyzing two-lane highways **only**. Modifications will be required to analyze a four-lane highway.

User Input
Formula
Constant

%HV Base:	5%
%HV Project:	100%

Gc Truck	7.5	secs
Gc Base	5	secs
Gc Project	7.375	secs

HV/PV Ratio	2.1
Avg LT Base	3
Avg LT Project	6.135
Avg LT Clr Base	1.9
Avg LT Clr Project	6.08

Advancing Total	90
LT Percentage	11%
Opposing Total	165

HR 211 Base Constant Parameters

Assume 5% HVs in base model

Average time to make a left turn (T)

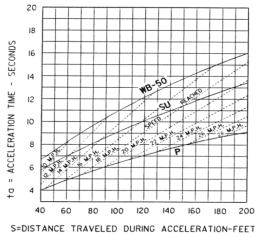
Four-lane highway	4	sec
Two-lane highway	3	sec

Critical Headway (Gc)

Four-lane highway	6	sec
Two-lane highway	5	sec

Avg time a LT vehicle clears lane (Te)

Two-lane highway	1.9	sec



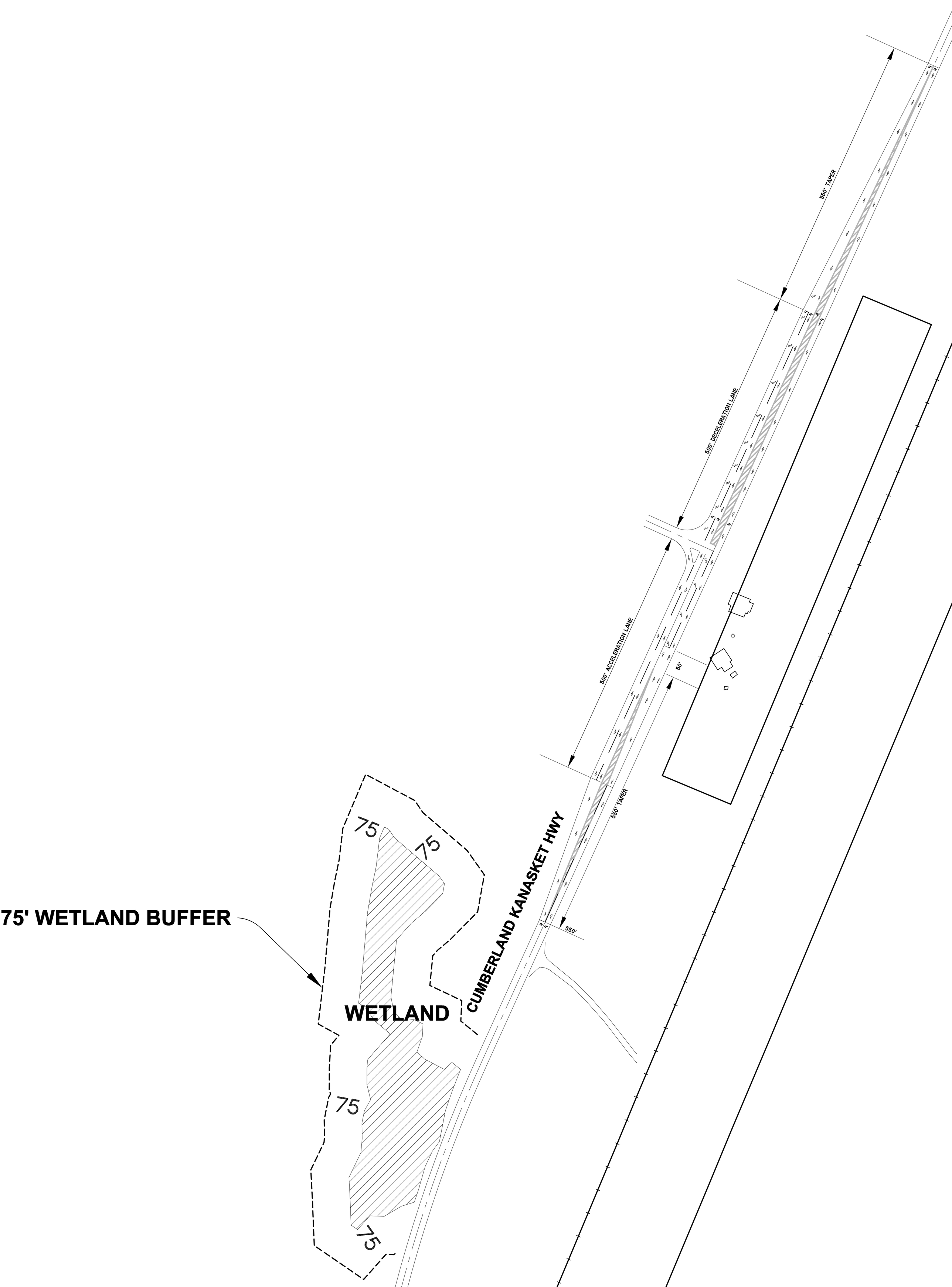
HV/PV Ratio Reference (Figure 2, Page 3)

Assumed 60 ft to complete LT movement. Ratio based on values taken from nomograph at this point.

HV = Heavy Vehicle, PV = Passenger Vehicle

Appendix E

WSDOT Turn Lane Figures and HRR 211 Analysis


550' TAPER
500' DECELERATION LANE
500' ACCELERATION LANE
50'
550' TAPER
550'
CUMBERLAND KANASKET HWY
75' WETLAND BUFFER
75
75
75
WETLAND