

Appendix F

Traffic Impact Analysis

**TRAFFIC IMPACT ANALYSIS FOR
CROSSROADS WEST SPECIFIC PLAN EIR
Riverbank, CA**

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Crossroads West SP.rpt

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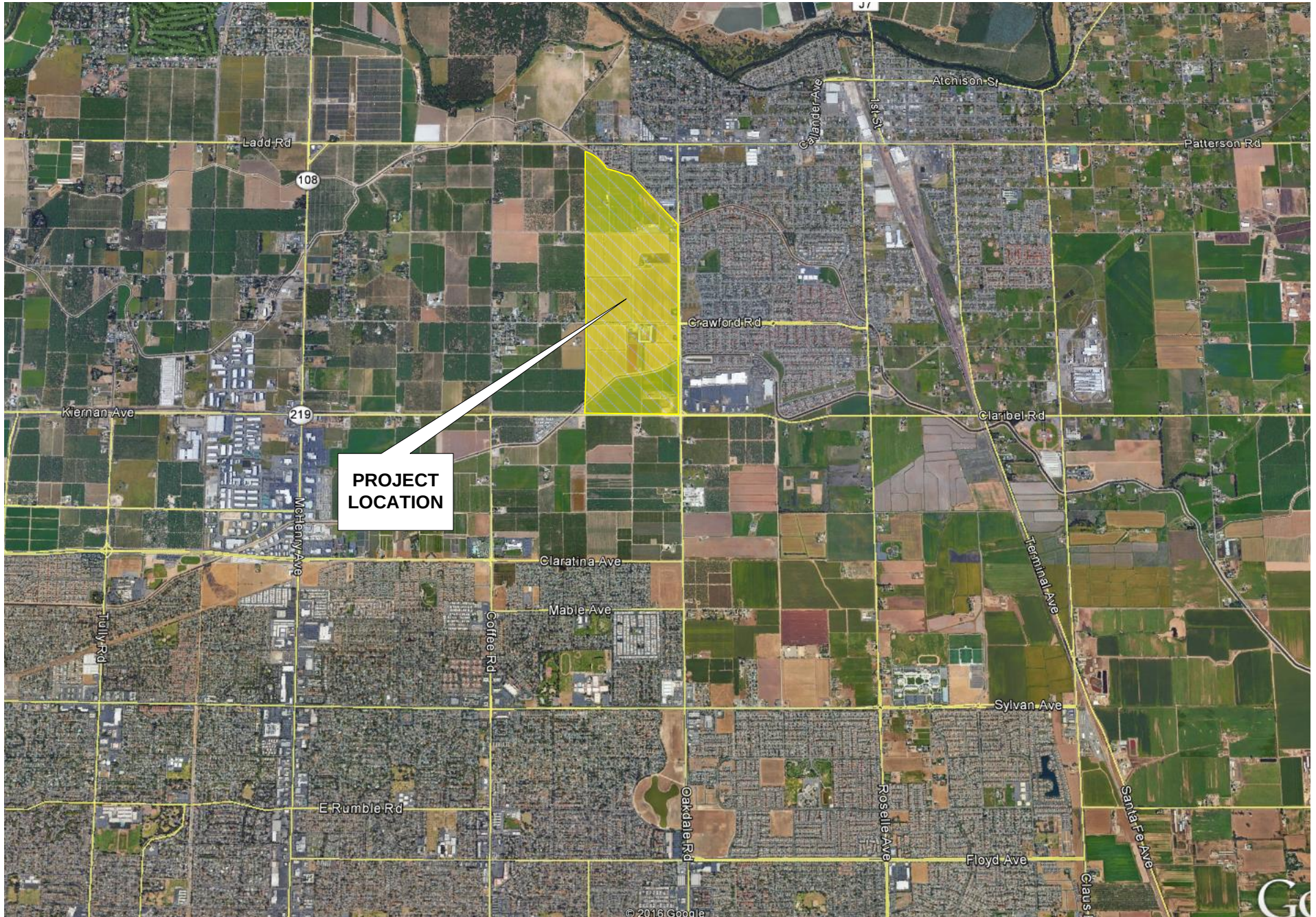
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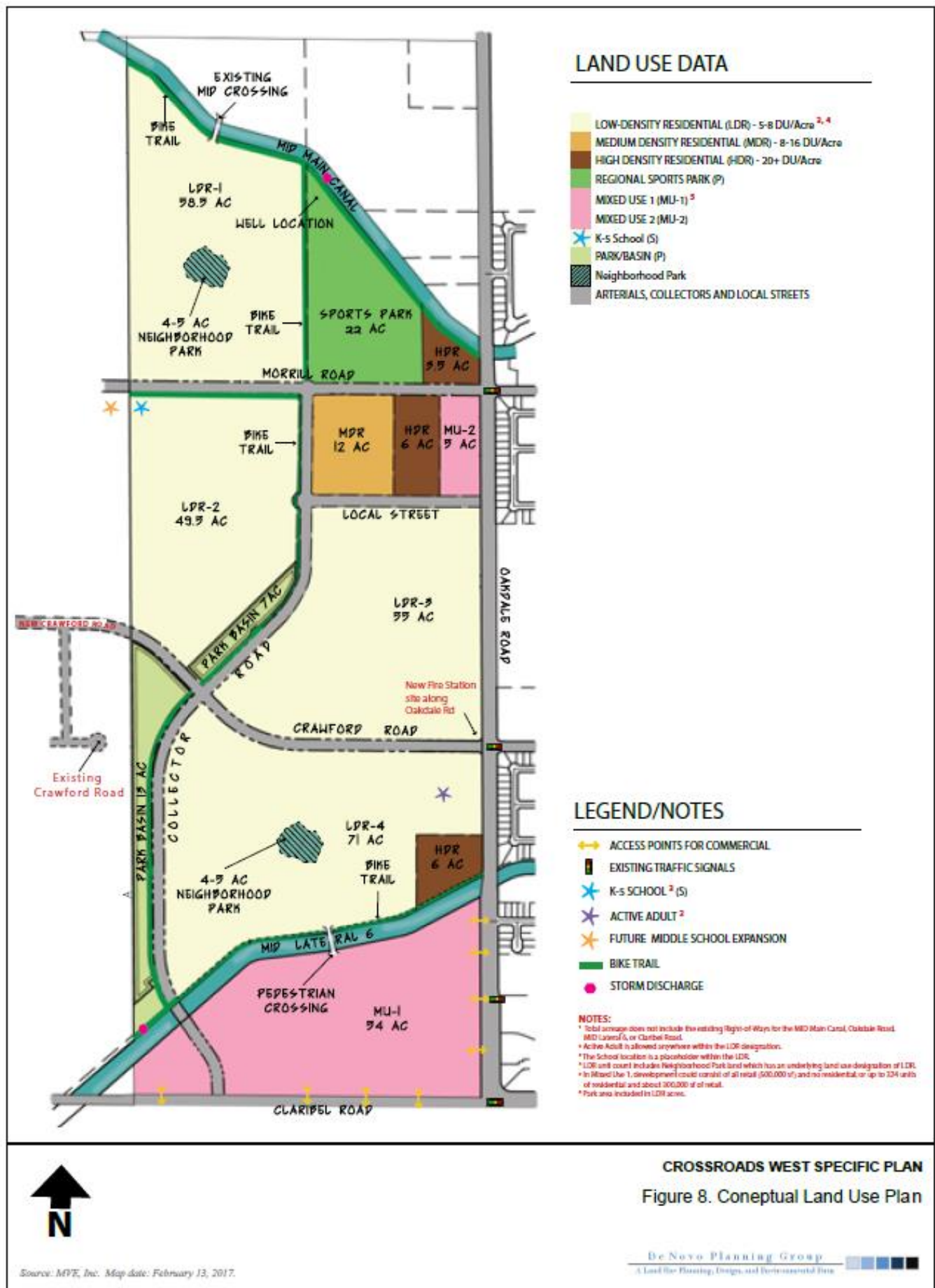
INTRODUCTION

This report summarizes **KD Anderson & Associates** analysis of the potential traffic impacts associated with development of the **Crossroads West Specific Plan Area** in Riverbank, California. The Crossroads West Specific Plan (CWSP) will guide development of roughly 390 acres of residential, mixed use commercial and potentially public uses located north of Claribel Road between Coffee Avenue and Oakdale Avenue. The project site is located regionally in Figure 1, and Figure 2 is the proposed CWSP land use plan.

Approach

The purpose of this analysis is to document current and future traffic conditions in the area of the CWSP and to identify the traffic impacts associated with development of the CWSP in a manner that is consistent with City of Riverbank, City of Modesto, Stanislaus County and Caltrans guidelines. This report includes evaluation of existing circulation conditions in the area based on current daily and a.m./p.m. peak hour traffic volumes. The extent to which improvements are already needed has been determined, and facilities serving alternative transportation modes have been catalogued. The general characteristics of the proposed project have been determined based on an analysis of trip generation that may be associated with the proposed land uses. Project trips were assigned to the study area street system, and resulting Levels of Service were compared to current conditions in order to identify the impacts of CWSP development alone. Cumulative traffic impacts were also evaluated assuming implementation of planned / programmed circulation system improvements and continuing development in the City of Riverbank as anticipated under the City of Riverbank General Plan and assumed in the pending evaluation of the North County Corridor (NCC) project. Mitigation measures that will be needed to address both project specific and cumulative impacts were identified.





EXISTING SETTING

Existing Circulation System

Roadways. Today regional access to the CWSP area is provided by many roads that fall under the jurisdiction of the City of Riverbank, as well as the City of Modesto, Stanislaus County and Caltrans. Patterson Road (SR 108) and Claribel Road connect the project with the northern Modesto and SR 99 area to the west and with the Oakdale area to the east. North-south streets such as McHenry Avenue, Coffee Road, Oakdale Road, Roselle Avenue and Claus Road link the plan areas with the Modesto area to the south. The text which follows describes study area roadways.

Two major streets front the CWSP:

Claribel Road is a major east-west arterial that extends easterly from an intersection on McHenry Avenue (SR 108) past the project site along the south side of Riverbank into rural Stanislaus County beyond Oakdale-Waterford Highway. Claribel Road is designated an Arterial in the Riverbank General Plan Circulation Element. Today Claribel Road is a four-lane facility from McHenry Avenue to Oakdale Road, but between Oakdale Road and Squire Wells Way the north side has been widened to its ultimate four-lane width. The posted speed limit is 45 mph.

Traffic counts conducted for this study in November 2016 indicated that Claribel Road carried 20,080 vehicles per day (vpd) in the area from McHenry Avenue to Coffee Road, 19,720 vpd from Coffee Road to Oakdale Road, 14,250 vpd from Oakdale Road to Roselle Avenue and 10,930 vpd from Roselle Avenue to Claus Road.

Oakdale Road is a major north-south arterial that extends from an intersection on Patterson Road (SR 108) south through Riverbank into Modesto to its southern terminus on Scenic Drive along the Tuolumne River. Oakdale Road is a divided four-lane facility in most of Riverbank. But the segment from Morrill Road to Crawford Road has a single southbound lane. Oakdale Road narrows to two-lanes in Modesto between Claribel Road and Claratina Avenue. The route gains a second southbound lane south of Claratina Avenue and is four-lanes south of Sylvan Avenue. The posted speed limit on Oakdale Road is 50 mph in Riverbank.

Traffic counts indicated that Oakdale Road carried 13,790 vpd between Patterson Road and Morrill Road, 13,620 vpd between Morrill Road and Crawford Road, 17,510 vpd between Crawford Road and Claribel Road and 18,840 vpd between Claribel Road and Claratina Avenue.

The area circulation system includes these east-west streets:

Patterson Road is a major east-west arterial that extends easterly from an intersection on McHenry Avenue through Riverbank across rural Stanislaus County into the area south of Oakdale to its eastern terminus at the Albers Road – Oakdale – Waterford Highway intersection. The segment through western Riverbank to Callander Avenue is also SR 108. Patterson Road is a two-lane rural highway from McHenry Avenue to the Hot Springs Lane intersection in western Riverbank. The route is a four-lane facility from that point east to Jackson Avenue and is a two-

lane road from Jackson Avenue through the Callander Avenue intersection. Patterson Road continues east as a two-lane road through Riverbank.

Caltrans traffic counts for SR 108 indicated that Patterson Road carried an *Annual Average Daily Traffic* (AADT) volume of 14,100 vpd east of McHenry Avenue to Coffee Road, 15,600 vpd from Coffee Road to Oakdale Road and 16,700 vpd east of Oakdale Road.

Morrill Road is an east-west collector street that runs from Coffee Road to Roselle Avenue through western Riverbank. Morrill Road is a two-lane facility. Traffic counts conducted for this study indicated that Morrill Road carried 1,770 vpd between Coffee Road and Oakdale Road and 4,660 vpd east of Oakdale Road.

Crawford Road is an east-west collector that extends easterly from Coffee Road through the middle of the CWSP area across Oakdale Road to Roselle Avenue. Crawford Road is a two-lane roadway. The western area of Crawford Road provides access to several rural residences, and to minimize traffic in that area a raised median has been installed in the Oakdale Road/Crawford Road intersection to preclude east-west through traffic.

The daily traffic counts observed on Crawford Road totaled 480 vpd between Coffee Road and Oakdale Road and 4,890 vpd east of Oakdale Road.

Claratina Avenue – Pelandale Avenue is an east-west expressway across northern Modesto from SR 99 to Oakdale Road. Today Claratina Avenue is a two-lane road east of McHenry Avenue, but the City of Modesto is pursuing a project to widen Claratina Avenue to four-lanes.

Mable Avenue is a two-lane collector street that runs from Coffee Road to Oakdale Road.

Standiford Avenue - Sylvan Avenue is a major arterial street that runs from SR 99 to Claus Road. Claus Road is a four lane facility.

Future North County Corridor (NCC). Future plans for regional circulation in this area of Stanislaus County involve the development of bypass routes to reduce traffic on existing state routes and other major facilities. The North County Corridor (NCC) Expressway is expected to link SR 99 in northern Modesto with SR 120/108 east of Oakdale. The NCC is identified in the Riverbank General Plan Element, and the NCC's Environmental Impact Report for this two-lane / six lane facility was available for public review as the CWSP traffic study was being prepared. The alignment of NCC has not been adopted. NCC alternative alignments all make use of a similar route across the southern Riverbank – Northern Modesto area, and four alternatives for the area east of Riverbank and east of Oakdale are being evaluated in its environmental document. The NCC will become State Route 108 when completed.

The north south streets within the study area include:

McHenry Avenue is a major north-south arterial that extends from the City of Modesto across the Stanislaus River to Escalon. The portion of McHenry Avenue south of Patterson Road is also SR 108. McHenry Avenue varies in width, as the roadway has six lanes south of Coralwood Road, four-lanes from Coralwood Road through the Kiernan Avenue – Claribel Road intersection and two-lanes north to San Joaquin County. Stanislaus County is currently pursuing a project to widen northern McHenry Avenue to four lanes.

Caltrans traffic counts indicate that in 2015 McHenry Avenue carried 19,200 AADT south of Kiernan Avenue and 13,300 AADT south of Patterson Road.

Coffee Road is a north south arterial street that extends south from Patterson Road across Claribel Road into Modesto and its southern terminus on Scenic Drive along the Tuolumne River. Coffee Road is a two-lane facility from Patterson Road to Mable Avenue and is a four lane facility from that point south.

Traffic counts made for this study indicated that Coffee Road carried 3,750 vpd from Patterson Road to Crawford Road, 5,610 vehicles per day between Crawford Road and Claribel Road and 10,930 vehicles per day south of Claribel Road.

Roselle Avenue is an arterial street that extends south from Patterson Road in downtown Riverbank across Claribel Road into Modesto. Roselle Avenue is generally a two-lane roadway through Riverbank, but portions of the alignment have been widened to the ultimate four-lane width as development has proceeded. South of the Claribel Road intersection Roselle Road is a two-lane facility but widens to four-lanes at Floyd Avenue.

The daily traffic volume on Roselle Avenue was observed to be 9,260 vpd south of Claribel Road.

Terminal Avenue is a two-lane north-south collector street that lies east of and parallel to the BN&SF railroad and extends from Patterson Road south to an intersection on Claus Road north of Sylvan Avenue.

Claus Road is a north-south arterial street that originates at an intersection on SR 108 in northeastern Riverbank and continues southerly through Modesto to an intersection on SR 132 in eastern Modesto. Claus Road is a two-lane facility through Riverbanks, although the roadway has been widened to its ultimate width in various locations. Claus Road widens to a four-lane facility at Briggsmore Avenue in Modesto.

Intersections. In urban areas the quality of traffic flow during peak traffic hours is typically governed by the flow of traffic through major intersections. This analysis considers seventeen existing intersections in the vicinity of CWSP:

The **Patterson Road (SR 108) / Coffee Road intersection** is a “tee” controlled by a stop sign on the southbound Coffee Road approach. The intersection is configured with single approach lanes which combine through and turning traffic. No crosswalks exist at this location.

The **Patterson Road / Oakdale Road intersection** is controlled by an actuated traffic signal. The three lane Oakdale Road approaches each have separate left turn, a through lane and a right turn, and the northbound right turn lane operates with an overlap phase. The westbound Patterson Road approach has dual left turn lanes. Crosswalks are striped across all legs of the intersection.

The **Coffee Road / Morrill Road intersection** is a “tee” controlled by a stop sign on the westbound Morrill Road approach. Each approach has a single lane, and there are no crosswalks at this intersection.

The **Oakdale Road / Morrill Road intersection** is controlled by an actuated traffic signal. Each approach has three lanes. The Morrill Road approaches have separate left turn, right turn and through lanes, as does the southbound Oakdale Road approach. The northbound Oakdale Road approach has a left turn lane, a through lane and a combined through+right turn lane. Crosswalks are available on all legs of the intersection.

The **Coffee Road / Crawford Road intersection** is a “tee” controlled by a stop sign on the westbound Crawford Road approach. Each approach has a single lane, and there are no crosswalks at this location.

The **Oakdale Road / Crawford Road intersection** is controlled by a traffic signal with a center median that precludes east-west through traffic. The eastbound and westbound Crawford Road approaches have separate left turn and right turn lanes. The Oakdale Road approaches have separate left turn lanes. Crosswalks are striped on all legs of the intersection.

The **Oakdale Road / Freddi Lane intersection** provides access to the Crossroads Shopping Center. The intersection is controlled by a traffic signal. Oakdale Road has two through lanes in each direction, as well as separate left turn lanes and a northbound right turn lane. The westbound Freddi Lane approach has dual left turn lanes and a separate right turn lane. Crosswalks are striped across the north and east legs of the intersection.

The **McHenry Blvd (SR 108) / Kiernan Avenue intersection** is controlled by an actuated traffic signal. The four-lane McHenry Blvd approaches have two through lanes and separate left turn and right turn lanes. The six lane eastbound Kiernan Avenue approach has dual left turn lanes, three through lanes and a separate right turn lane. The westbound Claribel Road approach has dual left turn lanes, a through lane and a combined through+right turn lane. Crosswalks are striped across each leg of the intersection.

The **Coffee Road / Claribel Road intersection** is controlled by an actuated traffic signal. The three lane Coffee Road approaches have separate left turn, through and right turn lanes. The four lane Claribel Road approaches have a left turn, two through lanes and a right turn lane. Crosswalks are striped across each leg of the intersection.

The **Oakdale Road / Claribel Road intersection** is controlled by an actuated traffic signal. The Claribel Road approaches have two through lanes and a separate left turn lane, and the westbound approach has a separated right turn lane. The northbound Oakdale Road approach

has a left turn lane, a through lane and a combined through+right turn lane. The three lane southbound Oakdale Road approach has separate left turn, through and right turn lanes. Crosswalks exist on all four legs of the intersection.

The **Claribel Road / Squire Wells Way intersection** is a “tee” controlled by an actuated traffic signal. Each approach has two lanes. The southbound Squire Wells Way approach has separate left turn and right turn lanes. The eastbound Claribel Road approach has a left turn lane and a single through lane. The westbound approach has a through lane and a combined through+right turn lane. Crosswalk is striped on the north leg of the intersection.

The **Claribel Road / Roselle Road intersection** is currently controlled by an all-way stop, but the City of Riverbank and Stanislaus County are currently working to install a traffic signal at this intersection. The plans for the new intersection perpetuate single through lanes on each approach, with separate left turn lanes and a right turn lane on eastbound Claribel Road. Crosswalks will be installed.

The **Claribel Road / Terminal Avenue intersection** is controlled by a traffic signal that is coordinated with the adjoining BN&SF railroad crossing which is equipped with an advance signal indication at the crossing. The Claribel Road approaches are single lanes, and the Terminal Avenue approaches have separate right turn lanes. There are no crosswalks at this intersection.

The **Claribel Road / Claus Road intersection** is controlled by an actuated traffic signal. Each approach has three lanes that are configured as separate left turn, through and right turn lanes. Crosswalks exist at the intersection.

The **Claratina Avenue / Oakdale Road intersection** in Modesto is a “tee” controlled by a stop sign on the eastbound Claratina Avenue approach. The City of Modesto has secured funding to install a traffic signal at this location, but no changes to intersection geometry will occur. The intersection features a single through lane in each direction on Oakdale Road, and a northbound left turn lane is provided. The eastbound Claratina Avenue approach has separate left turn and right turn lanes, and the right turn lane continues beyond the intersection as the second southbound lane on Oakdale Road. Today there are no crosswalks at the intersection.

The **Coffee Avenue / Claratina Avenue intersection** in Modesto is controlled by an “interim” single lane roundabout. The intersection is expected to be modified as part of the City’s pending Claratina Avenue improvement project.

The **Oakdale Road / Mable Avenue intersection** in Modesto is controlled by an actuated traffic signal. Today Oakdale Road has a single northbound through lane and two southbound through lanes at this intersection. Separate left turn lanes are provided on Oakdale Road, and a separated southbound right turn lane is also available. The two-lane eastbound Mable Avenue approach has a separate left turn and a combined through + right turn lane. The westbound Mable Avenue approach is a single lane. Crosswalks are striped across the north, south and west legs of the intersection.

The **Oakdale Road / Sylvan Avenue intersection in Modesto** is controlled by an actuated traffic signal. Today the intersection provided two through lanes in each direction. Separate left turn and right turn lanes are available on the Sylvan Avenue approaches. Dual left turns exist on the Oakdale Road approaches, and the southbound approach has a separate right turn lane. Crosswalks are provided.

Intersection improvements are a condition of approval for the adjoining marketplace shopping center. These improvements will add a northbound right turn lane.

The **Roselle Avenue / Sylvan Avenue intersection** is controlled by a two-lane roundabout.

Alternative Transportation Modes

Pedestrian System. A majority of roadways in the developed areas of the City of Riverbank provide sidewalks and crossings for pedestrians, but these facilities are limited in the rural areas of the community that have not been developed and in the unincorporated areas of Stanislaus County near Riverbank. Sidewalks exist on the west side of Oakdale Road north of Morrill Road and as a shared Class 1 bikeway from Crawford Road to Claribel Road. Sidewalk is present on the east side of Oakdale Road from Patterson Road to Claribel Road.

Bicycle Facilities. The 2013 StanCOG Non-Motorized Transportation Master Plan provides guidance with regard to regional bicycle facilities and suggests the following classifications for bikeways:

- Class 1 Bikeways: Bike paths that are separated from vehicular traffic
- Class 2 Bikeways: Bike lanes that are striped on streets alongside vehicular traffic
- Class 3.5 Bikeways: Bike routes where bicycles and vehicles share the road but where wide shoulders are available
- Class 3 Bikeways: Bike routes where bicycles and vehicles share the road but are only signed

Today the wide sidewalks along the east side of Oakdale Road north of Claribel Road serve as Class 1 paths. A separated path also exists on the north side of the MID canal from Oakdale Road east to Roselle Avenue.

Class 2 lanes exist on:

- Claribel Road from McHenry Avenue to Oakdale Road
- Morrill Road east of Oakdale Road
- Crawford Road east of Oakdale Road

The Non-Motorized Transportation Master Plan (figure 2-2 Countywide Priority bikeways) suggests that:

- The MID trail should be extended westerly to Coffee Road
- A new trail should be constructed along the Hetch Hetchy ROW
- The Oakdale Road trail should be extended north beyond Crawford Road
- The Crawford Road and Morrill Road bike lanes should extend westerly to Coffee Road
- The Claribel Road bike lanes should extend easterly to Claus Road
- Class 2 bike lanes should be created on Coffee Road, Oakdale Road and Roselle Avenue south of Claribel Road

Public Transit. Riverbank is served by one transit provider, Stanislaus Regional Transit (StaRT). StaRT offers fixed route services. StaRT Route 60 operates Monday through Friday between 5:00 a.m. and 9:43 p.m. This bus operates thirteen round trips between Modesto and Oakdale and passes through Riverbank. On Saturday between 6:15 a.m. and 8:34 p.m., seven round trips are provided. The Saturday service is combined with the Modesto/Turlock route. This route follows Claribel Road and Oakdale Road and has a designated stop on Oakdale Road north of the Freddi Lane intersection. The Riverbank Dial-A-Ride service is available from 6:30 a.m. to 5:30 p.m. Monday through Friday. The ADA Paratransit service is provided as a compliment to fixed route service and is available to individuals with disabilities Monday 5:00 a.m. to 10:00 p.m. and Saturday service from 6:15 a.m. to 9:00 p.m.

Analysis Methodologies

Levels of Service were determined at study area intersections and on roadway segments to quantitatively evaluate traffic conditions and to provide a basis for comparing operating conditions with and without project generated traffic.

"Level of Service" (LOS) is a quantitative measure of traffic operating conditions whereby a letter grade "A" through "F" is assigned to an intersection. LOS "A" through "F" represents progressively worsening traffic conditions. The characteristics associated with the various LOS for intersections are presented in Table 1. The City of Riverbank General Plan has established LOS "D" as the minimum standard. Stanislaus County identifies LOS C as its minimum but defers to the standard of the applicable city within adopted Spheres of Influence. The City of Modesto General Plan identified LOS D as the general standard but identifies specific locations where LOS E and LOS F are accepted.

Intersection Level of Service Calculation. Levels of Service were calculated for this study at intersection using the methodology contained in the 2010 Highway Capacity Manual (HCM 2010). Synchro 10.0 software was employed. The overall Level of Service for intersections was determined based on the average length of delays for all motorists at signalized intersections and locations controlled by all-way stops. At un-signalized intersections the Level of Service was predicated on the length of the average delay experienced by motorists who must yield the right of way before turning or continuing through an intersection, and the Level of Service calculated for the approach with greatest delays was employed for analysis to provide a "worst case" evaluation.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.
Sources: 2010 <u>Highway Capacity Manual</u> .			

Roadway Segment Level of Service. The general Level of Service on roadway segments was determined based on adopted planning level thresholds.

City of Riverbank. Roadway service levels within the Sphere of Influence of the City of Riverbank are determined by comparing traffic volumes for selected roadway segments with daily LOS capacity thresholds. These thresholds, shown in Table 2, are taken from the City of Riverbank General Plan EIR.

TABLE 2
LEVEL OF SERVICE THRESHOLDS BASED ON SEGMENT TRAFFIC VOLUME

Classification / Terrain	Pavement Width	Shoulder Width	Level of Service Threshold				
			A	B	C	D	E
Two Lane Collector			-	-	7,700	11,600	12,900
Two Lane Undivided Urban Arterial			-	10,200	13,500	14,800	15,700
Four Lane Divided Urban Arterial			-	22,800	29,500	31,700	33,400
Six Lane Divided Urban Arterial			-	35,100	45,000	47,900	50,300
Rural Road - two lanes in "Level" terrain (HCS)	22	0	105 vph	285 vph	510 vph	920 vph	1,965 vph
Source: City of Riverbank GPU EIR, Table 4.15-2							

Stanislaus County. Service levels for roadways in Stanislaus County are also determined by comparing traffic volumes for selected roadway segments with the daily LOS capacity thresholds. These thresholds are shown in Table 3 and were developed for the *Stanislaus County Circulation Element* (Dowling Associates Inc., November 2005). The Stanislaus County thresholds are much lower than the City of Riverbank thresholds. This is due to the rural nature of Stanislaus County roadways. Rural roadway capacities are based on different characteristics than urban roadways, such as amount of time spent following another vehicle.

TABLE 3
STANISLAUS COUNTY ROADWAY SEGMENTS
LEVEL OF SERVICE CRITERIA

Facility Type	Maximum Daily Volume				
	LOS A	LOS B	LOS C	LOS D	LOS E
2-lane Collector	700	1,900	3,400	5,900	10,000
4-lane Collector	5,600	9,400	13,200	15,800	20,000
2-lane Arterial	1,400	3,800	6,800	11,800	20,000
4-lane Arterial	10,080	16,520	23,760	28,440	36,000
SOURCE: Traffic Analysis of Stanislaus County Circulation Element (Dowling Associates Inc, November 2005).					

City of Modesto. The City of Modesto General Plan identified roadway segment Level of Service based on peak hour directional lane capacity. Table 4 presents these thresholds.

TABLE 4
CITY OF MODESTO ROADWAY SEGMENTS
LEVEL OF SERVICE CRITERIA

Type of Roadway Segment	Hourly Capacity (veh/ln/hr)	Maximum Volume					
		A	B	C	D	E	F
Maximum v/c		0.60	0.70	0.80	0.90	1.00	>1.00
Freeway Mainline	2,000	1,200	1,400	1,600	1,800	2,000	
Expressway (Class A)	1,500	900	1,050	1,200	1,350	1,500	
Expressway (Class B)	1,250	750	875	1,000	1,125	1,250	
Expressway (Class C)	1,000	600	700	800	900	1,000	
Arterial (Signalized)	750	450	525	600	675	750	
Arterial (Un-signalized)	1,000	600	700	800	900	1,000	
Collector (Signalized)	500	300	350	400	450	500	
Collector (Un-signalized)	750	450	525	600	675	750	
Rural Road	900	540	630	720	810	900	
Source: City of Modesto General Plan, veh/ln/hr is vehicles per lane per hour							

Traffic Signal Warrants. The extent to which traffic signals may be justified is determined based on evaluation of guidelines published in the Manual of Uniform Traffic Control Devices (MUTCD)¹. These guidelines make use of a system of nine traffic signal **Warrants** that consider various aspects of the effects of traffic controls, including traffic volumes at various times, pedestrian activity, collision history, etc. For this analysis Warrant 3 (peak hour volume warrant) has been applied. It is important to note that satisfaction of a single warrant is not by itself justification for installing a traffic signal. While useful for evaluating the relative effects of a project, an evaluation based on peak hour volumes should be supplemented by consideration of other applicable warrants before making a decision to install a signal.

Existing Traffic Volumes

To quantify existing traffic conditions, a base of current peak hour and daily traffic volume information was assembled from new traffic counts completed by this consultant in 2016. Figure 3 identifies the recorded daily traffic volumes, as well as the location of study area intersections. Figure 4 presents the observed weekday a.m. and p.m. peak hour traffic counts made at key intersections while are schools were in session. Current information regarding the number of lanes and traffic control devices assumed for Level of Service analysis are also presented in that figure.

¹ Manual of Uniform Traffic Control Devices, Transportation Research Board, 2014

Current Traffic Operating Conditions

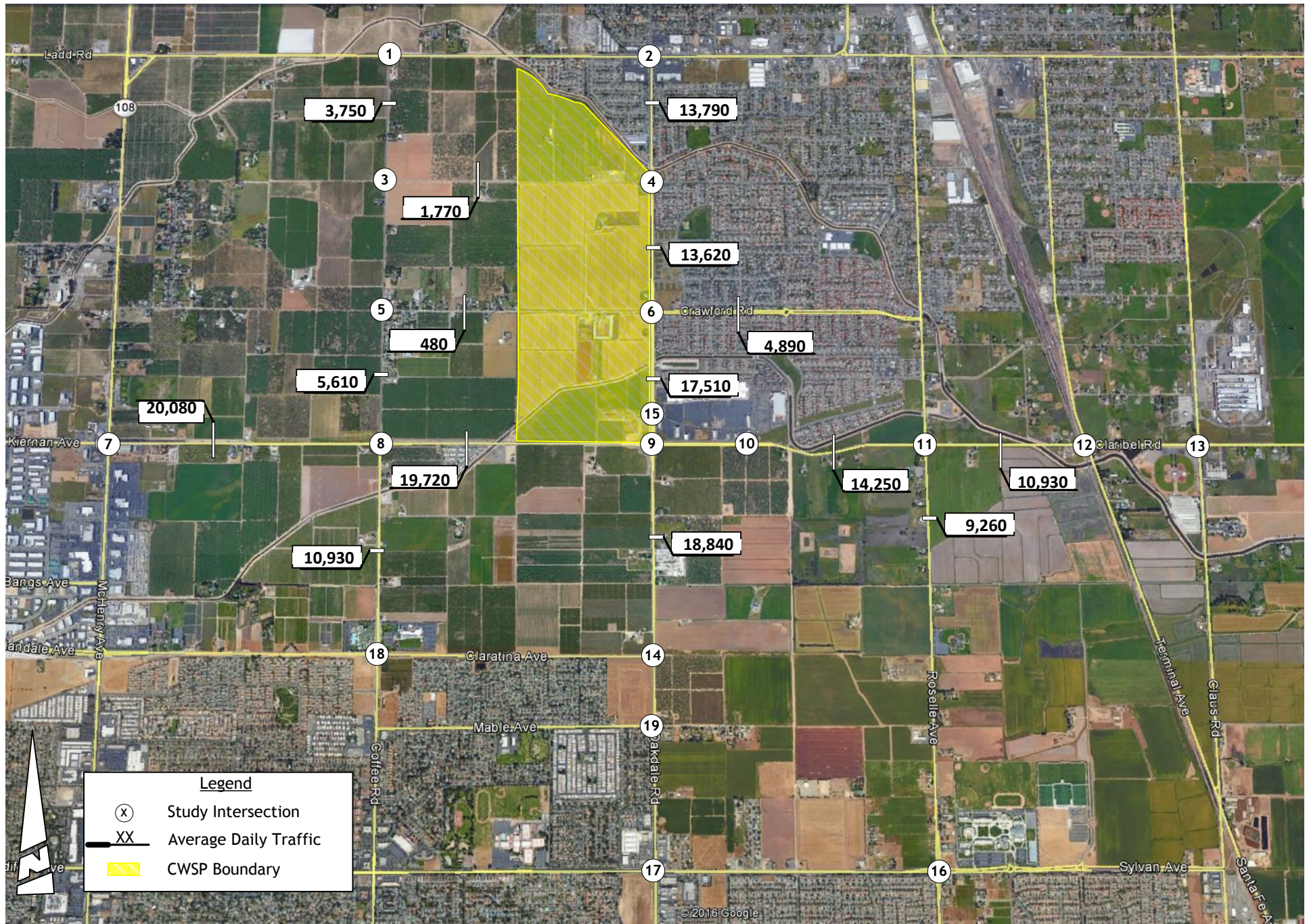
Intersection Levels of Service. Current a.m. and p.m. peak hour Levels of Service were calculated at existing study intersections (Refer to Appendix for calculation worksheets) under "Existing" conditions, and the results are presented in Table 5.

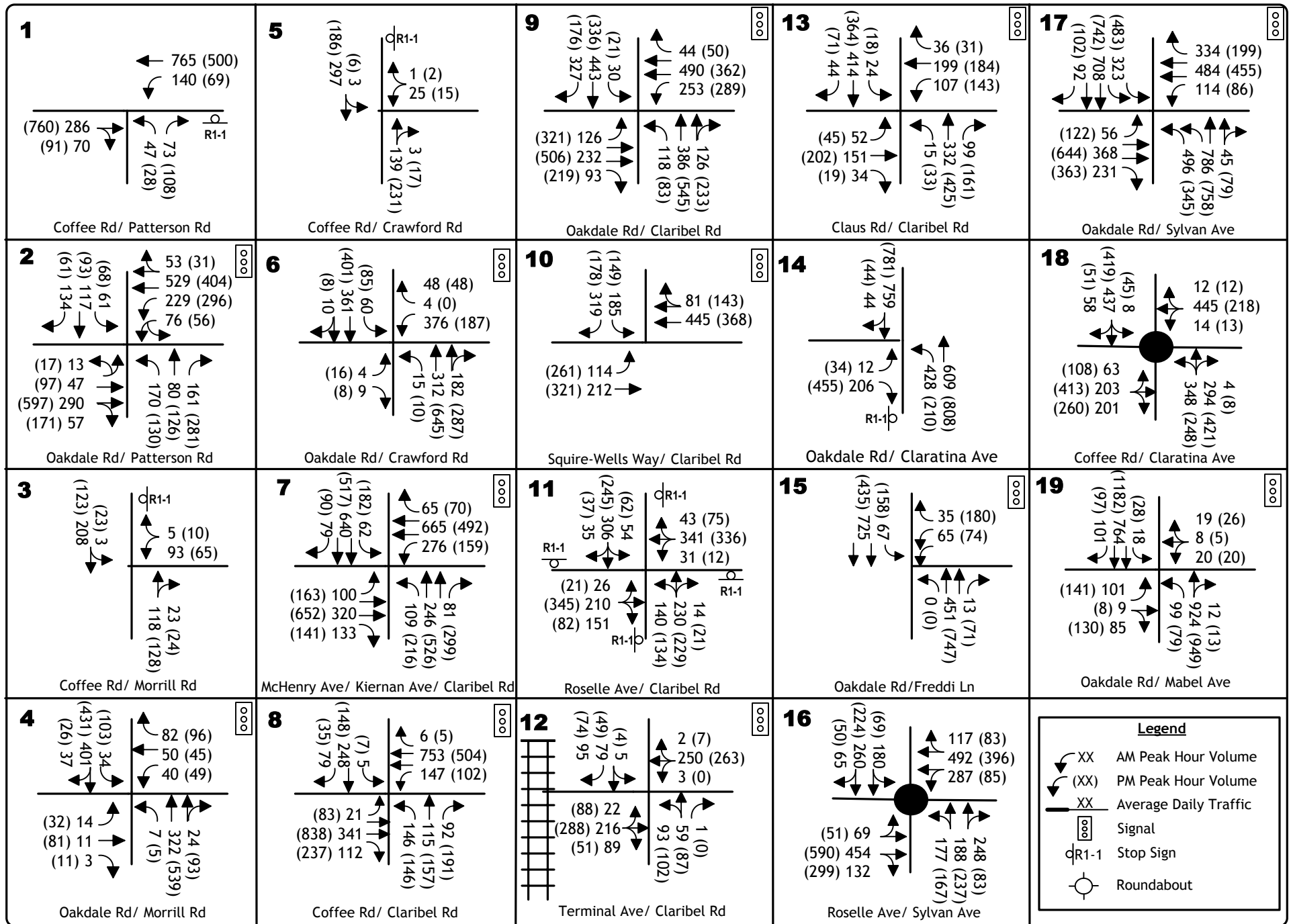
As indicated, with four exceptions, the Level of Service at each location satisfies the minimum LOS D standard established by the respective agencies. The four exceptions are:

- **Patterson Road / Coffee Road**, where the northbound approach operates at LOS E.
- **Claribel Road / Roselle Avenue**, where the All-Way Stop operates at LOS F, but where the City of Riverbank and Stanislaus County are installing intersection improvements, including a signal. With that improvement the intersection will operate at LOS C.
- **Oakdale Road / Claratina Avenue**, where the eastbound approach operates at LOS F. The City of Modesto has plans to install a traffic signal, and with signalization the intersection will operate at LOS C in the a.m. and LOS B in the p.m.
- **Coffee Road / Claratina Avenue**, where the existing single lane roundabout operates at LOS F. The City of Modesto is currently preparing plans for overall Claratina Avenue improvements, which will include a two-lane roundabout at this intersection. A two-lane roundabout will provide a Level of Service that satisfies the City's Minimum LOS D standard.

With planned improvements all study intersections will operate with Levels of Service that satisfy minimum standards.

Traffic Signal Warrants. Current traffic volumes were compared to the thresholds contained in Warrant 3 (peak hour volume) to determine whether traffic signals might be justified today at any un-signalized intersection that is not already planned for signalization. The results are also indicated in Table 5. As shown current peak hour volumes at the **Patterson Road / Coffee Road** intersection satisfy peak hour volume warrants. Volumes at other locations do not reach the level that satisfies the peak hour warrant.





**TABLE 5
EXISTING INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour			PM Peak Hour		
		Average Delay (sec/veh)	LOS	Traffic Signal Warrant Met?	Average Delay (sec/veh)	LOS	Traffic Signal Warrants Met?
Patterson Rd (SR 108) / Coffee Rd Northbound approach	NB Stop	40.2	E	Yes	39.0	E	Yes
Patterson Rd (SR 108) / Oakdale Rd	Signal	26.6	C	n.a.	38.1	D	n.a.
Coffee Rd / Morrill Rd Westbound approach	WB Stop	11.9	B	No	11.4	B	No
Oakdale Rd / Morrill Rd	Signal	14.4	B	n.a.	16.4	B	n.a.
Coffee Rd / Crawford Rd Westbound approach	WB Stop	12.0	B	No	11.7	B	No
Oakdale Rd / Crawford Rd	Signal	16.2	B	n.a.	25.9	C	n.a.
McHenry Ave (SR 108) / Claribel Rd	Signal	28.9	C		35.0	D	
Claribel Rd / Coffee Rd	Signal	8.9	A		8.4	A	
Claribel Rd / Oakdale Rd	Signal	30.4	C		32.4	C	
Claribel Rd /Squire Wells Way	Signal	14.2	B		13.0	B	
Claribel Rd / Roselle Ave	AWS	56.7	F	Yes	63.9	F	Yes
	Signal	22.2	C	n.a.	20.3	C	n.a.
Claribel Rd / Terminal Ave	Signal	7.2	A		7.5	A	
Claribel Rd / Claus Rd	Signal	18.3	B		21.4	B	
Oakdale Rd / Claratina Ave Eastbound approach	EB Stop	70.1	F	Yes	186.0	F	Yes
	Signal	21.6	C	n.a.	13.2	B	n.a.
Oakdale Rd / Freddi Lane	Signal	8.1	A		19.8	B	
Roselle Ave / Sylvan Lane	Roundabout	16.2	C		12.1	B	
Oakdale Rd / Sylvan Ave	Signal	15.9	B		14.5	B	
Coffee Rd / Claratina Ave	Roundabout	27.0	D		51.5	F	
Oakdale Rd /Mable Ave	Signal	22.1	C		24.4	C	

Roadway Segment Level of Service. Current daily and peak hour traffic volumes on key roadway segments in the vicinity of the project were compared to adopted LOS thresholds, and the results are presented in Table 6. While most roadways carry volumes that satisfy the applicable minimum Level of Service goal, three segments operate with unacceptable Level of Service:

The two-lane segment of **Patterson Road west of Riverbank from McHenry Avenue to Hot Springs Lane** operates at LOS E. This exceeds Stanislaus County and City of Riverbank minimum standards. A four-lane roadway would be needed to deliver the minimum LOS. The City of Riverbank mitigation fee program includes funds for this work, but no construction in this area is currently programmed.

In Modesto, the two-lane segment of **Oakdale Road south of Claribel Road** carries a directional peak hour volume (PM Northbound) that is indicative of LOS F under the City's General Plan thresholds. A four-lane section would be needed to deliver the minimum LOS today, and this roadway is included in the City of Modesto's CFF program as a 6-lane principal arterial street.

TABLE 6
EXISTING ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Classification	Jurisdiction	Maximum Volume	Current Volume	Volume / Capacity (V/C)	Level of Service
Patterson Road (SR 108)	McHenry Avenue to Coffee Road	2-lane Arterial	Caltrans / County	20,000	14,100		E
	Coffee Road to Oakdale Road	2-lane Arterial	Caltrans / Riverbank	15,700	15,600		E
	Oakdale Road to Jackson Avenue	4-lane Arterial	Caltrans / Riverbank	33,400	16,700		B
Morrill Road	Coffee Road to Oakdale Road	2-lane Rural	Riverbank	1,965 vph	205 vph		B
Crawford Road	Coffee Road to Oakdale Road	2-lane Rural	Riverbank	1,965 vph	42 vph		A
	Oakdale Road to Squire Wells Road	2-lane Collector	Riverbank	12,900	4,890		C
Claribel Road	McHenry Avenue to Coffee Road	4-lane Arterial	County	36,000	20,080		C
	Coffee Road to Oakdale Road	4-lane Arterial	Riverbank	33,400	19,720		B
	Oakdale Road to Roselle Avenue	2-lane Arterial	Riverbank	15,700	14,250		D
	Roselle Avenue to Claus Road	2-lane Arterial	Riverbank	15,700	10,930		C
Coffee Road	Patterson Road to Morrill Road	2-lane Rural	Riverbank	1,965 vph	330 vph		C
	Morrill Road to Crawford Road	2-lane Rural	Riverbank	1,965 vph	442 vph		C
	Crawford Road to Claribel Road	2-lane Rural	Riverbank	1,965 vph	476 vph		C
	Claribel Road to Claratina Avenue	2-lane Arterial	Modesto	750 vph (one way)	507 vph	0.68	B
Oakdale Road	Patterson Road to Morrill Road	4-lane Arterial	Riverbank	33,400	13,790		B
	Morrill Road to Crawford Road	2-lane Arterial	Riverbank	15,700	13,620		D
	Crawford Road to Claribel Road	4-lane Arterial	Riverbank	33,400	17,510		B
	Claribel Road to Claratina Avenue	2-lane Arterial	Modesto	750 vph	861 vph	1.15	F
Roselle Avenue	Claribel Road to Claratina Avenue	2-lane Arterial	Modesto	750 vph	488 vph	0.65	B
BOLD values exceed minimum LOS D standard							

POLICIES / PROGRAMS AND SIGNIFICANCE CRITERIA

Polices of local jurisdictions that affect circulation have been identified, and existing programs to fund circulation system improvements have been identified. The significance criteria for this analysis were developed from criteria presented in the “Environmental Checklist Form,” of the CEQA Guidelines and based on the professional judgment of the City of Riverbank and this consultant. The significance criterion varies by jurisdiction. The significance criteria for the City of Modesto, Stanislaus County, and Caltrans are described below.

City of Riverbank

The City’s goals, polices and implementation strategies regarding transportation and circulation are presented in its General Plan Circulation Element.

Goals and Policies. Goals and policies in this Element address various aspects of the circulation of people and goods to support buildout of the Riverbank General Plan.

Goal CIRC-1 Riverbank’s Circulation Network Provides Convenience and Choice among All Modes of Transportation

Policy CIRC-1.1 Approved plans, projects, and subdivision requests in new growth areas shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle facilities and pedestrian facilities, designed to comply with the Americans with Disabilities Act.

Policy CIRC-1.2 Approved plans, projects, and subdivision requests in new growth areas shall provide a fully connected network of smaller roadways that provide many alternative routes between each point of origin and destination.

Policy CIRC-1.3 Approved projects, plans, and subdivision requests in new growth areas shall arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of emergency responders.

Policy CIRC-1.4 Approved projects, plans, and subdivision requests with an internal street network shall provide an internal connectivity index of 1.4 or higher. The connectivity index is calculated by dividing the total number of road segments the number of nodes. Nodes are intersections plus cul-de-sacs. Roadway segments are between intersections. Cul-de-sacs are prohibited except where physical constraints make any other roadway solution impossible. The City may require higher levels of connectivity, beyond this standard, and will review plans and projects to take advantage of opportunities to provide more connectivity.

Policy CIRC-1.5 Approved projects, plans, and subdivision requests shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas. Plans and projects shall connect to adjacent planned

development areas and adjacent roadways at a minimum of 600-foot intervals. This minimum interval does not apply to development areas that are adjacent to existing or planned future limited-access highways, freeways, or expressways.

Policy CIRC-1.6 Approved projects, plans, and subdivision requests shall provide a roadway network such that driving distance from any dwelling to the nearest collector street is a maximum of 2,000 feet and no more than three turning movements at intersections are required in order to travel from any home to a collector street

Policy CIRC-1.7 The City will ensure frequent street and trail connections between new residential developments and established neighborhoods, between downtown and surrounding neighborhoods, across the railroad, across the river, and between other important origin and destination points.

Policy CIRC-1.8 City street improvement standards and the street classification system will reflect the need to accommodate the full range of locally available travel modes.

Policy CIRC-1.9 In new and existing developed areas, the City will invest in a convenient, well-maintained, and safe system of pedestrian and bicycle paths that connect residences with shopping centers, public buildings, parks, places of employment, and schools.

Policy CIRC-1.10 The City will incorporate pedestrian and bicycle improvement projects into the City's Capital Improvements Program.

Policy CIRC-1.11 The City's level of service standards will balance the need to provide convenient vehicular travelways during peak hours of demand with other community goals, such as the desire to accommodate pedestrian and bicycle access.

Policy CIRC-1.12 The City will use Level of Service D as the goal for roadway segments, as measured on a daily basis. The City's goal for peak hour intersection level of service is LOS D. The City may elect to exceed of these standards in favor of other community planning and environmental goals and policies.

Policy CIRC-1.13 City environmental documents and associated mitigation programs will explicitly consider compact development, mixing of land uses, affordable housing, and other pedestrian, bicycle, and transit oriented design elements that generate fewer vehicle trips. Such approved plans, projects, and subdivision requests will have a correspondingly lower contribution toward any roadway or intersection improvement mitigation measures required in City environmental documents.

Policy CIRC-1.14 The City will ensure provision of signage and secure storage facilities in appropriate locations for bicycles.

Policy CIRC-1.15 The City will ensure that the pedestrian network is safe, accessible, attractive and efficient, running largely along public spaces (including streets and open spaces) fronted by

houses, and avoids uses that generate major breaks in surveillance on routes to and from public transport and other routes used at night.

Goal CIRC-2 The City's Urban Development Pattern Supports All Locally Available Modes of Transportation

Policy CIRC-1.1 Approved plans, projects, and subdivision requests in new growth areas shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle facilities and pedestrian facilities, designed to comply with the Americans with Disabilities Act.

Policy CIRC-2.1 Approved plans, projects, and subdivision requests in new growth areas will provide an appropriate balance of higher-activity land uses, such as schools, parks, retail and commercial services, small offices, civic uses, apartments, in accessible neighborhood centers. Higher-activity land uses shall not be focused in a linear pattern along large roadways.

Policy CIRC-2.2 The City will not allow large, unbroken surface parking lots, which unnecessarily inhibit travel on foot and by bicycle. Please refer also to Community Character and Design Element policies that address the location and nature of surface parking.

Policy CIRC-2.3 Approved projects, plans, and subdivisions shall provide shade trees in parking areas at a ratio of at least one tree for every four parking spaces. These trees shall be dispersed throughout the parking area.

Policy CIRC-2.4 The City will ensure that redevelopment and revitalization efforts in the existing City are designed to accommodate and encourage pedestrian and bicycle travel, as well as public transit options, as such options become more widely available.

Policy CIRC-2.5 The City will be flexible in parking requirements or eliminate off-street parking requirements for redevelopment, infill, and multifamily projects by allowing cooperative shared use of parking between properties with different parking demand peaking periods, utilization of on-street parking spaces to meet parking requirements, allowing parking reductions for projects located in walkable areas with improvements that accommodate alternative forms of travel, and allowing parking reductions for multi-family development to reflect the trip generation characteristics of this type of development.

Policy CIRC-2.6 The City will pursue in the existing developed area, and require in new growth areas pedestrian amenities, such as street furniture, shade trees, pedestrian lighting, water fountains, and pedestrian oriented signage.

Policy CIRC-2.7 The City will encourage and support appropriate home-based businesses in residential areas and telecommuting centers in appropriate areas.

Goal CIRC-3 Increase the Availability and Use of Transit.

Policy CIRC-3.1 The City will coordinate planning efforts and project entitlements with the Riverbank Oakdale Transit Agency, the Stanislaus Area Regional Transit District (START), and any future providers serving Riverbank to enhance and expand transit services throughout the City and surrounding region.

Policy CIRC-3.2 The City will promote the development, improvement, expansion, and increased ridership of transit within the City, including the development of new transit agencies and new forms of transit, as they become available.

Policy CIRC-3.3 Approved plans, projects, and subdivision requests will accommodate transit facilities consistent with transit agency planning.

Policy CIRC-3.4 When transit stops are required in existing developed portions of Riverbank or new growth areas, the City will ensure that stops are safe, convenient, comfortable, well maintained, and complementary to the urban design in the surrounding vicinity.

Policy CIRC-3.5 The City will coordinate with local and regional transit providers in developing transit plans that link important origin and destination points affecting Riverbank residents and businesses.

Policy CIRC-3.6 The City will support and provide incentives to encourage local businesses and transit providers to develop transit incentive programs.

Policy CIRC-3.7 The City will coordinate with all agencies involved in planning for a future east-west expressway through northern Stanislaus County to ensure that transit service is provided along the route, including potentially the use of HOV/transit only lanes during peak hours.

Goal CIRC-4 Move Freight and Passengers Efficiently

Policy CIRC-4.1 The City will work with relevant public agencies and the railroad to appropriately regulate the movement of truck traffic and hazardous materials throughout the City.

Policy CIRC-4.2 The City will enforce weight limits as a means to safely regulate truck traffic in noise sensitive areas, such as residential neighborhoods and near schools and hospitals.

Policy CIRC-4.3 The City will ensure that signage indicating weight limits is clearly posted throughout the City.

Policy CIRC-4.4 The City will support the development and implementation of a quick-response emergency services program for railroad corridors and continue to support the County's Hazardous Materials Team.

Policy CIRC-4.5 The City will coordinate with rail transportation operators, such as BN&SF and Amtrak, to ensure safe and reliable rail transportation in and through the Planning Area.

Policy CIRC-4.6 The City will limit, with a maximum weight limits, truck traffic to appropriate routes. Truck routes include Highway 108 through the City (Patterson Road, Callander Avenue, and Atchison Street), Roselle Avenue, First Street in the downtown area, Claus Road, Claribel Road, Snedigar Avenue, and Coffee Road. Areas of the aforementioned listed streets not within the City limits will be formally designated by the City upon any annexation that may occur in the future. Although Claribel Road may not be fully within City limits, it is likely that this would be a major roadway serving the County at some point in the future and appropriate for truck traffic.

The City will designate, post signage, and otherwise restrict truck traffic from using other streets, with an emphasis on streets that are primarily residential. Trucks may go by direct route to and from restricted streets, where required for the purpose of making pickups and deliveries of goods, but are otherwise restricted to truck routes.

Implementation Strategies. The General Plan's Implementation Strategies are noted below:

Implementation Measure CIRC-1

The City will develop and implement a Bicycle Master Plan. In coordination with the public at large and other relevant public agencies, the City will outline a comprehensive bikeway system that serves the goals of the General Plan. Elements of the Bicycle Master Plan will be included in Citywide capital improvements planning. The Bicycle Master Plan will be coordinated, as appropriate, with City of Modesto Bikeway Planning and Countywide and regional efforts, as they arise. The City will specifically work with the City of Modesto to coordinate bikeways along the Hetch-Hetchy right-of-way and along the railroad line, as appropriate.

As a part of implementation of the City's bicycle master plan, the City will work with local irrigation districts, the County, local railroad concerns, other property owners, and other agencies and interested parties to acquire and/or use existing easements and rights-of-way for development of off-street pedestrian and bicycle pathways.

Implementation Measure CIRC-3

The City will work with outside agencies, employees, and employers to optimize the use of alternative travel modes and reduce the use of the automobile, especially during peak periods of congestion. To support this effort, the City will develop a Travel Demand Management ordinance that requires large employers to provide incentives for employees to commute via transit, bicycle, on foot, or by carpool, rather than the single-occupant vehicular commute.

Implementation Measure CIRC-4

The City will revise street improvement standards to be consistent with this Circulation Element, including consideration on equal footing of all locally available forms of travel. Standards will ensure, among other things:

- a complete and comprehensive pedestrian and bicycle system to allow such travel for daily needs; sidewalks are wide and shaded by trees;
- trees are placed to provide separation between pedestrians and auto traffic; avoid sidewalk damage by tree roots;
- the width and number of curb cuts (driveways) on City streets protects the safety of pedestrians;
- lower speed limits on roads cyclists will share with motorists;
- automatic traffic signal actuators where cyclists may reach them without leaving the roadway; and,
- adequate paved shoulders on arterial and collector roadways for bicycles.

The City will also include in street improvement standards strategies for using pervious pavement for access streets and rubberized asphalt made from recycled tires for newly constructed collector and arterial roadways. Access will be designed to allow for future City control (and therefore increased access) along Patterson Road and the possible use of the Claribel Road alignment (and therefore limited access) as a future regional expressway and/or State Highway.

Implementation Measure CIRC-5

The City shall coordinate with relevant transit providers and include, as appropriate, transit improvements in the Capital Improvements Plan (CIP).

Implementation Measure CIRC-6

The City will actively pursue State and federal grant programs for developing, improving, and enhancing bicycle and pedestrian routes in the existing developed City, including Safe Routes to School associated funds.

Implementation Measure CIRC-7

The City will develop and implement a Parking Master Plan to coordinate and manage parking in the City. The Master Plan will include strategies and implementation measures for addressing the City's parking supply and parking requirements and design standards. The plan will include strategies to optimize the parking supply, especially in the downtown area, through shared parking; development of shared parking facilities; use of on-street parking to meet demand of nearby properties; ensuring parking standards reflect actual parking demand; ensuring parking standards are reduced for properties in walkable and bicycle friendly areas of the City; use innovative design standards, such as tandem parking, stacked parking, and valet parking; and other strategies. The City will develop and include maximum, as well as, minimum parking requirements for new growth areas.

Implementation Measure CIRC-8

The City will work with surrounding jurisdictions, the County, and StanCOG to develop regional solutions to regional vehicular transportation issues. The City will evaluate and make use of City approved regional traffic modeling tools, and use such tools for impact assessment and traffic mitigation for development projects.

Riverbank Impact Fee Program. The City of Riverbank has adopted a mitigation fee program to address the impacts of anticipated development. The current program was updated in 2015. Table 7 identifies the location of planned improvements in the study area that are addressed by the fee program.

TABLE 7
CITY OF RIVERBANK MITIGATION FEE TRANSPORTATION IMPROVEMENTS

Index	Location	Improvement
14	SR 108	Widen to 4 lanes from McHenry Ave to Coffee Road
15	SR 108	Widen to 4 lanes from Coffee Road to Oakdale Road
16	SR 108	Widen to 4 lanes from Oakdale Road to Jackson Street
22	Claribel Road	Widen to 4 lanes from Squire Wells Way to Roselle Avenue
23	Claribel Road	Widen to 4 lanes from Roselle Avenue to Terminal Avenue
24	Claribel Road	Widen to 4 lanes from Roselle Avenue to Claus Road
25	Claribel Road	Widen to 4 lanes from Claus Road to Eleanor Avenue
27	Roselle Avenue	Build to Ultimate configuration from Patterson Road to Claribel Road
29	Claus Road	Widen to 4 lanes from Townsend Street to Claribel Road
30	SR 108 / Coffee Road	Construct Traffic Signal
31	Claribel Road / Retail Access	Construct Traffic Signal
41	Hetch Hetchy Trail System	
45	Claribel Road / Terminal Avenue	Construct Traffic Signal
Source: City of Riverbank Final Nexus Fee Study, ADE, January 29, 2015		

Significance Criteria. With the exception of Policy CIR 1.12 that defines Level of Service minimum, the City has not adopted formal traffic impact study guidelines to identify impact significance criteria. For this analysis the following criteria have been employed based on consideration of General Plan policies, CEQA guidelines and the criteria employed by adjoining jurisdictions.

Signalized Intersections. A significant project impact is defined to occur at a signalized or roundabout intersection if the addition of project traffic causes either of the following:

1. An intersection operating at an acceptable level (LOS D or better) to degrade to an unacceptable level (LOS E or worse).
2. An increase in control delay of more than five (5.0) seconds of overall delay at a signalized or roundabout intersection that currently operates at an unacceptable level.

Un-signalized Intersections. A significant project impact is defined to occur at an un-signalized or roundabout intersection if the addition of project traffic causes either of the following:

1. An intersection operating at an acceptable level (LOS D or better) to degrade to an unacceptable level (LOS E or worse).
2. An increase in control delay of more than five (5.0) seconds of overall delay at an all-way stop operating at an unacceptable level.
3. An increase in approach delay of five (5.0) seconds and satisfaction of traffic signal warrants at an un-signalized intersection that currently operates at an unacceptable level.

Roadway Segment. A significant project impact is defined to occur at a roadway segment if the addition of project traffic causes either of the following:

1. A roadway segment operating at an acceptable level (LOS D or better) to degrade to an unacceptable level (LOS E or worse).
2. An increase in volume-to-capacity ratio of more than 0.05 on a roadway segment that currently operates at an unacceptable level.

Bicycle and Pedestrian Facilities. A project is considered to have a significant impact on bicycle or pedestrian facilities if it would:

- eliminate or adversely affect an existing bikeway or pedestrian facility in a way that would discourage its use;
- interfere with the implementation of a planned bikeway as shown in the Bicycle Master Plan; or
- result in unsafe conditions for bicyclists or pedestrians, including unsafe bicycle/pedestrian, bicycle/motor vehicle, or pedestrian/motor vehicle conflicts.

Public Transit. In this traffic impact study, a project is considered to have a significant impact on the public transit system if the project would generate ridership which may exceed available or planned system capacity.

Stanislaus County

Policy. For study roadway segments that are within the jurisdiction of Stanislaus County, a separate set of criteria determines the acceptable operating standards. According to Policy 2.1 from the Circulation Element of the Stanislaus County General Plan, originally adopted in 1987 and most recently revised in 2000, the minimum acceptable operating standards has been determined as follows:

- The County shall maintain LOS C or better for all County roadways and intersections, except, within the sphere of influence of a city that has adopted a lower Level of Service standard, the City standard shall apply.

Criteria. The following describes the criteria for determining the significance of potential impacts on Stanislaus County facilities:

Intersections. A significant project impact is defined to occur at a signalized or un-signalized intersection if the addition of project traffic causes either of the following:

1. An intersection operating at an acceptable level (LOS C or better) to degrade to an unacceptable level (LOS D or worse).
2. An increase in control delay of more than five (5.0) seconds at an approach/movement at a signalized or un-signalized intersection that currently operates at an unacceptable level.

Roadway Segment. A significant project impact is defined to occur at a roadway segment if the addition of project traffic causes either of the following:

1. A roadway segment operating at an acceptable level (LOS C or better) to degrade to an unacceptable level (LOS D or worse).
2. An increase in volume-to-capacity ratio of more than 0.05 on a roadway segment that currently operates at an unacceptable level.

Public Facilities Fee (PFF) Program / Regional Traffic Impact Fee

Development in Stanislaus County and its incorporated cities pay fees toward the cost of circulation system improvements of regional benefit through the Public Facilities Fee (PFF) programs Regional Transportation Fee. The PFF was last published in September 2017. The planned update to the Stanislaus County Public Facilities Fee has yet to be adopted. The draft regional fee's project list is Table 8.

TABLE 8
STANISLAUS COUNTY REGIONAL TRANSPORTATION FEE (RTIF) PROJECTS

Street	Location	Improvement
North County Corridor	SR 99 to SR 120	New Expressway
McHenry Avenue	Ladd Road to San Joaquin County	5 lanes
Source: ADM Draft Stanislaus County Comprehensive Public Facilities Impact Fee Update, Wildan, September 15, 2017		

City of Modesto

Standards of Significance

City of Modesto standards specify the following:

“The City may allow individual locations to fall below the City’s LOS standards in instances where the construction of physical improvements would be infeasible, be prohibitively expensive, significantly impact adjacent properties or the environment, significantly impact non-motorized transportation systems, or have a significant adverse effect on the character of the community. To the extent feasible, the City shall strive for **LOS D** on all streets and intersections.

Individual development projects that could affect conditions on traffic facilities predicted by the General Plan Traffic Analysis to operate at LOS “E” (as shown in [Appendix A] of the Master EIR) shall not, without further study, cause conditions on those facilities to exceed LOS “E” at any time prior to 2025.

Individual development projects that could affect conditions on traffic facilities predicted by the General Plan Traffic Analysis to achieve LOS “F” (as shown in [Appendix A] of the Master EIR) shall not, without further study, cause further substantial degradation of conditions. Further substantial degradation shall be defined as an increase in the daily vehicle/capacity (v/c) ratio of 0.05 or greater for roadway segments whose v/c ratio is estimated to be 1.00 or higher in 2025 by the traffic model.”

With this context, and in an effort to be consistent with the methodology incorporated in other adjacent traffic studies, project impacts were considered to be significant if the project would result in any of the following:

- A. Deterioration of a **signalized** intersection from LOS D (or better) to LOS E or LOS F, an increase in the service volume of any approach by five percent (5%) or more

for a signalized intersection operating at LOS E or LOS F under baseline conditions, or an increase in average delay of five (5.0) or more seconds for a signalized intersection operating at LOS E or LOS F under baseline conditions.

B. Deterioration of a controlled movement at an **unsignalized** intersection from LOS E or better to LOS F or, at intersections where a controlled movement already operates at LOS F, the satisfaction of one of the following conditions.

1. The satisfaction of the peak hour volume signal warrant as a result of project traffic,
2. An increase in minor movement delay of 30 seconds or more, or
3. If the peak hour volume signal warrant is already met without the project and delay cannot be measured, an increase in traffic of ten or more vehicles per lane on any approach.

C. Deterioration of a **roadway segment** from LOS D or better, to LOS E or LOS F, or an increase in the Volume to Capacity (V/C) ratio of 0.05 or more for a segment operating at LOS E or LOS F under Baseline Conditions.

Capital Facilities Fee (CFF). Capital Facilities Fees (CFF) are impact fees established to mitigate the impacts of new development as outlined in [§66000 of the California Government Code](#). These fees may be used for the purchase, construction, expansion, rehabilitation, or acquisition of public facilities, include street improvements. CFF projects in the study area are listed in Table 9.

TABLE 9
MODESTO CFF PROJECTS

Street	Location	Improvement
Claratina Avenue	McHenry Avenue to Coffee Road	6 lanes
	Coffee Road to Oakdale Road	6 lanes
	Oakdale Road to Roselle Road	6 lanes
	Roselle Road to R/R Tracks	4 lanes
Claus Road	Claribel Road to Sylvan Avenue	6 lanes
	Sylvan Avenue to Floyd Road	4 lanes
Coffee Road	Claribel Road to Claratina Avenue	4 lanes
	Claratina Avenue to Mable Avenue	4 lanes
McHenry Avenue	Kiernan Avenue to Pelandale Avenue	6 lanes
	Pelandale Avenue to Standiford Avenue	6 lanes
Oakdale Road	Claribel Road to Claratina Avenue	6 lanes
	Claratina Avenue to Sylvan Avenue	6 lanes
Roselle Avenue	Claribel Road to Claratina Avenue	4 lanes
	Claratina Avenue to Sylvan Avenue	4 lanes
Sylvan Avenue	McHenry Avenue to Oakdale Road	6 lanes
Claratina Avenue	Coffee Road	New
Claratina Avenue	Oakdale Road	New
Claratina Avenue	Roselle Avenue	New
Claribel Road	Oakdale Road	New
Claribel Road	Roselle Avenue	New
Claribel Road	Claus Road	New
Source: Documentation of Justification for Impact Fee Mitigation, Town Hall Services and OMNI-MEANS, June 3, 2003, Appendix VIII-A		

State of California

Policy. SR 108 is under the jurisdiction of Caltrans. Caltrans developed a Transportation concept Report (TCR) for SR 108 in 2014. The TCR identifies existing and cumulative operational deficiencies on state routes and identifies potential improvements. According to the SR 108 TCR, SR 108 from McHenry Avenue to Oakdale Road is designated as part of the IRRS, is subject to the general LOS criteria (LOS C) and is ultimately a four-lane facility. The Concept Level of Service is LOS D east of Oakdale Road.

Caltrans policy regarding applicable traffic controls has recently been expanded based on Traffic Operations Policy Directive 13-02. This directive requires that Caltrans consider the relative merits of alternative traffic controls when it becomes necessary to stop traffic on state highways,

and all-way stops, traffic signals and roundabouts are to be considered. The policy directive requires preparation of an *Intersection Control Evaluation (ICE)* to determine the preferred traffic control.

Criteria. The following describes the criteria for determining the significance of potential impacts on Caltrans facilities:

Intersections. A significant project impact is defined to occur at a signalized or un-signalized intersection if the addition of project traffic causes either of the following:

1. An intersection operating at an acceptable level to degrade to an unacceptable level; or
2. An increase in control delay at a signalized or un-signalized intersection that currently operates at an unacceptable level.

Roadway Segments. A significant project impact is defined to occur at a roadway segment if the addition of project traffic causes either of the following:

1. A roadway segment operating at an acceptable level to degrade to an unacceptable level; or
2. An increase in volume on a roadway segment that currently operates at an unacceptable level.

PROJECT CHARACTERISTICS

This report section describes the characteristics of development in the CWSP in terms of the amount of vehicular traffic associated with these uses and the routes that this traffic may use.

Trip Generation

The amount of traffic generated by development of the CWSP has been estimated based on the trip generation characteristics of the proposed uses.

Trip Generation Rates. Table 10 presents the trip generation rates employed for this analysis. These rates are taken from the Institute of Transportation Engineers (ITE) publication *Trip Generation Manual, 9th Edition* and *Trip Generation Handbook, 3rd Edition*. Because the trip generation rates and pass-by trip percentages for retail uses vary greatly based on the size and character of the specific use, it was necessary to identify individual trip generation rates and pass-by percentages for the potential mixed use retail centers.

Trip Generation Forecasts. As shown in Table 11, development of all of the area within the CWSP could result in about 33,163 new daily trips, with 1,790 trips generated in the a.m. peak hour and 3,490 trips occurring in the p.m. peak hour.

Table 12 presents the estimate for a development alternative which reduces the amount of retail area and replaces it with additional residences. This alternative generates slightly more traffic on a daily basis and in the a.m. peak hour but less trips during the p.m. peak hour

**TABLE 10
TRIP GENERATION RATES FOR CROSSROADS WEST SPECIFIC PLAN AREA**

ITE Code	Description	Quantity	Trips per Unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
820	MU Retail – (1) (550 ksf)	ksf	33.39	62%	38%	0.80	48%	52%	3.41
820	MU Retail – (1) (360 ksf)	ksf	43.38	62%	38%	0.95	48%	52%	3.92
820	MU Retail – (2) (average)	ksf	42.70	62%	38%	0.96	48%	52%	3.71
488	Sports Park	field	71.33	57%	43%	1.12	67%	33%	17.70
210	LDR / MDR/MU Residential (Detached Single Family Residential)	dwelling	9.52	25%	75%	0.75	63%	37%	1.00
220	HDR / MU Residential Apartments	dwelling	6.65	20%	80%	0.51	65%	35%	0.62
251	Senior Detached Housing	dwelling	3.68	35%	65%	0.22	61%	39%	0.27
520	Elementary School	student	1.29	55%	45%	0.45	49%	51%	0.15
522	Middle School / Junior High School	student	1.62	55%	45%	0.54	49%	51%	0.16
412	Park	acre	2.28	61%	39%	0.02	61%	39%	0.09
488	Sports Park – soccer	fields	71.33	57%	43%	1.12	67%	33%	17.70
-	Fire Station	firefighter	4.34	50%	50%	2.00	50%	50%	2.00

**TABLE 11
TRIP GENERATION FORECASTS FOR PROPOSED CROSSROADS WEST SPECIFIC PLAN AREA**

ITE Code	Description	Quantity	Trips per Unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
820	Mixed Use Retail (1)	550 ksf	18,370	273	168	441	901	976	1,877
	Pass-by (24%)		4,409	66	40	106	216	235	451
	Net New Trips		13,961	207	128	335	685	741	1,426
820	Mixed Use Retail (2)	27 ksf	1,153	16	10	26	48	52	100
	Pass-by (34%)		392	5	4	9	16	18	34
	Net New Trips		761	11	6	17	32	34	66
210	LDR / MDR/MU Residential	1,703 du	16,213	319	958	1,277	1,073	630	1,703
	Net New Trips		16,213	319	958	1,277	1,073	630	1,703
880	HDR / MU Residential)	310 du	2,015	32	126	158	125	67	192
	Net New Trips		2,015	32	126	158	125	67	192
488	Sports Park	3 fields	214	2	1	3	36	17	53
	Net New Trips		214	2	1	3	36	17	53
PROJECT TOTAL NET NEW TRIPS			33,163	571	1,219	1,790	1,951	1,489	3,440
Alternative Land Uses									
520	12 acre Elementary School*	600 students	774	149	121	270	44	46	90
522	20 acre Middle School / Junior High School	1,000 students	1,622	297	243	540	78	82	160
The elementary school would occupy 10+ to 12+ acres and at 6.5 du's per acre will displace 65 to 78 LDR units. While a school would generate more traffic than the alternative residential use in the a.m. peak hour, those trips would generally be internal to the project site if an elementary school is developed, and greater external traffic would result from the residential alternative. The school's p.m. peak hour trip generation would be similar to the residential alternative, but again, most of those trips would remain internal to the plan area. While a school would contribute considerable traffic to the adjoining local streets and this impact will need to be assessed when a school site is selected, the underlying residential uses represent the "worst case" approach to external trip generation.									
The middle school would occupy 20+ acres and at 6.5 du's per acre will displace 130 LDR units. While a school would generate more traffic than the alternative residential use in the a.m. peak hour, many of those trips would be internal to the project site developed, and greater external traffic would result from the residential alternative. The school's p.m. peak hour trip generation would be similar to the residential alternative, but again, most of those trips would remain internal to the plan area. While a school would contribute considerable traffic to the adjoining local streets and this impact will need to be assessed when a school site is selected, the underlying residential uses represent the "worst case" approach to external trip generation.									
-	Fire Station	4 firefighters	18	4	4	8	4	4	8
The fire station would occupy 1-3+ acres and displace 7 to 20 LDR units. The trip generation associated with this use is less than that associated with development under the LDR designation. While a fire station has access requirements that may influence the configuration of plan area streets adjoining the site, the underlying residential use represents the "worst case" approach to estimating trip generation.									
Residences limited to Active Adults may be developed on the site. Because the trip generation rates associated with this use are lower than those for convention residential development, the "worst case" analysis assumes the project is developed with conventional residential units.									

TABLE 12
TRIP GENERATION FORECASTS FOR ALTERNATIVE CROSSROADS WEST SPECIFIC PLAN AREA

ITE Code	Description	Quantity	Trips per Unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
820	Mixed Use Retail (1)	360 ksf*	15,615	211	130	341	678	735	1,413
	Pass-by (28%)		4,372	59	36	95	190	206	396
	Net New Trips		11,243	152	94	246	488	529	1,017
820	Mixed Use Retail (2)	27 ksf	1,153	16	10	26	48	52	100
	Pass-by (34%)		392	5	4	9	16	18	34
	Net New Trips		761	11	6	17	32	34	66
210	LDR / MDR/ MU Residential	2,053 du	19,545	385	1,155	1,540	1,293	760	2,053
	Net New Trips		19,545	385	1,155	1,540	1,293	760	2,053
880	HDR	310 du	2,015	32	126	158	125	67	192
	Net New Trips		2,015	32	126	158	125	67	192
488	Sports Park	3 fields	214	2	1	3	36	17	53
	Net New Trips		214	2	1	3	36	17	53
PROJECT TOTAL NET NEW TRIPS			33,778	582	1,381	1,963	1,974	1,407	3,381

Access / Circulation Assumptions

Street Alignment. The CWSP circulation plan identifies the system of arterial and collector streets that will serve the project area. As shown in Figure 2, a new north-south collector street will traverse the project site from Claribel Road to Morrill Road. This roadway is consistent with the General Plan Circulation Diagram, and full access is anticipated at the new intersection on Claribel Road.

Crawford Road will be changed under the CWSP, but not all of the long term change will be implemented immediately. The Oakdale Road / Crawford Road intersection will be opened by removing the existing median island to allow through east-west traffic. Crawford Road west of CWSP will be separated from the plan area. When the area west of CWSP is developed a new east-west extension of Crawford Road will be routed to the north to avoid the existing rural residential neighborhood near Coffee Road, and a new full access intersection will be created on Coffee Road. This work is not a part of CWSP.

Ultimately, the segment of Claribel Road west of the plan area will be rerouted to the north to intersect Coffee Road when the NCC expressway is constructed. This construction is not a part of the CWSP project and is assumed to be built as part of the NCC project.

Trip Distribution and Assignment

The regional distribution of the trips generated by the CWSP will reflect the project's location on the northern end of the Modesto area and west Riverbank.

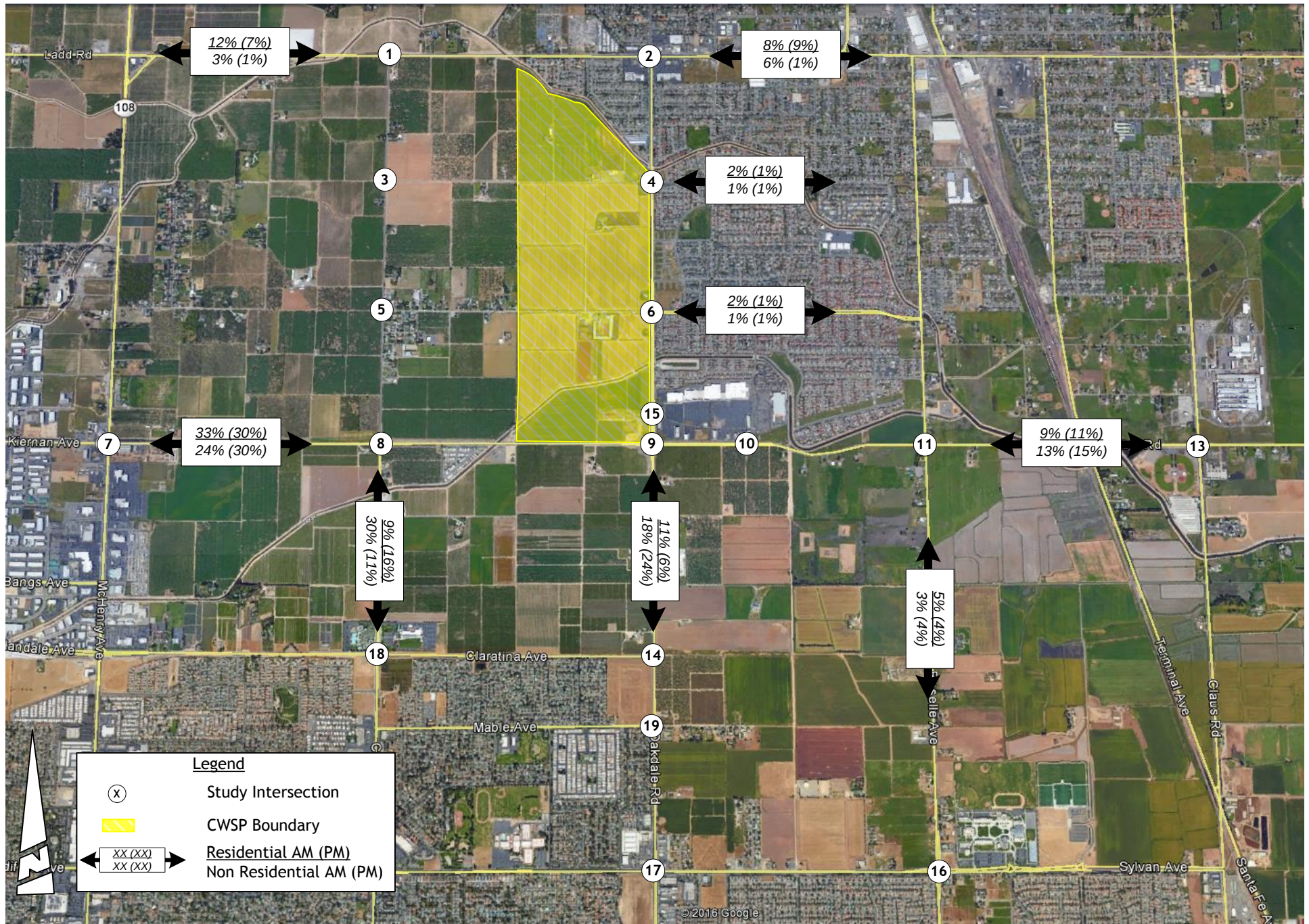
The regional distribution of project trips and the share of trips that will remain internal to the CWSP site were identified from a "select zone" analysis conducted with the regional travel demand forecasting model also employed for the cumulative analysis. The paths taken by trips generated in residential and commercial areas were determined separately, and the results are presented in Table 13.

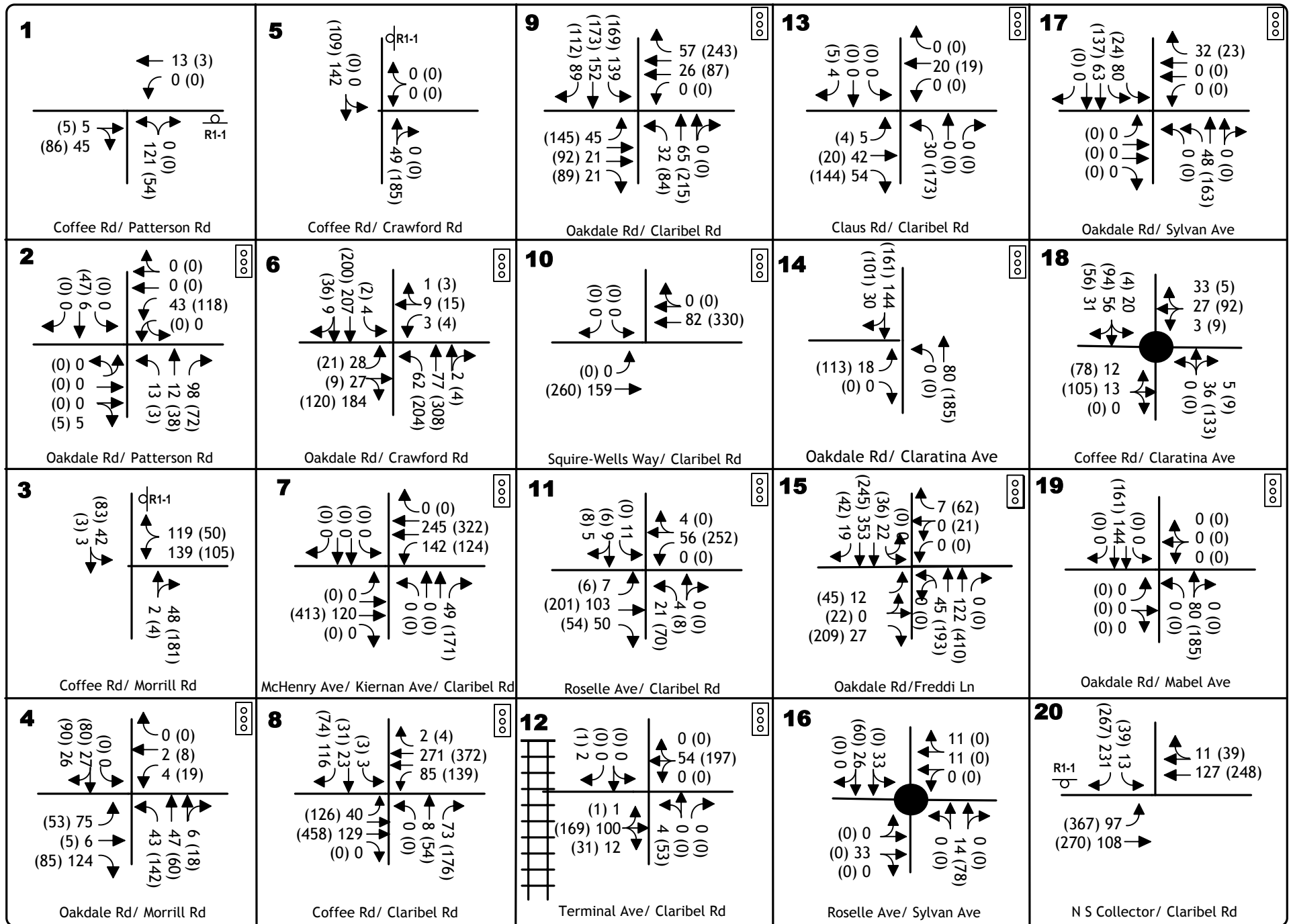
As indicated, the primary travel directions for both residential and non-residential uses are to the south and west. Roughly 7-10% of the trips generated by new residential uses will remain on site, and 2-8% of the trips generated by retail uses are also internal. Figure 5 suggests these trip distribution assumptions graphically. It is important to note that the distribution patterns employed herein may differ from retail use characteristics suggested in other project documents. This methodology yields conservative (i.e., worst case) assumptions based on the gravity model and does not reflect customer choices based on the quality of alternative retail destinations in the area. Thus, these assumptions may differ from those suggested in the Urban Decay Analysis which can consider those factors.

TABLE 13
SHORT TERM TRIP DISTRIBUTION ASSUMPTIONS

Direction	Route	Percentage of Total Trips			
		Residential		Non-Residential	
		AM	PM	AM	PM
West	Patterson Rd beyond Coffee Rd	12%	7%	3%	1%
	Claribel Rd beyond Coffee Rd	33%	30%	24%	30%
East	Patterson Rd beyond Oakdale Rd	8%	9%	6%	1%
	Morrill Rd and Crawford Rd	4%	2%	2%	3%
	Existing Crossroads SC	2%	5%	0%	3%
	Claribel Rd beyond Roselle Rd	9%	11%	13%	15%
South	Coffee Rd beyond Claribel Rd	9%	16%	29%	11%
	Oakdale Rd beyond Claribel Rd	11%	6%	18%	24%
	Roselle Rd beyond Claribel Rd	5%	4%	3%	4%
Internal		7%	10%	2%	8%
Total		100.00%	100.00%	100.00%	100.00%

Project trips were assigned to the local area street system under the distribution assumptions presented above and the access assumptions described previously. The resulting “project only” trip assignment is presented in Figure 6.





CROSSROADS WEST ONLY
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

PROJECT IMPACTS

Existing Plus Project Traffic Volumes

The analysis of project impacts assumes 100% build out of the CWAP and superimposes external project traffic onto current background traffic volumes. The resulting “Existing plus Project” traffic volumes are presented in Figure 7.

Existing Plus Project Intersection Levels of Service and Traffic Signal Warrants

The traffic impacts occurring with development of the CWSP have been evaluated based on the Level of Service at key intersections, as shown in Table 14 and traffic signal warrants as shown in Table 15. As indicated in Table 14 four intersections will operate with Levels of Service that exceed the LOS D minimum.

Impact E-1. With development of the CWSP the **Patterson Road / Coffee Road intersection** will operate at LOS F on the northbound approach. Based on the change in average delay and satisfaction of signal warrants, as noted in Table 14, this is a significant impact.

Improvements to address this impact would include installation of a roundabout intersection or improvements that involves auxiliary turn lanes and a traffic signal. Either would deliver Level of Service that satisfies the City of Riverbank’s minimum LOS requirement. However, under current Caltrans directives, the exact nature of the needed improvement cannot be confirmed without completion of an *Intersection Control Evaluation (ICE) Report*. Caltrans typically requires a complete evaluation of all traffic signal warrants prior to installing a traffic signal. Intersection improvements are already included in the adopted City of Riverbank Impact Fee program,

Mitigation E-1. Because intersection improvements are already included in the adopted City of Riverbank Impact Fee program, development in the CWSP will mitigated its impact by paying adopted fees. However, because improvements to this location are subject to Caltrans’ approval process regarding design and installation, improvements may not be installed before the impact occurs. Because there is no guarantee regarding the timing of installation, the impact is significant and unavoidable.

Impact E-2. With development of the CWSP the **Claribel Road / Oakdale Road intersection** will operate at LOS E. Based on the change from acceptable to unacceptable LOS, this is a significant impact.

Improving the Level of Service to meet the minimum standard will require adding a second southbound through lane on Oakdale Road through the intersection and a separate northbound right turn lane. Creating the southbound lane requires widening Oakdale Road south of Claribel Road to a distance sufficient to accommodate through travel and merging back into a single southbound lane. The distance needed to accommodate the auxiliary through lane and transition

back to a single lane is roughly ¼ mile. Improving the Oakdale Road / Claribel Road intersection is not in the Riverbank impact fee program, but Oakdale Road widening is included in the City of Modesto's CFF program.

Mitigation E-2. Development in the CWSP shall be responsible for paying the CWSP's fair share of the cost of widening Oakdale Road to provide a second southbound travel lane that continues beyond Claribel Road a distance sufficient to accommodate efficient intersection traffic operations and a transition back to a single lane, as well as a northbound right turn lane. With this mitigation the impact would not be significant. However, as work on Oakdale Road south of Claribel Road falls under the purview of Stanislaus County and the City of Modesto, there is no guarantee that these agencies will allow this improvement to be constructed or provide funding for their share of needed improvements that may benefit others. ***As a result, this impact is significant and unavoidable.***

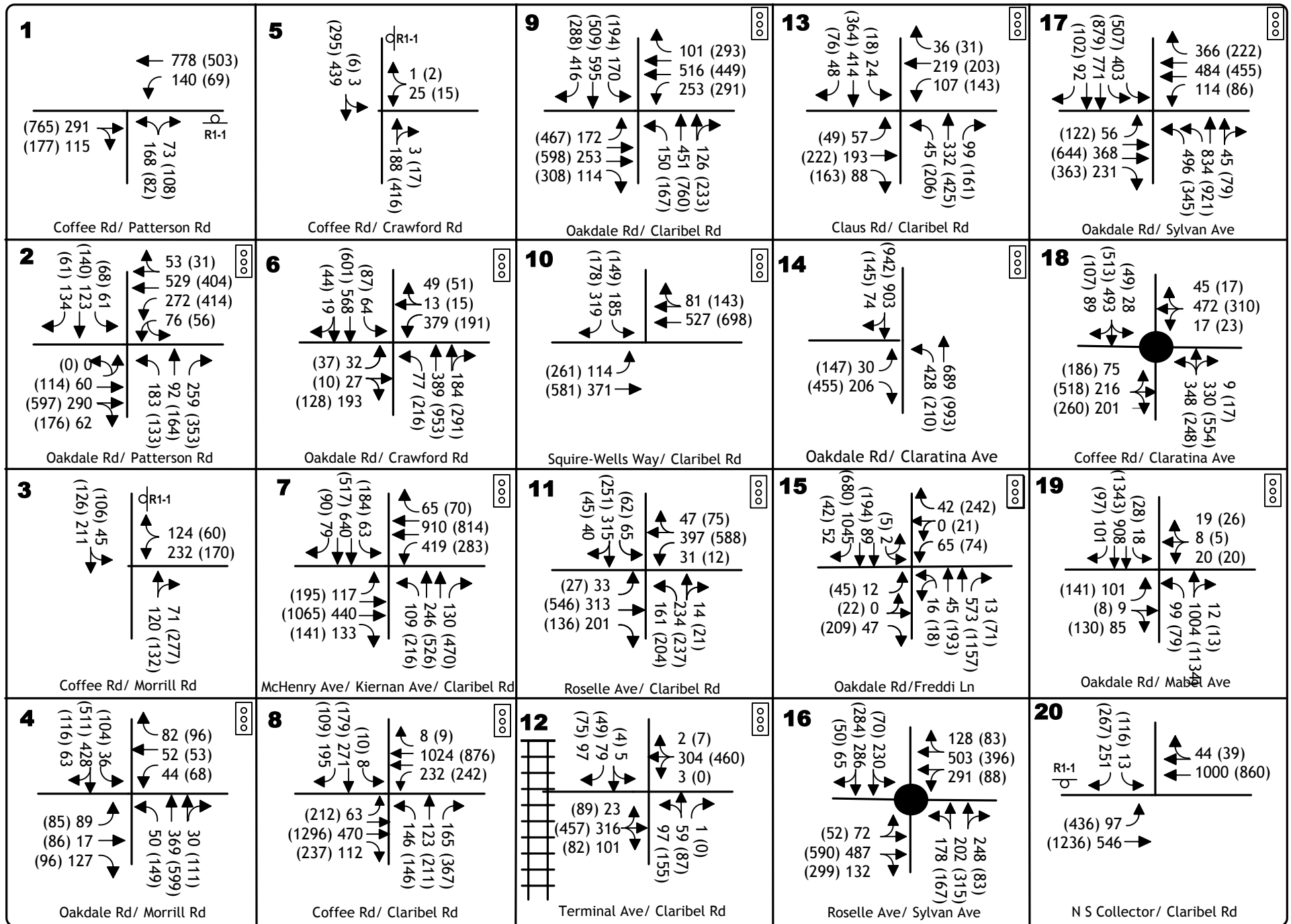
Impact E-3: With development of the CWSP the **Claribel Road / N-S Collector intersection** will operate at LOS F. Because LOS F exceeds the minimum standard and traffic signal warrants are satisfied, this is a significant impact.

A traffic signal and auxiliary turn lanes are needed to provide Level of Service that satisfies the City of Riverbank's minimum LOS standards. A new traffic signal on Claribel Road serving the retail center is included in the City of Riverbank Impact Fee program. This improvement can be applied to the new N/S collector intersection

Mitigation E-3. Because intersection improvements are not included in the adopted City of Riverbank Impact Fee program, development in the CWSP will mitigate its impact by constructing the traffic signal and ancillary lanes. Each applicant within CWSP shall be responsible for paying its fair share of constructing these improvements. The signal shall be installed when conditions warrant, as determined by the City of Riverbank City Engineer. When warranted, this roadway improvement shall be noted on the improvement plans for such Project. With this mitigation the impact is not significant.

The Coffee Road / Morrill Road intersection will carry traffic volumes that satisfy rural peak hour warrants if the CWSP is developed. This is a potentially significant impact.

As noted in the discussion of methodologies, satisfaction of peak hour warrants is one of several criteria employed to determine whether a traffic signal is justified. As noted in the analysis of intersection Level of Service, both locations will operate within the City's LOS D minimum standard without signalization. Thus, it is likely that CWSP alone may not justify a traffic signal. While signalization is not recommend for Existing plus Project impacts, and no mitigation is required, this issue is considered again under Cumulative plus Project conditions.



EXISTING PLUS CROSSROADS WEST
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

**TABLE 14
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour				PM Peak Hour			
		Existing		EX Plus Project		Existing		EX Plus Project	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
Patterson Rd (SR 108) / Coffee Rd Northbound approach	NB Stop	40.2	E	477.1	F	39.0	E	67.6	F
	Roundabout	15.3	B	27.2	B	14.0	B	18.6	C
	Signal			13.3	B			15.1	B
Patterson Rd (SR 108) / Oakdale Rd	Signal	26.6	C	27.1	C	38.1	D	38.7	D
Coffee Rd / Morrill Rd Westbound approach	WB Stop	11.9	B	21.9	C	11.4	B	22.6	C
Oakdale Rd / Morrill Rd	Signal	14.4	B	20.0	C	16.4	B	24.8	C
Coffee Rd / Crawford Rd Westbound approach	WB Stop	12.0	B	14.4	B	11.7	B	15.5	C
Oakdale Rd / Crawford Rd	Signal	16.2	B	36.4	D	25.9	C	32.9	C
McHenry Ave (SR 108) / Claribel Rd	Signal	28.9	C	32.5	C	35.0	D	54.9	D
Claribel Rd / Coffee Rd	Signal	8.9	A	11.7	B	8.4	A	46.5	D
Claribel Rd / N-S Collector Southbound approach	SB Stop			25.0	C			>999	F
	Mitigated (Signal)			7.6	A			26.3	C
Claribel Rd / Oakdale Rd	Signal	30.4	C	44.4	D	32.4	C	67.0	E
	Mitigated			37.2	D			49.0	D
Claribel Rd /Squire Wells Way	Signal	14.2	B	14.2	B	13.0	B	15.2	B
Claribel Rd / Roselle Ave	Signal	22.2	C	24.4	C	20.3	C	32.0	C
Claribel Rd / Terminal Ave	Signal	7.2	A	7.2	A	7.5	A	9.2	A
Claribel Rd / Claus Rd	Signal	18.3	B	20.0	B	21.4	B	29.0	C
Oakdale Rd / Claratina Ave	Signal	21.6	C	41.1	D	13.2	B	30.8	C
Oakdale Rd / Freddi Lane	Signal	8.1	A	10.1	B	19.8	B	31.8	C
Roselle Ave / Sylvan Lane	2-lane roundabout	16.2	C	20.6	C	12.1	B	13.4	B
Oakdale Rd / Sylvan Ave	Signal	15.9	B	39.5	D	14.5	B	23.3	C
Coffee Rd / Claratina Ave	2-lane roundabout	10.6	B	13.5	B	12.0	B	20.0	C
Oakdale Rd /Mable Ave	Signal	22.1	C	22.9	C	24.4	C	30.4	C
Bold values exceed minimum LOS. Highlighted values are a significant impact.									

**TABLE 15
EXISTING PLUS PROJECT TRAFFIC SIGNAL WARRANTS**

Intersection	Peak Hour Volumes											
	AM Peak Hour						PM Peak Hour					
	Existing			Existing Plus Project			Existing			Existing Plus Project		
	Major	Minor	Met?	Major	Minor	Met?	Major	Minor	Met?	Major	Minor	Met?
Patterson Rd (SR 108) / Coffee Rd	1,261	120	YES	1,324	241	YES	1,420	136	YES	1,514	190	YES
Coffee Rd / Morrill Rd	352	98	no	446	356	YES	298	75	no	569	230	YES
Coffee Rd / Crawford Rd	442	26	no	633	26	no	440	17	no	734	17	no
Claribel Rd / N-S Collector	1,344	0	no	1,687	244	YES	1,647	0	no	2,572	306	YES
Highlighted value is a potentially significant impact												

Traffic Impacts Based on Segment Volumes

Segment traffic volumes on study area roads have been projected, and these forecasts are presented in Table 16. These volumes were then compared to the LOS threshold adopted by each agency, and the resulting Levels of Service are noted. As shown seven roadway segments will be impacted by the project at build out.

Impact E-4. Development of the CWSP will cause the two-lane segments of **Patterson Road from McHenry Avenue to Coffee Road** to continue to operate with Levels of Service that exceed the County / Caltrans minimum LOS C standard. Because conditions exceed the adopted standard with and without the project, the significance of the project's impact is based on the incremental change in volume / capacity ratio (v/c). In this case, the difference is 0.07 which exceeds the 0.05 increment permitted under County guidelines, and the project's impact is significant.

Improving the Level of Service in this area requires widening SR 108 to 4-lanes. This work is addressed by the City of Riverbank's existing traffic impact mitigation fee. As with any improvement implemented by a fee program, the possibility exists that shorter term impacts may occur as the City of Riverbank and Caltrans assemble the funds needed to complete this work. By paying the adopted fee, development in the CWSP will contribute its fair share to the cost of improving SR 108, and the project's impact is not significant.

Mitigation E-4. Because SR 108 widening is already included in the adopted City of Riverbank Impact Fee program, development in the CWSP will mitigate its impact by paying adopted fees. However, because improvements to this location are subject to Caltrans' approval process regarding design and installation, improvements may not be installed before the impact occurs. Because there is no guarantee that the improvement will be installed prior to the impact occurring this impact is significant and unavoidable.

Impact E-5. Development in the CWSP will cause the segment of **Claribel Road from McHenry Avenue to Coffee Road** to operate at LOS E with the addition of project trips. Because the project will cause the minimum Level of Service standard to be exceeded, the project's impact is significant.

Improving the Level of Service in this area would either require widening Claribel Road to 6 lanes or creating additional parallel east-west capacity to reduce the volume of traffic on Claribel Road. The North County Corridor (NCC) will provide that parallel capacity, and this improvement is included in the County's RTIF. As with any regional improvement, short term impacts may occur during the period prior to completion of the NCC.

Mitigation E-5. Because the NCC is already included in the adopted Regional Fee program, development in the CWSP will mitigated its impact by paying adopted fees. However, because the City of Riverbank does not control the Regional Fee program, there is no guarantee that the NCC will be constructed in time to mitigate the project impact. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

**TABLE 16
EXISTING PLUS PROJECT ROADWAY SEGMENT LEVELS OF SERVICE**

Roadway	Location	Class	Maximum Volume	Existing Conditions			Existing Plus CWSP			
				Volume	V/C	LOS	Volume		V/C	LOS
							Project Only	Total		
Patterson Road (SR 108)	McHenry Ave to Coffee Rd	2-lane Arterial	20,000	14,100	0.71	E	1,350	15,450	0.77	E
		4-lane Arterial	36,000					15,400	0.43	B
	Coffee Rd to Oakdale Rd	2-lane Arterial	15,700	15,600	0.99	E	80	15,680	1.00	E
	Oakdale Rd to Jackson Ave	4-lane Arterial	33,400	16,700		B	1,750	18,450	0.55	
Morrill Road	Coffee Rd to NS Collector	2-lane Rural	1,965 vph	205vph		B	419 vph	624 vph	0.32	D
	NS Collector to Oakdale Rd	2-lane Collector	12,900	1,770			3,480	5,250	0.41	C
Crawford Road	Coffee Rd to Project	2-lane Rural	1,965 vph	42 vph		A	0 vph	42 vph	0.02	A
	NS Collector to Oakdale Rd	2-lane Collector	12,900	580		C	3,680	4,260	0.33	C
	Oakdale Rd to Squire Wells Rd	2-lane Collector	12,900	4,890		C	350	5,240	0.41	C
Claribel Road	McHenry Ave to Coffee Rd	4-lane Arterial	36,000	20,080		C	9,630	29,710	0.83	E
	Coffee Rd to N-S Collector	4-lane Arterial	33,400	19,720			10,850	30,570	0.83	D
	N-S Collector to Oakdale Rd	4-lane Arterial	33,400	19,720		B	5,800	25,520	0.75	C
	Oakdale Rd to Roselle Ave	2-lane Arterial	15,700	14,250		D	5,525	19,775	1.26	F
	Roselle Ave to Claus Rd	2-lane Arterial	15,700	10,930		C	4,250	15,180	0.98	E
Coffee Road	Patterson Rd to Morrill Rd	2-lane Rural	1,965 vph	330 vph		C	140 vph	470vph	0.24	C
	Morrill Rd to Crawford Rd	2-lane Rural	1,965 vph	442 vph		C	294 vph	736 vph	0.37	D
	Crawford Rd to Claribel Rd	2-lane Rural	1,965 vph	476 vph		C	294 vph	732 vph (1)	0.37	D
	Claribel Rd to Claratina Ave	2-lane Arterial	750 vph	507 vph	0.68	B	231 vph	738 vph	0.98	E
		4-lane Arterial	1,500 vph				231 vph	738 vph	0.50	A
Oakdale Road	Patterson Rd to Morrill Rd	4-lane Arterial	33,400	13,790		B	2,620	16,405	0.49	B
	Morrill Rd to Crawford Rd	2-lane Arterial	15,700	13,620		D	5,250	18,870	1.20	F
		4-lane Arterial					5,075	18,870	0.56	B
	Crawford Rd to Claribel Rd	4-lane Arterial	33,400	17,510		B	9,990	27,500	0.82	C
	Claribel Rd to Claratina Ave	2-lane Arterial	750 vph	861 vph	1.15	F	262 vph	1,123 vph	1.50	F
		4-lane Arterial	1,500 vph					1,123 vph	0.75	C
Roselle Avenue	Claribel Rd to Claratina Ave	2-lane Arterial	750 vph	488 vph	0.65	B	59 vph	547 vph	0.73	C
BOLD values exceed minimum LOS D standard (1) with project traffic peak volume is p.m. peak hour										

Impact E-6. Development in CWSP will cause the two-lane segments of **Claribel Road from Oakdale Road to Claus Road** to operate at LOS F with the addition of project trips. Level of Service F exceeds the City of Riverbanks' minimum LOS D standard. Because the project will cause the minimum Level of Service standard to be exceeded, the project's impact is significant.

Improving the Level of Service in this area would either require widening Claribel Road to 4 lanes or creating additional parallel east-west capacity to reduce the volume of traffic on Claribel Road. Widening Claribel Road is included in the Riverbank Impact Fee program. The North County Corridor (NCC) will provide that parallel capacity, and this improvement is included in the County's RTIF. As with any regional improvement, short term impacts may occur during the period prior to completion of programmed improvements.

Mitigation E-6. Because the widening Claribel Road is already included in the Riverbank Impact Fee and the NCC is already included in the adopted Regional Fee program, development in the CWSP will mitigate its impact by paying adopted fees. However, because the City of Riverbank does not control the Regional Fee program, there is no guarantee that the NCC will be constructed in time to mitigate the project impact. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

Impact E-7. Development in CWSP will cause the Level of Service on the two lane section of **Coffee Road between Claribel Road and Claratina Avenue in the City of Modesto** to drop to LOS F. Because LOS F exceeds the City of Modesto's minimum LOS D standard, this is a significant impact.

Improving the Level of Service in this area would either require improving Coffee Road to Modesto's 4 lane Arterial street standard. This work is included in the City of Modesto's CFF traffic impact fee program, and a portion is within the NCC project area. While development in Riverbank pays RTIF fees it does not contribute CFF fees.

The precedent for development projects within a particular jurisdiction contributing to the cost of improvements in other jurisdictions outside of adopted fee programs is limited. The Tivoli Specific Plan EIR² notes that

Currently no funding mechanism exists by which development in the City of Modesto can contribute to traffic improvements within the City of Riverbank, just as no mechanism exists by which development within the City of Riverbank contributes to funding traffic improvements in the City of Modesto. Development of such a mechanism would require negotiations between the two agencies to figure out if and acceptable, bilateral funding arrangement could be developed. if such an arrangement were to be developed, then project development could be conditioned on payment towards such improvements at the time of tentative map approval for individual subdivisions within the project area.

² City of Modesto, Tivoli Specific Plan Project, Final Environmental Impact Report, February 26, 2008, Findings and Statements Required under California Environmental Quality Act, page 10

No mechanism has been created to allow Tivolo SP development to contribute to the cost of traffic improvements in the City of Riverbank.

Because no mechanism exists for CWSP to contribute to the cost of improvements in the City of Modesto and because the City of Riverbank does not control the RTIF or Modesto CFF program, there is no guarantee that the City of Modesto would allocate CFF funds to this improvement. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

Impact E-8. Development in CWSP will cause the Level of Service on the two lane section of **Oakdale Road between Morrill Road and Crawford Road** to drop to LOS F at CWSP buildout. Because LOS F exceeds the City of Riverbank's minimum LOS D standard, this is a significant impact.

Improving the Level of Service in this area would require improving Oakdale Road to a 4-lane Arterial street standard. This work is consistent with the City of Riverbanks normal policy for frontage improvements. The volume of traffic on this portion of Oakdale Road in the future will be dependent on the location of CWSP development that proceeds, and regular monitoring would be needed to confirm when LOS D is exceeded.

Mitigation E-7. Each applicant within CWSP shall be responsible for contributing its fair share to the cost of widening Oakdale Road to four lanes by providing a second southbound through travel lane between Morrill Road and Crawford Road. The applicant shall be responsible for widening Oakdale Road when determined by the City Engineer. This work will result in Level of Service that satisfies the City's minimums standard, and the project's impacts would not be significant.

Impact E-9. Development in CWSP will add traffic to the two lane section of **Oakdale Road between Claribel Road and Claratina Avenue in the City of Modesto** which operates at LOS F. Because LOS F exceeds the City of Modesto's minimum LOS D standard and the CWSP's trips will increase the v/c ratio by more than 0.05, this is a significant impact.

Improving the Level of Service in this area would require improving Oakdale Road to Modesto's 4 lane Arterial street standard. This work is included in the City of Modesto's PFF traffic impact fee program, but development in Riverbank does not contribute PFF fees. This area is also within the project limits of the NCC and Oakdale Road is likely to be widened with this improvement project funded via CFF fees

Because no mechanism exists for CWSP to contribute to the cost of improvements in the City of Modesto and because the City of Riverbank does not control the RTIF or Modesto CFF program, there is no guarantee that the City of Modesto would allocate CFF funds to this improvement. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

Access / Circulation Impacts

Intersection Queues. The distance between signalized intersections on Oakdale Road warrants evaluation of peak period queues as capacity can be affected and safety issues created when queuing traffic extends beyond the available storage lanes.

Table 17 compares the 95th percentile queues occurring in key turn lanes at intersections on Oakdale Road under the Existing Plus Approved Projects plus CWSP conditions. This represents the worst case condition in this area prior to the implementation of the NCC.

As shown, there are several locations where the projected queues exceed available storage.

At the **Oakdale Road / Crawford Road intersection** the queue of westbound traffic on Crawford Road turning left onto southbound Oakdale Road exceeds the available storage. To an appreciable degree this is an existing problem as the CWSP itself adds little traffic to the left turning volume.

At the **Oakdale Road / Freddi Lane intersection** the projected queue in the northbound left turn lane is expected to exceed the available storage. The lane would need to be lengthened or dual left turn lanes installed, and the design choice will need to be made by the City of Riverbank when a plan for the mixed use retail center comes forward. Similarly, the design of the mixed use retail area will need to accommodate eastbound queues, but the nature of these lanes cannot be determined until a development plan is proposed.

At the **Oakdale Road / Claribel Road intersection**, anticipated 95th percentile queues under this scenario exceed available left turn lane storage on three approaches. To an appreciable degree the need to lengthen these lanes is linked to the construction of the NCC as that improvement would alter traffic volumes in this area. In lieu of that improvement, the storage in the westbound, northbound and eastbound left turn lanes would need to be lengthened.

**TABLE 17
INTERSECTION QUEUES**

Approach	Lane	Storage (feet)	AM Peak Hour		PM Peak Hour	
			EPAP + CWSP Volume (vph)	95 th % Queue	EPAP + CWSP Volume (vph)	95 th Queue
Oakdale Road / Crawford Road						
Northbound	Left turn	300	71	110	195	220
Westbound	Left turn	180	379	370	191	245
Oakdale Road / Freddi Lane						
Westbound	Left + thru	100	-	-	77	50
	Right turn	100	-	-	244	80
Northbound	Left turn	240	-	-	308	310
Southbound	Left turn	420	-	-	201	230
Eastbound	Left turn	-			141	175
	Right turn	-			271	120
Oakdale Road/ Claribel Road						
Southbound	Left turn	300	166	180	194	300
Eastbound	Left turn	400	166	215	447	585
Westbound	Left turn	320	263	360	297	420
Northbound	Left turn	130	150	240	167	275
Bold values are queues that exceed available storage						

Impact E-10: Development of the CWSP will increase the length of queues occurring at key intersections and increase the possibility of queues extending into adjoining travel lanes. This is a potential safety impact.

Mitigation E-8. Development in CWSP shall be responsible for lengthening the available storage in left turn lanes at the Crawford Road, Freddi Lane and Claribel Road intersections. Each applicant within CWSP shall be responsible for contributing its fair share to the cost of lengthening left turn lanes. The applicant shall be responsible for lengthening specific turn lanes when determined by the City Engineer. With this mitigation the impact is not significant.

Retail Access. Direct access to the southern mixed use retail area is anticipated on both Oakdale Road and Claribel Avenue, as well as to the new N-S Collector. Although no formal development plan has been created for this area the CWSP Circulation Plan envisions numerous points of access on the 2,000 feet from the N-S Collector to Oakdale Road and onto Oakdale Road on both sides of Freddi Lane intersection.

Raised medians either exist today or are planned on both Oakdale Road and Claribel Road. While the distance along Oakdale Road may not be adequate to permit additional median openings, it will be possible to modify the Claribel Road median to allow access. While the conceptual access locations have not been quantitatively analyzed as part of the Level of Service analysis, feasibility will depend on factors such as:

- Completion of the NCC in the area of the project and the realignment of Claribel Road to a new intersection on Coffee Road.
- The distance between driveways and proximity to public road intersections.
- Presence of access on the south side of Claribel Road.
- Applicable standards for minimum turn lane length based on storage and deceleration.
- The layout of the eventual land uses in the mixed use retail area.

The feasibility of driveway access based on the distance between intersections has been evaluated conceptually under short term and long term conditions. The CWSP Circulation Plan suggests three midblock access points on Claribel Road between the N-S Collector and Oakdale Road. The average spacing would be 500 feet between intersections.

Before NCC is completed Claribel Road will still carry appreciable background traffic, and it is likely that a traffic signal will be needed to accommodate outbound left turns. Under these circumstances it is reasonable to expect that a single traffic signal could be permitted midway between the N/S collector and Oakdale Road and that the other locations would be limited to right turns only.

Once the NCC is completed full access at each location could theoretically be developed, the City will need to consider the probable minimum length of turn lanes and bay tapers at each opening. If full access to the properties on the south side of Claribel Road is to be allowed then the 500 foot average distance between driveways may be too short to accommodate back-to-back left turn lanes.

The issues associated with retail access may represent a potential safety issue if congestion occurs or if inadequate turn lanes are created.

Impact E-11. Development of the CWSP Mixed Use Retail area could create safety conflicts or capacity bottlenecks at driveways if access is improperly designed. This is a potentially significant impact.

Mitigation E-9. Development in the CWSP shall provide a design for vehicular access to the satisfaction of the City of Riverbank City Engineer when development of the MU-1 Mixed Use Retail area proceeds. With this mitigation the impact is not significant.

Impacts to Alternative Transportation Modes

Pedestrian / Bicycle Impacts. Pedestrian and bicycle activity will occur as development in the CWSP proceeds, and these improvements are consistent with the StanCOG Non-Motorized Transportation Master Plan. The CWSP identifies the locations of Class II bike lanes on Morrill Road, Coffee Road, Oakdale Road and on the new N-S Collector. Class I bike trails are planned along the MID Main Canal at the north end of the site and along MID Lateral #6 to the south, and these facilities are linked by a trail on western Morrill Road and on the N-S Collector. A Class I trail is also planned along Claribel Road. Ultimately pedestrian facilities will be created along the frontage of new development. Thus the CWSP does not interfere with the implementation of the planned bicycle and pedestrian system.

Potential safety impacts could occur as the CWSP is connected to existing facilities. Existing traffic signals provide adequate pedestrian crossings on Oakdale Road to link CWSP with most of the balance of Riverbank. However, a protected crossing will be needed for the MID Lateral trail across Oakdale Road, and the distance between Morrill Road and Crawford Road may justify another east-west crossing on Oakdale Road. While the Morrill Road / N-S Collector intersection may not carry traffic volumes that justify signalization based on vehicular warrants, a protected crossing for the trail to the MID Main Canal may be needed. The nature of the crossings will need to be considered in consultation with the City of Riverbank but may feature a Hybrid Pedestrian Beacon to stop traffic when pedestrians are present while remaining dark otherwise.

Impact E-12. Development of the CWSP may result in pedestrian / vehicle conflicts at planned trail crossings and at key midblock locations. This is a potentially significant impact.

Mitigation E-10. Development in CWSP shall work with City of Riverbank staff to identify applicable pedestrian crossing features and cause those features to be installed when warranted to the satisfaction of the City of Riverbank City Engineer. With this mitigation the impact is not significant

Depending on the actual location of initial development within the CWSP, there may be instances when short term “gaps” between existing crossings / sidewalks and the new facilities included with individual development projects. The City of Riverbank should monitor development within the plan area to identify gaps that result in conflicts between pedestrians and automobiles and require interim paths that provide a safe route. Similarly, development of the sports park and/or school sites within the CWSP may result in travel by school age children prior to completion of the overall circulation system. Interim facilities may be needed.

Impact E-13: Incremental development of the CWSP could result in short term gaps in the pedestrian circulation and bicycle systems that result in conflicts between pedestrians, bicycles and motor vehicles on Oakdale Road. This is a potentially significant impact that can be mitigated.

Mitigation E-11: Development in CWSP shall monitor pedestrian, bicycle and motor vehicle safety conditions as development proceeds and install measures to bridge identified gaps as applicable to the satisfaction of the City of Riverbank City Engineer. With this mitigation the impact is less than significant.

Transit Service. Development in the CWSP could result in the increased demand for transit service. Today StaRT Route 60 passes the site on Claribel Road and Oakdale Road and operates Monday through Friday between 5:00 a.m. and 9:43 p.m. This bus operates thirteen round trips between Modesto and Oakdale and passes through Riverbank. On Saturday between 6:15 a.m. and 8:34 p.m., seven round trips are provided. The Saturday service is combined with the Modesto/Turlock route. This route follows Claribel Road and Oakdale and has a designated stop on Oakdale Road at the Freddi Lane intersection.

The CWSP anticipates that bus shelters and pullouts will be installed at key locations within the plan area to be determined in consultation with Stanislaus Regional Transit.

The StaRT routes that are available will be adequate to serve the CWSP as development in the plan areas begins. As suggested by the CWSP, project proponents will need to work with Regional Transit to identify applicable locations for stops and pullouts and to install them as development proceeds. However, ultimate decisions regard the nature of any routes that may circulate through CWSP will rest with Stanislaus Regional Transit. The project's impact on transit is not significant. However, mitigation would be required to ensure that transit facilities are incorporated into the Project.

Mitigation E-12: Development in CWSP shall install the transit elements included in the CWSP when warranted as determined by the City Engineer. With this mitigation the impact is less than significant.

Rail Facilities. The CWSP would result in increased automobile traffic over the existing BN&SF crossing on Claribel Road. However, this crossing is already equipped with applicable gates and is linked to the adjoining traffic signal at Terminal Avenue. The additional traffic caused by CWSP would not result in unsafe conditions, and the project's impact is not significant. No mitigation is required.

EXISTING PLUS APPROVED PROJECTS IMPACTS

This report section considers the impacts of CWSP within the context of conditions with occupancy other approved projects identified in consultation with City of Riverbank and City of Modesto staff.

Approved Projects List

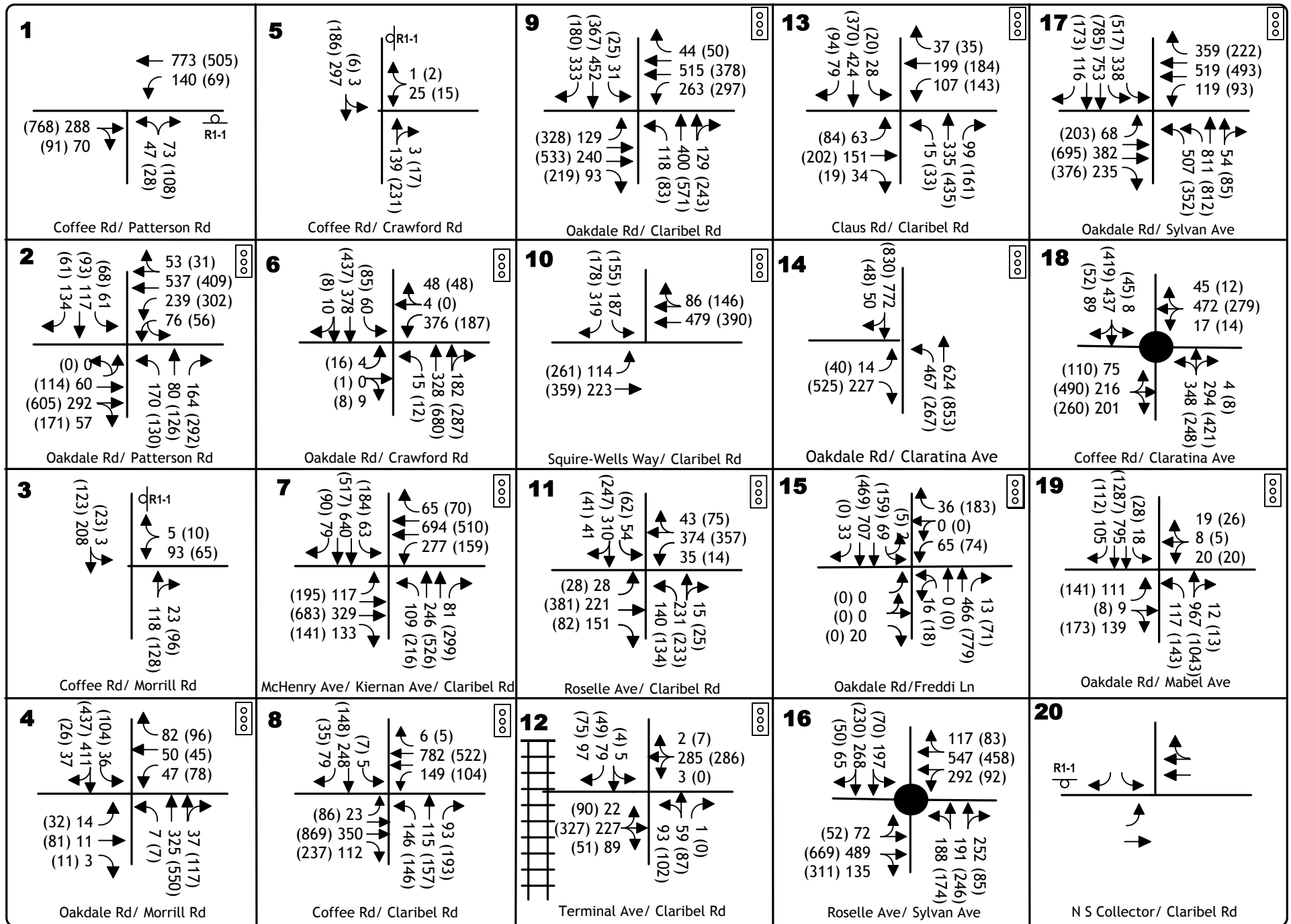
Land Use. Table 18 identifies development project identified by Modesto and Riverbank staff for this analysis. The development within Riverbank's CFD 2016-1 is located on the east side of Riverbank off of Claus Road. The list of Modesto's approved projects includes both retail and residential development projects.

Trip Generation. As indicated in Table 18, these projects would generate a total of 18,921 new daily trips, with 369 trips in the a.m. peak hour and 1,701 trips in the p.m. peak hour.

**TABLE 18
APPROVED PROJECTS**

Jurisdiction	Name	Description	Trip Generation		
			Daily	AM Peak Hour	PM Peak Hour
Riverbank	CFD	285 SFR and 72 MFR east of Claus Rd near Patterson Rd	2,925	230	302
Modesto	The Marketplace	168 ksf retail center at Oakdale / Sylvan	11,332	214 ¹	909
	Hillglen Parks	62 SFR @ Hillglen / Caden	590	47	62
	Hillglen	39 SFR @ Roselle/ Hillglen	371	29	39
	Lincoln Parks	58 SFR @ Kodiak / Lincoln Oak	552	44	58
	Rose Villas	114 SFR @ Oakdale / Mable	1,085	86	114
	Millbrook Manor	14 SFR @ Kodiak & Millbrook	133	11	14
	Falling Leaf	203 SFR @ Floyd & Claus	1,933	152	203
Total			18,921	813	1,701
(1) a.m. peak hour was not evaluated by the City of Modesto					

Traffic Volume Forecasts. The trips associated with approved projects were assigned to the regional street system based on information contained in their respective traffic studies or based on a distribution developed for the regional travel demand forecasting model. Figure 8 presents the resulting traffic volume at study locations.



EXISTING PLUS APPROVED PROJECTS
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

Existing Plus Approved Projects Conditions

Intersection Traffic Operations. The Levels of Service occurring at study intersections under the Existing Plus Approved Projects baseline conditions with and without the proposed CWSP were calculated and are identified in Table 19.

As shown, if the other approved projects proceed, then the intersections which currently operate with Levels of Service below the adopted minimum standard under Existing conditions will continue to do so. No additional locations would operate unacceptably under Existing Plus Approved Projects conditions.

Traffic Signal Warrants. The extent to which the addition of trips from Approved projects affects the status of traffic signal warrants at un-signalized intersection is noted in Table 20. As shown no additional intersections satisfy peak hour warrants due to the approved projects.

Roadway Segment Levels of Service. The addition of trips from approved projects will increase the traffic volumes on some study area roadways. Compared to Existing Conditions the Level of Service on one segment will drop below the LOS D threshold. The daily volume on the two-lane segment of **Claribel Road between Oakdale Road and Roselle Avenue** will increase, and this segment will operate at LOS E.

TABLE 19
EXISTING PLUS APPROVED PROJECTS PLUS CWSP INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour			
		Existing Plus Approved Projects		EPAP Plus CWSP		Existing Plus Approved Projects		EPAP Plus CWSP	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
Patterson Rd (SR 108) / Coffee Rd Northbound approach	NB Stop	40.9	E	489.7	F	40.6	E	199.9	F
	Roundabout	15.7	C	27.2	D	14.3	B	19.1	B
	Signal			24.2	C			20.5	C
Patterson Rd (SR 108) / Oakdale Rd	Signal	26.9	C	28.4	C	35.5	D	39.5	D
Coffee Rd / Morrill Rd Westbound approach	WB Stop	11.9	B	21.9	C	11.4	B	22.6	C
Oakdale Rd / Morrill Rd	Signal	14.2	B	20.3	C	17.1	B	25.9	C
Coffee Rd / Crawford Rd Westbound approach	WB Stop	12.0	B	14.4	B	11.7	B	15.5	B
Oakdale Rd / Crawford Rd	Signal	16.2	B	36.8	D	18.1	B	33.8	C
McHenry Ave (SR 108) / Claribel Rd	Signal	26.8	C	32.8	C	35.4	D	56.6	E
Claribel Rd / Coffee Rd	Signal	8.7	A	11.9	B	19.1	B	48.8	D
Claribel / N-S Collector Southbound approach	SB Stop			26.6	D			>999	F
	Signal			7.6	A			24.7	C
Claribel Rd / Oakdale Rd	Signal	30.9	C	46.8	D	34.3	C	70.9	E
	mitigated			39.1	D			50.8	D
Claribel Rd /Squire Wells Way	Signal	14.7	B	14.6	B	13.0	B	15.5	B
Claribel Rd / Roselle Ave	Signal	21.8	C	26.0	C	20.8	C	35.2	D
Claribel Rd / Terminal Ave	Signal	7.2	A	7.3	A	7.6	A	9.5	A
Claribel Rd / Claus Rd	Signal	18.5	B	20.2	C	22.0	C	29.5	C
Oakdale Rd / Claratina Ave	Signal	26.6	C	49.7	D	16.8	B	44.0	D
Oakdale Rd / Freddi Lane	Signal	8.6	A	10.8	B	22.0	C	31.8	C
Roselle Ave / Sylvan Lane	2-lane roundabout	18.0	C	20.6	C	13.9	B	15.6	C
Oakdale Rd / Sylvan Ave	Signal	23.2	C	32.8	C	20.6	C	26.8	C
Coffee Rd / Claratina Ave	2-lane roundabout	11.2	B	13.5	B	13.4	B	23.6	C
Oakdale Rd /Mable Ave	Signal	27.6	C	30.3	C	33.6	C	47.2	D
Bold values exceed minimum LOS. Highlighted values are a significant impact (1) existing Crawford Road intersection (2) relocated Crawford Road									

**TABLE 20
EXISTING PLUS APPROVED PROJECTS PLUS CWSP TRAFFIC SIGNAL WARRANTS**

Intersection	Peak Hour Volumes											
	AM Peak Hour						PM Peak Hour					
	Existing Plus Approved Projects			EPAP Plus CWSP			Existing Plus Approved Projects			EPAP Plus CWSP		
	Major	Minor	Met?	Major	Minor	Met?	Major	Minor	Met?	Major	Minor	Met?
Patterson Rd (SR 108)/ Coffee Rd	1,271	120	Yes	1,333	241	YES	1,434	136	YES	1,528	190	YES
Coffee Rd / Morrill Rd	352	98	No	446	356	YES	298	75	No	569	230	YES
Coffee Rd / Crawford Rd	442	26	No	633	26	no	440	17	No	734	17	No
Claribel Rd / N-S Collector	1,385	0	No	1,728	244	YES	1,699	0	No	2,624	306	Yes
Highlighted value is a potentially significant impact												

TABLE 21
EXISTING PLUS APPROVED PROJECTS PLUS CWSP ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Class	Maximum Volume	Existing Plus Approved Projects			EPAP Plus CWSP			
				Volume	V/C	LOS	Volume		V/C	LOS
							Project Only	Total		
Patterson Road (SR 108)	McHenry Ave to Coffee Rd	2-lane Arterial	20,000	14,360	0.71	E	1,350	15,710	0.78	E
	Coffee Rd to Oakdale Rd	2-lane Arterial	15,700	15,725	1.00	E	80	15,805	1.01	E
	Oakdale Rd to Jackson Ave	4-lane Arterial	33,400	16,990		B	1,750	18,740	0.56	B
Morrill Road	Coffee Rd to NS Collector	2-lane Rural	1,995 vph	205 vph		B	419 vph	624 vph	0.32	D
	NS Collector to Oakdale Road	2-lane Collector	12,900	1,770			3,480	5,250	0.41	C
Crawford Road	Coffee Rd to Project	2-lane Collector	1,965 vph	42 vph		C	0 vph	42 vph	0.02	A
	N-S Collector to Oakdale Road	2-lane collector	12,900	580		C	3,680	4,260	0.33	C
	Oakdale Rd to Squire Wells Rd	2-lane Collector	12,900	4,890		C	350	5,240	0.41	C
Claribel Road	McHenry Ave to Coffee Rd	4-lane Arterial	36,000	20,570		C	9,630	31,200	0.83	E
	Coffee to N-S Collector	4-lane Arterial	33,400	20,235		B	10,850	31,085	0.83	C
	N-S Collector to Oakdale Rd	4-lane Arterial	33,400	20,210		B	5,800	26,020	0.75	C
	Oakdale Rd to Roselle Ave	2-lane Arterial	15,700	14,920		E	5,525	20,445	1.30	F
	Roselle Ave to Claus Rd	2-lane Arterial	15,700	11,550		C	4,250	15,800	1.01	F
Coffee Road	Patterson Rd to Morrill Rd	2-lane Rural	1,965 vph	330 vph	0.68	C	140 vph	470 vph	0.24	C
	Morrill Rd to Crawford Rd	2-lane Rural	1,965 vph	442 vph		C	294vph	736 vph	0.37	D
	Crawford Rd to Claribel Rd	2-lane Rural	1,965 vph	476 vph		C	294 ph	734 vph (1)	0.37	D
	Claribel Rd to Claratina Ave	2-lane Arterial	750 vph	512 vph		B	231 vph	743 vph	0.99	E
Oakdale Road	Patterson Rd to Morrill Rd	4-lane Arterial	33,400	13,950		B	2,620	16,570	0.49	B
	Morrill Rd to Crawford Rd	4-lane Arterial	33,400	13,840		B	5,250	19,090	0.57	B
	Crawford Rd to Claribel Rd	4-lane Arterial	33,400	17,690		B	9,990	27,680	0.83	C
	Claribel Rd to Claratina Ave	2-lane Arterial	750 vph	934 vph	1.25	F	262 vph	1,196vph	1.59	F
Roselle Avenue	Claribel Rd to Claratina Ave	2-lane Arterial	750 vph	496 vph	0.66	B	59 vph	555 vph	0.73	C
BOLD values exceed minimum LOS D standard (1) with project traffic peak volume is p.m. peak hour										

Existing Plus Approved Projects (EPAP) Plus CWSP Conditions

Traffic Volumes. The trips identified for CWSP were superimposed onto the EPAP baseline condition to create the EPAP plus Project volumes shown in Figure 9 and Table 19. These volumes are the basis for the subsequent analysis of Level of Service and traffic signal warrants.

Intersection Levels of Service. Table 19 compares Intersection Levels of Service at study locations with and without CWSP. As indicated, with one exception the same intersections that operated with Level of Service less than the adopted standard under Existing Plus Project conditions would do so with the addition of background traffic.

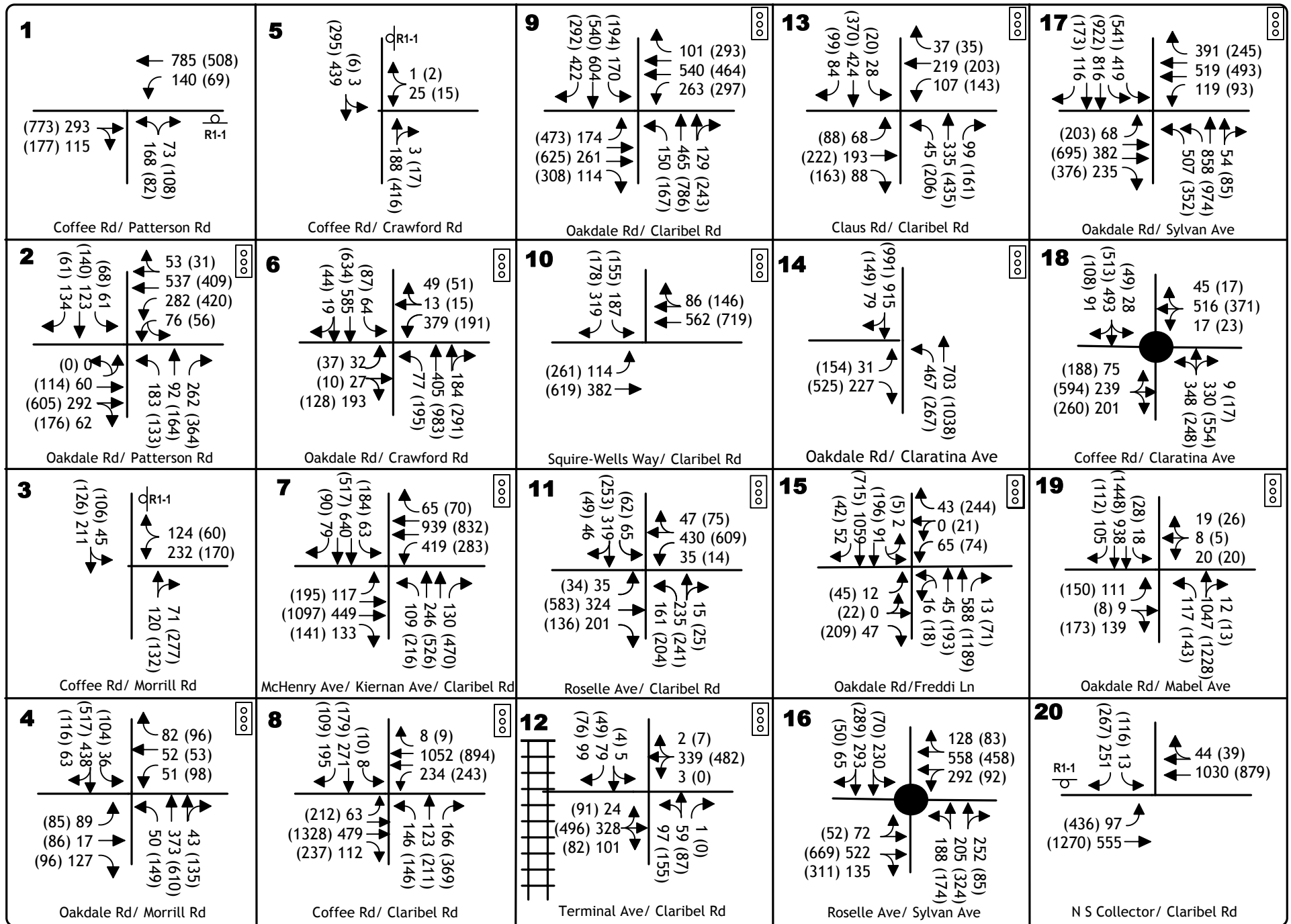
EPAP Impact 1. With other approved projects and development of the CWSP the **McHenry Avenue / Kiernan Avenue / Claribel Avenue intersection** will operate at LOS E. Based on the change to an unacceptable Level of Service, this is a significant impact.

Improving the Level of Service would require additional intersection capacity, and the NCC project includes improvements to this location. The NCC is included in the County's RTIF. As with any regional improvement, short term impacts may occur during the period prior to completion of the NCC.

Mitigation EPAP 1. Because the NCC is already included in the adopted Regional Fee program, development in the CWSP will mitigate its impact by paying adopted fees. However, because the City of Riverbank does not control the Regional Fee program, there is no guarantee that the NCC will be constructed in time to mitigate the project impact. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

Traffic Signal Warrants. Table 20 compares the results of peak hour traffic signal warrants analysis at un-signalized study intersections with and without the project. As indicated the same locations that satisfied warrants under Existing Plus Project conditions do so under the EPAP Plus Project conditions.

Roadway Segments. Table 21 compares roadways segment Level of Service with and without the project. As indicated the same locations which were deficient under Existing Plus Project conditions operate with Level of Service below LOS D under EPAP plus Project conditions. The project's impacts and mitigation requirements based on roadway segment Level of Service would be the same.



CUMULATIVE TRAFFIC IMPACTS

This report section considers the impacts of the CWSP within the context of long term traffic conditions that may accompany the development of regional circulation system improvements and regional residential and non-residential development

Approach to Traffic Volume Forecasting

Available sources of information regarding long term traffic conditions were reviewed, and the basis for cumulative analysis was selected in consultation with City of Riverbank. The City of Riverbank General Plan Update EIR regional travel demand forecasting model was considered. That tool was created from the StanCOG regional model as it existed when the GPU began in 2007 and may not represent the most current information regarding regional development. The traffic model employed for the most recent StanCOG Regional Transportation Plan Updated (RTP) was obtained and reviewed. That tool was obtained and reviewed but as the specific traffic volume forecasts for study area roadways have not been endorsed by local agencies this alternative was not selected.

The regional traffic model employed for the pending North County Corridor (NCC) DEIR was reviewed and found to be the best available resource. This model produced Year 2042 land use forecasts that represent a “Worst Case” view of regional growth, and the results identified in the Traffic Operational Analysis accompanying the DEIR have been accepted by Caltrans and Stanislaus County.

Modeling Approach in NCC Area. The approach to making use of the traffic model was intended to make use of information presented in the NCC DEIR while reflecting comments received from the city of Riverbank and City of Modesto during the preparation of the CWSP traffic impact analysis. Because the NCC analysis addressed some but not all of the locations to be evaluated for CWSP, two alternative measures were employed.

Where NCC Analysis forecasts were available the traffic model was reviewed and modified to reflect the specific land use assumptions inherent to the CWSP, and the local roadway network was modified to reflect the proposed project. The locations evaluated under this approach generally lie along the NCC corridor north of and including Claratina Avenue. In this area intersection turning movement forecasts were identified from the model for Year 2042 with CWSP conditions, and these results were compared to the model as employed for the NCC. The net differences were applied to the published turning movements presented in the NCC traffic operational analysis to create adjusted 2042 Plus Project volumes. This approach was particular applicable since the information in the NCC analysis reflected a degree of “post processor” manual adjustment that would be impossible to duplicate for this analysis.

Modeling Approach Outside of NCC Area. An alternative approach was taken where the NCC DEIR analysis did not provide specific forecasts. These areas generally include locations in Modesto south of Claratina Avenue, but information relative to locations in Riverbank was also

created for comparison to NCC data. Two land use changes were made in areas separate from CWSP at the request of the City of Riverbank and the City of Modesto.

- Potential residential development along and adjoining the NCC corridor that might someday be developed was assumed to occur after 2042 and at the direction of the City of Riverbank was not included.
- In Modesto, the City asked that the approved Tivoli Specific Plan be assumed to be 100% occupied. This change primarily reflected retail use added at the employee density employed by the City of Modesto in their traffic model.

To best account for inherent limitations of a regional model an “incremental” approach was taken to create the Year 2042 traffic volumes used for this analysis. The 2042 with CWSP model run results were compared to the NCC model’s calibrated baseline year forecasts and the incremental difference in segment volume was identified on a daily and peak hour basis. These increments were added to observed Year 2017 volumes to create the “adjusted” future condition. Individual growth rates were then calculated for each segments and intersection approach by comparing observed and adjusted future volumes. Finally, these growth rates were applied to the turning movement volumes at each intersection, and the results were balanced using the techniques contained in *Transportation Research Board’s (TRB’s) NCHRP report 255, Highway Data for Urbanized Area Project Planning and Design*.

As noted earlier the analysis of future conditions assumes implementation of the North County Corridor, and the planned expressway is included in the model. While four alternative alignments have been included in the DEIR analysis contained in the NCC’s environmental document, this analysis follows the direction of the City of Riverbank and Alternative 2B has been assumed. In general all NCC alternatives are similar on the area of CWSP but differ in the paths followed east of Claus Road.

Project Access. Because any regional model lacks the ability to account for specific local access conditions, the specific assignment of CWSP trips was identified assuming implementation of the future circulation system. The new trips associated with CWSP were then manually assigned to the local intersections adjoining the project, and the results adjusted to balance to the forecasts at regional intersections.

No Project Conditions. To identify the incremental effects of CWSP in the Year 2042, the trips associated with CWSP were manually subtracted from the 2042 Plus Project forecasts. Under the No Project condition Crawford Road would remain at its current location.

Long Term Circulation System Improvements

This analysis addresses implementation of improvements that are reasonably foreseeable by the Year 2042.

The NCC project included the following study area improvements:

- Realignment of Claribel Road west of CWSP along a new alignment to Coffee Road, with improvements to Coffee Road between the NCC and Claribel Road.
- Realignment of Claribel Road east of Roselle Avenue over the BN&SF to a new intersection on Claus Road.

In Riverbank, improvements addressed by the City's Impact Fee program are assumed to be completed. These include:

- Widening SR 108 to 4 lanes from McHenry Avenue through Riverbank to Snediger Road
- Widening Claribel Road to 4 lanes from Squire Wells Way to Claus Road
- Widening Patterson Road to 4 lanes from Roselle Avenue to Terminal Avenue

In Modesto, improvements addressed by the City's CFF will occur in concert with assumed development. These include widening Coffee Road, Oakdale Road and Roselle Avenue.

Traffic Volume Forecasts

Figures 10 and 11 display resulting Year 2042 a.m. and p.m. peak hour traffic volumes for conditions with and without CWSP.

Cumulative (Year 2035) No Project Conditions

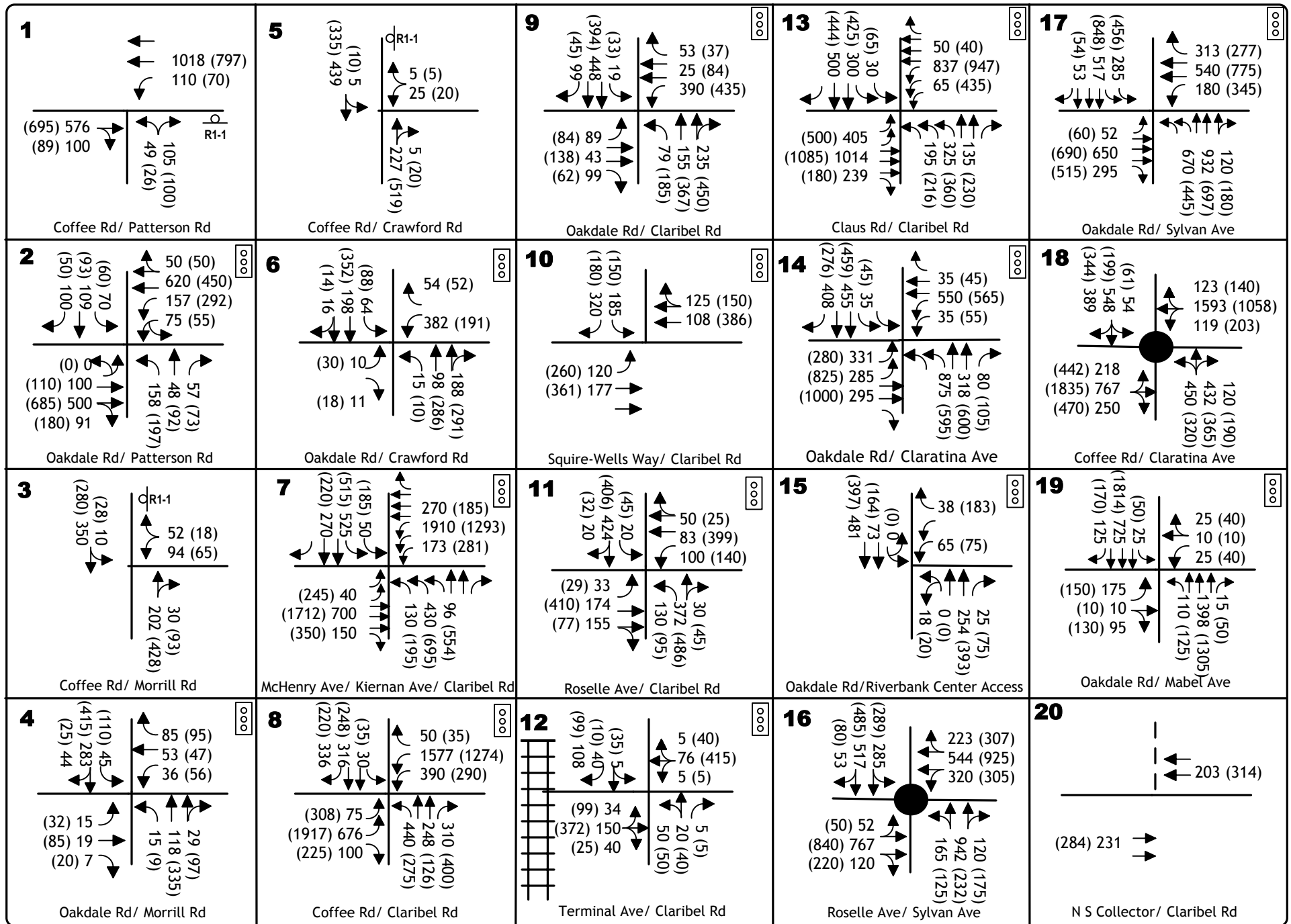
The results of Level of Service analysis for both peak hour conditions at study area intersections are summarized in Table 22.

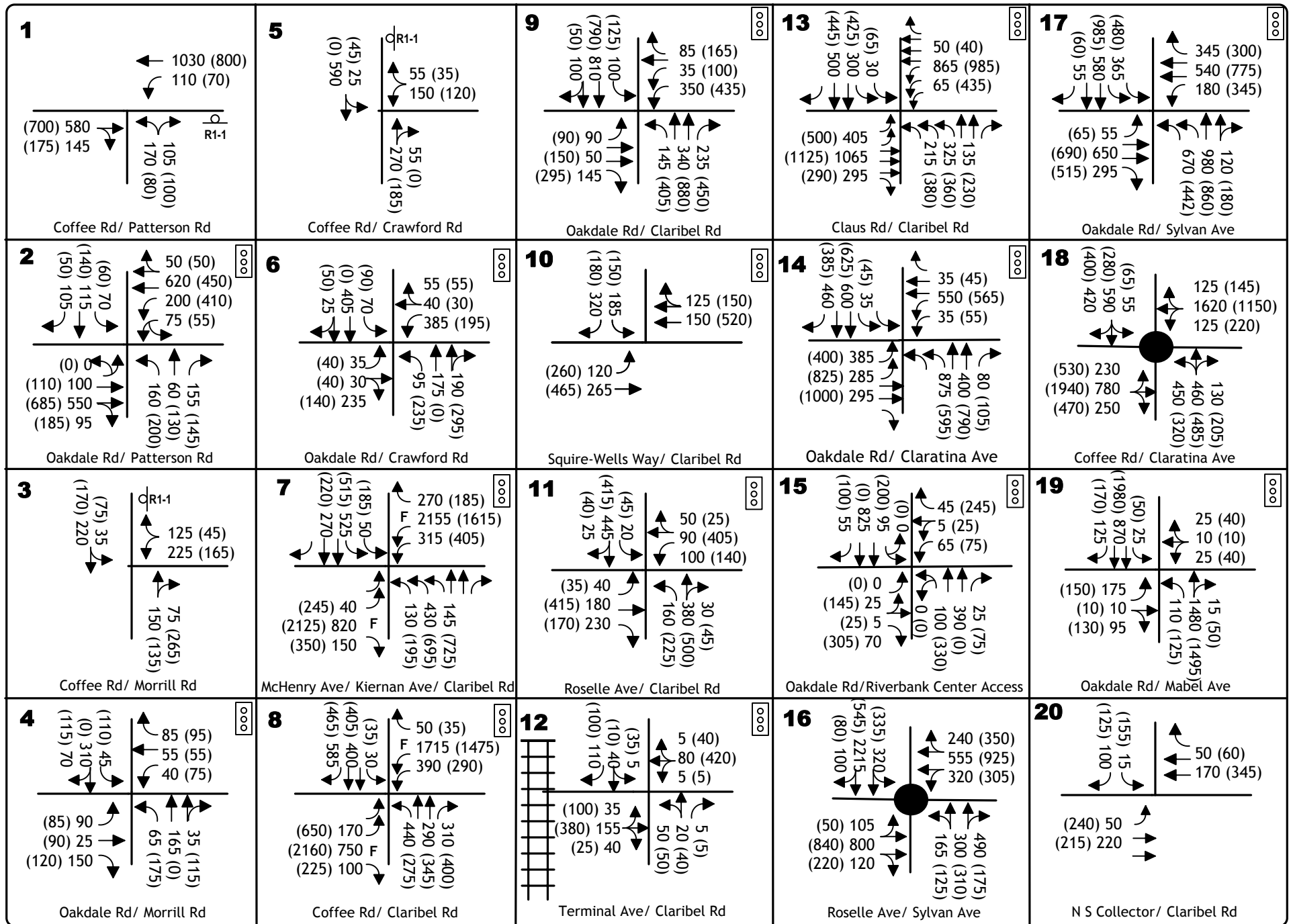
No Project Intersection Levels of Service. As noted in Table 22, Levels of Service satisfying the City's minimum LOS D standard are anticipated at most locations if the CWSP was not developed, but 4 intersections will operate with a deficient Level of Service (i.e., LOS E or worse):

- SR 108 (Patterson Road / Coffee Road): LOS F
- Oakdale Road / Claratina Avenue: LOS E
- Roselle Avenue / Sylvan Avenue: LOS F
- Coffee Road / Claratina Avenue: LOS F

No Project Traffic Signal Warrants. If CWSP does not proceed, then one intersection would continue to satisfy peak hour traffic signal warrants (i.e., Patterson Road / Coffee Road), as noted in Table 23.

No Project Roadway Segment Level of Service. If CWSP does not develop, then one roadway will operate with a Level of Service in excess of LOS D. The two-lane segment of **Coffee Road from the NCC to the realigned Claribel frontage road intersection** would operate at LOS E. This segment would need to be improved to a two-lane arterial standard. This segment is within the project limits identified for the NCC and would be expected to be completed as part of that project.





**TABLE 22
YEAR 2042 PLUS CWSP INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour				PM Peak Hour			
		2042 No Project		2042 With CWSP		2042 No Project		2042 with CWSP	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
Patterson Rd (SR 108) / Coffee Rd Northbound approach	NB Stop	42.2	E	480.6	F	22.3	C	85.3	F
	Roundabout	35.0	D	64.9	F	15.0	C	19.3	C
	2-lane roundabout			9.9	A				
	Signal			14.0	B			9.3	A
Patterson Rd (SR 108) / Oakdale Rd	Signal	31.8	C	33.4	C	46.1	D	52.6	D
Coffee Rd / Morrill Rd Westbound approach	WB Stop	14.5	B	43.7	E	18.5	C	90.9	F
Oakdale Rd / Morrill Rd	Signal	14.6	B	19.2	C	16.8	B	28.4	C
Coffee Rd / Crawford Rd Westbound approach	WB Stop	14.0	B(1)	36.4	E(2)	17.2	B (1)	115	F
	Signal			10.3	B			13.2	B
Oakdale Rd / Crawford Rd	Signal	23.2	C	38.9	D	18.4	B	30.2	C
McHenry Ave (SR 108) / Claribel Rd	Signal	16.3	B	20.0	B	31.0	C	25.9	C
Claribel Rd / Coffee Rd	Signal	33.8	C	49.8	D	19.5	B	25.4	C
Claribel / N-S Collector Southbound approach	SB Stop	-	-	9.8	A	-	-	50.1	F
	Signal	-	-	12.5	B	-	-	17.3	B
Claribel Rd / Oakdale Rd	Signal	24.5	C	28.5	C	32.9	C	60.9	E
	mitigated							26.9	C
Claribel Rd /Squire Wells Way	Signal	11.3	B	11.1	B	12.9	B	13.3	B
Claribel Rd / Roselle Ave	Signal	20.7	C	25.1	C	25.9	C	36.4	C
Claribel Rd / Terminal Ave	Signal	6.4	A	6.4	A	7.1	A	7.1	A
Claribel Rd / Claus Rd	Signal	24.7	C	25.1	C	35.7	D	39.8	D
Oakdale Rd / Claratina Ave	Signal	59.4	E	61.5	E	30.1	C	32.1	C
Oakdale Rd / Freddi Lane	Signal	8.0	A	15.8	B	15.4	B	32.9	C
Roselle Ave / Sylvan Lane	2-lane roundabout	62.4	F	71.0	F	88.3	F	108.1	F
Oakdale Rd / Sylvan Ave	Signal	32.3	C	36.8	D	42.3	D	36.3	D
Coffee Rd / Claratina Ave	2-lane roundabout	243.5	F	259.0	F	254.0	F	331.9	F
Oakdale Rd /Mable Ave	Signal	17.2	B	17.5	B	19.7	B	20.7	C
Bold values exceed minimum LOS. Highlighted values are a significant impact. (1) existing Crawford Road intersection (2) relocated Crawford Road									

TABLE 23
2042 PLUS CWSP TRAFFIC SIGNAL WARRANTS

Intersection	Peak Hour Volumes											
	AM Peak Hour						PM Peak Hour					
	Year 2042 No Project			Year 2042 with CWSP			Year 2042 No Project			Year 2042 with CWSP		
	Major	Minor	Met?	Major	Minor	Met?	Major	Minor	Met?	Major	Minor	Met?
Patterson Rd (SR 108)/ Coffee Rd	1,804	154	Yes	1,865	275	Yes	1,651	126	Yes	1,745	180	Yes
Coffee Rd / Morrill Rd	592	146	No	730	350	Yes	829	83	No	1,115	210	Yes
Coffee Rd / Crawford Rd	676	30	No	670	205	Yes	884	25	No	1,365	205	Yes
Claribel Rd / N-S Collector				490	115	No				860	280	Yes
Highlighted value is a potentially significant impact												

TABLE 24
YEAR 2042 PLUS CWSP ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Class	Maximum Volume	Base Without CWSP			With CWSP			
				Volume	V/C	LOS	Volume		V/C	LOS
							Project Only	Total		
Patterson Road (SR 108)	McHenry Ave to Coffee Rd	4-lane Arterial	36,000	17,825	0.50	C	1,375	19,200	0.53	C
	Coffee Rd to Oakdale Rd	4-lane Arterial	33,400	18,925	0.57	B	75	19,000	0.57	B
	Oakdale Rd to Jackson Ave	4-lane Arterial	33,400	23,525	0.70	C	1,775	25,300	0.76	C
Morrill Road	Coffee Rd to Oakdale Rd	2-lane Collector	12,900	5,325	0.41	C	3,875	9,200	0.71	D
Crawford Road	Coffee Rd to Oakdale Rd	2-lane Collector	12,900	1,325	0.10	C	3,175	4,500	0.35	C
	Oakdale Rd to Squire Wells Rd	2-lane Collector	12,900	4,550	0.35	C	450	5,800	0.45	C
Claribel Road (Realigned)	Coffee Rd to N-S Collector	2-lane Arterial	15,700	1,500	0.10	B	4,300	5,800	0.37	B
	N-S Collector to Oakdale Rd	4-lane Arterial	33,400	4,800	0.14	B	5,200	10,000	0.30	B
	Oakdale Rd to Roselle Ave	4-lane Arterial	33,400	5,600	0.17	B	2,400	8,000	0.24	B
	Roselle Ave to Claus Rd	2-lane Arterial	15,700	5,575	0.36	B	125	5,700	0.36	B
Coffee Road	Patterson Rd to Morrill Rd	2-lane Rural	1,965 vph	364 vph	0.19	C	166 vph	530 vph	0.25	C
		2-lane Arterial	15,700	5,100	0.33	B	1,300	6,400	0.41	B
	Morrill Rd to Crawford Rd	2-lane Rural	1,965 vph	866 vph	0.44	D	339 vph	1,205 vph	0.61	E
		2-lane Arterial	15,700	11,050	0.70	C	3,050	14,100	0.902	D
	Crawford Rd to Claribel Rd	2-lane Rural	1,965 vph	857 vph	0.44	D	573 vph	1,430 vph	0.56	E
		2/4-lane Arterial	33,400	11,475	0.34	C(2)	5,525	17,000	0.51	B
	Claribel Rd to NCC	2-lane Rural	1,965 vph	972vph	0.50	E	963 vph	1,935 vph	0.98	F
		2/4-lane Arterial	33,400	7,725	0.49	B	9,275	17,000	0.51	B
NCC to Claratina Ave	6-lane Arterial	2,250 vph	801	0.36	A	219	1,020 vph	0.45	A	
Oakdale Road	Patterson Rd to Morrill Rd	4-lane Arterial	33,400	19,100	0.57	B	2,700	21,800	0.65	B
	Morrill Rd to Crawford Rd	4-lane Arterial	33,400	12,225	0.37	B	5,275	17,500	0.52	B
	Crawford Rd to Claribel Rd	4-lane Arterial	33,400	12,300	0.37	B	11,600	23,900	0.72	C
	Claribel Rd to NCC	4-lane Arterial	33,400	21,675	0.65	B	13,875	35,500	1.06	F
		6-lane arterial	50,300	-	-	-			0.71	C
	NCC to Claratina	6-lane Arterial	2,250	839	0.37	A	311	1,150	0.51	A
Roselle Avenue	Claribel Rd to NCC	2-lane Arterial	750 vph	627 vph	0.84	D	143 vph	770 vph	1.03	F
		4-lane Arterial	1,500 vph						0.52	A
BOLD values exceed minimum LOS D standard										

Year 2042 Plus CWSP Conditions

Intersection Levels of Service. Table 22 compares Year 2042 intersection Levels of Service with and without CWSP. As indicated, six intersections are projected to operate with Levels of Service that exceed the minimum LOS D standard.

Cumulative Impact C-1. With development of the CWSP the **Patterson Road / Coffee Road intersection** will operate at LOS F on the northbound approach. Based on the change in average delay and satisfaction of signal warrants, as noted in Table 23, this is a significant impact.

As was noted in the discussion of Impact 1, improvements to address this impact would include installation of a 2-lane roundabout intersection or improvements that involves auxiliary turn lanes and a traffic signal. Either would deliver Level of Service that satisfies the City of Riverbank's minimum LOS requirement. However, under current Caltrans directives, the exact nature of the needed improvement cannot be confirmed without completion of an *Intersection Control Evaluation (ICE) Report*. Caltrans typically requires a complete evaluation of all traffic signal warrants prior to installing a traffic signal.

Mitigation E-1 addresses this impact, and no additional mitigation is required. Because intersection improvements are already included in the adopted City of Riverbank Impact Fee program, development in the CWSP will mitigate its impact by paying adopted fees. However, for the same reasons noted earlier, ***because the City of Riverbank cannot guarantee that the improvement will be installed, the impact remains significant and unavoidable.***

Cumulative Impact C-2. With development of the CWSP the **Coffee Road / Morrill Road intersection** will operate at LOS F on the westbound approach. Based on the change in average delay and satisfaction of signal warrants, as noted in Table 23, this is a significant impact.

A traffic signal will improve the Level of Service at this location to a condition that satisfies the City's minimum Level of Service standard. While the intersection is noted as a potential signal location in the Riverbank GPU EIR, it is not included in any adopted fee program. Because the need for this improvement will depend on the location and extent of development within CWSP, condition should be monitored as development proceeds and a traffic signal should be installed when warrants are met to the satisfaction of the city of Riverbank.

Mitigation C-1. Development in CWSP shall be responsible for causing a traffic signal to be installed at the Coffee Road / Morrill Road intersection, and development within CWSP shall be responsible for contributing its fair share to the cost of the traffic signal. The signal shall be installed when conditions warrant, as determined by the City of Riverbank City Engineer. By signalizing the intersection the City's minimum LOS standard will be satisfied, and the project's impact would not be significant. However, ***because this improvement is not included in any adopted fee program, there is no guarantee that the improvement will be installed, and the project's impact is significant and unavoidable.***

Cumulative Impact C-3. With development of the CWSP the **Coffee Road / Relocated Crawford Road intersection** will operate at LOS F on the westbound approach. Based on the change in average delay and satisfaction of signal warrants, as noted in Table 23, this is a significant impact.

A traffic signal will improve the Level of Service at this location to a condition that satisfies the City's minimum Level of Service standard. While the intersection is noted as a potential signal location in the Riverbank GPU EIR, it is not included in any adopted fee program. Because the need for this improvement will dependent on the location and extent of development within CWSP, condition should be monitored as development proceeds and a traffic signal should be installed when warrants are met to the satisfaction of the City of Riverbank City Engineer. With this mitigation the project's impact is not significant.

Mitigation C-2. Development in CWSP shall be responsible for its fair share of the cost of installing traffic signal at the Coffee Road / Relocated Crawford Road intersection. The signal shall be installed when conditions warrant, as determined by the City of Riverbank City Engineer. By signaling the intersection the City's minimum LOS standard will be satisfied, and the project's impact would not be significant. However, ***because this improvement is not included in any adopted fee program, there is no guarantee that the improvement will be installed, and the project's impact is significant and unavoidable.***

Cumulative Impact C-4. With development of the CWSP the Claribel Road / N-S Collector intersection will operate at LOS E, and traffic signal warrants will be met. As LOS E exceeds the LOS D standard, this is a significant impact.

A traffic signal is needed at this location. This improvement is identified as Mitigation E-3, and no further mitigation is required.

Cumulative Impact C-5. With development of the CWSP the **Claribel Road / Oakdale Road intersection** will operate at LOS E. Based on the change from acceptable to unacceptable LOS, this is a significant impact.

Improving the Level of Service will require adding a second northbound left turn lane on Oakdale Road and reorienting the four-lane westbound approach to provide dual left turns, a through lane and a separate right turn lane. Improving the Oakdale Road / Claribel Road intersection is not in the Riverbank impact fee program, but the intersection is within the project area of the NCC. The second northbound left turn lane has not been included in the NCC project as described in the DEIR.

Mitigation C-4. Development in the CWSP shall be responsible for contributing its fair share to the cost of adding a second northbound left turn lane. The improvement shall be installed when determined to be warranted by the City Engineer. With this improvement and contributing to the cost of the NCC by paying regional fees to cover other intersection costs, the City's minimum LOS standard is met. However, ***because the City of Riverbank does not control the NCC Project nor regional fee program, there is no guarantee that the improvement will be installed, and the impact remains significant and unavoidable.***

The Oakdale Road / Claratina Road intersection is projected to operate at LOS E with and without the project. Because the incremental increase in delay is less than the 5.0 second increment used by the City of Modesto, the project's impact is not significant.

Cumulative Impact C-6: The **Roselle Avenue / Sylvan Avenue intersection** is projected to operate at LOS F with and without the CWSP. Because the incremental change in delay exceeds the 5.0 second threshold employed by the City of Modesto, this is a significant impact.

The existing two-lane roundabout might be enhanced to increase its capacity. However, a three lane roundabout would not provide LOS D. Because no mechanism exists for CWSP to contribute to the cost of improvements in the City of Modesto and because the City of Riverbank does not control the RTIF or Modesto CFF program, there is no guarantee that the City of Modesto would allocate CFF funds any improvement. ***Because mitigation does not appear feasible and installation of any improvement cannot be assured by the City of Riverbank, this cumulative impact remains significant and unavoidable.***

Cumulative Impact C-7: The **Coffee Avenue / Claratina Avenue intersection** is projected to operate at LOS F with and without the CWSP. Because the incremental change in delay exceeds the 5.0 second threshold employed by the City of Modesto, this is a significant impact.

The anticipated two-lane roundabout might be enhanced to increase its capacity. However, a three-lane roundabout would not provide LOS D. Because no mechanism exists for CWSP to contribute to the cost of improvements in the City of Modesto and because the City of Riverbank does not control the RTIF or Modesto CFF program, there is no guarantee that the City of Modesto would allocate CFF funds to any improvement. ***Because mitigation does not appear feasible and installation of any improvement cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

Thus, the project's cumulative impact is significant and unavoidable.

Year 2042 Traffic Impacts Based on Segment Volumes

Segment traffic volumes on study area roads have been projected, and these forecasts are presented in Table 24. These volumes were then compared to the LOS threshold adopted by each agency, and the resulting Levels of Service are noted. As shown four roadway segments will be impacted by the project at build out.

Cumulative Impact C-8. The addition of trips generated by CWSP will result in Level of Service F conditions on the two-lane rural section of **Coffee Road between Morrill Road and the relocated Crawford Road**. Because LOS F exceeds the city's minimum LOS D standard, this is a significant impact.

Improving the Level of Service in this area would require improving Coffee Road to the functional equivalent of a 2 lane Arterial standard which would provide LOS C with the forecast traffic volume. Not all of the overall improvements included in the City's Arterial street standard are needed to improve the Level of Service, and the functional equivalent of an arterial street will include a travel lane in each direction, center Two-Way Left-Turn lane and applicable shoulders. This work is not included in the City's traffic impact fee program

Mitigation C-5. Development in the CWSP shall be responsible for its fair share of the cost of improving Coffee Road from Morrill Road to the relocated Crawford Road intersection to provide the functional equivalent of a two-lane arterial street standard. By improving the road the City's minimum LOS D standard will be satisfied, and the project's impact would not be significant. However, ***because the improvement is not in any adopted fee program, there is no guarantee that the improvement will be installed, and the project's impact is significant and unavoidable.***

Cumulative Impact C-9. The addition of trips generated by CWSP will contribute to Level of Service F conditions on the two-lane rural section of **Coffee Road between the relocated Crawford Road and the realigned Claribel Road intersection.** While LOS F is projected with and without the project, because change in v/c ratio exceeds the 0.05 increment permitted by the City of Riverbank this is a significant impact.

Improving the Level of Service in this area would require improving Coffee Road to an Arterial standard. The projected volume exceeds the capacity of a two-lane arterial and a 4-lane arterial would provide LOS B with the forecast traffic volume. Not all of the overall improvements included in the City's Arterial street standard are needed to improve the Level of Service, and the functional equivalent of an arterial street will include two travel lanes in each direction, center Two-Way Left-Turn lane and applicable shoulders. This work is not included in the City's traffic impact fee program

Mitigation C-9. Development in the CWSP shall be responsible for contributing its fair share to the cost of improving Coffee Road from the relocated Crawford Road intersection to the realigned Claribel Road intersection to the equivalent of a four-lane arterial street standard. By improving the road the City's minimum LOS D standard will be satisfied, and the project's impact would not be significant. However, ***because the improvement is not in any adopted fee program, there is no guarantee that the improvement will be installed, and the project's impact is significant and unavoidable.***

Cumulative Impact C-10. The addition of trips generated by CWSP will contribute to Level of Service F conditions on the two-lane rural section of **Coffee Road between the realigned Claribel Road intersection and NCC.** While LOS F is projected with and without the project, because change in v/c ratio exceeds the 0.05 increment permitted by the City of Riverbank this is a significant impact.

Improving the Level of Service in this area would require improving Coffee Road to a four lane Arterial standard. This work is not included in the City's traffic impact fee program. The area is within the limits of the NCC project area, and the project may contribute to this work through Regional Impact Fees

Mitigation C-6. Development in the CWSP shall be responsible for contributing its fair share to the cost of improving Coffee Road from the realigned Claribel Road intersection to NCC to a four-lane arterial street standard, by paying adopted fees. By improving the road the City's minimum LOS D standard will be satisfied, and the project's impact would not be significant. However, ***because the City of Riverbank does not control the NCC or regional fee, there is no guarantee that the improvement will be installed, and the project's impact is significant and unavoidable.***

Cumulative Impact C-11. The addition of trips generated by CWSP will contribute to Level of Service F conditions on the 4-lane section of **Oakdale Road between the Claribel Road intersection and NCC in the City of Modesto.** Because LOS F exceeds the minimum LOS D standard this is a significant impact.

Improving the Level of Service in this area would require improving Oakdale Road to a six-lane Arterial standard. This work is not included in the City's traffic impact fee program. The area is within the limits of the NCC project area, and the project may contribute to this work through Regional Impact Fees.

Because no mechanism exists for CWSP to contribute to the cost of improvements in the City of Modesto and because the City of Riverbank does not control the RTIF or Modesto CFF program, there is no guarantee that the City of Modesto would allocate CFF funds to this improvement. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

Cumulative Impact C-12. The addition of trips generated by CWSP creates Level of Service F conditions on the 2-lane section of **Roselle Avenue between the Claribel Road intersection and NCC.** Because LOS F exceeds the minimum LOS D standard this is a significant impact.

Improving the Level of Service in this area would require improving Roselle Avenue to a four-lane Arterial standard. This work is not included in the City's traffic impact fee program. The area is within the limits of the NCC project area and is included in Modesto's PFF, and the project may contribute to this work through Regional Impact Fees.

Because no mechanism exists for CWSP to contribute to the cost of improvements in the City of Modesto and because the City of Riverbank does not control the RTIF or Modesto CFF program, there is no guarantee that the City of Modesto would allocate CFF funds to this improvement. ***Because installation cannot be assured by the City of Riverbank, this impact remains significant and unavoidable.***

TECHNICAL APPENDIX

FOR

**CROSSROADS WEST SPECIFIC PLAN EIR
TRAFFIC IMPACT ANALYSIS**
Riverbank, CA

Prepared For:

City of Riverbank
6707 Third Street
Riverbank, CA 95367

Prepared By:

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3853 Taylor Road, Suite G
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(916) 660-1555

May 25, 2018

5895-14

KD Anderson & Associates, Inc.

Transportation Engineers

KD ANDERSON & ASSOCIATES, INC.

5895-14

Modesto

(916) 660-1555

All Vehicles & Uturns On Unshifted

File Name : Oakdale Rd & Mable Ave

Bikes & Peds On Bank 1

Date : 5/9/2017

Nothing On Bank 2

Unshifted Count = All Vehicles & Uturns

	Oakdale Road Southbound					Mable Ave Westbound					Oakdale Road Northbound					Mable Ave Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	2	116	14	0	132	3	0	2	0	5	9	121	1	0	131	10	1	18	0	29	297	0
7:15	1	162	28	0	191	4	1	2	0	7	20	248	2	0	270	17	1	23	0	41	509	0
7:30	2	211	27	0	240	2	2	2	0	6	19	213	4	0	236	23	1	26	0	50	532	0
7:45	2	153	22	0	177	2	1	3	0	6	12	196	2	0	210	12	2	31	0	45	438	0
Total	7	642	91	0	740	11	4	9	0	24	60	778	9	0	847	62	5	98	0	165	1776	0
8:00	3	194	29	0	226	4	3	3	0	10	22	203	4	0	229	34	4	16	0	54	519	0
8:15	6	195	31	0	232	6	2	4	0	12	26	260	3	0	289	26	1	26	0	53	586	0
8:30	5	197	19	0	221	2	1	4	0	7	32	245	3	0	280	19	2	20	0	41	549	0
8:45	4	178	22	0	204	8	2	8	0	18	19	216	2	0	237	22	2	23	0	47	506	0
Total	18	764	101	0	883	20	8	19	0	47	99	924	12	0	1035	101	9	85	0	195	2160	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	3	268	21	0	292	3	1	6	0	10	14	229	1	0	244	23	1	21	0	45	591	0
16:15	6	282	32	0	320	4	0	2	0	6	17	240	2	0	259	31	0	34	0	65	650	0
16:30	3	260	18	0	281	6	3	6	0	15	14	193	2	0	209	29	5	25	0	59	564	0
16:45	10	260	24	0	294	4	0	5	0	9	27	244	3	0	274	39	1	34	0	74	651	0
Total	22	1070	95	0	1187	17	4	19	0	40	72	906	8	0	986	122	7	114	0	243	2456	0
17:00	5	280	24	0	309	5	1	6	0	12	14	215	3	0	232	30	3	33	0	66	619	0
17:15	7	320	26	0	353	7	2	12	0	21	21	241	2	0	264	43	2	25	0	70	708	0
17:30	6	322	23	0	351	4	2	3	0	9	17	249	5	0	271	29	2	38	0	69	700	0
17:45	2	230	24	0	256	4	3	1	0	8	24	223	3	0	250	27	1	21	0	49	563	0
Total	20	1152	97	0	1269	20	8	22	0	50	76	928	13	0	1017	129	8	117	0	254	2590	0
Grand Total	67	3628	384	0	4079	68	24	69	0	161	307	3536	42	0	3885	414	29	414	0	857	8982	0
Apprch %	1.6%	88.9%	9.4%	0.0%		42.2%	14.9%	42.9%	0.0%		7.9%	91.0%	1.1%	0.0%		48.3%	3.4%	48.3%	0.0%			
Total %	0.7%	40.4%	4.3%	0.0%	45.4%	0.8%	0.3%	0.8%	0.0%	1.8%	3.4%	39.4%	0.5%	0.0%	43.3%	4.6%	0.3%	4.6%	0.0%	9.5%	100.0%	

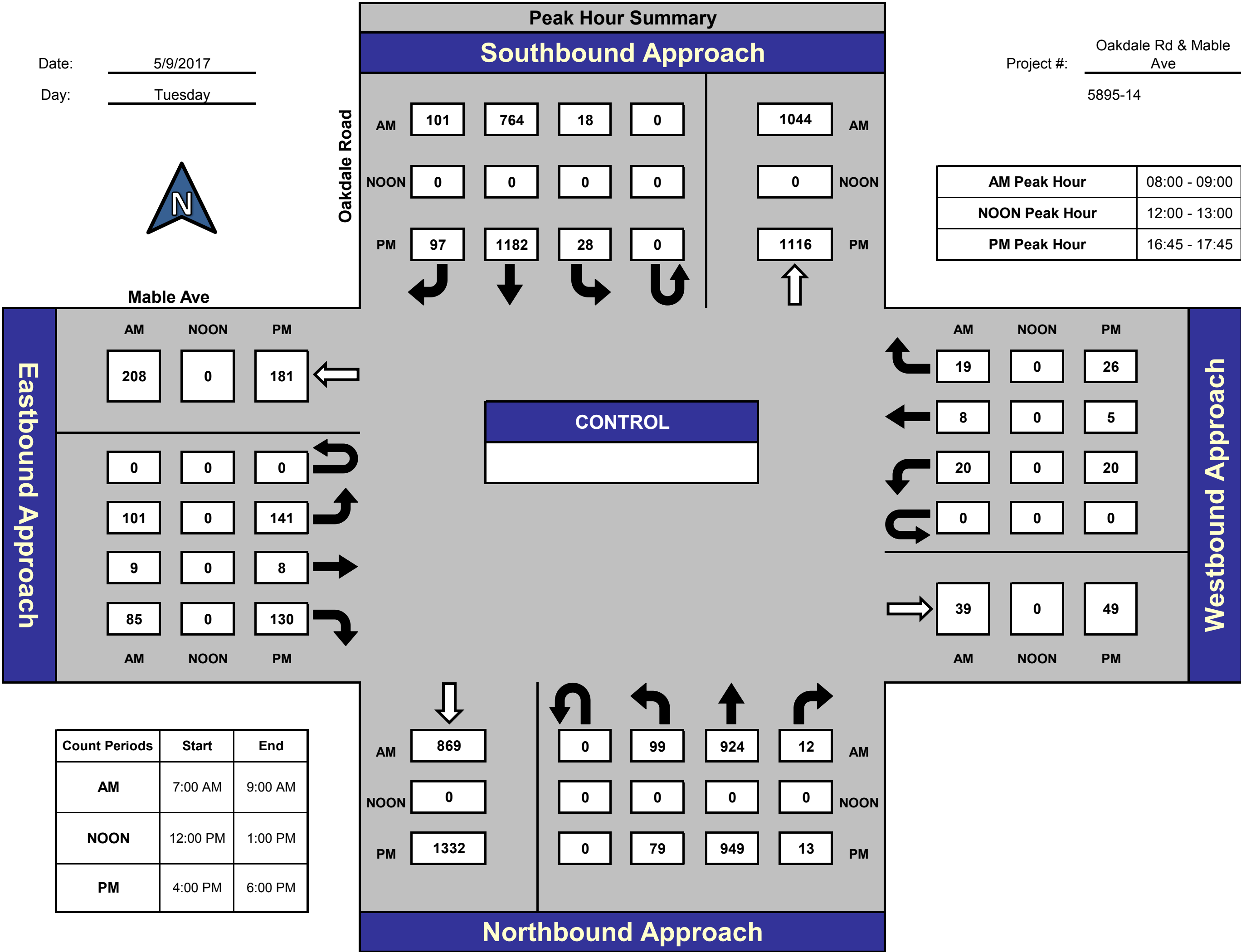
AM PEAK HOUR	Oakdale Road Southbound					Mable Ave Westbound					Oakdale Road Northbound					Mable Ave Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
8:00	3	194	29	0	226	4	3	3	0	10	22	203	4	0	229	34	4	16	0	54	519
8:15	6	195	31	0	232	6	2	4	0	12	26	260	3	0	289	26	1	26	0	53	586
8:30	5	197	19	0	221	2	1	4	0	7	32	245	3	0	280	19	2	20	0	41	549
8:45	4	178	22	0	204	8	2	8	0	18	19	216	2	0	237	22	2	23	0	47	506
Total Volume	18	764	101	0	883	20	8	19	0	47	99	924	12	0	1035	101	9	85	0	195	2160
% App Total	2.0%	86.5%	11.4%	0.0%		42.6%	17.0%	40.4%	0.0%		9.6%	89.3%	1.2%	0.0%		51.8%	4.6%	43.6%	0.0%		
PHF	.750	.970	.815	.000	.952	.625	.667	.594	.000	.653	.773	.888	.750	.000	.895	.743	.563	.817	.000	.903	.922

PM PEAK HOUR	Oakdale Road Southbound					Mable Ave Westbound					Oakdale Road Northbound					Mable Ave Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	10	260	24	0	294	4	0	5	0	9	27	244	3	0	274	39	1	34	0	74	651
17:00	5	280	24	0	309	5	1	6	0	12	14	215	3	0	232	30	3	33	0	66	619
17:15	7	320	26	0	353	7	2	12	0	21	21	241	2	0	264	43	2	25	0	70	708
17:30	6	322	23	0	351	4	2	3	0	9	17	249	5	0	271	29	2	38	0	69	700
Total Volume	28	1182	97	0	1307	20	5	26	0	51	79	949	13	0	1041	141	8	130	0	279	2678
% App Total	2.1%	90.4%	7.4%	0.0%		39.2%	9.8%	51.0%	0.0%		7.6%	91.2%	1.2%	0.0%		50.5%	2.9%	46.6%	0.0%		
PHF	.700	.918	.933	.000	.926	.714	.625	.542	.000	.607	.731	.953	.650	.000	.950	.820	.667	.855	.000	.943	.946

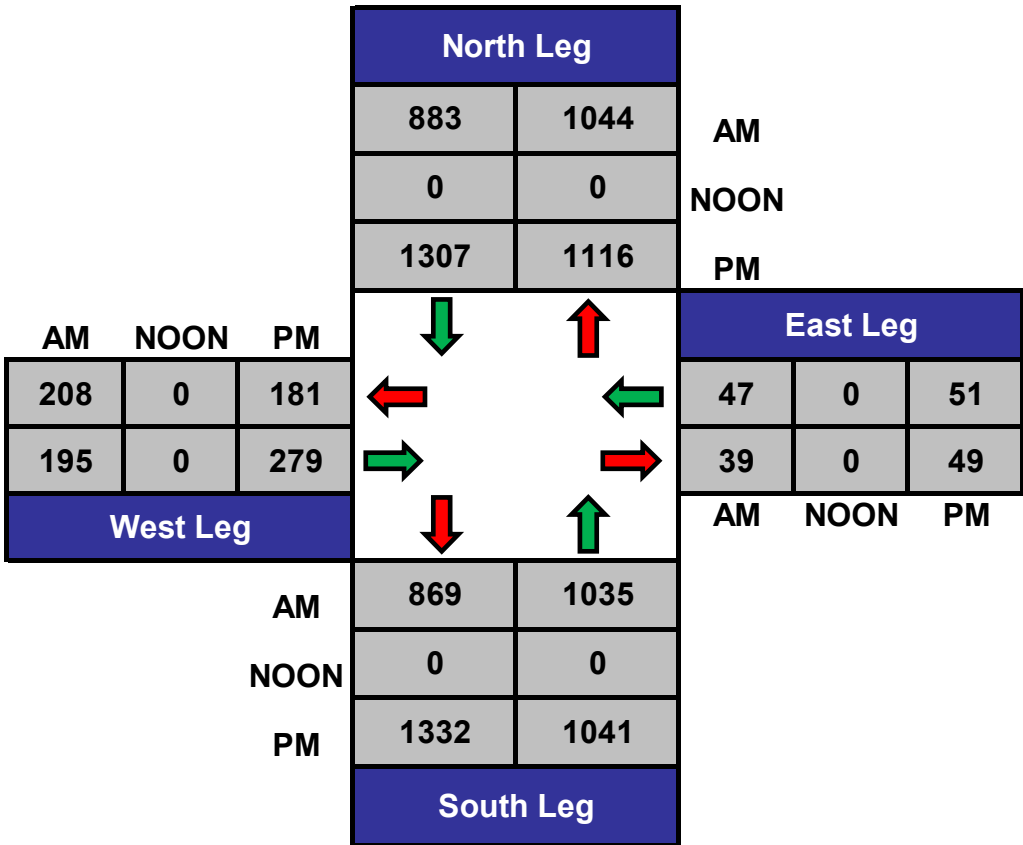
Oakdale Rd & Mable Ave

Date: 5/9/2017
Day: Tuesday

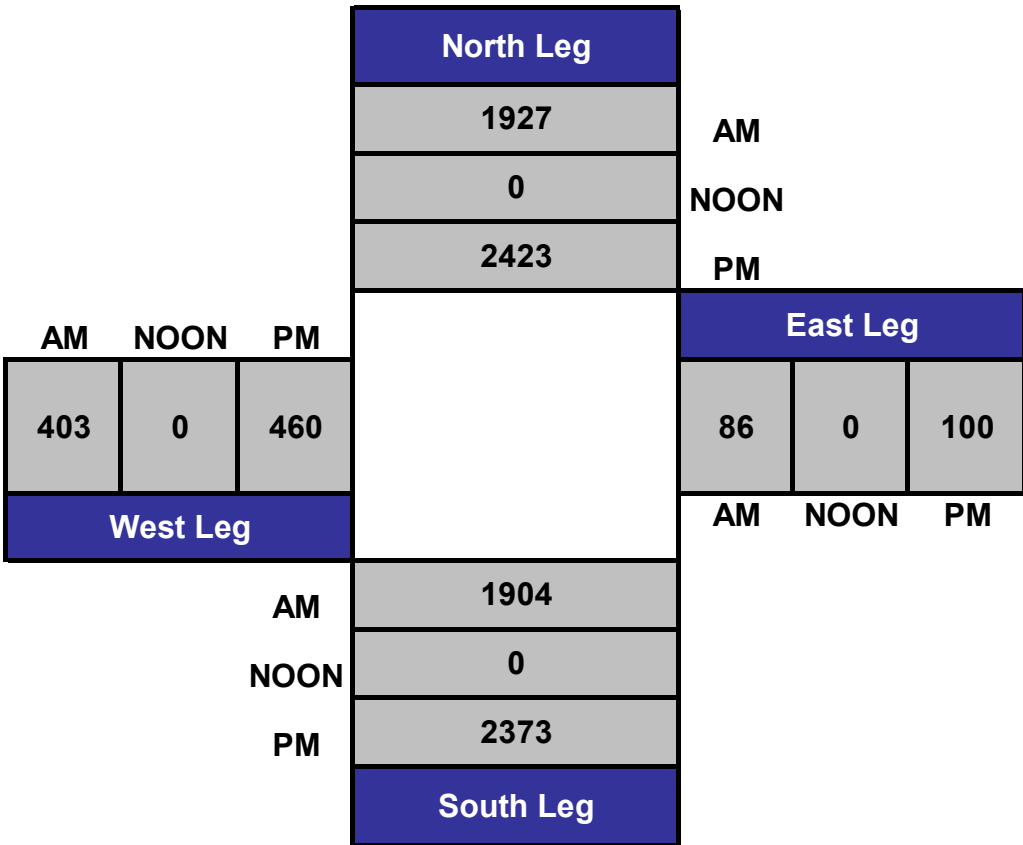
Project #: Oakdale Rd & Mable Ave
5895-14



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-001 Coffee Rd & SR 108
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Coffee Rd Southbound					SR 108 Westbound					Coffee Rd Northbound					SR 108 Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	0	0	0	0	0	18	151	0	0	169	18	0	15	0	33	0	36	12	0	48	250	0
7:15	0	0	0	0	0	28	166	0	0	194	17	0	12	0	29	0	60	15	0	75	298	0
7:30	0	0	0	0	0	36	232	0	0	268	12	0	19	0	31	0	67	19	0	86	385	0
7:45	0	0	0	0	0	37	182	0	0	219	7	0	29	0	36	0	90	17	0	107	362	0
Total	0	0	0	0	0	119	731	0	0	850	54	0	75	0	129	0	253	63	0	316	1295	0
8:00	0	0	0	0	0	39	185	0	0	224	11	0	13	0	24	0	69	19	0	88	336	0
8:15	0	0	0	0	0	35	135	0	0	170	10	0	17	0	27	0	61	18	0	79	276	0
8:30	0	0	0	0	0	18	108	0	0	126	6	0	12	0	18	0	93	12	0	105	249	0
8:45	0	0	0	0	0	35	127	0	0	162	8	0	20	0	28	0	58	14	0	72	262	0
Total	0	0	0	0	0	127	555	0	0	682	35	0	62	0	97	0	281	63	0	344	1123	0
16:00	0	0	0	0	0	21	109	0	0	130	9	0	25	0	34	0	163	22	0	185	349	0
16:15	0	0	0	0	0	14	123	0	0	137	8	0	30	0	38	0	188	23	0	211	386	0
16:30	0	0	0	0	0	15	113	0	0	128	15	0	33	0	48	0	161	17	0	178	354	0
16:45	0	0	0	0	0	21	109	0	0	130	7	0	32	0	39	0	159	22	0	181	350	0
Total	0	0	0	0	0	71	454	0	0	525	39	0	120	0	159	0	671	84	0	755	1439	0
17:00	0	0	0	0	0	21	125	0	0	146	1	0	23	0	24	0	208	22	0	230	400	0
17:15	0	0	0	0	0	7	133	0	0	140	13	0	29	0	42	0	215	23	0	238	420	0
17:30	0	0	0	0	0	20	133	0	0	153	7	0	24	0	31	0	178	24	0	202	386	0
17:45	0	0	0	0	0	12	95	0	0	107	5	0	30	0	35	0	168	21	0	189	331	0
Total	0	0	0	0	0	60	486	0	0	546	26	0	106	0	132	0	769	90	0	859	1537	0
Grand Total	0	0	0	0	0	377	2226	0	0	2603	154	0	363	0	517	0	1974	300	0	2274	5394	0
Apprch %	0.0%	0.0%	0.0%	0.0%		14.5%	85.5%	0.0%	0.0%		29.8%	0.0%	70.2%	0.0%		0.0%	86.8%	13.2%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	41.3%	0.0%	0.0%	48.3%	2.9%	0.0%	6.7%	0.0%	9.6%	0.0%	36.6%	5.6%	0.0%	42.2%	100.0%	

AM PEAK HOUR	Coffee Rd Southbound					SR 108 Westbound					Coffee Rd Northbound					SR 108 Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	28	166	0	0	194	17	0	12	0	29	0	60	15	0	75	298
7:30	0	0	0	0	0	36	232	0	0	268	12	0	19	0	31	0	67	19	0	86	385
7:45	0	0	0	0	0	37	182	0	0	219	7	0	29	0	36	0	90	17	0	107	362
8:00	0	0	0	0	0	39	185	0	0	224	11	0	13	0	24	0	69	19	0	88	336
Total Volume	0	0	0	0	0	140	765	0	0	905	47	0	73	0	120	0	286	70	0	356	1381
% App Total	0.0%	0.0%	0.0%	0.0%		15.5%	84.5%	0.0%	0.0%		39.2%	0.0%	60.8%	0.0%		0.0%	80.3%	19.7%	0.0%		
PHF	.000	.000	.000	.000	.000	.897	.824	.000	.000	.844	.691	.000	.629	.000	.833	.000	.794	.921	.000	.832	.897

PM PEAK HOUR	Coffee Rd Southbound					SR 108 Westbound					Coffee Rd Northbound					SR 108 Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	21	109	0	0	130	7	0	32	0	39	0	159	22	0	181	350
17:00	0	0	0	0	0	21	125	0	0	146	1	0	23	0	24	0	208	22	0	230	400
17:15	0	0	0	0	0	7	133	0	0	140	13	0	29	0	42	0	215	23	0	238	420
17:30	0	0	0	0	0	20	133	0	0	153	7	0	24	0	31	0	178	24	0	202	386
Total Volume	0	0	0	0	0	69	500	0	0	569	28	0	108	0	136	0	760	91	0	851	1556
% App Total	0.0%	0.0%	0.0%	0.0%		12.1%	87.9%	0.0%	0.0%		20.6%	0.0%	79.4%	0.0%		0.0%	89.3%	10.7%	0.0%		
PHF	.000	.000	.000	.000	.000	.821	.940	.000	.000	.930	.538	.000	.844	.000	.810	.000	.884	.948	.000	.894	.926

Coffee Rd & SR 108

Date: 11/16/2016
Day: Wednesday

Project #: 16-7834-001



SR 108

Coffee Rd

Southbound Approach

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

AM	NOON	PM
812	0	528
0	0	0
0	0	0
286	0	760
70	0	91
AM	NOON	PM

CONTROL

AM	NOON	PM
0	0	0
765	0	500
140	0	69
0	0	0
359	0	868
AM	NOON	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

AM	210	0	47	0	73	AM
NOON	0	0	0	0	0	NOON
PM	160	0	28	0	108	PM

Northbound Approach

Total Ins & Outs

			North Leg					
			0	0	AM			
			0	0	NOON			
			0	0	PM			
AM	NOON	PM				East Leg		
812	0	528				905	0	569
356	0	851				359	0	868
West Leg						AM	NOON	PM
			AM	210	120			
			NOON	0	0			
			PM	160	136			
			South Leg					

Total Volume Per Leg

			North Leg					
			0			AM		
			0			NOON		
			0			PM		
AM			NOON			PM		
1168			0			1379		
West Leg						East Leg		
						1264		
						0		
						1437		
						AM		
						NOON		
						PM		
			AM			330		
			NOON			0		
			PM			296		
						South Leg		

National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-002 Oakdale Rd & SR 108
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					SR 108 Westbound					Oakdale Rd Northbound					SR 108 Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	8	19	22	0	49	27	89	10	12	138	49	25	16	0	90	8	43	15	4	70	347	16
7:15	10	17	23	0	50	39	110	8	15	172	50	10	29	0	89	13	47	9	5	74	385	20
7:30	18	33	47	0	98	46	150	8	13	217	43	27	46	0	116	13	69	11	4	97	528	17
7:45	17	28	34	0	79	64	132	18	21	235	47	20	49	0	116	16	99	13	3	131	561	24
Total	53	97	126	0	276	176	481	44	61	762	189	82	140	0	411	50	258	48	16	372	1821	77
8:00	15	32	29	0	76	65	139	10	25	239	44	18	31	0	93	14	65	19	1	99	507	26
8:15	11	24	24	0	59	54	108	17	17	196	36	15	35	0	86	4	57	14	5	80	421	22
8:30	11	22	15	0	48	65	102	9	20	196	33	20	28	0	81	12	78	18	3	111	436	23
8:45	22	14	16	0	52	61	97	12	11	181	21	19	36	0	76	20	65	15	2	102	411	13
Total	59	92	84	0	235	245	446	48	73	812	134	72	130	0	336	50	265	66	11	392	1775	84
16:00	28	26	15	0	69	61	82	9	20	172	33	14	72	0	119	24	135	41	2	202	562	22
16:15	19	22	10	0	51	70	98	7	30	205	20	39	89	0	148	21	147	29	0	197	601	30
16:30	11	23	10	0	44	86	89	8	14	197	32	23	72	0	127	24	158	33	2	217	585	16
16:45	17	23	11	0	51	73	96	7	15	191	34	27	74	0	135	25	134	42	5	206	583	20
Total	75	94	46	0	215	290	365	31	79	765	119	103	307	0	529	94	574	145	9	822	2331	88
17:00	20	16	14	0	50	77	100	11	12	200	36	30	70	0	136	21	140	44	3	208	594	15
17:15	15	32	15	0	62	73	102	6	19	200	29	39	70	0	138	28	174	50	6	258	658	25
17:30	16	22	21	0	59	73	106	7	10	196	31	30	67	0	128	23	149	35	3	210	593	13
17:45	17	26	10	0	53	70	69	12	19	170	25	29	71	0	125	19	123	46	7	195	543	26
Total	68	96	60	0	224	293	377	36	60	766	121	128	278	0	527	91	586	175	19	871	2388	79
Grand Total	255	379	316	0	950	1004	1669	159	273	3105	563	385	855	0	1803	285	1683	434	55	2457	8315	328
Apprch %	26.8%	39.9%	33.3%	0.0%		32.3%	53.8%	5.1%	8.8%		31.2%	21.4%	47.4%	0.0%		11.6%	68.5%	17.7%	2.2%			
Total %	3.1%	4.6%	3.8%	0.0%	11.4%	12.1%	20.1%	1.9%	3.3%	37.3%	6.8%	4.6%	10.3%	0.0%	21.7%	3.4%	20.2%	5.2%	0.7%	29.5%	100.0%	

AM PEAK HOUR	Oakdale Rd Southbound					SR 108 Westbound					Oakdale Rd Northbound					SR 108 Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	18	33	47	0	98	46	150	8	13	217	43	27	46	0	116	13	69	11	4	97	528
7:45	17	28	34	0	79	64	132	18	21	235	47	20	49	0	116	16	99	13	3	131	561
8:00	15	32	29	0	76	65	139	10	25	239	44	18	31	0	93	14	65	19	1	99	507
8:15	11	24	24	0	59	54	108	17	17	196	36	15	35	0	86	4	57	14	5	80	421
Total Volume	61	117	134	0	312	229	529	53	76	887	170	80	161	0	411	47	290	57	13	407	2017
% App Total	19.6%	37.5%	42.9%	0.0%		25.8%	59.6%	6.0%	8.6%		41.4%	19.5%	39.2%	0.0%		11.5%	71.3%	14.0%	3.2%		
PHF	.847	.886	.713	.000	.796	.881	.882	.736	.760	.928	.904	.741	.821	.000	.886	.734	.732	.750	.650	.777	.899

PM PEAK HOUR	Oakdale Rd Southbound					SR 108 Westbound					Oakdale Rd Northbound					SR 108 Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	17	23	11	0	51	73	96	7	15	191	34	27	74	0	135	25	134	42	5	206	583
17:00	20	16	14	0	50	77	100	11	12	200	36	30	70	0	136	21	140	44	3	208	594
17:15	15	32	15	0	62	73	102	6	19	200	29	39	70	0	138	28	174	50	6	258	658
17:30	16	22	21	0	59	73	106	7	10	196	31	30	67	0	128	23	149	35	3	210	593
Total Volume	68	93	61	0	222	296	404	31	56	787	130	126	281	0	537	97	597	171	17	882	2428
% App Total	30.6%	41.9%	27.5%	0.0%		37.6%	51.3%	3.9%	7.1%		24.2%	23.5%	52.3%	0.0%		11.0%	67.7%	19.4%	1.9%		
PHF	.850	.727	.726	.000	.895	.961	.953	.705	.737	.984	.903	.808	.949	.000	.973	.866	.858	.855	.708	.855	.922

Oakdale Rd & SR 108

Date: 11/16/2016
Day: Wednesday

Project #: 16-7834-002



SR 108

Oakdale Rd

Peak Hour Summary
Southbound Approach

AM	134	117	61	0	180	AM
NOON	0	0	0	0	0	NOON
PM	61	93	68	0	254	PM

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

Eastbound Approach

AM	NOON	PM
846	0	612
13	0	17
47	0	97
290	0	597
57	0	171
AM	NOON	PM

CONTROL

Westbound Approach

AM	NOON	PM
53	0	31
529	0	404
229	0	296
76	0	56
588	0	1002
AM	NOON	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

AM	403	0	170	80	161	AM
NOON	0	0	0	0	0	NOON
PM	560	0	130	126	281	PM

Northbound Approach

Total Ins & Outs

North Leg					
AM	312	180	AM		
NOON	0	0	NOON		
PM	222	254	PM		
AM	846	0	612	East Leg	
NOON	0	0	887	0	787
PM	407	0	588	0	1002
West Leg			AM	NOON	PM
AM	403	411			
NOON	0	0			
PM	560	537	South Leg		

Total Volume Per Leg

North Leg					
AM	492	AM			
NOON	0	NOON			
PM	476	PM			
AM	1253	0	1494	East Leg	
NOON	0	0	887	0	787
PM	407	0	588	0	1002
West Leg			AM	NOON	PM
AM	814				
NOON	0				
PM	1097	South Leg			

National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-003 Coffee Rd & Morrill Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Coffee Rd Southbound					Morrill Rd Westbound					Coffee Rd Northbound					Morrill Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	29	0	0	30	13	0	4	0	17	0	28	1	0	29	0	0	0	0	0	76	0
7:15	1	40	0	0	41	27	0	3	0	30	0	25	6	0	31	0	0	0	0	0	102	0
7:30	1	51	0	0	52	26	0	2	0	28	0	33	5	0	38	0	0	0	0	0	118	0
7:45	1	58	0	0	59	27	0	0	0	27	0	31	6	0	37	0	0	0	0	0	123	0
Total	4	178	0	0	182	93	0	9	0	102	0	117	18	0	135	0	0	0	0	0	419	0
8:00	0	59	0	0	59	13	0	0	0	13	0	29	6	0	35	0	0	0	0	0	107	0
8:15	1	52	0	0	53	13	0	1	0	14	0	23	6	0	29	0	0	0	0	0	96	0
8:30	1	29	0	0	30	17	0	1	0	18	0	17	6	0	23	0	0	0	0	0	71	0
8:45	2	48	0	0	50	16	0	3	0	19	0	26	5	0	31	0	0	0	0	0	100	0
Total	4	188	0	0	192	59	0	5	0	64	0	95	23	0	118	0	0	0	0	0	374	0
16:00	4	38	0	0	42	13	0	4	0	17	0	36	30	0	66	0	0	0	0	0	125	0
16:15	2	33	0	0	35	9	0	1	0	10	0	34	18	0	52	0	0	0	0	0	97	0
16:30	3	31	0	0	34	10	0	3	0	13	0	41	16	0	57	0	0	0	0	0	104	0
16:45	3	35	0	0	38	7	0	1	0	8	0	38	25	0	63	0	0	0	0	0	109	0
Total	12	137	0	0	149	39	0	9	0	48	0	149	89	0	238	0	0	0	0	0	435	0
17:00	3	38	0	0	41	18	0	3	0	21	0	28	28	0	56	0	0	0	0	0	118	0
17:15	7	21	0	0	28	10	0	1	0	11	0	36	23	0	59	0	0	0	0	0	98	0
17:30	10	36	0	0	46	16	0	4	0	20	0	28	22	0	50	0	0	0	0	0	116	0
17:45	3	28	0	0	31	21	0	2	0	23	0	36	23	0	59	0	0	0	0	0	113	0
Total	23	123	0	0	146	65	0	10	0	75	0	128	96	0	224	0	0	0	0	0	445	0
Grand Total	43	626	0	0	669	256	0	33	0	289	0	489	226	0	715	0	0	0	0	0	1673	0
Apprch %	6.4%	93.6%	0.0%	0.0%		88.6%	0.0%	11.4%	0.0%		0.0%	68.4%	31.6%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	2.6%	37.4%	0.0%	0.0%	40.0%	15.3%	0.0%	2.0%	0.0%	17.3%	0.0%	29.2%	13.5%	0.0%	42.7%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

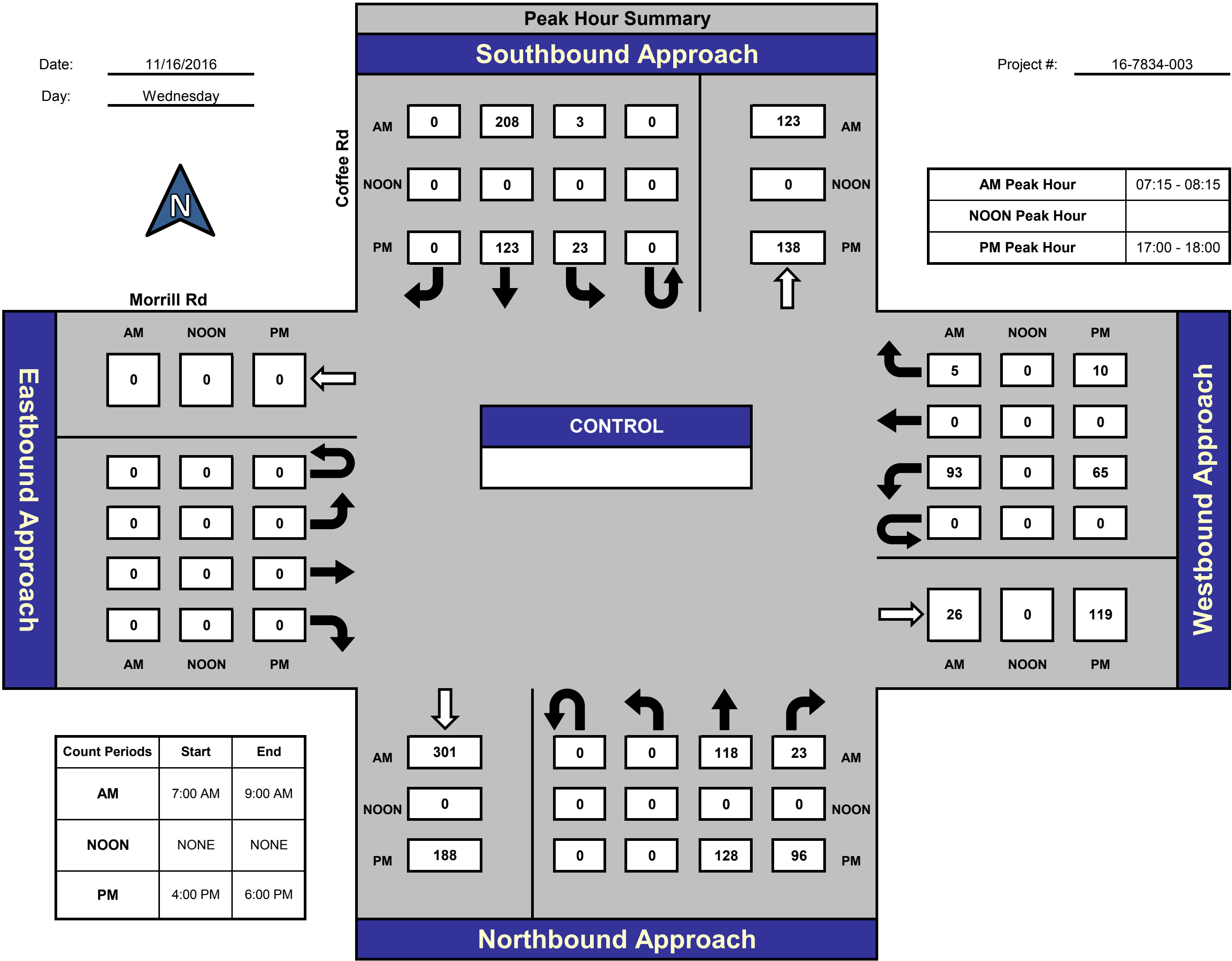
AM PEAK HOUR	Coffee Rd Southbound					Morrill Rd Westbound					Coffee Rd Northbound					Morrill Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	1	40	0	0	41	27	0	3	0	30	0	25	6	0	31	0	0	0	0	0	102
7:30	1	51	0	0	52	26	0	2	0	28	0	33	5	0	38	0	0	0	0	0	118
7:45	1	58	0	0	59	27	0	0	0	27	0	31	6	0	37	0	0	0	0	0	123
8:00	0	59	0	0	59	13	0	0	0	13	0	29	6	0	35	0	0	0	0	0	107
Total Volume	3	208	0	0	211	93	0	5	0	98	0	118	23	0	141	0	0	0	0	0	450
% App Total	1.4%	98.6%	0.0%	0.0%		94.9%	0.0%	5.1%	0.0%		0.0%	83.7%	16.3%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.750	.881	.000	.000	.894	.861	.000	.417	.000	.817	.000	.894	.958	.000	.928	.000	.000	.000	.000	.000	.915

PM PEAK HOUR	Coffee Rd Southbound					Morrill Rd Westbound					Coffee Rd Northbound					Morrill Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	3	38	0	0	41	18	0	3	0	21	0	28	28	0	56	0	0	0	0	0	118
17:15	7	21	0	0	28	10	0	1	0	11	0	36	23	0	59	0	0	0	0	0	98
17:30	10	36	0	0	46	16	0	4	0	20	0	28	22	0	50	0	0	0	0	0	116
17:45	3	28	0	0	31	21	0	2	0	23	0	36	23	0	59	0	0	0	0	0	113
Total Volume	23	123	0	0	146	65	0	10	0	75	0	128	96	0	224	0	0	0	0	0	445
% App Total	15.8%	84.2%	0.0%	0.0%		86.7%	0.0%	13.3%	0.0%		0.0%	57.1%	42.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.575	.809	.000	.000	.793	.774	.000	.625	.000	.815	.000	.889	.857	.000	.949	.000	.000	.000	.000	.000	.943

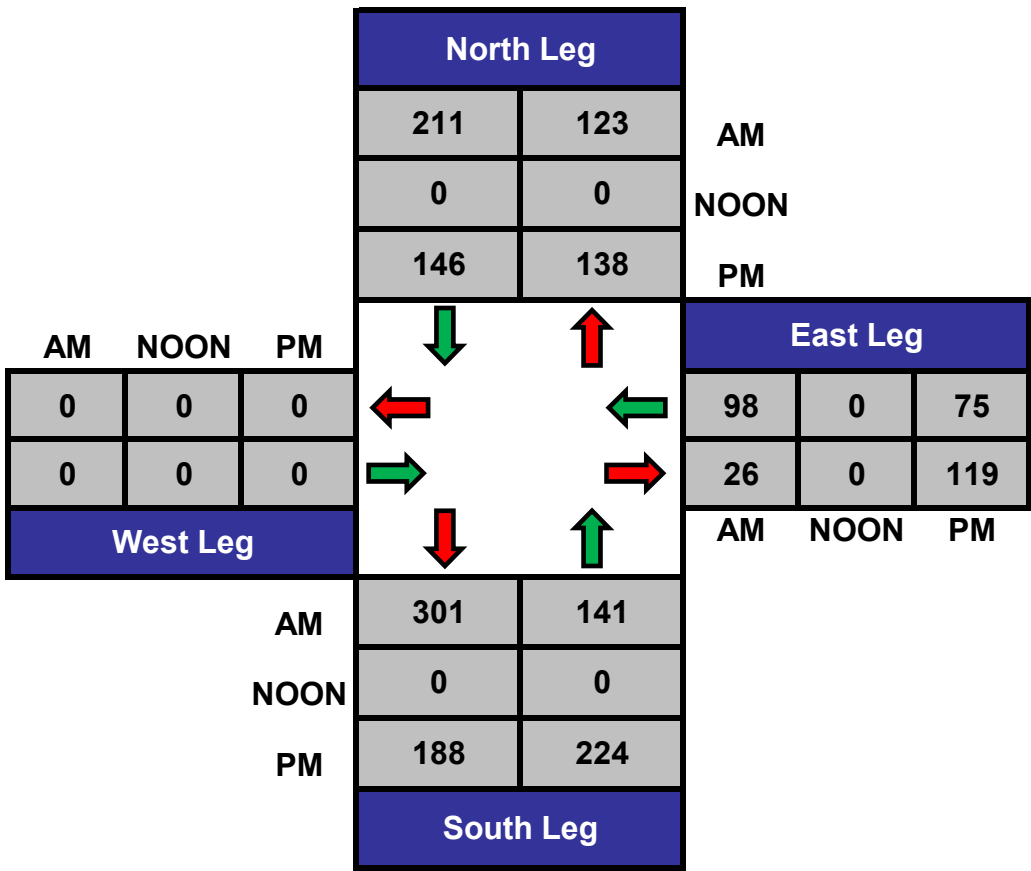
Coffee Rd & Morrill Rd

Date: 11/16/2016
Day: Wednesday

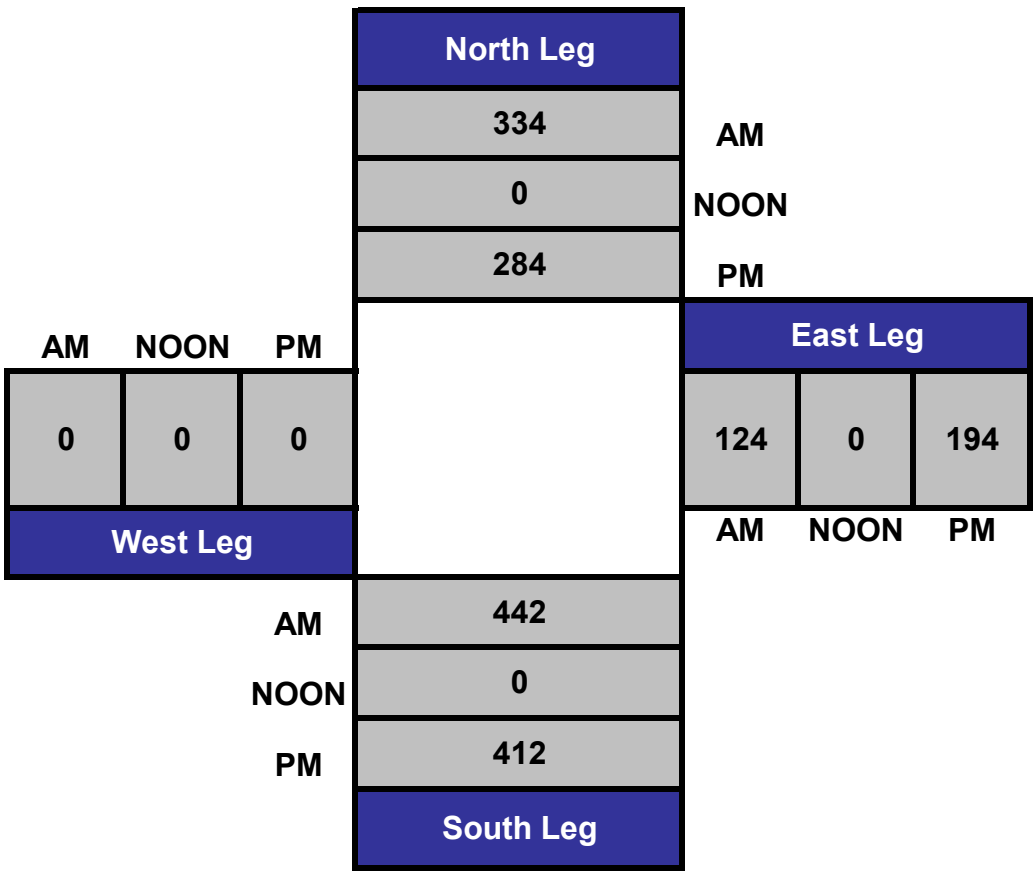
Project #: 16-7834-003



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-004 Oakdale Rd & Morrill Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					Morrill Rd Westbound					Oakdale Rd Northbound					Morrill Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	10	73	9	0	92	16	14	21	0	51	2	55	4	0	61	0	3	1	0	4	208	0
7:15	3	89	5	0	97	14	16	20	0	50	2	66	5	0	73	6	0	1	0	7	227	0
7:30	5	115	12	1	133	13	17	24	0	54	3	92	8	0	103	3	2	2	0	7	297	1
7:45	13	94	15	1	123	7	9	21	0	37	0	85	4	0	89	3	5	0	0	8	257	1
Total	31	371	41	2	445	50	56	86	0	192	7	298	21	0	326	12	10	4	0	26	989	2
8:00	13	103	5	0	121	6	8	17	0	31	2	79	7	0	88	2	4	0	0	6	246	0
8:15	13	86	9	0	108	6	5	17	0	28	0	79	7	0	86	1	0	2	0	3	225	0
8:30	8	68	5	0	81	13	12	18	0	43	2	76	3	0	81	3	3	4	0	10	215	0
8:45	6	97	11	1	115	12	10	8	0	30	2	75	5	0	82	1	4	2	0	7	234	1
Total	40	354	30	1	425	37	35	60	0	132	6	309	22	0	337	7	11	8	0	26	920	1
16:00	22	117	8	0	147	12	8	16	0	36	1	139	20	1	161	12	23	1	0	36	380	1
16:15	24	89	4	0	117	11	7	25	0	43	1	145	23	0	169	2	19	2	0	23	352	0
16:30	26	114	2	0	142	15	8	20	0	43	1	158	22	0	181	4	8	3	0	15	381	0
16:45	27	101	2	0	130	12	8	21	0	41	1	133	23	0	157	11	18	2	0	31	359	0
Total	99	421	16	0	536	50	31	82	0	163	4	575	88	1	668	29	68	8	0	105	1472	1
17:00	23	116	12	0	151	14	12	24	0	50	0	129	27	0	156	9	18	0	0	27	384	0
17:15	29	111	2	0	142	10	7	22	0	39	1	130	28	1	160	6	25	1	0	32	373	1
17:30	24	91	5	0	120	14	13	28	0	55	1	136	22	1	160	7	17	6	0	30	365	1
17:45	27	113	7	1	148	11	13	22	0	46	3	144	16	0	163	10	21	4	0	35	392	1
Total	103	431	26	1	561	49	45	96	0	190	5	539	93	2	639	32	81	11	0	124	1514	3
Grand Total	273	1577	113	4	1967	186	167	324	0	677	22	1721	224	3	1970	80	170	31	0	281	4895	7
Apprch %	13.9%	80.2%	5.7%	0.2%		27.5%	24.7%	47.9%	0.0%		1.1%	87.4%	11.4%	0.2%		28.5%	60.5%	11.0%	0.0%			
Total %	5.6%	32.2%	2.3%	0.1%	40.2%	3.8%	3.4%	6.6%	0.0%	13.8%	0.4%	35.2%	4.6%	0.1%	40.2%	1.6%	3.5%	0.6%	0.0%	5.7%	100.0%	

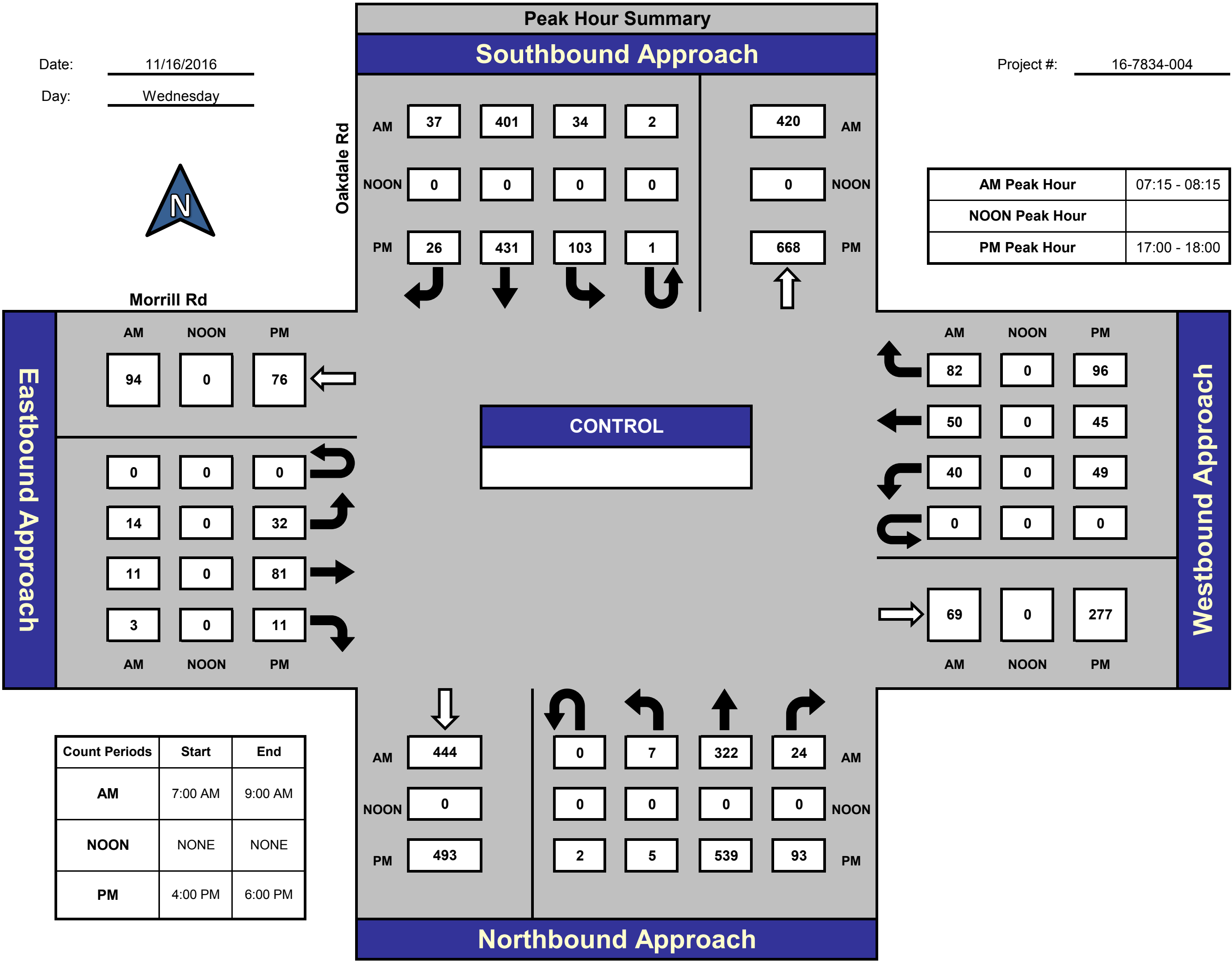
AM PEAK HOUR	Oakdale Rd Southbound					Morrill Rd Westbound					Oakdale Rd Northbound					Morrill Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	3	89	5	0	97	14	16	20	0	50	2	66	5	0	73	6	0	1	0	7	227
7:30	5	115	12	1	133	13	17	24	0	54	3	92	8	0	103	3	2	2	0	7	297
7:45	13	94	15	1	123	7	9	21	0	37	0	85	4	0	89	3	5	0	0	8	257
8:00	13	103	5	0	121	6	8	17	0	31	2	79	7	0	88	2	4	0	0	6	246
Total Volume	34	401	37	2	474	40	50	82	0	172	7	322	24	0	353	14	11	3	0	28	1027
% App Total	7.2%	84.6%	7.8%	0.4%		23.3%	29.1%	47.7%	0.0%		2.0%	91.2%	6.8%	0.0%		50.0%	39.3%	10.7%	0.0%		
PHF	.654	.872	.617	.500	.891	.714	.735	.854	.000	.796	.583	.875	.750	.000	.857	.583	.550	.375	.000	.875	.864

PM PEAK HOUR	Oakdale Rd Southbound					Morrill Rd Westbound					Oakdale Rd Northbound					Morrill Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	23	116	12	0	151	14	12	24	0	50	0	129	27	0	156	9	18	0	0	27	384
17:15	29	111	2	0	142	10	7	22	0	39	1	130	28	1	160	6	25	1	0	32	373
17:30	24	91	5	0	120	14	13	28	0	55	1	136	22	1	160	7	17	6	0	30	365
17:45	27	113	7	1	148	11	13	22	0	46	3	144	16	0	163	10	21	4	0	35	392
Total Volume	103	431	26	1	561	49	45	96	0	190	5	539	93	2	639	32	81	11	0	124	1514
% App Total	18.4%	76.8%	4.6%	0.2%		25.8%	23.7%	50.5%	0.0%		0.8%	84.4%	14.6%	0.3%		25.8%	65.3%	8.9%	0.0%		
PHF	.888	.929	.542	.250	.929	.875	.865	.857	.000	.864	.417	.936	.830	.500	.980	.800	.810	.458	.000	.886	.966

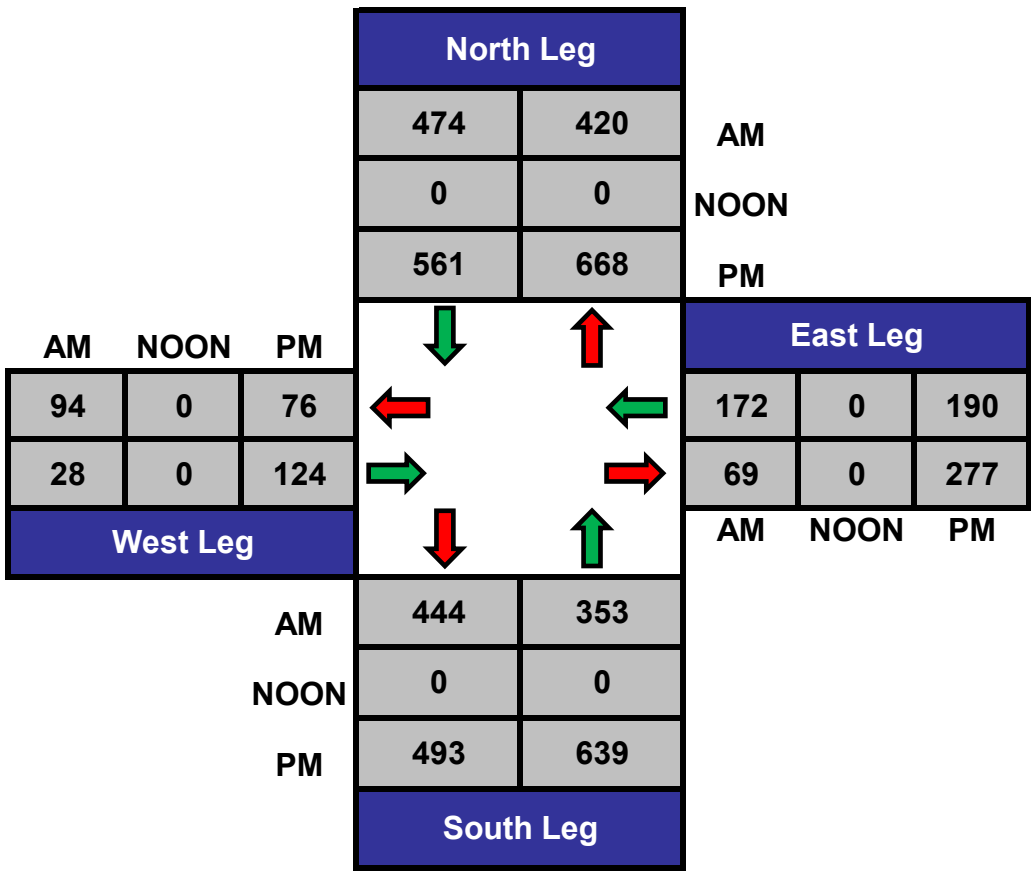
Oakdale Rd & Morrill Rd

Date: 11/16/2016
Day: Wednesday

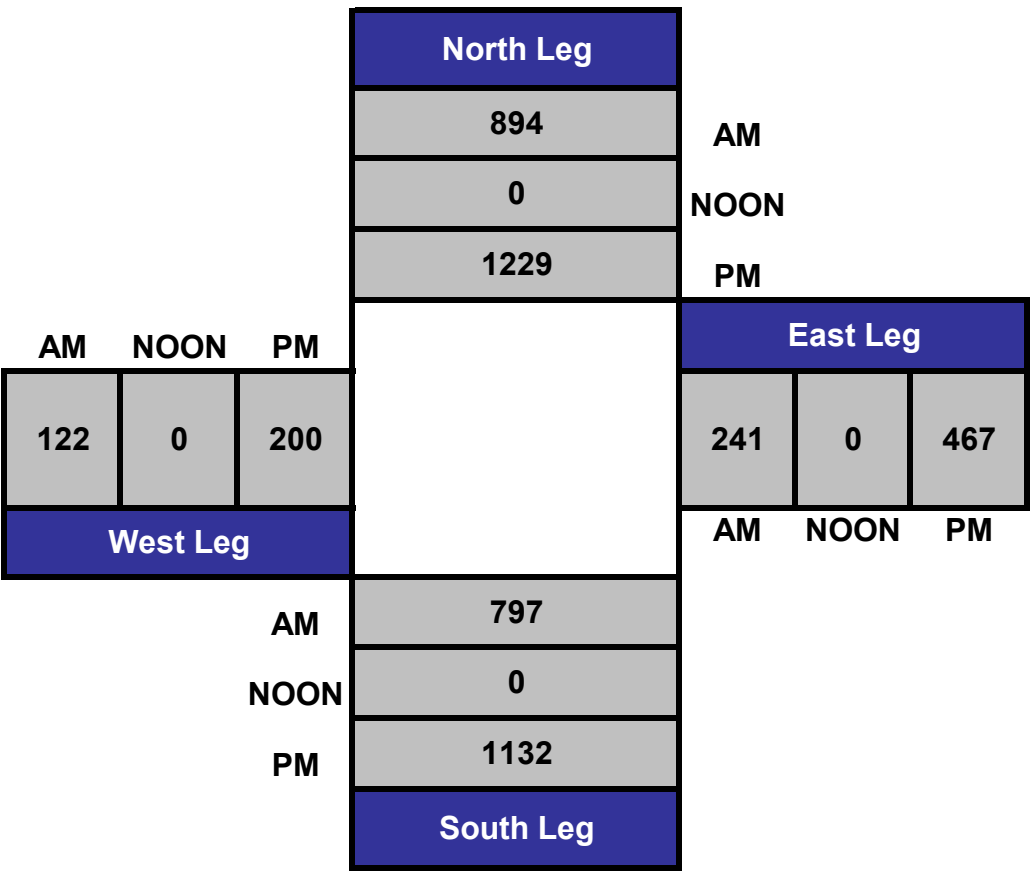
Project #: 16-7834-004



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-005 Coffee Rd & Crawford Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Coffee Rd Southbound					Crawford Rd Westbound					Coffee Rd Northbound					Crawford Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	39	0	0	40	8	0	2	0	10	0	27	4	0	31	0	0	0	0	0	81	0
7:15	0	66	0	0	66	3	0	0	0	3	0	33	0	0	33	0	0	0	0	0	102	0
7:30	2	75	0	0	77	13	0	1	0	14	0	38	1	0	39	0	0	0	0	0	130	0
7:45	1	82	0	0	83	5	0	0	0	5	0	39	0	0	39	0	0	0	0	0	127	0
Total	4	262	0	0	266	29	0	3	0	32	0	137	5	0	142	0	0	0	0	0	440	0
8:00	0	74	0	0	74	4	0	0	0	4	0	29	2	0	31	0	0	0	0	0	109	0
8:15	1	61	0	0	62	9	0	1	0	10	0	27	1	0	28	0	0	0	0	0	100	0
8:30	2	41	0	0	43	5	0	1	0	6	0	21	1	0	22	0	0	0	0	0	71	0
8:45	0	70	0	0	70	6	0	0	0	6	0	30	1	0	31	0	0	0	0	0	107	0
Total	3	246	0	0	249	24	0	2	0	26	0	107	5	0	112	0	0	0	0	0	387	0
16:00	1	52	0	0	53	5	0	2	0	7	0	65	2	0	67	0	0	0	0	0	127	0
16:15	1	46	0	0	47	4	0	0	0	4	0	59	6	0	65	0	0	0	0	0	116	0
16:30	0	39	0	0	39	2	0	0	0	2	0	53	4	0	57	0	0	0	0	0	98	0
16:45	3	43	0	0	46	0	0	1	0	1	0	66	2	0	68	0	0	0	0	0	115	0
Total	5	180	0	0	185	11	0	3	0	14	0	243	14	0	257	0	0	0	0	0	456	0
17:00	2	58	0	0	60	9	0	1	0	10	0	53	5	0	58	0	0	0	0	0	128	0
17:15	1	33	0	0	34	2	0	1	0	3	0	56	4	0	60	0	0	0	0	0	97	0
17:30	1	50	0	0	51	1	0	0	0	1	0	53	3	0	56	0	0	0	0	0	108	0
17:45	0	49	0	0	49	1	0	1	0	2	0	55	2	0	57	0	0	0	0	0	108	0
Total	4	190	0	0	194	13	0	3	0	16	0	217	14	0	231	0	0	0	0	0	441	0
Grand Total	16	878	0	0	894	77	0	11	0	88	0	704	38	0	742	0	0	0	0	0	1724	0
Apprch %	1.8%	98.2%	0.0%	0.0%		87.5%	0.0%	12.5%	0.0%		0.0%	94.9%	5.1%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.9%	50.9%	0.0%	0.0%	51.9%	4.5%	0.0%	0.6%	0.0%	5.1%	0.0%	40.8%	2.2%	0.0%	43.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

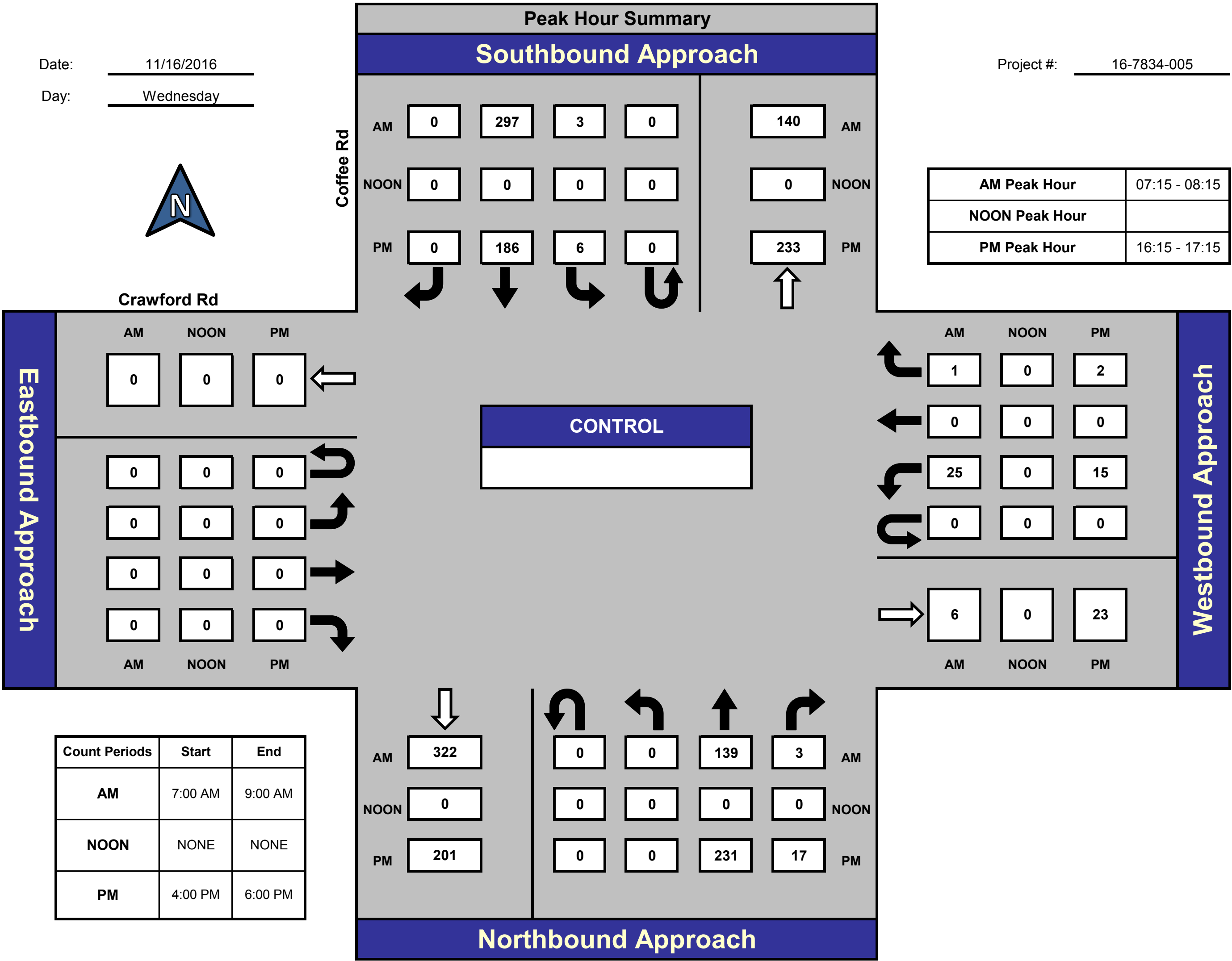
AM PEAK HOUR	Coffee Rd Southbound					Crawford Rd Westbound					Coffee Rd Northbound					Crawford Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	66	0	0	66	3	0	0	0	3	0	33	0	0	33	0	0	0	0	0	102
7:30	2	75	0	0	77	13	0	1	0	14	0	38	1	0	39	0	0	0	0	0	130
7:45	1	82	0	0	83	5	0	0	0	5	0	39	0	0	39	0	0	0	0	0	127
8:00	0	74	0	0	74	4	0	0	0	4	0	29	2	0	31	0	0	0	0	0	109
Total Volume	3	297	0	0	300	25	0	1	0	26	0	139	3	0	142	0	0	0	0	0	468
% App Total	1.0%	99.0%	0.0%	0.0%		96.2%	0.0%	3.8%	0.0%		0.0%	97.9%	2.1%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.375	.905	.000	.000	.904	.481	.000	.250	.000	.464	.000	.891	.375	.000	.910	.000	.000	.000	.000	.000	.900

PM PEAK HOUR	Coffee Rd Southbound					Crawford Rd Westbound					Coffee Rd Northbound					Crawford Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	1	46	0	0	47	4	0	0	0	4	0	59	6	0	65	0	0	0	0	0	116
16:30	0	39	0	0	39	2	0	0	0	2	0	53	4	0	57	0	0	0	0	0	98
16:45	3	43	0	0	46	0	0	1	0	1	0	66	2	0	68	0	0	0	0	0	115
17:00	2	58	0	0	60	9	0	1	0	10	0	53	5	0	58	0	0	0	0	0	128
Total Volume	6	186	0	0	192	15	0	2	0	17	0	231	17	0	248	0	0	0	0	0	457
% App Total	3.1%	96.9%	0.0%	0.0%		88.2%	0.0%	11.8%	0.0%		0.0%	93.1%	6.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.500	.802	.000	.000	.800	.417	.000	.500	.000	.425	.000	.875	.708	.000	.912	.000	.000	.000	.000	.000	.893

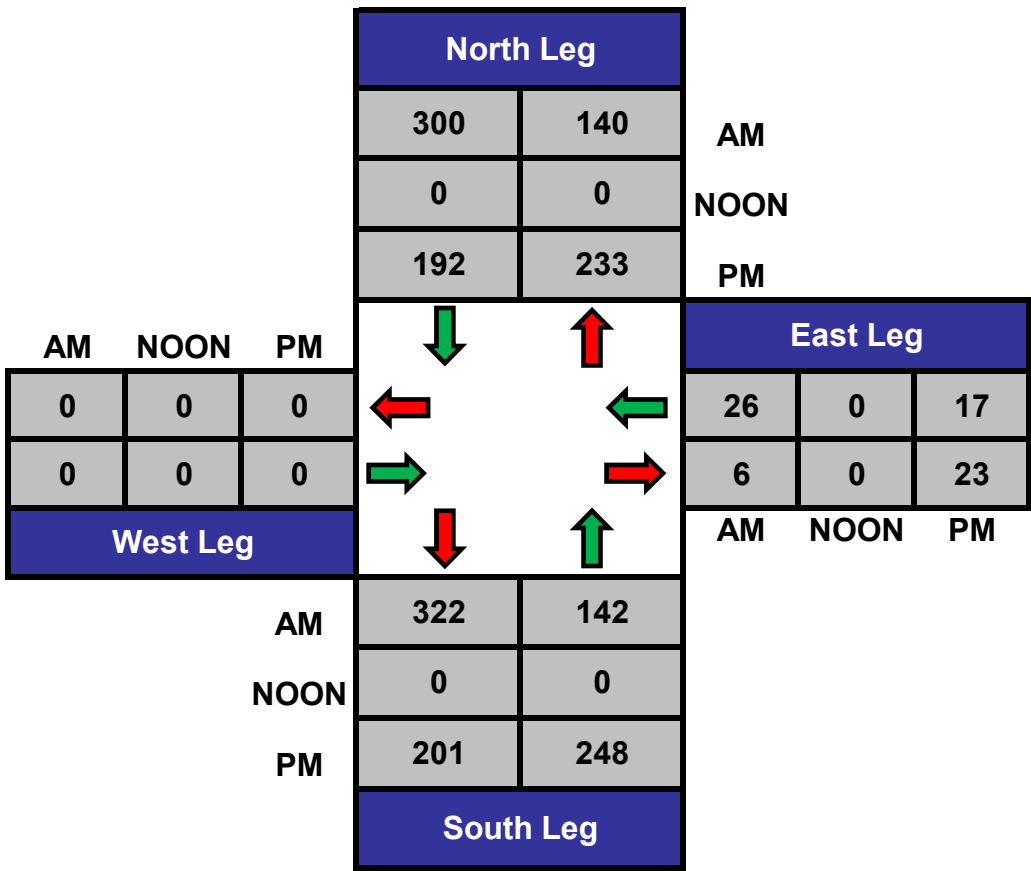
Coffee Rd & Crawford Rd

Date: 11/16/2016
Day: Wednesday

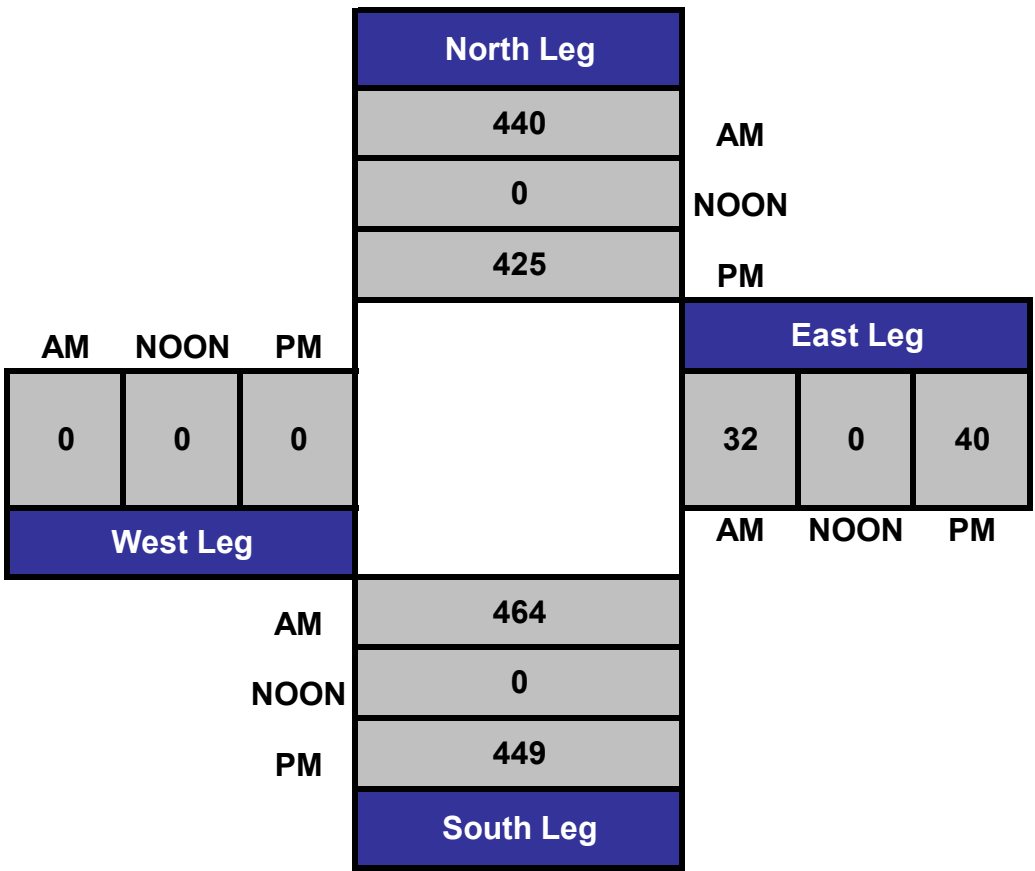
Project #: 16-7834-005



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-006 Oakdale Rd & Crawford Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					Crawford Rd Westbound					Oakdale Rd Northbound					Crawford Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	2	81	1	0	84	62	0	14	0	76	3	48	20	2	73	0	0	6	0	6	239	2
7:15	6	100	1	0	107	81	0	10	0	91	2	65	12	0	79	0	0	7	0	7	284	0
7:30	9	119	3	0	131	121	2	13	0	136	3	86	31	0	120	1	0	5	0	6	393	0
7:45	18	79	2	0	99	98	0	4	0	102	5	73	53	0	131	1	0	2	0	3	335	0
Total	35	379	7	0	421	362	2	41	0	405	13	272	116	2	403	2	0	20	0	22	1251	2
8:00	16	81	2	0	99	87	1	11	0	99	3	88	59	0	150	1	0	2	0	3	351	0
8:15	17	82	3	0	102	70	1	20	0	91	4	65	39	0	108	1	0	0	0	1	302	0
8:30	11	65	2	0	78	73	1	6	0	80	0	67	14	0	81	0	0	1	0	1	240	0
8:45	16	97	0	0	113	47	0	13	0	60	3	68	30	0	101	1	0	3	0	4	278	0
Total	60	325	7	0	392	277	3	50	0	330	10	288	142	0	440	3	0	6	0	9	1171	0
16:00	20	113	2	0	135	39	0	10	0	49	5	156	52	0	213	1	0	2	0	3	400	0
16:15	13	93	1	0	107	33	0	12	0	45	2	158	58	0	218	6	0	3	0	9	379	0
16:30	24	105	2	0	131	55	0	14	0	69	1	178	70	1	250	7	0	2	0	9	459	1
16:45	17	92	0	0	109	43	0	13	0	56	3	136	69	1	209	2	0	3	0	5	379	1
Total	74	403	5	0	482	170	0	49	0	219	11	628	249	2	890	16	0	10	0	26	1617	2
17:00	21	107	4	0	132	40	0	12	0	52	2	164	64	0	230	4	0	2	0	6	420	0
17:15	23	97	2	0	122	49	0	9	0	58	4	167	84	0	255	3	1	1	0	5	440	0
17:30	27	81	0	0	108	55	0	13	0	68	1	148	56	0	205	3	0	3	0	6	387	0
17:45	18	110	1	0	129	35	0	13	0	48	4	157	70	0	231	2	0	2	0	4	412	0
Total	89	395	7	0	491	179	0	47	0	226	11	636	274	0	921	12	1	8	0	21	1659	0
Grand Total	258	1502	26	0	1786	988	5	187	0	1180	45	1824	781	4	2654	33	1	44	0	78	5698	4
Apprch %	14.4%	84.1%	1.5%	0.0%		83.7%	0.4%	15.8%	0.0%		1.7%	68.7%	29.4%	0.2%		42.3%	1.3%	56.4%	0.0%			
Total %	4.5%	26.4%	0.5%	0.0%	31.3%	17.3%	0.1%	3.3%	0.0%	20.7%	0.8%	32.0%	13.7%	0.1%	46.6%	0.6%	0.0%	0.8%	0.0%	1.4%	100.0%	

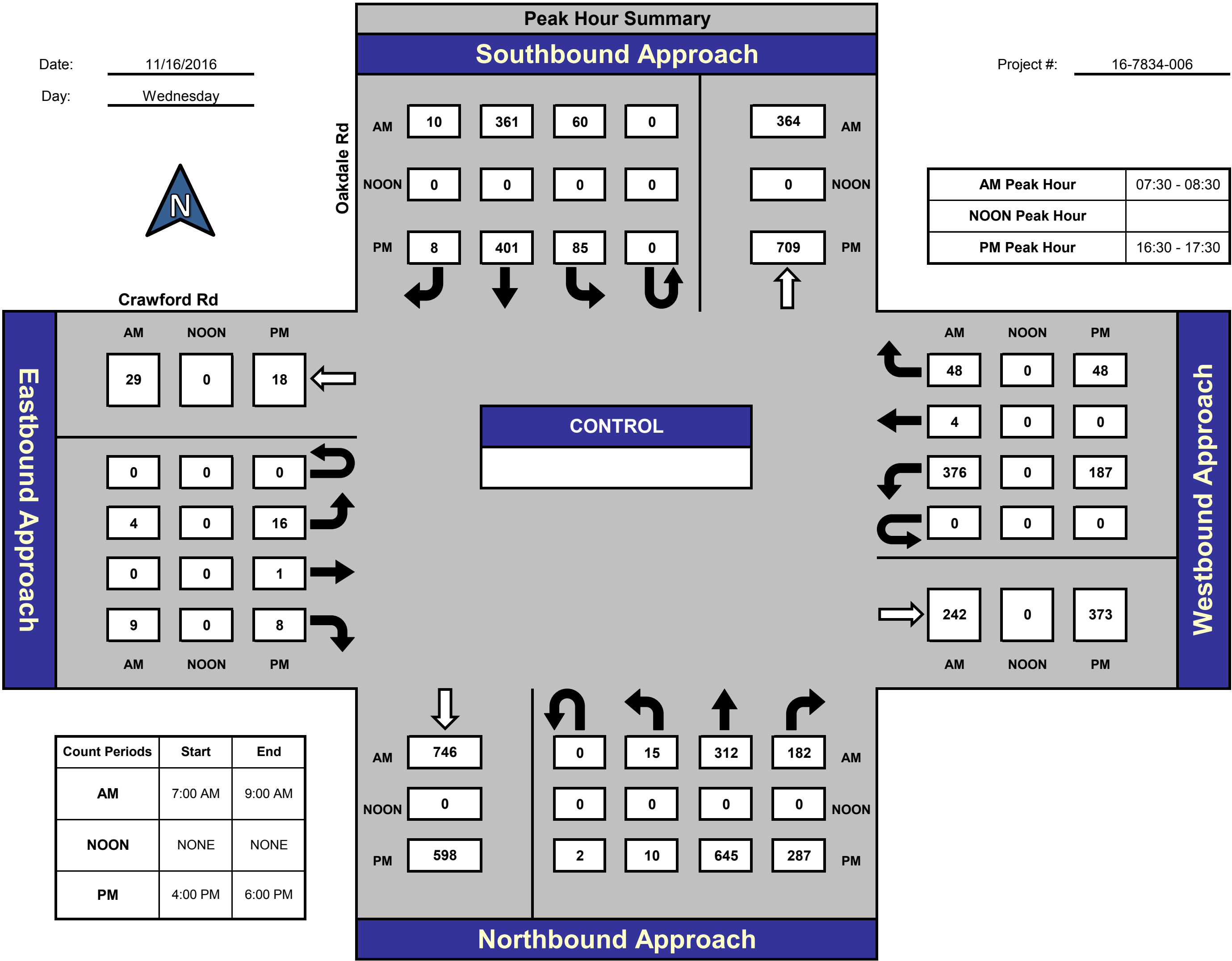
AM PEAK HOUR	Oakdale Rd Southbound					Crawford Rd Westbound					Oakdale Rd Northbound					Crawford Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	9	119	3	0	131	121	2	13	0	136	3	86	31	0	120	1	0	5	0	6	393
7:45	18	79	2	0	99	98	0	4	0	102	5	73	53	0	131	1	0	2	0	3	335
8:00	16	81	2	0	99	87	1	11	0	99	3	88	59	0	150	1	0	2	0	3	351
8:15	17	82	3	0	102	70	1	20	0	91	4	65	39	0	108	1	0	0	0	1	302
Total Volume	60	361	10	0	431	376	4	48	0	428	15	312	182	0	509	4	0	9	0	13	1381
% App Total	13.9%	83.8%	2.3%	0.0%		87.9%	0.9%	11.2%	0.0%		2.9%	61.3%	35.8%	0.0%		30.8%	0.0%	69.2%	0.0%		
PHF	.833	.758	.833	.000	.823	.777	.500	.600	.000	.787	.750	.886	.771	.000	.848	1.000	.000	.450	.000	.542	.878

PM PEAK HOUR	Oakdale Rd Southbound					Crawford Rd Westbound					Oakdale Rd Northbound					Crawford Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	24	105	2	0	131	55	0	14	0	69	1	178	70	1	250	7	0	2	0	9	459
16:45	17	92	0	0	109	43	0	13	0	56	3	136	69	1	209	2	0	3	0	5	379
17:00	21	107	4	0	132	40	0	12	0	52	2	164	64	0	230	4	0	2	0	6	420
17:15	23	97	2	0	122	49	0	9	0	58	4	167	84	0	255	3	1	1	0	5	440
Total Volume	85	401	8	0	494	187	0	48	0	235	10	645	287	2	944	16	1	8	0	25	1698
% App Total	17.2%	81.2%	1.6%	0.0%		79.6%	0.0%	20.4%	0.0%		1.1%	68.3%	30.4%	0.2%		64.0%	4.0%	32.0%	0.0%		
PHF	.885	.937	.500	.000	.936	.850	.000	.857	.000	.851	.625	.906	.854	.500	.925	.571	.250	.667	.000	.694	.925

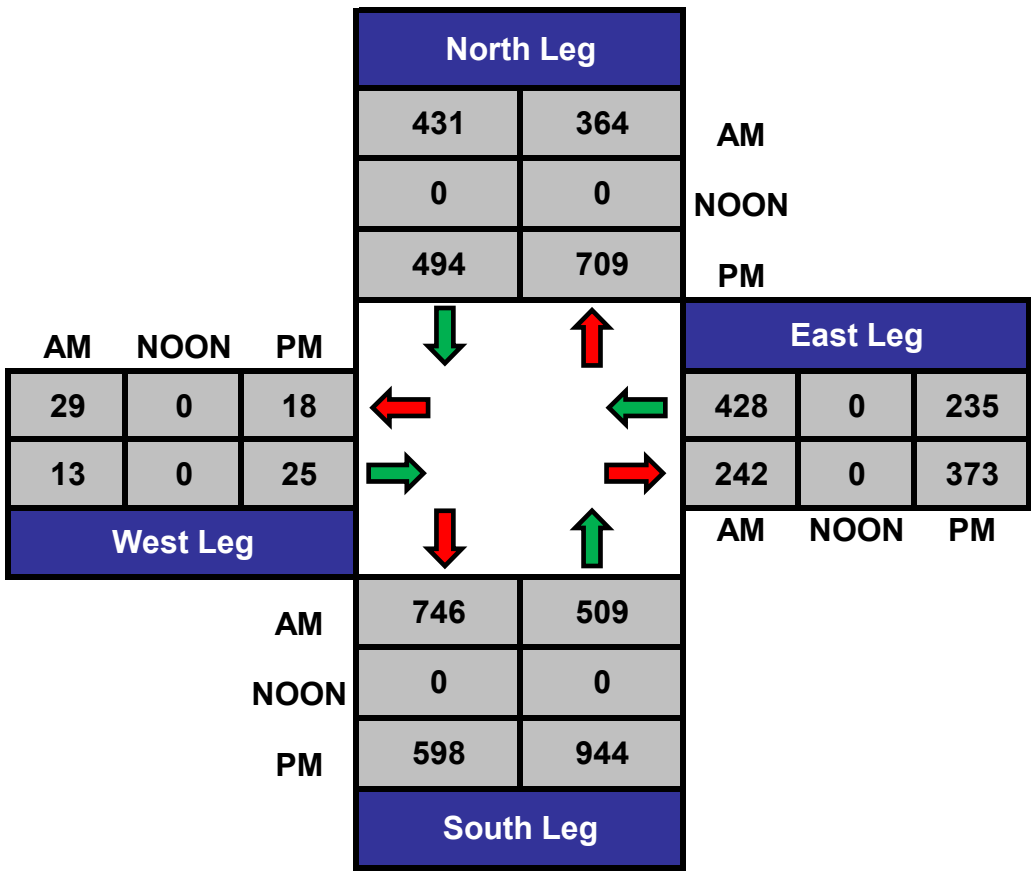
Oakdale Rd & Crawford Rd

Date: 11/16/2016
Day: Wednesday

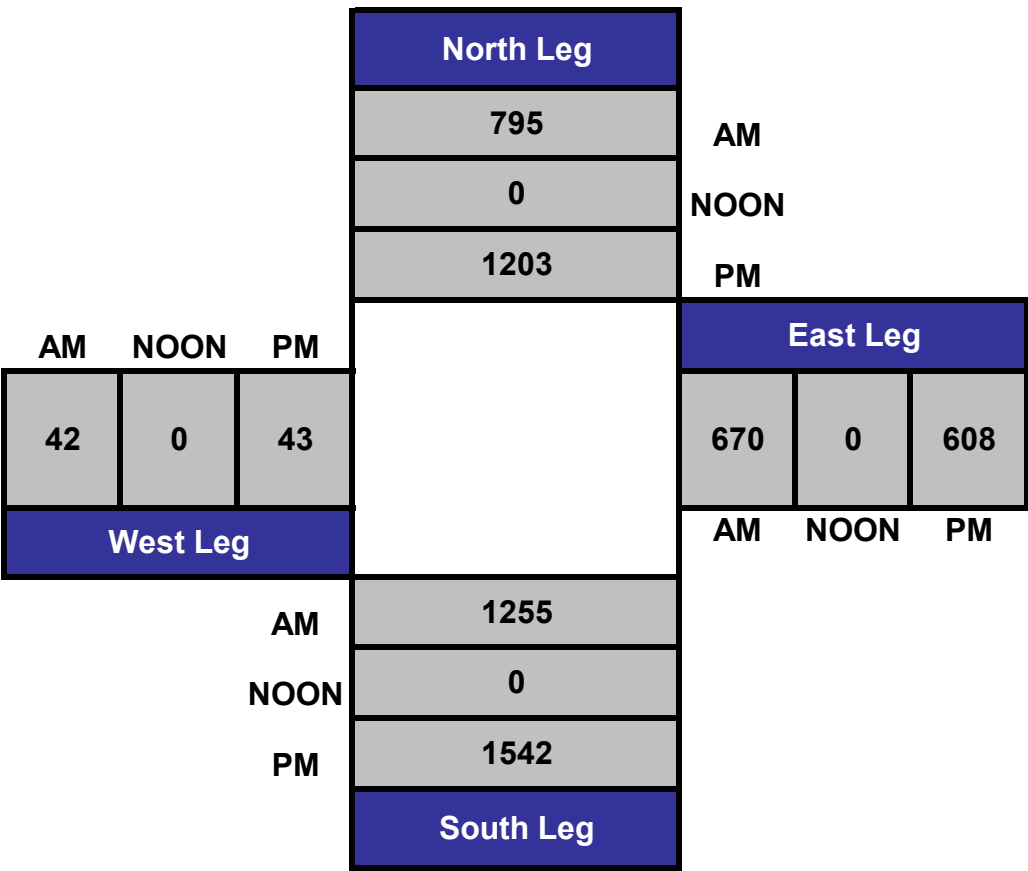
Project #: 16-7834-006



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-007 McHenry Ave & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	McHenry Ave Southbound					Claribel Rd Westbound					McHenry Ave Northbound					Claribel Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	15	85	10	0	110	43	146	22	1	212	19	51	16	0	86	22	66	26	0	114	522	1
7:15	11	117	12	0	140	42	160	19	1	222	29	51	11	0	91	17	62	26	3	108	561	4
7:30	11	190	24	0	225	58	182	14	0	254	34	50	14	0	98	30	66	22	6	124	701	6
7:45	10	163	16	0	189	87	154	16	1	258	20	69	19	0	108	26	100	33	5	164	719	6
Total	47	555	62	0	664	230	642	71	3	946	102	221	60	0	383	95	294	107	14	510	2503	17
8:00	18	140	20	1	179	67	173	25	0	265	32	52	29	0	113	24	88	43	4	159	716	5
8:15	23	147	19	0	189	64	156	10	0	230	23	75	19	0	117	20	66	35	2	123	659	2
8:30	17	114	19	1	151	38	121	11	0	170	33	60	28	0	121	24	55	34	6	119	561	7
8:45	7	139	9	0	155	43	101	18	1	163	34	70	29	0	133	16	69	26	1	112	563	2
Total	65	540	67	2	674	212	551	64	1	828	122	257	105	0	484	84	278	138	13	513	2499	16
16:00	31	128	22	0	181	38	111	17	0	166	46	114	58	0	218	37	158	53	3	251	816	3
16:15	47	111	22	0	180	37	119	12	0	168	53	109	63	0	225	40	150	51	9	250	823	9
16:30	41	125	18	0	184	43	121	18	0	182	43	127	71	0	241	39	159	38	11	247	854	11
16:45	44	112	22	0	178	41	109	26	0	176	52	121	74	0	247	40	141	31	8	220	821	8
Total	163	476	84	0	723	159	460	73	0	692	194	471	266	0	931	156	608	173	31	968	3314	31
17:00	56	153	27	2	238	43	129	17	0	189	59	138	79	0	276	36	189	35	6	266	969	8
17:15	41	127	23	0	191	32	133	9	0	174	62	140	75	0	277	48	163	37	7	255	897	7
17:30	50	146	24	0	220	35	95	22	0	152	52	134	48	0	234	29	119	28	6	182	788	6
17:45	39	113	16	1	169	34	133	10	1	178	50	127	59	0	236	31	144	36	2	213	796	4
Total	186	539	90	3	818	144	490	58	1	693	223	539	261	0	1023	144	615	136	21	916	3450	25
Grand Total	461	2110	303	5	2879	745	2143	266	5	3159	641	1488	692	0	2821	479	1795	554	79	2907	11766	89
Apprch %	16.0%	73.3%	10.5%	0.2%		23.6%	67.8%	8.4%	0.2%		22.7%	52.7%	24.5%	0.0%		16.5%	61.7%	19.1%	2.7%			
Total %	3.9%	17.9%	2.6%	0.0%	24.5%	6.3%	18.2%	2.3%	0.0%	26.8%	5.4%	12.6%	5.9%	0.0%	24.0%	4.1%	15.3%	4.7%	0.7%	24.7%	100.0%	

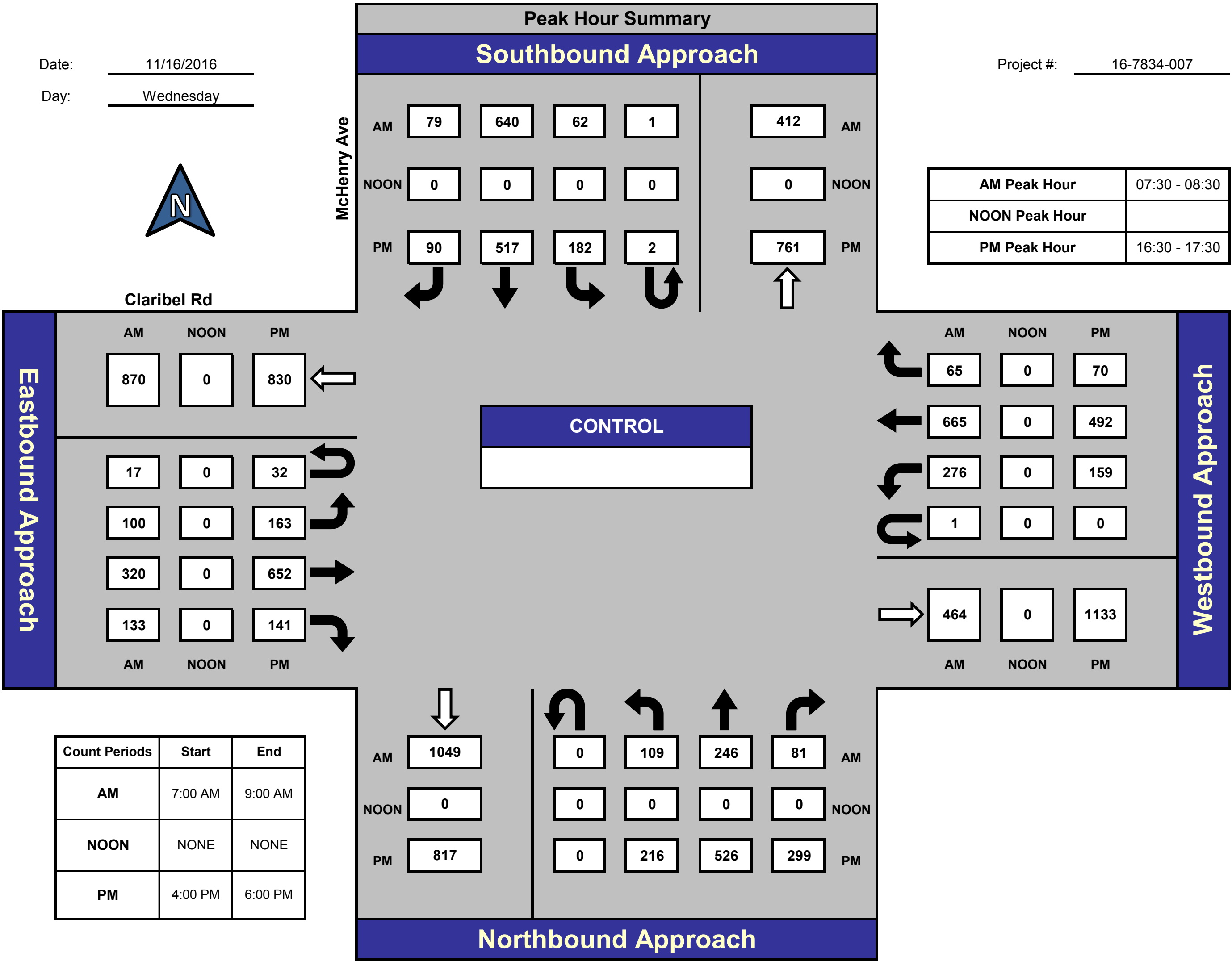
AM PEAK HOUR	McHenry Ave Southbound					Claribel Rd Westbound					McHenry Ave Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	11	190	24	0	225	58	182	14	0	254	34	50	14	0	98	30	66	22	6	124	701
7:45	10	163	16	0	189	87	154	16	1	258	20	69	19	0	108	26	100	33	5	164	719
8:00	18	140	20	1	179	67	173	25	0	265	32	52	29	0	113	24	88	43	4	159	716
8:15	23	147	19	0	189	64	156	10	0	230	23	75	19	0	117	20	66	35	2	123	659
Total Volume	62	640	79	1	782	276	665	65	1	1007	109	246	81	0	436	100	320	133	17	570	2795
% App Total	7.9%	81.8%	10.1%	0.1%		27.4%	66.0%	6.5%	0.1%		25.0%	56.4%	18.6%	0.0%		17.5%	56.1%	23.3%	3.0%		
PHF	.674	.842	.823	.250	.869	.793	.913	.650	.250	.950	.801	.820	.698	.000	.932	.833	.800	.773	.708	.869	.972

PM PEAK HOUR	McHenry Ave Southbound					Claribel Rd Westbound					McHenry Ave Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	41	125	18	0	184	43	121	18	0	182	43	127	71	0	241	39	159	38	11	247	854
16:45	44	112	22	0	178	41	109	26	0	176	52	121	74	0	247	40	141	31	8	220	821
17:00	56	153	27	2	238	43	129	17	0	189	59	138	79	0	276	36	189	35	6	266	969
17:15	41	127	23	0	191	32	133	9	0	174	62	140	75	0	277	48	163	37	7	255	897
Total Volume	182	517	90	2	791	159	492	70	0	721	216	526	299	0	1041	163	652	141	32	988	3541
% App Total	23.0%	65.4%	11.4%	0.3%		22.1%	68.2%	9.7%	0.0%		20.7%	50.5%	28.7%	0.0%		16.5%	66.0%	14.3%	3.2%		
PHF	.813	.845	.833	.250	.831	.924	.925	.673	.000	.954	.871	.939	.946	.000	.940	.849	.862	.928	.727	.929	.914

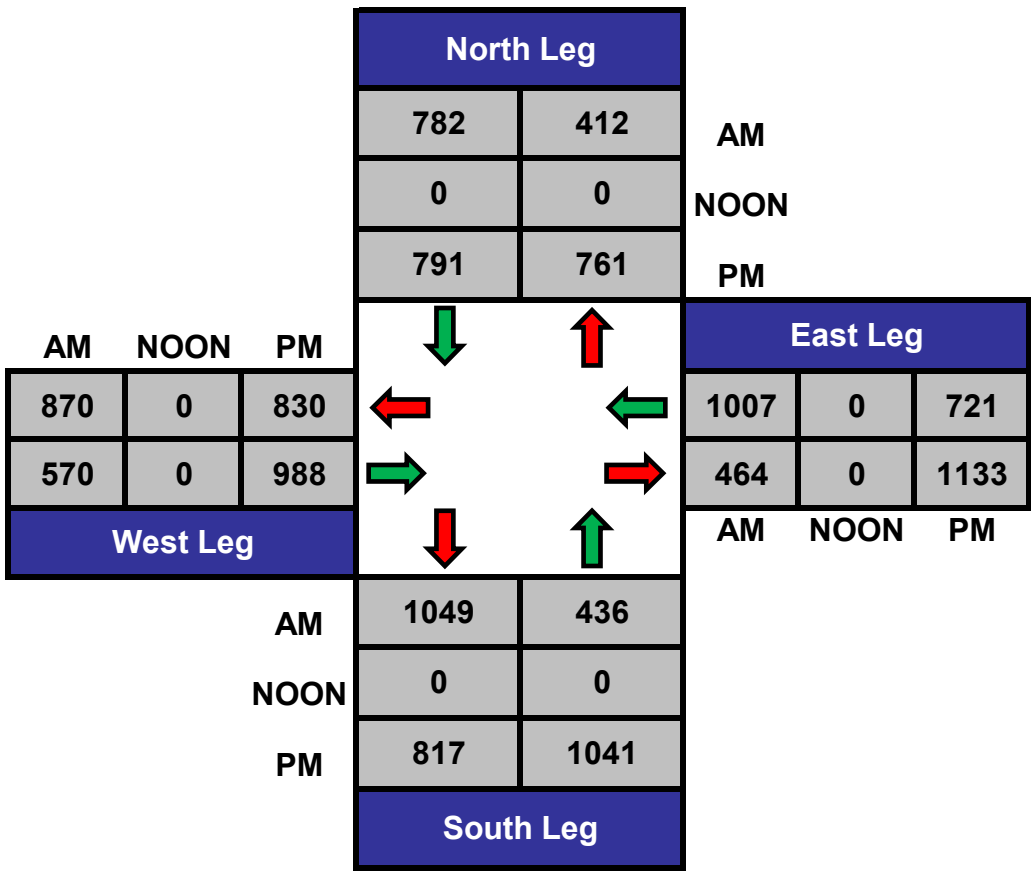
McHenry Ave & Claribel Rd

Date: 11/16/2016
Day: Wednesday

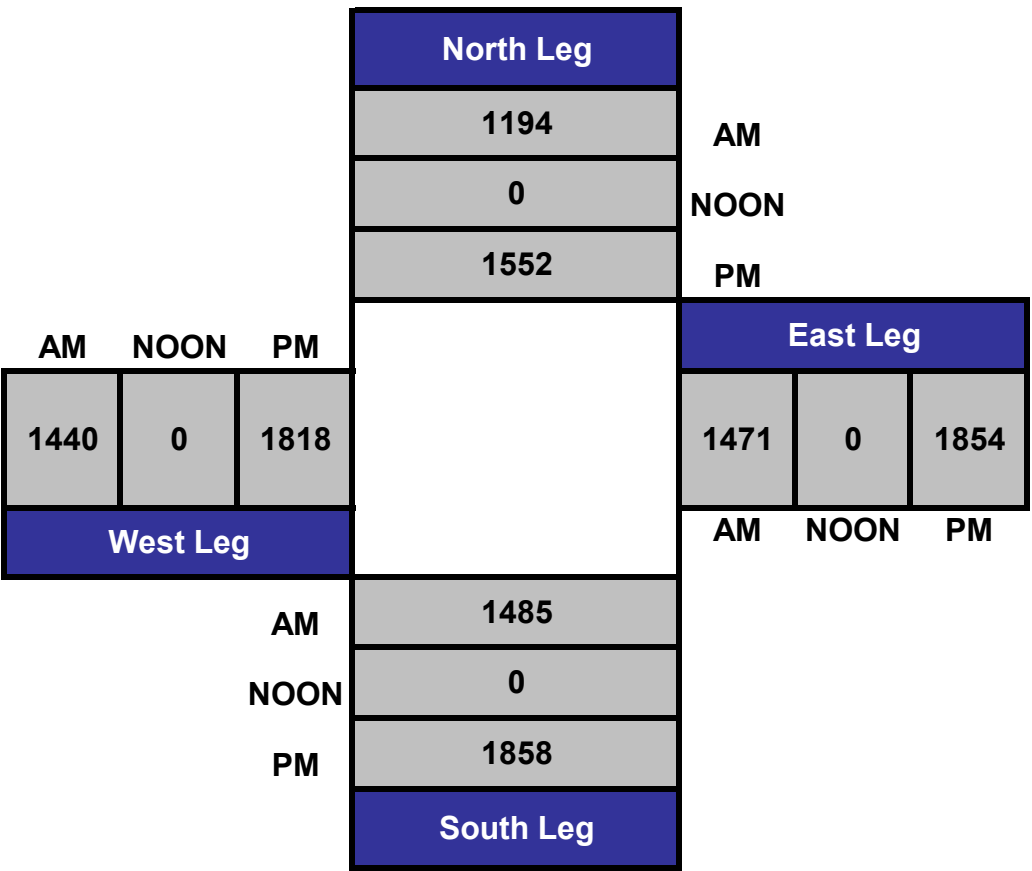
Project #: 16-7834-007



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-008 Coffee Rd & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Coffee Rd Southbound					Claribel Rd Westbound					Coffee Rd Northbound					Claribel Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	1	30	14	0	45	14	146	2	0	162	49	25	10	0	84	3	75	19	0	97	388	0
7:15	3	43	23	0	69	16	178	2	0	196	40	27	13	0	80	3	66	11	0	80	425	0
7:30	2	55	32	0	89	50	203	0	0	253	33	33	18	0	84	7	76	21	0	104	530	0
7:45	1	69	22	0	92	42	195	2	0	239	40	32	30	0	102	4	92	35	1	132	565	1
Total	7	197	91	0	295	122	722	6	0	850	162	117	71	0	350	17	309	86	1	413	1908	1
8:00	1	59	13	0	73	28	176	2	0	206	49	23	25	0	97	6	92	23	1	122	498	1
8:15	1	65	12	0	78	27	179	2	0	208	24	27	19	0	70	4	81	33	0	118	474	0
8:30	1	35	12	0	48	21	136	0	0	157	26	19	18	0	63	5	90	15	0	110	378	0
8:45	0	54	19	0	73	37	118	1	0	156	26	24	17	0	67	5	83	18	1	107	403	1
Total	3	213	56	0	272	113	609	5	0	727	125	93	79	0	297	20	346	89	2	457	1753	2
16:00	0	46	10	0	56	18	127	2	0	147	20	47	35	0	102	26	184	46	0	256	561	0
16:15	1	40	8	0	49	18	133	0	0	151	24	38	60	0	122	16	200	51	0	267	589	0
16:30	4	38	4	0	46	16	126	2	0	144	24	39	48	0	111	19	211	58	1	289	590	1
16:45	1	25	6	0	32	28	120	0	1	149	39	49	46	0	134	20	206	48	1	275	590	2
Total	6	149	28	0	183	80	506	4	1	591	107	173	189	0	469	81	801	203	2	1087	2330	3
17:00	1	55	18	0	74	26	134	2	0	162	44	28	49	0	121	25	209	61	1	296	653	1
17:15	1	30	7	0	38	32	124	1	0	157	39	41	48	0	128	19	212	70	0	301	624	0
17:30	1	39	14	0	54	28	115	0	0	143	41	44	42	0	127	16	175	43	1	235	559	1
17:45	2	38	10	0	50	24	139	1	0	164	27	45	43	0	115	19	158	52	1	230	559	1
Total	5	162	49	0	216	110	512	4	0	626	151	158	182	0	491	79	754	226	3	1062	2395	3
Grand Total	21	721	224	0	966	425	2349	19	1	2794	545	541	521	0	1607	197	2210	604	8	3019	8386	9
Apprch %	2.2%	74.6%	23.2%	0.0%		15.2%	84.1%	0.7%	0.0%		33.9%	33.7%	32.4%	0.0%		6.5%	73.2%	20.0%	0.3%			
Total %	0.3%	8.6%	2.7%	0.0%	11.5%	5.1%	28.0%	0.2%	0.0%	33.3%	6.5%	6.5%	6.2%	0.0%	19.2%	2.3%	26.4%	7.2%	0.1%	36.0%	100.0%	

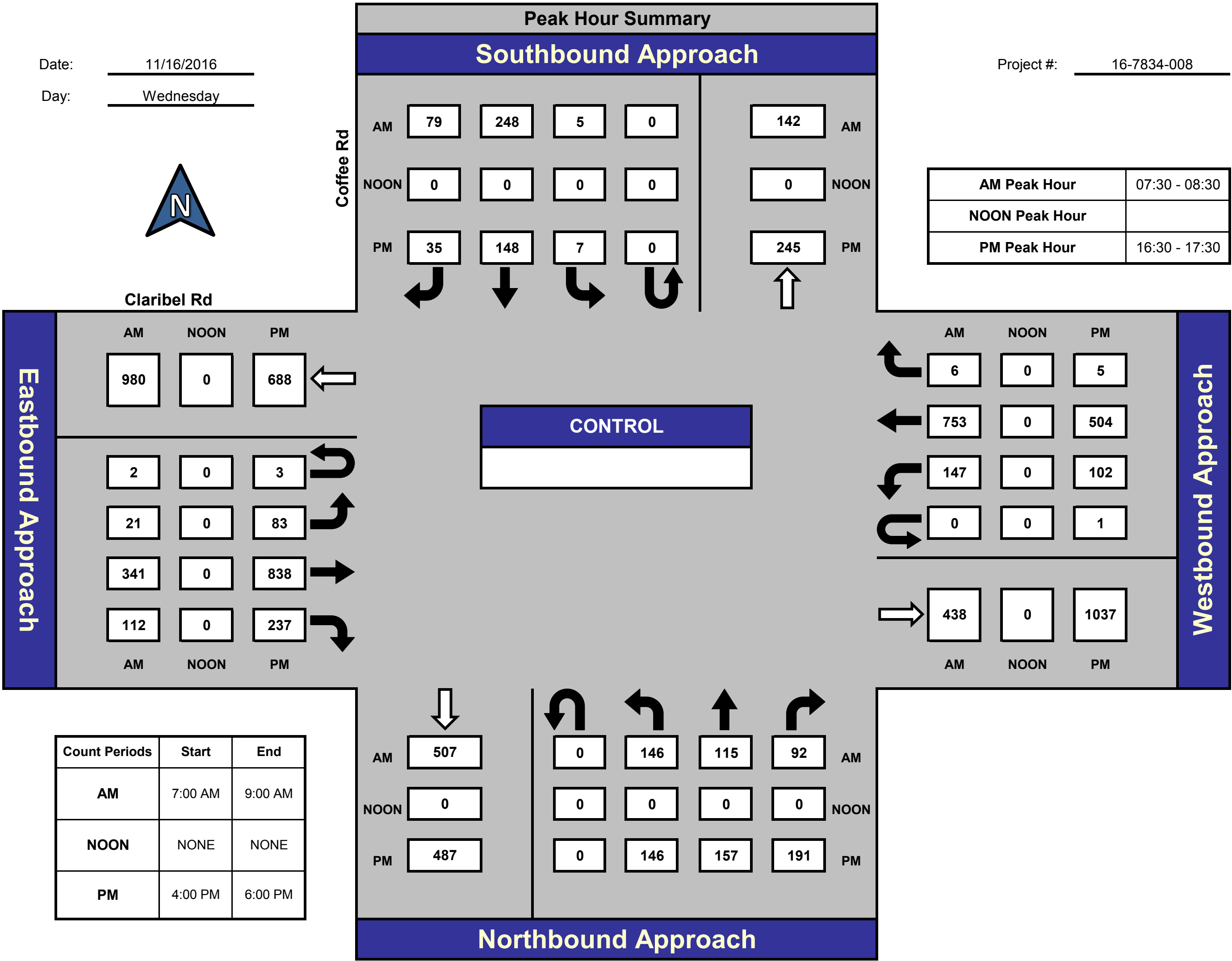
AM PEAK HOUR	Coffee Rd Southbound					Claribel Rd Westbound					Coffee Rd Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	2	55	32	0	89	50	203	0	0	253	33	33	18	0	84	7	76	21	0	104	530
7:45	1	69	22	0	92	42	195	2	0	239	40	32	30	0	102	4	92	35	1	132	565
8:00	1	59	13	0	73	28	176	2	0	206	49	23	25	0	97	6	92	23	1	122	498
8:15	1	65	12	0	78	27	179	2	0	208	24	27	19	0	70	4	81	33	0	118	474
Total Volume	5	248	79	0	332	147	753	6	0	906	146	115	92	0	353	21	341	112	2	476	2067
% App Total	1.5%	74.7%	23.8%	0.0%		16.2%	83.1%	0.7%	0.0%		41.4%	32.6%	26.1%	0.0%		4.4%	71.6%	23.5%	0.4%		
PHF	.625	.899	.617	.000	.902	.735	.927	.750	.000	.895	.745	.871	.767	.000	.865	.750	.927	.800	.500	.902	.915

PM PEAK HOUR	Coffee Rd Southbound					Claribel Rd Westbound					Coffee Rd Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	4	38	4	0	46	16	126	2	0	144	24	39	48	0	111	19	211	58	1	289	590
16:45	1	25	6	0	32	28	120	0	1	149	39	49	46	0	134	20	206	48	1	275	590
17:00	1	55	18	0	74	26	134	2	0	162	44	28	49	0	121	25	209	61	1	296	653
17:15	1	30	7	0	38	32	124	1	0	157	39	41	48	0	128	19	212	70	0	301	624
Total Volume	7	148	35	0	190	102	504	5	1	612	146	157	191	0	494	83	838	237	3	1161	2457
% App Total	3.7%	77.9%	18.4%	0.0%		16.7%	82.4%	0.8%	0.2%		29.6%	31.8%	38.7%	0.0%		7.1%	72.2%	20.4%	0.3%		
PHF	.438	.673	.486	.000	.642	.797	.940	.625	.250	.944	.830	.801	.974	.000	.922	.830	.988	.846	.750	.964	.941

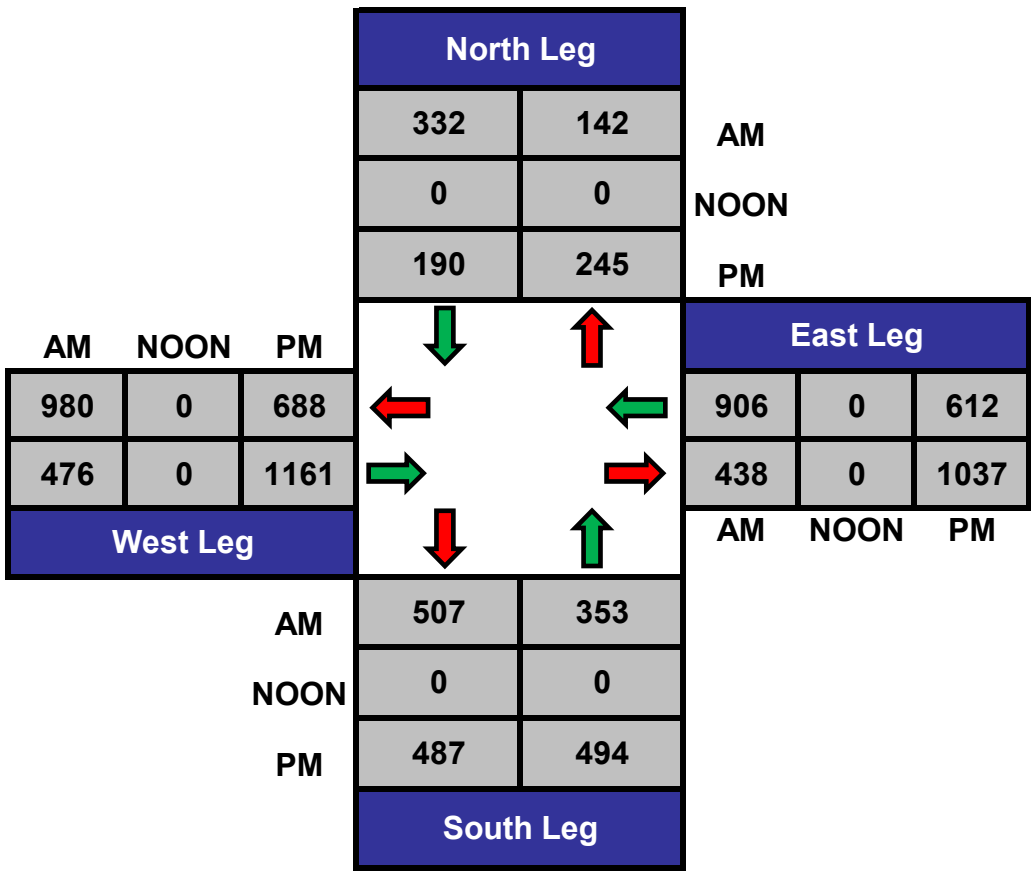
Coffee Rd & Claribel Rd

Date: 11/16/2016
Day: Wednesday

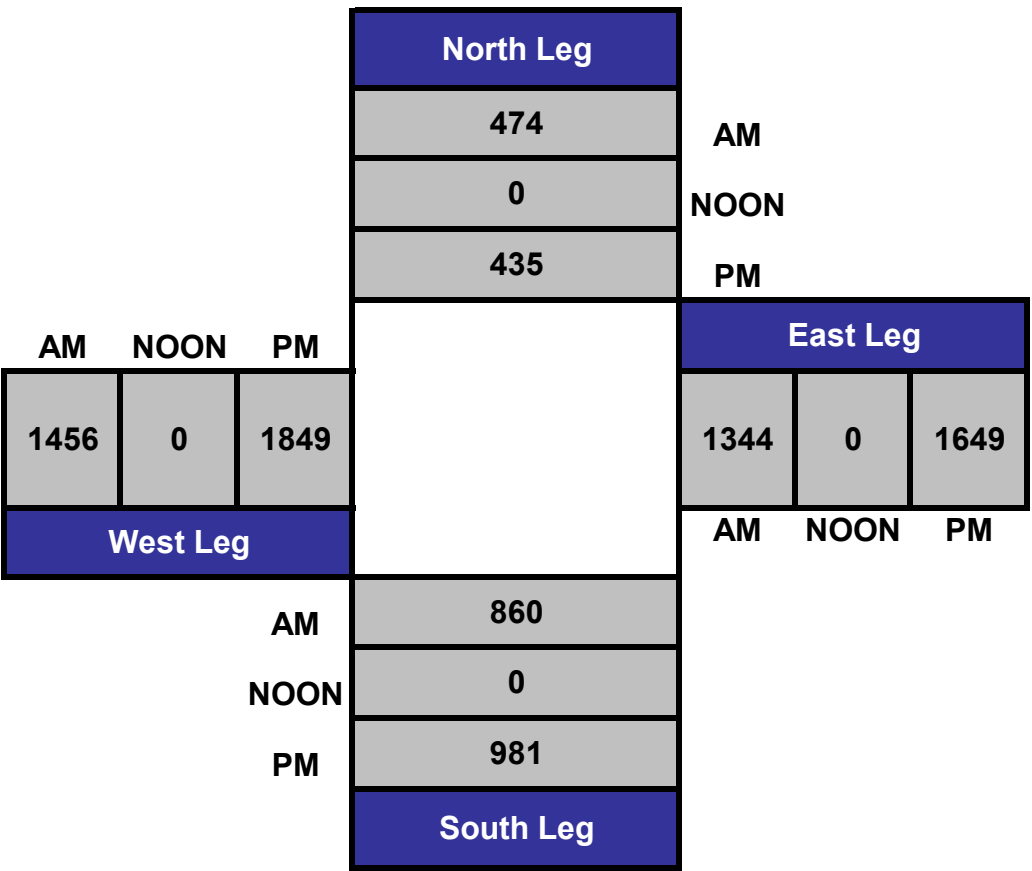
Project #: 16-7834-008



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-009 Oakdale Rd & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					Claribel Rd Westbound					Oakdale Rd Northbound					Claribel Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	6	82	53	0	141	31	89	8	0	128	23	50	19	0	92	17	53	16	0	86	447	0
7:15	6	126	56	0	188	58	99	10	0	167	42	60	14	0	116	28	33	17	0	78	549	0
7:30	10	152	95	0	257	86	125	8	0	219	41	102	20	0	163	22	56	24	0	102	741	0
7:45	7	110	86	0	203	73	134	6	0	213	26	115	42	0	183	25	74	18	1	118	717	1
Total	29	470	290	0	789	248	447	32	0	727	132	327	95	0	554	92	216	75	1	384	2454	1
8:00	7	92	76	0	175	39	125	11	0	175	24	100	33	0	157	51	61	31	0	143	650	0
8:15	6	89	70	1	166	55	106	19	0	180	27	69	31	0	127	28	41	20	0	89	562	1
8:30	4	76	50	1	131	39	72	15	0	126	27	47	23	0	97	32	57	27	0	116	470	1
8:45	7	76	45	0	128	35	88	10	1	134	27	60	41	0	128	34	52	16	0	102	492	1
Total	24	333	241	2	600	168	391	55	1	615	105	276	128	0	509	145	211	94	0	450	2174	3
16:00	7	79	36	1	123	66	91	10	0	167	25	116	48	0	189	81	101	35	0	217	696	1
16:15	6	49	45	0	100	48	74	14	0	136	33	113	65	1	212	75	128	39	1	243	691	2
16:30	4	101	47	1	153	65	99	18	0	182	14	144	49	0	207	80	131	63	0	274	816	1
16:45	6	70	36	1	113	56	78	13	1	148	19	147	43	0	209	79	123	39	1	242	712	3
Total	23	299	164	3	489	235	342	55	1	633	91	520	205	1	817	315	483	176	2	976	2915	7
17:00	6	80	46	1	133	82	92	7	0	181	30	127	75	0	232	79	125	57	0	261	807	1
17:15	5	85	47	1	138	86	93	12	1	192	20	127	66	0	213	83	127	60	0	270	813	2
17:30	8	69	47	0	124	67	75	18	0	160	23	123	50	0	196	89	94	50	0	233	713	0
17:45	9	69	37	0	115	48	90	7	0	145	37	116	58	0	211	80	111	36	0	227	698	0
Total	28	303	177	2	510	283	350	44	1	678	110	493	249	0	852	331	457	203	0	991	3031	3
Grand Total	104	1405	872	7	2388	934	1530	186	3	2653	438	1616	677	1	2732	883	1367	548	3	2801	10574	14
Apprch %	4.4%	58.8%	36.5%	0.3%		35.2%	57.7%	7.0%	0.1%		16.0%	59.2%	24.8%	0.0%		31.5%	48.8%	19.6%	0.1%			
Total %	1.0%	13.3%	8.2%	0.1%	22.6%	8.8%	14.5%	1.8%	0.0%	25.1%	4.1%	15.3%	6.4%	0.0%	25.8%	8.4%	12.9%	5.2%	0.0%	26.5%	100.0%	

AM PEAK HOUR	Oakdale Rd Southbound					Claribel Rd Westbound					Oakdale Rd Northbound					Claribel Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	10	152	95	0	257	86	125	8	0	219	41	102	20	0	163	22	56	24	0	102	741
7:45	7	110	86	0	203	73	134	6	0	213	26	115	42	0	183	25	74	18	1	118	717
8:00	7	92	76	0	175	39	125	11	0	175	24	100	33	0	157	51	61	31	0	143	650
8:15	6	89	70	1	166	55	106	19	0	180	27	69	31	0	127	28	41	20	0	89	562
Total Volume	30	443	327	1	801	253	490	44	0	787	118	386	126	0	630	126	232	93	1	452	2670
% App Total	3.7%	55.3%	40.8%	0.1%		32.1%	62.3%	5.6%	0.0%		18.7%	61.3%	20.0%	0.0%		27.9%	51.3%	20.6%	0.2%		
PHF	.750	.729	.861	.250	.779	.735	.914	.579	.000	.898	.720	.839	.750	.000	.861	.618	.784	.750	.250	.790	.901

PM PEAK HOUR	Oakdale Rd Southbound					Claribel Rd Westbound					Oakdale Rd Northbound					Claribel Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	4	101	47	1	153	65	99	18	0	182	14	144	49	0	207	80	131	63	0	274	816
16:45	6	70	36	1	113	56	78	13	1	148	19	147	43	0	209	79	123	39	1	242	712
17:00	6	80	46	1	133	82	92	7	0	181	30	127	75	0	232	79	125	57	0	261	807
17:15	5	85	47	1	138	86	93	12	1	192	20	127	66	0	213	83	127	60	0	270	813
Total Volume	21	336	176	4	537	289	362	50	2	703	83	545	233	0	861	321	506	219	1	1047	3148
% App Total	3.9%	62.6%	32.8%	0.7%		41.1%	51.5%	7.1%	0.3%		9.6%	63.3%	27.1%	0.0%		30.7%	48.3%	20.9%	0.1%		
PHF	.875	.832	.936	1.000	.877	.840	.914	.694	.500	.915	.692	.927	.777	.000	.928	.967	.966	.869	.250	.955	.964

Oakdale Rd & Claribel Rd

Date: 11/16/2016
Day: Wednesday

Project #: 16-7834-009

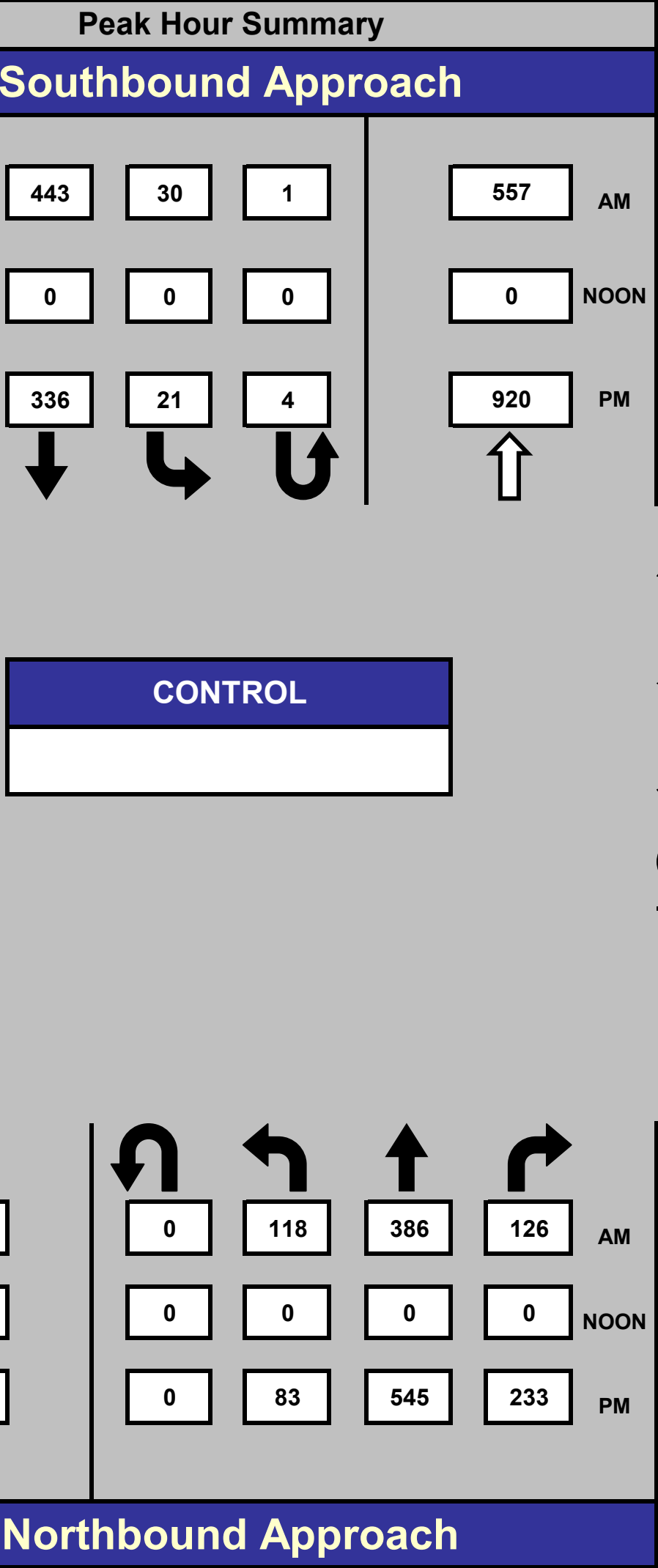


Oakdale Rd

Claribel Rd

Eastbound Approach

Westbound Approach

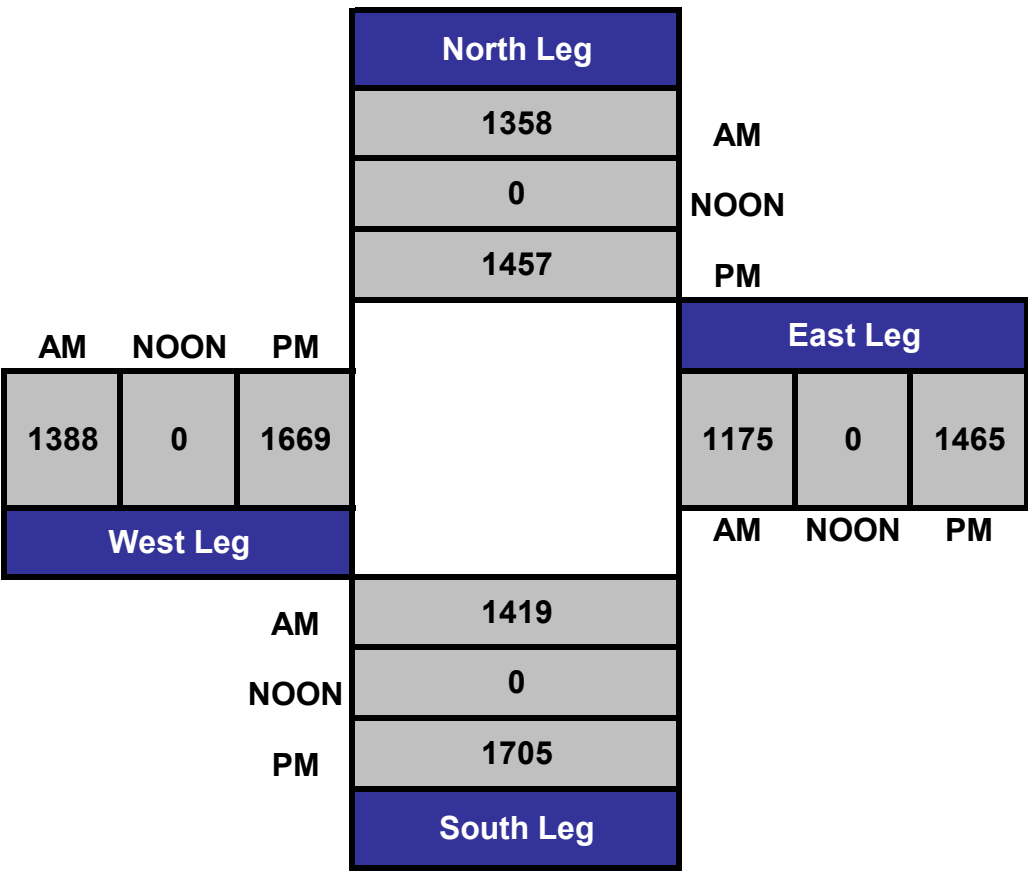
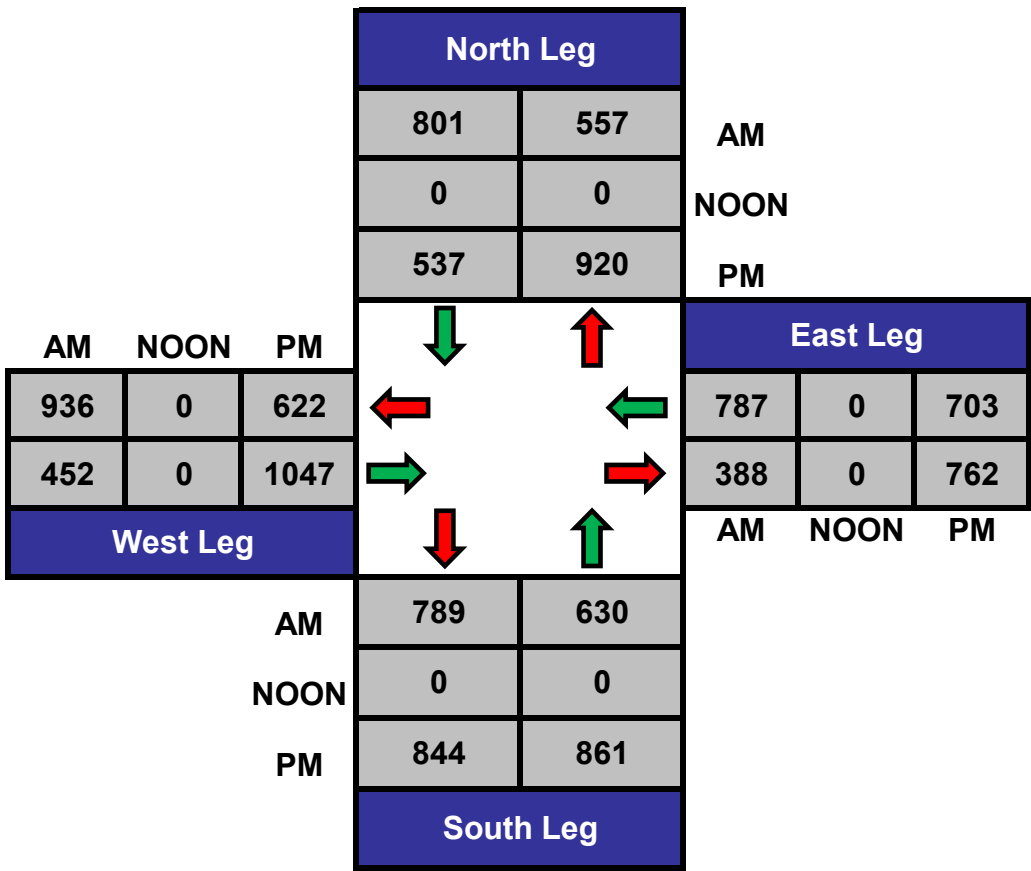


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Total Ins & Outs

Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-010 Squire Wells Way & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Squire Wells Way Southbound					Claribel Rd Westbound					Squire Wells Way Northbound					Claribel Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	22	0	37	0	59	0	80	7	0	87	0	0	0	0	0	19	45	0	0	64	210	0
7:15	68	0	66	0	134	0	97	15	0	112	0	0	0	0	0	12	41	0	0	53	299	0
7:30	73	0	124	0	197	0	102	11	0	113	0	0	0	0	0	21	61	0	0	82	392	0
7:45	21	0	69	0	90	0	123	19	0	142	0	0	0	0	0	40	58	0	0	98	330	0
Total	184	0	296	0	480	0	402	52	0	454	0	0	0	0	0	92	205	0	0	297	1231	0
8:00	23	0	60	0	83	0	123	36	0	159	0	0	0	0	0	41	52	0	0	93	335	0
8:15	17	0	52	0	69	0	112	28	0	140	0	0	0	0	0	24	34	0	0	58	267	0
8:30	21	0	33	0	54	0	81	24	0	105	0	0	0	0	0	27	43	0	0	70	229	0
8:45	22	0	40	0	62	0	70	35	0	105	0	0	0	0	0	32	56	0	0	88	255	0
Total	83	0	185	0	268	0	386	123	0	509	0	0	0	0	0	124	185	0	0	309	1086	0
16:00	40	0	35	0	75	0	99	32	0	131	0	0	0	0	0	65	65	0	0	130	336	0
16:15	44	0	26	0	70	0	89	31	0	120	0	0	0	0	0	63	68	0	0	131	321	0
16:30	39	0	43	0	82	0	96	29	0	125	0	0	0	0	0	71	67	0	0	138	345	0
16:45	25	0	41	0	66	0	96	36	0	132	0	0	0	0	0	49	89	0	0	138	336	0
Total	148	0	145	0	293	0	380	128	0	508	0	0	0	0	0	248	289	0	0	537	1338	0
17:00	45	0	49	0	94	0	81	40	0	121	0	0	0	0	0	76	81	0	0	157	372	0
17:15	40	0	45	0	85	0	95	38	0	133	0	0	0	0	0	65	84	0	0	149	367	0
17:30	40	0	46	0	86	0	82	42	0	124	0	0	0	0	0	62	53	0	0	115	325	0
17:45	44	0	39	0	83	0	79	42	0	121	0	0	0	0	0	64	69	0	0	133	337	0
Total	169	0	179	0	348	0	337	162	0	499	0	0	0	0	0	267	287	0	0	554	1401	0
Grand Total	584	0	805	0	1389	0	1505	465	0	1970	0	0	0	0	0	731	966	0	0	1697	5056	0
Apprch %	42.0%	0.0%	58.0%	0.0%		0.0%	76.4%	23.6%	0.0%		0.0%	0.0%	0.0%	0.0%		43.1%	56.9%	0.0%	0.0%			
Total %	11.6%	0.0%	15.9%	0.0%	27.5%	0.0%	29.8%	9.2%	0.0%	39.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.5%	19.1%	0.0%	0.0%	33.6%	100.0%	

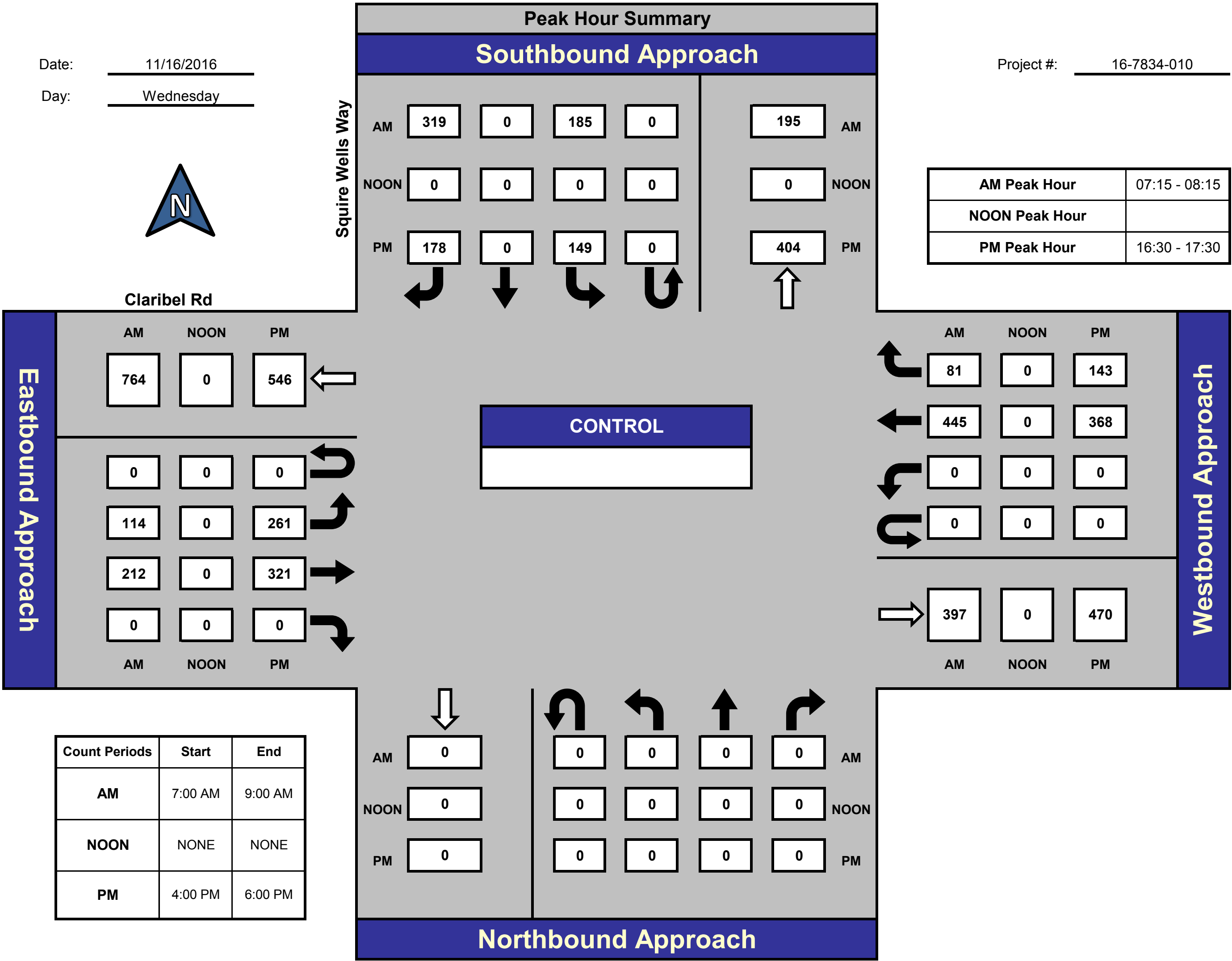
AM PEAK HOUR	Squire Wells Way Southbound					Claribel Rd Westbound					Squire Wells Way Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	68	0	66	0	134	0	97	15	0	112	0	0	0	0	0	12	41	0	0	53	299
7:30	73	0	124	0	197	0	102	11	0	113	0	0	0	0	0	21	61	0	0	82	392
7:45	21	0	69	0	90	0	123	19	0	142	0	0	0	0	0	40	58	0	0	98	330
8:00	23	0	60	0	83	0	123	36	0	159	0	0	0	0	0	41	52	0	0	93	335
Total Volume	185	0	319	0	504	0	445	81	0	526	0	0	0	0	0	114	212	0	0	326	1356
% App Total	36.7%	0.0%	63.3%	0.0%		0.0%	84.6%	15.4%	0.0%		0.0%	0.0%	0.0%	0.0%		35.0%	65.0%	0.0%	0.0%		
PHF	.634	.000	.643	.000	.640	.000	.904	.563	.000	.827	.000	.000	.000	.000	.000	.695	.869	.000	.000	.832	.865

PM PEAK HOUR	Squire Wells Way Southbound					Claribel Rd Westbound					Squire Wells Way Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	39	0	43	0	82	0	96	29	0	125	0	0	0	0	0	71	67	0	0	138	345
16:45	25	0	41	0	66	0	96	36	0	132	0	0	0	0	0	49	89	0	0	138	336
17:00	45	0	49	0	94	0	81	40	0	121	0	0	0	0	0	76	81	0	0	157	372
17:15	40	0	45	0	85	0	95	38	0	133	0	0	0	0	0	65	84	0	0	149	367
Total Volume	149	0	178	0	327	0	368	143	0	511	0	0	0	0	0	261	321	0	0	582	1420
% App Total	45.6%	0.0%	54.4%	0.0%		0.0%	72.0%	28.0%	0.0%		0.0%	0.0%	0.0%	0.0%		44.8%	55.2%	0.0%	0.0%		
PHF	.828	.000	.908	.000	.870	.000	.958	.894	.000	.961	.000	.000	.000	.000	.000	.859	.902	.000	.000	.927	.954

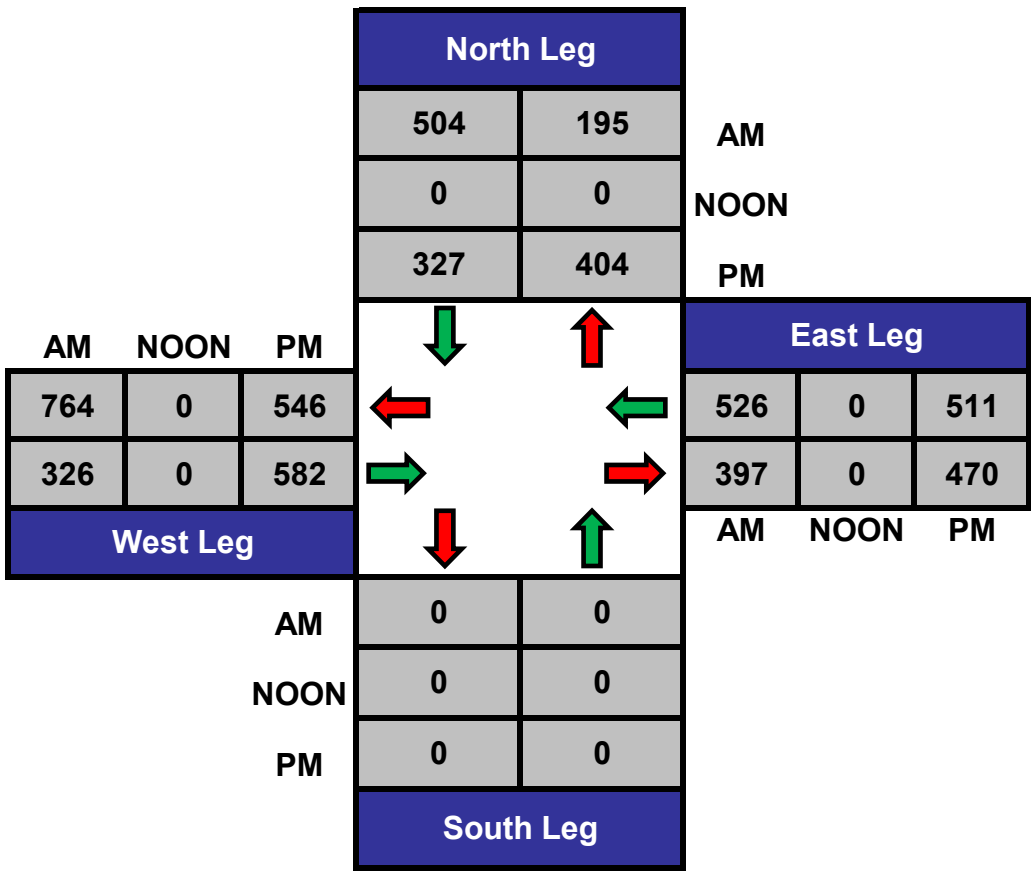
Squire Wells Way & Claribel Rd

Date: 11/16/2016
Day: Wednesday

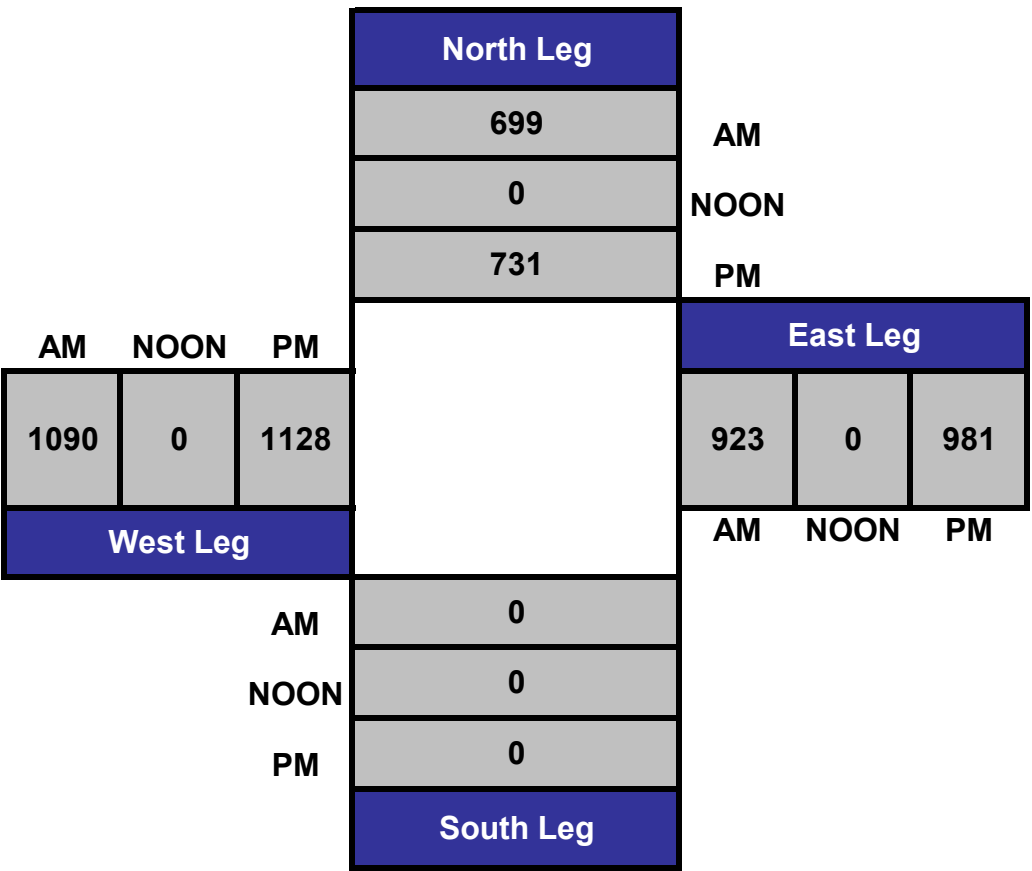
Project #: 16-7834-010



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-011 Roselle Ave & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Roselle Ave Southbound					Claribel Rd Westbound					Roselle Ave Northbound					Claribel Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	20	76	9	0	105	4	48	7	0	59	28	32	1	0	61	6	38	15	0	59	284	0
7:15	19	88	7	0	114	7	84	11	0	102	25	49	2	0	76	3	48	38	0	89	381	0
7:30	6	89	6	0	101	14	74	11	0	99	37	58	5	0	100	6	47	59	0	112	412	0
7:45	13	75	5	0	93	6	88	14	0	108	36	67	1	0	104	4	62	40	0	106	411	0
Total	58	328	27	0	413	31	294	43	0	368	126	206	9	0	341	19	195	152	0	366	1488	0
8:00	16	54	17	0	87	4	95	7	0	106	42	56	6	0	104	13	53	14	0	80	377	0
8:15	11	61	14	0	86	6	89	8	0	103	31	39	3	0	73	7	36	13	0	56	318	0
8:30	10	42	9	0	61	7	52	10	0	69	46	27	2	0	75	5	43	20	0	68	273	0
8:45	9	36	16	0	61	6	59	4	0	69	31	22	3	0	56	7	50	16	0	73	259	0
Total	46	193	56	0	295	23	295	29	0	347	150	144	14	0	308	32	182	63	0	277	1227	0
16:00	18	55	13	0	86	4	94	11	0	109	25	42	2	0	69	10	76	21	0	107	371	0
16:15	14	69	10	0	93	2	78	9	0	89	30	71	3	0	104	8	76	22	0	106	392	0
16:30	16	56	8	0	80	2	89	20	0	111	36	63	7	0	106	6	80	23	0	109	406	0
16:45	13	61	9	0	83	3	79	9	0	91	45	56	5	0	106	4	87	18	0	109	389	0
Total	61	241	40	0	342	11	340	49	0	400	136	232	17	0	385	28	319	84	0	431	1558	0
17:00	17	73	9	0	99	4	77	24	0	105	25	53	6	0	84	7	84	21	0	112	400	0
17:15	16	55	11	0	82	3	91	22	0	116	28	57	3	0	88	4	94	20	0	118	404	0
17:30	18	65	10	0	93	2	87	16	0	105	25	57	5	0	87	5	68	35	0	108	393	0
17:45	6	64	16	0	86	6	73	14	0	93	31	64	2	0	97	2	89	27	0	118	394	0
Total	57	257	46	0	360	15	328	76	0	419	109	231	16	0	356	18	335	103	0	456	1591	0
Grand Total	222	1019	169	0	1410	80	1257	197	0	1534	521	813	56	0	1390	97	1031	402	0	1530	5864	0
Apprch %	15.7%	72.3%	12.0%	0.0%		5.2%	81.9%	12.8%	0.0%		37.5%	58.5%	4.0%	0.0%		6.3%	67.4%	26.3%	0.0%			
Total %	3.8%	17.4%	2.9%	0.0%	24.0%	1.4%	21.4%	3.4%	0.0%	26.2%	8.9%	13.9%	1.0%	0.0%	23.7%	1.7%	17.6%	6.9%	0.0%	26.1%	100.0%	

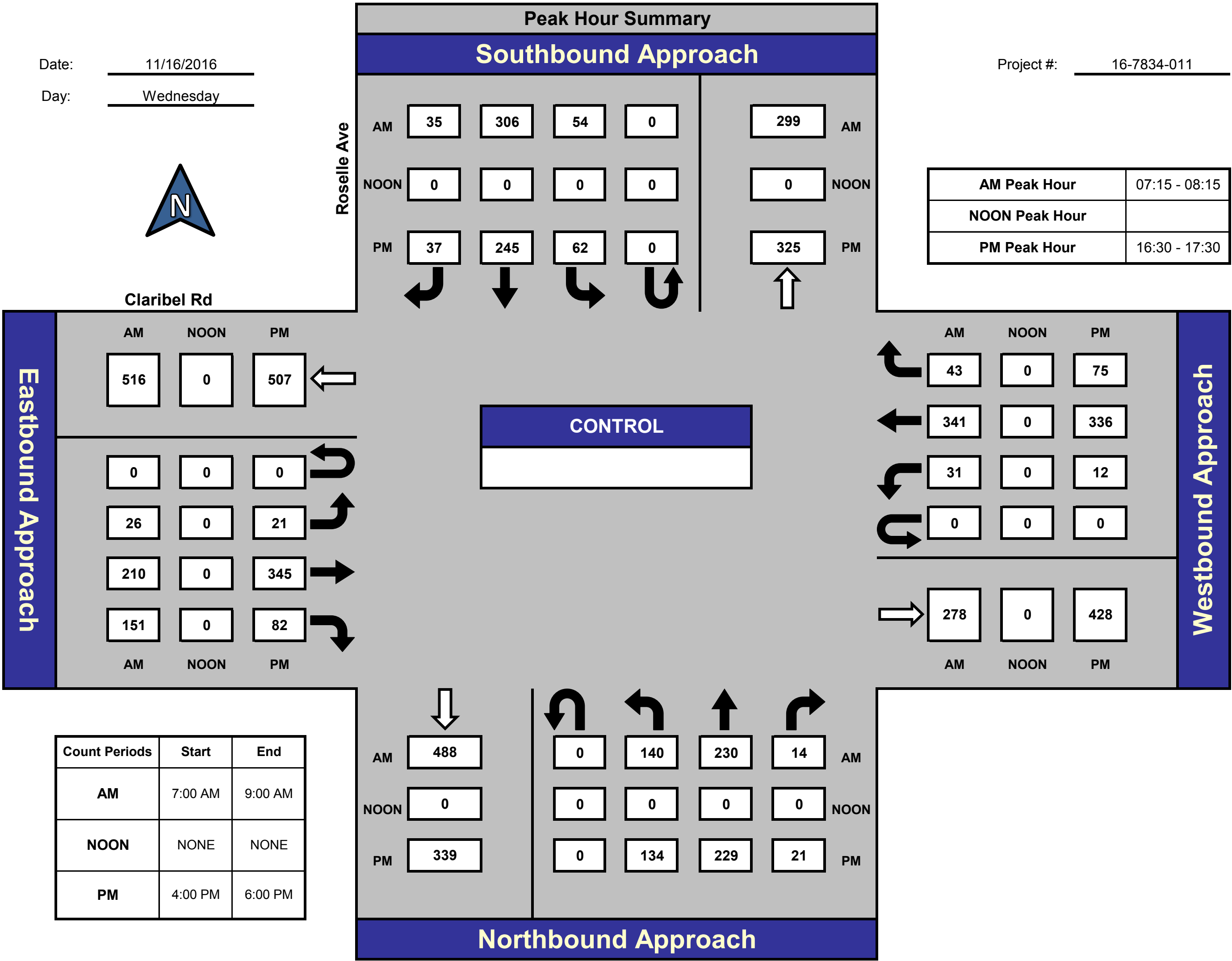
AM PEAK HOUR	Roselle Ave Southbound					Claribel Rd Westbound					Roselle Ave Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	19	88	7	0	114	7	84	11	0	102	25	49	2	0	76	3	48	38	0	89	381
7:30	6	89	6	0	101	14	74	11	0	99	37	58	5	0	100	6	47	59	0	112	412
7:45	13	75	5	0	93	6	88	14	0	108	36	67	1	0	104	4	62	40	0	106	411
8:00	16	54	17	0	87	4	95	7	0	106	42	56	6	0	104	13	53	14	0	80	377
Total Volume	54	306	35	0	395	31	341	43	0	415	140	230	14	0	384	26	210	151	0	387	1581
% App Total	13.7%	77.5%	8.9%	0.0%		7.5%	82.2%	10.4%	0.0%		36.5%	59.9%	3.6%	0.0%		6.7%	54.3%	39.0%	0.0%		
PHF	.711	.860	.515	.000	.866	.554	.897	.768	.000	.961	.833	.858	.583	.000	.923	.500	.847	.640	.000	.864	.959

PM PEAK HOUR	Roselle Ave Southbound					Claribel Rd Westbound					Roselle Ave Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	16	56	8	0	80	2	89	20	0	111	36	63	7	0	106	6	80	23	0	109	406
16:45	13	61	9	0	83	3	79	9	0	91	45	56	5	0	106	4	87	18	0	109	389
17:00	17	73	9	0	99	4	77	24	0	105	25	53	6	0	84	7	84	21	0	112	400
17:15	16	55	11	0	82	3	91	22	0	116	28	57	3	0	88	4	94	20	0	118	404
Total Volume	62	245	37	0	344	12	336	75	0	423	134	229	21	0	384	21	345	82	0	448	1599
% App Total	18.0%	71.2%	10.8%	0.0%		2.8%	79.4%	17.7%	0.0%		34.9%	59.6%	5.5%	0.0%		4.7%	77.0%	18.3%	0.0%		
PHF	.912	.839	.841	.000	.869	.750	.923	.781	.000	.912	.744	.909	.750	.000	.906	.750	.918	.891	.000	.949	.985

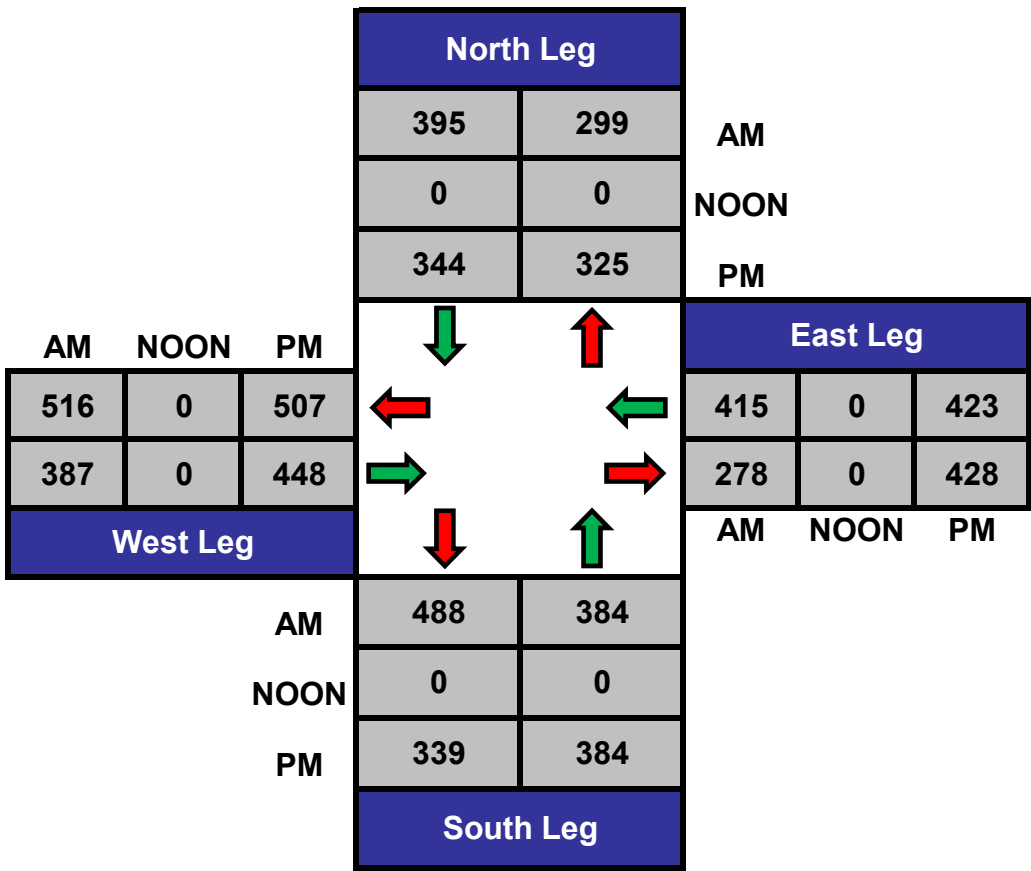
Roselle Ave & Claribel Rd

Date: 11/16/2016
Day: Wednesday

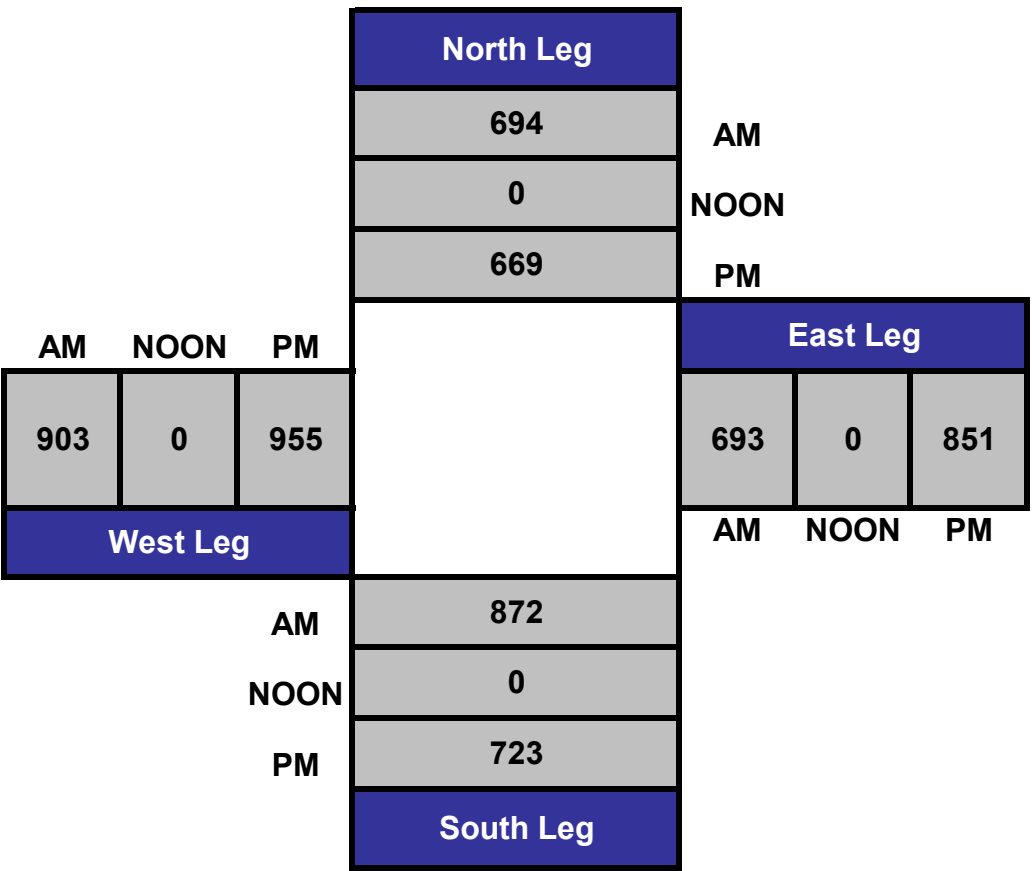
Project #: 16-7834-011



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-012 Terminal Ave & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Terminal Ave Southbound					Claribel Rd Westbound					Terminal Ave Northbound					Claribel Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	0	15	16	0	31	0	42	0	0	42	10	6	0	0	16	7	34	12	0	53	142	0
7:15	2	20	17	0	39	0	53	1	0	54	19	13	0	0	32	3	54	21	0	78	203	0
7:30	1	26	31	0	58	0	73	0	0	73	24	17	0	0	41	7	44	32	0	83	255	0
7:45	0	17	22	0	39	0	63	0	0	63	29	17	0	0	46	6	60	23	0	89	237	0
Total	3	78	86	0	167	0	231	1	0	232	82	53	0	0	135	23	192	88	0	303	837	0
8:00	2	16	25	0	43	3	61	1	0	65	21	12	1	0	34	6	58	13	0	77	219	0
8:15	1	7	13	0	21	0	42	0	0	42	24	10	0	0	34	5	35	7	0	47	144	0
8:30	0	11	16	0	27	0	44	2	0	46	12	14	0	0	26	7	43	6	0	56	155	0
8:45	1	7	19	0	27	0	38	0	0	38	18	6	0	0	24	4	47	7	0	58	147	0
Total	4	41	73	0	118	3	185	3	0	191	75	42	1	0	118	22	183	33	0	238	665	0
16:00	1	15	20	0	36	0	71	1	0	72	29	18	0	0	47	12	67	14	0	93	248	0
16:15	0	14	17	0	31	0	60	0	0	60	20	13	1	0	34	13	57	19	0	89	214	0
16:30	0	13	14	0	27	0	63	2	0	65	26	23	0	0	49	19	66	12	0	97	238	0
16:45	1	16	20	0	37	0	65	1	0	66	22	26	0	0	48	18	82	11	0	111	262	0
Total	2	58	71	0	131	0	259	4	0	263	97	80	1	0	178	62	272	56	0	390	962	0
17:00	1	9	21	0	31	0	65	1	0	66	23	21	0	0	44	28	59	16	0	103	244	0
17:15	2	11	19	0	32	0	70	3	0	73	31	17	0	0	48	23	81	12	0	116	269	0
17:30	0	10	33	0	43	2	65	0	0	67	15	13	2	0	30	18	58	15	0	91	231	0
17:45	1	7	21	0	29	1	48	0	0	49	16	14	0	0	30	18	73	10	0	101	209	0
Total	4	37	94	0	135	3	248	4	0	255	85	65	2	0	152	87	271	53	0	411	953	0
Grand Total	13	214	324	0	551	6	923	12	0	941	339	240	4	0	583	194	918	230	0	1342	3417	0
Apprch %	2.4%	38.8%	58.8%	0.0%		0.6%	98.1%	1.3%	0.0%		58.1%	41.2%	0.7%	0.0%		14.5%	68.4%	17.1%	0.0%			
Total %	0.4%	6.3%	9.5%	0.0%	16.1%	0.2%	27.0%	0.4%	0.0%	27.5%	9.9%	7.0%	0.1%	0.0%	17.1%	5.7%	26.9%	6.7%	0.0%	39.3%	100.0%	

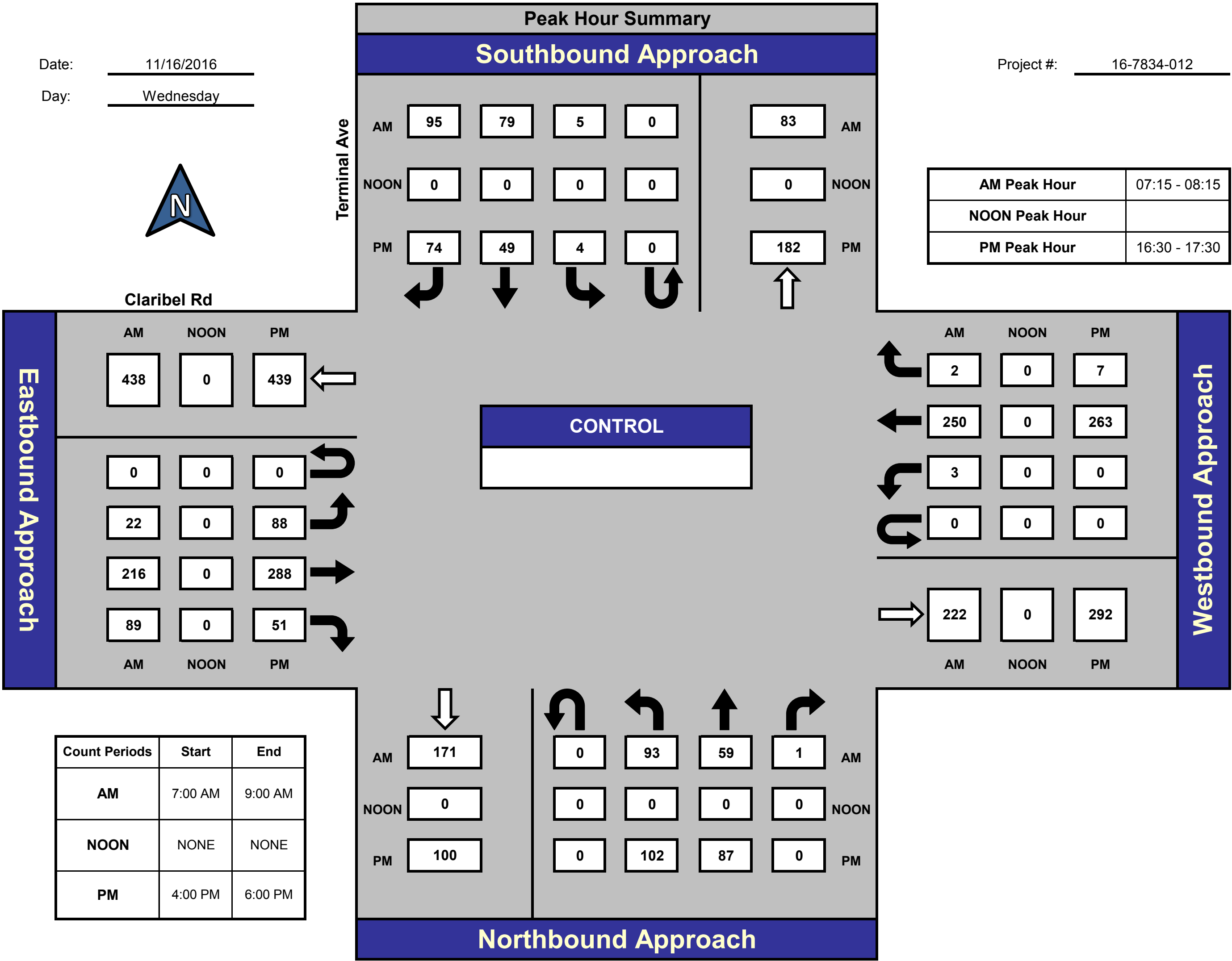
AM PEAK HOUR	Terminal Ave Southbound					Claribel Rd Westbound					Terminal Ave Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	2	20	17	0	39	0	53	1	0	54	19	13	0	0	32	3	54	21	0	78	203
7:30	1	26	31	0	58	0	73	0	0	73	24	17	0	0	41	7	44	32	0	83	255
7:45	0	17	22	0	39	0	63	0	0	63	29	17	0	0	46	6	60	23	0	89	237
8:00	2	16	25	0	43	3	61	1	0	65	21	12	1	0	34	6	58	13	0	77	219
Total Volume	5	79	95	0	179	3	250	2	0	255	93	59	1	0	153	22	216	89	0	327	914
% App Total	2.8%	44.1%	53.1%	0.0%		1.2%	98.0%	0.8%	0.0%		60.8%	38.6%	0.7%	0.0%		6.7%	66.1%	27.2%	0.0%		
PHF	.625	.760	.766	.000	.772	.250	.856	.500	.000	.873	.802	.868	.250	.000	.832	.786	.900	.695	.000	.919	.896

PM PEAK HOUR	Terminal Ave Southbound					Claribel Rd Westbound					Terminal Ave Northbound					Claribel Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	13	14	0	27	0	63	2	0	65	26	23	0	0	49	19	66	12	0	97	238
16:45	1	16	20	0	37	0	65	1	0	66	22	26	0	0	48	18	82	11	0	111	262
17:00	1	9	21	0	31	0	65	1	0	66	23	21	0	0	44	28	59	16	0	103	244
17:15	2	11	19	0	32	0	70	3	0	73	31	17	0	0	48	23	81	12	0	116	269
Total Volume	4	49	74	0	127	0	263	7	0	270	102	87	0	0	189	88	288	51	0	427	1013
% App Total	3.1%	38.6%	58.3%	0.0%		0.0%	97.4%	2.6%	0.0%		54.0%	46.0%	0.0%	0.0%		20.6%	67.4%	11.9%	0.0%		
PHF	.500	.766	.881	.000	.858	.000	.939	.583	.000	.925	.823	.837	.000	.000	.964	.786	.878	.797	.000	.920	.941

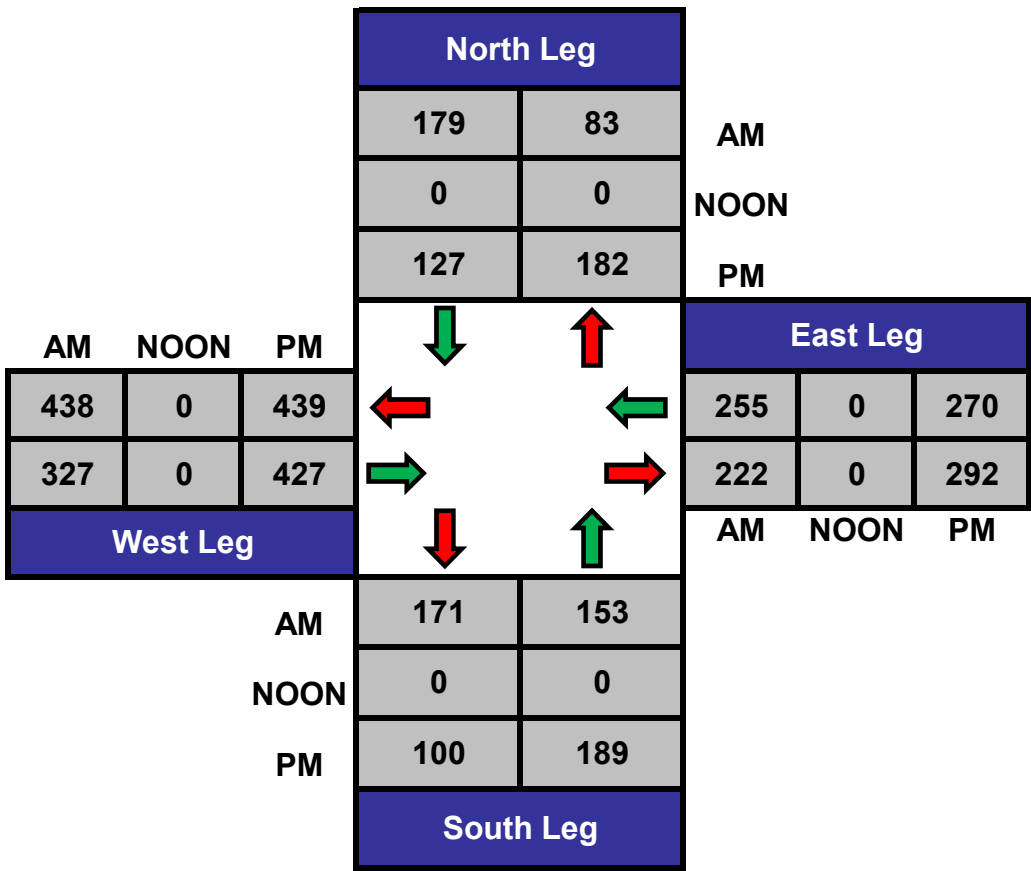
Terminal Ave & Claribel Rd

Date: 11/16/2016
Day: Wednesday

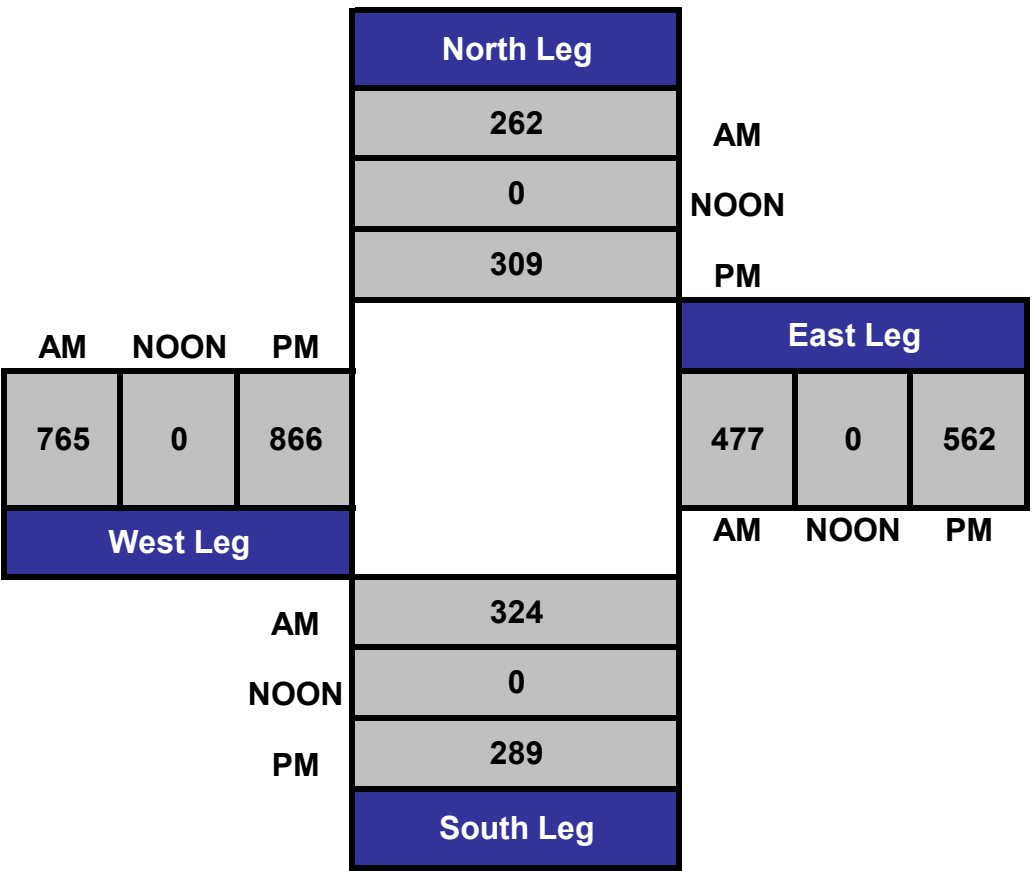
Project #: 16-7834-012



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-013 Claus Rd & Claribel Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Claus Rd Southbound					Claribel Rd Westbound					Claus Rd Northbound					Claribel Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	9	88	7	0	104	27	28	4	0	59	6	43	17	0	66	1	18	5	0	24	253	0
7:15	6	109	10	0	125	28	41	4	0	73	6	84	26	0	116	12	47	8	0	67	381	0
7:30	6	116	18	0	140	36	53	11	0	100	2	84	20	0	106	4	28	15	0	47	393	0
7:45	5	77	9	0	91	20	50	13	0	83	6	97	28	0	131	14	42	6	0	62	367	0
Total	26	390	44	0	460	111	172	32	0	315	20	308	91	0	419	31	135	34	0	200	1394	0
8:00	7	112	7	0	126	23	55	8	0	86	1	67	25	0	93	22	34	5	0	61	366	0
8:15	5	85	9	0	99	18	28	3	0	49	7	56	29	0	92	9	30	3	0	42	282	0
8:30	3	72	14	0	89	26	29	1	0	56	3	64	23	0	90	5	35	1	0	41	276	0
8:45	1	63	11	0	75	18	22	2	0	42	4	67	22	0	93	14	27	8	0	49	259	0
Total	16	332	41	0	389	85	134	14	0	233	15	254	99	0	368	50	126	17	0	193	1183	0
16:00	10	49	15	0	74	25	52	5	0	82	3	89	28	0	120	14	49	8	0	71	347	0
16:15	2	77	7	0	86	37	50	3	0	90	10	105	29	0	144	13	37	5	0	55	375	0
16:30	6	68	21	0	95	34	51	9	0	94	7	104	41	0	152	16	50	4	0	70	411	0
16:45	7	100	12	0	119	39	41	8	0	88	7	101	30	0	138	9	51	6	0	66	411	0
Total	25	294	55	0	374	135	194	25	0	354	27	399	128	0	554	52	187	23	0	262	1544	0
17:00	2	82	17	0	101	36	46	7	0	89	7	100	45	0	152	14	49	3	0	66	408	0
17:15	3	114	21	0	138	34	46	7	0	87	12	120	45	0	177	6	52	6	0	64	466	0
17:30	7	95	24	0	126	19	42	7	0	68	8	76	37	0	121	10	40	9	0	59	374	0
17:45	1	87	18	0	106	20	34	3	0	57	5	77	35	0	117	10	50	6	0	66	346	0
Total	13	378	80	0	471	109	168	24	0	301	32	373	162	0	567	40	191	24	0	255	1594	0
Grand Total	80	1394	220	0	1694	440	668	95	0	1203	94	1334	480	0	1908	173	639	98	0	910	5715	0
Apprch %	4.7%	82.3%	13.0%	0.0%		36.6%	55.5%	7.9%	0.0%		4.9%	69.9%	25.2%	0.0%		19.0%	70.2%	10.8%	0.0%			
Total %	1.4%	24.4%	3.8%	0.0%	29.6%	7.7%	11.7%	1.7%	0.0%	21.0%	1.6%	23.3%	8.4%	0.0%	33.4%	3.0%	11.2%	1.7%	0.0%	15.9%	100.0%	

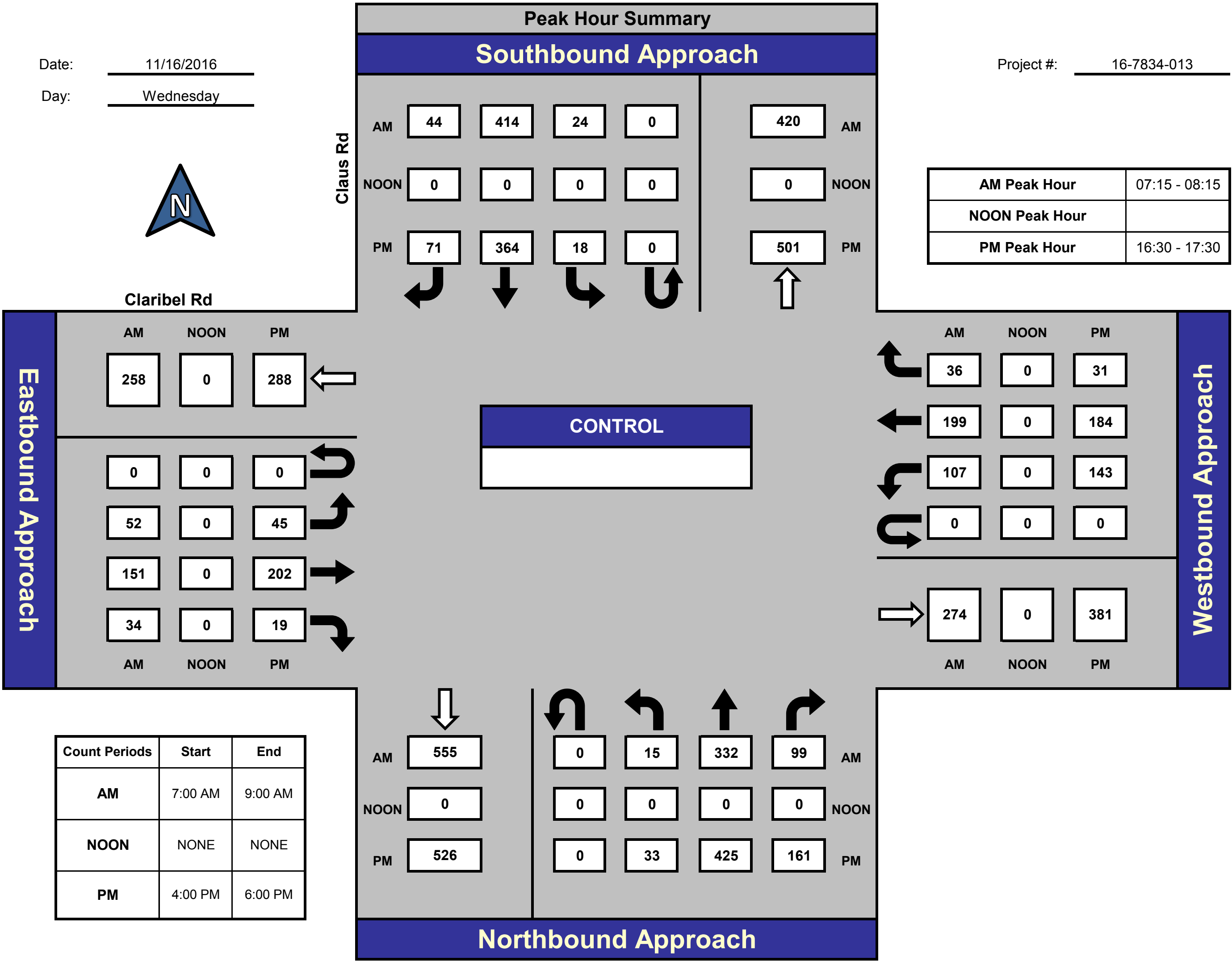
AM PEAK HOUR	Claus Rd Southbound					Claribel Rd Westbound					Claus Rd Northbound					Claribel Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	6	109	10	0	125	28	41	4	0	73	6	84	26	0	116	12	47	8	0	67	381
7:30	6	116	18	0	140	36	53	11	0	100	2	84	20	0	106	4	28	15	0	47	393
7:45	5	77	9	0	91	20	50	13	0	83	6	97	28	0	131	14	42	6	0	62	367
8:00	7	112	7	0	126	23	55	8	0	86	1	67	25	0	93	22	34	5	0	61	366
Total Volume	24	414	44	0	482	107	199	36	0	342	15	332	99	0	446	52	151	34	0	237	1507
% App Total	5.0%	85.9%	9.1%	0.0%		31.3%	58.2%	10.5%	0.0%		3.4%	74.4%	22.2%	0.0%		21.9%	63.7%	14.3%	0.0%		
PHF	.857	.892	.611	.000	.861	.743	.905	.692	.000	.855	.625	.856	.884	.000	.851	.591	.803	.567	.000	.884	.959

PM PEAK HOUR	Claus Rd Southbound					Claribel Rd Westbound					Claus Rd Northbound					Claribel Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	6	68	21	0	95	34	51	9	0	94	7	104	41	0	152	16	50	4	0	70	411
16:45	7	100	12	0	119	39	41	8	0	88	7	101	30	0	138	9	51	6	0	66	411
17:00	2	82	17	0	101	36	46	7	0	89	7	100	45	0	152	14	49	3	0	66	408
17:15	3	114	21	0	138	34	46	7	0	87	12	120	45	0	177	6	52	6	0	64	466
Total Volume	18	364	71	0	453	143	184	31	0	358	33	425	161	0	619	45	202	19	0	266	1696
% App Total	4.0%	80.4%	15.7%	0.0%		39.9%	51.4%	8.7%	0.0%		5.3%	68.7%	26.0%	0.0%		16.9%	75.9%	7.1%	0.0%		
PHF	.643	.798	.845	.000	.821	.917	.902	.861	.000	.952	.688	.885	.894	.000	.874	.703	.971	.792	.000	.950	.910

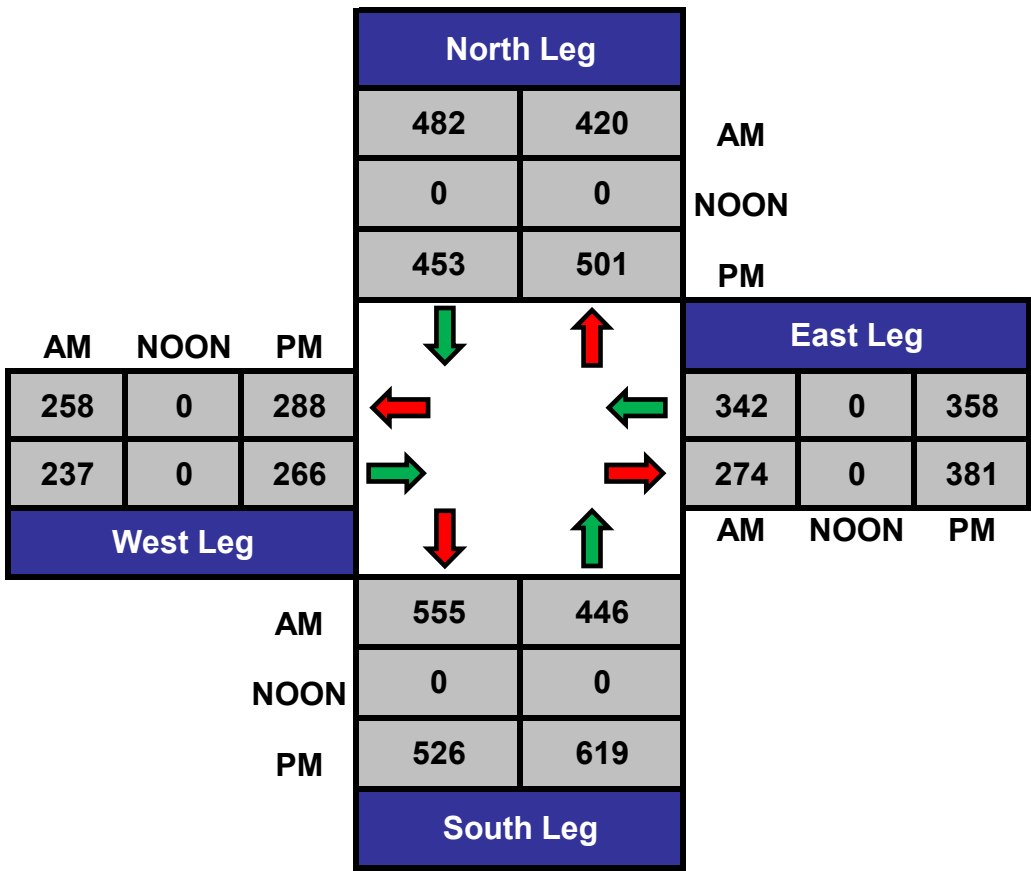
Claus Rd & Claribel Rd

Date: 11/16/2016
Day: Wednesday

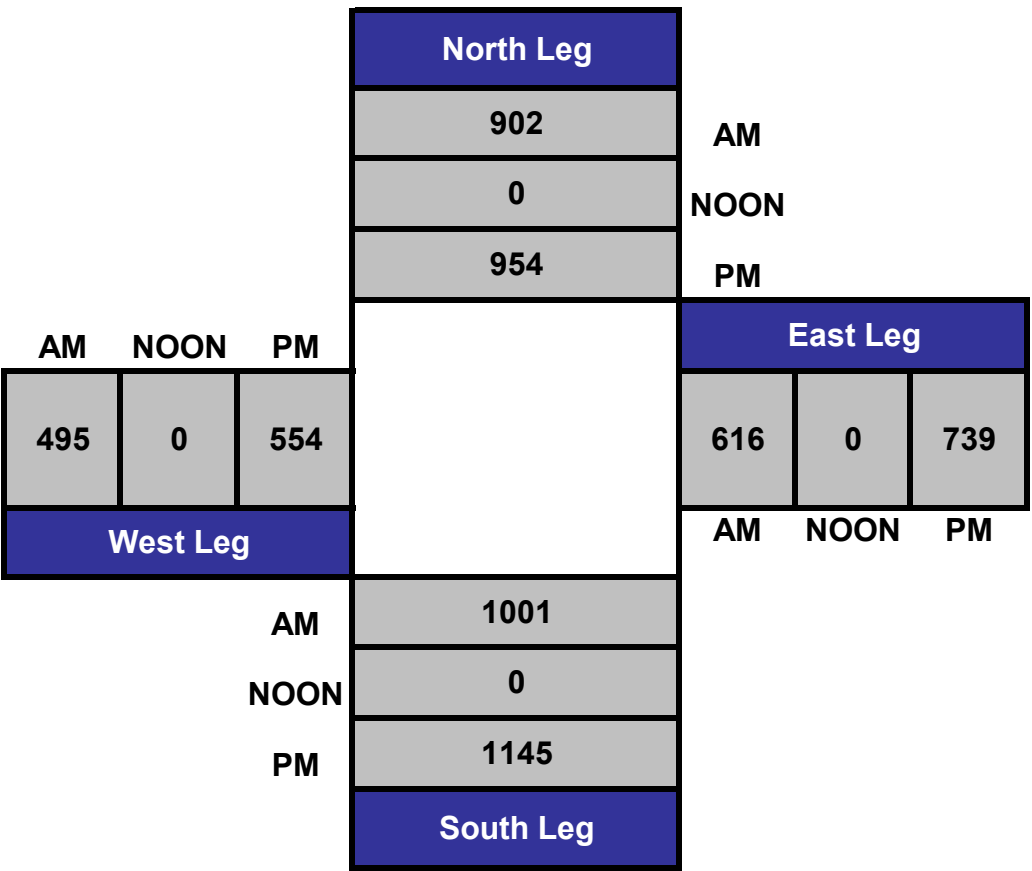
Project #: 16-7834-013



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-014 Oakdale Rd & Claratina Rd
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					Claratina Rd Westbound					Oakdale Rd Northbound					Claratina Rd Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	0	129	13	0	142	0	0	0	0	0	75	101	0	0	176	2	0	28	0	30	348	0
7:15	0	182	11	0	193	0	0	0	0	0	105	115	0	0	220	4	0	40	0	44	457	0
7:30	0	233	13	0	246	0	0	0	0	0	118	150	0	0	268	0	0	59	0	59	573	0
7:45	0	202	9	0	211	0	0	0	0	0	107	177	0	0	284	4	0	57	0	61	556	0
Total	0	746	46	0	792	0	0	0	0	0	405	543	0	0	948	10	0	184	0	194	1934	0
8:00	0	142	11	0	153	0	0	0	0	0	98	167	0	0	265	4	0	50	0	54	472	0
8:15	0	142	10	0	152	0	0	0	0	0	124	105	0	0	229	1	0	39	0	40	421	0
8:30	0	136	11	0	147	0	0	0	0	0	82	93	0	0	175	4	0	53	0	57	379	0
8:45	0	123	9	0	132	0	0	0	0	0	92	119	0	0	211	6	0	23	0	29	372	0
Total	0	543	41	0	584	0	0	0	0	0	396	484	0	0	880	15	0	165	0	180	1644	0
16:00	0	172	8	0	180	0	0	0	0	0	39	192	0	0	231	9	0	92	0	101	512	0
16:15	0	139	4	0	143	0	0	0	0	0	41	205	0	0	246	10	0	104	0	114	503	0
16:30	0	225	6	0	231	0	0	0	0	0	58	184	0	0	242	11	0	123	0	134	607	0
16:45	0	155	13	0	168	0	0	0	0	0	48	225	0	0	273	10	0	98	0	108	549	0
Total	0	691	31	0	722	0	0	0	0	0	186	806	0	0	992	40	0	417	0	457	2171	0
17:00	0	193	16	0	209	0	0	0	0	0	60	206	0	0	266	7	0	120	0	127	602	0
17:15	0	208	9	0	217	0	0	0	0	0	44	193	0	0	237	6	0	114	0	120	574	0
17:30	0	177	7	0	184	0	0	0	0	0	69	194	0	0	263	9	0	101	0	110	557	0
17:45	0	147	13	0	160	0	0	0	0	0	68	203	0	0	271	10	0	83	0	93	524	0
Total	0	725	45	0	770	0	0	0	0	0	241	796	0	0	1037	32	0	418	0	450	2257	0
Grand Total	0	2705	163	0	2868	0	0	0	0	0	1228	2629	0	0	3857	97	0	1184	0	1281	8006	0
Apprch %	0.0%	94.3%	5.7%	0.0%		0.0%	0.0%	0.0%	0.0%		31.8%	68.2%	0.0%	0.0%		7.6%	0.0%	92.4%	0.0%			
Total %	0.0%	33.8%	2.0%	0.0%	35.8%	0.0%	0.0%	0.0%	0.0%	0.0%	15.3%	32.8%	0.0%	0.0%	48.2%	1.2%	0.0%	14.8%	0.0%	16.0%	100.0%	

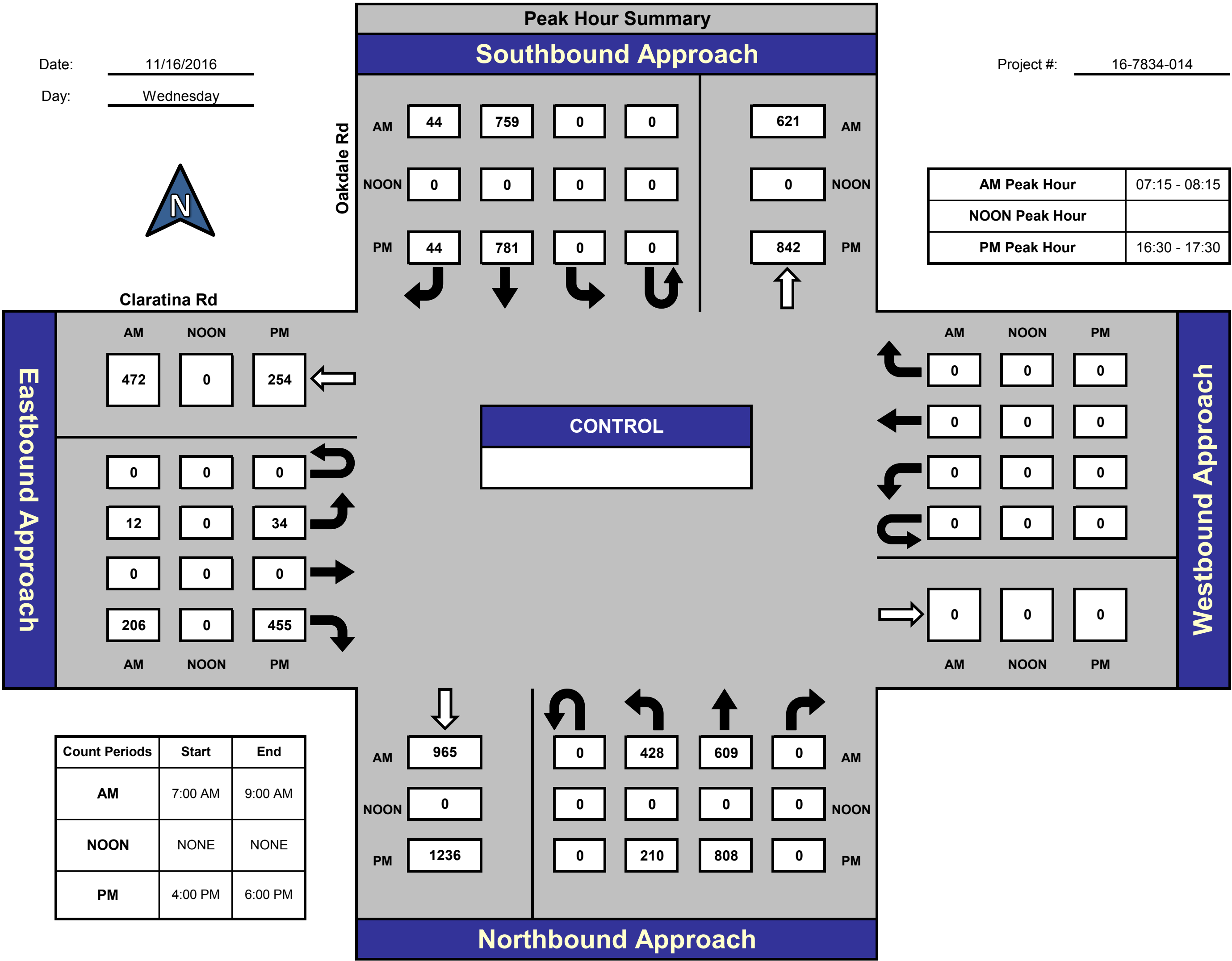
AM PEAK HOUR	Oakdale Rd Southbound					Claratina Rd Westbound					Oakdale Rd Northbound					Claratina Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	182	11	0	193	0	0	0	0	0	105	115	0	0	220	4	0	40	0	44	457
7:30	0	233	13	0	246	0	0	0	0	0	118	150	0	0	268	0	0	59	0	59	573
7:45	0	202	9	0	211	0	0	0	0	0	107	177	0	0	284	4	0	57	0	61	556
8:00	0	142	11	0	153	0	0	0	0	0	98	167	0	0	265	4	0	50	0	54	472
Total Volume	0	759	44	0	803	0	0	0	0	0	428	609	0	0	1037	12	0	206	0	218	2058
% App Total	0.0%	94.5%	5.5%	0.0%		0.0%	0.0%	0.0%	0.0%		41.3%	58.7%	0.0%	0.0%		5.5%	0.0%	94.5%	0.0%		
PHF	.000	.814	.846	.000	.816	.000	.000	.000	.000	.000	.907	.860	.000	.000	.913	.750	.000	.873	.000	.893	.898

PM PEAK HOUR	Oakdale Rd Southbound					Claratina Rd Westbound					Oakdale Rd Northbound					Claratina Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	225	6	0	231	0	0	0	0	0	58	184	0	0	242	11	0	123	0	134	607
16:45	0	155	13	0	168	0	0	0	0	0	48	225	0	0	273	10	0	98	0	108	549
17:00	0	193	16	0	209	0	0	0	0	0	60	206	0	0	266	7	0	120	0	127	602
17:15	0	208	9	0	217	0	0	0	0	0	44	193	0	0	237	6	0	114	0	120	574
Total Volume	0	781	44	0	825	0	0	0	0	0	210	808	0	0	1018	34	0	455	0	489	2332
% App Total	0.0%	94.7%	5.3%	0.0%		0.0%	0.0%	0.0%	0.0%		20.6%	79.4%	0.0%	0.0%		7.0%	0.0%	93.0%	0.0%		
PHF	.000	.868	.688	.000	.893	.000	.000	.000	.000	.000	.875	.898	.000	.000	.932	.773	.000	.925	.000	.912	.960

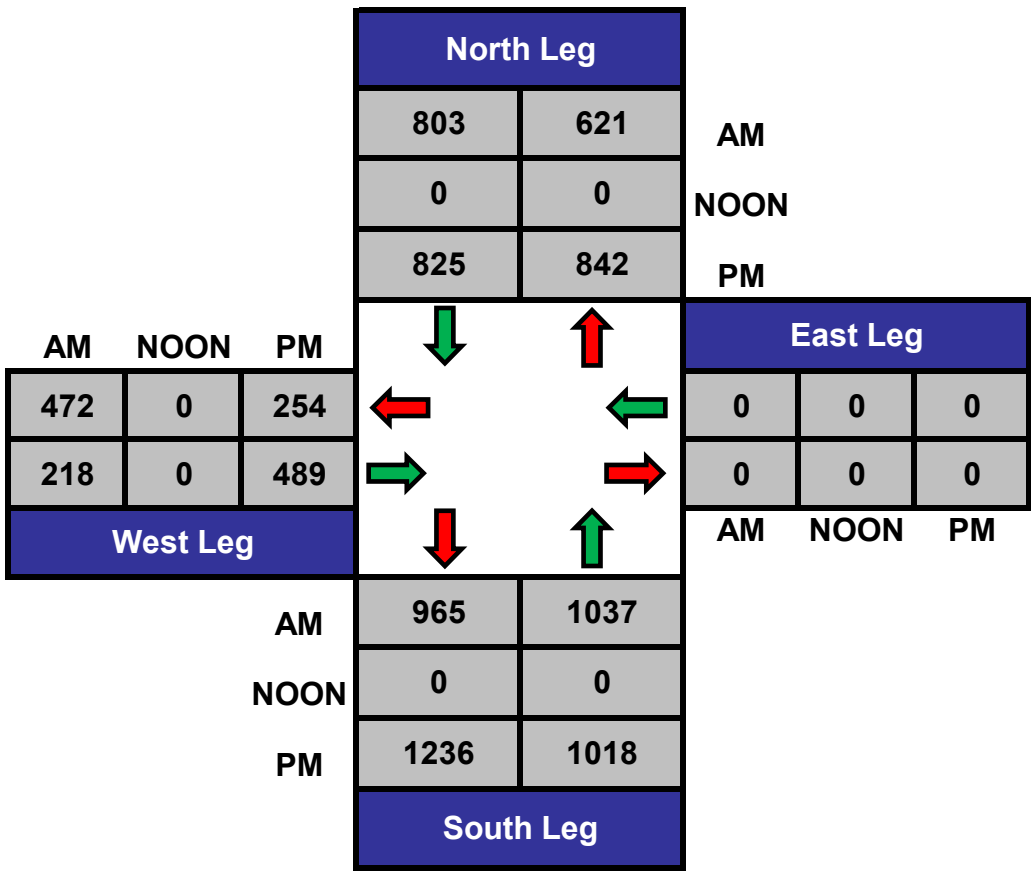
Oakdale Rd & Claratina Rd

Date: 11/16/2016
Day: Wednesday

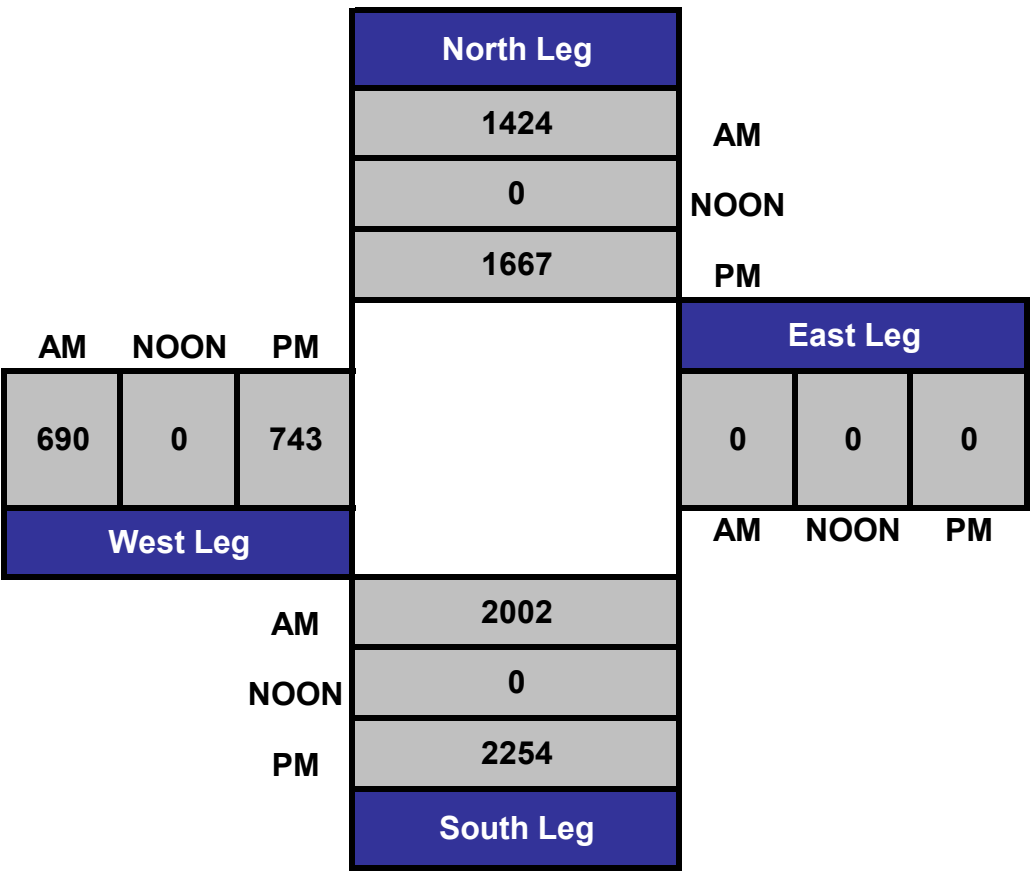
Project #: 16-7834-014



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-015 Oakdale Rd & Crossroads SC's North Access
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					Crossroads SC's North Access Westbound					Oakdale Rd Northbound					Crossroads SC's North Access Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	21	136	0	1	158	18	0	8	0	26	0	64	3	6	73	0	0	0	0	0	257	7
7:15	13	172	0	0	185	17	0	6	0	23	0	74	3	6	83	0	0	0	0	0	291	6
7:30	15	235	0	1	251	19	0	10	0	29	0	114	4	2	120	0	0	0	0	0	400	3
7:45	10	170	0	0	180	12	0	12	0	24	0	124	4	6	134	0	0	0	0	0	338	6
Total	59	713	0	2	774	66	0	36	0	102	0	376	14	20	410	0	0	0	0	0	1286	22
8:00	29	148	0	1	178	17	0	7	0	24	0	139	2	2	143	0	0	0	0	0	345	3
8:15	22	130	0	0	152	16	0	9	0	25	0	90	10	5	105	0	0	0	0	0	282	5
8:30	24	109	0	0	133	20	0	6	0	26	0	79	3	4	86	0	0	0	0	0	245	4
8:45	24	117	0	0	141	11	0	11	0	22	0	85	3	2	90	0	0	0	0	0	253	2
Total	99	504	0	1	604	64	0	33	0	97	0	393	18	13	424	0	0	0	0	0	1125	14
16:00	58	98	0	0	156	21	0	30	0	51	0	180	13	6	199	0	0	0	0	0	406	6
16:15	46	84	0	1	131	13	0	42	0	55	0	174	11	4	189	0	0	0	0	0	375	5
16:30	37	123	0	0	160	20	0	46	0	66	0	192	19	4	215	0	0	0	0	0	441	4
16:45	37	95	0	4	136	12	0	33	0	45	0	190	26	3	219	0	0	0	0	0	400	7
Total	178	400	0	5	583	66	0	151	0	217	0	736	69	17	822	0	0	0	0	0	1622	22
17:00	42	107	0	0	149	22	0	46	0	68	0	179	14	7	200	0	0	0	0	0	417	7
17:15	42	110	0	1	153	20	0	55	0	75	0	186	12	4	202	0	0	0	0	0	430	5
17:30	47	89	0	1	137	19	0	34	0	53	0	181	11	9	201	0	0	0	0	0	391	10
17:45	48	103	0	0	151	14	0	43	0	57	0	172	16	5	193	0	0	0	0	0	401	5
Total	179	409	0	2	590	75	0	178	0	253	0	718	53	25	796	0	0	0	0	0	1639	27
Grand Total	515	2026	0	10	2551	271	0	398	0	669	0	2223	154	75	2452	0	0	0	0	0	5672	85
Apprch %	20.2%	79.4%	0.0%	0.4%		40.5%	0.0%	59.5%	0.0%		0.0%	90.7%	6.3%	3.1%		0.0%	0.0%	0.0%	0.0%			
Total %	9.1%	35.7%	0.0%	0.2%	45.0%	4.8%	0.0%	7.0%	0.0%	11.8%	0.0%	39.2%	2.7%	1.3%	43.2%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

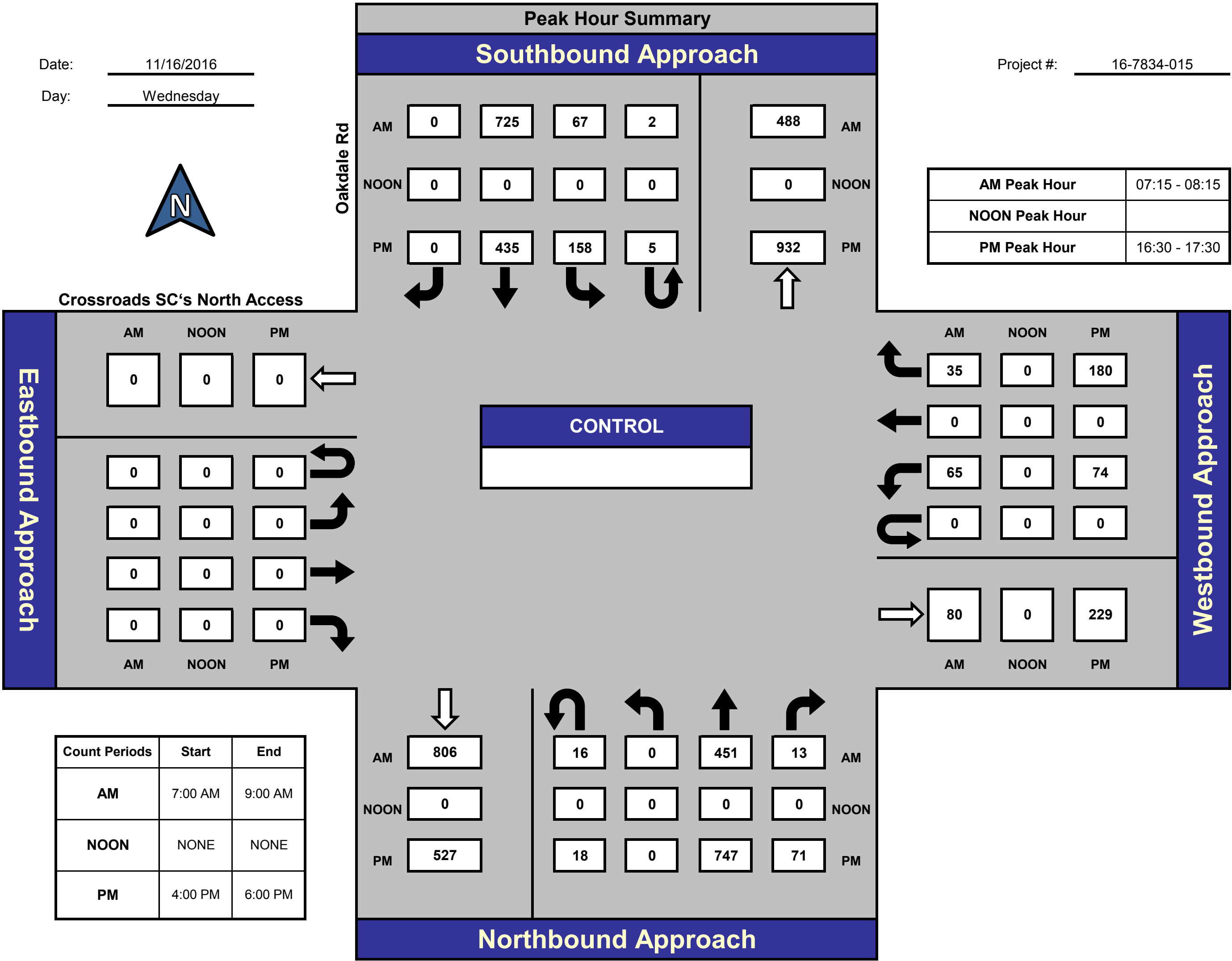
AM PEAK HOUR	Oakdale Rd Southbound					Crossroads SC's North Access Westbound					Oakdale Rd Northbound					Crossroads SC's North Access Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	13	172	0	0	185	17	0	6	0	23	0	74	3	6	83	0	0	0	0	0	291
7:30	15	235	0	1	251	19	0	10	0	29	0	114	4	2	120	0	0	0	0	0	400
7:45	10	170	0	0	180	12	0	12	0	24	0	124	4	6	134	0	0	0	0	0	338
8:00	29	148	0	1	178	17	0	7	0	24	0	139	2	2	143	0	0	0	0	0	345
Total Volume	67	725	0	2	794	65	0	35	0	100	0	451	13	16	480	0	0	0	0	0	1374
% App Total	8.4%	91.3%	0.0%	0.3%		65.0%	0.0%	35.0%	0.0%		0.0%	94.0%	2.7%	3.3%		0.0%	0.0%	0.0%	0.0%		
PHF	.578	.771	.000	.500	.791	.855	.000	.729	.000	.862	.000	.811	.813	.667	.839	.000	.000	.000	.000	.000	.859

PM PEAK HOUR	Oakdale Rd Southbound					Crossroads SC's North Access Westbound					Oakdale Rd Northbound					Crossroads SC's North Access Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	37	123	0	0	160	20	0	46	0	66	0	192	19	4	215	0	0	0	0	0	441
16:45	37	95	0	4	136	12	0	33	0	45	0	190	26	3	219	0	0	0	0	0	400
17:00	42	107	0	0	149	22	0	46	0	68	0	179	14	7	200	0	0	0	0	0	417
17:15	42	110	0	1	153	20	0	55	0	75	0	186	12	4	202	0	0	0	0	0	430
Total Volume	158	435	0	5	598	74	0	180	0	254	0	747	71	18	836	0	0	0	0	0	1688
% App Total	26.4%	72.7%	0.0%	0.8%		29.1%	0.0%	70.9%	0.0%		0.0%	89.4%	8.5%	2.2%		0.0%	0.0%	0.0%	0.0%		
PHF	.940	.884	.000	.313	.934	.841	.000	.818	.000	.847	.000	.973	.683	.643	.954	.000	.000	.000	.000	.000	.957

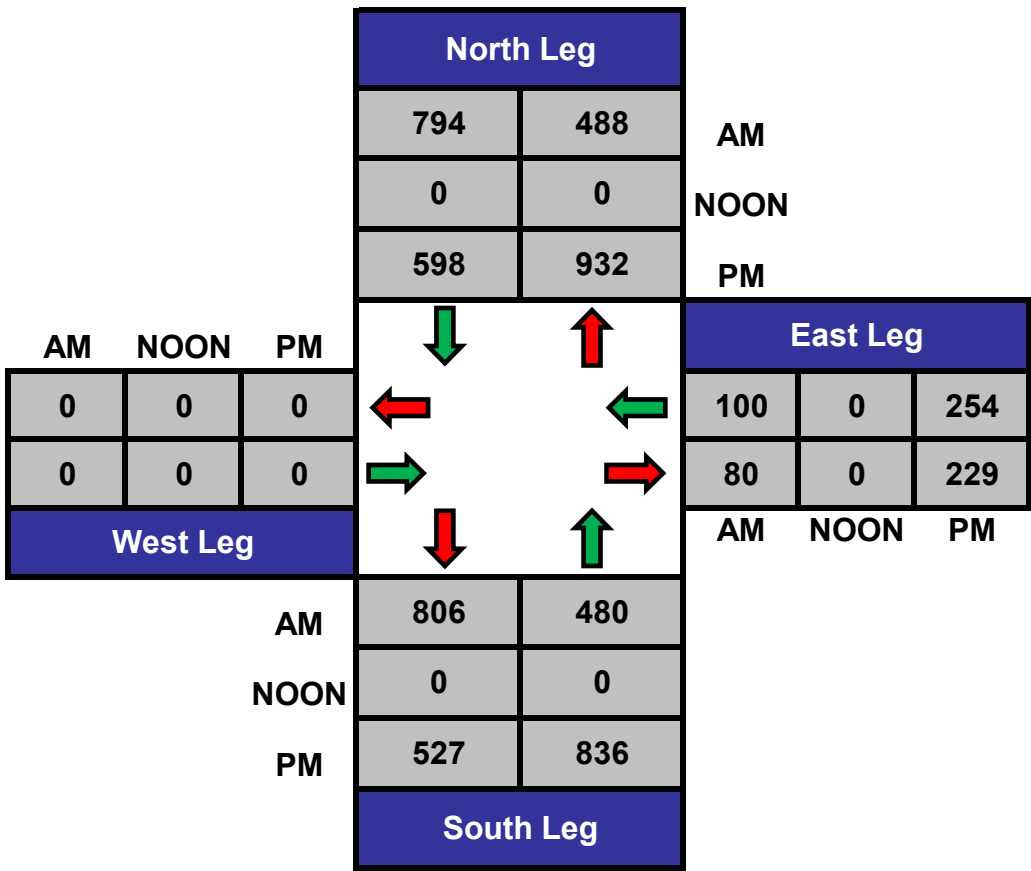
Oakdale Rd & Crossroads SC's North Access

Date: 11/16/2016
Day: Wednesday

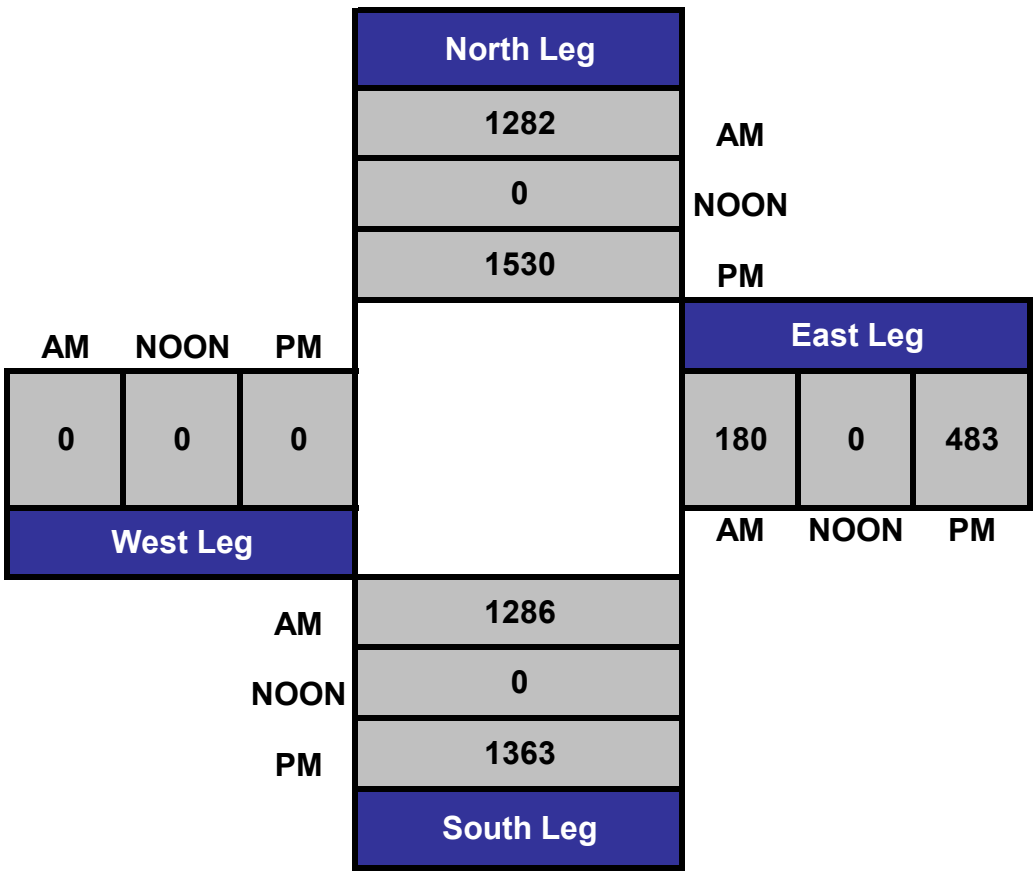
Project #: 16-7834-015



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-016 Roselle Ave & Sylvan Ave
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Roselle Ave Southbound					Sylvan Ave Westbound					Roselle Ave Northbound					Sylvan Ave Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	31	47	11	2	91	53	92	21	1	167	42	34	34	0	110	6	100	12	0	118	486	3
7:15	59	45	17	3	124	46	109	32	1	188	51	56	55	0	162	17	104	29	2	152	626	6
7:30	56	79	17	5	157	88	144	31	0	263	33	34	83	0	150	26	155	43	0	224	794	5
7:45	34	89	20	7	150	100	147	33	2	282	51	64	76	1	192	20	95	48	1	164	788	11
Total	180	260	65	17	522	287	492	117	4	900	177	188	248	1	614	69	454	132	3	658	2694	25
8:00	14	45	9	0	68	7	75	14	0	96	75	50	7	0	132	9	72	37	0	118	414	0
8:15	13	52	13	0	78	6	101	11	1	119	61	53	10	0	124	9	60	31	0	100	421	1
8:30	6	55	12	1	74	2	82	16	0	100	64	47	13	0	124	4	47	30	0	81	379	1
8:45	6	45	9	0	60	6	79	13	3	101	44	34	11	0	89	8	47	29	3	87	337	6
Total	39	197	43	1	280	21	337	54	4	416	244	184	41	0	469	30	226	127	3	386	1551	8
16:00	13	48	11	0	72	15	81	24	1	121	41	56	14	1	112	6	103	60	0	169	474	2
16:15	19	59	18	1	97	27	103	26	1	157	43	62	24	0	129	14	136	72	0	222	605	2
16:30	19	45	15	0	79	30	116	25	2	173	45	54	23	0	122	14	169	83	1	267	641	3
16:45	13	53	11	0	77	11	86	22	0	119	41	62	17	0	120	15	138	69	0	222	538	0
Total	64	205	55	1	325	83	386	97	4	570	170	234	78	1	483	49	546	284	1	880	2258	7
17:00	18	67	6	0	91	17	91	10	0	118	38	59	19	0	116	8	147	75	0	230	555	0
17:15	22	42	12	0	76	7	84	13	2	106	40	75	33	0	148	8	180	85	0	273	603	2
17:30	18	65	10	0	93	27	98	19	3	147	45	59	25	0	129	5	151	95	0	251	620	3
17:45	27	52	20	1	100	24	80	22	0	126	49	59	25	0	133	15	130	50	0	195	554	1
Total	85	226	48	1	360	75	353	64	5	497	172	252	102	0	526	36	608	305	0	949	2332	6
Grand Total	368	888	211	20	1487	466	1568	332	17	2383	763	858	469	2	2092	184	1834	848	7	2873	8835	46
Apprch %	24.7%	59.7%	14.2%	1.3%		19.6%	65.8%	13.9%	0.7%		36.5%	41.0%	22.4%	0.1%		6.4%	63.8%	29.5%	0.2%			
Total %	4.2%	10.1%	2.4%	0.2%	16.8%	5.3%	17.7%	3.8%	0.2%	27.0%	8.6%	9.7%	5.3%	0.0%	23.7%	2.1%	20.8%	9.6%	0.1%	32.5%	100.0%	

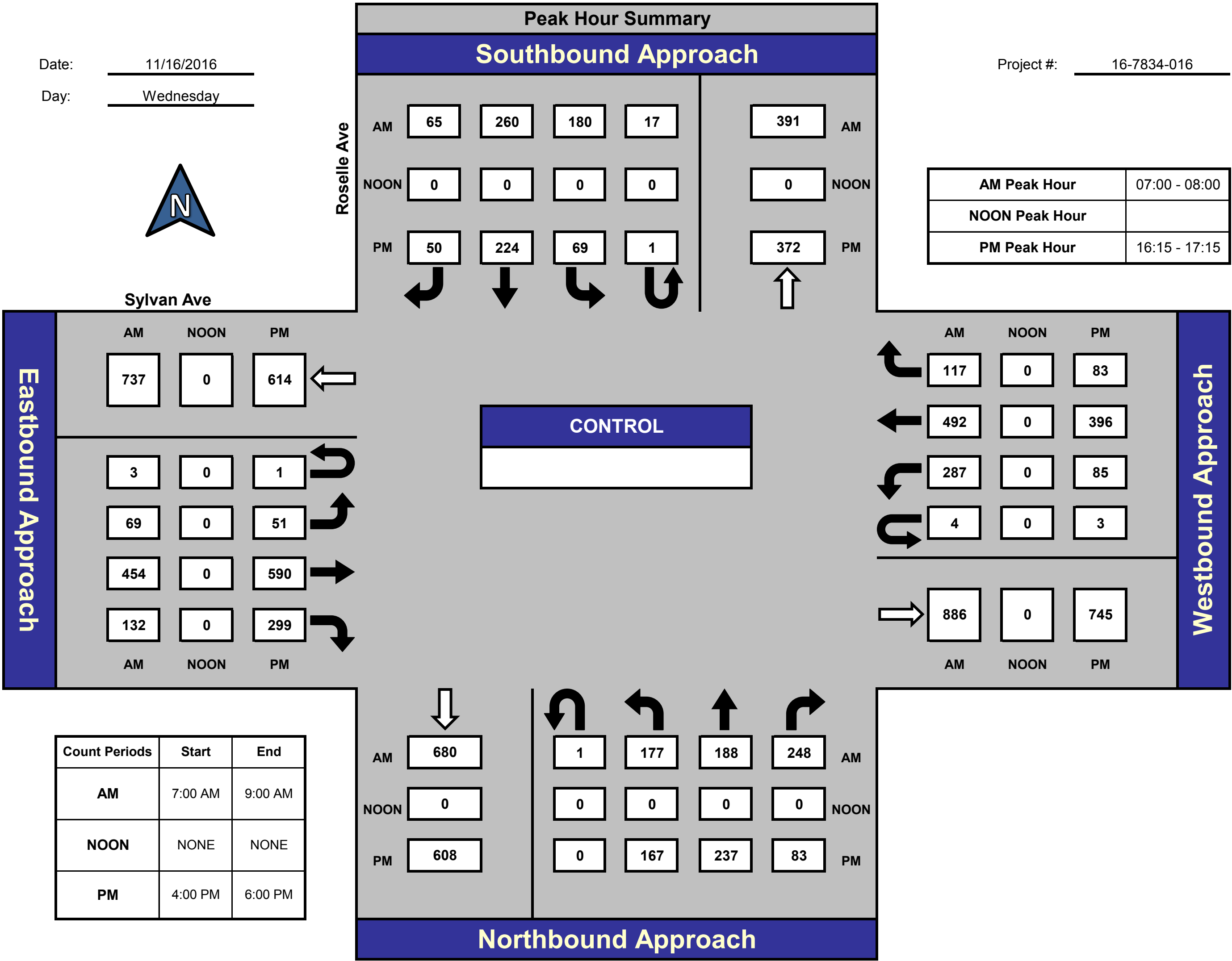
AM PEAK HOUR	Roselle Ave Southbound					Sylvan Ave Westbound					Roselle Ave Northbound					Sylvan Ave Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	31	47	11	2	91	53	92	21	1	167	42	34	34	0	110	6	100	12	0	118	486
7:15	59	45	17	3	124	46	109	32	1	188	51	56	55	0	162	17	104	29	2	152	626
7:30	56	79	17	5	157	88	144	31	0	263	33	34	83	0	150	26	155	43	0	224	794
7:45	34	89	20	7	150	100	147	33	2	282	51	64	76	1	192	20	95	48	1	164	788
Total Volume	180	260	65	17	522	287	492	117	4	900	177	188	248	1	614	69	454	132	3	658	2694
% App Total	34.5%	49.8%	12.5%	3.3%		31.9%	54.7%	13.0%	0.4%		28.8%	30.6%	40.4%	0.2%		10.5%	69.0%	20.1%	0.5%		
PHF	.763	.730	.813	.607	.831	.718	.837	.886	.500	.798	.868	.734	.747	.250	.799	.663	.732	.688	.375	.734	.848

PM PEAK HOUR	Roselle Ave Southbound					Sylvan Ave Westbound					Roselle Ave Northbound					Sylvan Ave Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	19	59	18	1	97	27	103	26	1	157	43	62	24	0	129	14	136	72	0	222	605
16:30	19	45	15	0	79	30	116	25	2	173	45	54	23	0	122	14	169	83	1	267	641
16:45	13	53	11	0	77	11	86	22	0	119	41	62	17	0	120	15	138	69	0	222	538
17:00	18	67	6	0	91	17	91	10	0	118	38	59	19	0	116	8	147	75	0	230	555
Total Volume	69	224	50	1	344	85	396	83	3	567	167	237	83	0	487	51	590	299	1	941	2339
% App Total	20.1%	65.1%	14.5%	0.3%		15.0%	69.8%	14.6%	0.5%		34.3%	48.7%	17.0%	0.0%		5.4%	62.7%	31.8%	0.1%		
PHF	.908	.836	.694	.250	.887	.708	.853	.798	.375	.819	.928	.956	.865	.000	.944	.850	.873	.901	.250	.881	.912

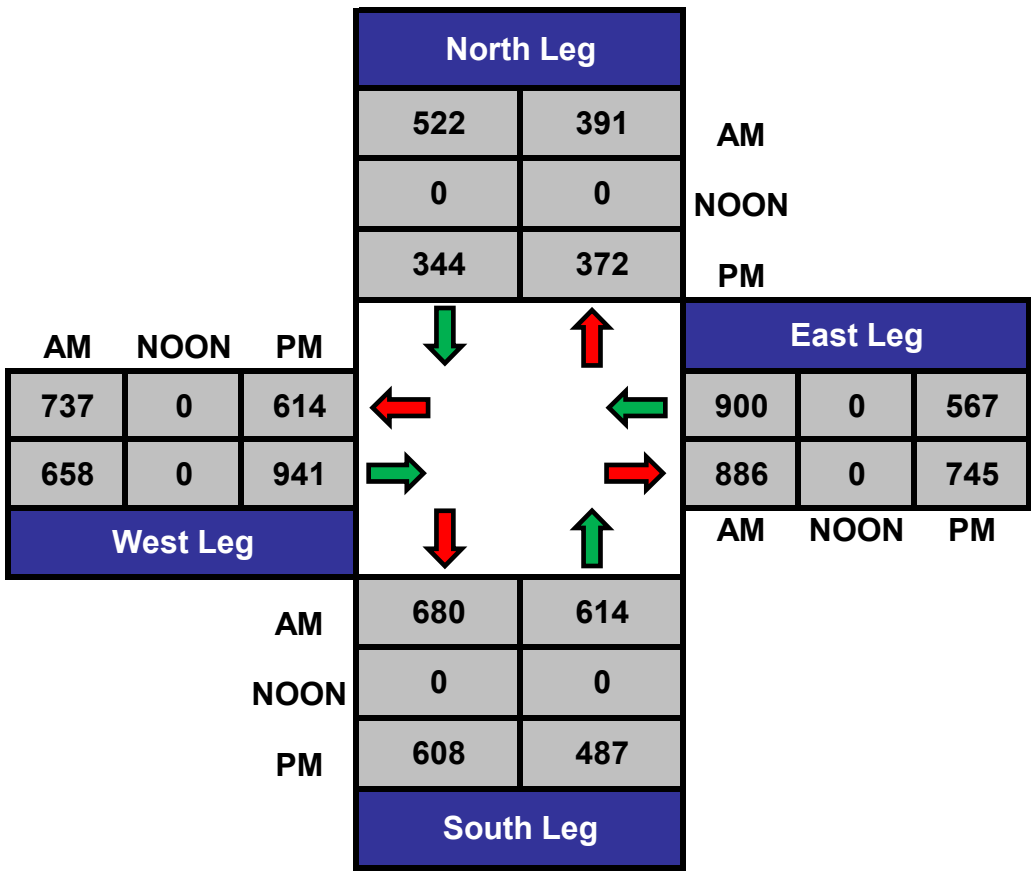
Roselle Ave & Sylvan Ave

Date: 11/16/2016
Day: Wednesday

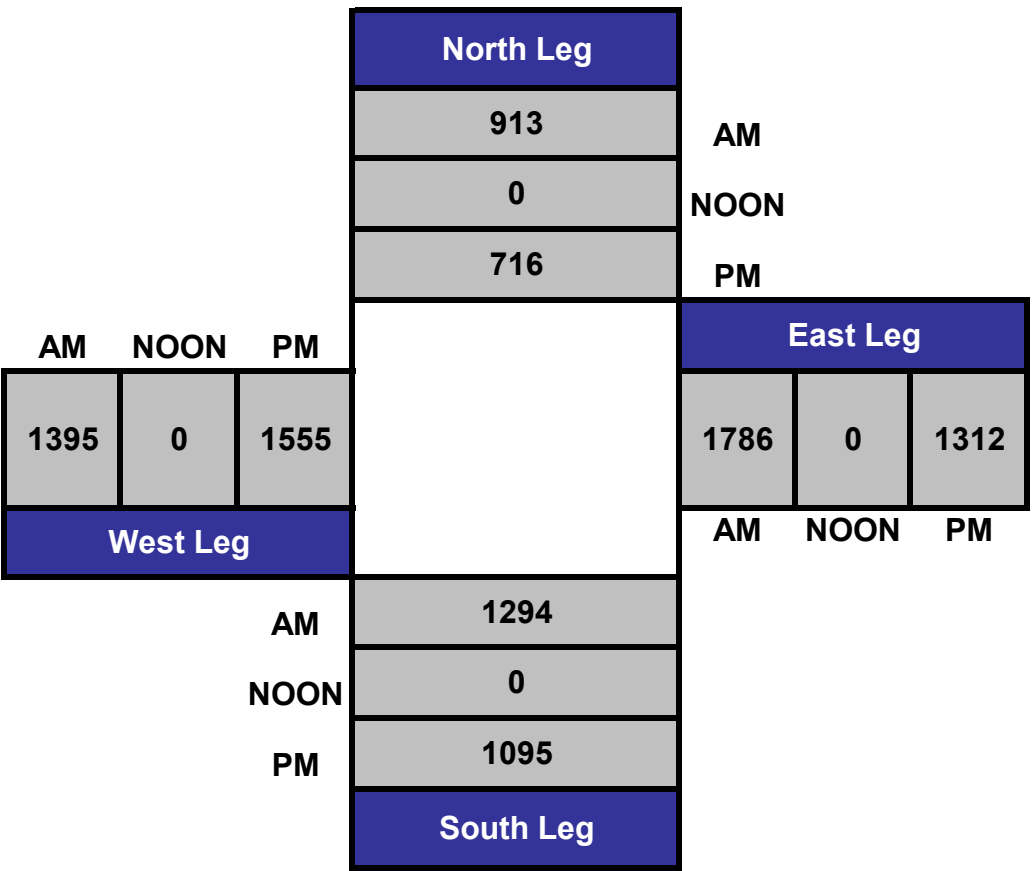
Project #: 16-7834-016



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-017 Oakdale Rd & Sylvan Ave
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Oakdale Rd Southbound					Sylvan Ave Westbound					Oakdale Rd Northbound					Sylvan Ave Eastbound					Total	Uturns Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
7:00	31	102	11	0	144	20	84	56	0	160	54	118	13	0	185	12	66	34	0	112	601	0
7:15	58	146	21	0	225	20	92	67	0	179	93	164	11	0	268	7	84	47	0	138	810	0
7:30	124	213	20	0	357	31	135	86	0	252	149	211	14	0	374	19	109	71	0	199	1182	0
7:45	90	203	26	0	319	37	132	105	0	274	156	220	7	0	383	22	89	74	0	185	1161	0
Total	303	664	78	0	1045	108	443	314	0	865	452	713	45	0	1210	60	348	226	0	634	3754	0
8:00	51	146	25	0	222	26	125	76	0	227	98	191	13	0	302	8	86	39	0	133	884	0
8:15	43	161	19	0	223	16	122	65	0	203	72	166	12	0	250	21	53	41	0	115	791	0
8:30	40	124	18	0	182	13	95	62	0	170	67	121	11	0	199	10	53	39	0	102	653	0
8:45	36	125	24	0	185	16	101	47	0	164	70	139	10	0	219	12	49	42	0	103	671	0
Total	170	556	86	0	812	71	443	250	0	764	307	617	46	0	970	51	241	161	0	453	2999	0
16:00	97	165	29	0	291	25	98	43	0	166	70	172	24	0	266	29	116	74	0	219	942	0
16:15	92	164	26	0	282	22	131	45	0	198	83	180	29	0	292	19	177	70	0	266	1038	0
16:30	121	192	21	0	334	23	119	66	0	208	82	178	42	0	302	30	153	72	0	255	1099	0
16:45	126	194	26	0	346	25	123	59	0	207	95	181	23	0	299	25	152	92	0	269	1121	0
Total	436	715	102	0	1253	95	471	213	0	779	330	711	118	0	1159	103	598	308	0	1009	4200	0
17:00	100	158	23	0	281	26	108	45	0	179	86	200	19	0	305	25	152	88	0	265	1030	0
17:15	136	205	25	0	366	14	110	49	0	173	78	163	20	0	261	33	171	85	0	289	1089	0
17:30	121	185	28	0	334	21	114	46	0	181	86	214	17	0	317	39	169	98	0	306	1138	0
17:45	94	161	15	0	270	15	105	61	0	181	73	165	17	0	255	28	139	93	0	260	966	0
Total	451	709	91	0	1251	76	437	201	0	714	323	742	73	0	1138	125	631	364	0	1120	4223	0
Grand Total	1360	2644	357	0	4361	350	1794	978	0	3122	1412	2783	282	0	4477	339	1818	1059	0	3216	15176	0
Apprch %	31.2%	60.6%	8.2%	0.0%		11.2%	57.5%	31.3%	0.0%		31.5%	62.2%	6.3%	0.0%		10.5%	56.5%	32.9%	0.0%			
Total %	9.0%	17.4%	2.4%	0.0%	28.7%	2.3%	11.8%	6.4%	0.0%	20.6%	9.3%	18.3%	1.9%	0.0%	29.5%	2.2%	12.0%	7.0%	0.0%	21.2%	100.0%	

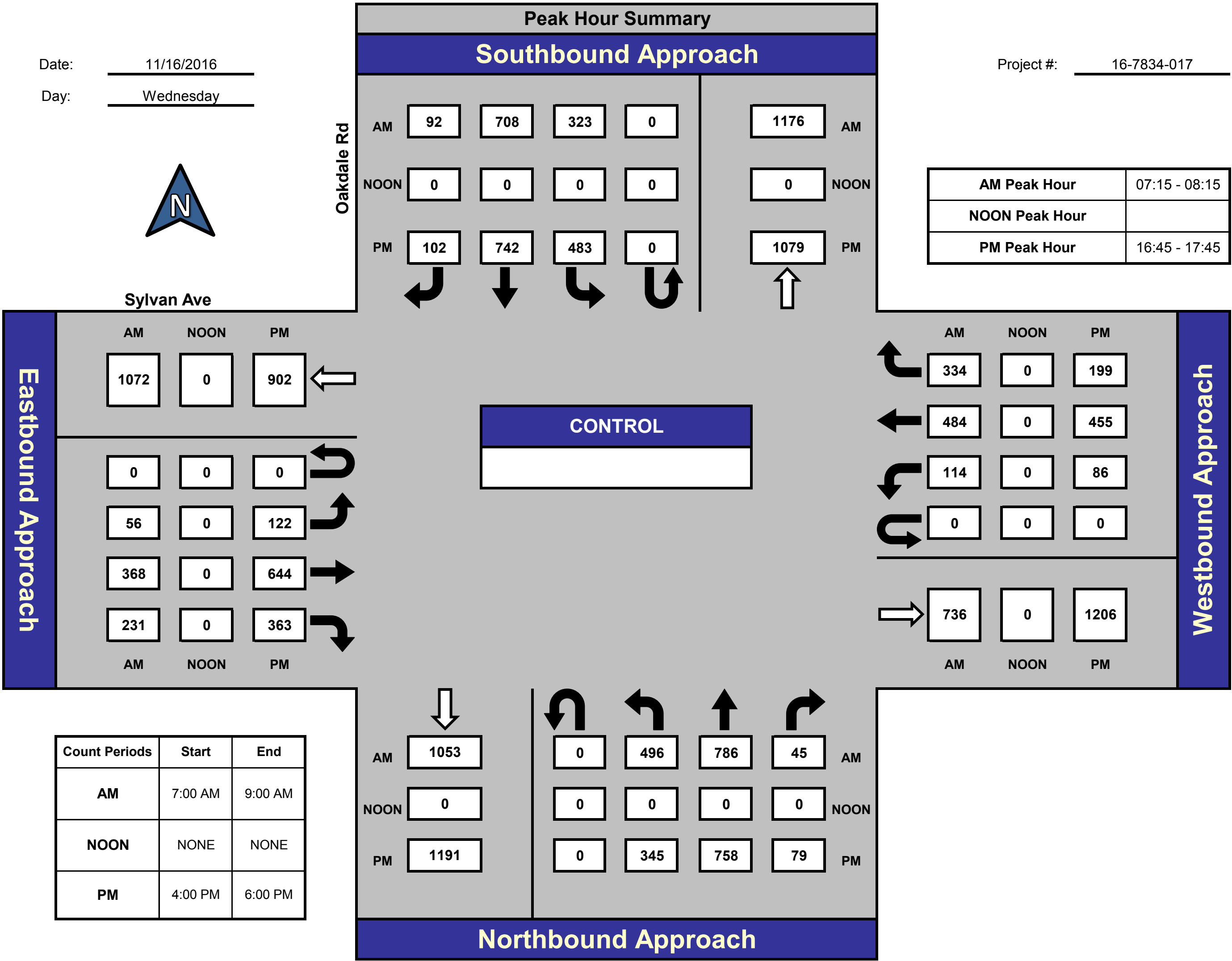
AM PEAK HOUR	Oakdale Rd Southbound					Sylvan Ave Westbound					Oakdale Rd Northbound					Sylvan Ave Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	58	146	21	0	225	20	92	67	0	179	93	164	11	0	268	7	84	47	0	138	810
7:30	124	213	20	0	357	31	135	86	0	252	149	211	14	0	374	19	109	71	0	199	1182
7:45	90	203	26	0	319	37	132	105	0	274	156	220	7	0	383	22	89	74	0	185	1161
8:00	51	146	25	0	222	26	125	76	0	227	98	191	13	0	302	8	86	39	0	133	884
Total Volume	323	708	92	0	1123	114	484	334	0	932	496	786	45	0	1327	56	368	231	0	655	4037
% App Total	28.8%	63.0%	8.2%	0.0%		12.2%	51.9%	35.8%	0.0%		37.4%	59.2%	3.4%	0.0%		8.5%	56.2%	35.3%	0.0%		
PHF	.651	.831	.885	.000	.786	.770	.896	.795	.000	.850	.795	.893	.804	.000	.866	.636	.844	.780	.000	.823	.854

PM PEAK HOUR	Oakdale Rd Southbound					Sylvan Ave Westbound					Oakdale Rd Northbound					Sylvan Ave Eastbound					Total
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	126	194	26	0	346	25	123	59	0	207	95	181	23	0	299	25	152	92	0	269	1121
17:00	100	158	23	0	281	26	108	45	0	179	86	200	19	0	305	25	152	88	0	265	1030
17:15	136	205	25	0	366	14	110	49	0	173	78	163	20	0	261	33	171	85	0	289	1089
17:30	121	185	28	0	334	21	114	46	0	181	86	214	17	0	317	39	169	98	0	306	1138
Total Volume	483	742	102	0	1327	86	455	199	0	740	345	758	79	0	1182	122	644	363	0	1129	4378
% App Total	36.4%	55.9%	7.7%	0.0%		11.6%	61.5%	26.9%	0.0%		29.2%	64.1%	6.7%	0.0%		10.8%	57.0%	32.2%	0.0%		
PHF	.888	.905	.911	.000	.906	.827	.925	.843	.000	.894	.908	.886	.859	.000	.932	.782	.942	.926	.000	.922	.962

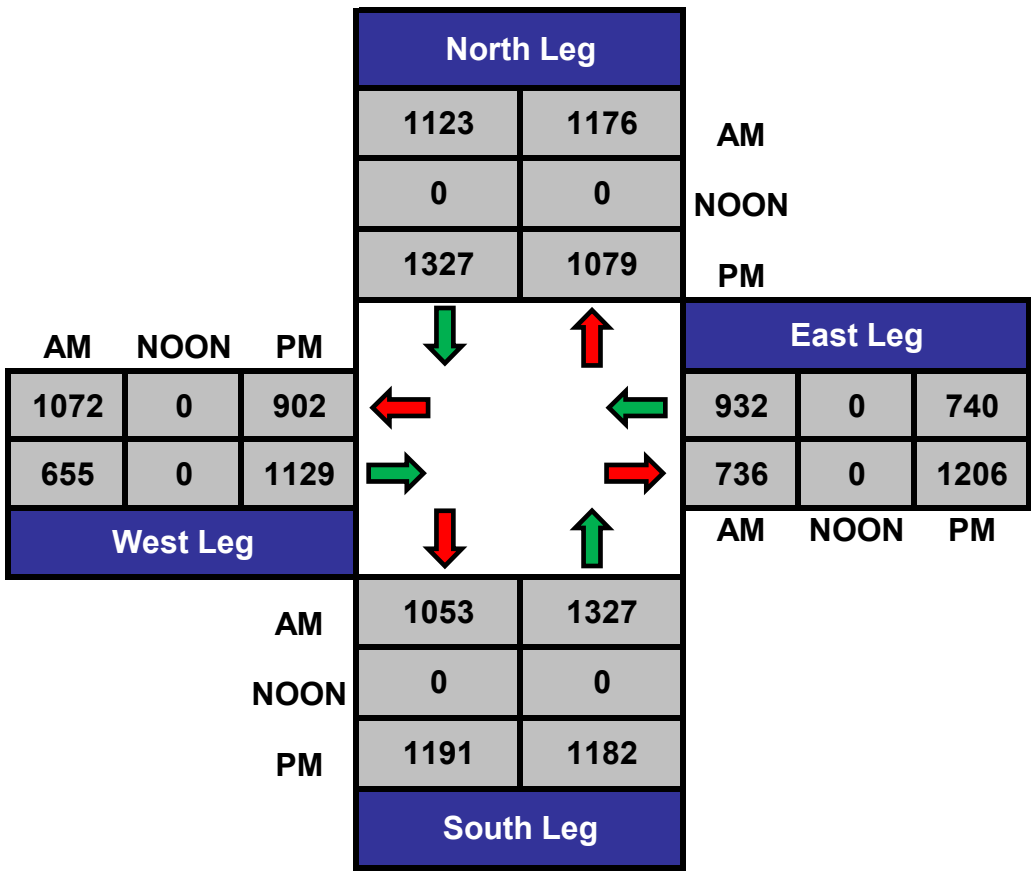
Oakdale Rd & Sylvan Ave

Date: 11/16/2016
Day: Wednesday

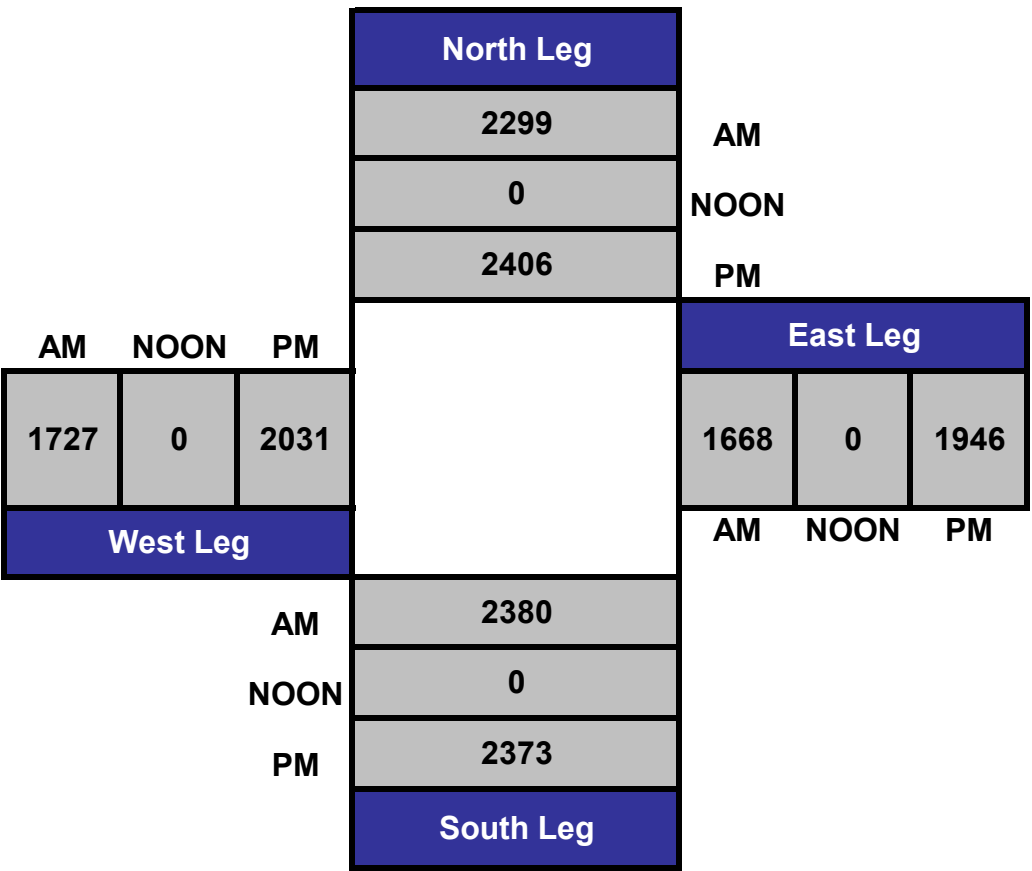
Project #: 16-7834-017



Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Stanislaus County
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 16-7834-018 Coffee Rd & Claratina Ave
Date : 11/16/2016

Unshifted Count = All Vehicles & Uturns

	Coffee Rd Southbound					Claratina Ave Westbound					Coffee Rd Northbound					Claratina Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	2	53	13	0	68	0	69	9	0	78	51	69	4	0	124	3	29	22	0	54	324	0
7:15	3	62	10	0	75	2	115	4	0	121	62	64	2	0	128	7	39	26	0	72	396	0
7:30	2	90	14	0	106	4	105	3	0	112	76	76	1	0	153	16	58	44	0	118	489	0
7:45	0	128	16	0	144	3	125	3	0	131	107	83	0	0	190	21	57	57	0	135	600	0
Total	7	333	53	0	393	9	414	19	0	442	296	292	7	0	595	47	183	149	0	379	1809	0
8:00	3	111	13	0	127	7	93	2	0	102	94	77	3	0	174	11	47	54	0	112	515	0
8:15	3	108	15	0	126	0	122	4	0	126	71	58	0	0	129	15	41	46	0	102	483	0
8:30	0	65	11	0	76	4	94	1	0	99	43	57	0	1	101	9	52	41	0	102	378	1
8:45	0	86	17	0	103	1	90	2	0	93	41	59	1	0	101	13	31	40	0	84	381	0
Total	6	370	56	0	432	12	399	9	0	420	249	251	4	1	505	48	171	181	0	400	1757	1
16:00	7	95	12	0	114	2	38	3	0	43	59	89	4	0	152	23	88	48	0	159	468	0
16:15	7	96	9	0	112	2	44	1	0	47	66	98	3	0	167	32	113	58	0	203	529	0
16:30	11	92	13	0	116	0	61	1	0	62	52	90	1	0	143	19	129	68	0	216	537	0
16:45	4	92	17	0	113	3	53	6	0	62	64	109	0	0	173	35	101	62	0	198	546	0
Total	29	375	51	0	455	7	196	11	0	214	241	386	8	0	635	109	431	236	0	776	2080	0
17:00	9	108	12	0	129	2	53	2	0	57	59	93	1	0	153	26	117	65	0	208	547	0
17:15	22	123	9	0	154	6	58	0	1	65	62	114	3	0	179	23	98	59	0	180	578	1
17:30	10	96	13	0	119	2	54	4	0	60	63	105	4	0	172	24	97	74	0	195	546	0
17:45	8	99	13	0	120	4	79	3	0	86	53	90	0	0	143	31	82	50	0	163	512	0
Total	49	426	47	0	522	14	244	9	1	268	237	402	8	0	647	104	394	248	0	746	2183	1
Grand Total	91	1504	207	0	1802	42	1253	48	1	1344	1023	1331	27	1	2382	308	1179	814	0	2301	7829	2
Apprch %	5.0%	83.5%	11.5%	0.0%		3.1%	93.2%	3.6%	0.1%		42.9%	55.9%	1.1%	0.0%		13.4%	51.2%	35.4%	0.0%			
Total %	1.2%	19.2%	2.6%	0.0%	23.0%	0.5%	16.0%	0.6%	0.0%	17.2%	13.1%	17.0%	0.3%	0.0%	30.4%	3.9%	15.1%	10.4%	0.0%	29.4%	100.0%	

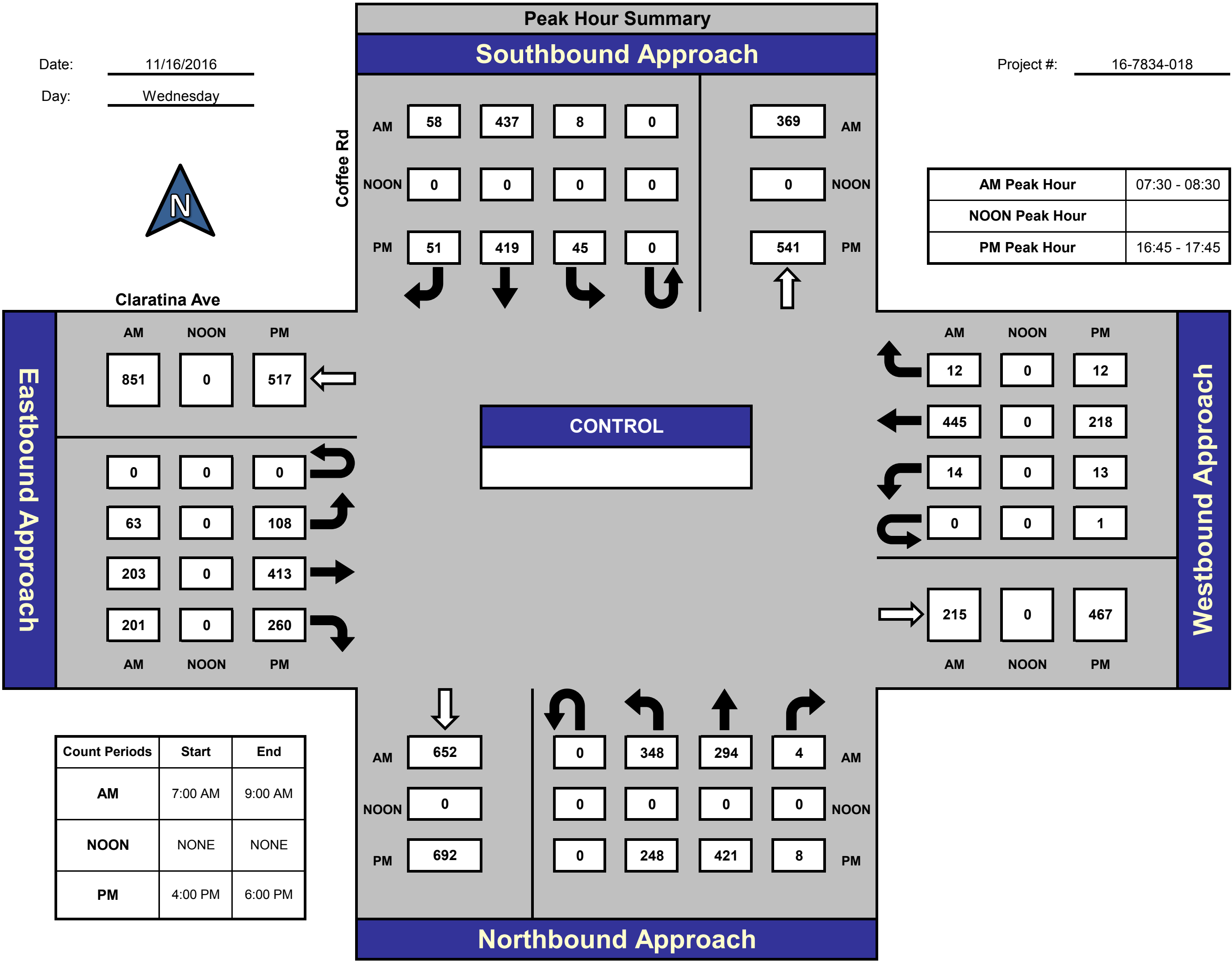
AM PEAK HOUR	Coffee Rd Southbound					Claratina Ave Westbound					Coffee Rd Northbound					Claratina Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	2	90	14	0	106	4	105	3	0	112	76	76	1	0	153	16	58	44	0	118	489
7:45	0	128	16	0	144	3	125	3	0	131	107	83	0	0	190	21	57	57	0	135	600
8:00	3	111	13	0	127	7	93	2	0	102	94	77	3	0	174	11	47	54	0	112	515
8:15	3	108	15	0	126	0	122	4	0	126	71	58	0	0	129	15	41	46	0	102	483
Total Volume	8	437	58	0	503	14	445	12	0	471	348	294	4	0	646	63	203	201	0	467	2087
% App Total	1.6%	86.9%	11.5%	0.0%		3.0%	94.5%	2.5%	0.0%		53.9%	45.5%	0.6%	0.0%		13.5%	43.5%	43.0%	0.0%		
PHF	.667	.854	.906	.000	.873	.500	.890	.750	.000	.899	.813	.886	.333	.000	.850	.750	.875	.882	.000	.865	.870

PM PEAK HOUR	Coffee Rd Southbound					Claratina Ave Westbound					Coffee Rd Northbound					Claratina Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	
Peak Hour Analysis From 16:45 to 17:45																						
Peak Hour For Entire Intersection Begins at 16:45																						
16:45	4	92	17	0	113	3	53	6	0	62	64	109	0	0	173	35	101	62	0	198	546	
17:00	9	108	12	0	129	2	53	2	0	57	59	93	1	0	153	26	117	65	0	208	547	
17:15	22	123	9	0	154	6	58	0	1	65	62	114	3	0	179	23	98	59	0	180	578	
17:30	10	96	13	0	119	2	54	4	0	60	63	105	4	0	172	24	97	74	0	195	546	
Total Volume	45	419	51	0	515	13	218	12	1	244	248	421	8	0	677	108	413	260	0	781	2217	
% App Total	8.7%	81.4%	9.9%	0.0%		5.3%	89.3%	4.9%	0.4%		36.6%	62.2%	1.2%	0.0%		13.8%	52.9%	33.3%	0.0%			
PHF	.511	.852	.750	.000	.836	.542	.940	.500	.250	.938	.969	.923	.500	.000	.946	.771	.882	.878	.000	.939	.959	

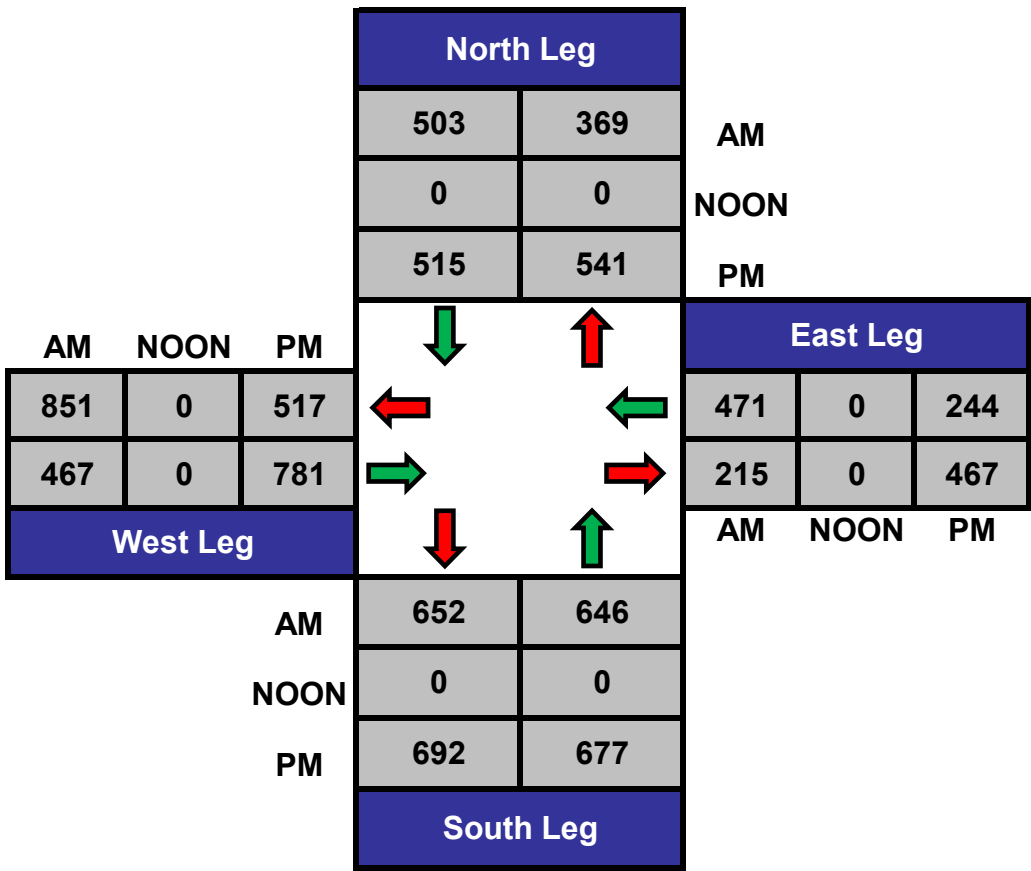
Coffee Rd & Claratina Ave

Date: 11/16/2016
Day: Wednesday

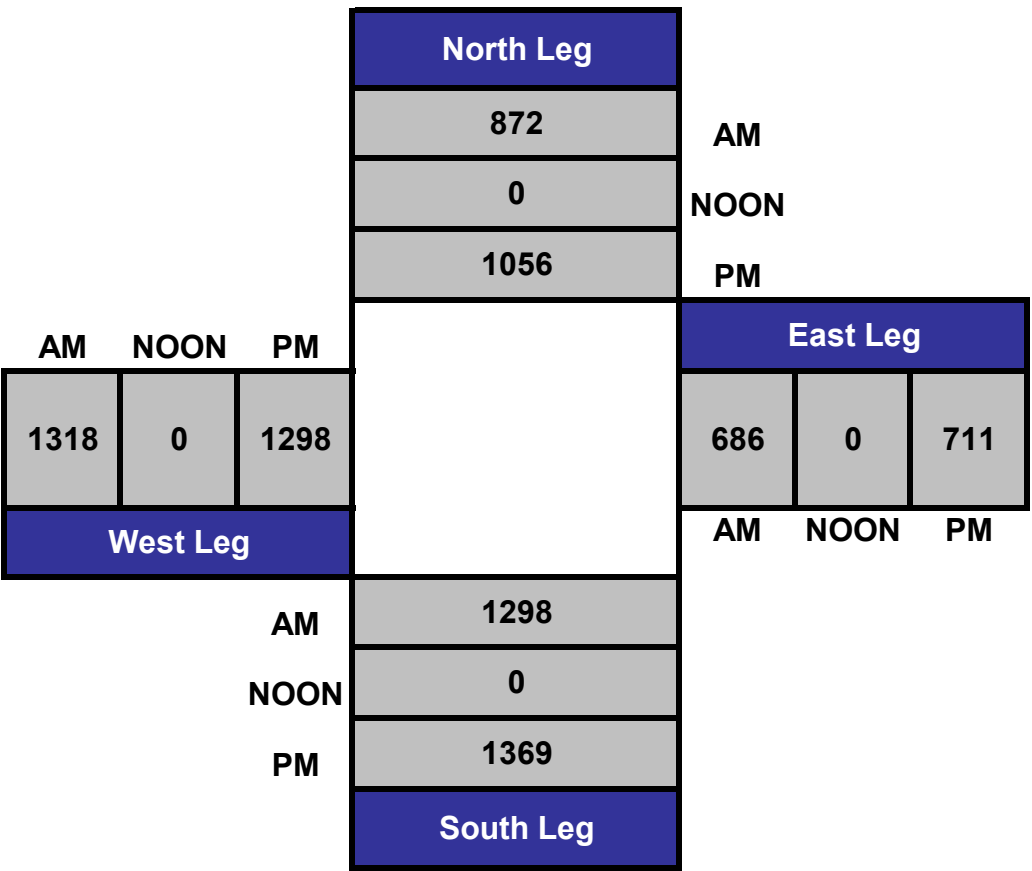
Project #: 16-7834-018



Total Ins & Outs



Total Volume Per Leg



VOLUME

Morrill Rd Bet. Coffee Rd & Oakdale Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_004

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						868	898						1,766
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL							TOTAL
00:00			0	0	0		12:00			10	11	21							
00:15			1	0	1		12:15			12	16	28							
00:30			0	0	0		12:30			10	20	30							
00:45			1	2	3	3	12:45			8	40	10	57	18	97				
01:00			1	0	1		13:00			16	11	27							
01:15			2	0	2		13:15			9	10	19							
01:30			0	1	1		13:30			10	7	17							
01:45			1	4	1	2	13:45			11	46	15	43	26	89				
02:00			1	1	2		14:00			18	19	37							
02:15			1	1	2		14:15			17	14	31							
02:30			1	1	2		14:30			10	17	27							
02:45			0	3	1	4	14:45			15	60	12	62	27	122				
03:00			0	3	3		15:00			11	12	23							
03:15			1	2	3		15:15			13	17	30							
03:30			0	4	4		15:30			27	13	40							
03:45			0	1	2	11	15:45			30	81	13	55	43	136				
04:00			1	2	3		16:00			34	16	50							
04:15			0	3	3		16:15			19	11	30							
04:30			0	8	8		16:30			17	11	28							
04:45			0	1	3	16	16:45			31	101	12	50	43	151				
05:00			0	7	7		17:00			28	18	46							
05:15			1	11	12		17:15			32	11	43							
05:30			3	10	13		17:30			31	22	53							
05:45			1	5	8	36	17:45			31	122	19	70	50	192				
06:00			0	11	11		18:00			28	16	44							
06:15			1	7	8		18:15			16	24	40							
06:30			0	11	11		18:30			23	13	36							
06:45			5	6	16	45	18:45			10	77	8	61	18	138				
07:00			2	24	26		19:00			12	12	24							
07:15			8	20	28		19:15			13	5	18							
07:30			8	37	45		19:30			18	3	21							
07:45			7	25	17	98	19:45			15	58	11	31	26	89				
08:00			5	16	21		20:00			14	7	21							
08:15			5	12	17		20:15			12	5	17							
08:30			9	19	28		20:30			10	2	12							
08:45			6	25	22	69	20:45			15	51	6	20	21	71				
09:00			7	12	19		21:00			13	3	16							
09:15			3	18	21		21:15			9	3	12							
09:30			7	12	19		21:30			8	0	8							
09:45			3	20	13	52	21:45			6	36	0	6	6	42				
10:00			11	16	27		22:00			4	2	6							
10:15			5	8	13		22:15			6	1	7							
10:30			9	11	20		22:30			6	3	9							
10:45			11	36	22	46	22:45			6	22	2	8	8	30				
11:00			11	14	25		23:00			3	3	6							
11:15			10	17	27		23:15			1	2	3							
11:30			10	7	17		23:30			1	3	4							
11:45			9	40	15	44	23:45			1	6	1	9	2	15				
TOTALS			168	426	594		TOTALS			700	472	1172							
SPLIT %			28.3%	71.7%	33.6%		SPLIT %			59.7%	40.3%	66.4%							

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						868	898						1,766

AM Peak Hour			10:45	07:00	07:00	PM Peak Hour			16:45	17:30	17:00
AM Pk Volume			42	98	123	PM Pk Volume			122	81	192
Pk Hr Factor			0.955	0.662	0.683	Pk Hr Factor			0.953	0.844	0.906
7 - 9 Volume	0	0	50	167	217	4 - 6 Volume	0	0	223	120	343
7 - 9 Peak Hour			07:15	07:00	07:00	4 - 6 Peak Hour			16:45	17:00	17:00
7 - 9 Pk Volume	0	0	28	98	123	4 - 6 Pk Volume	0	0	122	70	192
Pk Hr Factor	0.000	0.000	0.875	0.662	0.683	Pk Hr Factor	0.000	0.000	0.953	0.795	0.906

Prepared by NDS/ATD

Project #: CA16_7835_004

City: Stanislaus County

Location: Morrill Rd Bet. Coffee Rd & Oakdale Rd

Date: 11/16/2016



VOLUME

Morrill Rd Bet. Oakdale Rd & Squire Wells Way

Day: Tuesday
Date: 11/22/2016

City: Stanislaus County
Project #: CA16_7835_005

DAILY TOTALS					NB	SB	EB					WB	Total		
					0	0						2,365			2,295
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL			
00:00			7	2	9		12:00			35	41	76			
00:15			3	3	6		12:15			43	32	75			
00:30			4	1	5		12:30			26	28	54			
00:45			3	17	2	8	12:45			34	138	37	138	71	276
01:00			2	2	4		13:00			25	26	51			
01:15			3	1	4		13:15			31	35	66			
01:30			3	1	4		13:30			32	22	54			
01:45			2	10	2	6	13:45			37	125	33	116	70	241
02:00			3	2	5		14:00			25	36	61			
02:15			1	1	2		14:15			57	35	92			
02:30			3	4	7		14:30			53	44	97			
02:45			3	10	4	11	14:45			43	178	49	164	92	342
03:00			2	3	5		15:00			49	48	97			
03:15			2	9	11		15:15			58	32	90			
03:30			0	12	12		15:30			62	40	102			
03:45			2	6	10	34	15:45			55	224	40	160	95	384
04:00			1	8	9		16:00			55	37	92			
04:15			3	11	14		16:15			58	34	92			
04:30			0	9	9		16:30			63	48	111			
04:45			4	8	7	35	16:45			74	250	35	154	109	404
05:00			2	17	19		17:00			76	36	112			
05:15			2	14	16		17:15			63	49	112			
05:30			5	31	36		17:30			65	46	111			
05:45			5	14	26	88	17:45			77	281	38	169	115	450
06:00			4	28	32		18:00			72	48	120			
06:15			6	21	27		18:15			42	22	64			
06:30			4	29	33		18:30			49	32	81			
06:45			14	28	31	109	18:45			51	214	29	131	80	345
07:00			16	42	58		19:00			35	26	61			
07:15			8	50	58		19:15			47	14	61			
07:30			20	68	88		19:30			28	23	51			
07:45			22	66	44	204	19:45			37	147	16	79	53	226
08:00			30	43	73		20:00			27	11	38			
08:15			17	43	60		20:15			30	14	44			
08:30			14	41	55		20:30			29	16	45			
08:45			15	76	43	170	20:45			31	117	10	51	41	168
09:00			23	30	53		21:00			24	14	38			
09:15			15	24	39		21:15			33	14	47			
09:30			17	33	50		21:30			14	16	30			
09:45			28	83	28	115	21:45			11	82	5	49	16	131
10:00			20	31	51		22:00			19	7	26			
10:15			16	30	46		22:15			12	4	16			
10:30			15	30	45		22:30			15	12	27			
10:45			18	69	28	119	22:45			8	54	9	32	17	86
11:00			20	27	47		23:00			10	4	14			
11:15			39	36	75		23:15			15	5	20			
11:30			29	35	64		23:30			9	7	16			
11:45			34	122	34	132	23:45			12	46	5	21	17	67
TOTALS	509				1031	1540	TOTALS	1856				1264	3120		
SPLIT %	33.1%				66.9%	33.0%	SPLIT %	59.5%				40.5%	67.0%		

DAILY TOTALS					NB	SB	EB					WB	Total				
					0	0	2,365					2,295	4,660				
AM Peak Hour			11:30	07:15	07:30		PM Peak Hour			17:00	17:15	17:15					
AM Pk Volume			141	205	287		PM Pk Volume			281	181	458					
Pk Hr Factor			0.820	0.754	0.815		Pk Hr Factor			0.912	0.923	0.954					
7 - 9 Volume	0	0	142	374	516		4 - 6 Volume	0	0	531	323	854					
7 - 9 Peak Hour			07:30	07:15	07:30		4 - 6 Peak Hour			17:00	17:00	17:00					
7 - 9 Pk Volume	0	0	89	205	287		4 - 6 Pk Volume	0	0	281	169	450					
Pk Hr Factor	0.000	0.000	0.742	0.754	0.815		Pk Hr Factor	0.000	0.000	0.912	0.862	0.978					

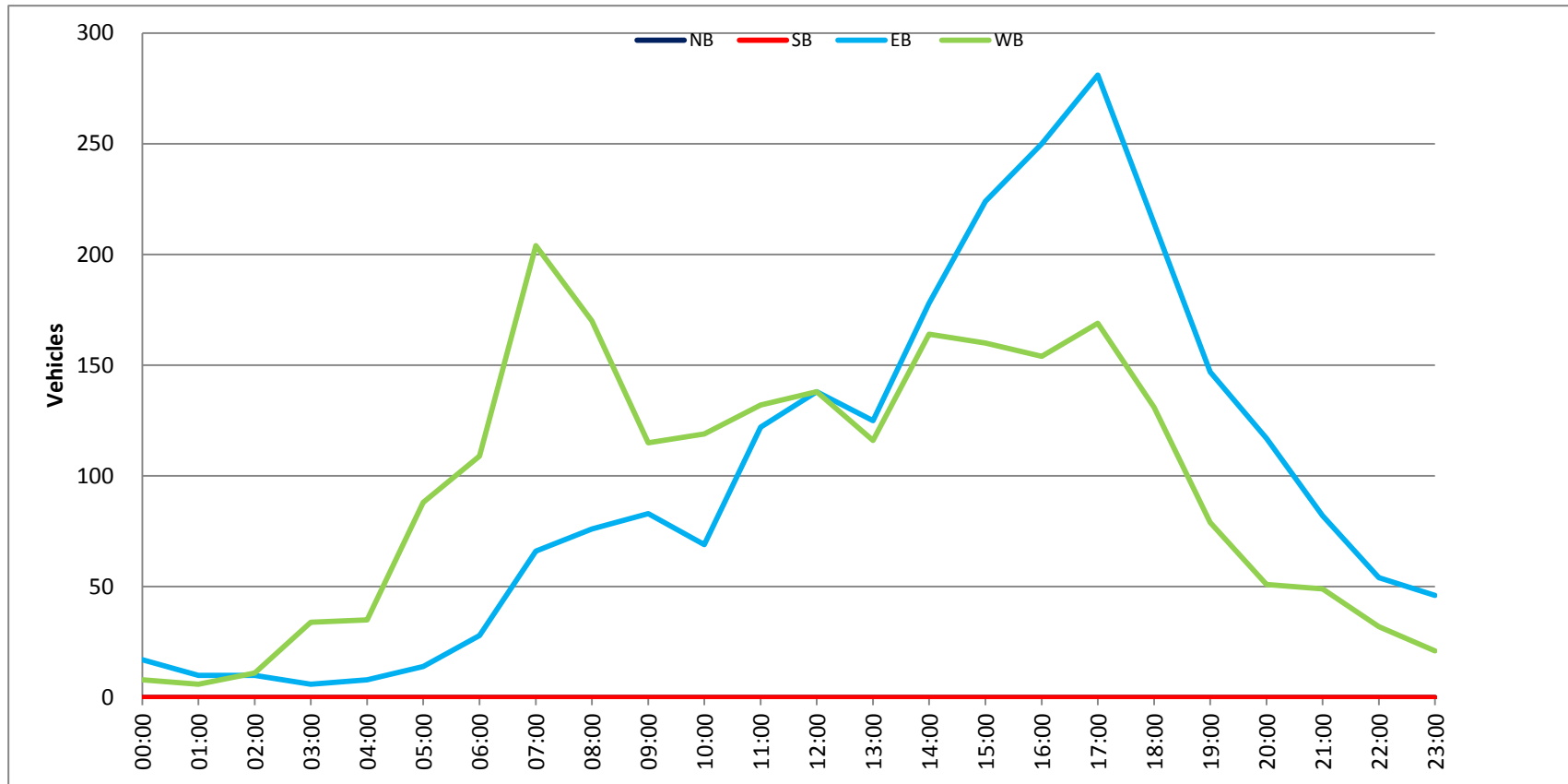
Prepared by NDS/ATD

Project #: CA16_7835_005

City: Stanislaus County

Location: Morrill Rd Bet. Oakdale Rd & Squire Wells

Date: 11/22/2016



VOLUME

Crawford Rd Bet. Coffee Rd & Oakdale Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_006

DAILY TOTALS				NB	SB	EB				WB	Total
				0	0	202				271	473

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			0	0	0	12:00			3	2	5			
00:15			1	1	2	12:15			4	4	8			
00:30			0	1	1	12:30			6	5	11			
00:45			0	1	0	12:45			2	15	2	13	4	28
01:00			0	0	0	13:00			3	6	9			
01:15			0	0	0	13:15			1	6	7			
01:30			0	0	0	13:30			5	3	8			
01:45			0	0	0	13:45			2	11	5	20	7	31
02:00			0	0	0	14:00			3	6	9			
02:15			0	0	0	14:15			4	2	6			
02:30			1	1	2	14:30			5	7	12			
02:45			0	1	0	14:45			3	15	10	25	13	40
03:00			0	0	0	15:00			1	6	7			
03:15			0	0	0	15:15			4	10	14			
03:30			0	1	1	15:30			5	6	11			
03:45			1	1	0	15:45			4	14	5	27	9	41
04:00			0	1	1	16:00			3	6	9			
04:15			0	0	0	16:15			10	3	13			
04:30			0	1	1	16:30			4	4	8			
04:45			0	1	1	16:45			6	23	4	17	10	40
05:00			0	0	0	17:00			7	6	13			
05:15			0	0	0	17:15			4	4	8			
05:30			1	0	1	17:30			5	2	7			
05:45			1	2	1	17:45			2	18	5	17	7	35
06:00			2	7	9	18:00			5	3	8			
06:15			0	7	7	18:15			1	2	3			
06:30			2	4	6	18:30			3	1	4			
06:45			2	6	9	18:45			3	12	3	9	6	21
07:00			9	3	12	19:00			1	0	1			
07:15			13	3	16	19:15			1	3	4			
07:30			3	7	10	19:30			3	3	6			
07:45			3	28	6	19:45			1	6	1	7	2	13
08:00			2	9	11	20:00			0	2	2			
08:15			0	7	7	20:15			1	0	1			
08:30			3	3	6	20:30			0	0	0			
08:45			2	7	3	20:45			1	2	0	2	1	4
09:00			6	3	9	21:00			1	1	2			
09:15			2	3	5	21:15			1	0	1			
09:30			1	4	5	21:30			0	2	2			
09:45			1	10	4	21:45			1	3	1	4	2	7
10:00			5	3	8	22:00			0	1	1			
10:15			2	7	9	22:15			1	2	3			
10:30			1	6	7	22:30			1	0	1			
10:45			1	9	3	22:45			0	2	1	4	1	6
11:00			4	5	9	23:00			1	0	1			
11:15			3	4	7	23:15			0	0	0			
11:30			2	5	7	23:30			0	1	1			
11:45			4	13	2	23:45			2	3	0	1	2	4
TOTALS	78				125	203	TOTALS	124				146	270	
SPLIT %	38.4%				61.6%	42.9%	SPLIT %	45.9%				54.1%	57.1%	

DAILY TOTALS				NB	SB	EB				WB	Total
				0	0	202				271	473

AM Peak Hour			07:00	07:30	06:45	PM Peak Hour			16:15	14:30	14:30
AM Pk Volume			28	29	49	PM Pk Volume			27	33	46
Pk Hr Factor			0.538	0.806	0.766	Pk Hr Factor			0.675	0.825	0.821
7 - 9 Volume	0	0	35	41	76	4 - 6 Volume	0	0	41	34	75
7 - 9 Peak Hour			07:00	07:30	07:00	4 - 6 Peak Hour			16:15	16:30	16:15
7 - 9 Pk Volume	0	0	28	29	47	4 - 6 Pk Volume	0	0	27	18	44
Pk Hr Factor	0.000	0.000	0.538	0.806	0.734	Pk Hr Factor	0.000	0.000	0.675	0.750	0.846

Prepared by NDS/ATD

Project #: CA16_7835_006

City: Stanislaus County

Location: Crawford Rd Bet. Coffee Rd & Oakdale Rd

Date: 11/16/2016



VOLUME

Crawford Rd Bet. Oakdale Rd & Homewood Way

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_007

DAILY TOTALS					NB	SB	EB					WB	Total		
					0	0						2,456			2,436
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL			
00:00			5	1	6		12:00			37	29	66			
00:15			0	1	1		12:15			31	41	72			
00:30			3	1	4		12:30			30	32	62			
00:45			1	9	0	3	12:45			38	136	34	136	72	272
01:00			1	0	1		13:00			38	32	70			
01:15			1	1	2		13:15			32	22	54			
01:30			0	0	0		13:30			34	30	64			
01:45			0	2	0	1	13:45			23	127	40	124	63	251
02:00			0	1	1		14:00			43	36	79			
02:15			1	0	1		14:15			70	34	104			
02:30			1	3	4		14:30			67	36	103			
02:45			1	3	2	6	14:45			60	240	95	201	155	441
03:00			1	3	4		15:00			57	56	113			
03:15			1	3	4		15:15			52	40	92			
03:30			2	8	10		15:30			49	42	91			
03:45			1	5	7	21	15:45			44	202	34	172	78	374
04:00			0	7	7		16:00			52	40	92			
04:15			0	3	3		16:15			53	40	93			
04:30			3	8	11		16:30			68	40	108			
04:45			0	3	6	24	16:45			70	243	39	159	109	402
05:00			4	11	15		17:00			57	33	90			
05:15			1	15	16		17:15			68	44	112			
05:30			3	14	17		17:30			71	42	113			
05:45			3	11	20	60	17:45			65	261	34	153	99	414
06:00			9	23	32		18:00			48	39	87			
06:15			9	13	22		18:15			45	26	71			
06:30			10	47	57		18:30			37	27	64			
06:45			24	52	36	119	18:45			33	163	34	126	67	289
07:00			16	55	71		19:00			29	11	40			
07:15			21	65	86		19:15			38	22	60			
07:30			47	98	145		19:30			33	23	56			
07:45			72	156	75	293	19:45			31	131	25	81	56	212
08:00			57	93	150		20:00			26	20	46			
08:15			38	63	101		20:15			24	16	40			
08:30			18	49	67		20:30			27	15	42			
08:45			36	149	40	245	20:45			27	104	15	66	42	170
09:00			30	32	62		21:00			20	11	31			
09:15			25	33	58		21:15			18	10	28			
09:30			19	26	45		21:30			20	7	27			
09:45			20	94	26	117	21:45			17	75	6	34	23	109
10:00			28	19	47		22:00			11	9	20			
10:15			26	36	62		22:15			5	11	16			
10:30			25	32	57		22:30			7	6	13			
10:45			30	109	35	122	22:45			8	31	1	27	9	58
11:00			38	32	70		23:00			5	0	5			
11:15			35	39	74		23:15			3	2	5			
11:30			35	36	71		23:30			1	0	1			
11:45			31	139	35	142	23:45			2	11	2	4	4	15
TOTALS	732				1153	1885	TOTALS	1724				1283	3007		
SPLIT %	38.8%				61.2%	38.5%	SPLIT %	57.3%				42.7%	61.5%		

DAILY TOTALS					NB	SB	EB					WB	Total				
					0	0	2,456					2,436	4,892				
AM Peak Hour			07:30	07:15	07:30		PM Peak Hour			16:45	14:45	14:15					
AM Pk Volume			214	331	543		PM Pk Volume			266	233	475					
Pk Hr Factor			0.743	0.844	0.905		Pk Hr Factor			0.937	0.613	0.766					
7 - 9 Volume	0	0	305	538	843		4 - 6 Volume	0	0	504	312	816					
7 - 9 Peak Hour			07:30	07:15	07:30		4 - 6 Peak Hour			16:45	16:00	16:45					
7 - 9 Pk Volume	0	0	214	331	543		4 - 6 Pk Volume	0	0	266	159	424					
Pk Hr Factor	0.000	0.000	0.743	0.844	0.905		Pk Hr Factor	0.000	0.000	0.937	0.994	0.938					

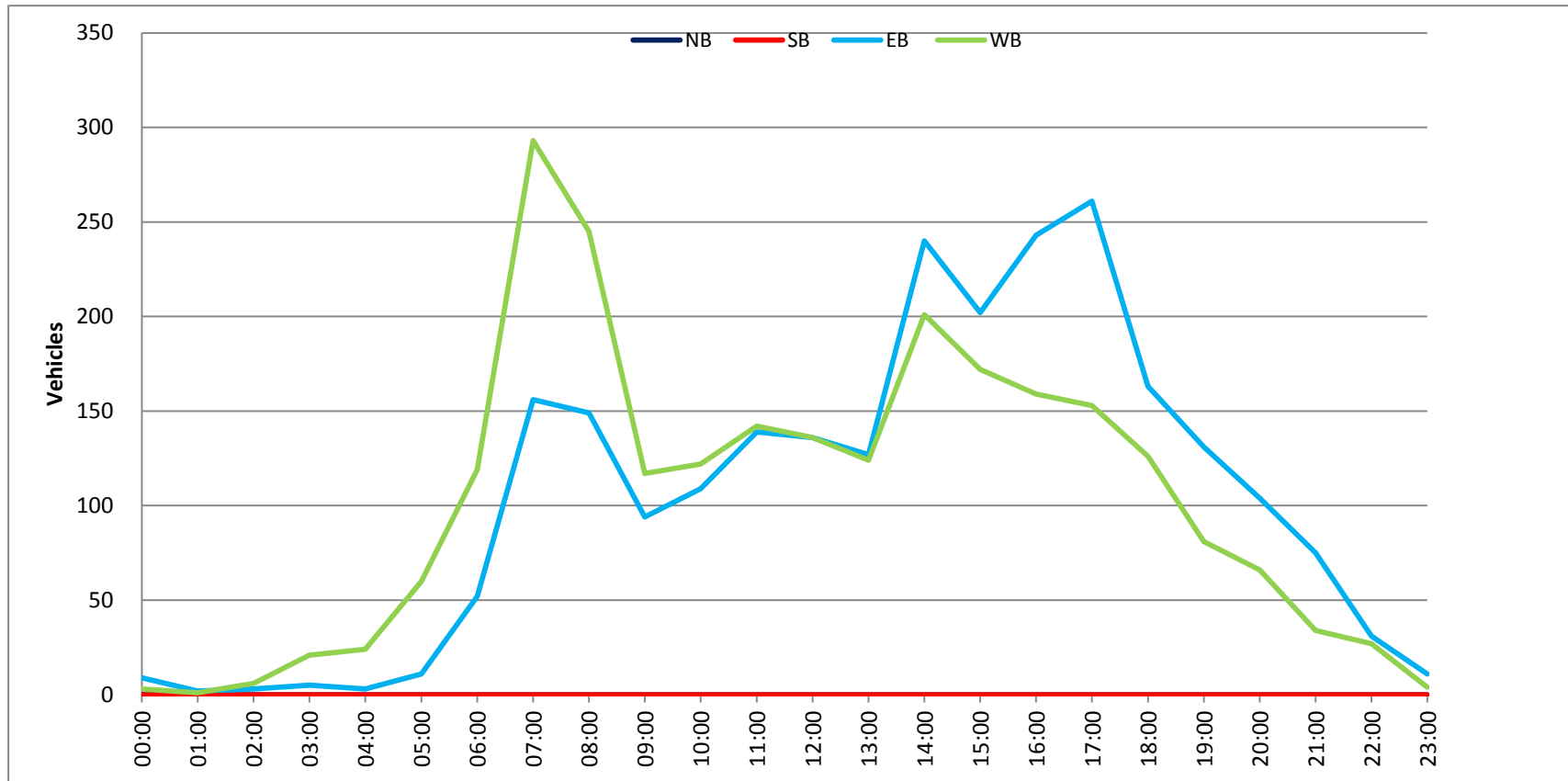
Prepared by NDS/ATD

Project #: CA16_7835_007

City: Stanislaus County

Location: Crawford Rd Bet. Oakdale Rd & Homewood

Date: 11/16/2016



VOLUME

Claribel Rd Bet. McHenry Ave & Coffee Rd

Day: Tuesday
Date: 11/22/2016

City: Stanislaus County
Project #: CA16_7835_008

DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0						10,282	9,800	20,082
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00			27	19	46		12:00			171	141	312		
00:15			23	11	34		12:15			159	161	320		
00:30			27	10	37		12:30			168	157	325		
00:45			18	95	7	47	12:45			159	657	157	616	
					25	142						316	1273	
01:00			19	9	28		13:00			154	145	299		
01:15			11	7	18		13:15			150	139	289		
01:30			11	8	19		13:30			192	144	336		
01:45			11	52	9	33	13:45			171	667	131	559	
					20	85						302	1226	
02:00			17	10	27		14:00			187	151	338		
02:15			5	7	12		14:15			188	138	326		
02:30			12	13	25		14:30			186	154	340		
02:45			11	45	20	50	14:45			196	757	178	621	
					31	95						374	1378	
03:00			6	14	20		15:00			198	163	361		
03:15			5	43	48		15:15			224	160	384		
03:30			8	45	53		15:30			242	155	397		
03:45			11	30	34	136	15:45			216	880	160	638	
					45	166						376	1518	
04:00			11	36	47		16:00			239	176	415		
04:15			16	51	67		16:15			226	171	397		
04:30			13	57	70		16:30			268	163	431		
04:45			18	58	62	206	16:45			273	1006	164	674	
					80	264						437	1680	
05:00			13	47	60		17:00			304	158	462		
05:15			27	76	103		17:15			293	173	466		
05:30			34	93	127		17:30			262	166	428		
05:45			37	111	91	307	17:45			209	1068	165	662	
					128	418						374	1730	
06:00			37	105	142		18:00			211	154	365		
06:15			43	106	149		18:15			220	98	318		
06:30			75	134	209		18:30			154	117	271		
06:45			77	232	154	499	18:45			100	685	84	453	
					231	731						184	1138	
07:00			68	190	258		19:00			133	103	236		
07:15			85	195	280		19:15			120	81	201		
07:30			106	258	364		19:30			161	60	221		
07:45			125	384	255	898	19:45			106	520	70	314	
					380	1282						176	834	
08:00			120	218	338		20:00			142	46	188		
08:15			102	220	322		20:15			97	42	139		
08:30			116	191	307		20:30			96	51	147		
08:45			103	441	179	808	20:45			80	415	36	175	
					282	1249						116	590	
09:00			109	167	276		21:00			100	55	155		
09:15			127	147	274		21:15			86	35	121		
09:30			114	148	262		21:30			82	47	129		
09:45			105	455	163	625	21:45			51	319	47	184	
					268	1080						98	503	
10:00			129	143	272		22:00			65	36	101		
10:15			100	138	238		22:15			57	32	89		
10:30			108	146	254		22:30			49	28	77		
10:45			127	464	132	559	22:45			34	205	23	119	
					259	1023						57	324	
11:00			126	125	251		23:00			43	17	60		
11:15			138	143	281		23:15			34	13	47		
11:30			147	140	287		23:30			28	17	45		
11:45			195	606	146	554	23:45			25	130	16	63	
					341	1160						41	193	
TOTALS	2973			4722	7695		TOTALS	7309			5078	12387		
SPLIT %	38.6%			61.4%	38.3%		SPLIT %	59.0%			41.0%	61.7%		

DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0	10,282					9,800	20,082	
AM Peak Hour			11:45	07:30	07:30		PM Peak Hour			16:30	16:00	16:30		
AM Pk Volume			693	951	1404		PM Pk Volume			1138	674	1796		
Pk Hr Factor			0.888	0.922	0.924		Pk Hr Factor			0.936	0.957	0.964		
7 - 9 Volume	0	0	825	1706	2531		4 - 6 Volume	0	0	2074	1336	3410		
7 - 9 Peak Hour			07:45	07:30	07:30		4 - 6 Peak Hour			16:30	16:00	16:30		
7 - 9 Pk Volume	0	0	463	951	1404		4 - 6 Pk Volume	0	0	1138	674	1796		
Pk Hr Factor	0.000	0.000	0.926	0.922	0.924		Pk Hr Factor	0.000	0.000	0.936	0.957	0.964		

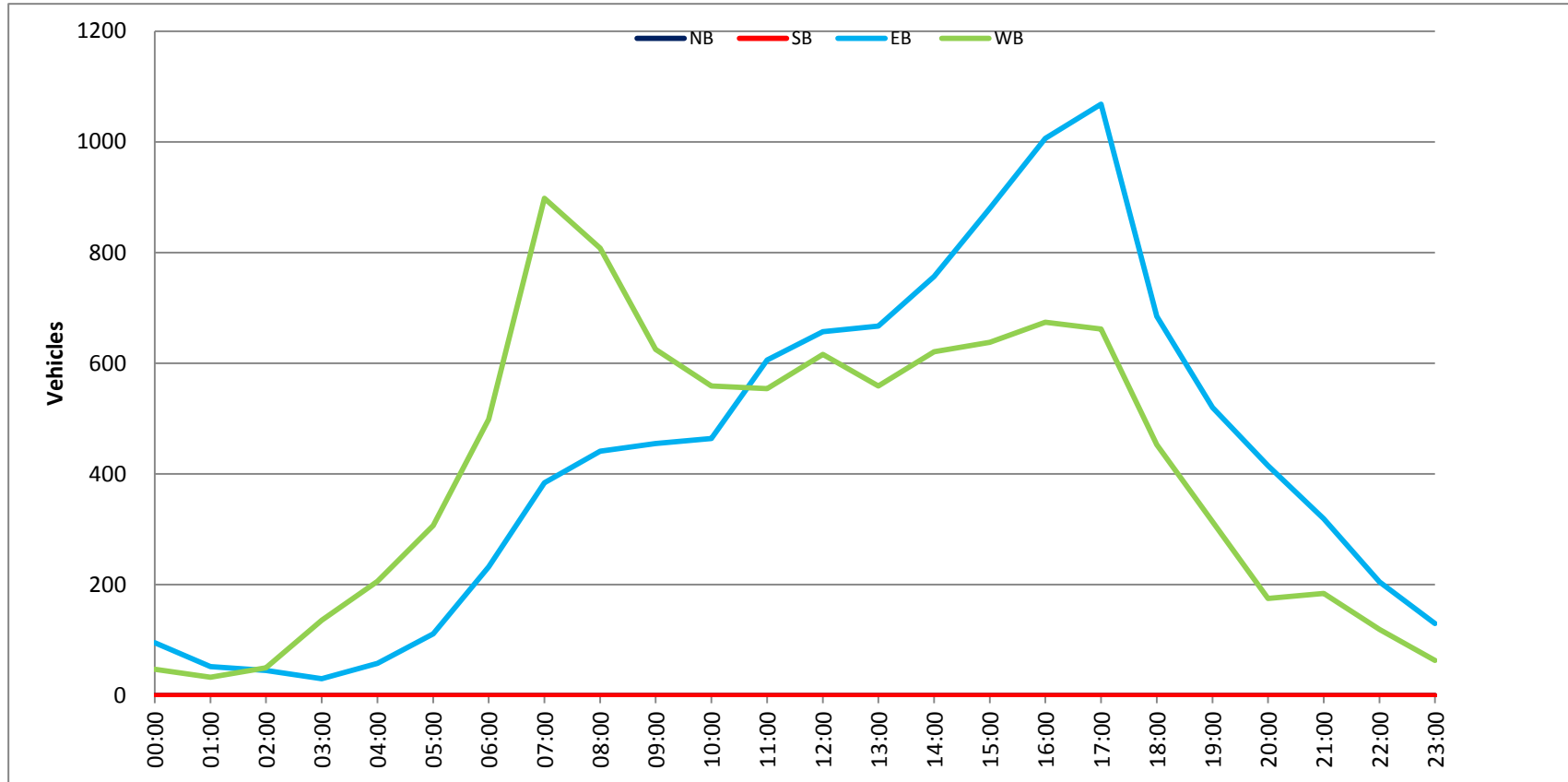
Prepared by NDS/ATD

Project #: CA16_7835_008

City: Stanislaus County

Location: Claribel Rd Bet. McHenry Ave & Coffee Rd

Date: 11/22/2016



VOLUME

Claribel Rd Bet. Coffee Rd & Oakdale Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_009

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						10,439	9,279
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			29	19	48		12:00			176	124	300	
00:15			19	14	33		12:15			173	136	309	
00:30			19	6	25		12:30			161	103	264	
00:45			12	79	5	44	12:45			140	650	178	541
					17	123						318	1191
01:00			20	8	28		13:00			153	141	294	
01:15			9	7	16		13:15			158	119	277	
01:30			7	7	14		13:30			166	146	312	
01:45			12	48	11	33	13:45			176	653	139	545
					23	81						315	1198
02:00			11	7	18		14:00			198	131	329	
02:15			8	5	13		14:15			185	150	335	
02:30			10	7	17		14:30			198	143	341	
02:45			9	38	23	42	14:45			204	785	161	585
					32	80						365	1370
03:00			9	22	31		15:00			232	156	388	
03:15			5	37	42		15:15			200	153	353	
03:30			11	43	54		15:30			206	168	374	
03:45			14	39	31	133	15:45			247	885	150	627
					45	172						397	1512
04:00			19	37	56		16:00			216	151	367	
04:15			18	35	53		16:15			255	152	407	
04:30			13	40	53		16:30			259	162	421	
04:45			19	69	59	171	16:45			256	986	148	613
					78	240						404	1599
05:00			19	53	72		17:00			255	150	405	
05:15			37	61	98		17:15			261	148	409	
05:30			38	56	94		17:30			214	155	369	
05:45			36	130	93	263	17:45			215	945	144	597
					129	393						359	1542
06:00			44	109	153		18:00			192	130	322	
06:15			60	106	166		18:15			192	125	317	
06:30			71	145	216		18:30			208	88	296	
06:45			68	243	140	500	18:45			168	760	116	459
					208	743						284	1219
07:00			77	159	236		19:00			196	84	280	
07:15			80	196	276		19:15			159	92	251	
07:30			103	264	367		19:30			158	75	233	
07:45			122	382	227	846	19:45			151	664	78	329
					349	1228						229	993
08:00			118	222	340		20:00			131	77	208	
08:15			102	191	293		20:15			152	62	214	
08:30			113	158	271		20:30			119	53	172	
08:45			105	438	148	719	20:45			121	523	57	249
					253	1157						178	772
09:00			124	159	283		21:00			102	31	133	
09:15			111	162	273		21:15			73	47	120	
09:30			100	146	246		21:30			83	44	127	
09:45			101	436	135	602	21:45			79	337	35	157
					236	1038						114	494
10:00			111	124	235		22:00			57	29	86	
10:15			126	125	251		22:15			37	25	62	
10:30			125	150	275		22:30			49	22	71	
10:45			130	492	136	535	22:45			34	177	25	101
					266	1027						59	278
11:00			138	124	262		23:00			38	18	56	
11:15			138	130	268		23:15			28	14	42	
11:30			145	153	298		23:30			34	13	47	
11:45			143	564	124	531	23:45			16	116	12	57
					267	1095						28	173
TOTALS			2958	4419	7377		TOTALS			7481	4860	12341	
SPLIT %			40.1%	59.9%	37.4%		SPLIT %			60.6%	39.4%	62.6%	

DAILY TOTALS				NB	SB	EB				WB	Total
				0	0	10,439				9,279	19,718
AM Peak Hour			11:45	07:15	07:30	PM Peak Hour			16:30	14:45	16:30
AM Pk Volume			653	909	1349	PM Pk Volume			1031	638	1639
Pk Hr Factor			0.928	0.861	0.919	Pk Hr Factor			0.988	0.949	0.973
7 - 9 Volume	0	0	820	1565	2385	4 - 6 Volume	0	0	1931	1210	3141
7 - 9 Peak Hour			07:45	07:15	07:30	4 - 6 Peak Hour			16:30	16:00	16:30
7 - 9 Pk Volume	0	0	455	909	1349	4 - 6 Pk Volume	0	0	1031	613	1639
Pk Hr Factor	0.000	0.000	0.932	0.861	0.919	Pk Hr Factor	0.000	0.000	0.988	0.946	0.973

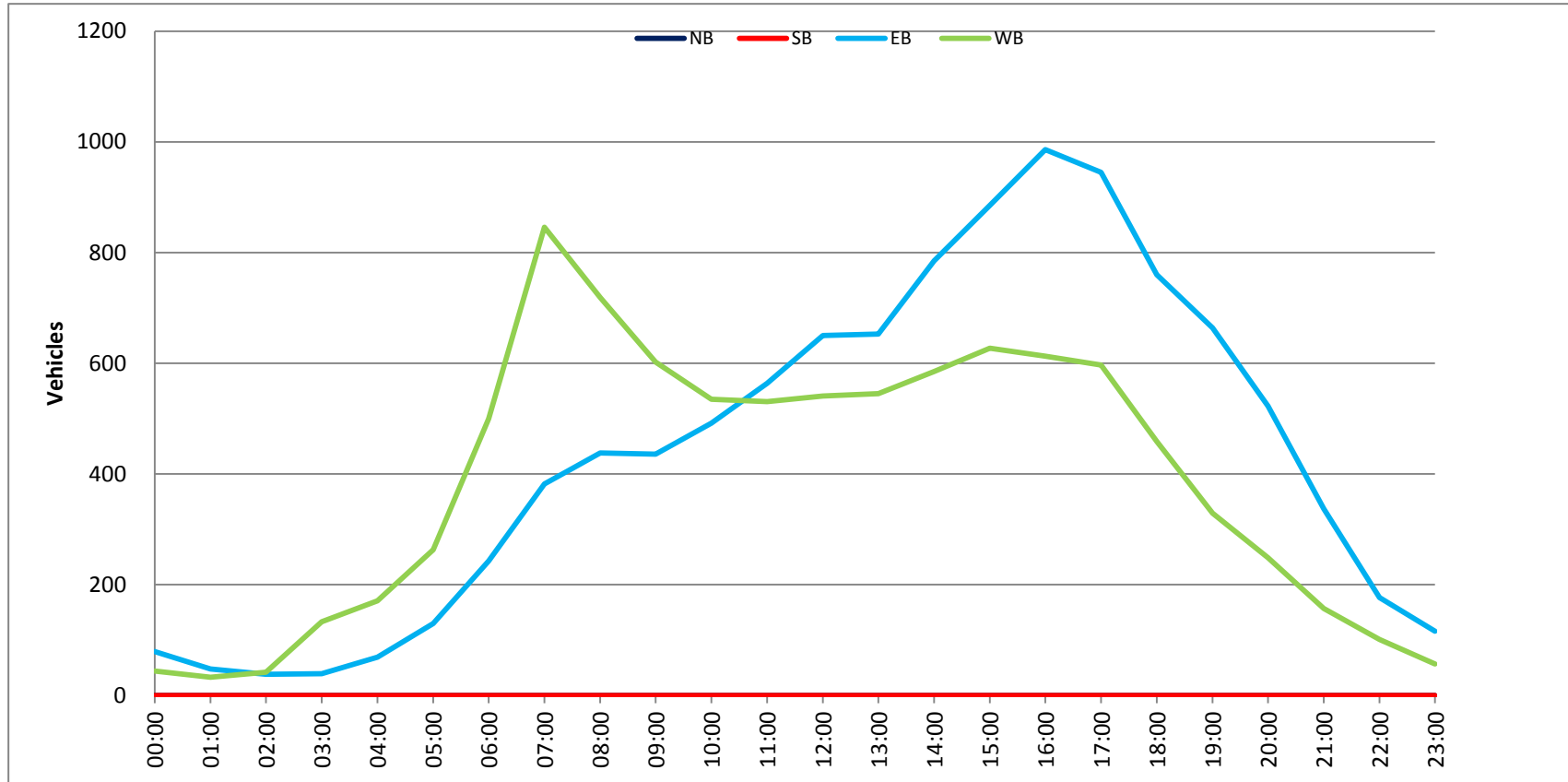
Prepared by NDS/ATD

Project #: CA16_7835_009

City: Stanislaus County

Location: Claribel Rd Bet. Coffee Rd & Oakdale Rd

Date: 11/16/2016



VOLUME

Claribel Rd Bet. Oakdale Rd & Roselle Ave

Day: Tuesday
Date: 11/22/2016

City: Stanislaus County
Project #: CA16_7835_010

DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0						6,873	7,371	14,244
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00			12	10	22		12:00			116	139	255		
00:15			13	9	22		12:15			124	132	256		
00:30			17	8	25		12:30			129	128	257		
00:45			8	50	5	32	12:45			156	525	112	511	
01:00			13	7	20		13:00			122	123	245		
01:15			9	3	12		13:15			121	98	219		
01:30			9	6	15		13:30			133	126	259		
01:45			7	38	5	21	13:45			147	523	123	470	
02:00			10	6	16		14:00			115	109	224		
02:15			6	4	10		14:15			126	135	261		
02:30			5	3	8		14:30			120	131	251		
02:45			3	24	6	19	14:45			114	475	140	515	
03:00			5	7	12		15:00			127	130	257		
03:15			6	21	27		15:15			120	145	265		
03:30			4	19	23		15:30			108	128	236		
03:45			5	20	16	63	15:45			109	464	151	554	
04:00			7	17	24		16:00			114	137	251		
04:15			8	22	30		16:15			111	133	244		
04:30			10	31	41		16:30			122	124	246		
04:45			13	38	29	99	16:45			126	473	133	527	
05:00			11	22	33		17:00			129	143	272		
05:15			24	29	53		17:15			116	140	256		
05:30			35	45	80		17:30			124	136	260		
05:45			30	100	59	155	17:45			79	448	102	521	
06:00			23	47	70		18:00			118	107	225		
06:15			46	63	109		18:15			130	91	221		
06:30			65	76	141		18:30			100	108	208		
06:45			76	210	87	273	18:45			95	443	85	391	
07:00			62	111	173		19:00			106	81	187		
07:15			91	98	189		19:15			97	67	164		
07:30			136	99	235		19:30			104	49	153		
07:45			81	370	144	452	19:45			83	390	53	250	
08:00			70	165	235		20:00			102	58	160		
08:15			65	144	209		20:15			84	45	129		
08:30			83	116	199		20:30			77	49	126		
08:45			64	282	112	537	20:45			101	364	39	191	
09:00			61	110	171		21:00			76	39	115		
09:15			92	125	217		21:15			76	35	111		
09:30			74	150	224		21:30			72	38	110		
09:45			90	317	115	500	21:45			49	273	28	140	
10:00			80	126	206		22:00			40	18	58		
10:15			99	108	207		22:15			44	20	64		
10:30			102	125	227		22:30			30	15	45		
10:45			100	381	130	489	22:45			30	144	19	72	
11:00			89	144	233		23:00			25	14	39		
11:15			116	127	243		23:15			28	10	38		
11:30			99	152	251		23:30			21	14	35		
11:45			121	425	108	531	23:45			22	96	20	58	
TOTALS	2255				3171	5426	TOTALS	4618				4200	8818	
SPLIT %	41.6%				58.4%	38.1%	SPLIT %	52.4%				47.6%	61.9%	

DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0	6,873					7,371	14,244	
AM Peak Hour			11:45	07:45	11:45		PM Peak Hour			12:45	15:15	16:45		
AM Pk Volume			490	569	997		PM Pk Volume			532	561	1047		
Pk Hr Factor			0.950	0.862	0.970		Pk Hr Factor			0.853	0.929	0.962		
7 - 9 Volume	0	0	652	989	1641		4 - 6 Volume	0	0	921	1048	1969		
7 - 9 Peak Hour			07:15	07:45	07:30		4 - 6 Peak Hour			16:45	16:45	16:45		
7 - 9 Pk Volume	0	0	378	569	904		4 - 6 Pk Volume	0	0	495	552	1047		
Pk Hr Factor	0.000	0.000	0.695	0.862	0.962		Pk Hr Factor	0.000	0.000	0.959	0.965	0.962		

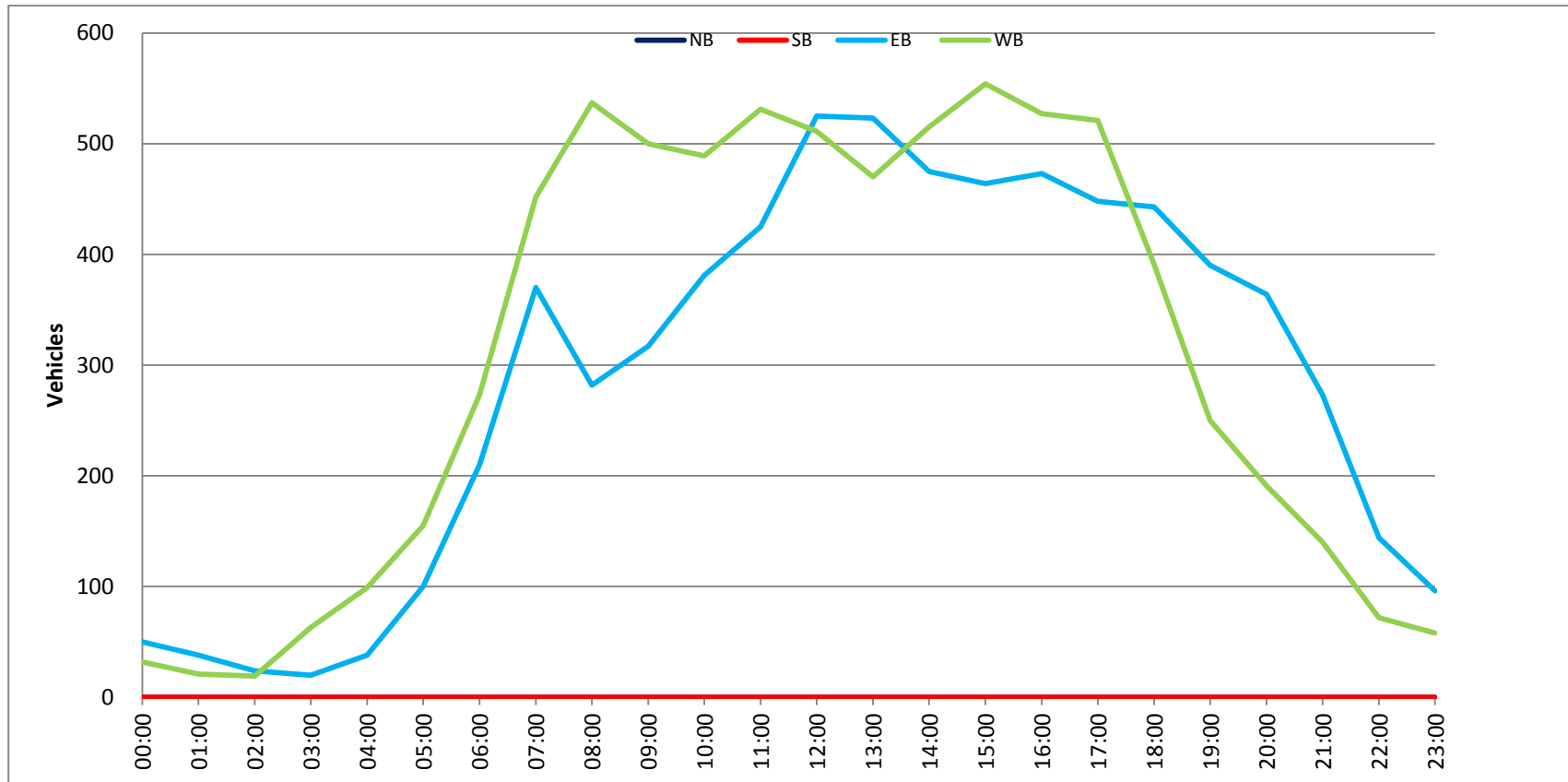
Prepared by NDS/ATD

Project #: CA16_7835_010

City: Stanislaus County

Location: Claribel Rd Bet. Oakdale Rd & Roselle Ave

Date: 11/22/2016



VOLUME

Claribel Rd Bet. Roselle Ave & Claus Rd

Day: Tuesday
Date: 11/22/2016

City: Stanislaus County
Project #: CA16_7835_011

DAILY TOTALS				NB	SB					EB	WB	Total	
				0	0					5,324	5,602	10,926	

AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			7	9	16		12:00			88	83	171	
00:15			12	11	23		12:15			91	108	199	
00:30			12	7	19		12:30			91	94	185	
00:45			7	38	5	32	12:45			102	372	87	372
					12	70						189	744
01:00			7	7	14		13:00			86	82	168	
01:15			9	4	13		13:15			104	82	186	
01:30			8	3	11		13:30			87	101	188	
01:45			3	27	5	19	13:45			103	380	99	364
					8	46						202	744
02:00			6	2	8		14:00			88	76	164	
02:15			4	2	6		14:15			95	105	200	
02:30			3	2	5		14:30			80	109	189	
02:45			2	15	6	12	14:45			78	341	89	379
					8	27						167	720
03:00			2	11	13		15:00			78	86	164	
03:15			3	9	12		15:15			91	110	201	
03:30			3	18	21		15:30			87	96	183	
03:45			6	14	13	51	15:45			107	363	96	388
					19	65						203	751
04:00			3	11	14		16:00			93	85	178	
04:15			8	16	24		16:15			101	113	214	
04:30			10	21	31		16:30			102	100	202	
04:45			16	37	18	66	16:45			99	395	116	414
					34	103						215	809
05:00			10	15	25		17:00			94	93	187	
05:15			18	25	43		17:15			95	121	216	
05:30			32	38	70		17:30			96	92	188	
05:45			28	88	54	132	17:45			93	378	79	385
					82	220						172	763
06:00			34	45	79		18:00			80	81	161	
06:15			38	53	91		18:15			96	85	181	
06:30			67	44	111		18:30			85	79	164	
06:45			61	200	66	208	18:45			75	336	73	318
					127	408						148	654
07:00			53	78	131		19:00			79	53	132	
07:15			55	74	129		19:15			89	58	147	
07:30			58	99	157		19:30			66	43	109	
07:45			92	258	99	350	19:45			64	298	28	182
					191	608						92	480
08:00			70	99	169		20:00			69	44	113	
08:15			52	101	153		20:15			73	53	126	
08:30			77	94	171		20:30			53	42	95	
08:45			66	265	72	366	20:45			73	268	38	177
					138	631						111	445
09:00			58	82	140		21:00			55	34	89	
09:15			80	99	179		21:15			61	41	102	
09:30			78	121	199		21:30			49	33	82	
09:45			73	289	89	391	21:45			46	211	30	138
					162	680						76	349
10:00			63	87	150		22:00			35	17	52	
10:15			79	74	153		22:15			32	20	52	
10:30			77	92	169		22:30			21	9	30	
10:45			73	292	108	361	22:45			21	109	22	68
					181	653						43	177
11:00			59	93	152		23:00			17	7	24	
11:15			88	103	191		23:15			15	13	28	
11:30			71	104	175		23:30			11	11	22	
11:45			76	294	73	373	23:45			13	56	25	56
					149	667						38	112
TOTALS			1817	2361	4178		TOTALS			3507	3241	6748	
SPLIT %			43.5%	56.5%	38.2%		SPLIT %			52.0%	48.0%	61.8%	

DAILY TOTALS				NB	SB					EB	WB	Total	
				0	0					5,324	5,602	10,926	

AM Peak Hour			11:45	10:45	11:45	PM Peak Hour			15:45	16:30	16:30
AM Pk Volume			346	408	704	PM Pk Volume			403	430	820
Pk Hr Factor			0.951	0.944	0.884	Pk Hr Factor			0.942	0.888	0.949
7 - 9 Volume	0	0	523	716	1239	4 - 6 Volume	0	0	773	799	1572
7 - 9 Peak Hour			07:45	07:30	07:45	4 - 6 Peak Hour			16:15	16:30	16:30
7 - 9 Pk Volume	0	0	291	398	684	4 - 6 Pk Volume	0	0	396	430	820
Pk Hr Factor	0.000	0.000	0.791	0.985	0.895	Pk Hr Factor	0.000	0.000	0.971	0.888	0.949

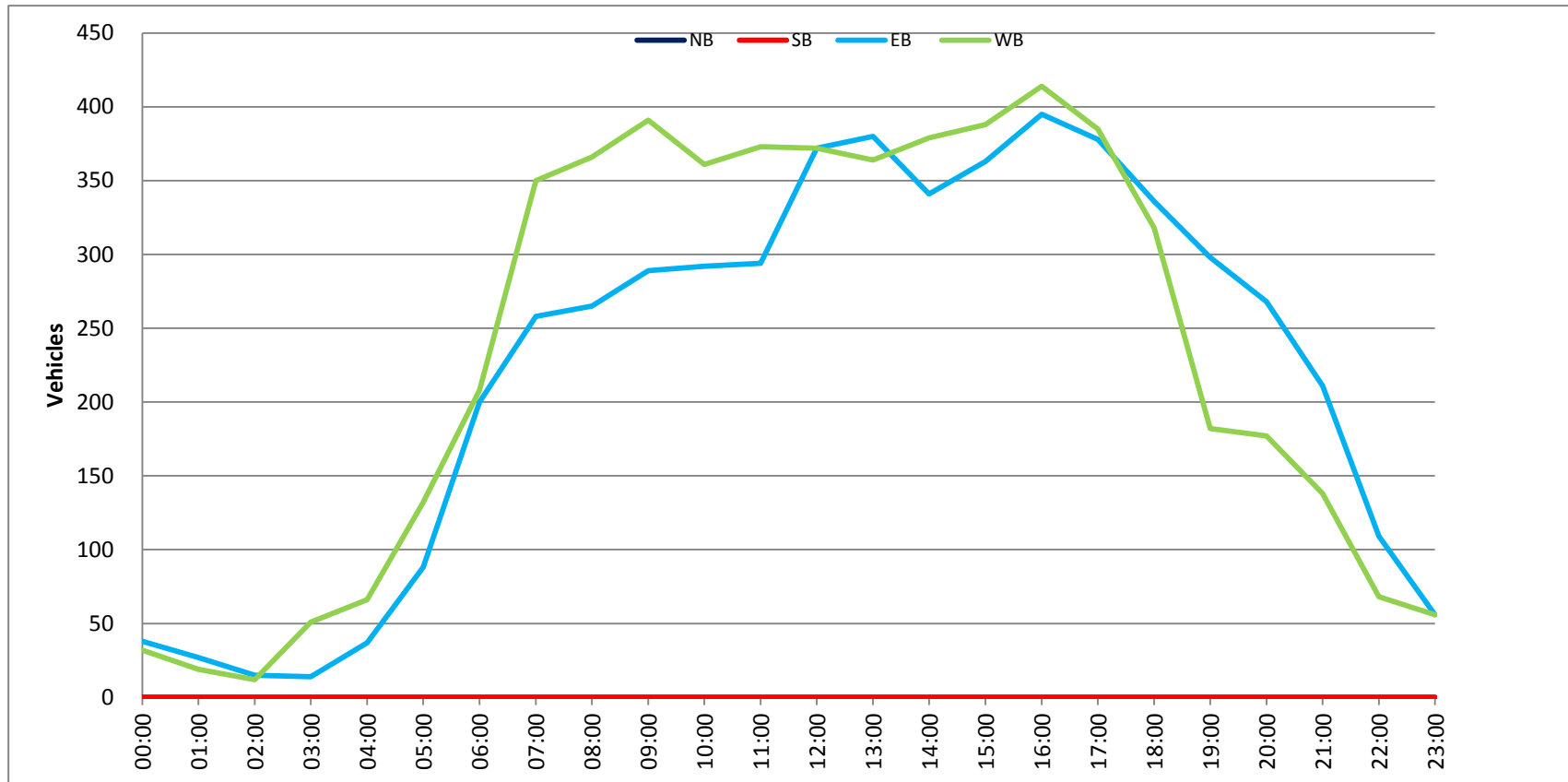
Prepared by NDS/ATD

Project #: CA16_7835_011

City: Stanislaus County

Location: Claribel Rd Bet. Roselle Ave & Claus Rd

Date: 11/22/2016



VOLUME

Coffee Rd Bet. SR 108 & Crawford Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_012

DAILY TOTALS					NB	SB	EBWB					Total
					1,822	1,921						0
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00	1	2			3	12:00	30	18			48	
00:15	3	4			7	12:15	25	29			54	
00:30	6	1			7	12:30	35	32			67	
00:45	2	12	2	9	421	12:45	37	127	26	105	63232	
01:00	1	0			1	13:00	32	20			52	
01:15	2	0			2	13:15	40	31			71	
01:30	2	2			4	13:30	31	40			71	
01:45	0	5	1	3	18	13:45	31	134	19	110	50244	
02:00	0	0			0	14:00	24	32			56	
02:15	1	1			2	14:15	33	26			59	
02:30	0	1			1	14:30	35	44			79	
02:45	1	2	1	3	25	14:45	31	123	29	131	60254	
03:00	1	3			4	15:00	39	35			74	
03:15	1	2			3	15:15	39	30			69	
03:30	4	0			4	15:30	36	35			71	
03:45	1	7	2	7	314	15:45	31	145	29	129	60274	
04:00	2	0			2	16:00	42	41			83	
04:15	6	0			6	16:15	38	34			72	
04:30	2	7			9	16:30	38	34			72	
04:45	5	15	1	8	623	16:45	37	155	43	152	80307	
05:00	6	3			9	17:00	31	44			75	
05:15	5	6			11	17:15	36	33			69	
05:30	5	7			12	17:30	31	40			71	
05:45	14	30	10	26	2456	17:45	37	135	33	150	70285	
06:00	15	17			32	18:00	26	49			75	
06:15	19	13			32	18:15	23	29			52	
06:30	17	27			44	18:30	24	21			45	
06:45	31	82	37	94	68176	18:45	17	90	24	123	41213	
07:00	32	28			60	19:00	32	22			54	
07:15	25	44			69	19:15	23	12			35	
07:30	38	56			94	19:30	21	12			33	
07:45	30	125	56	184	86309	19:45	18	94	11	57	29151	
08:00	22	51			73	20:00	14	5			19	
08:15	25	51			76	20:15	28	9			37	
08:30	22	33			55	20:30	17	13			30	
08:45	27	96	46	181	73277	20:45	20	79	6	33	26112	
09:00	25	30			55	21:00	11	17			28	
09:15	26	28			54	21:15	5	10			15	
09:30	23	26			49	21:30	6	6			12	
09:45	16	90	47	131	63221	21:45	10	32	4	37	1469	
10:00	19	27			46	22:00	7	5			12	
10:15	24	32			56	22:15	9	4			13	
10:30	34	36			70	22:30	6	6			12	
10:45	15	92	27	122	42214	22:45	6	28	2	17	845	
11:00	25	25			50	23:00	5	1			6	
11:15	25	26			51	23:15	2	4			6	
11:30	25	26			51	23:30	6	3			9	
11:45	35	110	22	99	57209	23:45	1	14	2	10	324	
TOTALS	666	867			1533	TOTALS	1156	1054			2210	
SPLIT %	43.4%	56.6%			41.0%	SPLIT %	52.3%	47.7%			59.0%	

DAILY TOTALS					NB	SB	EB					WB	Total
					1,822	1,921						0	0
AM Peak Hour	06:45	07:30			07:30		PM Peak Hour	16:00	16:45			16:00	
AM Pk Volume	126	214			329		PM Pk Volume	155	160			307	
Pk Hr Factor	0.829	0.955			0.875		Pk Hr Factor	0.923	0.909			0.925	
7 - 9 Volume	221	365	0	0	586		4 - 6 Volume	290	302	0	0	592	
7 - 9 Peak Hour	07:00	07:30			07:30		4 - 6 Peak Hour	16:00	16:45			16:00	
7 - 9 Pk Volume	125	214	0	0	329		4 - 6 Pk Volume	155	160	0	0	307	
Pk Hr Factor	0.822	0.955	0.000	0.000	0.875		Pk Hr Factor	0.923	0.909	0.000	0.000	0.925	

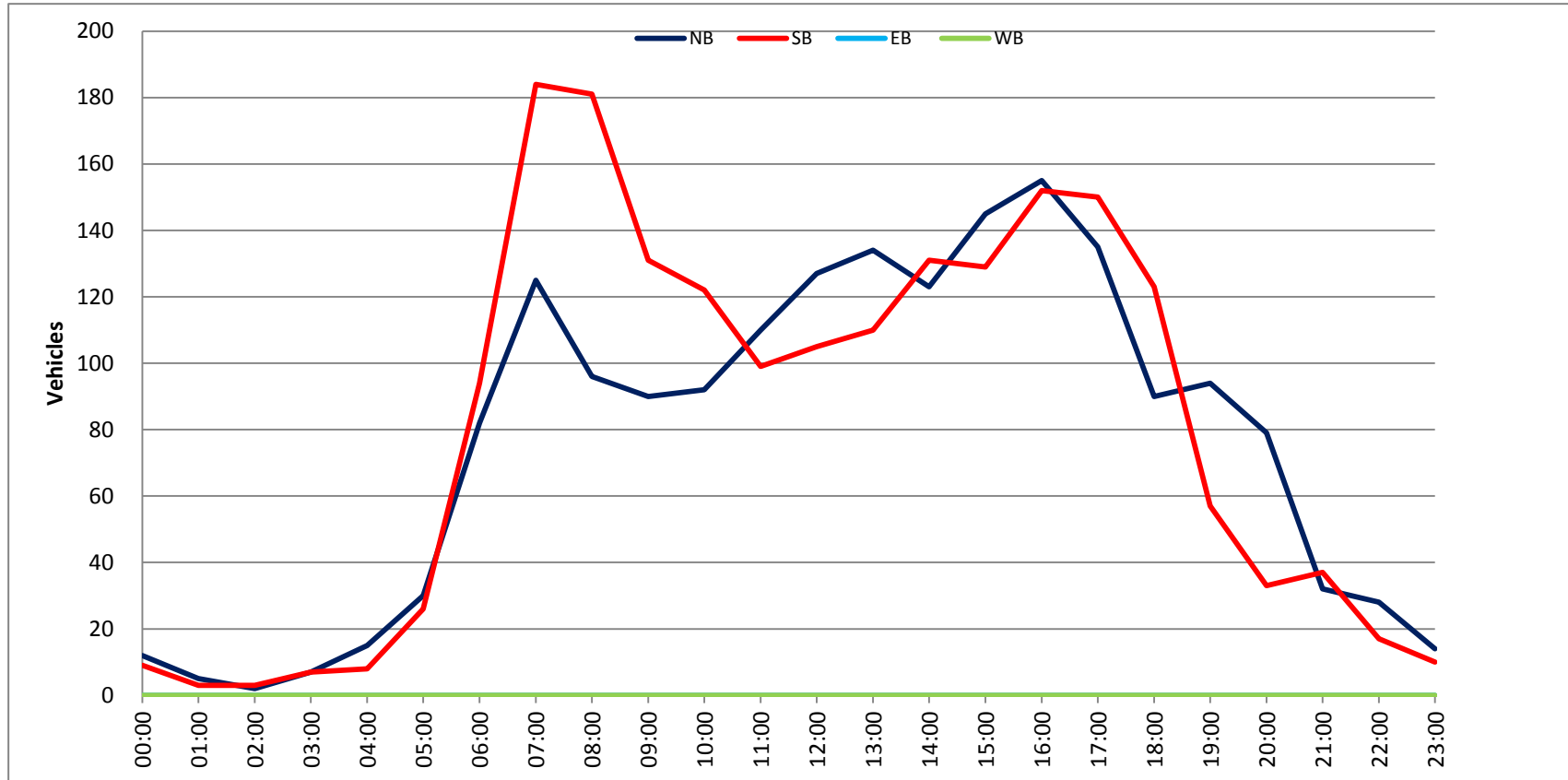
Prepared by NDS/ATD

Project #: CA16_7835_012

City: Stanislaus County

Location: Coffee Rd Bet. SR 108 & Crawford Rd

Date: 11/16/2016



VOLUME

Coffee Rd Bet. Crawford Rd & Claribel Rd

Day: Tuesday
Date: 11/22/2016

City: Stanislaus County
Project #: CA16_7835_013

DAILY TOTALS					NB	SB					EB	WB	Total
					2,717	2,888					0	0	5,605
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL		
00:00	7	2			9	12:00	40	40			80		
00:15	5	2			7	12:15	33	38			71		
00:30	1	3			4	12:30	43	53			96		
00:45	1	14	3	10	4	12:45	50	166	59	190	109	356	
01:00	3	0			3	13:00	35	36			71		
01:15	3	2			5	13:15	55	47			102		
01:30	0	5			5	13:30	26	46			72		
01:45	2	8	0	7	2	13:45	47	163	35	164	82	327	
02:00	3	3			6	14:00	46	45			91		
02:15	1	1			2	14:15	66	52			118		
02:30	2	3			5	14:30	52	35			87		
02:45	1	7	6	13	7	14:45	52	216	57	189	109	405	
03:00	1	3			4	15:00	60	55			115		
03:15	4	6			10	15:15	62	48			110		
03:30	0	4			4	15:30	57	49			106		
03:45	2	7	5	18	7	15:45	59	238	56	208	115	446	
04:00	1	3			4	16:00	60	56			116		
04:15	4	7			11	16:15	58	46			104		
04:30	3	4			7	16:30	64	48			112		
04:45	7	15	3	17	10	16:45	77	259	54	204	131	463	
05:00	5	12			17	17:00	67	56			123		
05:15	4	15			19	17:15	63	54			117		
05:30	8	23			31	17:30	63	49			112		
05:45	13	30	20	70	33	17:45	56	249	41	200	97	449	
06:00	14	17			31	18:00	48	56			104		
06:15	22	26			48	18:15	44	30			74		
06:30	31	35			66	18:30	35	32			67		
06:45	36	103	51	129	87	18:45	37	164	31	149	68	313	
07:00	18	42			60	19:00	29	25			54		
07:15	38	65			103	19:15	41	27			68		
07:30	25	99			124	19:30	17	19			36		
07:45	35	116	76	282	111	19:45	24	111	18	89	42	200	
08:00	36	76			112	20:00	24	15			39		
08:15	26	64			90	20:15	29	16			45		
08:30	36	65			101	20:30	28	13			41		
08:45	29	127	68	273	97	20:45	19	100	5	49	24	149	
09:00	40	56			96	21:00	27	17			44		
09:15	34	55			89	21:15	27	14			41		
09:30	47	42			89	21:30	15	12			27		
09:45	41	162	57	210	98	21:45	14	83	14	57	28	140	
10:00	29	33			62	22:00	12	7			19		
10:15	41	45			86	22:15	8	7			15		
10:30	41	41			82	22:30	13	9			22		
10:45	34	145	39	158	73	22:45	12	45	7	30	19	75	
11:00	36	39			75	23:00	12	5			17		
11:15	38	41			79	23:15	10	6			16		
11:30	35	38			73	23:30	4	2			6		
11:45	46	155	35	153	81	23:45	8	34	6	19	14	53	
TOTALS	889	1340			2229	TOTALS	1828	1548			3376		
SPLIT %	39.9%	60.1%			39.8%	SPLIT %	54.1%	45.9%			60.2%		

DAILY TOTALS					NB	SB					EB	WB	Total
					2,717	2,888					0	0	5,605

AM Peak Hour	09:00	07:15			07:15	PM Peak Hour	16:30	16:45			16:30		
AM Pk Volume	162	316			450	PM Pk Volume	271	213			483		
Pk Hr Factor	0.862	0.798			0.907	Pk Hr Factor	0.880	0.951			0.922		
7 - 9 Volume	243	555	0	0	798	4 - 6 Volume	508	404	0	0	912		
7 - 9 Peak Hour	07:15	07:15			07:15	4 - 6 Peak Hour	16:30	16:45			16:30		
7 - 9 Pk Volume	134	316	0	0	450	4 - 6 Pk Volume	271	213	0	0	483		
Pk Hr Factor	0.882	0.798	0.000	0.000	0.907	Pk Hr Factor	0.880	0.951	0.000	0.000	0.922		

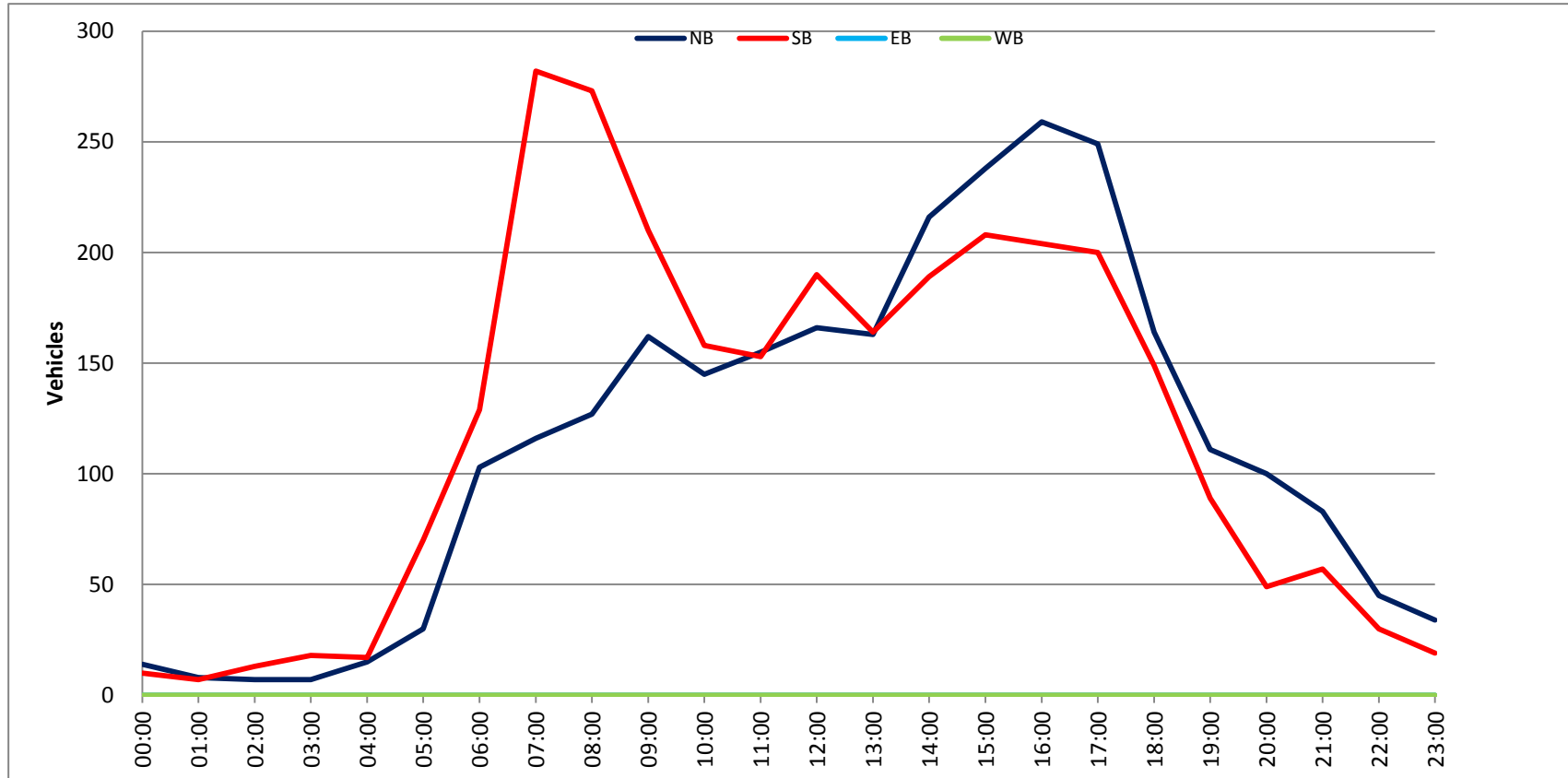
Prepared by NDS/ATD

Project #: CA16_7835_013

City: Stanislaus County

Location: Coffee Rd Bet. Crawford Rd & Claribel Rd

Date: 11/22/2016



VOLUME

Oakdale Rd Bet. SR 108 & Morrill Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_014

DAILY TOTALS	NB	SB	EB		WB	Total
	7,219	6,546	0	0		13,765

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	4		13						17		12:00	123		100						223	
00:15	11		14						25		12:15	151		103						254	
00:30	8		10						18		12:30	123		106						229	
00:45	8	31	8	45					16	76	12:45	119	516	131	440					250	956
01:00	5		3						8		13:00	106		112						218	
01:15	1		4						5		13:15	132		113						245	
01:30	2		6						8		13:30	122		119						241	
01:45	4	12	4	17					8	29	13:45	123	483	127	471					250	954
02:00	8		2						10		14:00	132		103						235	
02:15	8		6						14		14:15	128		110						238	
02:30	6		5						11		14:30	124		129						253	
02:45	7	29	1	14					8	43	14:45	138	522	115	457					253	979
03:00	2		9						11		15:00	152		146						298	
03:15	13		0						13		15:15	146		108						254	
03:30	11		3						14		15:30	128		144						272	
03:45	6	32	3	15					9	47	15:45	140	566	117	515					257	1081
04:00	12		9						21		16:00	151		125						276	
04:15	17		7						24		16:15	161		127						288	
04:30	11		12						23		16:30	157		126						283	
04:45	20	60	11	39					31	99	16:45	155	624	133	511					288	1135
05:00	29		9						38		17:00	151		138						289	
05:15	31		25						56		17:15	150		135						285	
05:30	28		25						53		17:30	152		121						273	
05:45	57	145	29	88					86	233	17:45	158	611	156	550					314	1161
06:00	60		38						98		18:00	145		138						283	
06:15	54		47						101		18:15	125		116						241	
06:30	74		52						126		18:30	125		114						239	
06:45	71	259	57	194					128	453	18:45	97	492	99	467					196	959
07:00	74		84						158		19:00	82		83						165	
07:15	96		83						179		19:15	94		63						157	
07:30	116		120						236		19:30	84		68						152	
07:45	98	384	101	388					199	772	19:45	76	336	66	280					142	616
08:00	99		115						214		20:00	74		65						139	
08:15	88		88						176		20:15	62		61						123	
08:30	91		86						177		20:30	76		70						146	
08:45	86	364	101	390					187	754	20:45	67	279	47	243					114	522
09:00	94		83						177		21:00	55		44						99	
09:15	87		95						182		21:15	42		40						82	
09:30	82		73						155		21:30	38		39						77	
09:45	91	354	89	340					180	694	21:45	39	174	32	155					71	329
10:00	83		97						180		22:00	50		28						78	
10:15	83		80						163		22:15	21		21						42	
10:30	103		93						196		22:30	17		31						48	
10:45	100	369	102	372					202	741	22:45	16	104	16	96					32	200
11:00	85		103						188		23:00	16		15						31	
11:15	118		99						217		23:15	8		9						17	
11:30	110		110						220		23:30	15		19						34	
11:45	111	424	89	401					200	825	23:45	10	49	15	58					25	107
TOTALS	2463		2303						4766		TOTALS	4756		4243						8999	
SPLIT %	51.7%		48.3%						34.6%		SPLIT %	52.9%		47.1%						65.4%	

DAILY TOTALS	NB	SB	EB		WB	Total
	7,219	6,546	0	0		13,765

AM Peak Hour	11:45	07:30			11:45	PM Peak Hour	16:00	17:00			17:00
AM Pk Volume	508	424			906	PM Pk Volume	624	550			1161
Pk Hr Factor	0.841	0.883			0.892	Pk Hr Factor	0.969	0.881			0.924
7 - 9 Volume	748	778	0	0	1526	4 - 6 Volume	1235	1061	0	0	2296
7 - 9 Peak Hour	07:15	07:30			07:15	4 - 6 Peak Hour	16:00	17:00			17:00
7 - 9 Pk Volume	409	424	0	0	828	4 - 6 Pk Volume	624	550	0	0	1161
Pk Hr Factor	0.881	0.883	0.000	0.000	0.877	Pk Hr Factor	0.969	0.881	0.000	0.000	0.924

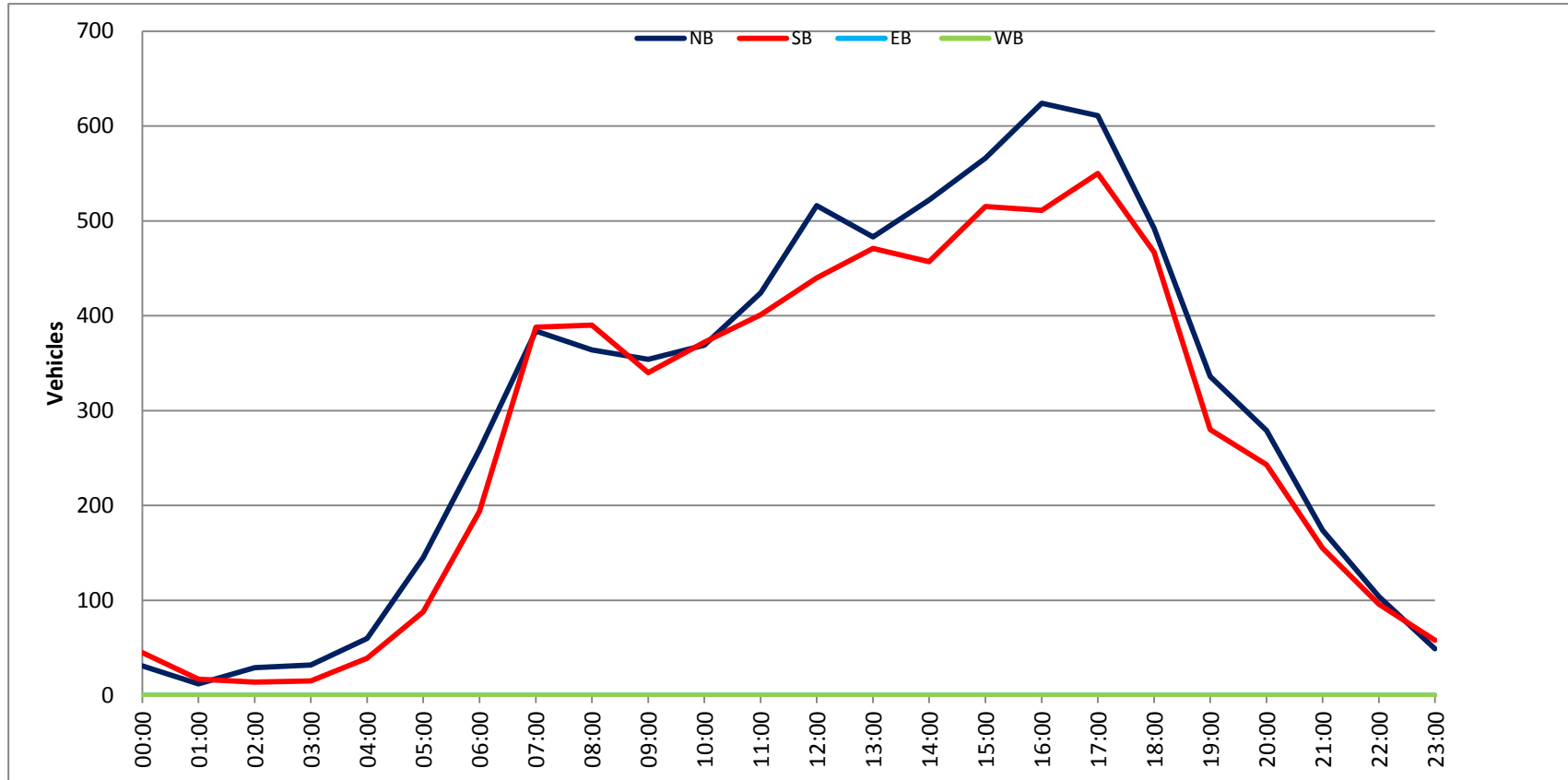
Prepared by NDS/ATD

Project #: CA16_7835_014

City: Stanislaus County

Location: Oakdale Rd Bet. SR 108 & Morrill Rd

Date: 11/16/2016



VOLUME

Oakdale Rd Bet. Morrill Rd & Crawford Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_015

DAILY TOTALS						NB	SB	EBWB						Total	
						7,255	6,360							0	0
AM Period	NB		SB		EB	WB	TOTAL	PM Period	NB		SB		EB	WB	TOTAL
00:00	14		13				27	12:00	111		81				192
00:15	13		14				27	12:15	148		103				251
00:30	7		11				18	12:30	121		86				207
00:45	10	44	6	44			16 88	12:45	105	485	123	393			228 878
01:00	3		3				6	13:00	120		109				229
01:15	1		7				8	13:15	112		108				220
01:30	3		4				7	13:30	115		102				217
01:45	5	12	4	18			9 30	13:45	105	452	126	445			231 897
02:00	9		4				13	14:00	162		101				263
02:15	3		5				8	14:15	126		103				229
02:30	8		5				13	14:30	123		121				244
02:45	6	26	3	17			9 43	14:45	154	565	98	423			252 988
03:00	4		8				12	15:00	148		138				286
03:15	5		3				8	15:15	149		107				256
03:30	12		7				19	15:30	142		134				276
03:45	1	22	11	29			12 51	15:45	148	587	126	505			274 1092
04:00	12		9				21	16:00	163		123				286
04:15	9		15				24	16:15	162		111				273
04:30	9		17				26	16:30	177		128				305
04:45	14	44	10	51			24 95	16:45	151	653	117	479			268 1132
05:00	24		15				39	17:00	163		123				286
05:15	16		23				39	17:15	158		130				288
05:30	28		38				66	17:30	161		108				269
05:45	39	107	34	110			73 217	17:45	167	649	132	493			299 1142
06:00	41		52				93	18:00	146		115				261
06:15	46		50				96	18:15	138		100				238
06:30	57		63				120	18:30	126		108				234
06:45	51	195	67	232			118 427	18:45	124	534	82	405			206 939
07:00	56		94				150	19:00	96		70				166
07:15	73		108				181	19:15	100		52				152
07:30	97		135				232	19:30	89		63				152
07:45	82	308	96	433			178 741	19:45	73	358	64	249			137 607
08:00	99		116				215	20:00	88		59				147
08:15	75		85				160	20:15	98		54				152
08:30	68		96				164	20:30	82		56				138
08:45	93	335	99	396			192 731	20:45	80	348	48	217			128 565
09:00	85		102				187	21:00	66		40				106
09:15	67		90				157	21:15	61		43				104
09:30	95		80				175	21:30	54		36				90
09:45	79	326	88	360			167 686	21:45	55	236	27	146			82 382
10:00	74		96				170	22:00	48		32				80
10:15	84		92				176	22:15	26		19				45
10:30	93		89				182	22:30	25		29				54
10:45	92	343	98	375			190 718	22:45	26	125	19	99			45 224
11:00	88		99				187	23:00	19		17				36
11:15	114		95				209	23:15	19		10				29
11:30	96		102				198	23:30	21		20				41
11:45	125	423	86	382			211 805	23:45	19	78	12	59			31 137
TOTALS	2185		2447				4632	TOTALS	5070		3913				8983
SPLIT %	47.2%		52.8%				34.0%	SPLIT %	56.4%		43.6%				66.0%

DAILY TOTALS					NB	SB	EB				WB	Total
					7,255	6,360	0				0	13,615

AM Peak Hour	11:45	07:15			11:45	PM Peak Hour	16:00	15:00			16:30
AM Pk Volume	505	455			861	PM Pk Volume	653	505			1147
Pk Hr Factor	0.853	0.843			0.858	Pk Hr Factor	0.922	0.915			0.940
7 - 9 Volume	643	829	0	0	1472	4 - 6 Volume	1302	972	0	0	2274
7 - 9 Peak Hour	07:30	07:15			07:15	4 - 6 Peak Hour	16:00	16:30			16:30
7 - 9 Pk Volume	353	455	0	0	806	4 - 6 Pk Volume	653	498	0	0	1147
Pk Hr Factor	0.891	0.843	0.000	0.000	0.869	Pk Hr Factor	0.922	0.958	0.000	0.000	0.940

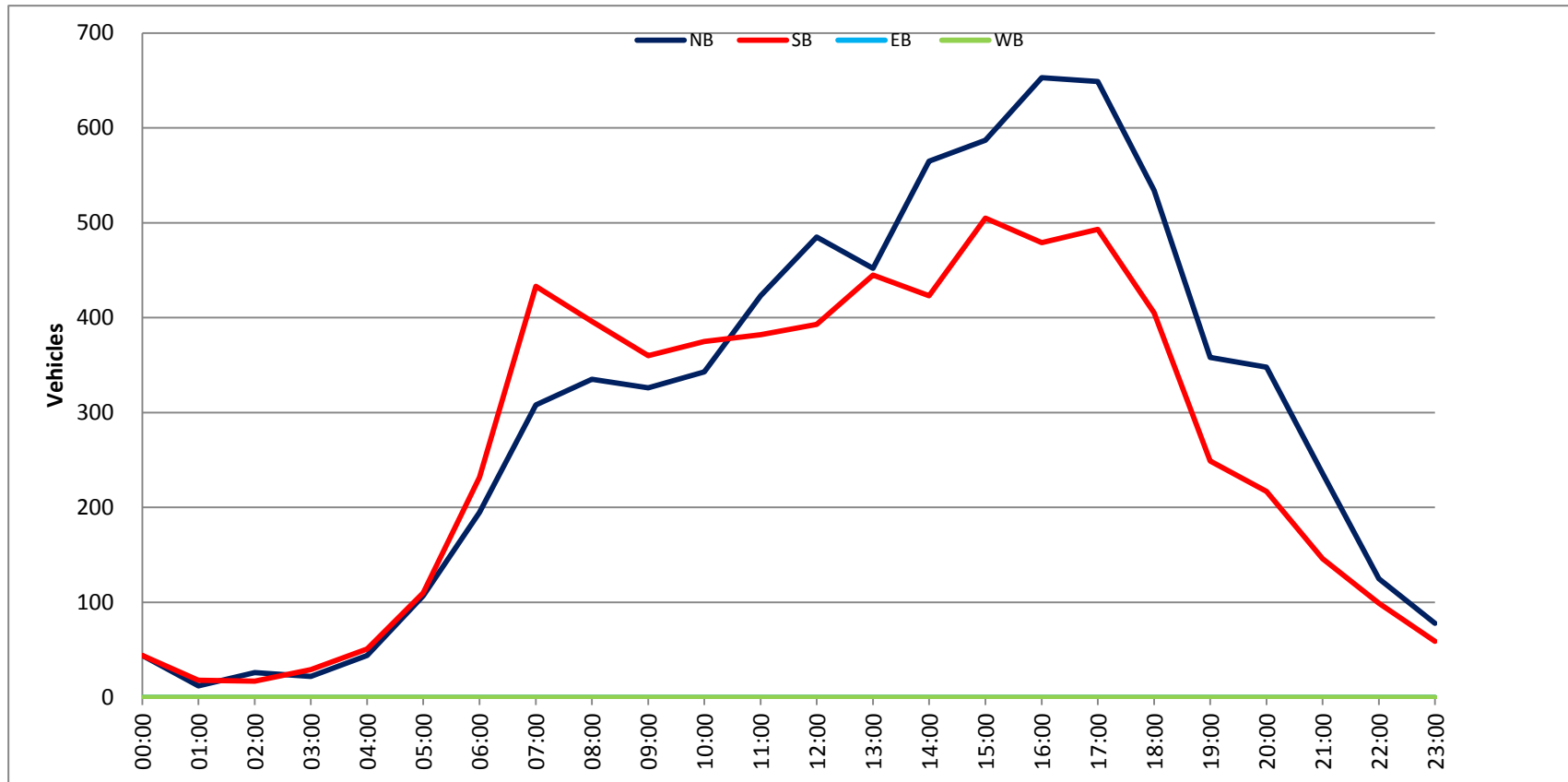
Prepared by NDS/ATD

Project #: CA16_7835_015

City: Stanislaus County

Location: Oakdale Rd Bet. Morrill Rd & Crawford Rd

Date: 11/16/2016



VOLUME

Oakdale Rd Bet. Crawford Rd & Claribel Rd

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_016

DAILY TOTALS				NB	SB	EB				WB	Total	
				9,312	8,194					0	0	17,506

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	19		14						33		12:00	154		96						250	
00:15	19		16						35		12:15	162		128						290	
00:30	10		8						18		12:30	136		100						236	
00:45	11	59	5	43					16 102		12:45	124	576	141	465					265 1041	
01:00	7		5						12		13:00	143		129						272	
01:15	2		7						9		13:15	142		109						251	
01:30	5		4						9		13:30	136		125						261	
01:45	7	21	6	22					13 43		13:45	145	566	157	520					302 1086	
02:00	8		6						14		14:00	175		117						292	
02:15	6		6						12		14:15	204		116						320	
02:30	7		7						14		14:30	167		146						313	
02:45	11	32	9	28					20 60		14:45	195	741	158	537					353 1278	
03:00	5		10						15		15:00	205		176						381	
03:15	5		13						18		15:15	219		127						346	
03:30	15		16						31		15:30	177		172						349	
03:45	2	27	21	60					23 87		15:45	200	801	133	608					333 1409	
04:00	12		20						32		16:00	201		150						351	
04:15	8		23						31		16:15	217		125						342	
04:30	10		22						32		16:30	242		161						403	
04:45	14	44	25	90					39 134		16:45	216	876	144	580					360 1456	
05:00	24		26						50		17:00	216		146						362	
05:15	18		47						65		17:15	224		153						377	
05:30	23		45						68		17:30	219		137						356	
05:45	33	98	55	173					88 271		17:45	218	877	145	581					363 1458	
06:00	35		72						107		18:00	186		130						316	
06:15	47		66						113		18:15	201		136						337	
06:30	56		116						172		18:30	167		110						277	
06:45	64	202	105	359					169 561		18:45	160	714	109	485					269 1199	
07:00	69		158						227		19:00	115		71						186	
07:15	89		195						284		19:15	151		70						221	
07:30	109		250						359		19:30	123		76						199	
07:45	138	405	178	781					316 1186		19:45	112	501	71	288					183 789	
08:00	147		180						327		20:00	115		82						197	
08:15	92		143						235		20:15	119		72						191	
08:30	88		140						228		20:30	119		61						180	
08:45	105	432	141	604					246 1036		20:45	116	469	53	268					169 737	
09:00	98		116						214		21:00	96		53						149	
09:15	88		115						203		21:15	84		48						132	
09:30	87		107						194		21:30	73		39						112	
09:45	100	373	103	441					203 814		21:45	68	321	24	164					92 485	
10:00	93		103						196		22:00	73		37						110	
10:15	85		109						194		22:15	30		25						55	
10:30	122		119						241		22:30	28		31						59	
10:45	112	412	121	452					233 864		22:45	35	166	22	115					57 281	
11:00	100		108						208		23:00	20		16						36	
11:15	141		120						261		23:15	27		11						38	
11:30	129		117						246		23:30	23		23						46	
11:45	138	508	121	466					259 974		23:45	21	91	14	64					35 155	
TOTALS	2613		3519						6132		TOTALS	6699		4675						11374	
SPLIT %	42.6%		57.4%						35.0%		SPLIT %	58.9%		41.1%						65.0%	

DAILY TOTALS				NB	SB	EB				WB	Total	
				9,312	8,194					0	0	17,506

AM Peak Hour	11:45	07:15			07:15	PM Peak Hour	16:30	14:45			16:30
AM Pk Volume	590	803			1286	PM Pk Volume	898	633			1502
Pk Hr Factor	0.910	0.803			0.896	Pk Hr Factor	0.928	0.899			0.932
7 - 9 Volume	837	1385	0	0	2222	4 - 6 Volume	1753	1161	0	0	2914
7 - 9 Peak Hour	07:30	07:15			07:15	4 - 6 Peak Hour	16:30	16:30			16:30
7 - 9 Pk Volume	486	803	0	0	1286	4 - 6 Pk Volume	898	604	0	0	1502
Pk Hr Factor	0.827	0.803	0.000	0.000	0.896	Pk Hr Factor	0.928	0.938	0.000	0.000	0.932

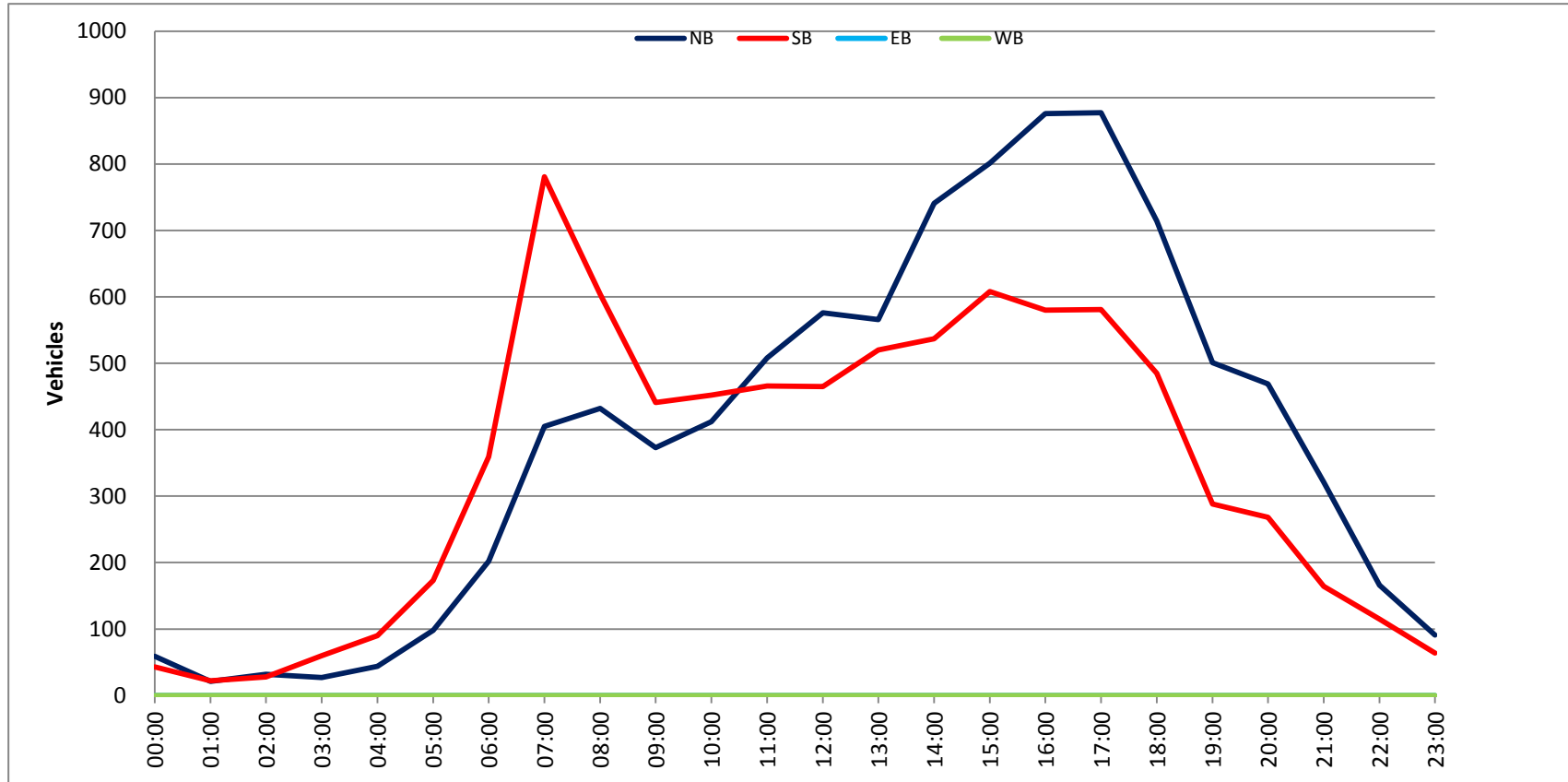
Prepared by NDS/ATD

Project #: CA16_7835_016

City: Stanislaus County

Location: Oakdale Rd Bet. Crawford Rd & Claribel Rd

Date: 11/16/2016



VOLUME

Oakdale Rd Bet. Claribel Rd & Claratina Ave

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_017

DAILY TOTALS				NB	SB	EB				WB	Total	
				9,356	9,484					0	0	18,840

AM Period	NB		SB		EB		WB		TOTAL	PM Period	NB		SB		EB		WB		TOTAL
00:00	14		13						27	12:00	156		135						291
00:15	16		16						32	12:15	144		134						278
00:30	10		10						20	12:30	142		143						285
00:45	12	52	11	50					23 102	12:45	137	579	155	567					292 1146
01:00	3		7						10	13:00	151		142						293
01:15	6		8						14	13:15	134		138						272
01:30	6		5						11	13:30	128		146						274
01:45	7	22	5	25					12 47	13:45	139	552	171	597					310 1149
02:00	14		9						23	14:00	188		147						335
02:15	5		6						11	14:15	198		160						358
02:30	7		7						14	14:30	143		187						330
02:45	10	36	5	27					15 63	14:45	213	742	171	665					384 1407
03:00	8		12						20	15:00	226		204						430
03:15	16		6						22	15:15	156		175						331
03:30	14		12						26	15:30	164		173						337
03:45	15	53	12	42					27 95	15:45	201	747	187	739					388 1486
04:00	13		18						31	16:00	196		177						373
04:15	13		15						28	16:15	211		146						357
04:30	24		26						50	16:30	196		217						413
04:45	23	73	12	71					35 144	16:45	228	831	167	707					395 1538
05:00	30		26						56	17:00	209		238						447
05:15	30		31						61	17:15	196		211						407
05:30	38		39						77	17:30	213		168						381
05:45	54	152	43	139					97 291	17:45	207	825	168	785					375 1610
06:00	66		59						125	18:00	146		163						309
06:15	73		70						143	18:15	152		157						309
06:30	87		112						199	18:30	130		154						284
06:45	104	330	107	348					211 678	18:45	134	562	153	627					287 1189
07:00	104		152						256	19:00	122		111						233
07:15	118		218						336	19:15	106		108						214
07:30	163		248						411	19:30	90		109						199
07:45	177	562	192	810					369 1372	19:45	92	410	102	430					194 840
08:00	158		148						306	20:00	81		103						184
08:15	109		154						263	20:15	91		89						180
08:30	103		138						241	20:30	87		79						166
08:45	122	492	122	562					244 1054	20:45	92	351	72	343					164 694
09:00	122		127						249	21:00	69		78						147
09:15	117		130						247	21:15	62		61						123
09:30	128		102						230	21:30	49		63						112
09:45	103	470	116	475					219 945	21:45	48	228	52	254					100 482
10:00	108		124						232	22:00	46		54						100
10:15	130		114						244	22:15	26		26						52
10:30	116		125						241	22:30	31		33						64
10:45	124	478	116	479					240 957	22:45	26	129	28	141					54 270
11:00	122		117						239	23:00	21		30						51
11:15	149		138						287	23:15	27		26						53
11:30	137		121						258	23:30	27		30						57
11:45	174	582	123	499					297 1081	23:45	23	98	16	102					39 200
TOTALS	3302		3527						6829	TOTALS	6054		5957						12011
SPLIT %	48.4%		51.6%						36.2%	SPLIT %	50.4%		49.6%						63.8%

DAILY TOTALS				NB	SB	EB				WB	Total	
				9,356	9,484					0	0	18,840

AM Peak Hour	07:15	07:00			07:15	PM Peak Hour	16:45	16:30			16:30
AM Pk Volume	616	810			1422	PM Pk Volume	846	833			1662
Pk Hr Factor	0.870	0.817			0.865	Pk Hr Factor	0.928	0.875			0.930
7 - 9 Volume	1054	1372	0	0	2426	4 - 6 Volume	1656	1492	0	0	3148
7 - 9 Peak Hour	07:15	07:00			07:15	4 - 6 Peak Hour	16:45	16:30			16:30
7 - 9 Pk Volume	616	810	0	0	1422	4 - 6 Pk Volume	846	833	0	0	1662
Pk Hr Factor	0.870	0.817	0.000	0.000	0.865	Pk Hr Factor	0.928	0.875	0.000	0.000	0.930

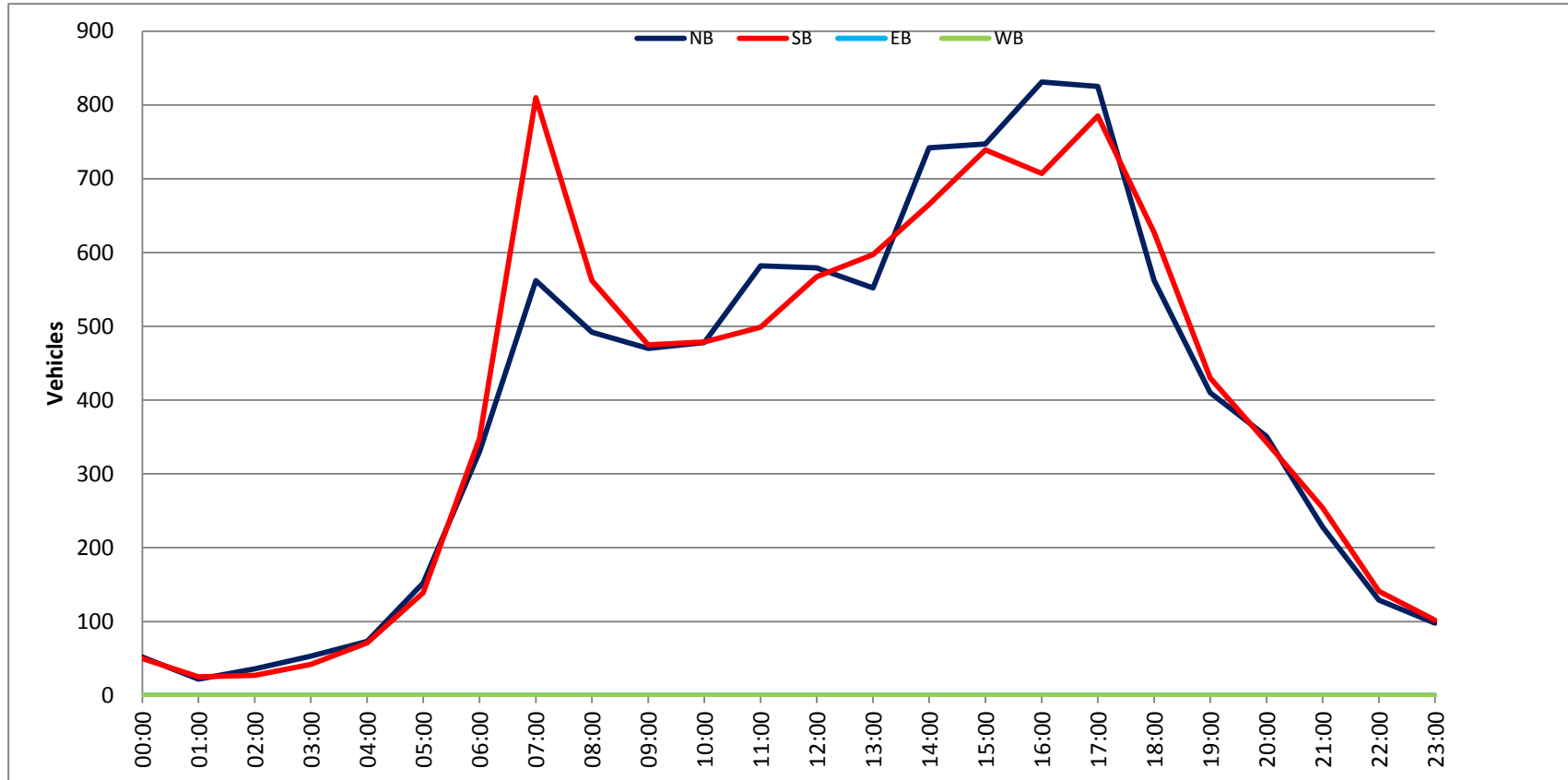
Prepared by NDS/ATD

Project #: CA16_7835_017

City: Stanislaus County

Location: Oakdale Rd Bet. Claribel Rd & Claratina Ave

Date: 11/16/2016



VOLUME

Roselle Rd Bet. Claribel Rd & Claratina Ave

Day: Tuesday
Date: 11/22/2016

City: Stanislaus County
Project #: CA16_7835_018

DAILY TOTALS					NB	SB	EBWB					Total	
					4,427	4,834						0	0
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	2	6			8		12:00	55	63			118	
00:15	10	11			21		12:15	68	65			133	
00:30	2	9			11		12:30	52	56			108	
00:45	9	23	8	34	17	57	12:45	54	229	64	248	118	477
01:00	4	4			8		13:00	61	82			143	
01:15	6	3			9		13:15	70	65			135	
01:30	6	5			11		13:30	62	85			147	
01:45	3	19	4	16	7	35	13:45	58	251	86	318	144	569
02:00	6	3			9		14:00	98	103			201	
02:15	2	3			5		14:15	98	74			172	
02:30	2	4			6		14:30	78	103			181	
02:45	2	12	6	16	8	28	14:45	103	377	102	382	205	759
03:00	2	2			4		15:00	91	99			190	
03:15	8	7			15		15:15	44	86			130	
03:30	8	8			16		15:30	62	87			149	
03:45	6	24	8	25	14	49	15:45	92	289	67	339	159	628
04:00	8	5			13		16:00	91	77			168	
04:15	6	10			16		16:15	108	90			198	
04:30	11	15			26		16:30	106	82			188	
04:45	13	38	14	44	27	82	16:45	101	406	85	334	186	740
05:00	13	18			31		17:00	73	94			167	
05:15	15	17			32		17:15	82	93			175	
05:30	29	23			52		17:30	91	101			192	
05:45	47	104	26	84	73	188	17:45	83	329	75	363	158	692
06:00	30	25			55		18:00	93	89			182	
06:15	28	44			72		18:15	61	76			137	
06:30	36	69			105		18:30	63	57			120	
06:45	52	146	98	236	150	382	18:45	75	292	58	280	133	572
07:00	61	91			152		19:00	62	61			123	
07:15	72	143			215		19:15	48	43			91	
07:30	102	177			279		19:30	45	57			102	
07:45	125	360	108	519	233	879	19:45	39	194	37	198	76	392
08:00	79	67			146		20:00	45	50			95	
08:15	73	60			133		20:15	33	39			72	
08:30	64	68			132		20:30	38	38			76	
08:45	67	283	56	251	123	534	20:45	35	151	38	165	73	316
09:00	44	55			99		21:00	32	42			74	
09:15	62	41			103		21:15	31	39			70	
09:30	51	59			110		21:30	18	39			57	
09:45	43	200	65	220	108	420	21:45	28	109	31	151	59	260
10:00	54	54			108		22:00	24	30			54	
10:15	45	51			96		22:15	18	24			42	
10:30	46	60			106		22:30	15	27			42	
10:45	51	196	59	224	110	420	22:45	10	67	13	94	23	161
11:00	63	56			119		23:00	15	18			33	
11:15	74	52			126		23:15	12	15			27	
11:30	78	70			148		23:30	12	9			21	
11:45	66	281	57	235	123	516	23:45	8	47	16	58	24	105
TOTALS	1686	1904			3590		TOTALS	2741	2930			5671	
SPLIT %	47.0%	53.0%			38.8%		SPLIT %	48.3%	51.7%			61.2%	

DAILY TOTALS					NB	SB					EB	WB	Total	
					4,427	4,834					0	0	9,261	

AM Peak Hour	07:30	07:00			07:00	PM Peak Hour	16:00	14:30			14:00
AM Pk Volume	379	519			879	PM Pk Volume	406	390			759
Pk Hr Factor	0.758	0.733			0.788	Pk Hr Factor	0.940	0.947			0.926
7 - 9 Volume	643	770	0	0	1413	4 - 6 Volume	735	697	0	0	1432
7 - 9 Peak Hour	07:30	07:00			07:00	4 - 6 Peak Hour	16:00	16:45			16:00
7 - 9 Pk Volume	379	519	0	0	879	4 - 6 Pk Volume	406	373	0	0	740
Pk Hr Factor	0.758	0.733	0.000	0.000	0.788	Pk Hr Factor	0.940	0.923	0.000	0.000	0.934

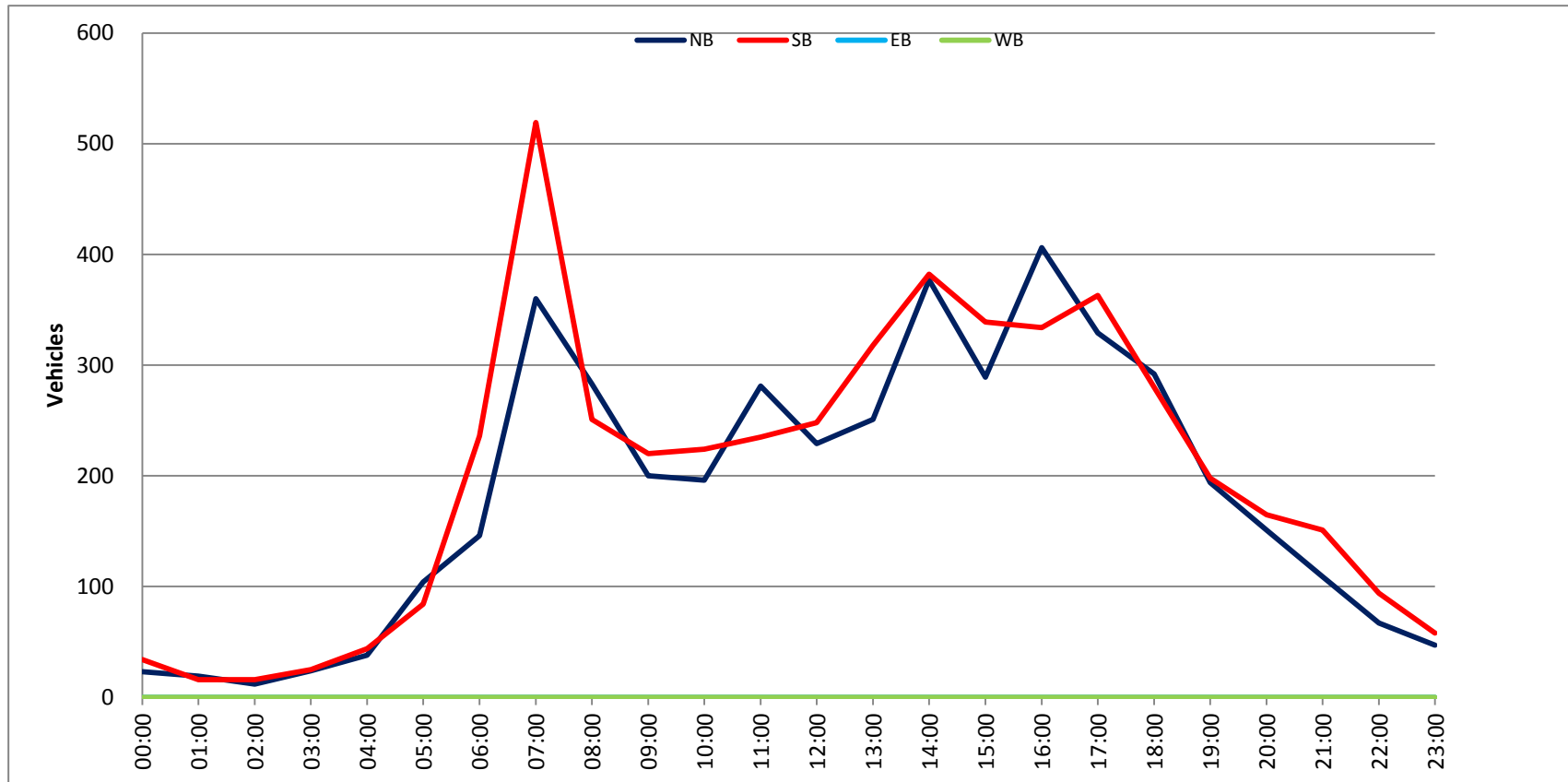
Prepared by NDS/ATD

Project #: CA16_7835_018

City: Stanislaus County

Location: Roselle Rd Bet. Claribel Rd & Claratina Ave

Date: 11/22/2016



VOLUME

Coffee Rd Bet. Claribel Rd & Claratina Ave

Day: Wednesday
Date: 11/16/2016

City: Stanislaus County
Project #: CA16_7835_019

DAILY TOTALS				NB	SB	EB				WB	Total	
				5,334	5,597					0	0	10,931

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	8		8						16		12:00	93		59						152	
00:15	5		9						14		12:15	93		77						170	
00:30	3		6						9		12:30	67		93						160	
00:45	2	18	3	26					5	44	12:45	102	355	95	324					197	679
01:00	7		4						11		13:00	89		86						175	
01:15	6		3						9		13:15	82		80						162	
01:30	2		6						8		13:30	90		87						177	
01:45	2	17	3	16					5	33	13:45	74	335	85	338					159	673
02:00	5		1						6		14:00	91		90						181	
02:15	1		2						3		14:15	95		91						186	
02:30	1		4						5		14:30	103		107						210	
02:45	7	14	8	15					15	29	14:45	82	371	97	385					179	756
03:00	2		8						10		15:00	109		117						226	
03:15	1		5						6		15:15	98		108						206	
03:30	7		4						11		15:30	100		119						219	
03:45	11	21	4	21					15	42	15:45	102	409	114	458					216	867
04:00	7		7						14		16:00	105		114						219	
04:15	8		9						17		16:15	119		107						226	
04:30	6		16						22		16:30	113		115						228	
04:45	10	31	13	45					23	76	16:45	138	475	103	439					241	914
05:00	16		10						26		17:00	116		136						252	
05:15	14		31						45		17:15	120		129						249	
05:30	16		29						45		17:30	129		109						238	
05:45	31	77	27	97					58	174	17:45	115	480	123	497					238	977
06:00	31		38						69		18:00	80		124						204	
06:15	56		49						105		18:15	102		97						199	
06:30	47		51						98		18:30	71		78						149	
06:45	65	199	69	207					134	406	18:45	66	319	93	392					159	711
07:00	89		67						156		19:00	70		63						133	
07:15	82		73						155		19:15	65		43						108	
07:30	93		129						222		19:30	75		59						134	
07:45	90	354	142	411					232	765	19:45	55	265	43	208					98	473
08:00	90		116						206		20:00	58		45						103	
08:15	70		115						185		20:15	69		40						109	
08:30	57		81						138		20:30	58		54						112	
08:45	70	287	113	425					183	712	20:45	44	229	41	180					85	409
09:00	66		80						146		21:00	47		39						86	
09:15	66		63						129		21:15	30		30						60	
09:30	55		70						125		21:30	27		31						58	
09:45	56	243	93	306					149	549	21:45	22	126	18	118					40	244
10:00	68		70						138		22:00	21		17						38	
10:15	80		65						145		22:15	26		19						45	
10:30	97		68						165		22:30	15		19						34	
10:45	60	305	72	275					132	580	22:45	11	73	8	63					19	136
11:00	64		79						143		23:00	9		11						20	
11:15	72		81						153		23:15	12		14						26	
11:30	74		70						144		23:30	6		12						18	
11:45	88	298	79	309					167	607	23:45	6	33	5	42					11	75
TOTALS	1864		2153						4017		TOTALS	3470		3444						6914	
SPLIT %	46.4%		53.6%						36.7%		SPLIT %	50.2%		49.8%						63.3%	

DAILY TOTALS				NB	SB	EB				WB	Total	
				5,334	5,597					0	0	10,931

AM Peak Hour	07:15	07:30			07:30	PM Peak Hour	16:45	17:00			16:45
AM Pk Volume	355	502			845	PM Pk Volume	503	497			980
Pk Hr Factor	0.954	0.884			0.911	Pk Hr Factor	0.911	0.914			0.972
7 - 9 Volume	641	836	0	0	1477	4 - 6 Volume	955	936	0	0	1891
7 - 9 Peak Hour	07:15	07:30			07:30	4 - 6 Peak Hour	16:45	17:00			16:45
7 - 9 Pk Volume	355	502	0	0	845	4 - 6 Pk Volume	503	497	0	0	980
Pk Hr Factor	0.954	0.884	0.000	0.000	0.911	Pk Hr Factor	0.911	0.914	0.000	0.000	0.972

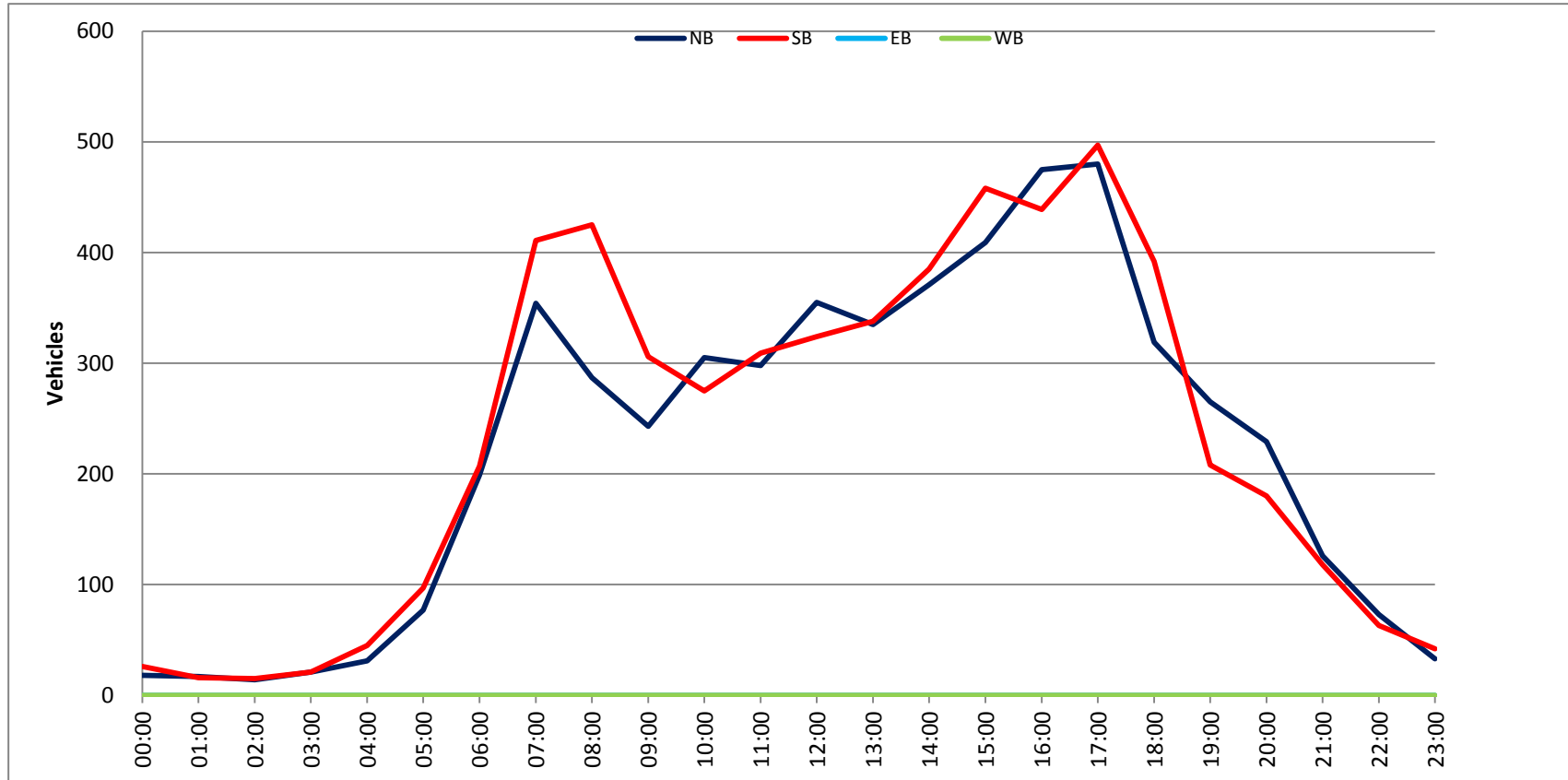
Prepared by NDS/ATD

Project #: CA16_7835_019

City: Stanislaus County

Location: Coffee Rd Bet. Claribel Rd & Claratina Ave

Date: 11/16/2016



Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	286	70	140	765	0	47	0	73	0	0	0
Future Vol, veh/h	0	286	70	140	765	0	47	0	73	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	318	78	156	850	0	52	0	81	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	396	0	0	1519	1519	357
Stage 1	-	-	-	-	-	-	357	357	-
Stage 2	-	-	-	-	-	-	1162	1162	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1163	-	0	131	119	687
Stage 1	0	-	-	-	-	0	708	628	-
Stage 2	0	-	-	-	-	0	298	269	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1163	-	-	113	0	687
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	0	-
Stage 1	-	-	-	-	-	-	613	0	-
Stage 2	-	-	-	-	-	-	298	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	40.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	230	-	-	1163	-
HCM Lane V/C Ratio	0.58	-	-	0.134	-
HCM Control Delay (s)	40.2	-	-	8.6	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	3.3	-	-	0.5	-

HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	290	57	305	529	53	170	80	161	61	117	134
Future Volume (veh/h)	60	290	57	305	529	53	170	80	161	61	117	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	67	322	63	339	588	59	189	89	179	68	130	149
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	495	96	443	785	79	233	691	791	97	548	466
Arrive On Green	0.05	0.17	0.17	0.13	0.24	0.24	0.13	0.37	0.37	0.05	0.29	0.29
Sat Flow, veh/h	1774	2959	572	3442	3249	325	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	67	191	194	339	320	327	189	89	179	68	130	149
Grp Sat Flow(s),veh/h/ln	1774	1770	1762	1721	1770	1805	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.4	6.5	6.7	6.1	10.8	10.8	6.7	2.0	4.1	2.4	3.4	4.7
Cycle Q Clear(g_c), s	2.4	6.5	6.7	6.1	10.8	10.8	6.7	2.0	4.1	2.4	3.4	4.7
Prop In Lane	1.00		0.32	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	296	294	443	428	436	233	691	791	97	548	466
V/C Ratio(X)	0.70	0.65	0.66	0.77	0.75	0.75	0.81	0.13	0.23	0.70	0.24	0.32
Avail Cap(c_a), veh/h	143	493	491	506	611	623	288	691	791	195	548	466
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	30.0	25.1	25.2	27.2	22.7	22.7	27.3	13.4	9.1	30.0	17.3	17.8
Incr Delay (d2), s/veh	8.8	2.4	2.5	6.0	3.1	3.1	13.2	0.4	0.7	8.9	1.0	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	1.4	3.4	3.4	3.3	5.6	5.7	4.1	1.1	1.9	1.4	1.9	2.3
LnGrp Delay(d),s/veh	38.8	27.5	27.7	33.2	25.7	25.8	40.5	13.8	9.8	38.9	18.3	19.6
LnGrp LOS	D	C	C	C	C	C	D	B	A	D	B	B
Approach Vol, veh/h		452			986			457			347	
Approach Delay, s/veh		29.2			28.3			23.3			22.9	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	28.5	12.8	15.3	13.0	23.5	8.0	20.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.1	22.4	9.5	18.0	10.5	19.0	5.2	22.3				
Max Q Clear Time (g_c+I1), s	4.4	6.1	8.1	8.7	8.7	6.7	4.4	12.8				
Green Ext Time (p_c), s	0.0	0.9	0.2	1.5	0.1	0.9	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				26.6								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	93	0	5	0	118	23	3	208	0
Future Vol, veh/h	0	0	0	93	0	5	0	118	23	3	208	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	102	0	5	0	130	25	3	229	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				378	378	143	-	0	0	155	0	0
Stage 1				143	143	-	-	-	-	-	-	-
Stage 2				235	235	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				624	554	905	0	-	-	1425	-	0
Stage 1				884	779	-	0	-	-	-	-	0
Stage 2				804	710	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				623	0	905	-	-	-	1425	-	-
Mov Cap-2 Maneuver				623	0	-	-	-	-	-	-	-
Stage 1				882	0	-	-	-	-	-	-	-
Stage 2				804	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				11.9		0			0.1			
HCM LOS				B								
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT							
Capacity (veh/h)	-	-	633	1425	-							
HCM Lane V/C Ratio	-	-	0.17	0.002	-							
HCM Control Delay (s)	-	-	11.9	7.5	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.6	0	-							

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	11	3	40	50	82	7	322	24	36	401	37
Future Volume (veh/h)	14	11	3	40	50	82	7	322	24	36	401	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	13	3	47	58	95	8	374	28	42	466	43
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	36	187	159	88	242	206	19	1343	100	81	735	68
Arrive On Green	0.02	0.10	0.10	0.05	0.13	0.13	0.01	0.40	0.40	0.05	0.44	0.44
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3339	249	1774	1680	155
Grp Volume(v), veh/h	16	13	3	47	58	95	8	197	205	42	0	509
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1819	1774	0	1835
Q Serve(g_s), s	0.4	0.3	0.1	1.2	1.3	2.5	0.2	3.4	3.4	1.0	0.0	9.7
Cycle Q Clear(g_c), s	0.4	0.3	0.1	1.2	1.3	2.5	0.2	3.4	3.4	1.0	0.0	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.08
Lane Grp Cap(c), veh/h	36	187	159	88	242	206	19	712	732	81	0	802
V/C Ratio(X)	0.45	0.07	0.02	0.54	0.24	0.46	0.43	0.28	0.28	0.52	0.00	0.63
Avail Cap(c_a), veh/h	198	749	637	198	749	637	198	712	732	198	0	802
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	0.00	1.00
Uniform Delay (d), s/veh	21.7	18.2	18.1	20.8	17.5	18.0	22.0	9.0	9.0	20.9	0.0	9.8
Incr Delay (d2), s/veh	8.5	0.2	0.0	5.0	0.5	1.6	14.6	1.0	1.0	5.1	0.0	3.8
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	0.3	0.2	0.0	0.7	0.7	1.2	0.2	1.8	1.9	0.6	0.0	5.7
LnGrp Delay(d),s/veh	30.2	18.4	18.2	25.8	18.0	19.6	36.6	10.0	10.0	26.0	0.0	13.6
LnGrp LOS	C	B	B	C	B	B	D	A	A	C		B
Approach Vol, veh/h		32			200			410			551	
Approach Delay, s/veh		24.3			20.6			10.5			14.6	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	22.5	6.7	9.0	5.0	24.1	5.4	10.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	3.0	5.4	3.2	2.3	2.2	11.7	2.4	4.5				
Green Ext Time (p_c), s	0.0	1.9	0.0	0.0	0.0	1.7	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				14.4								
HCM 2010 LOS				B								

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	25	0	1	0	139	3	3	297	0
Future Vol, veh/h	0	0	0	25	0	1	0	139	3	3	297	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	28	0	1	0	154	3	3	330	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				492	492	156	-	0	0	157	0	0
Stage 1				156	156	-	-	-	-	-	-	-
Stage 2				336	336	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				536	478	890	0	-	-	1423	-	0
Stage 1				872	769	-	0	-	-	-	-	0
Stage 2				724	642	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				534	0	890	-	-	-	1423	-	-
Mov Cap-2 Maneuver				534	0	-	-	-	-	-	-	-
Stage 1				869	0	-	-	-	-	-	-	-
Stage 2				724	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				12			0			0.1		
HCM LOS				B								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	542	1423	-							
HCM Lane V/C Ratio	-	-	0.053	0.002	-							
HCM Control Delay (s)	-	-	12	7.5	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.2	0	-							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	0	9	376	4	48	15	312	182	60	361	10
Future Volume (veh/h)	4	0	9	376	4	48	15	312	182	60	361	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	1900	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	0	10	427	5	55	17	355	207	68	410	11
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	12	0	0	505	0	294	37	820	470	109	1474	39
Arrive On Green	0.01	0.00	0.00	0.28	0.19	0.19	0.02	0.38	0.38	0.06	0.42	0.42
Sat Flow, veh/h	1774	5		1774	0	1583	1774	2170	1243	1774	3521	94
Grp Volume(v), veh/h	5	46.0		427	0	55	17	288	274	68	206	215
Grp Sat Flow(s),veh/h/ln	1774	D		1774	0	1583	1774	1770	1643	1774	1770	1846
Q Serve(g_s), s	0.1			11.1	0.0	1.4	0.5	5.9	6.1	1.8	3.7	3.8
Cycle Q Clear(g_c), s	0.1			11.1	0.0	1.4	0.5	5.9	6.1	1.8	3.7	3.8
Prop In Lane	1.00			1.00		1.00	1.00		0.76	1.00		0.05
Lane Grp Cap(c), veh/h	12			505	0	294	37	669	621	109	741	773
V/C Ratio(X)	0.42			0.85	0.00	0.19	0.45	0.43	0.44	0.62	0.28	0.28
Avail Cap(c_a), veh/h	181			743	0	1084	181	669	621	181	741	773
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2			16.5	0.0	16.8	23.7	11.3	11.4	22.4	9.4	9.4
Incr Delay (d2), s/veh	21.8			6.0	0.0	0.3	8.4	2.0	2.3	5.7	0.9	0.9
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
%ile BackOfQ(50%),veh/ln	0.1			6.2	0.0	0.6	0.3	3.3	3.1	1.1	2.0	2.1
LnGrp Delay(d),s/veh	46.0			22.5	0.0	17.1	32.1	13.3	13.6	28.1	10.3	10.3
LnGrp LOS	D			C		B	C	B	B	C	B	B
Approach Vol, veh/h					482				579		489	
Approach Delay, s/veh					21.9				14.0		12.8	
Approach LOS					C				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	23.0	18.4		5.5	25.0	4.8	13.6				
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	20.5		5.0	18.5	5.0	33.5				
Max Q Clear Time (g_c+I1), s	3.8	8.1	13.1		2.5	5.8	2.1	3.4				
Green Ext Time (p_c), s	0.0	2.6	0.9		0.0	2.0	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	16.2											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

EXISTING (11/2016) AM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	320	133	277	665	65	109	246	81	63	640	79
Future Volume (veh/h)	117	320	133	277	665	65	109	246	81	63	640	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	121	330	137	286	686	67	112	254	84	65	660	81
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	589	264	295	865	387	146	1164	521	95	1063	476
Arrive On Green	0.09	0.17	0.17	0.17	0.24	0.24	0.08	0.33	0.33	0.05	0.30	0.30
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	121	330	137	286	686	67	112	254	84	65	660	81
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.2	5.4	5.0	10.1	11.5	2.1	3.9	3.3	2.4	2.3	10.1	2.4
Cycle Q Clear(g_c), s	4.2	5.4	5.0	10.1	11.5	2.1	3.9	3.3	2.4	2.3	10.1	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	157	589	264	295	865	387	146	1164	521	95	1063	476
V/C Ratio(X)	0.77	0.56	0.52	0.97	0.79	0.17	0.77	0.22	0.16	0.68	0.62	0.17
Avail Cap(c_a), veh/h	323	1063	476	295	1007	451	379	1164	521	354	1063	476
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	28.2	24.2	24.0	26.2	22.4	18.9	28.4	15.3	15.0	29.4	19.0	16.3
Incr Delay (d2), s/veh	7.8	0.8	1.6	44.3	3.8	0.2	8.1	0.4	0.7	8.2	2.7	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	2.4	2.7	2.3	8.6	6.1	0.9	2.2	1.7	1.1	1.3	5.4	1.1
LnGrp Delay(d),s/veh	36.0	25.1	25.6	70.5	26.2	19.1	36.6	15.8	15.7	37.6	21.7	17.1
LnGrp LOS	D	C	C	E	C	B	D	B	B	D	C	B
Approach Vol, veh/h		588			1039			450			806	
Approach Delay, s/veh		27.5			38.0			20.9			22.6	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	25.3	15.0	15.0	9.7	23.5	10.1	19.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.6	19.9	10.5	19.0	13.5	19.0	11.5	18.0				
Max Q Clear Time (g_c+I), s	14.3	5.3	12.1	7.4	5.9	12.1	6.2	13.5				
Green Ext Time (p_c), s	0.1	1.6	0.0	2.0	0.1	2.6	0.1	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay				28.9								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
8: Coffee Rd & Claribel Ave

EXISTING (11/2016) AM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	341	112	147	753	6	146	115	92	5	248	79
Future Volume (veh/h)	23	341	112	147	753	6	146	115	92	5	248	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	25	375	123	162	827	7	160	126	101	5	273	87
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	1480	662	508	1480	662	423	629	535	528	629	535
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	656	3539	1583	896	3539	1583	1017	1863	1583	1149	1863	1583
Grp Volume(v), veh/h	25	375	123	162	827	7	160	126	101	5	273	87
Grp Sat Flow(s),veh/h/ln	656	1770	1583	896	1770	1583	1017	1863	1583	1149	1863	1583
Q Serve(g_s), s	1.1	2.5	1.8	5.3	6.5	0.1	5.3	1.8	1.7	0.1	4.2	1.4
Cycle Q Clear(g_c), s	7.7	2.5	1.8	7.8	6.5	0.1	9.5	1.8	1.7	1.9	4.2	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	353	1480	662	508	1480	662	423	629	535	528	629	535
V/C Ratio(X)	0.07	0.25	0.19	0.32	0.56	0.01	0.38	0.20	0.19	0.01	0.43	0.16
Avail Cap(c_a), veh/h	568	2640	1181	802	2640	1181	590	935	794	717	935	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	11.1	7.0	6.8	9.5	8.1	6.3	13.2	8.7	8.6	9.3	9.5	8.6
Incr Delay (d2), s/veh	0.1	0.1	0.1	0.4	0.3	0.0	0.6	0.2	0.2	0.0	0.5	0.1
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	0.2	1.2	0.8	1.4	3.2	0.0	1.5	0.9	0.8	0.0	2.2	0.6
LnGrp Delay(d),s/veh	11.1	7.1	6.9	9.9	8.5	6.3	13.7	8.8	8.8	9.3	9.9	8.7
LnGrp LOS	B	A	A	A	A	A	B	A	A	A	A	A
Approach Vol, veh/h		523			996			387			365	
Approach Delay, s/veh		7.2			8.7			10.8			9.6	
Approach LOS		A			A			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.0		19.9		17.0		19.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		27.5		18.5		27.5				
Max Q Clear Time (g_c+I1), s		11.5		9.7		6.2		9.8				
Green Ext Time (p_c), s		0.9		2.5		1.3		5.6				
Intersection Summary												
HCM 2010 Ctrl Delay				8.9								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

EXISTING (11/2016) AM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	232	93	253	490	44	118	386	126	31	443	327
Future Volume (veh/h)	127	232	93	253	490	44	118	386	126	31	443	327
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	141	258	0	281	544	0	131	429	140	34	492	363
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	432	193	323	724	324	164	1135	367	59	694	590
Arrive On Green	0.10	0.12	0.00	0.18	0.20	0.00	0.09	0.43	0.43	0.03	0.37	0.37
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2631	851	1774	1863	1583
Grp Volume(v), veh/h	141	258	0	281	544	0	131	287	282	34	492	363
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1713	1774	1863	1583
Q Serve(g_s), s	6.1	5.4	0.0	12.0	11.3	0.0	5.6	8.6	8.7	1.5	17.5	14.5
Cycle Q Clear(g_c), s	6.1	5.4	0.0	12.0	11.3	0.0	5.6	8.6	8.7	1.5	17.5	14.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	177	432	193	323	724	324	164	764	739	59	694	590
V/C Ratio(X)	0.80	0.60	0.00	0.87	0.75	0.00	0.80	0.38	0.38	0.57	0.71	0.62
Avail Cap(c_a), veh/h	241	818	366	376	1086	486	194	764	739	137	694	590
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	32.4	0.0	31.0	29.1	0.0	34.6	15.0	15.1	37.1	20.9	19.9
Incr Delay (d2), s/veh	12.4	1.3	0.0	17.4	1.6	0.0	17.8	1.4	1.5	8.4	6.1	4.8
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	3.6	2.7	0.0	7.4	5.7	0.0	3.6	4.4	4.4	0.9	10.2	7.1
LnGrp Delay(d),s/veh	46.7	33.7	0.0	48.4	30.7	0.0	52.4	16.4	16.6	45.5	26.9	24.7
LnGrp LOS	D	C		D	C		D	B	B	D	C	C
Approach Vol, veh/h	399			825			700			889		
Approach Delay, s/veh	38.3			36.7			23.2			26.7		
Approach LOS	D			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	38.1	18.7	14.0	11.7	33.5	12.3	20.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.0	31.5	16.5	18.0	8.5	29.0	10.6	23.9				
Max Q Clear Time (g_c+I), s	13.5	10.7	14.0	7.4	7.6	19.5	8.1	13.3				
Green Ext Time (p_c), s	0.0	3.5	0.2	1.1	0.0	3.2	0.1	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay	30.4											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

EXISTING (11/2016) AM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	212	0	0	445	81	0	0	0	185	0	319
Future Volume (veh/h)	114	212	0	0	445	81	0	0	0	185	0	319
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	133	247	0	0	517	94				215	0	371
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86				0.86	0.86	0.86
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	173	893	0	0	807	146				527	0	470
Arrive On Green	0.10	0.48	0.00	0.00	0.27	0.27				0.30	0.00	0.30
Sat Flow, veh/h	1774	1863	0	0	3088	542				1774	0	1583
Grp Volume(v), veh/h	133	247	0	0	305	306				215	0	371
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1767				1774	0	1583
Q Serve(g_s), s	2.9	3.2	0.0	0.0	6.1	6.2				3.9	0.0	8.6
Cycle Q Clear(g_c), s	2.9	3.2	0.0	0.0	6.1	6.2				3.9	0.0	8.6
Prop In Lane	1.00		0.00	0.00		0.31				1.00		1.00
Lane Grp Cap(c), veh/h	173	893	0	0	477	476				527	0	470
V/C Ratio(X)	0.77	0.28	0.00	0.00	0.64	0.64				0.41	0.00	0.79
Avail Cap(c_a), veh/h	463	1529	0	0	792	791				794	0	709
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	6.3	0.0	0.0	13.0	13.0				11.3	0.0	13.0
Incr Delay (d2), s/veh	6.9	0.2	0.0	0.0	1.4	1.5				0.5	0.0	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
%ile BackOfQ(50%),veh/ln	1.8	1.7	0.0	0.0	3.2	3.2				2.0	0.0	7.5
LnGrp Delay(d),s/veh	24.6	6.5	0.0	0.0	14.4	14.4				11.8	0.0	16.5
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		380			611						586	
Approach Delay, s/veh		12.8			14.4						14.8	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				23.8		16.4	8.4	15.3				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				33.0		18.0	10.5	18.0				
Max Q Clear Time (g_c+I1), s				5.2		10.6	4.9	8.2				
Green Ext Time (p_c), s				1.5		1.3	0.1	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay				14.2								
HCM 2010 LOS				B								

Intersection	
Intersection Delay, s/veh	56.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	210	151	31	341	43	140	230	14	54	306	35
Future Vol, veh/h	26	210	151	31	341	43	140	230	14	54	306	35
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	219	157	32	355	45	146	240	15	56	319	36
Number of Lanes	1	1	1	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	3
HCM Control Delay	24.2	105.3	29.7	63.9
HCM LOS	C	F	D	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	100%	0%
Vol Thru, %	0%	94%	0%	100%	0%	0%	89%	0%	90%
Vol Right, %	0%	6%	0%	0%	100%	0%	11%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	244	26	210	151	31	384	54	341
LT Vol	140	0	26	0	0	31	0	54	0
Through Vol	0	230	0	210	0	0	341	0	306
RT Vol	0	14	0	0	151	0	43	0	35
Lane Flow Rate	146	254	27	219	157	32	400	56	355
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.424	0.701	0.08	0.615	0.412	0.095	1.11	0.161	0.962
Departure Headway (Hd)	11.01	10.443	11.131	10.604	9.867	10.6	9.992	10.823	10.226
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	330	348	324	343	366	338	364	334	359
Service Time	8.71	8.143	8.831	8.304	7.567	8.359	7.751	8.523	7.926
HCM Lane V/C Ratio	0.442	0.73	0.083	0.638	0.429	0.095	1.099	0.168	0.989
HCM Control Delay	21.6	34.3	14.8	28.8	19.3	14.5	112.6	15.6	71.5
HCM Lane LOS	C	D	B	D	C	B	F	C	F
HCM 95th-tile Q	2	5.1	0.3	3.9	2	0.3	14.9	0.6	10.5

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	210	151	31	341	43	140	230	14	54	306	35
Future Volume (veh/h)	26	210	151	31	341	43	140	230	14	54	306	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	27	219	157	32	355	45	146	240	15	56	319	36
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	490	416	63	433	55	185	511	32	95	401	45
Arrive On Green	0.03	0.26	0.26	0.04	0.27	0.27	0.10	0.29	0.29	0.05	0.24	0.24
Sat Flow, veh/h	1774	1863	1583	1774	1621	205	1774	1735	108	1774	1644	186
Grp Volume(v), veh/h	27	219	157	32	0	400	146	0	255	56	0	355
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1826	1774	0	1844	1774	0	1830
Q Serve(g_s), s	0.8	5.0	4.1	0.9	0.0	10.5	4.1	0.0	5.8	1.6	0.0	9.3
Cycle Q Clear(g_c), s	0.8	5.0	4.1	0.9	0.0	10.5	4.1	0.0	5.8	1.6	0.0	9.3
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.06	1.00		0.10
Lane Grp Cap(c), veh/h	55	490	416	63	0	488	185	0	543	95	0	447
V/C Ratio(X)	0.49	0.45	0.38	0.50	0.00	0.82	0.79	0.00	0.47	0.59	0.00	0.79
Avail Cap(c_a), veh/h	174	657	559	174	0	645	205	0	687	174	0	650
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.3	15.7	15.4	24.1	0.0	17.5	22.3	0.0	14.7	23.6	0.0	18.1
Incr Delay (d2), s/veh	6.5	0.6	0.6	6.1	0.0	6.3	16.8	0.0	0.6	5.7	0.0	4.3
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	0.5	2.6	1.9	0.6	0.0	6.1	2.9	0.0	3.0	0.9	0.0	5.2
LnGrp Delay(d),s/veh	30.8	16.3	15.9	30.2	0.0	23.8	39.1	0.0	15.3	29.2	0.0	22.4
LnGrp LOS	C	B	B	C		C	D		B	C		C
Approach Vol, veh/h		403			432			401			411	
Approach Delay, s/veh		17.2			24.3			24.0			23.3	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	19.5	6.3	17.9	9.8	16.9	6.1	18.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	19.0	5.0	18.0	5.9	18.1	5.0	18.0				
Max Q Clear Time (g_c+I1), s	13.6	7.8	2.9	7.0	6.1	11.3	2.8	12.5				
Green Ext Time (p_c), s	0.0	1.1	0.0	1.3	0.0	1.2	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay				22.2								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	216	89	3	250	2	93	59	1	5	79	95
Future Volume (veh/h)	22	216	89	3	250	2	93	59	1	5	79	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	24	240	0	3	278	0	103	66	0	6	88	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	498	0	186	256	0	488	195	0	209	452	0
Arrive On Green	0.29	0.29	0.00	0.29	0.14	0.00	0.25	0.25	0.00	0.25	0.25	0.00
Sat Flow, veh/h	90	1715	0	8	1849	0	768	769	0	57	1782	0
Grp Volume(v), veh/h	264	0	0	281	0	0	169	0	0	94	0	0
Grp Sat Flow(s),veh/h/ln	1805	0	0	1858	0	0	1537	0	0	1840	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	0.0	2.8	0.0	0.0	1.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.09		0.00	0.01		0.00	0.61		0.00	0.06		0.00
Lane Grp Cap(c), veh/h	723	0	0	724	0	0	683	0	0	660	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.39	0.00	0.00	0.25	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	2124	0	0	2203	0	0	1769	0	0	1996	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	0.0	8.5	0.0	0.0	6.1	0.0	0.0	5.8	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
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	1.2	0.0	0.0	1.2	0.0	0.0	0.8	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	8.8	0.0	0.0	6.3	0.0	0.0	5.9	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h	264				281				169		94	
Approach Delay, s/veh	6.1				8.8				6.3		5.9	
Approach LOS	A				A				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	9.5		10.2		9.5		10.2					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	19.5		21.5		19.5		21.5					
Max Q Clear Time (g_c+I1), s	3.7		4.3		2.8		4.8					
Green Ext Time (p_c), s	0.7		1.2		0.3		1.3					
Intersection Summary												
HCM 2010 Ctrl Delay			7.1									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	151	34	107	199	36	15	332	99	24	414	44
Future Volume (veh/h)	52	151	34	107	199	36	15	332	99	24	414	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	54	157	35	111	207	38	16	346	103	25	431	46
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	257	218	142	307	261	35	711	604	52	728	619
Arrive On Green	0.05	0.14	0.14	0.08	0.16	0.16	0.02	0.38	0.38	0.03	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	54	157	35	111	207	38	16	346	103	25	431	46
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.4	3.8	0.9	3.0	5.1	1.0	0.4	6.8	2.1	0.7	8.9	0.9
Cycle Q Clear(g_c), s	1.4	3.8	0.9	3.0	5.1	1.0	0.4	6.8	2.1	0.7	8.9	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	257	218	142	307	261	35	711	604	52	728	619
V/C Ratio(X)	0.57	0.61	0.16	0.78	0.68	0.15	0.45	0.49	0.17	0.48	0.59	0.07
Avail Cap(c_a), veh/h	183	691	588	201	711	604	183	711	604	183	728	619
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	22.4	19.7	18.4	21.9	19.0	17.3	23.5	11.4	9.9	23.2	11.7	9.3
Incr Delay (d2), s/veh	5.3	2.3	0.3	12.1	2.6	0.3	8.7	2.4	0.6	6.6	3.5	0.2
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	0.8	2.1	0.4	1.9	2.8	0.4	0.3	3.9	1.0	0.4	5.3	0.4
LnGrp Delay(d),s/veh	27.7	22.0	18.8	34.0	21.6	17.6	32.2	13.8	10.5	29.8	15.2	9.5
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	A
Approach Vol, veh/h	246				356				465		502	
Approach Delay, s/veh	22.8				25.0				13.7		15.4	
Approach LOS	C				C				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	23.0	8.4	11.2	5.5	23.5	7.1	12.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (G_max), s	5.0	18.5	5.5	18.0	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I12), s	12.5	8.8	5.0	5.8	2.4	10.9	3.4	7.1				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.7	0.0	1.5	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 11

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	206	428	609	759	44
Future Vol, veh/h	12	206	428	609	759	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	229	476	677	843	49

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2497	868	892
Stage 1	868	-	-
Stage 2	1629	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	32	352	760
Stage 1	411	-	-
Stage 2	176	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 12	352	760
Mov Cap-2 Maneuver	~ 12	-	-
Stage 1	154	-	-
Stage 2	176	-	-

Approach	EB	NB	SB
HCM Control Delay, s	70.1	7.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	760	-	12	352	-	-
HCM Lane V/C Ratio	0.626	-	1.111	0.65	-	-
HCM Control Delay (s)	17.3	-	718.1	32.4	-	-
HCM Lane LOS	C	-	F	D	-	-
HCM 95th %tile Q(veh)	4.5	-	2.3	4.3	-	-

Notes

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

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

EXISTING (11/2016) AM
10/30/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations									
Traffic Volume (veh/h)	12	206	428	609	759	44			
Future Volume (veh/h)	12	206	428	609	759	44			
Number	7	14	5	2	6	16			
Initial Q (Qb), veh	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900			
Adj Flow Rate, veh/h	13	0	476	677	843	49			
Adj No. of Lanes	1	1	1	1	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2			
Cap, veh/h	28	25	519	1622	909	53			
Arrive On Green	0.02	0.00	0.29	0.87	0.52	0.52			
Sat Flow, veh/h	1774	1583	1774	1863	1744	101			
Grp Volume(v), veh/h	13	0	476	677	0	892			
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1845			
Q Serve(g_s), s	0.6	0.0	20.6	5.8	0.0	35.5			
Cycle Q Clear(g_c), s	0.6	0.0	20.6	5.8	0.0	35.5			
Prop In Lane	1.00	1.00	1.00			0.05			
Lane Grp Cap(c), veh/h	28	25	519	1622	0	962			
V/C Ratio(X)	0.47	0.00	0.92	0.42	0.00	0.93			
Avail Cap(c_a), veh/h	112	100	593	1785	0	1047			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	38.7	0.0	27.1	1.0	0.0	17.6			
Incr Delay (d2), s/veh	11.7	0.0	17.8	0.2	0.0	13.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.4	0.0	12.6	2.9	0.0	21.3			
LnGrp Delay(d),s/veh	50.4	0.0	44.9	1.2	0.0	30.7			
LnGrp LOS	D		D	A		C			
Approach Vol, veh/h	13			1153	892				
Approach Delay, s/veh	50.4			19.3	30.7				
Approach LOS	D			B	C				
Timer	1	2	3	4	5	6	7	8	
Assigned Phs		2		4	5	6			
Phs Duration (G+Y+Rc), s		73.6		5.7	27.7	45.9			
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5			
Max Green Setting (Gmax), s		76.0		5.0	26.5	45.0			
Max Q Clear Time (g_c+I1), s		7.8		2.6	22.6	37.5			
Green Ext Time (p_c), s		5.7		0.0	0.7	3.8			
Intersection Summary									
HCM 2010 Ctrl Delay			24.4						
HCM 2010 LOS			C						
Notes									

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	65	0	35	16	451	13	69	725	0
Future Volume (veh/h)	0	0	0	65	0	35	16	451	13	69	725	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	0	1863	1863	1863	1863	1863	1863	0
Adj Flow Rate, veh/h				76	0	41	19	524	15	80	843	0
Adj No. of Lanes				2	0	1	1	2	1	1	2	0
Peak Hour Factor				0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				319	0	147	42	1703	762	133	1883	0
Arrive On Green				0.09	0.00	0.09	0.02	0.48	0.48	0.07	0.53	0.00
Sat Flow, veh/h				3442	0	1583	1774	3539	1583	1774	3632	0
Grp Volume(v), veh/h				76	0	41	19	524	15	80	843	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	1774	1770	1583	1774	1770	0
Q Serve(g_s), s				0.8	0.0	0.9	0.4	3.5	0.2	1.7	5.6	0.0
Cycle Q Clear(g_c), s				0.8	0.0	0.9	0.4	3.5	0.2	1.7	5.6	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				319	0	147	42	1703	762	133	1883	0
V/C Ratio(X)				0.24	0.00	0.28	0.45	0.31	0.02	0.60	0.45	0.00
Avail Cap(c_a), veh/h				1612	0	741	231	1703	762	231	1883	0
HCM Platoon Ratio				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	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				16.2	0.0	16.2	18.5	6.1	5.2	17.2	5.5	0.0
Incr Delay (d2), s/veh				0.4	0.0	1.0	7.2	0.5	0.0	4.4	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.4	0.0	0.4	0.3	1.8	0.1	1.0	2.9	0.0
LnGrp Delay(d),s/veh				16.6	0.0	17.3	25.8	6.5	5.3	21.6	6.3	0.0
LnGrp LOS				B		B	C	A	A	C	A	
Approach Vol, veh/h					117			558			923	
Approach Delay, s/veh					16.8			7.2			7.6	
Approach LOS					B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	7.4	23.0			5.4	25.0		8.1				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	18.5			5.0	18.5		18.0				
Max Q Clear Time (g_c+13), s	5.5	5.5			2.4	7.6		2.9				
Green Ext Time (p_c), s	0.0	2.9			0.0	4.4		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay				8.1								
HCM 2010 LOS				A								

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Exist AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	193	2.0	0.538	15.3	LOS C	2.3	57.3	0.64	0.70	29.9
8	T1	204	2.0	0.538	15.2	LOS C	2.3	57.3	0.63	0.69	29.7
18	R2	270	2.0	0.538	14.8	LOS B	2.2	55.2	0.62	0.67	30.4
Approach		667	2.0	0.538	15.1	LOS C	2.3	57.3	0.63	0.69	30.0
East: Sylvan Ave											
1	L2	316	2.0	0.628	15.4	LOS C	3.4	86.4	0.63	0.68	30.1
6	T1	535	2.0	0.628	15.2	LOS C	3.4	86.4	0.61	0.66	31.8
16	R2	127	2.0	0.628	15.1	LOS C	3.2	82.5	0.61	0.65	30.6
Approach		978	2.0	0.628	15.2	LOS C	3.4	86.4	0.62	0.67	31.1
North: Roselle Ave											
7	L2	214	2.0	0.554	18.6	LOS C	2.2	55.7	0.73	0.80	28.4
4	T1	283	2.0	0.554	18.0	LOS C	2.2	55.7	0.71	0.78	29.0
14	R2	71	2.0	0.554	17.8	LOS C	2.1	54.0	0.71	0.77	29.3
Approach		567	2.0	0.554	18.2	LOS C	2.2	55.7	0.72	0.79	28.8
West: Sylvan Ave											
5	L2	78	2.0	0.589	17.3	LOS C	2.6	66.6	0.67	0.74	30.2
2	T1	493	2.0	0.589	17.0	LOS C	2.6	66.6	0.66	0.72	31.2
12	R2	143	2.0	0.589	16.7	LOS C	2.5	64.2	0.65	0.71	29.9
Approach		715	2.0	0.589	17.0	LOS C	2.6	66.6	0.66	0.72	30.8
All Vehicles		2928	2.0	0.628	16.2	LOS C	3.4	86.4	0.65	0.71	30.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	368	231	114	484	334	496	786	45	323	708	92
Future Volume (veh/h)	56	368	231	114	484	334	496	786	45	323	708	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	66	433	272	134	569	393	584	925	53	380	833	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	310	1289	576	373	1289	576	653	1443	83	571	1500	671
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.42	0.42	0.42	0.42	0.42	0.00
Sat Flow, veh/h	581	3539	1583	740	3539	1583	1273	3403	195	1111	3539	1583
Grp Volume(v), veh/h	66	433	272	134	569	393	584	481	497	380	833	0
Grp Sat Flow(s),veh/h/ln	581	1770	1583	740	1770	1583	637	1770	1828	556	1770	1583
Q Serve(g_s), s	4.1	3.8	5.6	6.8	5.2	8.9	10.5	9.1	9.1	8.9	7.5	0.0
Cycle Q Clear(g_c), s	9.3	3.8	5.6	10.6	5.2	8.9	18.0	9.1	9.1	18.0	7.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	310	1289	576	373	1289	576	653	750	775	571	1500	671
V/C Ratio(X)	0.21	0.34	0.47	0.36	0.44	0.68	0.89	0.64	0.64	0.67	0.56	0.00
Avail Cap(c_a), veh/h	345	1500	671	418	1500	671	653	750	775	571	1500	671
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	0.00
Uniform Delay (d), s/veh	13.7	9.8	10.4	13.6	10.2	11.4	18.4	9.7	9.7	18.5	9.2	0.0
Incr Delay (d2), s/veh	0.3	0.2	0.6	0.6	0.2	2.3	17.1	4.2	4.0	6.0	1.5	0.0
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	0.7	1.8	2.5	1.4	2.5	4.2	4.9	5.3	5.4	2.6	3.9	0.0
LnGrp Delay(d),s/veh	14.1	9.9	11.0	14.2	10.5	13.7	35.5	13.9	13.7	24.5	10.7	0.0
LnGrp LOS	B	A	B	B	B	B	D	B	B	C	B	
Approach Vol, veh/h	771				1096				1562			
Approach Delay, s/veh	10.7				12.1				21.9		15.0	
Approach LOS	B				B				C		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	22.5		20.0		22.5		20.0					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	20.0		11.3		20.0		12.6					
Green Ext Time (p_c), s	0.0		2.5		0.0		2.9					
Intersection Summary												
HCM 2010 Ctrl Delay	15.9											
HCM 2010 LOS	B											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Exist AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	378	2.0	0.759	18.8	LOS C	5.9	149.7	0.66	0.68	28.7
8	T1	320	2.0	0.759	18.8	LOS C	5.9	149.7	0.66	0.68	28.1
18	R2	4	2.0	0.759	18.8	LOS C	5.9	149.7	0.66	0.68	28.1
Approach		702	2.0	0.759	18.8	LOS C	5.9	149.7	0.66	0.68	28.4
East: Claratina Ave											
1	L2	15	2.0	0.799	28.1	LOS D	5.2	130.9	0.78	0.92	26.7
6	T1	484	2.0	0.799	28.1	LOS D	5.2	130.9	0.78	0.92	27.2
16	R2	13	2.0	0.799	28.1	LOS D	5.2	130.9	0.78	0.92	26.1
Approach		512	2.0	0.799	28.1	LOS D	5.2	130.9	0.78	0.92	27.2
North: Coffee Ave											
7	L2	9	2.0	0.923	46.6	LOS E	8.6	218.0	0.90	1.25	21.8
4	T1	475	2.0	0.923	46.6	LOS E	8.6	218.0	0.90	1.25	21.5
14	R2	63	2.0	0.923	46.6	LOS E	8.6	218.0	0.90	1.25	21.4
Approach		547	2.0	0.923	46.6	LOS E	8.6	218.0	0.90	1.25	21.5
West: Claratina Ave											
5	L2	68	2.0	0.654	16.2	LOS C	3.5	89.8	0.63	0.69	30.8
2	T1	221	2.0	0.654	16.2	LOS C	3.5	89.8	0.63	0.69	31.5
12	R2	218	2.0	0.654	16.2	LOS C	3.5	89.8	0.63	0.69	29.9
Approach		508	2.0	0.654	16.2	LOS C	3.5	89.8	0.63	0.69	30.7
All Vehicles		2268	2.0	0.923	27.0	LOS D	8.6	218.0	0.74	0.87	26.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\1 Existing\18 Exist AM Coffee_Claratina.sip7

HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

EXISTING (11/2016) AM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	9	85	20	8	19	99	924	12	18	764	101
Future Volume (veh/h)	101	9	85	20	8	19	99	924	12	18	764	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	110	10	92	22	9	21	108	1004	13	20	830	0
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	15	133	30	12	29	137	1152	15	39	2027	907
Arrive On Green	0.09	0.09	0.09	0.04	0.04	0.04	0.08	0.63	0.63	0.02	0.57	0.00
Sat Flow, veh/h	1774	158	1449	721	295	689	1774	1835	24	1774	3539	1583
Grp Volume(v), veh/h	110	0	102	52	0	0	108	0	1017	20	830	0
Grp Sat Flow(s),veh/h/ln	1774	0	1607	1705	0	0	1774	0	1859	1774	1770	1583
Q Serve(g_s), s	5.0	0.0	5.1	2.5	0.0	0.0	5.0	0.0	37.5	0.9	10.9	0.0
Cycle Q Clear(g_c), s	5.0	0.0	5.1	2.5	0.0	0.0	5.0	0.0	37.5	0.9	10.9	0.0
Prop In Lane	1.00		0.90	0.42		0.40	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	163	0	148	72	0	0	137	0	1166	39	2027	907
V/C Ratio(X)	0.67	0.00	0.69	0.73	0.00	0.00	0.79	0.00	0.87	0.51	0.41	0.00
Avail Cap(c_a), veh/h	383	0	347	368	0	0	177	0	1166	106	2027	907
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.6	0.0	36.7	39.4	0.0	0.0	37.8	0.0	12.8	40.3	9.9	0.0
Incr Delay (d2), s/veh	4.8	0.0	5.6	13.0	0.0	0.0	16.3	0.0	9.1	9.7	0.6	0.0
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	2.7	0.0	2.5	1.4	0.0	0.0	3.0	0.0	21.9	0.6	5.5	0.0
LnGrp Delay(d),s/veh	41.4	0.0	42.3	52.4	0.0	0.0	54.1	0.0	21.8	50.0	10.6	0.0
LnGrp LOS	D		D	D			D		C	D	B	
Approach Vol, veh/h	212			52			1125			850		
Approach Delay, s/veh	41.8			52.4			24.9			11.5		
Approach LOS	D			D			C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	56.8		12.2	10.9	52.2		8.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	51.0		18.0	8.3	47.7		18.0				
Max Q Clear Time (g_c+1/3), s	12.9	39.5		7.1	7.0	12.9		4.5				
Green Ext Time (p_c), s	0.0	5.6		0.6	0.0	6.0		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	22.1											
HCM 2010 LOS	C											

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	760	91	69	500	0	28	0	108	0	0	0
Future Vol, veh/h	0	760	91	69	500	0	28	0	108	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	817	98	74	538	0	30	0	116	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	915	0	0	1552	1552	866
Stage 1	-	-	-	-	-	-	866	866	-
Stage 2	-	-	-	-	-	-	686	686	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	745	-	0	125	113	353
Stage 1	0	-	-	-	-	0	412	370	-
Stage 2	0	-	-	-	-	0	500	448	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	745	-	-	113	0	353
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	0	-
Stage 1	-	-	-	-	-	-	371	0	-
Stage 2	-	-	-	-	-	-	500	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	39
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	246	-	-	745	-
HCM Lane V/C Ratio	0.594	-	-	0.1	-
HCM Control Delay (s)	39	-	-	10.4	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	3.4	-	-	0.3	-

HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	597	171	352	404	31	130	126	281	68	93	61
Future Volume (veh/h)	114	597	171	352	404	31	130	126	281	68	93	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	124	649	186	383	439	34	141	137	305	74	101	66
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	699	200	433	980	76	167	569	683	97	495	421
Arrive On Green	0.09	0.26	0.26	0.13	0.29	0.29	0.09	0.31	0.31	0.05	0.27	0.27
Sat Flow, veh/h	1774	2717	778	3442	3330	257	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	124	422	413	383	233	240	141	137	305	74	101	66
Grp Sat Flow(s),veh/h/ln	1774	1770	1725	1721	1770	1817	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	4.8	16.3	16.3	7.7	7.5	7.5	5.5	3.9	9.5	2.9	2.9	2.2
Cycle Q Clear(g_c), s	4.8	16.3	16.3	7.7	7.5	7.5	5.5	3.9	9.5	2.9	2.9	2.2
Prop In Lane	1.00		0.45	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	157	455	444	433	521	535	167	569	683	97	495	421
V/C Ratio(X)	0.79	0.93	0.93	0.89	0.45	0.45	0.84	0.24	0.45	0.77	0.20	0.16
Avail Cap(c_a), veh/h	193	455	444	433	521	535	167	569	683	132	495	421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	25.4	25.4	30.1	20.1	20.1	31.2	18.2	14.0	32.7	20.0	19.7
Incr Delay (d2), s/veh	16.1	25.4	26.2	19.2	0.6	0.6	30.4	1.0	2.1	16.4	0.9	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	3.0	11.1	11.0	4.8	3.7	3.8	4.1	2.1	4.5	1.9	1.6	1.1
LnGrp Delay(d),s/veh	47.4	50.8	51.5	49.3	20.7	20.7	61.6	19.2	16.1	49.1	20.9	20.5
LnGrp LOS	D	D	D	D	C	C	E	B	B	D	C	C
Approach Vol, veh/h		959			856			583			241	
Approach Delay, s/veh		50.7			33.5			27.9			29.4	
Approach LOS		D			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	25.9	13.3	22.5	11.1	23.1	10.7	25.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.2	20.0	8.8	18.0	6.6	18.6	7.6	19.2				
Max Q Clear Time (g_c+I1), s	4.9	11.5	9.7	18.3	7.5	4.9	6.8	9.5				
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	0.0	0.6	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay				38.1								
HCM 2010 LOS				D								

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	65	0	10	0	128	96	23	123	0
Future Vol, veh/h	0	0	0	65	0	10	0	128	96	23	123	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	69	0	11	0	136	102	24	131	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				366	366	187	-	0	0	238	0	0
Stage 1				187	187	-	-	-	-	-	-	-
Stage 2				179	179	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				634	562	855	0	-	-	1329	-	0
Stage 1				845	745	-	0	-	-	-	-	0
Stage 2				852	751	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				622	0	855	-	-	-	1329	-	-
Mov Cap-2 Maneuver				622	0	-	-	-	-	-	-	-
Stage 1				829	0	-	-	-	-	-	-	-
Stage 2				852	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				11.4		0			1.2			
HCM LOS				B								
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT							
Capacity (veh/h)		-	-	645	1329	-						
HCM Lane V/C Ratio		-	-	0.124	0.018	-						
HCM Control Delay (s)		-	-	11.4	7.8	0						
HCM Lane LOS		-	-	B	A	A						
HCM 95th %tile Q(veh)		-	-	0.4	0.1	-						

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

EXISTING (11/2016) PM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	81	11	49	45	96	7	539	93	104	431	26
Future Volume (veh/h)	32	81	11	49	45	96	7	539	93	104	431	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	33	84	11	51	46	99	7	556	96	107	444	27
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	192	163	92	219	186	16	1155	199	142	788	48
Arrive On Green	0.04	0.10	0.10	0.05	0.12	0.12	0.01	0.38	0.38	0.08	0.45	0.45
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3021	520	1774	1738	106
Grp Volume(v), veh/h	33	84	11	51	46	99	7	325	327	107	0	471
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1771	1774	0	1844
Q Serve(g_s), s	0.9	2.0	0.3	1.3	1.1	2.8	0.2	6.5	6.6	2.8	0.0	8.8
Cycle Q Clear(g_c), s	0.9	2.0	0.3	1.3	1.1	2.8	0.2	6.5	6.6	2.8	0.0	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.06
Lane Grp Cap(c), veh/h	66	192	163	92	219	186	16	677	677	142	0	836
V/C Ratio(X)	0.50	0.44	0.07	0.56	0.21	0.53	0.42	0.48	0.48	0.75	0.00	0.56
Avail Cap(c_a), veh/h	188	713	606	188	713	606	188	677	677	188	0	836
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	0.00	1.00
Uniform Delay (d), s/veh	22.2	19.8	19.1	21.8	18.8	19.5	23.2	11.0	11.0	21.2	0.0	9.4
Incr Delay (d2), s/veh	5.7	1.6	0.2	5.2	0.5	2.3	16.4	2.4	2.5	11.3	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	0.1	0.8	0.6	1.3	0.2	3.6	3.6	1.8	0.0	5.1
LnGrp Delay(d),s/veh	28.0	21.4	19.2	27.0	19.2	21.9	39.6	13.4	13.5	32.5	0.0	12.2
LnGrp LOS	C	C	B	C	B	C	D	B	B	C		B
Approach Vol, veh/h		128			196			659			578	
Approach Delay, s/veh		22.9			22.6			13.7			16.0	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	22.5	6.9	9.4	4.9	25.8	6.3	10.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	4.8	8.6	3.3	4.0	2.2	10.8	2.9	4.8				
Green Ext Time (p_c), s	0.0	2.8	0.0	0.3	0.0	1.7	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				16.4								
HCM 2010 LOS				B								

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	0	2	0	231	17	6	186	0
Future Vol, veh/h	0	0	0	15	0	2	0	231	17	6	186	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	17	0	2	0	257	19	7	207	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				488	488	267	-	0	0	276	0	0
Stage 1				267	267	-	-	-	-	-	-	-
Stage 2				221	221	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				539	480	772	0	-	-	1287	-	0
Stage 1				778	688	-	0	-	-	-	-	0
Stage 2				816	720	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				536	0	772	-	-	-	1287	-	-
Mov Cap-2 Maneuver				536	0	-	-	-	-	-	-	-
Stage 1				773	0	-	-	-	-	-	-	-
Stage 2				816	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				11.7		0			0.2			
HCM LOS				B								
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT							
Capacity (veh/h)	-	-	556	1287	-							
HCM Lane V/C Ratio	-	-	0.034	0.005	-							
HCM Control Delay (s)	-	-	11.7	7.8	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.1	0	-							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1	8	187	0	48	12	645	287	85	401	8
Future Volume (veh/h)	16	1	8	187	0	48	12	645	287	85	401	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	0	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	17	1	9	201	0	52	13	694	309	91	431	9
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	2	2	2	2	2	2	2
Cap, veh/h	38	0	50	193	0	0	30	935	416	133	1597	33
Arrive On Green	0.02	0.03	0.03	0.11	0.00	0.00	0.02	0.39	0.39	0.07	0.45	0.45
Sat Flow, veh/h	1774	0	1583	1774	201		1774	2384	1061	1774	3545	74
Grp Volume(v), veh/h	17	0	9	201	96.1		13	515	488	91	215	225
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	F		1774	1770	1675	1774	1770	1850
Q Serve(g_s), s	0.4	0.0	0.3	5.0			0.3	11.5	11.5	2.3	3.5	3.5
Cycle Q Clear(g_c), s	0.4	0.0	0.3	5.0			0.3	11.5	11.5	2.3	3.5	3.5
Prop In Lane	1.00		1.00	1.00			1.00		0.63	1.00		0.04
Lane Grp Cap(c), veh/h	38	0	50	193			30	694	657	133	797	833
V/C Ratio(X)	0.45	0.00	0.18	1.04			0.44	0.74	0.74	0.69	0.27	0.27
Avail Cap(c_a), veh/h	193	0	621	193			193	694	657	193	797	833
HCM Platoon Ratio	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	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	21.6	20.4			22.4	12.0	12.0	20.7	7.9	7.9
Incr Delay (d2), s/veh	8.2	0.0	1.7	75.6			10.0	7.0	7.4	6.1	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.1	6.4			0.2	6.8	6.5	1.3	1.9	1.9
LnGrp Delay(d),s/veh	30.4	0.0	23.3	96.1			32.3	19.0	19.4	26.8	8.7	8.7
LnGrp LOS	C		C	F			C	B	B	C	A	A
Approach Vol, veh/h	26							1016			531	
Approach Delay, s/veh	28.0							19.3			11.8	
Approach LOS	C							B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7					
Phs Duration (G+Y+Rc), s	7.9	22.5	9.5	6.0	5.3	25.2	5.5					
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Green Setting (Gmax), s	5.0	18.0	5.0	18.0	5.0	18.0	5.0					
Max Q Clear Time (g_c+I1), s	4.3	13.5	7.0	2.3	2.3	5.5	2.4					
Green Ext Time (p_c), s	0.0	2.6	0.0	0.0	0.0	2.1	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	25.9											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	652	141	159	492	70	216	526	299	184	517	90
Future Volume (veh/h)	195	652	141	159	492	70	216	526	299	184	517	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	214	716	155	175	541	77	237	578	329	202	568	99
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	835	373	213	755	338	278	956	428	243	885	396
Arrive On Green	0.14	0.24	0.24	0.12	0.21	0.21	0.16	0.27	0.27	0.14	0.25	0.25
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	214	716	155	175	541	77	237	578	329	202	568	99
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.9	14.7	6.3	7.3	10.8	3.1	9.9	10.8	14.5	8.4	10.9	3.8
Cycle Q Clear(g_c), s	8.9	14.7	6.3	7.3	10.8	3.1	9.9	10.8	14.5	8.4	10.9	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	835	373	213	755	338	278	956	428	243	885	396
V/C Ratio(X)	0.84	0.86	0.41	0.82	0.72	0.23	0.85	0.60	0.77	0.83	0.64	0.25
Avail Cap(c_a), veh/h	269	885	396	245	839	375	315	956	428	294	885	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	27.8	24.6	32.6	27.7	24.7	31.2	24.2	25.5	31.9	25.4	22.8
Incr Delay (d2), s/veh	20.4	8.1	0.7	17.5	2.6	0.3	17.9	2.8	12.5	15.5	3.6	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	5.8	8.1	2.8	4.6	5.5	1.4	6.2	5.7	7.8	5.1	5.7	1.8
LnGrp Delay(d),s/veh	52.1	35.9	25.3	50.1	30.4	25.0	49.1	27.0	38.1	47.4	29.0	24.3
LnGrp LOS	D	D	C	D	C	C	D	C	D	D	C	C
Approach Vol, veh/h	1085					793		1144		869		
Approach Delay, s/veh	37.6					34.2		34.8		32.8		
Approach LOS	D					C		C		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.9	25.0	13.6	22.4	16.4	23.5	15.3	20.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.6	19.9	10.5	19.0	13.5	19.0	11.5	18.0				
Max Q Clear Time (g_c+110), s	110.4	16.5	9.3	16.7	11.9	12.9	10.9	12.8				
Green Ext Time (p_c), s	0.1	1.6	0.1	1.2	0.1	2.1	0.0	1.8				
Intersection Summary												
HCM 2010 Ctrl Delay			35.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
8: Coffee Rd & Claribel Ave

EXISTING (11/2016) PM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	838	237	103	504	5	146	157	191	7	148	35
Future Volume (veh/h)	86	838	237	103	504	5	146	157	191	7	148	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	891	252	110	536	5	155	167	203	7	157	37
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	535	1763	789	344	1763	789	427	509	432	386	509	432
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	861	3539	1583	490	3539	1583	1184	1863	1583	1008	1863	1583
Grp Volume(v), veh/h	91	891	252	110	536	5	155	167	203	7	157	37
Grp Sat Flow(s),veh/h/ln	861	1770	1583	490	1770	1583	1184	1863	1583	1008	1863	1583
Q Serve(g_s), s	2.8	6.6	3.7	7.6	3.5	0.1	4.7	2.8	4.2	0.2	2.6	0.7
Cycle Q Clear(g_c), s	6.3	6.6	3.7	14.3	3.5	0.1	7.3	2.8	4.2	3.0	2.6	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	535	1763	789	344	1763	789	427	509	432	386	509	432
V/C Ratio(X)	0.17	0.51	0.32	0.32	0.30	0.01	0.36	0.33	0.47	0.02	0.31	0.09
Avail Cap(c_a), veh/h	707	2472	1106	443	2472	1106	660	875	744	584	875	744
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	7.7	6.6	5.9	11.4	5.8	5.0	14.3	11.4	11.9	12.6	11.4	10.6
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.5	0.1	0.0	0.5	0.4	0.8	0.0	0.3	0.1
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	0.7	3.3	1.7	1.1	1.7	0.0	1.6	1.5	1.9	0.1	1.4	0.3
LnGrp Delay(d),s/veh	7.8	6.8	6.1	11.9	5.9	5.0	14.8	11.8	12.7	12.7	11.7	10.7
LnGrp LOS	A	A	A	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h	1234				651				525		201	
Approach Delay, s/veh	6.8				6.9				13.0		11.6	
Approach LOS	A				A				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	15.3		24.1		15.3		24.1					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.5		27.5		18.5		27.5					
Max Q Clear Time (g_c+I1), s	9.3		8.6		5.0		16.3					
Green Ext Time (p_c), s	1.4		6.6		0.6		3.3					
Intersection Summary												
HCM 2010 Ctrl Delay			8.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

EXISTING (11/2016) PM

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	506	219	291	362	50	83	545	233	25	336	176
Future Volume (veh/h)	322	506	219	291	362	50	83	545	233	25	336	176
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	335	527	0	303	377	0	86	568	243	26	350	183
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	380	694	310	349	630	282	110	792	338	50	547	465
Arrive On Green	0.21	0.20	0.00	0.20	0.18	0.00	0.06	0.33	0.33	0.03	0.29	0.29
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2418	1032	1774	1863	1583
Grp Volume(v), veh/h	335	527	0	303	377	0	86	415	396	26	350	183
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1681	1774	1863	1583
Q Serve(g_s), s	13.1	10.1	0.0	11.8	7.0	0.0	3.4	14.8	14.8	1.0	11.7	6.6
Cycle Q Clear(g_c), s	13.1	10.1	0.0	11.8	7.0	0.0	3.4	14.8	14.8	1.0	11.7	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	380	694	310	349	630	282	110	580	550	50	547	465
V/C Ratio(X)	0.88	0.76	0.00	0.87	0.60	0.00	0.78	0.72	0.72	0.52	0.64	0.39
Avail Cap(c_a), veh/h	434	940	421	409	891	399	136	580	550	127	547	465
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	27.2	0.0	27.8	27.0	0.0	33.1	21.1	21.1	34.3	22.0	20.2
Incr Delay (d2), s/veh	17.0	2.5	0.0	16.0	0.9	0.0	20.3	7.4	7.9	8.1	5.6	2.5
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	8.2	5.1	0.0	7.4	3.5	0.0	2.3	8.3	8.0	0.6	6.9	3.2
LnGrp Delay(d),s/veh	44.2	29.7	0.0	43.8	27.9	0.0	53.4	28.6	29.0	42.4	27.6	22.7
LnGrp LOS	D	C		D	C		D	C	C	D	C	C
Approach Vol, veh/h	862				680		897				559	
Approach Delay, s/veh	35.3				35.0		31.1				26.7	
Approach LOS	D				D		C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	27.9	18.6	18.5	8.9	25.5	19.8	17.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	21.4	16.5	19.0	5.5	21.0	17.5	18.0				
Max Q Clear Time (g_c+I1), s	13.0	16.8	13.8	12.1	5.4	13.7	15.1	9.0				
Green Ext Time (p_c), s	0.0	2.1	0.3	2.0	0.0	1.7	0.3	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			32.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
10: Claribel Ave & Squire-Wells Way

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	321	0	0	368	143	0	0	0	149	0	178
Future Volume (veh/h)	261	321	0	0	368	143	0	0	0	149	0	178
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	275	338	0	0	387	151				157	0	187
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	348	1073	0	0	647	249				322	0	287
Arrive On Green	0.20	0.58	0.00	0.00	0.26	0.26				0.18	0.00	0.18
Sat Flow, veh/h	1774	1863	0	0	2593	963				1774	0	1583
Grp Volume(v), veh/h	275	338	0	0	272	266				157	0	187
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1693				1774	0	1583
Q Serve(g_s), s	5.5	3.5	0.0	0.0	5.0	5.1				2.9	0.0	4.1
Cycle Q Clear(g_c), s	5.5	3.5	0.0	0.0	5.0	5.1				2.9	0.0	4.1
Prop In Lane	1.00		0.00	0.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	348	1073	0	0	458	438				322	0	287
V/C Ratio(X)	0.79	0.32	0.00	0.00	0.59	0.61				0.49	0.00	0.65
Avail Cap(c_a), veh/h	502	1657	0	0	859	821				861	0	768
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	4.1	0.0	0.0	12.0	12.1				13.6	0.0	14.1
Incr Delay (d2), s/veh	5.4	0.2	0.0	0.0	1.2	1.4				1.1	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.8	0.0	0.0	2.6	2.5				1.5	0.0	3.7
LnGrp Delay(d),s/veh	19.6	4.2	0.0	0.0	13.3	13.4				14.8	0.0	16.6
LnGrp LOS	B	A			B	B				B		B
Approach Vol, veh/h		613			538						344	
Approach Delay, s/veh		11.1			13.4						15.8	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				25.9		11.2	11.8	14.1				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				33.0		18.0	10.5	18.0				
Max Q Clear Time (g_c+I1), s				5.5		6.1	7.5	7.1				
Green Ext Time (p_c), s				2.1		0.9	0.2	2.5				
Intersection Summary												
HCM 2010 Ctrl Delay				13.0								
HCM 2010 LOS				B								

Intersection	
Intersection Delay, s/veh	63.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	345	82	12	336	75	134	229	21	62	245	37
Future Vol, veh/h	21	345	82	12	336	75	134	229	21	62	245	37
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	352	84	12	343	77	137	234	21	63	250	38
Number of Lanes	1	1	1	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	3
HCM Control Delay	55.8	124.9	29.2	38.1
HCM LOS	F	F	D	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	100%	0%
Vol Thru, %	0%	92%	0%	100%	0%	0%	82%	0%	87%
Vol Right, %	0%	8%	0%	0%	100%	0%	18%	0%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	250	21	345	82	12	411	62	282
LT Vol	134	0	21	0	0	12	0	62	0
Through Vol	0	229	0	345	0	0	336	0	245
RT Vol	0	21	0	0	82	0	75	0	37
Lane Flow Rate	137	255	21	352	84	12	419	63	288
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.393	0.694	0.061	0.946	0.209	0.036	1.157	0.183	0.787
Departure Headway (Hd)	11.046	10.459	10.801	10.276	9.541	10.591	9.931	11.139	10.517
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	328	347	334	356	378	340	369	324	345
Service Time	8.746	8.159	8.501	7.976	7.241	8.291	7.631	8.839	8.217
HCM Lane V/C Ratio	0.418	0.735	0.063	0.989	0.222	0.035	1.136	0.194	0.835
HCM Control Delay	20.7	33.8	14.2	68.1	14.7	13.7	128.1	16.3	42.9
HCM Lane LOS	C	D	B	F	B	B	F	C	E
HCM 95th-tile Q	1.8	4.9	0.2	10	0.8	0.1	16.6	0.7	6.5

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	345	82	12	336	75	134	229	21	62	245	37
Future Volume (veh/h)	21	345	82	12	336	75	134	229	21	62	245	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	352	84	12	343	77	137	234	21	63	250	38
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	45	550	468	27	421	94	175	424	38	105	336	51
Arrive On Green	0.03	0.30	0.30	0.02	0.29	0.29	0.10	0.25	0.25	0.06	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1774	1474	331	1774	1685	151	1774	1580	240
Grp Volume(v), veh/h	21	352	84	12	0	420	137	0	255	63	0	288
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1804	1774	0	1836	1774	0	1820
Q Serve(g_s), s	0.6	7.8	1.9	0.3	0.0	10.3	3.6	0.0	5.7	1.6	0.0	7.0
Cycle Q Clear(g_c), s	0.6	7.8	1.9	0.3	0.0	10.3	3.6	0.0	5.7	1.6	0.0	7.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	45	550	468	27	0	515	175	0	462	105	0	387
V/C Ratio(X)	0.46	0.64	0.18	0.44	0.00	0.82	0.78	0.00	0.55	0.60	0.00	0.74
Avail Cap(c_a), veh/h	186	704	598	186	0	682	224	0	733	186	0	688
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	14.6	12.5	23.2	0.0	15.8	21.0	0.0	15.5	21.8	0.0	17.5
Incr Delay (d2), s/veh	7.3	1.2	0.2	10.7	0.0	5.7	13.0	0.0	1.0	5.3	0.0	2.9
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	0.4	4.2	0.8	0.2	0.0	6.0	2.4	0.0	3.0	1.0	0.0	3.8
LnGrp Delay(d),s/veh	30.1	15.8	12.7	33.9	0.0	21.6	33.9	0.0	16.5	27.2	0.0	20.4
LnGrp LOS	C	B	B	C		C	C		B	C		C
Approach Vol, veh/h		457			432			392			351	
Approach Delay, s/veh		15.9			21.9			22.6			21.6	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	16.5	5.2	18.6	9.2	14.6	5.7	18.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	19.0	5.0	18.0	6.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	13.6	7.7	2.3	9.8	5.6	9.0	2.6	12.3				
Green Ext Time (p_c), s	0.0	1.1	0.0	1.5	0.0	1.1	0.0	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay				20.3								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	288	51	0	263	7	102	87	0	4	49	74
Future Volume (veh/h)	88	288	51	0	263	7	102	87	0	4	49	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	94	306	0	0	280	0	109	93	0	4	52	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	508	0	0	503	0	397	195	0	175	404	0
Arrive On Green	0.40	0.40	0.00	0.00	0.27	0.00	0.23	0.23	0.00	0.23	0.23	0.00
Sat Flow, veh/h	213	1284	0	0	1863	0	727	858	0	58	1779	0
Grp Volume(v), veh/h	400	0	0	0	280	0	202	0	0	56	0	0
Grp Sat Flow(s),veh/h/ln	1497	0	0	0	1863	0	1584	0	0	1837	0	0
Q Serve(g_s), s	1.5	0.0	0.0	0.0	3.1	0.0	1.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.6	0.0	0.0	0.0	3.1	0.0	2.6	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.23		0.00	0.00		0.00	0.54		0.00	0.07		0.00
Lane Grp Cap(c), veh/h	779	0	0	0	503	0	592	0	0	579	0	0
V/C Ratio(X)	0.51	0.00	0.00	0.00	0.56	0.00	0.34	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	1586	0	0	0	1443	0	1502	0	0	1644	0	0
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	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	0.0	0.0	7.5	0.0	8.1	0.0	0.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	1.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0
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	2.2	0.0	0.0	0.0	1.7	0.0	1.2	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	6.3	0.0	0.0	0.0	8.5	0.0	8.4	0.0	0.0	7.4	0.0	0.0
LnGrp LOS	A				A		A			A		
Approach Vol, veh/h		400			280			202			56	
Approach Delay, s/veh		6.3			8.5			8.4			7.4	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.9		13.9		9.9		13.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		21.5		19.5		21.5				
Max Q Clear Time (g_c+I1), s		4.6		7.6		2.6		6.1				
Green Ext Time (p_c), s		0.8		1.9		0.2		1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			7.5									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	202	19	143	184	31	33	425	161	18	364	71
Future Volume (veh/h)	45	202	19	143	184	31	33	425	161	18	364	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	49	222	21	157	202	34	36	467	177	20	400	78
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	303	258	198	423	360	67	724	615	42	697	593
Arrive On Green	0.05	0.16	0.16	0.11	0.23	0.23	0.04	0.39	0.39	0.02	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	49	222	21	157	202	34	36	467	177	20	400	78
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.6	6.5	0.6	5.0	5.4	1.0	1.1	11.8	4.4	0.6	9.8	1.9
Cycle Q Clear(g_c), s	1.6	6.5	0.6	5.0	5.4	1.0	1.1	11.8	4.4	0.6	9.8	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	303	258	198	423	360	67	724	615	42	697	593
V/C Ratio(X)	0.58	0.73	0.08	0.79	0.48	0.09	0.53	0.65	0.29	0.47	0.57	0.13
Avail Cap(c_a), veh/h	191	584	496	232	626	532	154	724	615	154	697	593
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	26.8	22.9	20.4	24.9	19.2	17.5	27.1	14.3	12.1	27.7	14.3	11.8
Incr Delay (d2), s/veh	6.3	3.4	0.1	14.9	0.8	0.1	6.4	4.4	1.2	8.0	3.4	0.5
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	0.9	3.6	0.3	3.2	2.8	0.4	0.7	6.9	2.1	0.4	5.7	0.9
LnGrp Delay(d),s/veh	33.1	26.3	20.5	39.8	20.1	17.6	33.5	18.7	13.3	35.7	17.7	12.3
LnGrp LOS	C	C	C	D	C	B	C	B	B	D	B	B
Approach Vol, veh/h	292			393			680			498		
Approach Delay, s/veh	27.0			27.7			18.1			17.6		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	26.8	10.9	13.9	6.7	26.0	7.2	17.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	21.5	7.5	18.0	5.0	21.5	6.2	19.3				
Max Q Clear Time (g_c+I), s	12.6	13.8	7.0	8.5	3.1	11.8	3.6	7.4				
Green Ext Time (p_c), s	0.0	2.0	0.0	0.8	0.0	1.7	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay	21.4											
HCM 2010 LOS	C											

Intersection						
Int Delay, s/veh	40.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	455	210	808	781	44
Future Vol, veh/h	34	455	210	808	781	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	200	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	474	219	842	814	46
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2117	837	860	0	-	0
Stage 1	837	-	-	-	-	-
Stage 2	1280	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	56 ~ 367	781	-	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	40 ~ 367	781	-	-	-	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	306	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	186	2.4		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	781	-	40	367	-	-
HCM Lane V/C Ratio	0.28	-	0.885	1.291	-	-
HCM Control Delay (s)	11.4	-	260.3	180.4	-	-
HCM Lane LOS	B	-	F	F	-	-
HCM 95th %tile Q(veh)	1.1	-	3.4	21.6	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

EXISTING (11/2016) PM
10/30/2017

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	34	455	210	808	781	44		
Future Volume (veh/h)	34	455	210	808	781	44		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	35	0	219	842	814	46		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	61	55	261	1573	1113	63		
Arrive On Green	0.03	0.00	0.15	0.84	0.64	0.64		
Sat Flow, veh/h	1774	1583	1774	1863	1747	99		
Grp Volume(v), veh/h	35	0	219	842	0	860		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1845		
Q Serve(g_s), s	1.4	0.0	8.9	9.5	0.0	23.6		
Cycle Q Clear(g_c), s	1.4	0.0	8.9	9.5	0.0	23.6		
Prop In Lane	1.00	1.00	1.00			0.05		
Lane Grp Cap(c), veh/h	61	55	261	1573	0	1176		
V/C Ratio(X)	0.57	0.00	0.84	0.54	0.00	0.73		
Avail Cap(c_a), veh/h	431	385	305	1573	0	1176		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	35.4	0.0	30.9	1.6	0.0	9.2		
Incr Delay (d2), s/veh	8.1	0.0	16.5	1.3	0.0	4.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.8	0.0	5.6	5.2	0.0	13.0		
LnGrp Delay(d),s/veh	43.5	0.0	47.4	3.0	0.0	13.2		
LnGrp LOS	D		D	A		B		
Approach Vol, veh/h	35			1061	860			
Approach Delay, s/veh	43.5			12.1	13.2			
Approach LOS	D			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		67.4		7.1	15.4	52.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		62.9		18.1	12.8	45.6		
Max Q Clear Time (g_c+I1), s		11.5		3.4	10.9	25.6		
Green Ext Time (p_c), s		8.2		0.0	0.1	6.7		
Intersection Summary								
HCM 2010 Ctrl Delay			13.2					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	74	0	180	18	747	71	163	435	0
Future Volume (veh/h)	0	0	0	74	0	180	18	747	71	163	435	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	0	1863	1863	1863	1863	1863	1863	0
Adj Flow Rate, veh/h				77	0	188	19	778	74	170	453	0
Adj No. of Lanes				2	0	1	1	2	1	1	2	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	0
Cap, veh/h				1032	0	475	148	1121	501	281	1386	0
Arrive On Green				0.30	0.00	0.30	0.08	0.32	0.32	0.16	0.39	0.00
Sat Flow, veh/h				3442	0	1583	1774	3539	1583	1774	3632	0
Grp Volume(v), veh/h				77	0	188	19	778	74	170	453	0
Grp Sat Flow(s),veh/h/ln				1721	0	1583	1774	1770	1583	1774	1770	0
Q Serve(g_s), s				1.0	0.0	5.7	0.6	11.6	2.0	5.4	5.4	0.0
Cycle Q Clear(g_c), s				1.0	0.0	5.7	0.6	11.6	2.0	5.4	5.4	0.0
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h				1032	0	475	148	1121	501	281	1386	0
V/C Ratio(X)				0.07	0.00	0.40	0.13	0.69	0.15	0.61	0.33	0.00
Avail Cap(c_a), veh/h				1032	0	475	148	1121	501	281	1386	0
HCM Platoon Ratio				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	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				15.0	0.0	16.7	25.5	18.0	14.7	23.5	12.7	0.0
Incr Delay (d2), s/veh				0.1	0.0	2.5	1.8	3.6	0.6	9.3	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	2.8	0.4	6.2	0.9	3.3	2.7	0.0
LnGrp Delay(d),s/veh				15.2	0.0	19.1	27.3	21.5	15.3	32.8	13.4	0.0
LnGrp LOS				B		B	C	C	B	C	B	
Approach Vol, veh/h					265			871			623	
Approach Delay, s/veh					18.0			21.1			18.7	
Approach LOS					B			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	4.0	23.5			9.5	28.0		22.5				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.0				5.0	23.5		18.0				
Max Q Clear Time (g_c+I1), s	13.6				2.6	7.4		7.7				
Green Ext Time (p_c), s	0.1	2.6			0.0	2.7		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				19.8								
HCM 2010 LOS				B								

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Exist PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	182	2.0	0.423	12.2	LOS B	1.5	38.9	0.59	0.62	30.9
8	T1	258	2.0	0.423	12.0	LOS B	1.5	38.9	0.57	0.60	31.3
18	R2	90	2.0	0.423	11.8	LOS B	1.5	37.3	0.57	0.60	31.8
Approach		529	2.0	0.423	12.0	LOS B	1.5	38.9	0.58	0.61	31.3
East: Sylvan Ave											
1	L2	96	2.0	0.401	9.9	LOS A	1.5	37.2	0.50	0.52	33.2
6	T1	430	2.0	0.401	9.8	LOS A	1.5	37.2	0.49	0.50	34.5
16	R2	90	2.0	0.401	9.7	LOS A	1.4	35.5	0.48	0.49	33.0
Approach		616	2.0	0.401	9.8	LOS A	1.5	37.2	0.49	0.50	34.1
North: Roselle Ave											
7	L2	76	2.0	0.285	9.2	LOS A	0.9	21.9	0.52	0.52	32.9
4	T1	243	2.0	0.285	9.1	LOS A	0.9	21.9	0.51	0.51	32.7
14	R2	54	2.0	0.285	8.9	LOS A	0.8	20.9	0.50	0.50	33.1
Approach		374	2.0	0.285	9.1	LOS A	0.9	21.9	0.51	0.51	32.8
West: Sylvan Ave											
5	L2	57	2.0	0.625	14.7	LOS B	3.5	87.8	0.61	0.65	31.5
2	T1	641	2.0	0.625	14.6	LOS B	3.5	87.8	0.60	0.64	32.3
12	R2	325	2.0	0.625	14.4	LOS B	3.3	83.7	0.58	0.62	30.8
Approach		1023	2.0	0.625	14.6	LOS B	3.5	87.8	0.59	0.64	31.8
All Vehicles		2542	2.0	0.625	12.1	LOS B	3.5	87.8	0.55	0.58	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	644	363	86	455	199	345	758	79	483	742	102
Future Volume (veh/h)	122	644	363	86	455	199	345	758	79	483	742	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	127	671	378	90	474	207	359	790	82	503	773	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	379	1338	599	290	1338	599	670	1342	139	609	1467	656
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.41	0.41	0.41	0.41	0.41	0.00
Sat Flow, veh/h	756	3539	1583	536	3539	1583	1347	3237	336	1228	3539	1583
Grp Volume(v), veh/h	127	671	378	90	474	207	359	432	440	503	773	0
Grp Sat Flow(s),veh/h/ln	756	1770	1583	536	1770	1583	673	1770	1803	614	1770	1583
Q Serve(g_s), s	6.3	6.3	8.5	6.7	4.2	4.1	10.9	8.2	8.2	9.8	7.1	0.0
Cycle Q Clear(g_c), s	10.5	6.3	8.5	13.0	4.2	4.1	18.0	8.2	8.2	18.0	7.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	379	1338	599	290	1338	599	670	734	748	609	1467	656
V/C Ratio(X)	0.34	0.50	0.63	0.31	0.35	0.35	0.54	0.59	0.59	0.83	0.53	0.00
Avail Cap(c_a), veh/h	407	1467	656	310	1467	656	670	734	748	609	1467	656
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	0.00
Uniform Delay (d), s/veh	13.5	10.4	11.0	15.4	9.7	9.7	16.6	9.8	9.8	19.0	9.5	0.0
Incr Delay (d2), s/veh	0.5	0.3	1.7	0.6	0.2	0.3	3.1	3.4	3.4	12.2	1.4	0.0
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	1.4	3.1	4.0	1.0	2.1	1.8	2.4	4.7	4.7	4.0	3.7	0.0
LnGrp Delay(d),s/veh	14.0	10.7	12.7	16.0	9.9	10.0	19.6	13.3	13.2	31.2	10.9	0.0
LnGrp LOS	B	B	B	B	A	B	B	B	B	C	B	
Approach Vol, veh/h	1176				771				1231		1276	
Approach Delay, s/veh	11.7				10.6				15.1		18.9	
Approach LOS	B				B				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	22.5		20.9		22.5		20.9					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	20.0		12.5		20.0		15.0					
Green Ext Time (p_c), s	0.0		3.1		0.0		1.4					
Intersection Summary												
HCM 2010 Ctrl Delay			14.5									
HCM 2010 LOS			B									

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Exist PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	270	2.0	0.990	54.1	LOS F	17.1	433.8	1.00	1.56	20.1
8	T1	458	2.0	0.990	54.1	LOS F	17.1	433.8	1.00	1.56	19.8
18	R2	9	2.0	0.990	54.1	LOS F	17.1	433.8	1.00	1.56	19.8
Approach		736	2.0	0.990	54.1	LOS F	17.1	433.8	1.00	1.56	19.9
East: Claratina Ave											
1	L2	15	2.0	0.434	12.5	LOS B	1.5	38.4	0.59	0.62	32.6
6	T1	237	2.0	0.434	12.5	LOS B	1.5	38.4	0.59	0.62	33.4
16	R2	13	2.0	0.434	12.5	LOS B	1.5	38.4	0.59	0.62	31.6
Approach		265	2.0	0.434	12.5	LOS B	1.5	38.4	0.59	0.62	33.3
North: Coffee Ave											
7	L2	49	2.0	0.733	20.2	LOS C	4.6	117.6	0.71	0.79	29.1
4	T1	455	2.0	0.733	20.2	LOS C	4.6	117.6	0.71	0.79	28.4
14	R2	55	2.0	0.733	20.2	LOS C	4.6	117.6	0.71	0.79	28.4
Approach		560	2.0	0.733	20.2	LOS C	4.6	117.6	0.71	0.79	28.5
West: Claratina Ave											
5	L2	117	2.0	1.091	82.0	LOS F	36.5	928.1	1.00	2.22	16.3
2	T1	449	2.0	1.091	82.0	LOS F	36.5	928.1	1.00	2.22	16.5
12	R2	283	2.0	1.091	82.0	LOS F	36.5	928.1	1.00	2.22	16.0
Approach		849	2.0	1.091	82.0	LOS F	36.5	928.1	1.00	2.22	16.3
All Vehicles		2410	2.0	1.091	51.5	LOS F	36.5	928.1	0.89	1.51	20.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

EXISTING (11/2016) PM
10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	8	130	20	5	26	79	949	13	28	1182	97
Future Volume (veh/h)	141	8	130	20	5	26	79	949	13	28	1182	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	148	8	137	21	5	27	83	999	14	29	1244	0
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	11	182	28	7	36	107	1095	15	52	2005	897
Arrive On Green	0.12	0.12	0.12	0.04	0.04	0.04	0.06	0.60	0.60	0.03	0.57	0.00
Sat Flow, veh/h	1774	88	1508	665	158	855	1774	1833	26	1774	3539	1583
Grp Volume(v), veh/h	148	0	145	53	0	0	83	0	1013	29	1244	0
Grp Sat Flow(s),veh/h/ln	1774	0	1597	1679	0	0	1774	0	1858	1774	1770	1583
Q Serve(g_s), s	6.8	0.0	7.5	2.7	0.0	0.0	3.9	0.0	41.2	1.4	20.1	0.0
Cycle Q Clear(g_c), s	6.8	0.0	7.5	2.7	0.0	0.0	3.9	0.0	41.2	1.4	20.1	0.0
Prop In Lane	1.00		0.94	0.40		0.51	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	214	0	192	70	0	0	107	0	1110	52	2005	897
V/C Ratio(X)	0.69	0.00	0.75	0.75	0.00	0.00	0.78	0.00	0.91	0.56	0.62	0.00
Avail Cap(c_a), veh/h	374	0	337	354	0	0	173	0	1110	104	2005	897
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.0	0.0	36.3	40.4	0.0	0.0	39.5	0.0	15.2	40.9	12.4	0.0
Incr Delay (d2), s/veh	4.0	0.0	5.9	14.9	0.0	0.0	11.4	0.0	12.7	9.2	1.5	0.0
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	3.6	0.0	3.6	1.5	0.0	0.0	2.3	0.0	24.8	0.8	10.1	0.0
LnGrp Delay(d),s/veh	40.0	0.0	42.2	55.3	0.0	0.0	51.0	0.0	27.9	50.1	13.8	0.0
LnGrp LOS	D		D	E			D		C	D	B	
Approach Vol, veh/h	293				53		1096				1273	
Approach Delay, s/veh	41.1				55.3		29.7				14.6	
Approach LOS	D				E		C				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	7.0	55.5			14.8	9.6	52.9	8.1				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	51.0			18.0	8.3	47.7	18.0				
Max Q Clear Time (g_c+I1), s	13.4	43.2			9.5	5.9	22.1	4.7				
Green Ext Time (p_c), s	0.0	4.2			0.8	0.0	9.5	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			24.4									
HCM 2010 LOS			C									

Intersection												
Int Delay, s/veh	75.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶		↶	↶			↷				
Traffic Vol, veh/h	0	293	115	140	785	0	168	0	73	0	0	0
Future Vol, veh/h	0	293	115	140	785	0	168	0	73	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	326	128	156	872	0	187	0	81	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	454	0	0	1574	1574	390
Stage 1	-	-	-	-	-	-	390	390	-
Stage 2	-	-	-	-	-	-	1184	1184	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1107	-	0	~ 121	110	658
Stage 1	0	-	-	-	-	0	684	608	-
Stage 2	0	-	-	-	-	0	290	263	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1107	-	-	~ 104	0	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 104	0	-
Stage 1	-	-	-	-	-	-	588	0	-
Stage 2	-	-	-	-	-	-	290	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	\$ 489.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	140	-	-	1107	-
HCM Lane V/C Ratio	1.913	-	-	0.141	-
HCM Control Delay (s)	\$ 489.7	-	-	8.8	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	20.8	-	-	0.5	-

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

HCM 2010 Signalized Intersection Summary
1: Coffee Rd & Patterson Rd

AM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	293	115	140	785	0	168	0	73	0	0	0
Future Volume (veh/h)	0	293	115	140	785	0	168	0	73	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0	1900	1863	1900			
Adj Flow Rate, veh/h	0	326	128	156	872	0	187	0	81			
Adj No. of Lanes	0	1	0	1	1	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	0	2	2	2	2	0	0	2	0			
Cap, veh/h	0	461	181	198	1121	0	170	0	74			
Arrive On Green	0.00	0.36	0.36	0.11	0.60	0.00	0.14	0.00	0.14			
Sat Flow, veh/h	0	1274	500	1774	1863	0	1194	0	517			
Grp Volume(v), veh/h	0	0	454	156	872	0	268	0	0			
Grp Sat Flow(s),veh/h/ln	0	0	1774	1774	1863	0	1712	0	0			
Q Serve(g_s), s	0.0	0.0	7.7	3.0	12.3	0.0	5.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	7.7	3.0	12.3	0.0	5.0	0.0	0.0			
Prop In Lane	0.00		0.28	1.00		0.00	0.70		0.30			
Lane Grp Cap(c), veh/h	0	0	643	198	1121	0	244	0	0			
V/C Ratio(X)	0.00	0.00	0.71	0.79	0.78	0.00	1.10	0.00	0.00			
Avail Cap(c_a), veh/h	0	0	1641	252	1723	0	244	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	9.6	15.2	5.2	0.0	15.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	1.4	12.1	1.3	0.0	87.2	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.9	2.1	6.4	0.0	8.2	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	0.0	11.0	27.3	6.5	0.0	102.3	0.0	0.0			
LnGrp LOS			B	C	A		F					
Approach Vol, veh/h		454			1028			268				
Approach Delay, s/veh		11.0			9.7			102.3				
Approach LOS		B			A			F				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4				8				
Phs Duration (G+Y+Rc), s		9.5	8.4	17.2				25.6				
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5				
Max Green Setting (Gmax), s		5.0	5.0	32.5				32.5				
Max Q Clear Time (g_c+I1), s		7.0	5.0	9.7				14.3				
Green Ext Time (p_c), s		0.0	0.0	3.0				6.5				
Intersection Summary												
HCM 2010 Ctrl Delay			24.2									
HCM 2010 LOS			C									

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

EPAP + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	183	2.0	0.297	7.3	LOS A	0.9	23.2	0.36	0.31	33.1
18	R2	79	2.0	0.297	7.3	LOS A	0.9	23.2	0.36	0.31	32.2
Approach		262	2.0	0.297	7.3	LOS A	0.9	23.2	0.36	0.31	32.8
East: Patterson Ave											
1	L2	152	2.0	0.969	40.8	LOS E	23.4	595.1	1.00	0.99	23.2
6	T1	853	2.0	0.969	40.8	LOS E	23.4	595.1	1.00	0.99	23.5
Approach		1005	2.0	0.969	40.8	LOS E	23.4	595.1	1.00	0.99	23.5
West: Patterson Ave											
2	T1	318	2.0	0.430	8.2	LOS A	1.6	41.1	0.29	0.20	35.8
12	R2	125	2.0	0.430	8.2	LOS A	1.6	41.1	0.29	0.20	33.8
Approach		443	2.0	0.430	8.2	LOS A	1.6	41.1	0.29	0.20	35.2
All Vehicles		1711	2.0	0.969	27.2	LOS D	23.4	595.1	0.72	0.68	27.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\1 EPAPPP AM Coffee_Patterson.sip7

HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	292	62	358	537	53	183	92	262	61	123	134
Future Volume (veh/h)	60	292	62	358	537	53	183	92	262	61	123	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	67	324	69	398	597	59	203	102	291	68	137	149
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	466	98	492	812	80	247	689	586	96	531	451
Arrive On Green	0.05	0.16	0.16	0.14	0.25	0.25	0.14	0.37	0.37	0.05	0.28	0.28
Sat Flow, veh/h	1774	2912	612	3442	3255	321	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	67	195	198	398	324	332	203	102	291	68	137	149
Grp Sat Flow(s),veh/h/ln	1774	1770	1755	1721	1770	1806	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.5	6.9	7.0	7.4	11.1	11.1	7.3	2.4	9.4	2.5	3.7	4.9
Cycle Q Clear(g_c), s	2.5	6.9	7.0	7.4	11.1	11.1	7.3	2.4	9.4	2.5	3.7	4.9
Prop In Lane	1.00		0.35	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	283	281	492	442	451	247	689	586	96	531	451
V/C Ratio(X)	0.70	0.69	0.70	0.81	0.73	0.74	0.82	0.15	0.50	0.71	0.26	0.33
Avail Cap(c_a), veh/h	140	483	479	506	603	616	282	689	586	191	531	451
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	30.7	26.2	26.2	27.4	22.7	22.8	27.6	13.8	16.0	30.7	18.2	18.6
Incr Delay (d2), s/veh	9.1	3.0	3.2	9.3	3.0	3.0	15.8	0.5	3.0	9.3	1.2	2.0
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	1.4	3.6	3.7	4.1	5.8	5.9	4.7	1.3	4.6	1.5	2.1	2.4
LnGrp Delay(d),s/veh	39.8	29.1	29.4	36.6	25.8	25.8	43.4	14.3	19.0	40.0	19.4	20.6
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	B	C
Approach Vol, veh/h		460			1054			596			354	
Approach Delay, s/veh		30.8			29.9			26.5			23.8	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	28.9	13.9	15.1	13.7	23.3	8.0	21.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.1	22.2	9.7	18.0	10.5	18.8	5.2	22.5				
Max Q Clear Time (g_c+I1), s	4.5	11.4	9.4	9.0	9.3	6.9	4.5	13.1				
Green Ext Time (p_c), s	0.0	1.2	0.1	1.5	0.1	0.9	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				28.4								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	232	0	124	0	120	71	45	211	0
Future Vol, veh/h	0	0	0	232	0	124	0	120	71	45	211	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	255	0	136	0	132	78	49	232	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				501	501	171	-	0	0	210	0	0
Stage 1				171	171	-	-	-	-	-	-	-
Stage 2				330	330	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				530	472	873	0	-	-	1361	-	0
Stage 1				859	757	-	0	-	-	-	-	0
Stage 2				728	646	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				508	0	873	-	-	-	1361	-	-
Mov Cap-2 Maneuver				508	0	-	-	-	-	-	-	-
Stage 1				824	0	-	-	-	-	-	-	-
Stage 2				728	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				21.9			0			1.4		
HCM LOS				C								
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT						
Capacity (veh/h)		-	-	595	1361	-						
HCM Lane V/C Ratio		-	-	0.657	0.036	-						
HCM Control Delay (s)		-	-	21.9	7.7	0						
HCM Lane LOS		-	-	C	A	A						
HCM 95th %tile Q(veh)		-	-	4.8	0.1	-						

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	17	127	51	52	82	50	373	43	36	438	63
Future Volume (veh/h)	89	17	127	51	52	82	50	373	43	36	438	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	103	20	148	59	60	95	58	434	50	42	509	73
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	242	206	93	201	171	92	1510	173	75	736	106
Arrive On Green	0.07	0.13	0.13	0.05	0.11	0.11	0.05	0.47	0.47	0.04	0.46	0.46
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3201	367	1774	1594	229
Grp Volume(v), veh/h	103	20	148	59	60	95	58	239	245	42	0	582
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1798	1774	0	1822
Q Serve(g_s), s	3.4	0.6	5.3	1.9	1.8	3.4	1.9	4.9	4.9	1.4	0.0	15.0
Cycle Q Clear(g_c), s	3.4	0.6	5.3	1.9	1.8	3.4	1.9	4.9	4.9	1.4	0.0	15.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.13
Lane Grp Cap(c), veh/h	132	242	206	93	201	171	92	835	848	75	0	842
V/C Ratio(X)	0.78	0.08	0.72	0.63	0.30	0.56	0.63	0.29	0.29	0.56	0.00	0.69
Avail Cap(c_a), veh/h	194	609	518	153	565	481	153	835	848	179	0	842
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	0.00	1.00
Uniform Delay (d), s/veh	27.0	22.7	24.7	27.5	24.4	25.1	27.6	9.6	9.6	27.9	0.0	12.6
Incr Delay (d2), s/veh	11.4	0.1	4.6	7.0	0.8	2.8	6.9	0.9	0.9	6.5	0.0	4.6
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	2.1	0.3	2.6	1.1	0.9	1.6	1.1	2.6	2.7	0.8	0.0	8.5
LnGrp Delay(d),s/veh	38.3	22.8	29.4	34.5	25.2	27.9	34.5	10.4	10.4	34.3	0.0	17.2
LnGrp LOS	D	C	C	C	C	C	C	B	B	C		B
Approach Vol, veh/h	271				214				542			
Approach Delay, s/veh	32.3				29.0				13.0			
Approach LOS	C				C				B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	32.5	7.6	12.2	7.6	31.9	8.9	10.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.0	26.5	5.1	19.4	5.1	27.4	6.5	18.0				
Max Q Clear Time (g_c+I1), s	3.4	6.9	3.9	7.3	3.9	17.0	5.4	5.4				
Green Ext Time (p_c), s	0.0	2.8	0.0	0.4	0.0	2.9	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay	20.3											
HCM 2010 LOS	C											

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	25	0	1	0	188	3	3	439	0
Future Vol, veh/h	0	0	0	25	0	1	0	188	3	3	439	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	28	0	1	0	209	3	3	488	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				705	705	211	-	0	0	212	0	0
Stage 1				211	211	-	-	-	-	-	-	-
Stage 2				494	494	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				403	361	829	0	-	-	1358	-	0
Stage 1				824	728	-	0	-	-	-	-	0
Stage 2				613	546	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				402	0	829	-	-	-	1358	-	-
Mov Cap-2 Maneuver				402	0	-	-	-	-	-	-	-
Stage 1				822	0	-	-	-	-	-	-	-
Stage 2				613	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				14.4		0			0.1			
HCM LOS				B								
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT							
Capacity (veh/h)	-	-	410	1358	-							
HCM Lane V/C Ratio	-	-	0.07	0.002	-							
HCM Control Delay (s)	-	-	14.4	7.7	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.2	0	-							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	27	193	379	13	49	77	405	184	64	585	19
Future Volume (veh/h)	32	27	193	379	13	49	77	405	184	64	585	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	31	219	431	15	56	88	460	209	73	665	22
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	0	260	479	0	633	113	667	301	94	945	31
Arrive On Green	0.03	0.16	0.16	0.27	0.40	0.40	0.06	0.28	0.28	0.05	0.27	0.27
Sat Flow, veh/h	1774	0	1583	1774	0	1583	1774	2373	1070	1774	3496	116
Grp Volume(v), veh/h	36	0	219	431	0	56	88	342	327	73	336	351
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1774	1770	1674	1774	1770	1842
Q Serve(g_s), s	1.6	0.0	10.4	18.2	0.0	1.7	3.8	13.4	13.5	3.2	13.3	13.3
Cycle Q Clear(g_c), s	1.6	0.0	10.4	18.2	0.0	1.7	3.8	13.4	13.5	3.2	13.3	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		0.06
Lane Grp Cap(c), veh/h	62	0	260	479	0	633	113	498	471	94	478	498
V/C Ratio(X)	0.58	0.00	0.84	0.90	0.00	0.09	0.78	0.69	0.69	0.78	0.70	0.70
Avail Cap(c_a), veh/h	139	0	367	605	0	783	148	498	471	144	478	498
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	31.5	27.3	0.0	14.5	35.8	24.9	24.9	36.3	25.5	25.5
Incr Delay (d2), s/veh	8.5	0.0	11.7	14.0	0.0	0.1	17.4	7.6	8.2	13.6	8.4	8.1
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	0.9	0.0	5.4	10.7	0.0	0.8	2.4	7.6	7.3	1.9	7.6	7.8
LnGrp Delay(d),s/veh	45.4	0.0	43.2	41.3	0.0	14.6	53.3	32.4	33.1	49.9	33.9	33.6
LnGrp LOS	D		D	D		B	D	C	C	D	C	C
Approach Vol, veh/h	255				487		757				760	
Approach Delay, s/veh	43.5				38.3		35.2				35.3	
Approach LOS	D				D		D				D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	26.3	25.5	17.2	9.4	25.5	7.2	35.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.3	21.2	26.5	18.0	6.5	21.0	6.1	38.4				
Max Q Clear Time (g_c+I1), s	5.2	15.5	20.2	12.4	5.8	15.3	3.6	3.7				
Green Ext Time (p_c), s	0.0	2.1	0.8	0.3	0.0	2.1	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	36.8											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	449	133	419	939	65	109	246	130	63	640	79
Future Volume (veh/h)	117	449	133	419	939	65	109	246	130	63	640	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	121	463	137	432	968	67	112	254	134	65	660	81
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	153	607	271	475	1250	559	142	1031	461	84	916	410
Arrive On Green	0.09	0.17	0.17	0.27	0.35	0.35	0.08	0.29	0.29	0.05	0.26	0.26
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	121	463	137	432	968	67	112	254	134	65	660	81
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.4	10.1	6.4	19.1	19.7	2.3	5.0	4.4	5.3	2.9	13.8	3.2
Cycle Q Clear(g_c), s	5.4	10.1	6.4	19.1	19.7	2.3	5.0	4.4	5.3	2.9	13.8	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	153	607	271	475	1250	559	142	1031	461	84	916	410
V/C Ratio(X)	0.79	0.76	0.50	0.91	0.77	0.12	0.79	0.25	0.29	0.77	0.72	0.20
Avail Cap(c_a), veh/h	201	785	351	558	1497	670	164	1031	461	133	916	410
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	36.4	32.0	30.5	28.7	23.3	17.7	36.7	21.9	22.2	38.2	27.4	23.5
Incr Delay (d2), s/veh	14.6	3.3	1.5	17.2	2.2	0.1	19.9	0.6	1.6	13.9	4.9	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	3.3	5.2	2.9	11.6	9.9	1.0	3.2	2.2	2.5	1.8	7.3	1.5
LnGrp Delay(d),s/veh	50.9	35.3	31.9	45.9	25.5	17.8	56.6	22.5	23.8	52.1	32.2	24.6
LnGrp LOS	D	D	C	D	C	B	E	C	C	D	C	C
Approach Vol, veh/h	721				1467				500		806	
Approach Delay, s/veh	37.3				31.2				30.5		33.1	
Approach LOS	D				C				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	28.1	26.2	18.4	11.0	25.5	11.5	33.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	22.4	25.5	18.0	7.5	21.0	9.2	34.3					
Max Q Clear Time (g_c+I), s	7.3	21.1	12.1	7.0	15.8	7.4	21.7					
Green Ext Time (p_c), s	0.0	1.8	0.6	1.8	0.0	2.1	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay	32.8											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
8: Coffee Rd & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	479	112	234	1052	8	146	123	166	8	271	195
Future Volume (veh/h)	63	479	112	234	1052	8	146	123	166	8	271	195
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	69	526	123	257	1156	9	160	135	182	9	298	214
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	1647	737	440	1647	737	347	647	550	463	647	550
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	480	3539	1583	779	3539	1583	885	1863	1583	1058	1863	1583
Grp Volume(v), veh/h	69	526	123	257	1156	9	160	135	182	9	298	214
Grp Sat Flow(s),veh/h/ln	480	1770	1583	779	1770	1583	885	1863	1583	1058	1863	1583
Q Serve(g_s), s	6.4	4.5	2.2	14.9	12.5	0.1	8.2	2.5	4.1	0.3	6.0	4.9
Cycle Q Clear(g_c), s	18.9	4.5	2.2	19.3	12.5	0.1	14.2	2.5	4.1	2.7	6.0	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	249	1647	737	440	1647	737	347	647	550	463	647	550
V/C Ratio(X)	0.28	0.32	0.17	0.58	0.70	0.01	0.46	0.21	0.33	0.02	0.46	0.39
Avail Cap(c_a), veh/h	252	1671	748	445	1671	748	377	709	603	499	709	603
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	17.7	8.1	7.4	14.1	10.2	6.9	17.7	11.0	11.6	12.0	12.2	11.8
Incr Delay (d2), s/veh	0.6	0.1	0.1	1.9	1.3	0.0	1.0	0.2	0.3	0.0	0.5	0.4
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	0.9	2.2	0.9	3.4	6.2	0.1	2.1	1.3	1.8	0.1	3.2	2.2
LnGrp Delay(d),s/veh	18.3	8.2	7.6	16.1	11.5	6.9	18.7	11.2	11.9	12.0	12.7	12.3
LnGrp LOS	B	A	A	B	B	A	B	B	B	B	B	B
Approach Vol, veh/h	718		1422				477			521		
Approach Delay, s/veh	9.0		12.3				14.0			12.5		
Approach LOS	A		B				B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	21.2		26.9		21.2		26.9					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.3		22.7		18.3		22.7					
Max Q Clear Time (g_c+I1), s	16.2		20.9		8.0		21.3					
Green Ext Time (p_c), s	0.5		0.8		1.6		1.0					
Intersection Summary												
HCM 2010 Ctrl Delay	11.9											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Future Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	193	290	0	292	600	0	167	517	143	189	671	469
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	532	238	307	693	310	184	997	274	225	720	612
Arrive On Green	0.13	0.15	0.00	0.17	0.20	0.00	0.10	0.36	0.36	0.13	0.39	0.39
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2744	755	1774	1863	1583
Grp Volume(v), veh/h	193	290	0	292	600	0	167	333	327	189	671	469
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1729	1774	1863	1583
Q Serve(g_s), s	10.3	7.3	0.0	15.7	15.8	0.0	9.0	14.2	14.4	10.0	33.3	24.9
Cycle Q Clear(g_c), s	10.3	7.3	0.0	15.7	15.8	0.0	9.0	14.2	14.4	10.0	33.3	24.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	226	532	238	307	693	310	184	643	628	225	720	612
V/C Ratio(X)	0.85	0.54	0.00	0.95	0.87	0.00	0.91	0.52	0.52	0.84	0.93	0.77
Avail Cap(c_a), veh/h	259	660	295	307	755	338	184	643	628	342	720	612
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	37.9	0.0	39.5	37.6	0.0	42.8	24.1	24.1	41.2	28.4	25.8
Incr Delay (d2), s/veh	21.1	0.9	0.0	38.4	9.7	0.0	41.5	3.0	3.1	10.9	20.5	8.9
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	6.4	3.6	0.0	11.0	8.7	0.0	6.5	7.5	7.4	5.6	21.3	12.4
LnGrp Delay(d),s/veh	62.3	38.8	0.0	77.9	47.3	0.0	84.3	27.1	27.2	52.1	48.9	34.7
LnGrp LOS	E	D		E	D		F	C	C	D	D	C
Approach Vol, veh/h		483			892			827			1329	
Approach Delay, s/veh		48.2			57.3			38.7			44.4	
Approach LOS		D			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	39.6	21.2	19.0	14.5	41.8	16.8	23.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	18.6	28.7	16.7	18.0	10.0	37.3	14.1	20.6				
Max Q Clear Time (g_c+1/2C), s	11.0	16.4	17.7	9.3	11.0	35.3	12.3	17.8				
Green Ext Time (p_c), s	0.3	3.3	0.0	1.1	0.0	1.2	0.1	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			46.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

AM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Future Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	193	290	0	292	600	0	167	517	143	189	671	469
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	576	258	335	775	347	206	944	422	230	991	444
Arrive On Green	0.13	0.16	0.00	0.19	0.22	0.00	0.12	0.27	0.27	0.13	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	193	290	0	292	600	0	167	517	143	189	671	469
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.6	5.3	0.0	11.4	11.4	0.0	6.6	9.0	5.2	7.4	12.0	20.0
Cycle Q Clear(g_c), s	7.6	5.3	0.0	11.4	11.4	0.0	6.6	9.0	5.2	7.4	12.0	20.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	236	576	258	335	775	347	206	944	422	230	991	444
V/C Ratio(X)	0.82	0.50	0.00	0.87	0.77	0.00	0.81	0.55	0.34	0.82	0.68	1.06
Avail Cap(c_a), veh/h	303	892	399	360	1006	450	236	944	422	261	991	444
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	27.2	0.0	28.1	26.2	0.0	30.8	22.5	21.1	30.3	22.8	25.7
Incr Delay (d2), s/veh	12.9	0.7	0.0	19.3	2.8	0.0	16.9	2.3	2.2	17.0	3.7	58.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	2.7	0.0	7.4	5.8	0.0	4.2	4.7	2.5	4.7	6.4	15.9
LnGrp Delay(d),s/veh	43.0	27.9	0.0	47.4	29.1	0.0	47.7	24.8	23.3	47.3	26.5	84.4
LnGrp LOS	D	C		D	C		D	C	C	D	C	F
Approach Vol, veh/h	483				892				827		1329	
Approach Delay, s/veh	33.9				35.1				29.1		49.9	
Approach LOS	C				D				C		D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.7	23.5	18.0	16.1	12.8	24.5	14.0	20.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	19.0	14.5	18.0	9.5	20.0	12.2	20.3				
Max Q Clear Time (g_c+1.4), s	19.4	11.0	13.4	7.3	8.6	22.0	9.6	13.4				
Green Ext Time (p_c), s	0.1	2.5	0.1	1.3	0.0	0.0	0.1	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay			39.1									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	382	0	0	562	86	0	0	0	187	0	319
Future Volume (veh/h)	114	382	0	0	562	86	0	0	0	187	0	319
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	133	444	0	0	653	100				217	0	371
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86				0.86	0.86	0.86
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	172	935	0	0	930	142				520	0	464
Arrive On Green	0.10	0.50	0.00	0.00	0.30	0.30				0.29	0.00	0.29
Sat Flow, veh/h	1774	1863	0	0	3172	471				1774	0	1583
Grp Volume(v), veh/h	133	444	0	0	375	378				217	0	371
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1780				1774	0	1583
Q Serve(g_s), s	3.2	6.8	0.0	0.0	8.2	8.3				4.3	0.0	9.5
Cycle Q Clear(g_c), s	3.2	6.8	0.0	0.0	8.2	8.3				4.3	0.0	9.5
Prop In Lane	1.00		0.00	0.00		0.26				1.00		1.00
Lane Grp Cap(c), veh/h	172	935	0	0	535	538				520	0	464
V/C Ratio(X)	0.77	0.48	0.00	0.00	0.70	0.70				0.42	0.00	0.80
Avail Cap(c_a), veh/h	344	1338	0	0	746	751				789	0	704
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	7.1	0.0	0.0	13.6	13.6				12.5	0.0	14.3
Incr Delay (d2), s/veh	7.2	0.4	0.0	0.0	1.7	1.7				0.5	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.6	0.0	0.0	4.2	4.2				2.2	0.0	8.1
LnGrp Delay(d),s/veh	26.5	7.5	0.0	0.0	15.3	15.3				13.0	0.0	18.1
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		577			753						588	
Approach Delay, s/veh		11.9			15.3						16.3	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				26.5		17.4	8.8	17.8				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				31.5		19.5	8.5	18.5				
Max Q Clear Time (g_c+I1), s				8.8		11.5	5.2	10.3				
Green Ext Time (p_c), s				2.8		1.4	0.1	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay				14.6								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	324	201	35	430	47	161	235	15	65	319	46
Future Volume (veh/h)	35	324	201	35	430	47	161	235	15	65	319	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	338	209	36	448	49	168	245	16	68	332	48
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	583	684	66	517	56	211	543	35	97	398	57
Arrive On Green	0.04	0.31	0.31	0.04	0.31	0.31	0.12	0.31	0.31	0.05	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1650	181	1774	1730	113	1774	1592	230
Grp Volume(v), veh/h	36	338	209	36	0	497	168	0	261	68	0	380
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1831	1774	0	1843	1774	0	1822
Q Serve(g_s), s	1.3	9.7	5.5	1.3	0.0	16.4	5.9	0.0	7.2	2.4	0.0	12.6
Cycle Q Clear(g_c), s	1.3	9.7	5.5	1.3	0.0	16.4	5.9	0.0	7.2	2.4	0.0	12.6
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.06	1.00		0.13
Lane Grp Cap(c), veh/h	66	583	684	66	0	573	211	0	578	97	0	455
V/C Ratio(X)	0.55	0.58	0.31	0.55	0.00	0.87	0.80	0.00	0.45	0.70	0.00	0.83
Avail Cap(c_a), veh/h	142	714	795	142	0	702	291	0	686	239	0	624
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	18.4	11.9	30.3	0.0	20.7	27.4	0.0	17.5	29.7	0.0	22.7
Incr Delay (d2), s/veh	7.0	0.9	0.3	7.0	0.0	9.6	10.2	0.0	0.6	8.7	0.0	7.1
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	0.7	5.1	2.4	0.7	0.0	9.8	3.5	0.0	3.7	1.4	0.0	7.2
LnGrp Delay(d),s/veh	37.3	19.4	12.1	37.3	0.0	30.3	37.6	0.0	18.1	38.4	0.0	29.8
LnGrp LOS	D	B	B	D		C	D		B	D		C
Approach Vol, veh/h	583			533			429			448		
Approach Delay, s/veh	17.9			30.8			25.7			31.1		
Approach LOS	B			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	24.6	6.9	24.5	12.1	20.5	6.9	24.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	8.6	23.8	5.1	24.5	10.5	21.9	5.1	24.5				
Max Q Clear Time (g_c+I), s	14.4	9.2	3.3	11.7	7.9	14.6	3.3	18.4				
Green Ext Time (p_c), s	0.0	1.2	0.0	2.3	0.1	1.3	0.0	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			26.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	328	101	3	339	2	97	59	1	5	79	99
Future Volume (veh/h)	24	328	101	3	339	2	97	59	1	5	79	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	27	364	0	3	377	0	108	66	0	6	88	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	623	0	168	403	0	457	166	0	190	410	0
Arrive On Green	0.36	0.36	0.00	0.36	0.22	0.00	0.23	0.23	0.00	0.23	0.23	0.00
Sat Flow, veh/h	61	1751	0	5	1854	0	817	720	0	58	1781	0
Grp Volume(v), veh/h	391	0	0	380	0	0	174	0	0	94	0	0
Grp Sat Flow(s),veh/h/ln	1812	0	0	1859	0	0	1537	0	0	1839	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	4.0	0.0	0.0	2.0	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.07		0.00	0.01		0.00	0.62		0.00	0.06		0.00
Lane Grp Cap(c), veh/h	821	0	0	828	0	0	622	0	0	600	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.46	0.00	0.00	0.28	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	2017	0	0	2087	0	0	1537	0	0	1728	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	0.0	8.2	0.0	0.0	7.2	0.0	0.0	6.8	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
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	1.9	0.0	0.0	1.8	0.0	0.0	0.9	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	8.6	0.0	0.0	7.4	0.0	0.0	6.9	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		391			380			174			94	
Approach Delay, s/veh		6.1			8.6			7.4			6.9	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.5		12.2		9.5		12.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		22.5		18.5		22.5				
Max Q Clear Time (g_c+I1), s		4.0		5.7		2.9		6.0				
Green Ext Time (p_c), s		0.7		2.0		0.3		1.8				
Intersection Summary												
HCM 2010 Ctrl Delay			7.3									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	193	88	107	219	37	45	335	99	28	424	84
Future Volume (veh/h)	68	193	88	107	219	37	45	335	99	28	424	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	71	201	92	111	228	39	47	349	103	29	442	88
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	299	254	142	332	283	84	699	594	59	672	571
Arrive On Green	0.06	0.16	0.16	0.08	0.18	0.18	0.05	0.38	0.38	0.03	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	71	201	92	111	228	39	47	349	103	29	442	88
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.0	5.2	2.7	3.1	5.9	1.1	1.3	7.4	2.2	0.8	10.2	1.9
Cycle Q Clear(g_c), s	2.0	5.2	2.7	3.1	5.9	1.1	1.3	7.4	2.2	0.8	10.2	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	299	254	142	332	283	84	699	594	59	672	571
V/C Ratio(X)	0.65	0.67	0.36	0.78	0.69	0.14	0.56	0.50	0.17	0.50	0.66	0.15
Avail Cap(c_a), veh/h	173	654	556	190	672	571	173	699	594	173	672	571
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	23.5	20.2	19.2	23.2	19.7	17.7	23.9	12.3	10.7	24.4	13.7	11.1
Incr Delay (d2), s/veh	6.2	2.6	0.9	13.9	2.5	0.2	5.6	2.5	0.6	6.3	5.0	0.6
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	1.2	2.9	1.2	2.1	3.2	0.5	0.8	4.3	1.1	0.5	6.1	0.9
LnGrp Delay(d),s/veh	29.7	22.9	20.0	37.1	22.2	18.0	29.5	14.8	11.3	30.7	18.7	11.7
LnGrp LOS	C	C	C	D	C	B	C	B	B	C	B	B
Approach Vol, veh/h	364				378				499		559	
Approach Delay, s/veh	23.5				26.1				15.5		18.2	
Approach LOS	C				C				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.2	23.7	8.6	12.7	6.9	23.0	7.7	13.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	5.5	18.0	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I2), s	12.8	9.4	5.1	7.2	3.3	12.2	4.0	7.9				
Green Ext Time (p_c), s	0.0	1.5	0.0	1.0	0.0	1.4	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

AM PEAK EX+APPR+PROJECT
11/10/2017

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	31	227	467	703	915	79		
Future Volume (veh/h)	31	227	467	703	915	79		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	34	0	519	781	1017	88		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	47	503	517	1690	985	85		
Arrive On Green	0.03	0.00	0.29	0.91	0.58	0.58		
Sat Flow, veh/h	1774	1583	1774	1863	1691	146		
Grp Volume(v), veh/h	34	0	519	781	0	1105		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1837		
Q Serve(g_s), s	2.6	0.0	39.5	9.1	0.0	79.0		
Cycle Q Clear(g_c), s	2.6	0.0	39.5	9.1	0.0	79.0		
Prop In Lane	1.00	1.00	1.00			0.08		
Lane Grp Cap(c), veh/h	47	503	517	1690	0	1070		
V/C Ratio(X)	0.72	0.00	1.00	0.46	0.00	1.03		
Avail Cap(c_a), veh/h	235	671	517	1690	0	1070		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	65.5	0.0	48.1	1.0	0.0	28.3		
Incr Delay (d2), s/veh	18.4	0.0	40.7	0.2	0.0	36.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.5	0.0	25.1	4.6	0.0	50.6		
LnGrp Delay(d),s/veh	83.9	0.0	88.7	1.2	0.0	64.5		
LnGrp LOS	F		F	A		F		
Approach Vol, veh/h	34			1300	1105			
Approach Delay, s/veh	83.9			36.2	64.5			
Approach LOS	F			D	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		127.5		8.1	44.0	83.5		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		123.0		18.0	39.5	79.0		
Max Q Clear Time (g_c+l1), s		11.1		4.6	41.5	81.0		
Green Ext Time (p_c), s		7.3		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			49.7					
HCM 2010 LOS			D					
Notes								

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	12	0	47	65	0	43	61	588	13	93	1059	52
Future Volume (veh/h)	12	0	47	65	0	43	61	588	13	93	1059	52
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	0	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h				76	0	50	71	684	15	108	1231	60
Adj No. of Lanes				2	0	1	1	2	1	1	2	0
Peak Hour Factor				0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	2
Cap, veh/h				286	0	131	112	2003	896	140	2000	97
Arrive On Green				0.08	0.00	0.08	0.06	0.57	0.57	0.08	0.58	0.58
Sat Flow, veh/h				3442	0	1583	1774	3539	1583	1774	3436	167
Grp Volume(v), veh/h				76	0	50	71	684	15	108	634	657
Grp Sat Flow(s),veh/h/ln				1721	0	1583	1774	1770	1583	1774	1770	1833
Q Serve(g_s), s				1.0	0.0	1.5	1.9	5.2	0.2	3.0	11.6	11.6
Cycle Q Clear(g_c), s				1.0	0.0	1.5	1.9	5.2	0.2	3.0	11.6	11.6
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h				286	0	131	112	2003	896	140	1030	1067
V/C Ratio(X)				0.27	0.00	0.38	0.64	0.34	0.02	0.77	0.61	0.62
Avail Cap(c_a), veh/h				347	0	159	182	2003	896	368	1030	1067
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh				21.3	0.0	21.6	22.7	5.8	4.7	22.4	6.7	6.8
Incr Delay (d2), s/veh				0.5	0.0	1.8	5.9	0.5	0.0	8.6	2.7	2.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.7	1.1	2.6	0.1	1.8	6.2	6.5
LnGrp Delay(d),s/veh				21.8	0.0	23.4	28.6	6.3	4.8	31.0	9.5	9.4
LnGrp LOS				C		C	C	A	A	C	A	A
Approach Vol, veh/h					126			770			1399	
Approach Delay, s/veh					22.4			8.3			11.1	
Approach LOS					C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	8.4	32.6			7.6	33.4		8.6				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.3	23.7			5.1	28.9		5.0				
Max Q Clear Time (g_c+1.5), s	10.3	7.2			3.9	13.6		3.5				
Green Ext Time (p_c), s	0.1	4.4			0.0	7.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				10.8								
HCM 2010 LOS				B								

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

EPAP + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	204	2.0	0.613	19.2	LOS C	2.7	69.8	0.71	0.79	28.5
8	T1	223	2.0	0.613	18.9	LOS C	2.7	69.8	0.70	0.78	28.3
18	R2	274	2.0	0.613	18.5	LOS C	2.7	67.5	0.69	0.77	29.0
Approach		701	2.0	0.613	18.9	LOS C	2.7	69.8	0.70	0.78	28.6
East: Sylvan Ave											
1	L2	317	2.0	0.697	18.5	LOS C	4.3	108.7	0.69	0.77	29.0
6	T1	607	2.0	0.697	18.3	LOS C	4.3	108.7	0.68	0.75	30.5
16	R2	139	2.0	0.697	18.1	LOS C	4.1	104.1	0.67	0.74	29.4
Approach		1063	2.0	0.697	18.3	LOS C	4.3	108.7	0.68	0.75	29.9
North: Roselle Ave											
7	L2	250	2.0	0.664	25.0	LOS C	2.9	74.6	0.80	0.91	26.3
4	T1	318	2.0	0.664	24.0	LOS C	2.9	74.6	0.78	0.89	27.0
14	R2	71	2.0	0.664	23.8	LOS C	2.9	72.7	0.78	0.88	27.2
Approach		639	2.0	0.664	24.4	LOS C	2.9	74.6	0.79	0.89	26.7
West: Sylvan Ave											
5	L2	78	2.0	0.688	22.8	LOS C	3.5	88.0	0.75	0.85	28.2
2	T1	567	2.0	0.688	22.4	LOS C	3.5	88.0	0.74	0.84	29.0
12	R2	147	2.0	0.688	22.0	LOS C	3.4	85.3	0.73	0.82	28.0
Approach		792	2.0	0.688	22.4	LOS C	3.5	88.0	0.74	0.83	28.8
All Vehicles		3196	2.0	0.697	20.6	LOS C	4.3	108.7	0.72	0.81	28.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\16 EPAPPP AM Roselle_Sylvan.sip7

HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	382	235	119	519	391	507	858	54	419	816	116
Future Volume (veh/h)	68	382	235	119	519	391	507	858	54	419	816	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	80	449	276	140	611	460	596	1009	64	493	960	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	836	374	181	836	374	769	2201	140	691	2305	1031
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.65	0.65	0.65	0.65	0.65	0.00
Sat Flow, veh/h	525	3539	1583	726	3539	1583	1130	3380	214	1016	3539	1583
Grp Volume(v), veh/h	80	449	276	140	611	460	596	528	545	493	960	0
Grp Sat Flow(s),veh/h/ln	525	1770	1583	726	1770	1583	565	1770	1825	508	1770	1583
Q Serve(g_s), s	6.2	8.9	12.9	10.0	12.7	18.9	41.7	11.9	11.9	37.5	10.4	0.0
Cycle Q Clear(g_c), s	18.9	8.9	12.9	18.9	12.7	18.9	52.1	11.9	11.9	49.4	10.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	130	836	374	181	836	374	769	1152	1188	691	2305	1031
V/C Ratio(X)	0.61	0.54	0.74	0.77	0.73	1.23	0.77	0.46	0.46	0.71	0.42	0.00
Avail Cap(c_a), veh/h	130	836	374	181	836	374	769	1152	1188	691	2305	1031
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	0.00
Uniform Delay (d), s/veh	38.4	26.7	28.3	36.7	28.2	30.5	19.4	6.9	6.9	19.2	6.7	0.0
Incr Delay (d2), s/veh	8.3	0.7	7.5	18.6	3.3	124.7	7.5	1.3	1.3	6.2	0.6	0.0
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	2.1	4.4	6.4	4.0	6.6	21.2	7.3	6.1	6.3	5.8	5.2	0.0
LnGrp Delay(d),s/veh	46.7	27.4	35.8	55.3	31.5	155.3	26.9	8.2	8.2	25.4	7.2	0.0
LnGrp LOS	D	C	D	E	C	F	C	A	A	C	A	
Approach Vol, veh/h	805				1211				1669		1453	
Approach Delay, s/veh	32.2				81.3				14.9		13.4	
Approach LOS	C				F				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	56.6		23.4		56.6		23.4					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	52.1		18.9		52.1		18.9					
Max Q Clear Time (g_c+I1), s	54.1		20.9		51.4		20.9					
Green Ext Time (p_c), s	0.0		0.0		0.6		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			32.8									
HCM 2010 LOS			C									

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

EPAP + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	378	2.0	0.445	9.8	LOS A	1.7	42.5	0.45	0.44	31.2
8	T1	359	2.0	0.442	9.9	LOS A	1.7	44.2	0.47	0.46	32.8
18	R2	10	2.0	0.442	9.9	LOS A	1.7	44.2	0.47	0.46	32.7
Approach		747	2.0	0.445	9.9	LOS A	1.7	44.2	0.46	0.45	32.0
East: Claratina Ave											
1	L2	18	2.0	0.519	15.1	LOS C	2.1	53.4	0.64	0.69	31.5
6	T1	561	2.0	0.519	14.8	LOS B	2.1	53.4	0.63	0.68	32.4
16	R2	49	2.0	0.519	14.5	LOS B	2.0	51.4	0.62	0.66	30.8
Approach		628	2.0	0.519	14.8	LOS B	2.1	53.4	0.63	0.68	32.2
North: Coffee Ave											
7	L2	30	2.0	0.609	19.8	LOS C	2.7	67.5	0.73	0.81	29.2
4	T1	536	2.0	0.609	19.4	LOS C	2.7	67.5	0.72	0.80	28.7
14	R2	99	2.0	0.609	19.0	LOS C	2.6	65.3	0.71	0.79	28.9
Approach		665	2.0	0.609	19.4	LOS C	2.7	67.5	0.72	0.80	28.8
West: Claratina Ave											
5	L2	82	2.0	0.389	10.2	LOS B	1.4	35.2	0.53	0.54	33.1
2	T1	260	2.0	0.389	10.2	LOS B	1.4	35.2	0.52	0.54	34.1
12	R2	218	2.0	0.389	10.0	LOS A	1.3	33.6	0.50	0.52	32.8
Approach		560	2.0	0.389	10.1	LOS B	1.4	35.2	0.52	0.53	33.4
All Vehicles		2600	2.0	0.609	13.5	LOS B	2.7	67.5	0.58	0.61	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\18 EPAPPP AM Coffee_Claratina.sip7

HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	111	9	139	20	8	19	117	1047	12	18	938	105				
Future Volume (veh/h)	111	9	139	20	8	19	117	1047	12	18	938	105				
Number	7	4	14	3	8	18	5	2	12	1	6	16				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863				
Adj Flow Rate, veh/h	121	10	151	22	9	21	127	1138	13	20	1020	0				
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	208	12	175	28	12	27	153	1263	14	35	2197	983				
Arrive On Green	0.12	0.12	0.12	0.04	0.04	0.04	0.09	0.69	0.69	0.02	0.62	0.00				
Sat Flow, veh/h	1774	99	1499	721	295	689	1774	1838	21	1774	3539	1583				
Grp Volume(v), veh/h	121	0	161	52	0	0	127	0	1151	20	1020	0				
Grp Sat Flow(s),veh/h/ln	1774	0	1598	1705	0	0	1774	0	1859	1774	1770	1583				
Q Serve(g_s), s	8.5	0.0	13.0	4.0	0.0	0.0	9.3	0.0	67.0	1.5	20.2	0.0				
Cycle Q Clear(g_c), s	8.5	0.0	13.0	4.0	0.0	0.0	9.3	0.0	67.0	1.5	20.2	0.0				
Prop In Lane	1.00		0.94	0.42		0.40	1.00		0.01	1.00		1.00				
Lane Grp Cap(c), veh/h	208	0	187	67	0	0	153	0	1277	35	2197	983				
V/C Ratio(X)	0.58	0.00	0.86	0.77	0.00	0.00	0.83	0.00	0.90	0.57	0.46	0.00				
Avail Cap(c_a), veh/h	247	0	222	234	0	0	257	0	1277	69	2197	983				
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00				
Uniform Delay (d), s/veh	55.1	0.0	57.1	62.7	0.0	0.0	59.2	0.0	16.9	64.0	13.3	0.0				
Incr Delay (d2), s/veh	2.6	0.0	24.4	17.0	0.0	0.0	11.0	0.0	10.4	13.9	0.7	0.0				
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	4.3	0.0	7.0	2.2	0.0	0.0	5.0	0.0	37.6	0.9	10.0	0.0				
LnGrp Delay(d),s/veh	57.7	0.0	81.4	79.6	0.0	0.0	70.2	0.0	27.3	77.9	14.0	0.0				
LnGrp LOS	E		F	E			E		C	E	B					
Approach Vol, veh/h	282				52		1278				1040					
Approach Delay, s/veh	71.2				79.6		31.6				15.2					
Approach LOS	E				E		C				B					
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2			4	5	6	8								
Phs Duration (G+Y+Rc), s	7.1	95.0			19.9	15.8	86.3	9.7								
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5	4.5	4.5								
Max Green Setting (Gmax), s	5.1	90.5			18.3	19.1	76.5	18.1								
Max Q Clear Time (g_c+I1), s	13.5	69.0			15.0	11.3	22.2	6.0								
Green Ext Time (p_c), s	0.0	9.8			0.4	0.2	8.3	0.1								
Intersection Summary																
HCM 2010 Ctrl Delay				30.3												
HCM 2010 LOS				C												

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	97	555	1030	44	13	251
Future Vol, veh/h	97	555	1030	44	13	251
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	603	1120	48	14	273
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1168	0	-	0	1656	584
Stage 1	-	-	-	-	1144	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	594	-	-	-	89	455
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	594	-	-	-	65	455
Mov Cap-2 Maneuver	-	-	-	-	65	-
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	567	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.9	0		26.6		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	594	-	-	-	65	455
HCM Lane V/C Ratio	0.177	-	-	-	0.217	0.6
HCM Control Delay (s)	12.4	1.2	-	-	75.2	24.1
HCM Lane LOS	B	A	-	-	F	C
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7	3.8

HCM 2010 Signalized Intersection Summary
20: Claribel Ave & N-S Collector

AM PEAK EX+APPR+PROJ MITIGATION

11/10/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		 	 					
Traffic Volume (veh/h)	97	555	1030	44	13	251		
Future Volume (veh/h)	97	555	1030	44	13	251		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	105	603	1120	48	14	273		
Adj No. of Lanes	0	2	2	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	0	1780	1739	75	422	377		
Arrive On Green	0.00	0.50	0.50	0.50	0.24	0.24		
Sat Flow, veh/h	0	3632	3551	148	1774	1583		
Grp Volume(v), veh/h	0	603	573	595	14	273		
Grp Sat Flow(s),veh/h/ln	0	1770	1770	1837	1774	1583		
Q Serve(g_s), s	0.0	3.5	8.3	8.3	0.2	5.5		
Cycle Q Clear(g_c), s	0.0	3.5	8.3	8.3	0.2	5.5		
Prop In Lane	0.00			0.08	1.00	1.00		
Lane Grp Cap(c), veh/h	0	1780	890	924	422	377		
V/C Ratio(X)	0.00	0.34	0.64	0.64	0.03	0.72		
Avail Cap(c_a), veh/h	0	4739	1789	1856	996	889		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	5.2	6.3	6.3	10.2	12.2		
Incr Delay (d2), s/veh	0.0	0.1	0.8	0.8	0.0	2.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	1.7	4.2	4.3	0.1	4.9		
LnGrp Delay(d),s/veh	0.0	5.3	7.1	7.1	10.2	14.8		
LnGrp LOS		A	A	A	B	B		
Approach Vol, veh/h		603	1168		287			
Approach Delay, s/veh		5.3	7.1		14.6			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.0		12.8	0.0	22.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				46.5		19.5	6.9	35.1
Max Q Clear Time (g_c+I1), s				5.5		7.5	0.0	10.3
Green Ext Time (p_c), s				4.7		0.8	0.0	7.2
Intersection Summary								
HCM 2010 Ctrl Delay			7.6					
HCM 2010 LOS			A					

Intersection												
Int Delay, s/veh	22.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	773	177	69	508	0	82	0	108	0	0	0
Future Vol, veh/h	0	773	177	69	508	0	82	0	108	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	831	190	74	546	0	88	0	116	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	1021	0	0	1620	1620	926
Stage 1	-	-	-	-	-	-	926	926	-
Stage 2	-	-	-	-	-	-	694	694	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	680	-	0	113	103	326
Stage 1	0	-	-	-	-	0	386	347	-
Stage 2	0	-	-	-	-	0	496	444	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	680	-	-	101	0	326
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	0	-
Stage 1	-	-	-	-	-	-	344	0	-
Stage 2	-	-	-	-	-	-	496	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	199.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	-	-	680	-
HCM Lane V/C Ratio	1.231	-	-	0.109	-
HCM Control Delay (s)	199.9	-	-	10.9	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	11.5	-	-	0.4	-

HCM 2010 Signalized Intersection Summary
1: Coffee Rd & Patterson Rd

PM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	773	177	69	508	0	82	0	108	0	0	0
Future Volume (veh/h)	0	773	177	69	508	0	82	0	108	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0	1900	1863	1900			
Adj Flow Rate, veh/h	0	831	190	74	546	0	88	0	116			
Adj No. of Lanes	0	1	0	1	1	0	0	1	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	2	2	2	0	0	2	0			
Cap, veh/h	0	902	206	95	1355	0	109	0	144			
Arrive On Green	0.00	0.61	0.61	0.05	0.73	0.00	0.15	0.00	0.15			
Sat Flow, veh/h	0	1468	336	1774	1863	0	716	0	944			
Grp Volume(v), veh/h	0	0	1021	74	546	0	204	0	0			
Grp Sat Flow(s),veh/h/ln	0	0	1804	1774	1863	0	1660	0	0			
Q Serve(g_s), s	0.0	0.0	37.8	3.1	8.5	0.0	8.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	37.8	3.1	8.5	0.0	8.9	0.0	0.0			
Prop In Lane	0.00		0.19	1.00		0.00	0.43		0.57			
Lane Grp Cap(c), veh/h	0	0	1108	95	1355	0	253	0	0			
V/C Ratio(X)	0.00	0.00	0.92	0.78	0.40	0.00	0.81	0.00	0.00			
Avail Cap(c_a), veh/h	0	0	1237	130	1525	0	431	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	12.9	35.1	3.9	0.0	30.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	10.7	18.6	0.2	0.0	5.9	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.0	21.7	2.0	4.3	0.0	4.5	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	0.0	23.5	53.7	4.1	0.0	36.7	0.0	0.0			
LnGrp LOS			C	D	A		D					
Approach Vol, veh/h		1021			620			204				
Approach Delay, s/veh		23.5			10.0			36.7				
Approach LOS		C			B			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4				8				
Phs Duration (G+Y+Rc), s		16.0	8.5	50.6				59.1				
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5				
Max Green Setting (Gmax), s		19.5	5.5	51.5				61.5				
Max Q Clear Time (g_c+I1), s		10.9	5.1	39.8				10.5				
Green Ext Time (p_c), s		0.7	0.0	6.3				4.2				
Intersection Summary												
HCM 2010 Ctrl Delay			20.5									
HCM 2010 LOS			C									

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

Exist + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	89	2.0	0.338	10.5	LOS B	1.0	26.5	0.55	0.57	32.2
18	R2	117	2.0	0.338	10.5	LOS B	1.0	26.5	0.55	0.57	31.4
Approach		207	2.0	0.338	10.5	LOS B	1.0	26.5	0.55	0.57	31.7
East: Patterson Ave											
1	L2	75	2.0	0.557	10.0	LOS A	2.7	68.0	0.27	0.15	33.7
6	T1	547	2.0	0.557	10.0	LOS A	2.7	68.0	0.27	0.15	34.5
Approach		622	2.0	0.557	10.0	LOS A	2.7	68.0	0.27	0.15	34.4
West: Patterson Ave											
2	T1	832	2.0	0.886	25.4	LOS D	11.9	302.5	0.66	0.37	28.2
12	R2	192	2.0	0.886	25.4	LOS D	11.9	302.5	0.66	0.37	26.9
Approach		1024	2.0	0.886	25.4	LOS D	11.9	302.5	0.66	0.37	27.9
All Vehicles		1852	2.0	0.886	18.6	LOS C	11.9	302.5	0.52	0.32	30.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	605	176	476	409	31	133	164	364	68	140	61
Future Volume (veh/h)	114	605	176	476	409	31	133	164	364	68	140	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	124	658	191	517	445	34	145	178	396	74	152	66
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	698	202	584	1129	86	179	545	732	95	457	388
Arrive On Green	0.09	0.26	0.26	0.17	0.34	0.34	0.10	0.29	0.29	0.05	0.25	0.25
Sat Flow, veh/h	1774	2708	786	3442	3334	254	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	124	430	419	517	236	243	145	178	396	74	152	66
Grp Sat Flow(s),veh/h/ln	1774	1770	1724	1721	1770	1818	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.4	18.9	19.0	11.7	8.1	8.1	6.4	5.9	14.3	3.3	5.3	2.6
Cycle Q Clear(g_c), s	5.4	18.9	19.0	11.7	8.1	8.1	6.4	5.9	14.3	3.3	5.3	2.6
Prop In Lane	1.00		0.46	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	456	444	584	599	616	179	545	732	95	457	388
V/C Ratio(X)	0.79	0.94	0.94	0.88	0.39	0.40	0.81	0.33	0.54	0.78	0.33	0.17
Avail Cap(c_a), veh/h	270	456	444	584	599	616	190	545	732	141	457	388
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	35.5	28.9	28.9	32.3	20.1	20.1	35.0	22.0	15.3	37.2	24.7	23.6
Incr Delay (d2), s/veh	8.4	28.1	28.8	15.0	0.4	0.4	21.5	1.6	2.9	15.0	2.0	0.9
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	3.0	12.8	12.5	6.8	4.0	4.1	4.2	3.3	6.7	2.0	3.0	1.2
LnGrp Delay(d),s/veh	43.9	57.0	57.8	47.3	20.5	20.5	56.6	23.6	18.2	52.2	26.6	24.6
LnGrp LOS	D	E	E	D	C	C	E	C	B	D	C	C
Approach Vol, veh/h		973			996			719			292	
Approach Delay, s/veh		55.7			34.4			27.3			32.6	
Approach LOS		E			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	27.8	18.0	25.0	12.5	24.0	11.6	31.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.3	21.7	13.5	20.5	8.5	19.5	12.1	21.9				
Max Q Clear Time (g_c+I1), s	5.3	16.3	13.7	21.0	8.4	7.3	7.4	10.1				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.0	0.0	0.8	0.1	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay				39.5								
HCM 2010 LOS				D								

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	170	0	60	0	132	277	106	126	0
Future Vol, veh/h	0	0	0	170	0	60	0	132	277	106	126	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	181	0	64	0	140	295	113	134	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				648	648	288	-	0	0	435	0	0
Stage 1				288	288	-	-	-	-	-	-	-
Stage 2				360	360	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				435	389	751	0	-	-	1125	-	0
Stage 1				761	674	-	0	-	-	-	-	0
Stage 2				706	626	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				388	0	751	-	-	-	1125	-	-
Mov Cap-2 Maneuver				388	0	-	-	-	-	-	-	-
Stage 1				678	0	-	-	-	-	-	-	-
Stage 2				706	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				22.6			0			3.9		
HCM LOS				C								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	444	1125	-							
HCM Lane V/C Ratio	-	-	0.551	0.1	-							
HCM Control Delay (s)	-	-	22.6	8.6	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	3.3	0.3	-							

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	86	96	98	53	96	149	610	135	104	517	116
Future Volume (veh/h)	85	86	96	98	53	96	149	610	135	104	517	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	88	89	99	101	55	99	154	629	139	107	533	120
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	175	149	129	192	163	191	1491	329	138	718	162
Arrive On Green	0.06	0.09	0.09	0.07	0.10	0.10	0.11	0.52	0.52	0.08	0.49	0.49
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2884	636	1774	1473	332
Grp Volume(v), veh/h	88	89	99	101	55	99	154	386	382	107	0	653
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1750	1774	0	1804
Q Serve(g_s), s	3.7	3.4	4.6	4.2	2.1	4.5	6.4	10.2	10.2	4.5	0.0	22.0
Cycle Q Clear(g_c), s	3.7	3.4	4.6	4.2	2.1	4.5	6.4	10.2	10.2	4.5	0.0	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.18
Lane Grp Cap(c), veh/h	113	175	149	129	192	163	191	915	905	138	0	879
V/C Ratio(X)	0.78	0.51	0.66	0.78	0.29	0.61	0.81	0.42	0.42	0.78	0.00	0.74
Avail Cap(c_a), veh/h	162	444	377	176	459	390	228	915	905	282	0	879
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	0.00	1.00
Uniform Delay (d), s/veh	34.8	32.5	33.1	34.4	31.3	32.4	32.9	11.3	11.3	34.2	0.0	15.6
Incr Delay (d2), s/veh	14.0	2.3	5.0	14.4	0.8	3.6	16.4	1.4	1.4	8.9	0.0	5.6
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	2.2	1.9	2.2	2.6	1.1	2.1	4.0	5.3	5.3	2.5	0.0	12.3
LnGrp Delay(d),s/veh	48.8	34.8	38.1	48.8	32.1	36.0	49.3	12.7	12.7	43.1	0.0	21.2
LnGrp LOS	D	C	D	D	C	D	D	B	B	D		C
Approach Vol, veh/h		276			255			922			760	
Approach Delay, s/veh		40.4			40.2			18.8			24.3	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	43.5	10.0	11.6	12.6	41.3	9.3	12.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.0	34.5	7.5	18.0	9.7	36.8	6.9	18.6				
Max Q Clear Time (g_c+I1), s	6.5	12.2	6.2	6.6	8.4	24.0	5.7	6.5				
Green Ext Time (p_c), s	0.1	5.1	0.0	0.5	0.0	3.7	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			25.9									
HCM 2010 LOS			C									
Notes												

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	15	0	2	0	416	17	6	295	0
Future Vol, veh/h	0	0	0	15	0	2	0	416	17	6	295	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	17	0	2	0	462	19	7	328	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				814	814	472	-	0	0	481	0	0
Stage 1				472	472	-	-	-	-	-	-	-
Stage 2				342	342	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				347	312	592	0	-	-	1082	-	0
Stage 1				628	559	-	0	-	-	-	-	0
Stage 2				719	638	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				344	0	592	-	-	-	1082	-	-
Mov Cap-2 Maneuver				344	0	-	-	-	-	-	-	-
Stage 1				623	0	-	-	-	-	-	-	-
Stage 2				719	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				15.5			0			0.2		
HCM LOS				C								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	362	1082	-							
HCM Lane V/C Ratio	-	-	0.052	0.006	-							
HCM Control Delay (s)	-	-	15.5	8.3	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	0.2	0	-							

HCM 2010 Signalized Intersection Summary

6: Oakdale Rd & Crawford Rd

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	10	128	191	15	51	216	988	291	87	637	44
Future Volume (veh/h)	37	10	128	191	15	51	216	988	291	87	637	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	40	11	138	205	16	55	232	1062	313	94	685	47
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	0	178	243	0	337	273	1233	360	120	1244	85
Arrive On Green	0.04	0.11	0.11	0.14	0.21	0.21	0.15	0.46	0.46	0.07	0.37	0.37
Sat Flow, veh/h	1774	0	1583	1774	0	1583	1774	2703	790	1774	3361	230
Grp Volume(v), veh/h	40	0	138	205	0	55	232	692	683	94	360	372
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1774	1770	1723	1774	1770	1822
Q Serve(g_s), s	1.8	0.0	6.7	9.0	0.0	2.2	10.1	27.7	28.3	4.1	12.8	12.8
Cycle Q Clear(g_c), s	1.8	0.0	6.7	9.0	0.0	2.2	10.1	27.7	28.3	4.1	12.8	12.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.46	1.00		0.13
Lane Grp Cap(c), veh/h	65	0	178	243	0	337	273	807	786	120	655	674
V/C Ratio(X)	0.61	0.00	0.77	0.84	0.00	0.16	0.85	0.86	0.87	0.78	0.55	0.55
Avail Cap(c_a), veh/h	141	0	359	261	0	467	324	807	786	136	655	674
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	0.0	34.2	33.4	0.0	25.5	32.7	19.3	19.5	36.4	19.8	19.8
Incr Delay (d2), s/veh	8.9	0.0	7.0	20.5	0.0	0.2	16.8	11.4	12.5	22.6	3.3	3.2
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	1.0	0.0	3.3	5.8	0.0	1.0	6.2	16.0	16.0	2.8	6.8	7.0
LnGrp Delay(d),s/veh	46.5	0.0	41.2	53.9	0.0	25.7	49.5	30.7	32.0	59.1	23.1	23.0
LnGrp LOS	D		D	D		C	D	C	C	E	C	C
Approach Vol, veh/h	178				260				1607			
Approach Delay, s/veh	42.4				47.9				34.0			
Approach LOS	D				D				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	40.7	15.4	13.4	16.7	33.9	7.4	21.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.1	36.2	11.7	18.0	14.5	27.8	6.3	23.4				
Max Q Clear Time (g_c+I1), s	6.1	30.3	11.0	8.7	12.1	14.8	3.8	4.2				
Green Ext Time (p_c), s	0.0	4.1	0.0	0.2	0.2	3.8	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	33.8											
HCM 2010 LOS	C											
Notes												

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	1097	141	283	832	70	216	526	470	184	517	90
Future Volume (veh/h)	195	1097	141	283	832	70	216	526	470	184	517	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	214	1205	155	311	914	77	237	578	516	202	568	99
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	1207	540	314	1347	603	250	689	589	219	627	281
Arrive On Green	0.14	0.34	0.34	0.18	0.38	0.38	0.14	0.19	0.19	0.12	0.18	0.18
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	214	1205	155	311	914	77	237	578	516	202	568	99
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	13.0	37.4	7.9	19.2	23.7	3.5	14.6	17.3	21.4	12.4	17.3	6.0
Cycle Q Clear(g_c), s	13.0	37.4	7.9	19.2	23.7	3.5	14.6	17.3	21.4	12.4	17.3	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	1207	540	314	1347	603	250	689	589	219	627	281
V/C Ratio(X)	0.88	1.00	0.29	0.99	0.68	0.13	0.95	0.84	0.88	0.92	0.91	0.35
Avail Cap(c_a), veh/h	282	1207	540	314	1347	603	250	689	589	219	627	281
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	46.5	36.2	26.5	45.1	28.5	22.2	46.9	42.6	32.2	47.7	44.3	39.7
Incr Delay (d2), s/veh	23.0	25.6	0.3	47.6	1.4	0.1	42.7	11.8	16.7	39.6	19.0	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	7.9	22.5	3.5	13.6	11.8	1.5	10.1	9.6	17.2	8.5	10.1	2.9
LnGrp Delay(d),s/veh	69.5	61.8	26.8	92.7	29.8	22.3	89.6	54.4	48.9	87.3	63.3	43.2
LnGrp LOS	E	E	C	F	C	C	F	D	D	F	E	D
Approach Vol, veh/h	1574				1302				1331		869	
Approach Delay, s/veh	59.4				44.4				58.5		66.6	
Approach LOS	E				D				E		E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.1	25.9	24.0	42.0	20.0	24.0	19.6	46.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	13.6	21.4	19.5	37.5	15.5	19.5	17.5	39.5				
Max Q Clear Time (g_c+1.4), s	14.4	23.4	21.2	39.4	16.6	19.3	15.0	25.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.1	0.1	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay			56.6									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
8: Coffee Rd & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	1328	237	243	894	9	146	211	369	10	179	109
Future Volume (veh/h)	212	1328	237	243	894	9	146	211	369	10	179	109
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	226	1413	252	259	951	10	155	224	393	11	190	116
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	1417	634	216	1320	590	183	476	404	24	308	499
Arrive On Green	0.15	0.40	0.40	0.12	0.37	0.37	0.10	0.26	0.26	0.01	0.17	0.17
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	226	1413	252	259	951	10	155	224	393	11	190	116
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.7	34.3	9.8	10.5	19.9	0.3	7.4	8.8	21.2	0.5	8.2	4.7
Cycle Q Clear(g_c), s	10.7	34.3	9.8	10.5	19.9	0.3	7.4	8.8	21.2	0.5	8.2	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	1417	634	216	1320	590	183	476	404	24	308	499
V/C Ratio(X)	0.85	1.00	0.40	1.20	0.72	0.02	0.85	0.47	0.97	0.46	0.62	0.23
Avail Cap(c_a), veh/h	350	1417	634	216	1320	590	183	476	404	103	391	569
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	35.7	25.8	18.4	37.8	23.2	17.0	38.0	27.2	31.8	42.2	33.4	21.8
Incr Delay (d2), s/veh	14.4	23.2	0.4	125.0	1.9	0.0	28.9	0.7	37.3	13.3	2.0	0.2
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	6.3	21.2	4.3	12.6	10.0	0.2	5.1	4.6	13.4	0.3	4.3	2.1
LnGrp Delay(d),s/veh	50.1	48.9	18.8	162.8	25.1	17.1	66.8	27.9	69.1	55.5	35.4	22.1
LnGrp LOS	D	D	B	F	C	B	E	C	E	E	D	C
Approach Vol, veh/h	1891				1220				772		317	
Approach Delay, s/veh	45.1				54.3				56.7		31.2	
Approach LOS	D				D				E		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	26.5	15.0	39.0	13.4	18.8	17.4	36.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	22.0	10.5	34.5	8.9	18.1	17.0	28.0				
Max Q Clear Time (g_c+1/2), s	12.5	23.2	12.5	36.3	9.4	10.2	12.7	21.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.7	0.2	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			48.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Future Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	493	651	0	309	483	0	174	819	253	202	562	304
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	448	789	353	329	552	247	179	829	256	205	607	516
Arrive On Green	0.25	0.22	0.00	0.19	0.16	0.00	0.10	0.31	0.31	0.12	0.33	0.33
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2665	823	1774	1863	1583
Grp Volume(v), veh/h	493	651	0	309	483	0	174	544	528	202	562	304
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1718	1774	1863	1583
Q Serve(g_s), s	27.5	19.1	0.0	18.7	14.5	0.0	10.7	33.3	33.4	12.4	31.8	17.5
Cycle Q Clear(g_c), s	27.5	19.1	0.0	18.7	14.5	0.0	10.7	33.3	33.4	12.4	31.8	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	448	789	353	329	552	247	179	550	534	205	607	516
V/C Ratio(X)	1.10	0.82	0.00	0.94	0.87	0.00	0.97	0.99	0.99	0.99	0.93	0.59
Avail Cap(c_a), veh/h	448	821	367	329	584	261	179	550	534	205	607	516
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	40.3	0.0	43.8	45.0	0.0	48.9	37.4	37.4	48.1	35.5	30.7
Incr Delay (d2), s/veh	73.0	6.7	0.0	34.3	13.4	0.0	58.9	35.6	36.3	58.4	22.3	4.9
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	22.5	10.0	0.0	12.3	8.1	0.0	8.1	21.8	21.2	9.4	20.0	8.3
LnGrp Delay(d),s/veh	113.8	47.0	0.0	78.1	58.3	0.0	107.7	72.9	73.7	106.5	57.8	35.6
LnGrp LOS	F	D		E	E		F	E	E	F	E	D
Approach Vol, veh/h	1144			792			1246			1068		
Approach Delay, s/veh	75.8			66.0			78.1			60.7		
Approach LOS	E			E			E			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	38.4	24.7	28.8	15.5	40.0	32.0	21.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.6	33.9	20.2	25.3	11.0	35.5	27.5	18.0				
Max Q Clear Time (g_c+1/4), s	14.4	35.4	20.7	21.1	12.7	33.8	29.5	16.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.9	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay	70.9											
HCM 2010 LOS	E											

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Future Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	493	651	0	309	483	0	174	819	253	202	562	304
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	498	883	395	344	574	257	207	893	400	214	908	406
Arrive On Green	0.28	0.25	0.00	0.19	0.16	0.00	0.12	0.25	0.25	0.12	0.26	0.26
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	493	651	0	309	483	0	174	819	253	202	562	304
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	27.1	16.6	0.0	16.6	13.0	0.0	9.4	22.0	13.9	11.1	13.7	17.3
Cycle Q Clear(g_c), s	27.1	16.6	0.0	16.6	13.0	0.0	9.4	22.0	13.9	11.1	13.7	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	498	883	395	344	574	257	207	893	400	214	908	406
V/C Ratio(X)	0.99	0.74	0.00	0.90	0.84	0.00	0.84	0.92	0.63	0.94	0.62	0.75
Avail Cap(c_a), veh/h	498	883	395	401	651	291	245	893	400	214	908	406
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	33.8	0.0	38.5	39.8	0.0	42.4	35.6	32.6	42.7	32.2	33.5
Incr Delay (d2), s/veh	37.4	3.3	0.0	20.6	8.8	0.0	19.9	15.7	7.4	46.0	3.2	11.9
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	8.3	8.4	0.0	10.1	7.0	0.0	5.7	12.6	6.9	8.1	7.1	8.9
LnGrp Delay(d),s/veh	72.4	37.1	0.0	59.1	48.6	0.0	62.3	51.3	40.0	88.7	35.3	45.4
LnGrp LOS	E	D		E	D		E	D	D	F	D	D
Approach Vol, veh/h	1144				792				1246		1068	
Approach Delay, s/veh	52.3				52.7				50.5		48.3	
Approach LOS	D				D				D		D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.3	29.2	23.5	28.9	15.9	29.6	32.0	20.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	1.8	24.7	22.1	23.4	13.5	23.0	27.5	18.0				
Max Q Clear Time (g_c+1/3), s	1.8	24.0	18.6	18.6	11.4	19.3	29.1	15.0				
Green Ext Time (p_c), s	0.0	0.4	0.3	1.9	0.1	1.7	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			50.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	619	0	0	719	146	0	0	0	155	0	178
Future Volume (veh/h)	261	619	0	0	719	146	0	0	0	155	0	178
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	275	652	0	0	757	154				163	0	187
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	337	1168	0	0	988	201				306	0	273
Arrive On Green	0.19	0.63	0.00	0.00	0.34	0.34				0.17	0.00	0.17
Sat Flow, veh/h	1774	1863	0	0	3024	596				1774	0	1583
Grp Volume(v), veh/h	275	652	0	0	457	454				163	0	187
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1758				1774	0	1583
Q Serve(g_s), s	6.7	9.0	0.0	0.0	10.4	10.4				3.8	0.0	5.0
Cycle Q Clear(g_c), s	6.7	9.0	0.0	0.0	10.4	10.4				3.8	0.0	5.0
Prop In Lane	1.00		0.00	0.00		0.34				1.00		1.00
Lane Grp Cap(c), veh/h	337	1168	0	0	596	592				306	0	273
V/C Ratio(X)	0.82	0.56	0.00	0.00	0.77	0.77				0.53	0.00	0.69
Avail Cap(c_a), veh/h	407	1361	0	0	709	705				719	0	642
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	4.8	0.0	0.0	13.3	13.3				16.9	0.0	17.4
Incr Delay (d2), s/veh	10.3	0.4	0.0	0.0	4.2	4.2				1.4	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	4.7	0.0	0.0	5.6	5.6				1.9	0.0	4.4
LnGrp Delay(d),s/veh	27.8	5.2	0.0	0.0	17.5	17.5				18.4	0.0	20.5
LnGrp LOS	C	A			B	B				B		C
Approach Vol, veh/h		927			911						350	
Approach Delay, s/veh		11.9			17.5						19.5	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				32.7		12.2	13.0	19.6				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				32.8		18.2	10.3	18.0				
Max Q Clear Time (g_c+I1), s				11.0		7.0	8.7	12.4				
Green Ext Time (p_c), s				4.6		0.9	0.1	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				15.5								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	583	136	14	609	75	204	241	25	62	253	49
Future Volume (veh/h)	34	583	136	14	609	75	204	241	25	62	253	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	35	595	139	14	621	77	208	246	26	63	258	50
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	795	676	30	666	83	245	478	51	83	299	58
Arrive On Green	0.03	0.43	0.43	0.02	0.41	0.41	0.14	0.29	0.29	0.05	0.20	0.20
Sat Flow, veh/h	1774	1863	1583	1774	1626	202	1774	1657	175	1774	1517	294
Grp Volume(v), veh/h	35	595	139	14	0	698	208	0	272	63	0	308
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1827	1774	0	1832	1774	0	1811
Q Serve(g_s), s	1.6	21.9	4.5	0.6	0.0	29.7	9.3	0.0	10.1	2.9	0.0	13.4
Cycle Q Clear(g_c), s	1.6	21.9	4.5	0.6	0.0	29.7	9.3	0.0	10.1	2.9	0.0	13.4
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.10	1.00		0.16
Lane Grp Cap(c), veh/h	60	795	676	30	0	749	245	0	529	83	0	357
V/C Ratio(X)	0.59	0.75	0.21	0.47	0.00	0.93	0.85	0.00	0.51	0.76	0.00	0.86
Avail Cap(c_a), veh/h	111	814	692	109	0	797	259	0	569	133	0	434
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.8	19.6	14.7	39.7	0.0	22.9	34.3	0.0	24.2	38.4	0.0	31.6
Incr Delay (d2), s/veh	8.9	3.8	0.1	11.3	0.0	17.0	21.5	0.0	0.8	13.3	0.0	14.1
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	0.9	12.1	2.0	0.4	0.0	18.5	6.0	0.0	5.2	1.7	0.0	8.1
LnGrp Delay(d),s/veh	47.7	23.4	14.8	51.0	0.0	40.0	55.8	0.0	25.0	51.7	0.0	45.7
LnGrp LOS	D	C	B	D		D	E		C	D		D
Approach Vol, veh/h	769			712			480			371		
Approach Delay, s/veh	23.0			40.2			38.3			46.7		
Approach LOS	C			D			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	28.0	5.9	39.3	15.8	20.6	7.2	37.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	25.3	5.0	35.6	11.9	19.5	5.1	35.5					
Max Q Clear Time (g_c+I), s	12.1	2.6	23.9	11.3	15.4	3.6	31.7					
Green Ext Time (p_c), s	0.0	1.3	0.0	3.5	0.0	0.7	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			35.2									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	496	82	0	482	7	155	87	0	4	49	76
Future Volume (veh/h)	91	496	82	0	482	7	155	87	0	4	49	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	97	528	0	0	513	0	165	93	0	4	52	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	703	0	0	832	0	367	147	0	114	418	0
Arrive On Green	0.53	0.53	0.00	0.00	0.45	0.00	0.23	0.23	0.00	0.23	0.23	0.00
Sat Flow, veh/h	136	1335	0	0	1863	0	898	634	0	44	1800	0
Grp Volume(v), veh/h	625	0	0	0	513	0	258	0	0	56	0	0
Grp Sat Flow(s),veh/h/ln	1470	0	0	0	1863	0	1532	0	0	1844	0	0
Q Serve(g_s), s	5.0	0.0	0.0	0.0	7.9	0.0	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.9	0.0	0.0	0.0	7.9	0.0	5.7	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.16		0.00	0.00		0.00	0.64		0.00	0.07		0.00
Lane Grp Cap(c), veh/h	886	0	0	0	832	0	514	0	0	531	0	0
V/C Ratio(X)	0.71	0.00	0.00	0.00	0.62	0.00	0.50	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	1432	0	0	0	1472	0	908	0	0	1007	0	0
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	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	0.0	7.9	0.0	13.1	0.0	0.0	11.3	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.7	0.0	0.8	0.0	0.0	0.1	0.0	0.0
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	5.6	0.0	0.0	0.0	4.2	0.0	2.5	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	8.1	0.0	0.0	0.0	8.6	0.0	13.9	0.0	0.0	11.4	0.0	0.0
LnGrp LOS	A				A		B			B		
Approach Vol, veh/h		625			513			258			56	
Approach Delay, s/veh		8.1			8.6			13.9			11.4	
Approach LOS		A			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.2		24.2		13.2		24.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		32.5		18.5		32.5				
Max Q Clear Time (g_c+I1), s		7.7		15.9		2.9		10.9				
Green Ext Time (p_c), s		0.9		3.8		0.1		2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			9.5									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	222	163	143	203	35	206	435	161	20	370	99
Future Volume (veh/h)	88	222	163	143	203	35	206	435	161	20	370	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	97	244	179	157	223	38	226	478	177	22	407	109
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	328	279	185	393	334	253	761	647	45	543	461
Arrive On Green	0.07	0.18	0.18	0.10	0.21	0.21	0.14	0.41	0.41	0.03	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	97	244	179	157	223	38	226	478	177	22	407	109
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.4	7.8	6.6	5.5	6.8	1.2	7.9	12.9	4.7	0.8	12.5	3.3
Cycle Q Clear(g_c), s	3.4	7.8	6.6	5.5	6.8	1.2	7.9	12.9	4.7	0.8	12.5	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	328	279	185	393	334	253	761	647	45	543	461
V/C Ratio(X)	0.78	0.74	0.64	0.85	0.57	0.11	0.89	0.63	0.27	0.49	0.75	0.24
Avail Cap(c_a), veh/h	183	531	451	185	534	454	253	761	647	141	543	461
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	28.9	24.6	24.1	27.8	22.3	20.1	26.6	14.8	12.4	30.4	20.3	17.0
Incr Delay (d2), s/veh	12.1	3.3	2.5	28.7	1.3	0.1	30.4	3.9	1.0	8.0	9.2	1.2
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	2.1	4.3	3.1	4.1	3.6	0.6	6.0	7.3	2.2	0.5	7.8	1.6
LnGrp Delay(d),s/veh	41.0	28.0	26.6	56.5	23.6	20.3	57.0	18.7	13.5	38.4	29.5	18.2
LnGrp LOS	D	C	C	E	C	C	E	B	B	D	C	B
Approach Vol, veh/h	520			418			881			538		
Approach Delay, s/veh	29.9			35.7			27.5			27.5		
Approach LOS	C			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	30.3	11.1	15.6	13.5	22.9	8.9	17.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.6	22.4	6.6	18.0	9.0	18.4	6.5	18.1				
Max Q Clear Time (g_c+I2), s	12.8	14.9	7.5	9.8	9.9	14.5	5.4	8.8				
Green Ext Time (p_c), s	0.0	2.0	0.0	1.3	0.0	1.0	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay	29.5											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

PM PEAK EX+APPR+PROJECT
11/10/2017

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	154	525	267	1038	991	149		
Future Volume (veh/h)	154	525	267	1038	991	149		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	160	0	278	1081	1032	155		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	183	163	296	1556	1009	152		
Arrive On Green	0.10	0.00	0.17	0.84	0.64	0.64		
Sat Flow, veh/h	1774	1583	1774	1863	1583	238		
Grp Volume(v), veh/h	160	0	278	1081	0	1187		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1821		
Q Serve(g_s), s	13.0	0.0	22.7	33.4	0.0	93.5		
Cycle Q Clear(g_c), s	13.0	0.0	22.7	33.4	0.0	93.5		
Prop In Lane	1.00	1.00	1.00			0.13		
Lane Grp Cap(c), veh/h	183	163	296	1556	0	1161		
V/C Ratio(X)	0.87	0.00	0.94	0.69	0.00	1.02		
Avail Cap(c_a), veh/h	224	200	296	1556	0	1161		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	64.8	0.0	60.3	4.7	0.0	26.6		
Incr Delay (d2), s/veh	25.8	0.0	36.1	2.6	0.0	32.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.7	0.0	14.1	17.9	0.0	57.2		
LnGrp Delay(d),s/veh	90.6	0.0	96.4	7.3	0.0	58.8		
LnGrp LOS	F		F	A		F		
Approach Vol, veh/h	160			1359	1187			
Approach Delay, s/veh	90.6			25.5	58.8			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		127.0		19.6	29.0	98.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		122.5		18.5	24.5	93.5		
Max Q Clear Time (g_c+I1), s		35.4		15.0	24.7	95.5		
Green Ext Time (p_c), s		14.5		0.1	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			44.0					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	22	209	74	21	244	211	1189	71	201	715	42
Future Volume (veh/h)	45	22	209	74	21	244	211	1189	71	201	715	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	47	23	218	77	22	254	220	1239	74	209	745	44
Adj No. of Lanes	1	1	1	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	347	530	176	25	291	264	1411	631	247	1323	78
Arrive On Green	0.04	0.19	0.19	0.05	0.20	0.20	0.15	0.40	0.40	0.14	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	3442	128	1475	1774	3539	1583	1774	3396	201
Grp Volume(v), veh/h	47	23	218	77	0	276	220	1239	74	209	388	401
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	0	1602	1774	1770	1583	1774	1770	1827
Q Serve(g_s), s	2.1	0.8	8.5	1.7	0.0	13.4	9.7	26.0	2.4	9.2	13.8	13.8
Cycle Q Clear(g_c), s	2.1	0.8	8.5	1.7	0.0	13.4	9.7	26.0	2.4	9.2	13.8	13.8
Prop In Lane	1.00		1.00	1.00		0.92	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	72	347	530	176	0	316	264	1411	631	247	689	712
V/C Ratio(X)	0.65	0.07	0.41	0.44	0.00	0.87	0.83	0.88	0.12	0.84	0.56	0.56
Avail Cap(c_a), veh/h	210	513	671	232	0	359	409	1411	631	276	689	712
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	26.9	20.6	37.0	0.0	31.3	33.2	22.3	15.2	33.7	19.2	19.2
Incr Delay (d2), s/veh	9.7	0.1	0.5	1.7	0.0	18.8	8.5	8.0	0.4	19.2	3.3	3.2
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	1.2	0.4	3.8	0.9	0.0	7.6	5.3	14.1	1.1	5.8	7.3	7.5
LnGrp Delay(d),s/veh	47.6	27.0	21.1	38.7	0.0	50.1	41.7	30.3	15.6	52.9	22.5	22.4
LnGrp LOS	D	C	C	D		D	D	C	B	D	C	C
Approach Vol, veh/h	288			353			1533			998		
Approach Delay, s/veh	25.9			47.6			31.3			28.8		
Approach LOS	C			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	36.5	8.6	19.5	16.4	35.8	7.7	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.5	32.0	5.4	22.1	18.5	26.0	9.5	18.0				
Max Q Clear Time (g_c+111), s	11.2	28.0	3.7	10.5	11.7	15.8	4.1	15.4				
Green Ext Time (p_c), s	0.1	2.9	0.0	0.6	0.3	3.6	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay	31.8											
HCM 2010 LOS	C											
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Exist + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	182	2.0	0.491	13.9	LOS B	1.9	49.3	0.62	0.66	30.5
8	T1	342	2.0	0.491	13.6	LOS B	1.9	49.3	0.60	0.65	30.7
18	R2	90	2.0	0.491	13.4	LOS B	1.9	47.3	0.60	0.64	31.1
Approach		614	2.0	0.491	13.6	LOS B	1.9	49.3	0.61	0.65	30.7
East: Sylvan Ave											
1	L2	96	2.0	0.427	10.9	LOS B	1.6	40.9	0.54	0.57	32.7
6	T1	430	2.0	0.427	10.8	LOS B	1.6	40.9	0.53	0.55	34.0
16	R2	90	2.0	0.427	10.7	LOS B	1.5	39.0	0.52	0.54	32.5
Approach		616	2.0	0.427	10.8	LOS B	1.6	40.9	0.53	0.55	33.6
North: Roselle Ave											
7	L2	76	2.0	0.334	10.0	LOS B	1.1	27.6	0.54	0.55	32.7
4	T1	309	2.0	0.334	9.9	LOS A	1.1	27.6	0.53	0.54	32.4
14	R2	54	2.0	0.334	9.7	LOS A	1.0	26.4	0.52	0.53	32.7
Approach		439	2.0	0.334	9.9	LOS A	1.1	27.6	0.53	0.54	32.5
West: Sylvan Ave											
5	L2	57	2.0	0.658	16.5	LOS C	3.8	96.0	0.66	0.71	30.8
2	T1	641	2.0	0.658	16.4	LOS C	3.8	96.0	0.65	0.71	31.5
12	R2	325	2.0	0.658	16.2	LOS C	3.6	91.8	0.63	0.69	30.0
Approach		1023	2.0	0.658	16.4	LOS C	3.8	96.0	0.64	0.70	31.0
All Vehicles		2692	2.0	0.658	13.4	LOS B	3.8	96.0	0.59	0.63	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	695	376	93	493	245	352	974	85	541	922	173
Future Volume (veh/h)	203	695	376	93	493	245	352	974	85	541	922	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	211	724	392	97	514	255	367	1015	89	564	960	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	967	433	139	967	433	712	1998	175	618	2147	961
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.61	0.61	0.61	0.61	0.61	0.00
Sat Flow, veh/h	697	3539	1583	503	3539	1583	1130	3293	289	987	3539	1583
Grp Volume(v), veh/h	211	724	392	97	514	255	367	545	559	564	960	0
Grp Sat Flow(s),veh/h/ln	697	1770	1583	503	1770	1583	565	1770	1812	493	1770	1583
Q Serve(g_s), s	11.2	14.0	17.9	6.5	9.3	10.5	19.5	13.1	13.2	32.3	11.0	0.0
Cycle Q Clear(g_c), s	20.5	14.0	17.9	20.5	9.3	10.5	30.4	13.1	13.2	45.5	11.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	200	967	433	139	967	433	712	1074	1099	618	2147	961
V/C Ratio(X)	1.05	0.75	0.91	0.70	0.53	0.59	0.52	0.51	0.51	0.91	0.45	0.00
Avail Cap(c_a), veh/h	200	967	433	139	967	433	712	1074	1099	618	2147	961
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	0.00
Uniform Delay (d), s/veh	34.6	24.9	26.3	36.0	23.2	23.6	16.2	8.4	8.4	25.3	8.0	0.0
Incr Delay (d2), s/veh	78.2	3.3	22.3	14.0	0.6	2.1	2.7	1.7	1.7	20.2	0.7	0.0
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	8.5	7.3	10.5	2.5	4.6	4.8	3.3	6.9	7.0	7.5	5.5	0.0
LnGrp Delay(d),s/veh	112.7	28.2	48.6	50.0	23.7	25.7	18.8	10.1	10.1	45.5	8.6	0.0
LnGrp LOS	F	C	D	D	C	C	B	B	B	D	A	
Approach Vol, veh/h	1327			866			1471			1524		
Approach Delay, s/veh	47.7			27.3			12.3			22.3		
Approach LOS	D			C			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	50.0		25.0		50.0		25.0					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	45.5		20.5		45.5		20.5					
Max Q Clear Time (g_c+I1), s	32.4		22.5		47.5		22.5					
Green Ext Time (p_c), s	8.7		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	26.8											
HCM 2010 LOS	C											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Exist + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	270	2.0	0.736	24.8	LOS C	4.2	105.6	0.76	0.88	26.6
8	T1	602	2.0	0.736	24.2	LOS C	4.2	105.6	0.74	0.86	26.9
18	R2	18	2.0	0.736	24.0	LOS C	4.0	102.2	0.74	0.86	27.2
Approach		890	2.0	0.736	24.4	LOS C	4.2	105.6	0.75	0.87	26.8
East: Claratina Ave											
1	L2	25	2.0	0.380	13.7	LOS B	1.2	31.4	0.67	0.70	31.9
6	T1	337	2.0	0.380	13.4	LOS B	1.2	31.4	0.66	0.69	32.9
16	R2	18	2.0	0.380	13.1	LOS B	1.2	30.4	0.65	0.68	31.4
Approach		380	2.0	0.380	13.4	LOS B	1.2	31.4	0.66	0.69	32.8
North: Coffee Ave											
7	L2	53	2.0	0.523	13.5	LOS B	2.2	57.1	0.61	0.65	31.6
4	T1	558	2.0	0.523	13.4	LOS B	2.2	57.1	0.59	0.64	31.0
14	R2	116	2.0	0.523	13.2	LOS B	2.2	54.7	0.58	0.62	31.2
Approach		727	2.0	0.523	13.4	LOS B	2.2	57.1	0.59	0.64	31.1
West: Claratina Ave											
5	L2	202	2.0	0.757	23.6	LOS C	4.9	124.9	0.76	0.87	27.6
2	T1	563	2.0	0.757	23.3	LOS C	4.9	124.9	0.75	0.86	28.5
12	R2	283	2.0	0.757	23.0	LOS C	4.7	120.4	0.74	0.85	27.6
Approach		1048	2.0	0.757	23.3	LOS C	4.9	124.9	0.75	0.86	28.1
All Vehicles		3046	2.0	0.757	20.0	LOS C	4.9	124.9	0.70	0.79	28.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	8	173	20	5	26	143	1228	13	28	1448	112
Future Volume (veh/h)	150	8	173	20	5	26	143	1228	13	28	1448	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	158	8	182	21	5	27	151	1293	14	29	1524	0
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	9	202	27	6	35	176	1233	13	43	2108	943
Arrive On Green	0.13	0.13	0.13	0.04	0.04	0.04	0.10	0.67	0.67	0.02	0.60	0.00
Sat Flow, veh/h	1774	67	1526	665	158	855	1774	1839	20	1774	3539	1583
Grp Volume(v), veh/h	158	0	190	53	0	0	151	0	1307	29	1524	0
Grp Sat Flow(s),veh/h/ln	1774	0	1593	1679	0	0	1774	0	1859	1774	1770	1583
Q Serve(g_s), s	11.5	0.0	16.0	4.2	0.0	0.0	11.4	0.0	91.0	2.2	41.5	0.0
Cycle Q Clear(g_c), s	11.5	0.0	16.0	4.2	0.0	0.0	11.4	0.0	91.0	2.2	41.5	0.0
Prop In Lane	1.00		0.96	0.40		0.51	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	235	0	211	68	0	0	176	0	1246	43	2108	943
V/C Ratio(X)	0.67	0.00	0.90	0.78	0.00	0.00	0.86	0.00	1.05	0.67	0.72	0.00
Avail Cap(c_a), veh/h	235	0	211	222	0	0	221	0	1246	65	2108	943
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.1	0.0	58.0	64.5	0.0	0.0	60.2	0.0	22.4	65.7	19.5	0.0
Incr Delay (d2), s/veh	7.3	0.0	36.2	17.1	0.0	0.0	23.1	0.0	39.4	16.2	2.2	0.0
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	6.1	0.0	9.1	2.3	0.0	0.0	6.7	0.0	59.7	1.3	20.7	0.0
LnGrp Delay(d),s/veh	63.4	0.0	94.3	81.7	0.0	0.0	83.4	0.0	61.8	81.9	21.7	0.0
LnGrp LOS	E		F	F			F		F	F	C	
Approach Vol, veh/h	348				53		1458				1553	
Approach Delay, s/veh	80.3				81.7		64.0				22.8	
Approach LOS	F				F		E				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	7.8	95.5			22.5	17.9	85.4	10.0				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	91.0			18.0	16.9	79.1	18.0				
Max Q Clear Time (g_c+I), s	14.2	93.0			18.0	13.4	43.5	6.2				
Green Ext Time (p_c), s	0.0	0.0			0.0	0.1	14.4	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	47.2											
HCM 2010 LOS	D											

Intersection						
Int Delay, s/veh	398.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	436	1270	879	39	116	267
Future Vol, veh/h	436	1270	879	39	116	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	1380	955	42	126	290
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	997	0	-	0	2614	499
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	1638	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	690	-	-	-	~ 20	517
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	144	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	690	-	-	-	~ 6	517
Mov Cap-2 Maneuver	-	-	-	-	~ 6	-
Stage 1	-	-	-	-	~ 102	-
Stage 2	-	-	-	-	144	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.3	0		\$ 3104.4		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	690	-	-	-	6	517
HCM Lane V/C Ratio	0.687	-	-	-	-21.014	0.561
HCM Control Delay (s)	20.9	-	-	-	\$ 10202.7	20.5
HCM Lane LOS	C	-	-	-	F	C
HCM 95th %tile Q(veh)	5.5	-	-	-	17.7	3.4
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 2010 Signalized Intersection Summary
20: Claribel Ave & N-S Collector

PM PEAK EX+APPR+PROJ MITIGATION

11/10/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	436	1270	879	39	116	267		
Future Volume (veh/h)	436	1270	879	39	116	267		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	474	1380	955	42	126	290		
Adj No. of Lanes	1	2	2	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	523	2379	1102	48	375	334		
Arrive On Green	0.30	0.67	0.32	0.32	0.21	0.21		
Sat Flow, veh/h	1774	3632	3547	152	1774	1583		
Grp Volume(v), veh/h	474	1380	489	508	126	290		
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1836	1774	1583		
Q Serve(g_s), s	19.9	16.2	20.1	20.1	4.7	13.7		
Cycle Q Clear(g_c), s	19.9	16.2	20.1	20.1	4.7	13.7		
Prop In Lane	1.00			0.08	1.00	1.00		
Lane Grp Cap(c), veh/h	523	2379	565	586	375	334		
V/C Ratio(X)	0.91	0.58	0.87	0.87	0.34	0.87		
Avail Cap(c_a), veh/h	654	2771	630	653	471	420		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	26.2	6.8	24.8	24.8	25.9	29.4		
Incr Delay (d2), s/veh	14.1	0.2	11.3	11.0	0.5	14.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.8	7.7	11.6	11.9	2.3	12.5		
LnGrp Delay(d),s/veh	40.3	7.0	36.1	35.8	26.4	44.0		
LnGrp LOS	D	A	D	D	C	D		
Approach Vol, veh/h		1854	997		416			
Approach Delay, s/veh		15.5	35.9		38.6			
Approach LOS		B	D		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				56.4		20.8	27.3	29.2
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				60.5		20.5	28.5	27.5
Max Q Clear Time (g_c+I1), s				18.2		15.7	21.9	22.1
Green Ext Time (p_c), s				15.0		0.7	0.9	2.5
Intersection Summary								
HCM 2010 Ctrl Delay			24.7					
HCM 2010 LOS			C					

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰		↰	↰			↰				
Traffic Vol, veh/h	0	288	70	140	773	0	47	0	73	0	0	0
Future Vol, veh/h	0	288	70	140	773	0	47	0	73	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	320	78	156	859	0	52	0	81	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	398	0	0	1530	1530	359
Stage 1	-	-	-	-	-	-	359	359	-
Stage 2	-	-	-	-	-	-	1171	1171	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1161	-	0	129	117	685
Stage 1	0	-	-	-	-	0	707	627	-
Stage 2	0	-	-	-	-	0	295	267	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1161	-	-	112	0	685
Mov Cap-2 Maneuver	-	-	-	-	-	-	112	0	-
Stage 1	-	-	-	-	-	-	612	0	-
Stage 2	-	-	-	-	-	-	295	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	40.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	228	-	-	1161	-
HCM Lane V/C Ratio	0.585	-	-	0.134	-
HCM Control Delay (s)	40.9	-	-	8.6	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	3.3	-	-	0.5	-

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

EPAP AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	51	2.0	0.147	5.5	LOS A	0.4	10.0	0.31	0.25	34.8
18	R2	79	2.0	0.147	5.5	LOS A	0.4	10.0	0.31	0.25	33.8
Approach		130	2.0	0.147	5.5	LOS A	0.4	10.0	0.31	0.25	34.2
East: Patterson Ave											
1	L2	152	2.0	0.835	20.2	LOS C	9.3	236.3	0.44	0.20	29.2
6	T1	840	2.0	0.835	20.2	LOS C	9.3	236.3	0.44	0.20	29.8
Approach		992	2.0	0.835	20.2	LOS C	9.3	236.3	0.44	0.20	29.7
West: Patterson Ave											
2	T1	313	2.0	0.379	7.5	LOS A	1.3	33.8	0.27	0.18	36.2
12	R2	76	2.0	0.379	7.5	LOS A	1.3	33.8	0.27	0.18	34.1
Approach		389	2.0	0.379	7.5	LOS A	1.3	33.8	0.27	0.18	35.8
All Vehicles		1512	2.0	0.835	15.7	LOS C	9.3	236.3	0.38	0.20	31.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary

AM PEAK EXISTING+APPROVED PROJECTS

2: Oakdale Rd & Patterson Rd

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	292	57	315	537	53	170	80	164	61	117	134
Future Volume (veh/h)	60	292	57	315	537	53	170	80	164	61	117	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	67	324	63	350	597	59	189	89	182	68	130	149
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	493	95	452	794	78	233	689	794	97	546	464
Arrive On Green	0.05	0.17	0.17	0.13	0.24	0.24	0.13	0.37	0.37	0.05	0.29	0.29
Sat Flow, veh/h	1774	2963	569	3442	3255	321	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	67	192	195	350	324	332	189	89	182	68	130	149
Grp Sat Flow(s),veh/h/ln	1774	1770	1762	1721	1770	1806	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.4	6.6	6.7	6.4	11.0	11.0	6.7	2.0	4.2	2.4	3.4	4.8
Cycle Q Clear(g_c), s	2.4	6.6	6.7	6.4	11.0	11.0	6.7	2.0	4.2	2.4	3.4	4.8
Prop In Lane	1.00		0.32	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	295	293	452	432	440	233	689	794	97	546	464
V/C Ratio(X)	0.70	0.65	0.66	0.77	0.75	0.75	0.81	0.13	0.23	0.70	0.24	0.32
Avail Cap(c_a), veh/h	142	491	489	504	609	621	287	689	794	194	546	464
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	30.1	25.3	25.3	27.2	22.7	22.7	27.4	13.5	9.1	30.1	17.4	17.9
Incr Delay (d2), s/veh	8.8	2.4	2.6	6.6	3.3	3.3	13.3	0.4	0.7	9.0	1.0	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	1.4	3.4	3.5	3.4	5.7	5.8	4.2	1.1	2.0	1.4	1.9	2.3
LnGrp Delay(d),s/veh	39.0	27.7	27.9	33.9	26.0	26.0	40.7	13.9	9.8	39.1	18.4	19.7
LnGrp LOS	D	C	C	C	C	C	D	B	A	D	B	B
Approach Vol, veh/h		454			1006			460			347	
Approach Delay, s/veh		29.4			28.7			23.3			23.0	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	28.5	13.0	15.3	13.0	23.5	8.0	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.1	22.4	9.5	18.0	10.5	19.0	5.2	22.3				
Max Q Clear Time (g_c+I1), s	4.4	6.2	8.4	8.7	8.7	6.8	4.4	13.0				
Green Ext Time (p_c), s	0.0	0.9	0.2	1.5	0.1	0.9	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				26.9								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	93	0	5	0	118	23	3	208	0
Future Vol, veh/h	0	0	0	93	0	5	0	118	23	3	208	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	102	0	5	0	130	25	3	229	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				378	378	143	-	0	0	155	0	0
Stage 1				143	143	-	-	-	-	-	-	-
Stage 2				235	235	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				624	554	905	0	-	-	1425	-	0
Stage 1				884	779	-	0	-	-	-	-	0
Stage 2				804	710	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				623	0	905	-	-	-	1425	-	-
Mov Cap-2 Maneuver				623	0	-	-	-	-	-	-	-
Stage 1				882	0	-	-	-	-	-	-	-
Stage 2				804	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				11.9		0			0.1			
HCM LOS				B								
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT							
Capacity (veh/h)		-	-	633	1425							
HCM Lane V/C Ratio		-	-	0.17	0.002							
HCM Control Delay (s)		-	-	11.9	7.5							
HCM Lane LOS		-	-	B	A							
HCM 95th %tile Q(veh)		-	-	0.6	0							

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

4: Oakdale Rd & Morrill Rd

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	11	3	47	50	82	7	325	37	36	411	37
Future Volume (veh/h)	14	11	3	47	50	82	7	325	37	36	411	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	13	3	55	58	95	8	378	43	42	478	43
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	171	145	94	233	198	19	1456	165	78	821	74
Arrive On Green	0.02	0.09	0.09	0.05	0.13	0.13	0.01	0.45	0.45	0.04	0.49	0.49
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3206	362	1774	1684	152
Grp Volume(v), veh/h	16	13	3	55	58	95	8	208	213	42	0	521
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1799	1774	0	1836
Q Serve(g_s), s	0.4	0.3	0.1	1.5	1.4	2.8	0.2	3.7	3.7	1.2	0.0	10.2
Cycle Q Clear(g_c), s	0.4	0.3	0.1	1.5	1.4	2.8	0.2	3.7	3.7	1.2	0.0	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.08
Lane Grp Cap(c), veh/h	35	171	145	94	233	198	19	803	817	78	0	895
V/C Ratio(X)	0.45	0.08	0.02	0.58	0.25	0.48	0.43	0.26	0.26	0.54	0.00	0.58
Avail Cap(c_a), veh/h	179	668	568	179	668	568	179	803	817	208	0	895
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	0.00	1.00
Uniform Delay (d), s/veh	24.4	21.0	20.8	23.3	19.9	20.5	24.8	8.5	8.5	23.6	0.0	9.2
Incr Delay (d2), s/veh	8.8	0.2	0.1	5.6	0.6	1.8	14.8	0.8	0.8	5.6	0.0	2.8
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	0.3	0.2	0.0	0.9	0.8	1.3	0.2	2.0	2.0	0.7	0.0	5.8
LnGrp Delay(d),s/veh	33.3	21.1	20.9	28.9	20.5	22.3	39.6	9.3	9.3	29.2	0.0	12.0
LnGrp LOS	C	C	C	C	C	C	D	A	A	C		B
Approach Vol, veh/h		32			208			429			563	
Approach Delay, s/veh		27.2			23.6			9.9			13.3	
Approach LOS		C			C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	27.4	7.2	9.1	5.0	29.1	5.5	10.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.9	22.9	5.1	18.1	5.1	23.7	5.1	18.1				
Max Q Clear Time (g_c+I1), s	3.2	5.7	3.5	2.3	2.2	12.2	2.4	4.8				
Green Ext Time (p_c), s	0.0	2.3	0.0	0.0	0.0	2.6	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				14.2								
HCM 2010 LOS				B								

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	25	0	1	0	139	3	3	297	0
Future Vol, veh/h	0	0	0	25	0	1	0	139	3	3	297	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	28	0	1	0	154	3	3	330	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				492	492	156	-	0	0	157	0	0
Stage 1				156	156	-	-	-	-	-	-	-
Stage 2				336	336	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				536	478	890	0	-	-	1423	-	0
Stage 1				872	769	-	0	-	-	-	-	0
Stage 2				724	642	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				534	0	890	-	-	-	1423	-	-
Mov Cap-2 Maneuver				534	0	-	-	-	-	-	-	-
Stage 1				869	0	-	-	-	-	-	-	-
Stage 2				724	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				12			0			0.1		
HCM LOS				B								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	542	1423	-							
HCM Lane V/C Ratio	-	-	0.053	0.002	-							
HCM Control Delay (s)	-	-	12	7.5	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.2	0	-							

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

6: Oakdale Rd & Crawford Rd

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	0	9	376	4	48	15	328	182	60	378	10
Future Volume (veh/h)	4	0	9	376	4	48	15	328	182	60	378	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	1900	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	5	0	10	427	5	55	17	373	207	68	430	11
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	12	0	0	505	0	294	37	836	457	109	1476	38
Arrive On Green	0.01	0.00	0.00	0.28	0.19	0.19	0.02	0.38	0.38	0.06	0.42	0.42
Sat Flow, veh/h	1774	5		1774	0	1583	1774	2211	1208	1774	3526	90
Grp Volume(v), veh/h	5	46.0		427	0	55	17	297	283	68	216	225
Grp Sat Flow(s),veh/h/ln	1774	D		1774	0	1583	1774	1770	1649	1774	1770	1847
Q Serve(g_s), s	0.1			11.1	0.0	1.4	0.5	6.2	6.3	1.8	3.9	4.0
Cycle Q Clear(g_c), s	0.1			11.1	0.0	1.4	0.5	6.2	6.3	1.8	3.9	4.0
Prop In Lane	1.00			1.00		1.00	1.00		0.73	1.00		0.05
Lane Grp Cap(c), veh/h	12			505	0	294	37	669	623	109	741	773
V/C Ratio(X)	0.42			0.85	0.00	0.19	0.45	0.44	0.45	0.62	0.29	0.29
Avail Cap(c_a), veh/h	181			743	0	1084	181	669	623	181	741	773
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2			16.5	0.0	16.8	23.7	11.4	11.4	22.4	9.4	9.4
Incr Delay (d2), s/veh	21.8			6.0	0.0	0.3	8.4	2.1	2.4	5.7	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
%ile BackOfQ(50%),veh/ln	0.1			6.2	0.0	0.6	0.3	3.4	3.2	1.1	2.1	2.2
LnGrp Delay(d),s/veh	46.0			22.5	0.0	17.1	32.1	13.5	13.8	28.1	10.4	10.4
LnGrp LOS	D			C		B	C	B	B	C	B	B
Approach Vol, veh/h					482				597			
Approach Delay, s/veh					21.9				14.2			
Approach LOS					C				B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	23.0	18.4		5.5	25.0	4.8	13.6				
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	20.5		5.0	18.5	5.0	33.5				
Max Q Clear Time (g_c+I1), s	3.8	8.3	13.1		2.5	6.0	2.1	3.4				
Green Ext Time (p_c), s	0.0	2.6	0.9		0.0	2.1	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	16.2											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

7: McHenry Ave & Kiernan Ave/Claribel Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	329	133	277	694	65	109	246	81	63	640	79
Future Volume (veh/h)	117	329	133	277	694	65	109	246	81	63	640	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	121	339	137	286	715	67	112	254	84	65	660	81
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	594	266	333	949	425	143	1123	502	94	1025	459
Arrive On Green	0.09	0.17	0.17	0.19	0.27	0.27	0.08	0.32	0.32	0.05	0.29	0.29
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	121	339	137	286	715	67	112	254	84	65	660	81
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.4	5.8	5.2	10.2	12.2	2.1	4.1	3.5	2.5	2.4	10.7	2.5
Cycle Q Clear(g_c), s	4.4	5.8	5.2	10.2	12.2	2.1	4.1	3.5	2.5	2.4	10.7	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	594	266	333	949	425	143	1123	502	94	1025	459
V/C Ratio(X)	0.78	0.57	0.52	0.86	0.75	0.16	0.78	0.23	0.17	0.69	0.64	0.18
Avail Cap(c_a), veh/h	222	971	434	365	1257	562	176	1123	502	135	1025	459
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	29.3	25.1	24.9	25.8	22.0	18.3	29.6	16.5	16.1	30.5	20.3	17.4
Incr Delay (d2), s/veh	10.8	0.9	1.5	17.2	1.8	0.2	16.8	0.5	0.7	8.8	3.1	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	2.6	2.9	2.4	6.6	6.2	1.0	2.7	1.8	1.2	1.4	5.7	1.2
LnGrp Delay(d),s/veh	40.1	26.0	26.4	43.0	23.9	18.5	46.4	16.9	16.9	39.3	23.5	18.3
LnGrp LOS	D	C	C	D	C	B	D	B	B	D	C	B
Approach Vol, veh/h		597			1068			450			806	
Approach Delay, s/veh		28.9			28.7			24.2			24.2	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	25.3	16.8	15.5	9.8	23.5	10.2	22.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	20.5	13.5	18.0	6.5	19.0	8.2	23.3				
Max Q Clear Time (g_c+14), s	14.4	5.5	12.2	7.8	6.1	12.7	6.4	14.2				
Green Ext Time (p_c), s	0.0	1.6	0.1	1.9	0.0	2.5	0.0	3.4				
Intersection Summary												
HCM 2010 Ctrl Delay			26.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

8: Coffee Rd & Claribel Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	350	112	149	782	6	146	115	93	5	248	79
Future Volume (veh/h)	23	350	112	149	782	6	146	115	93	5	248	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	25	385	123	164	859	7	160	126	102	5	273	87
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	338	1399	626	495	1399	626	443	638	542	548	638	542
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	636	3539	1583	888	3539	1583	1017	1863	1583	1148	1863	1583
Grp Volume(v), veh/h	25	385	123	164	859	7	160	126	102	5	273	87
Grp Sat Flow(s),veh/h/ln	636	1770	1583	888	1770	1583	1017	1863	1583	1148	1863	1583
Q Serve(g_s), s	1.1	2.5	1.7	5.3	6.7	0.1	4.9	1.6	1.6	0.1	3.9	1.3
Cycle Q Clear(g_c), s	7.8	2.5	1.7	7.8	6.7	0.1	8.8	1.6	1.6	1.7	3.9	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	1399	626	495	1399	626	443	638	542	548	638	542
V/C Ratio(X)	0.07	0.28	0.20	0.33	0.61	0.01	0.36	0.20	0.19	0.01	0.43	0.16
Avail Cap(c_a), veh/h	420	1856	830	610	1856	830	629	977	830	757	977	830
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	11.4	7.0	6.8	9.7	8.3	6.3	12.1	8.0	7.9	8.6	8.7	7.8
Incr Delay (d2), s/veh	0.1	0.1	0.2	0.4	0.4	0.0	0.5	0.1	0.2	0.0	0.5	0.1
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	0.2	1.3	0.8	1.3	3.3	0.0	1.4	0.9	0.7	0.0	2.1	0.6
LnGrp Delay(d),s/veh	11.5	7.1	7.0	10.1	8.7	6.3	12.6	8.1	8.1	8.6	9.1	8.0
LnGrp LOS	B	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		533			1030			388			365	
Approach Delay, s/veh		7.3			8.9			9.9			8.9	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.3		18.1		16.3		18.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		10.8		9.8		5.9		9.8				
Green Ext Time (p_c), s		0.9		1.7		1.2		3.8				
Intersection Summary												
HCM 2010 Ctrl Delay				8.7								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

9: Oakdale Rd & Claribel Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	240	93	263	515	44	118	400	129	31	452	333
Future Volume (veh/h)	129	240	93	263	515	44	118	400	129	31	452	333
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	143	267	0	292	572	0	131	444	143	34	502	370
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	447	200	335	759	339	164	1108	354	59	671	571
Arrive On Green	0.10	0.13	0.00	0.19	0.21	0.00	0.09	0.42	0.42	0.03	0.36	0.36
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2640	843	1774	1863	1583
Grp Volume(v), veh/h	143	267	0	292	572	0	131	296	291	34	502	370
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1714	1774	1863	1583
Q Serve(g_s), s	6.1	5.5	0.0	12.4	11.8	0.0	5.6	9.1	9.2	1.5	18.3	15.1
Cycle Q Clear(g_c), s	6.1	5.5	0.0	12.4	11.8	0.0	5.6	9.1	9.2	1.5	18.3	15.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	179	447	200	335	759	339	164	743	719	59	671	571
V/C Ratio(X)	0.80	0.60	0.00	0.87	0.75	0.00	0.80	0.40	0.40	0.57	0.75	0.65
Avail Cap(c_a), veh/h	244	820	367	400	1130	506	194	743	719	137	671	571
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	32.1	0.0	30.6	28.6	0.0	34.5	15.7	15.8	37.0	21.7	20.7
Incr Delay (d2), s/veh	12.3	1.3	0.0	16.4	1.6	0.0	17.7	1.6	1.7	8.4	7.5	5.6
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	3.6	2.8	0.0	7.6	5.9	0.0	3.6	4.7	4.7	0.9	10.7	7.4
LnGrp Delay(d),s/veh	46.5	33.3	0.0	47.0	30.2	0.0	52.2	17.3	17.4	45.4	29.2	26.3
LnGrp LOS	D	C		D	C		D	B	B	D	C	C
Approach Vol, veh/h		410			864			718			906	
Approach Delay, s/veh		37.9			35.9			23.7			28.6	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	37.1	19.2	14.3	11.7	32.5	12.3	21.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.0	30.5	17.5	18.0	8.5	28.0	10.7	24.8				
Max Q Clear Time (g_c+I1), s	13.5	11.2	14.4	7.5	7.6	20.3	8.1	13.8				
Green Ext Time (p_c), s	0.0	3.6	0.3	1.1	0.0	2.9	0.1	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			30.9									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

10: Claribel Ave & Squire-Wells Way

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	223	0	0	479	86	0	0	0	187	0	319
Future Volume (veh/h)	114	223	0	0	479	86	0	0	0	187	0	319
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	133	259	0	0	557	100				217	0	371
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86				0.86	0.86	0.86
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	169	905	0	0	843	151				524	0	467
Arrive On Green	0.10	0.49	0.00	0.00	0.28	0.28				0.30	0.00	0.30
Sat Flow, veh/h	1774	1863	0	0	3094	537				1774	0	1583
Grp Volume(v), veh/h	133	259	0	0	328	329				217	0	371
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1768				1774	0	1583
Q Serve(g_s), s	3.0	3.4	0.0	0.0	6.7	6.8				4.0	0.0	8.9
Cycle Q Clear(g_c), s	3.0	3.4	0.0	0.0	6.7	6.8				4.0	0.0	8.9
Prop In Lane	1.00		0.00	0.00		0.30				1.00		1.00
Lane Grp Cap(c), veh/h	169	905	0	0	497	497				524	0	467
V/C Ratio(X)	0.78	0.29	0.00	0.00	0.66	0.66				0.41	0.00	0.79
Avail Cap(c_a), veh/h	237	1268	0	0	775	774				776	0	693
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	6.3	0.0	0.0	13.0	13.1				11.6	0.0	13.3
Incr Delay (d2), s/veh	10.8	0.2	0.0	0.0	1.5	1.5				0.5	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.8	0.0	0.0	3.5	3.5				2.0	0.0	7.7
LnGrp Delay(d),s/veh	29.0	6.5	0.0	0.0	14.5	14.6				12.2	0.0	17.2
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		392			657						588	
Approach Delay, s/veh		14.1			14.6						15.3	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				24.5		16.6	8.4	16.1				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				28.0		18.0	5.5	18.0				
Max Q Clear Time (g_c+I1), s				5.4		10.9	5.0	8.8				
Green Ext Time (p_c), s				1.5		1.3	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				14.7								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

11: Roselle Ave & Claribel Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	221	151	35	374	43	140	231	15	54	310	41
Future Volume (veh/h)	28	221	151	35	374	43	140	231	15	54	310	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	230	157	36	390	45	146	241	16	56	323	43
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	536	456	67	482	56	189	535	36	91	410	55
Arrive On Green	0.03	0.29	0.29	0.04	0.29	0.29	0.11	0.31	0.31	0.05	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1640	189	1774	1728	115	1774	1611	214
Grp Volume(v), veh/h	29	230	157	36	0	435	146	0	257	56	0	366
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1829	1774	0	1843	1774	0	1825
Q Serve(g_s), s	0.9	5.8	4.5	1.1	0.0	12.7	4.6	0.0	6.4	1.8	0.0	10.8
Cycle Q Clear(g_c), s	0.9	5.8	4.5	1.1	0.0	12.7	4.6	0.0	6.4	1.8	0.0	10.8
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.06	1.00		0.12
Lane Grp Cap(c), veh/h	57	536	456	67	0	537	189	0	570	91	0	465
V/C Ratio(X)	0.51	0.43	0.34	0.53	0.00	0.81	0.77	0.00	0.45	0.61	0.00	0.79
Avail Cap(c_a), veh/h	157	855	727	191	0	875	386	0	1032	222	0	854
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.4	16.6	16.2	27.2	0.0	18.8	25.0	0.0	15.9	26.7	0.0	20.0
Incr Delay (d2), s/veh	6.8	0.5	0.4	6.4	0.0	3.0	6.6	0.0	0.6	6.5	0.0	3.0
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	0.6	3.0	2.0	0.7	0.0	6.8	2.6	0.0	3.4	1.0	0.0	5.8
LnGrp Delay(d),s/veh	34.2	17.2	16.6	33.6	0.0	21.8	31.6	0.0	16.5	33.3	0.0	23.0
LnGrp LOS	C	B	B	C		C	C		B	C		C
Approach Vol, veh/h	416			471			403			422		
Approach Delay, s/veh	18.2			22.7			22.0			24.4		
Approach LOS	B			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	22.3	6.7	21.1	10.6	19.1	6.4	21.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	32.2	6.2	26.4	12.5	26.9	5.1	27.5				
Max Q Clear Time (g_c+I1), s	13.8	8.4	3.1	7.8	6.6	12.8	2.9	14.7				
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.2	1.9	0.0	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay			21.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

12: Terminal Ave & Claribel Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	227	89	3	285	2	93	59	1	5	79	97
Future Volume (veh/h)	22	227	89	3	285	2	93	59	1	5	79	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	24	252	0	3	317	0	103	66	0	6	88	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	535	0	180	301	0	476	188	0	203	439	0
Arrive On Green	0.31	0.31	0.00	0.31	0.16	0.00	0.25	0.25	0.00	0.25	0.25	0.00
Sat Flow, veh/h	82	1724	0	7	1852	0	776	763	0	58	1782	0
Grp Volume(v), veh/h	276	0	0	320	0	0	169	0	0	94	0	0
Grp Sat Flow(s),veh/h/ln	1806	0	0	1858	0	0	1538	0	0	1840	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0	3.2	0.0	0.0	1.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.09		0.00	0.01		0.00	0.61		0.00	0.06		0.00
Lane Grp Cap(c), veh/h	753	0	0	756	0	0	664	0	0	642	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.42	0.00	0.00	0.25	0.00	0.00	0.15	0.00	0.00
Avail Cap(c_a), veh/h	1760	0	0	1823	0	0	1610	0	0	1805	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	0.0	8.4	0.0	0.0	6.4	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
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	1.3	0.0	0.0	1.4	0.0	0.0	0.8	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	6.0	0.0	0.0	8.8	0.0	0.0	6.6	0.0	0.0	6.2	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		276			320			169			94	
Approach Delay, s/veh		6.0			8.8			6.6			6.2	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.5		10.8		9.5		10.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		3.7		4.4		2.8		5.2				
Green Ext Time (p_c), s		0.6		1.2		0.3		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			7.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

13: Claus Rd & Claribel Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	151	34	107	199	37	15	335	99	28	424	79
Future Volume (veh/h)	63	151	34	107	199	37	15	335	99	28	424	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	66	157	35	111	207	39	16	349	103	29	442	82
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	269	229	142	305	260	35	701	596	59	726	617
Arrive On Green	0.06	0.14	0.14	0.08	0.16	0.16	0.02	0.38	0.38	0.03	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	66	157	35	111	207	39	16	349	103	29	442	82
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	1.8	3.9	1.0	3.0	5.1	1.0	0.4	7.1	2.1	0.8	9.3	1.6
Cycle Q Clear(g_c), s	1.8	3.9	1.0	3.0	5.1	1.0	0.4	7.1	2.1	0.8	9.3	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	269	229	142	305	260	35	701	596	59	726	617
V/C Ratio(X)	0.62	0.58	0.15	0.78	0.68	0.15	0.45	0.50	0.17	0.49	0.61	0.13
Avail Cap(c_a), veh/h	180	682	580	198	701	596	180	701	596	180	726	617
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	22.5	19.6	18.4	22.2	19.3	17.6	23.8	11.8	10.2	23.4	12.0	9.7
Incr Delay (d2), s/veh	5.6	2.0	0.3	12.6	2.6	0.3	8.7	2.5	0.6	6.2	3.8	0.4
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	1.0	2.1	0.4	2.0	2.9	0.5	0.3	4.1	1.0	0.5	5.6	0.8
LnGrp Delay(d),s/veh	28.2	21.7	18.7	34.8	22.0	17.9	32.6	14.3	10.9	29.6	15.8	10.1
LnGrp LOS	C	C	B	C	C	B	C	B	B	C	B	B
Approach Vol, veh/h	258		357			468			553			
Approach Delay, s/veh	22.9		25.5			14.2			15.7			
Approach LOS	C		C			B			B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	23.0	8.4	11.6	5.5	23.7	7.5	12.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	5.5	18.0	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I2), s	12.8	9.1	5.0	5.9	2.4	11.3	3.8	7.1				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.7	0.0	1.6	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			18.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

14: Oakdale Rd & Claratina Ave

10/30/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	14	227	467	624	772	50		
Future Volume (veh/h)	14	227	467	624	772	50		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	16	0	519	693	858	56		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	31	527	559	1674	938	61		
Arrive On Green	0.02	0.00	0.32	0.90	0.54	0.54		
Sat Flow, veh/h	1774	1583	1774	1863	1730	113		
Grp Volume(v), veh/h	16	0	519	693	0	914		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1843		
Q Serve(g_s), s	1.0	0.0	30.5	6.5	0.0	48.6		
Cycle Q Clear(g_c), s	1.0	0.0	30.5	6.5	0.0	48.6		
Prop In Lane	1.00	1.00	1.00			0.06		
Lane Grp Cap(c), veh/h	31	527	559	1674	0	999		
V/C Ratio(X)	0.51	0.00	0.93	0.41	0.00	0.92		
Avail Cap(c_a), veh/h	301	768	732	2120	0	1260		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	52.5	0.0	35.7	0.9	0.0	22.4		
Incr Delay (d2), s/veh	12.3	0.0	15.4	0.2	0.0	9.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.6	0.0	17.4	3.2	0.0	27.1		
LnGrp Delay(d),s/veh	64.8	0.0	51.1	1.0	0.0	31.4		
LnGrp LOS	E		D	A		C		
Approach Vol, veh/h	16			1212	914			
Approach Delay, s/veh	64.8			22.5	31.4			
Approach LOS	E			C	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		101.4		6.4	38.5	62.9		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		122.7		18.3	44.5	73.7		
Max Q Clear Time (g_c+l1), s		8.5		3.0	32.5	50.6		
Green Ext Time (p_c), s		5.9		0.0	1.4	7.8		
Intersection Summary								
HCM 2010 Ctrl Delay			26.6					
HCM 2010 LOS			C					
Notes								

HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

15: Oakdale Rd & Riverbank Center Access

10/30/2017

	            											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	65	0	36	16	466	13	71	707	33
Future Volume (veh/h)	0	0	20	65	0	36	16	466	13	71	707	33
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	0	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h				76	0	42	19	542	15	83	822	38
Adj No. of Lanes				2	0	1	1	2	1	1	2	0
Peak Hour Factor				0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	2
Cap, veh/h				321	0	148	42	1695	758	136	1831	85
Arrive On Green				0.09	0.00	0.09	0.02	0.48	0.48	0.08	0.53	0.53
Sat Flow, veh/h				3442	0	1583	1774	3539	1583	1774	3445	159
Grp Volume(v), veh/h				76	0	42	19	542	15	83	422	438
Grp Sat Flow(s),veh/h/ln				1721	0	1583	1774	1770	1583	1774	1770	1835
Q Serve(g_s), s				0.8	0.0	0.9	0.4	3.6	0.2	1.7	5.6	5.6
Cycle Q Clear(g_c), s				0.8	0.0	0.9	0.4	3.6	0.2	1.7	5.6	5.6
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h				321	0	148	42	1695	758	136	941	975
V/C Ratio(X)				0.24	0.00	0.28	0.45	0.32	0.02	0.61	0.45	0.45
Avail Cap(c_a), veh/h				1612	0	742	231	1695	758	236	941	975
HCM Platoon Ratio				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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh				16.2	0.0	16.2	18.5	6.2	5.3	17.2	5.5	5.5
Incr Delay (d2), s/veh				0.4	0.0	1.0	7.2	0.5	0.0	4.4	1.5	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
%ile BackOfQ(50%),veh/ln				0.4	0.0	0.4	0.3	1.8	0.1	1.0	3.1	3.2
LnGrp Delay(d),s/veh				16.5	0.0	17.3	25.7	6.7	5.3	21.6	7.1	7.0
LnGrp LOS				B		B	C	A	A	C	A	A
Approach Vol, veh/h					118			576			943	
Approach Delay, s/veh					16.8			7.3			8.3	
Approach LOS					B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	7.4	22.9			5.4	24.9		8.1				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s	18.4				5.0	18.5		18.0				
Max Q Clear Time (g_c+I13), s	5.6				2.4	7.6		2.9				
Green Ext Time (p_c), s	0.0	3.0			0.0	4.1		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			8.6									
HCM 2010 LOS			A									

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

EPAP AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	204	2.0	0.569	16.7	LOS C	2.5	62.4	0.67	0.73	29.3
8	T1	208	2.0	0.569	16.5	LOS C	2.5	62.4	0.66	0.72	29.1
18	R2	274	2.0	0.569	16.1	LOS C	2.4	60.2	0.64	0.71	29.9
Approach		686	2.0	0.569	16.4	LOS C	2.5	62.4	0.65	0.72	29.5
East: Sylvan Ave											
1	L2	317	2.0	0.674	17.3	LOS C	4.0	100.8	0.67	0.73	29.4
6	T1	595	2.0	0.674	17.1	LOS C	4.0	100.8	0.65	0.71	31.0
16	R2	127	2.0	0.674	16.9	LOS C	3.8	96.5	0.65	0.71	29.8
Approach		1039	2.0	0.674	17.1	LOS C	4.0	100.8	0.66	0.72	30.3
North: Roselle Ave											
7	L2	214	2.0	0.593	21.1	LOS C	2.4	61.2	0.76	0.85	27.5
4	T1	291	2.0	0.593	20.4	LOS C	2.4	61.2	0.75	0.83	28.2
14	R2	71	2.0	0.593	20.2	LOS C	2.3	59.4	0.74	0.82	28.5
Approach		576	2.0	0.593	20.6	LOS C	2.4	61.2	0.75	0.84	28.0
West: Sylvan Ave											
5	L2	78	2.0	0.627	18.9	LOS C	2.9	74.8	0.69	0.77	29.6
2	T1	532	2.0	0.627	18.7	LOS C	2.9	74.8	0.69	0.76	30.5
12	R2	147	2.0	0.627	18.3	LOS C	2.8	72.2	0.67	0.74	29.3
Approach		757	2.0	0.627	18.6	LOS C	2.9	74.8	0.68	0.76	30.2
All Vehicles		3058	2.0	0.674	18.0	LOS C	4.0	100.8	0.68	0.75	29.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

17: Oakdale Rd & Sylvan Ave

10/30/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	382	235	119	519	359	507	811	54	338	753	116
Future Volume (veh/h)	68	382	235	119	519	359	507	811	54	338	753	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	80	449	276	140	611	422	596	954	64	398	886	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	910	407	211	910	407	794	2068	139	700	2174	973
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.61	0.61	0.61	0.61	0.61	0.00
Sat Flow, veh/h	544	3539	1583	726	3539	1583	1212	3367	226	1070	3539	1583
Grp Volume(v), veh/h	80	449	276	140	611	422	596	501	517	398	886	0
Grp Sat Flow(s),veh/h/ln	544	1770	1583	726	1770	1583	606	1770	1823	535	1770	1583
Q Serve(g_s), s	7.1	7.6	11.0	10.4	10.9	18.0	34.0	10.7	10.7	22.3	9.0	0.0
Cycle Q Clear(g_c), s	18.0	7.6	11.0	18.0	10.9	18.0	43.0	10.7	10.7	33.0	9.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	158	910	407	211	910	407	794	1087	1120	700	2174	973
V/C Ratio(X)	0.51	0.49	0.68	0.66	0.67	1.04	0.75	0.46	0.46	0.57	0.41	0.00
Avail Cap(c_a), veh/h	158	910	407	211	910	407	794	1087	1120	700	2174	973
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	0.00
Uniform Delay (d), s/veh	32.5	22.1	23.4	31.0	23.3	26.0	18.2	7.3	7.3	16.1	6.9	0.0
Incr Delay (d2), s/veh	2.6	0.4	4.5	7.5	1.9	54.4	6.5	1.4	1.4	3.3	0.6	0.0
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	1.6	3.7	5.3	3.1	5.5	14.0	6.4	5.6	5.7	3.6	4.5	0.0
LnGrp Delay(d),s/veh	35.1	22.5	27.9	38.5	25.3	80.4	24.7	8.7	8.6	19.5	7.5	0.0
LnGrp LOS	D	C	C	D	C	F	C	A	A	B	A	
Approach Vol, veh/h	805			1173			1614			1284		
Approach Delay, s/veh	25.6			46.7			14.6			11.2		
Approach LOS	C			D			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	47.5		22.5		47.5		22.5					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	43.0		18.0		43.0		18.0					
Max Q Clear Time (g_c+I1), s	45.0		20.0		35.0		20.0					
Green Ext Time (p_c), s	0.0		0.0		5.7		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	23.2											
HCM 2010 LOS	C											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

EPAP AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	378	2.0	0.429	9.3	LOS A	1.6	39.5	0.42	0.38	31.5
8	T1	320	2.0	0.375	8.5	LOS A	1.3	33.6	0.41	0.37	33.5
18	R2	4	2.0	0.375	8.5	LOS A	1.3	33.6	0.41	0.37	33.4
Approach		702	2.0	0.429	8.9	LOS A	1.6	39.5	0.42	0.38	32.4
East: Claratina Ave											
1	L2	15	2.0	0.446	12.7	LOS B	1.7	42.3	0.60	0.63	32.6
6	T1	533	2.0	0.446	12.5	LOS B	1.7	42.3	0.59	0.62	33.5
16	R2	13	2.0	0.446	12.3	LOS B	1.6	40.6	0.57	0.61	31.8
Approach		561	2.0	0.446	12.5	LOS B	1.7	42.3	0.59	0.62	33.4
North: Coffee Ave											
7	L2	9	2.0	0.491	15.3	LOS C	1.9	47.4	0.67	0.72	31.1
4	T1	475	2.0	0.491	15.0	LOS B	1.9	47.4	0.66	0.71	30.5
14	R2	65	2.0	0.491	14.7	LOS B	1.8	45.7	0.64	0.69	30.6
Approach		549	2.0	0.491	15.0	LOS B	1.9	47.4	0.65	0.71	30.5
West: Claratina Ave											
5	L2	70	2.0	0.348	9.0	LOS A	1.2	29.6	0.48	0.49	33.8
2	T1	246	2.0	0.348	9.0	LOS A	1.2	29.6	0.48	0.48	34.8
12	R2	218	2.0	0.348	8.8	LOS A	1.1	28.2	0.46	0.46	33.3
Approach		534	2.0	0.348	8.9	LOS A	1.2	29.6	0.47	0.47	34.0
All Vehicles		2346	2.0	0.491	11.2	LOS B	1.9	47.4	0.52	0.53	32.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary AM PEAK EXISTING+APPROVED PROJECTS

19: Oakdale Rd & Mable Ave

10/30/2017

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	111	9	139	20	8	19	117	967	12	18	795	105				
Future Volume (veh/h)	111	9	139	20	8	19	117	967	12	18	795	105				
Number	7	4	14	3	8	18	5	2	12	1	6	16				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863				
Adj Flow Rate, veh/h	121	10	151	22	9	21	127	1051	13	20	864	0				
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	212	12	179	28	12	27	155	1232	15	36	2137	956				
Arrive On Green	0.12	0.12	0.12	0.04	0.04	0.04	0.09	0.67	0.67	0.02	0.60	0.00				
Sat Flow, veh/h	1774	99	1499	721	295	689	1774	1836	23	1774	3539	1583				
Grp Volume(v), veh/h	121	0	161	52	0	0	127	0	1064	20	864	0				
Grp Sat Flow(s),veh/h/ln	1774	0	1598	1705	0	0	1774	0	1859	1774	1770	1583				
Q Serve(g_s), s	7.7	0.0	11.8	3.6	0.0	0.0	8.4	0.0	52.9	1.3	15.4	0.0				
Cycle Q Clear(g_c), s	7.7	0.0	11.8	3.6	0.0	0.0	8.4	0.0	52.9	1.3	15.4	0.0				
Prop In Lane	1.00		0.94	0.42		0.40	1.00		0.01	1.00		1.00				
Lane Grp Cap(c), veh/h	212	0	191	67	0	0	155	0	1247	36	2137	956				
V/C Ratio(X)	0.57	0.00	0.84	0.77	0.00	0.00	0.82	0.00	0.85	0.56	0.40	0.00				
Avail Cap(c_a), veh/h	271	0	244	257	0	0	273	0	1247	75	2137	956				
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00				
Uniform Delay (d), s/veh	49.9	0.0	51.7	57.1	0.0	0.0	53.9	0.0	15.2	58.3	12.5	0.0				
Incr Delay (d2), s/veh	2.4	0.0	18.7	16.9	0.0	0.0	10.3	0.0	7.5	12.7	0.6	0.0				
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	3.9	0.0	6.2	2.0	0.0	0.0	4.6	0.0	29.5	0.8	7.6	0.0				
LnGrp Delay(d),s/veh	52.3	0.0	70.5	74.0	0.0	0.0	64.1	0.0	22.7	71.0	13.0	0.0				
LnGrp LOS	D		E	E			E		C	E	B					
Approach Vol, veh/h	282			52			1191			884						
Approach Delay, s/veh	62.7			74.0			27.2			14.3						
Approach LOS	E			E			C			B						
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2			4	5	6	8								
Phs Duration (G+Y+Rc), s	6.9	85.0			18.8	15.0	77.0	9.2								
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5	4.5	4.5								
Max Green Setting (Gmax), s	5.1	80.5			18.3	18.5	67.1	18.1								
Max Q Clear Time (g_c+13), s	13.3	54.9			13.8	10.4	17.4	5.6								
Green Ext Time (p_c), s	0.0	9.2			0.5	0.2	6.6	0.1								
Intersection Summary																
HCM 2010 Ctrl Delay				27.6												
HCM 2010 LOS				C												

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	768	91	69	505	0	28	0	108	0	0	0
Future Vol, veh/h	0	768	91	69	505	0	28	0	108	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	826	98	74	543	0	30	0	116	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	924	0	0	1566	1566	875
Stage 1	-	-	-	-	-	-	875	875	-
Stage 2	-	-	-	-	-	-	691	691	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	739	-	0	122	111	349
Stage 1	0	-	-	-	-	0	408	367	-
Stage 2	0	-	-	-	-	0	497	446	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	739	-	-	110	0	349
Mov Cap-2 Maneuver	-	-	-	-	-	-	110	0	-
Stage 1	-	-	-	-	-	-	367	0	-
Stage 2	-	-	-	-	-	-	497	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	40.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	-	-	739	-
HCM Lane V/C Ratio	0.607	-	-	0.1	-
HCM Control Delay (s)	40.6	-	-	10.4	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	3.6	-	-	0.3	-

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

EPAP PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	30	2.0	0.242	9.0	LOS A	0.7	17.0	0.52	0.52	33.5
18	R2	117	2.0	0.242	9.0	LOS A	0.7	17.0	0.52	0.52	32.6
Approach		148	2.0	0.242	9.0	LOS A	0.7	17.0	0.52	0.52	32.8
East: Patterson Ave											
1	L2	75	2.0	0.517	8.7	LOS A	2.4	60.5	0.13	0.05	34.3
6	T1	549	2.0	0.517	8.7	LOS A	2.4	60.5	0.13	0.05	35.2
Approach		624	2.0	0.517	8.7	LOS A	2.4	60.5	0.13	0.05	35.1
West: Patterson Ave											
2	T1	835	2.0	0.811	18.9	LOS C	7.7	196.8	0.47	0.26	30.7
12	R2	99	2.0	0.811	18.9	LOS C	7.7	196.8	0.47	0.26	29.2
Approach		934	2.0	0.811	18.9	LOS C	7.7	196.8	0.47	0.26	30.5
All Vehicles		1705	2.0	0.811	14.3	LOS B	7.7	196.8	0.35	0.20	32.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	605	171	358	409	31	130	126	292	68	93	61
Future Volume (veh/h)	114	605	171	358	409	31	130	126	292	68	93	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	124	658	186	389	445	34	141	137	317	74	101	66
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	732	207	474	1057	80	175	575	707	95	491	417
Arrive On Green	0.09	0.27	0.27	0.14	0.32	0.32	0.10	0.31	0.31	0.05	0.26	0.26
Sat Flow, veh/h	1774	2726	770	3442	3334	254	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	124	427	417	389	236	243	141	137	317	74	101	66
Grp Sat Flow(s),veh/h/ln	1774	1770	1727	1721	1770	1818	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.3	18.1	18.1	8.5	8.2	8.2	6.0	4.3	10.8	3.2	3.3	2.5
Cycle Q Clear(g_c), s	5.3	18.1	18.1	8.5	8.2	8.2	6.0	4.3	10.8	3.2	3.3	2.5
Prop In Lane	1.00		0.45	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	475	463	474	561	576	175	575	707	95	491	417
V/C Ratio(X)	0.78	0.90	0.90	0.82	0.42	0.42	0.80	0.24	0.45	0.78	0.21	0.16
Avail Cap(c_a), veh/h	276	489	478	509	561	576	194	575	707	155	491	417
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	34.7	27.4	27.4	32.6	20.9	20.9	34.3	20.0	14.9	36.3	22.3	22.0
Incr Delay (d2), s/veh	8.3	19.0	19.5	9.8	0.5	0.5	19.7	1.0	2.1	12.8	0.9	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	3.0	11.3	11.1	4.7	4.1	4.2	3.9	2.3	5.1	1.9	1.8	1.2
LnGrp Delay(d),s/veh	43.0	46.4	47.0	42.4	21.4	21.4	54.0	21.0	16.9	49.1	23.2	22.8
LnGrp LOS	D	D	D	D	C	C	D	C	B	D	C	C
Approach Vol, veh/h	968		868				595		241			
Approach Delay, s/veh	46.2		30.8				26.7		31.1			
Approach LOS	D		C				C		C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	28.5	15.2	25.4	12.2	25.0	11.4	29.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.8	22.2	11.5	21.5	8.5	20.5	12.1	20.9				
Max Q Clear Time (g_c+I1), s	5.2	12.8	10.5	20.1	8.0	5.3	7.3	10.2				
Green Ext Time (p_c), s	0.0	1.3	0.2	0.8	0.0	0.6	0.1	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay	35.5											
HCM 2010 LOS	D											

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	65	0	10	0	128	96	23	123	0
Future Vol, veh/h	0	0	0	65	0	10	0	128	96	23	123	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	69	0	11	0	136	102	24	131	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				366	366	187	-	0	0	238	0	0
Stage 1				187	187	-	-	-	-	-	-	-
Stage 2				179	179	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				634	562	855	0	-	-	1329	-	0
Stage 1				845	745	-	0	-	-	-	-	0
Stage 2				852	751	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				622	0	855	-	-	-	1329	-	-
Mov Cap-2 Maneuver				622	0	-	-	-	-	-	-	-
Stage 1				829	0	-	-	-	-	-	-	-
Stage 2				852	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				11.4		0			1.2			
HCM LOS				B								
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT							
Capacity (veh/h)	-	-	645	1329	-							
HCM Lane V/C Ratio	-	-	0.124	0.018	-							
HCM Control Delay (s)	-	-	11.4	7.8	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-							

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	81	11	78	45	96	7	550	117	104	437	26
Future Volume (veh/h)	32	81	11	78	45	96	7	550	117	104	437	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	33	84	11	80	46	99	7	567	121	107	451	27
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	187	159	121	245	208	16	1108	236	140	785	47
Arrive On Green	0.04	0.10	0.10	0.07	0.13	0.13	0.01	0.38	0.38	0.08	0.45	0.45
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2905	618	1774	1740	104
Grp Volume(v), veh/h	33	84	11	80	46	99	7	345	343	107	0	478
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1754	1774	0	1844
Q Serve(g_s), s	0.9	2.1	0.3	2.1	1.1	2.8	0.2	7.3	7.3	2.9	0.0	9.3
Cycle Q Clear(g_c), s	0.9	2.1	0.3	2.1	1.1	2.8	0.2	7.3	7.3	2.9	0.0	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.35	1.00		0.06
Lane Grp Cap(c), veh/h	66	187	159	121	245	208	16	675	669	140	0	832
V/C Ratio(X)	0.50	0.45	0.07	0.66	0.19	0.48	0.43	0.51	0.51	0.77	0.00	0.57
Avail Cap(c_a), veh/h	183	691	588	183	691	588	183	675	669	201	0	832
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	0.00	1.00
Uniform Delay (d), s/veh	22.9	20.5	19.8	22.1	18.7	19.5	23.9	11.5	11.5	21.9	0.0	9.9
Incr Delay (d2), s/veh	5.8	1.7	0.2	6.1	0.4	1.7	16.4	2.7	2.8	10.2	0.0	2.9
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	0.5	1.1	0.1	1.2	0.6	1.3	0.2	4.1	4.0	1.8	0.0	5.3
LnGrp Delay(d),s/veh	28.7	22.2	19.9	28.1	19.1	21.2	40.3	14.3	14.3	32.1	0.0	12.7
LnGrp LOS	C	C	B	C	B	C	D	B	B	C		B
Approach Vol, veh/h		128			225			695			585	
Approach Delay, s/veh		23.7			23.2			14.6			16.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	23.0	7.8	9.4	4.9	26.4	6.3	10.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	18.5	5.0	18.0	5.0	19.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	4.9	9.3	4.1	4.1	2.2	11.3	2.9	4.8				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	1.8	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			17.1									
HCM 2010 LOS			B									
Notes												

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	15	0	2	0	231	17	6	186	0
Future Vol, veh/h	0	0	0	15	0	2	0	231	17	6	186	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	17	0	2	0	257	19	7	207	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				488	488	267	-	0	0	276	0	0
Stage 1				267	267	-	-	-	-	-	-	-
Stage 2				221	221	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				539	480	772	0	-	-	1287	-	0
Stage 1				778	688	-	0	-	-	-	-	0
Stage 2				816	720	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				536	0	772	-	-	-	1287	-	-
Mov Cap-2 Maneuver				536	0	-	-	-	-	-	-	-
Stage 1				773	0	-	-	-	-	-	-	-
Stage 2				816	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				11.7		0			0.2			
HCM LOS				B								
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT							
Capacity (veh/h)	-	-	556	1287	-							
HCM Lane V/C Ratio	-	-	0.034	0.005	-							
HCM Control Delay (s)	-	-	11.7	7.8	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.1	0	-							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1	8	187	0	48	12	680	287	85	437	8
Future Volume (veh/h)	16	1	8	187	0	48	12	680	287	85	437	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	0	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	17	1	9	201	0	52	13	731	309	91	470	9
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	0	2	2	2	2	2	2	2
Cap, veh/h	37	0	48	250	0	0	29	1111	469	117	1802	34
Arrive On Green	0.02	0.03	0.03	0.14	0.00	0.00	0.02	0.46	0.46	0.07	0.51	0.51
Sat Flow, veh/h	1774	0	1583	1774	201		1774	2426	1025	1774	3552	68
Grp Volume(v), veh/h	17	0	9	201	33.7		13	533	507	91	234	245
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	C		1774	1770	1682	1774	1770	1851
Q Serve(g_s), s	0.6	0.0	0.3	6.5			0.4	13.8	13.8	3.0	4.4	4.4
Cycle Q Clear(g_c), s	0.6	0.0	0.3	6.5			0.4	13.8	13.8	3.0	4.4	4.4
Prop In Lane	1.00		1.00	1.00			1.00		0.61	1.00		0.04
Lane Grp Cap(c), veh/h	37	0	48	250			29	810	770	117	898	939
V/C Ratio(X)	0.46	0.00	0.19	0.80			0.45	0.66	0.66	0.78	0.26	0.26
Avail Cap(c_a), veh/h	150	0	483	346			150	810	770	165	898	939
HCM Platoon Ratio	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	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	0.0	27.9	24.5			28.7	12.4	12.4	27.1	8.2	8.3
Incr Delay (d2), s/veh	8.9	0.0	1.9	9.2			10.6	4.2	4.4	14.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.2	3.8			0.3	7.6	7.3	1.9	2.3	2.4
LnGrp Delay(d),s/veh	37.5	0.0	29.7	33.7			39.3	16.6	16.8	41.3	9.0	8.9
LnGrp LOS	D		C	C			D	B	B	D	A	A
Approach Vol, veh/h	26							1053			570	
Approach Delay, s/veh	34.8							17.0			14.1	
Approach LOS	C							B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7					
Phs Duration (G+Y+Rc), s	8.4	31.5	12.8	6.3	5.5	34.4	5.7					
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5					
Max Green Setting (Gmax), s	5.5	27.0	11.5	18.0	5.0	27.5	5.0					
Max Q Clear Time (g_c+I1), s	5.0	15.8	8.5	2.3	2.4	6.4	2.6					
Green Ext Time (p_c), s	0.0	5.2	0.2	0.0	0.0	2.8	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay				18.1								
HCM 2010 LOS	B											
Notes												

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	683	141	159	510	70	216	526	299	184	517	90
Future Volume (veh/h)	195	683	141	159	510	70	216	526	299	184	517	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	214	751	155	175	560	77	237	578	329	202	568	99
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	252	860	385	211	779	349	275	969	622	240	899	402
Arrive On Green	0.14	0.24	0.24	0.12	0.22	0.22	0.16	0.27	0.27	0.14	0.25	0.25
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	214	751	155	175	560	77	237	578	329	202	568	99
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.3	16.0	6.5	7.6	11.5	3.1	10.3	11.2	12.5	8.7	11.2	3.9
Cycle Q Clear(g_c), s	9.3	16.0	6.5	7.6	11.5	3.1	10.3	11.2	12.5	8.7	11.2	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	860	385	211	779	349	275	969	622	240	899	402
V/C Ratio(X)	0.85	0.87	0.40	0.83	0.72	0.22	0.86	0.60	0.53	0.84	0.63	0.25
Avail Cap(c_a), veh/h	259	899	402	214	809	362	282	969	622	259	899	402
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	32.9	28.6	25.0	33.9	28.4	25.2	32.4	24.8	18.3	33.2	26.1	23.4
Incr Delay (d2), s/veh	22.1	9.2	0.7	22.6	3.0	0.3	22.5	2.7	3.2	20.2	3.4	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	6.1	8.9	2.9	5.0	5.9	1.4	6.7	5.8	6.0	5.6	5.9	1.9
LnGrp Delay(d),s/veh	55.1	37.8	25.7	56.5	31.4	25.5	54.9	27.5	21.5	53.4	29.4	24.8
LnGrp LOS	E	D	C	E	C	C	D	C	C	D	C	C
Approach Vol, veh/h	1120					812		1144		869		
Approach Delay, s/veh	39.4					36.3		31.5		34.5		
Approach LOS	D					D		C		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	26.0	13.9	23.6	16.7	24.5	15.7	21.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	1.5	21.0	9.5	20.0	12.5	20.0	11.5	18.0				
Max Q Clear Time (g_c+110), s	14.5	9.6	18.0	12.3	13.2	11.3	13.5					
Green Ext Time (p_c), s	0.0	2.8	0.0	1.1	0.0	2.3	0.0	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay	35.4											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary

8: Coffee Rd & Claribel Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	869	237	104	522	5	146	157	193	7	148	35
Future Volume (veh/h)	86	869	237	104	522	5	146	157	193	7	148	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	924	252	111	555	5	155	167	205	7	157	37
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	1214	543	142	1253	560	198	430	366	16	240	314
Arrive On Green	0.07	0.34	0.34	0.08	0.35	0.35	0.11	0.23	0.23	0.01	0.13	0.13
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	91	924	252	111	555	5	155	167	205	7	157	37
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.7	12.4	6.7	3.3	6.4	0.1	4.6	4.1	6.1	0.2	4.3	1.0
Cycle Q Clear(g_c), s	2.7	12.4	6.7	3.3	6.4	0.1	4.6	4.1	6.1	0.2	4.3	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	1214	543	142	1253	560	198	430	366	16	240	314
V/C Ratio(X)	0.74	0.76	0.46	0.78	0.44	0.01	0.78	0.39	0.56	0.43	0.65	0.12
Avail Cap(c_a), veh/h	312	1489	666	216	1297	580	282	801	681	166	679	687
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	24.4	15.6	13.7	24.1	13.2	11.2	23.1	17.4	18.2	26.4	22.2	17.6
Incr Delay (d2), s/veh	8.4	1.9	0.6	9.8	0.2	0.0	8.9	0.6	1.3	16.6	3.0	0.2
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	1.6	6.3	3.0	2.0	3.1	0.0	2.7	2.2	2.8	0.2	2.4	0.5
LnGrp Delay(d),s/veh	32.8	17.5	14.3	33.9	13.5	11.2	32.1	17.9	19.5	43.0	25.2	17.8
LnGrp LOS	C	B	B	C	B	B	C	B	B	D	C	B
Approach Vol, veh/h	1267				671				527		201	
Approach Delay, s/veh	18.0				16.9				22.7		24.4	
Approach LOS	B				B				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.0	16.9	8.8	22.9	10.5	11.4	8.2	23.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	23.0	6.5	22.5	8.5	19.5	9.4	19.6				
Max Q Clear Time (g_c+I2), s	12.2	8.1	5.3	14.4	6.6	6.3	4.7	8.4				
Green Ext Time (p_c), s	0.0	1.2	0.0	3.9	0.1	0.6	0.1	2.4				
Intersection Summary												
HCM 2010 Ctrl Delay			19.1									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	533	219	297	378	50	83	571	243	25	367	180
Future Volume (veh/h)	328	533	219	297	378	50	83	571	243	25	367	180
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	342	555	0	309	394	0	86	595	253	26	382	188
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	385	724	324	351	656	293	110	781	332	50	537	456
Arrive On Green	0.22	0.20	0.00	0.20	0.19	0.00	0.06	0.32	0.32	0.03	0.29	0.29
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2422	1029	1774	1863	1583
Grp Volume(v), veh/h	342	555	0	309	394	0	86	435	413	26	382	188
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1681	1774	1863	1583
Q Serve(g_s), s	13.6	10.8	0.0	12.3	7.4	0.0	3.5	16.1	16.1	1.1	13.4	7.0
Cycle Q Clear(g_c), s	13.6	10.8	0.0	12.3	7.4	0.0	3.5	16.1	16.1	1.1	13.4	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	385	724	324	351	656	293	110	570	542	50	537	456
V/C Ratio(X)	0.89	0.77	0.00	0.88	0.60	0.00	0.78	0.76	0.76	0.52	0.71	0.41
Avail Cap(c_a), veh/h	426	972	435	377	875	391	134	570	542	124	537	456
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	27.3	0.0	28.4	27.2	0.0	33.7	22.2	22.2	34.9	23.2	20.9
Incr Delay (d2), s/veh	18.6	2.6	0.0	19.7	0.9	0.0	21.1	9.3	9.8	8.2	7.8	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	5.5	0.0	7.9	3.7	0.0	2.3	9.3	8.9	0.6	8.1	3.4
LnGrp Delay(d),s/veh	46.2	29.9	0.0	48.0	28.1	0.0	54.8	31.5	32.0	43.1	31.0	23.7
LnGrp LOS	D	C		D	C		D	C	C	D	C	C
Approach Vol, veh/h		897			703			934			596	
Approach Delay, s/veh		36.1			36.9			33.8			29.2	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	28.0	18.9	19.4	9.0	25.5	20.3	18.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	21.4	15.5	20.0	5.5	21.0	17.5	18.0				
Max Q Clear Time (g_c+I1), s	13.6	18.1	14.3	12.8	5.5	15.4	15.6	9.4				
Green Ext Time (p_c), s	0.0	1.7	0.1	2.1	0.0	1.5	0.2	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			34.3									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					 							
Traffic Volume (veh/h)	261	359	0	0	390	146	0	0	0	155	0	178
Future Volume (veh/h)	261	359	0	0	390	146	0	0	0	155	0	178
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	275	378	0	0	411	154				163	0	187
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	347	1081	0	0	672	249				321	0	287
Arrive On Green	0.20	0.58	0.00	0.00	0.27	0.27				0.18	0.00	0.18
Sat Flow, veh/h	1774	1863	0	0	2623	937				1774	0	1583
Grp Volume(v), veh/h	275	378	0	0	286	279				163	0	187
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1697				1774	0	1583
Q Serve(g_s), s	5.6	4.0	0.0	0.0	5.3	5.4				3.1	0.0	4.1
Cycle Q Clear(g_c), s	5.6	4.0	0.0	0.0	5.3	5.4				3.1	0.0	4.1
Prop In Lane	1.00		0.00	0.00		0.55				1.00		1.00
Lane Grp Cap(c), veh/h	347	1081	0	0	470	451				321	0	287
V/C Ratio(X)	0.79	0.35	0.00	0.00	0.61	0.62				0.51	0.00	0.65
Avail Cap(c_a), veh/h	494	1629	0	0	844	809				846	0	755
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	4.2	0.0	0.0	12.1	12.2				13.9	0.0	14.3
Incr Delay (d2), s/veh	5.7	0.2	0.0	0.0	1.3	1.4				1.2	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.1	0.0	0.0	2.7	2.7				1.6	0.0	3.7
LnGrp Delay(d),s/veh	20.2	4.4	0.0	0.0	13.4	13.6				15.2	0.0	16.8
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		653			565						350	
Approach Delay, s/veh		11.0			13.5						16.1	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				26.4		11.3	11.9	14.5				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				33.0		18.0	10.5	18.0				
Max Q Clear Time (g_c+I1), s				6.0		6.1	7.6	7.4				
Green Ext Time (p_c), s				2.4		0.9	0.2	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			13.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	381	82	14	357	75	134	233	25	62	247	41
Future Volume (veh/h)	28	381	82	14	357	75	134	233	25	62	247	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	389	84	14	364	77	137	238	26	63	252	42
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	579	649	31	440	93	176	423	46	103	335	56
Arrive On Green	0.03	0.31	0.31	0.02	0.30	0.30	0.10	0.26	0.26	0.06	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1492	316	1774	1651	180	1774	1557	260
Grp Volume(v), veh/h	29	389	84	14	0	441	137	0	264	63	0	294
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1807	1774	0	1831	1774	0	1817
Q Serve(g_s), s	0.8	9.2	1.7	0.4	0.0	11.5	3.8	0.0	6.3	1.7	0.0	7.6
Cycle Q Clear(g_c), s	0.8	9.2	1.7	0.4	0.0	11.5	3.8	0.0	6.3	1.7	0.0	7.6
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.10	1.00		0.14
Lane Grp Cap(c), veh/h	59	579	649	31	0	534	176	0	469	103	0	391
V/C Ratio(X)	0.49	0.67	0.13	0.45	0.00	0.83	0.78	0.00	0.56	0.61	0.00	0.75
Avail Cap(c_a), veh/h	180	725	773	176	0	700	264	0	756	232	0	718
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	15.1	9.3	24.5	0.0	16.5	22.2	0.0	16.3	23.2	0.0	18.5
Incr Delay (d2), s/veh	6.3	1.7	0.1	9.7	0.0	6.3	8.2	0.0	1.1	5.7	0.0	2.9
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	0.5	4.9	0.7	0.3	0.0	6.6	2.3	0.0	3.3	1.0	0.0	4.2
LnGrp Delay(d),s/veh	30.2	16.8	9.4	34.2	0.0	22.8	30.4	0.0	17.3	28.9	0.0	21.4
LnGrp LOS	C	B	A	C		C	C		B	C		C
Approach Vol, veh/h		502			455			401			357	
Approach Delay, s/veh		16.4			23.2			21.8			22.8	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	17.4	5.4	20.1	9.5	15.3	6.2	19.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.6	20.8	5.0	19.6	7.5	19.9	5.1	19.5				
Max Q Clear Time (g_c+I1), s	13.5	8.3	2.4	11.2	5.8	9.6	2.8	13.5				
Green Ext Time (p_c), s	0.0	1.2	0.0	1.7	0.1	1.2	0.0	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay				20.8								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	90	327	51	0	286	7	102	87	0	4	49	75
Future Volume (veh/h)	90	327	51	0	286	7	102	87	0	4	49	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	96	348	0	0	304	0	109	93	0	4	52	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	258	551	0	0	553	0	384	191	0	167	397	0
Arrive On Green	0.42	0.42	0.00	0.00	0.30	0.00	0.22	0.22	0.00	0.22	0.22	0.00
Sat Flow, veh/h	200	1323	0	0	1863	0	727	857	0	57	1780	0
Grp Volume(v), veh/h	444	0	0	0	304	0	202	0	0	56	0	0
Grp Sat Flow(s),veh/h/ln	1522	0	0	0	1863	0	1584	0	0	1838	0	0
Q Serve(g_s), s	1.9	0.0	0.0	0.0	3.4	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	0.0	3.4	0.0	2.8	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.22		0.00	0.00		0.00	0.54		0.00	0.07		0.00
Lane Grp Cap(c), veh/h	810	0	0	0	553	0	575	0	0	564	0	0
V/C Ratio(X)	0.55	0.00	0.00	0.00	0.55	0.00	0.35	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	1523	0	0	0	1380	0	1436	0	0	1572	0	0
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	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	0.0	0.0	0.0	7.4	0.0	8.6	0.0	0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.0	0.9	0.0	0.4	0.0	0.0	0.1	0.0	0.0
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	2.6	0.0	0.0	0.0	1.8	0.0	1.3	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	6.4	0.0	0.0	0.0	8.2	0.0	8.9	0.0	0.0	7.9	0.0	0.0
LnGrp LOS	A				A		A			A		
Approach Vol, veh/h		444			304			202			56	
Approach Delay, s/veh		6.4			8.2			8.9			7.9	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		10.1		14.9		10.1		14.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5		21.5		19.5		21.5				
Max Q Clear Time (g_c+I1), s		4.8		8.3		2.6		6.4				
Green Ext Time (p_c), s		0.8		2.2		0.2		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay				7.6								
HCM 2010 LOS				A								
Notes												

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	202	19	143	184	35	33	435	161	20	370	94
Future Volume (veh/h)	84	202	19	143	184	35	33	435	161	20	370	94
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	222	21	157	202	38	36	478	177	22	407	103
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	303	258	198	386	328	67	720	612	46	697	593
Arrive On Green	0.07	0.16	0.16	0.11	0.21	0.21	0.04	0.39	0.39	0.03	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	92	222	21	157	202	38	36	478	177	22	407	103
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.9	6.5	0.6	5.0	5.5	1.1	1.1	12.2	4.4	0.7	10.0	2.5
Cycle Q Clear(g_c), s	2.9	6.5	0.6	5.0	5.5	1.1	1.1	12.2	4.4	0.7	10.0	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	119	303	258	198	386	328	67	720	612	46	697	593
V/C Ratio(X)	0.77	0.73	0.08	0.79	0.52	0.12	0.53	0.66	0.29	0.48	0.58	0.17
Avail Cap(c_a), veh/h	195	584	496	232	623	529	154	720	612	154	697	593
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	26.4	22.9	20.4	24.9	20.2	18.5	27.1	14.5	12.2	27.6	14.4	12.0
Incr Delay (d2), s/veh	10.2	3.4	0.1	14.9	1.1	0.2	6.4	4.8	1.2	7.6	3.6	0.6
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	1.8	3.6	0.3	3.2	3.0	0.5	0.7	7.2	2.1	0.4	5.8	1.2
LnGrp Delay(d),s/veh	36.6	26.3	20.5	39.8	21.3	18.6	33.5	19.3	13.4	35.2	17.9	12.7
LnGrp LOS	D	C	C	D	C	B	C	B	B	D	B	B
Approach Vol, veh/h	335			397			691			532		
Approach Delay, s/veh	28.7			28.4			18.5			17.6		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	26.7	10.9	13.9	6.7	26.0	8.3	16.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	21.5	7.5	18.0	5.0	21.5	6.3	19.2				
Max Q Clear Time (g_c+I1), s	12.5	14.2	7.0	8.5	3.1	12.0	4.9	7.5				
Green Ext Time (p_c), s	0.0	1.9	0.0	0.8	0.0	1.7	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay	22.0											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

PM EXISTING+APPROVED

10/31/2017

Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	40	525	267	853	830	48		
Future Volume (veh/h)	40	525	267	853	830	48		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	42	0	278	889	865	50		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	69	62	320	1567	1048	61		
Arrive On Green	0.04	0.00	0.18	0.84	0.60	0.60		
Sat Flow, veh/h	1774	1583	1774	1863	1744	101		
Grp Volume(v), veh/h	42	0	278	889	0	915		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1845		
Q Serve(g_s), s	1.7	0.0	11.4	10.9	0.0	29.4		
Cycle Q Clear(g_c), s	1.7	0.0	11.4	10.9	0.0	29.4		
Prop In Lane	1.00	1.00	1.00			0.05		
Lane Grp Cap(c), veh/h	69	62	320	1567	0	1108		
V/C Ratio(X)	0.61	0.00	0.87	0.57	0.00	0.83		
Avail Cap(c_a), veh/h	426	380	353	1567	0	1108		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	35.4	0.0	29.8	1.8	0.0	11.9		
Incr Delay (d2), s/veh	8.4	0.0	18.9	1.5	0.0	7.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.0	0.0	7.2	6.1	0.0	16.9		
LnGrp Delay(d),s/veh	43.8	0.0	48.7	3.3	0.0	18.9		
LnGrp LOS	D		D	A		B		
Approach Vol, veh/h	42			1167	915			
Approach Delay, s/veh	43.8			14.1	18.9			
Approach LOS	D			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		67.5		7.4	18.0	49.5		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		63.0		18.0	14.9	43.6		
Max Q Clear Time (g_c+I1), s		12.9		3.7	13.4	31.4		
Green Ext Time (p_c), s		9.0		0.1	0.1	5.6		
Intersection Summary								
HCM 2010 Ctrl Delay			16.8					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	0	62	74	0	183	107	690	71	164	411	58
Future Volume (veh/h)	96	0	62	74	0	183	107	690	71	164	411	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	100	0	65	77	0	191	111	719	74	171	428	60
Adj No. of Lanes	1	1	1	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	320	399	212	0	256	143	1173	525	216	1163	162
Arrive On Green	0.07	0.00	0.17	0.06	0.00	0.16	0.08	0.33	0.33	0.12	0.37	0.37
Sat Flow, veh/h	1774	1863	1583	3442	0	1583	1774	3539	1583	1774	3121	435
Grp Volume(v), veh/h	100	0	65	77	0	191	111	719	74	171	242	246
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	0	1583	1774	1770	1583	1774	1770	1786
Q Serve(g_s), s	3.2	0.0	1.8	1.2	0.0	6.6	3.5	9.8	1.9	5.4	5.7	5.8
Cycle Q Clear(g_c), s	3.2	0.0	1.8	1.2	0.0	6.6	3.5	9.8	1.9	5.4	5.7	5.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	128	320	399	212	0	256	143	1173	525	216	659	666
V/C Ratio(X)	0.78	0.00	0.16	0.36	0.00	0.75	0.78	0.61	0.14	0.79	0.37	0.37
Avail Cap(c_a), veh/h	170	600	637	300	0	496	219	1173	525	293	659	666
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	16.7	25.9	0.0	23.0	25.9	16.1	13.5	24.5	13.1	13.1
Incr Delay (d2), s/veh	15.5	0.0	0.2	1.0	0.0	4.3	9.2	2.4	0.6	10.0	1.6	1.6
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	2.1	0.0	0.8	0.6	0.0	3.2	2.1	5.1	0.9	3.2	3.0	3.1
LnGrp Delay(d),s/veh	41.7	0.0	16.9	26.9	0.0	27.3	35.1	18.5	14.0	34.5	14.7	14.7
LnGrp LOS	D		B	C		C	D	B	B	C	B	B
Approach Vol, veh/h	165				268		904		659			
Approach Delay, s/veh	32.0				27.2		20.2		19.8			
Approach LOS	C				C		C		B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	1.5	23.5	8.0	14.4	9.1	25.9	8.6	13.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	19.0	5.0	18.5	7.1	21.4	5.5	18.0				
Max Q Clear Time (g_c+I1), s	11.8	11.8	3.2	3.8	5.5	7.8	5.2	8.6				
Green Ext Time (p_c), s	0.1	2.9	0.0	0.1	0.0	2.5	0.0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			22.0									
HCM 2010 LOS			C									
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

EPAP PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	189	2.0	0.468	14.0	LOS B	1.8	44.6	0.63	0.68	30.2
8	T1	267	2.0	0.468	13.7	LOS B	1.8	44.6	0.62	0.66	30.6
18	R2	92	2.0	0.468	13.5	LOS B	1.7	42.9	0.61	0.65	31.0
Approach		549	2.0	0.468	13.8	LOS B	1.8	44.6	0.62	0.66	30.5
East: Sylvan Ave											
1	L2	100	2.0	0.454	11.0	LOS B	1.8	45.8	0.54	0.56	32.8
6	T1	498	2.0	0.454	10.9	LOS B	1.8	45.8	0.52	0.54	34.0
16	R2	90	2.0	0.454	10.8	LOS B	1.7	43.6	0.51	0.53	32.5
Approach		688	2.0	0.454	10.9	LOS B	1.8	45.8	0.52	0.54	33.6
North: Roselle Ave											
7	L2	76	2.0	0.307	10.1	LOS B	1.0	24.3	0.55	0.56	32.5
4	T1	250	2.0	0.307	9.9	LOS A	1.0	24.3	0.53	0.54	32.3
14	R2	54	2.0	0.307	9.7	LOS A	0.9	23.3	0.52	0.53	32.7
Approach		380	2.0	0.307	9.9	LOS A	1.0	24.3	0.54	0.55	32.4
West: Sylvan Ave											
5	L2	57	2.0	0.689	17.2	LOS C	4.3	110.4	0.67	0.73	30.5
2	T1	727	2.0	0.689	17.1	LOS C	4.3	110.4	0.66	0.72	31.2
12	R2	338	2.0	0.689	16.9	LOS C	4.1	105.4	0.64	0.70	29.8
Approach		1122	2.0	0.689	17.1	LOS C	4.3	110.4	0.65	0.71	30.7
All Vehicles		2739	2.0	0.689	13.9	LOS B	4.3	110.4	0.60	0.64	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	695	376	93	493	222	352	812	85	517	785	173
Future Volume (veh/h)	203	695	376	93	493	222	352	812	85	517	785	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	211	724	392	97	514	231	367	846	89	539	818	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	1024	458	164	1024	458	795	1850	195	708	2026	906
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.57	0.57	0.57	0.57	0.57	0.00
Sat Flow, veh/h	713	3539	1583	503	3539	1583	1291	3232	340	1157	3539	1583
Grp Volume(v), veh/h	211	724	392	97	514	231	367	463	472	539	818	0
Grp Sat Flow(s),veh/h/ln	713	1770	1583	503	1770	1583	646	1770	1803	579	1770	1583
Q Serve(g_s), s	11.0	11.9	15.2	6.9	7.8	7.9	14.4	9.9	9.9	27.3	8.4	0.0
Cycle Q Clear(g_c), s	18.8	11.9	15.2	18.8	7.8	7.9	22.7	9.9	9.9	37.2	8.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	231	1024	458	164	1024	458	795	1013	1032	708	2026	906
V/C Ratio(X)	0.91	0.71	0.86	0.59	0.50	0.50	0.46	0.46	0.46	0.76	0.40	0.00
Avail Cap(c_a), veh/h	231	1024	458	164	1024	458	795	1013	1032	708	2026	906
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	0.00
Uniform Delay (d), s/veh	29.4	20.6	21.8	30.6	19.2	19.2	14.0	8.1	8.1	20.2	7.7	0.0
Incr Delay (d2), s/veh	36.8	2.3	14.7	5.5	0.4	0.9	1.9	1.5	1.5	7.6	0.6	0.0
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	6.1	6.1	8.5	2.0	3.8	3.5	2.8	5.2	5.3	5.5	4.1	0.0
LnGrp Delay(d),s/veh	66.2	22.9	36.6	36.1	19.6	20.1	16.0	9.5	9.5	27.7	8.3	0.0
LnGrp LOS	E	C	D	D	B	C	B	A	A	C	A	
Approach Vol, veh/h	1327				842				1302		1357	
Approach Delay, s/veh	33.8				21.6				11.3		16.0	
Approach LOS	C				C				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	41.7		23.3		41.7		23.3					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	37.2		18.8		37.2		18.8					
Max Q Clear Time (g_c+I1), s	24.7		20.8		39.2		20.8					
Green Ext Time (p_c), s	7.4		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			20.6									
HCM 2010 LOS			C									

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

EPAP PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	270	2.0	0.558	15.1	LOS C	2.5	62.7	0.64	0.69	29.7
8	T1	458	2.0	0.558	14.8	LOS B	2.5	62.7	0.62	0.67	30.3
18	R2	9	2.0	0.558	14.7	LOS B	2.4	60.2	0.62	0.67	30.6
Approach		736	2.0	0.558	14.9	LOS B	2.5	62.7	0.63	0.68	30.1
East: Claratina Ave											
1	L2	15	2.0	0.280	10.0	LOS B	0.8	21.3	0.56	0.56	33.8
6	T1	303	2.0	0.280	9.8	LOS A	0.8	21.3	0.54	0.55	34.8
16	R2	13	2.0	0.280	9.6	LOS A	0.8	20.4	0.53	0.54	33.0
Approach		332	2.0	0.280	9.8	LOS A	0.8	21.3	0.54	0.55	34.7
North: Coffee Ave											
7	L2	49	2.0	0.391	10.3	LOS B	1.4	35.4	0.53	0.55	33.0
4	T1	455	2.0	0.391	10.2	LOS B	1.4	35.4	0.52	0.53	32.5
14	R2	57	2.0	0.391	10.0	LOS B	1.3	33.8	0.51	0.52	32.6
Approach		561	2.0	0.391	10.2	LOS B	1.4	35.4	0.52	0.53	32.5
West: Claratina Ave											
5	L2	120	2.0	0.619	15.5	LOS C	3.2	82.4	0.64	0.69	30.9
2	T1	533	2.0	0.619	15.4	LOS C	3.2	82.4	0.63	0.68	31.8
12	R2	283	2.0	0.619	15.2	LOS C	3.1	78.8	0.61	0.66	30.5
Approach		935	2.0	0.619	15.3	LOS C	3.2	82.4	0.62	0.68	31.3
All Vehicles		2563	2.0	0.619	13.4	LOS B	3.2	82.4	0.59	0.63	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

PM EXISTING+APPROVED

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	8	173	20	5	26	143	1043	13	28	1287	112
Future Volume (veh/h)	150	8	173	20	5	26	143	1043	13	28	1287	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	158	8	182	21	5	27	151	1098	14	29	1355	0
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	9	207	27	6	35	178	1198	15	45	2047	916
Arrive On Green	0.14	0.14	0.14	0.04	0.04	0.04	0.10	0.65	0.65	0.03	0.58	0.00
Sat Flow, veh/h	1774	67	1526	665	158	855	1774	1835	23	1774	3539	1583
Grp Volume(v), veh/h	158	0	190	53	0	0	151	0	1112	29	1355	0
Grp Sat Flow(s),veh/h/ln	1774	0	1593	1679	0	0	1774	0	1859	1774	1770	1583
Q Serve(g_s), s	10.5	0.0	14.5	3.9	0.0	0.0	10.4	0.0	63.9	2.0	32.4	0.0
Cycle Q Clear(g_c), s	10.5	0.0	14.5	3.9	0.0	0.0	10.4	0.0	63.9	2.0	32.4	0.0
Prop In Lane	1.00		0.96	0.40		0.51	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	240	0	216	68	0	0	178	0	1214	45	2047	916
V/C Ratio(X)	0.66	0.00	0.88	0.78	0.00	0.00	0.85	0.00	0.92	0.64	0.66	0.00
Avail Cap(c_a), veh/h	260	0	233	244	0	0	231	0	1214	73	2047	916
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.8	0.0	52.5	58.8	0.0	0.0	54.7	0.0	18.5	59.7	17.8	0.0
Incr Delay (d2), s/veh	5.4	0.0	28.5	17.0	0.0	0.0	20.1	0.0	12.2	14.1	1.7	0.0
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	5.5	0.0	8.1	2.1	0.0	0.0	6.1	0.0	36.6	1.2	16.1	0.0
LnGrp Delay(d),s/veh	56.2	0.0	81.1	75.8	0.0	0.0	74.8	0.0	30.8	73.9	19.5	0.0
LnGrp LOS	E		F	E			E		C	E	B	
Approach Vol, veh/h	348			53			1263			1384		
Approach Delay, s/veh	69.7			75.8			36.1			20.7		
Approach LOS	E			E			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	85.3		21.3	16.9	76.0		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	80.8		18.1	16.1	69.8		18.0				
Max Q Clear Time (g_c+14), s	14.0	65.9		16.5	12.4	34.4		5.9				
Green Ext Time (p_c), s	0.0	7.5		0.3	0.1	12.0		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	33.6											
HCM 2010 LOS	C											

Intersection												
Int Delay, s/veh	75.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗		↖	↗			↖				
Traffic Vol, veh/h	0	293	115	140	785	0	168	0	73	0	0	0
Future Vol, veh/h	0	293	115	140	785	0	168	0	73	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	326	128	156	872	0	187	0	81	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	454	0	0	1574	1574	390
Stage 1	-	-	-	-	-	-	390	390	-
Stage 2	-	-	-	-	-	-	1184	1184	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1107	-	0	~ 121	110	658
Stage 1	0	-	-	-	-	0	684	608	-
Stage 2	0	-	-	-	-	0	290	263	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1107	-	-	~ 104	0	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 104	0	-
Stage 1	-	-	-	-	-	-	588	0	-
Stage 2	-	-	-	-	-	-	290	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	\$ 489.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	140	-	-	1107	-
HCM Lane V/C Ratio	1.913	-	-	0.141	-
HCM Control Delay (s)	\$ 489.7	-	-	8.8	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	20.8	-	-	0.5	-

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

HCM 2010 Signalized Intersection Summary
1: Coffee Rd & Patterson Rd

AM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	293	115	140	785	0	168	0	73	0	0	0
Future Volume (veh/h)	0	293	115	140	785	0	168	0	73	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0	1900	1863	1900			
Adj Flow Rate, veh/h	0	326	128	156	872	0	187	0	81			
Adj No. of Lanes	0	1	0	1	1	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	0	2	2	2	2	0	0	2	0			
Cap, veh/h	0	461	181	198	1121	0	170	0	74			
Arrive On Green	0.00	0.36	0.36	0.11	0.60	0.00	0.14	0.00	0.14			
Sat Flow, veh/h	0	1274	500	1774	1863	0	1194	0	517			
Grp Volume(v), veh/h	0	0	454	156	872	0	268	0	0			
Grp Sat Flow(s),veh/h/ln	0	0	1774	1774	1863	0	1712	0	0			
Q Serve(g_s), s	0.0	0.0	7.7	3.0	12.3	0.0	5.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	7.7	3.0	12.3	0.0	5.0	0.0	0.0			
Prop In Lane	0.00		0.28	1.00		0.00	0.70		0.30			
Lane Grp Cap(c), veh/h	0	0	643	198	1121	0	244	0	0			
V/C Ratio(X)	0.00	0.00	0.71	0.79	0.78	0.00	1.10	0.00	0.00			
Avail Cap(c_a), veh/h	0	0	1641	252	1723	0	244	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	9.6	15.2	5.2	0.0	15.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	1.4	12.1	1.3	0.0	87.2	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.9	2.1	6.4	0.0	8.2	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	0.0	11.0	27.3	6.5	0.0	102.3	0.0	0.0			
LnGrp LOS			B	C	A		F					
Approach Vol, veh/h		454			1028			268				
Approach Delay, s/veh		11.0			9.7			102.3				
Approach LOS		B			A			F				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4				8				
Phs Duration (G+Y+Rc), s		9.5	8.4	17.2				25.6				
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5				
Max Green Setting (Gmax), s		5.0	5.0	32.5				32.5				
Max Q Clear Time (g_c+I1), s		7.0	5.0	9.7				14.3				
Green Ext Time (p_c), s		0.0	0.0	3.0				6.5				
Intersection Summary												
HCM 2010 Ctrl Delay			24.2									
HCM 2010 LOS			C									

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

EPAP + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	183	2.0	0.297	7.3	LOS A	0.9	23.2	0.36	0.31	33.1
18	R2	79	2.0	0.297	7.3	LOS A	0.9	23.2	0.36	0.31	32.2
Approach		262	2.0	0.297	7.3	LOS A	0.9	23.2	0.36	0.31	32.8
East: Patterson Ave											
1	L2	152	2.0	0.969	40.8	LOS E	23.4	595.1	1.00	0.99	23.2
6	T1	853	2.0	0.969	40.8	LOS E	23.4	595.1	1.00	0.99	23.5
Approach		1005	2.0	0.969	40.8	LOS E	23.4	595.1	1.00	0.99	23.5
West: Patterson Ave											
2	T1	318	2.0	0.430	8.2	LOS A	1.6	41.1	0.29	0.20	35.8
12	R2	125	2.0	0.430	8.2	LOS A	1.6	41.1	0.29	0.20	33.8
Approach		443	2.0	0.430	8.2	LOS A	1.6	41.1	0.29	0.20	35.2
All Vehicles		1711	2.0	0.969	27.2	LOS D	23.4	595.1	0.72	0.68	27.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\1 EPAPPP AM Coffee_Patterson.sip7

HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	292	62	358	537	53	183	92	262	61	123	134
Future Volume (veh/h)	60	292	62	358	537	53	183	92	262	61	123	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	67	324	69	398	597	59	203	102	291	68	137	149
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	466	98	492	812	80	247	689	586	96	531	451
Arrive On Green	0.05	0.16	0.16	0.14	0.25	0.25	0.14	0.37	0.37	0.05	0.28	0.28
Sat Flow, veh/h	1774	2912	612	3442	3255	321	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	67	195	198	398	324	332	203	102	291	68	137	149
Grp Sat Flow(s),veh/h/ln	1774	1770	1755	1721	1770	1806	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.5	6.9	7.0	7.4	11.1	11.1	7.3	2.4	9.4	2.5	3.7	4.9
Cycle Q Clear(g_c), s	2.5	6.9	7.0	7.4	11.1	11.1	7.3	2.4	9.4	2.5	3.7	4.9
Prop In Lane	1.00		0.35	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	283	281	492	442	451	247	689	586	96	531	451
V/C Ratio(X)	0.70	0.69	0.70	0.81	0.73	0.74	0.82	0.15	0.50	0.71	0.26	0.33
Avail Cap(c_a), veh/h	140	483	479	506	603	616	282	689	586	191	531	451
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	30.7	26.2	26.2	27.4	22.7	22.8	27.6	13.8	16.0	30.7	18.2	18.6
Incr Delay (d2), s/veh	9.1	3.0	3.2	9.3	3.0	3.0	15.8	0.5	3.0	9.3	1.2	2.0
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	1.4	3.6	3.7	4.1	5.8	5.9	4.7	1.3	4.6	1.5	2.1	2.4
LnGrp Delay(d),s/veh	39.8	29.1	29.4	36.6	25.8	25.8	43.4	14.3	19.0	40.0	19.4	20.6
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	B	C
Approach Vol, veh/h		460			1054			596			354	
Approach Delay, s/veh		30.8			29.9			26.5			23.8	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	28.9	13.9	15.1	13.7	23.3	8.0	21.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.1	22.2	9.7	18.0	10.5	18.8	5.2	22.5				
Max Q Clear Time (g_c+I1), s	4.5	11.4	9.4	9.0	9.3	6.9	4.5	13.1				
Green Ext Time (p_c), s	0.0	1.2	0.1	1.5	0.1	0.9	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				28.4								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	10.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	232	0	124	0	120	71	45	211	0
Future Vol, veh/h	0	0	0	232	0	124	0	120	71	45	211	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	255	0	136	0	132	78	49	232	0
Major/Minor												
Minor1				Major1				Major2				
Conflicting Flow All	501	501	171	-	0	0	210	0	0			
Stage 1	171	171	-	-	-	-	-	-	-	-	-	-
Stage 2	330	330	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	530	472	873	0	-	-	1361	-	0			
Stage 1	859	757	-	0	-	-	-	-	0			
Stage 2	728	646	-	0	-	-	-	-	0			
Platoon blocked, %							-	-	-			
Mov Cap-1 Maneuver	508	0	873	-	-	-	1361	-	-	-	-	-
Mov Cap-2 Maneuver	508	0	-	-	-	-	-	-	-	-	-	-
Stage 1	824	0	-	-	-	-	-	-	-	-	-	-
Stage 2	728	0	-	-	-	-	-	-	-	-	-	-
Approach												
WB				NB				SB				
HCM Control Delay, s	21.9			0				1.4				
HCM LOS	C											
Minor Lane/Major Mvmt												
NBT				NBRWBLn1				SBL SBT				
Capacity (veh/h)	-	-	595	1361	-							
HCM Lane V/C Ratio	-	-	0.657	0.036	-							
HCM Control Delay (s)	-	-	21.9	7.7	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	4.8	0.1	-							

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	17	127	51	52	82	50	373	43	36	438	63
Future Volume (veh/h)	89	17	127	51	52	82	50	373	43	36	438	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	103	20	148	59	60	95	58	434	50	42	509	73
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	242	206	93	201	171	92	1510	173	75	736	106
Arrive On Green	0.07	0.13	0.13	0.05	0.11	0.11	0.05	0.47	0.47	0.04	0.46	0.46
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3201	367	1774	1594	229
Grp Volume(v), veh/h	103	20	148	59	60	95	58	239	245	42	0	582
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1798	1774	0	1822
Q Serve(g_s), s	3.4	0.6	5.3	1.9	1.8	3.4	1.9	4.9	4.9	1.4	0.0	15.0
Cycle Q Clear(g_c), s	3.4	0.6	5.3	1.9	1.8	3.4	1.9	4.9	4.9	1.4	0.0	15.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.13
Lane Grp Cap(c), veh/h	132	242	206	93	201	171	92	835	848	75	0	842
V/C Ratio(X)	0.78	0.08	0.72	0.63	0.30	0.56	0.63	0.29	0.29	0.56	0.00	0.69
Avail Cap(c_a), veh/h	194	609	518	153	565	481	153	835	848	179	0	842
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	0.00	1.00
Uniform Delay (d), s/veh	27.0	22.7	24.7	27.5	24.4	25.1	27.6	9.6	9.6	27.9	0.0	12.6
Incr Delay (d2), s/veh	11.4	0.1	4.6	7.0	0.8	2.8	6.9	0.9	0.9	6.5	0.0	4.6
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	2.1	0.3	2.6	1.1	0.9	1.6	1.1	2.6	2.7	0.8	0.0	8.5
LnGrp Delay(d),s/veh	38.3	22.8	29.4	34.5	25.2	27.9	34.5	10.4	10.4	34.3	0.0	17.2
LnGrp LOS	D	C	C	C	C	C	C	B	B	C		B
Approach Vol, veh/h		271			214			542			624	
Approach Delay, s/veh		32.3			29.0			13.0			18.4	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	32.5	7.6	12.2	7.6	31.9	8.9	10.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.0	26.5	5.1	19.4	5.1	27.4	6.5	18.0				
Max Q Clear Time (g_c+I1), s	3.4	6.9	3.9	7.3	3.9	17.0	5.4	5.4				
Green Ext Time (p_c), s	0.0	2.8	0.0	0.4	0.0	2.9	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				20.3								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	25	0	1	0	188	3	3	439	0
Future Vol, veh/h	0	0	0	25	0	1	0	188	3	3	439	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	28	0	1	0	209	3	3	488	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				705	705	211	-	0	0	212	0	0
Stage 1				211	211	-	-	-	-	-	-	-
Stage 2				494	494	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				403	361	829	0	-	-	1358	-	0
Stage 1				824	728	-	0	-	-	-	-	0
Stage 2				613	546	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				402	0	829	-	-	-	1358	-	-
Mov Cap-2 Maneuver				402	0	-	-	-	-	-	-	-
Stage 1				822	0	-	-	-	-	-	-	-
Stage 2				613	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				14.4		0			0.1			
HCM LOS				B								
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT							
Capacity (veh/h)		-	-	410	1358							
HCM Lane V/C Ratio		-	-	0.07	0.002							
HCM Control Delay (s)		-	-	14.4	7.7							
HCM Lane LOS		-	-	B	A							
HCM 95th %tile Q(veh)		-	-	0.2	0							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	27	193	379	13	49	77	405	184	64	585	19
Future Volume (veh/h)	32	27	193	379	13	49	77	405	184	64	585	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	31	219	431	15	56	88	460	209	73	665	22
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	0	260	479	0	633	113	667	301	94	945	31
Arrive On Green	0.03	0.16	0.16	0.27	0.40	0.40	0.06	0.28	0.28	0.05	0.27	0.27
Sat Flow, veh/h	1774	0	1583	1774	0	1583	1774	2373	1070	1774	3496	116
Grp Volume(v), veh/h	36	0	219	431	0	56	88	342	327	73	336	351
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1774	1770	1674	1774	1770	1842
Q Serve(g_s), s	1.6	0.0	10.4	18.2	0.0	1.7	3.8	13.4	13.5	3.2	13.3	13.3
Cycle Q Clear(g_c), s	1.6	0.0	10.4	18.2	0.0	1.7	3.8	13.4	13.5	3.2	13.3	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		0.06
Lane Grp Cap(c), veh/h	62	0	260	479	0	633	113	498	471	94	478	498
V/C Ratio(X)	0.58	0.00	0.84	0.90	0.00	0.09	0.78	0.69	0.69	0.78	0.70	0.70
Avail Cap(c_a), veh/h	139	0	367	605	0	783	148	498	471	144	478	498
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	31.5	27.3	0.0	14.5	35.8	24.9	24.9	36.3	25.5	25.5
Incr Delay (d2), s/veh	8.5	0.0	11.7	14.0	0.0	0.1	17.4	7.6	8.2	13.6	8.4	8.1
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	0.9	0.0	5.4	10.7	0.0	0.8	2.4	7.6	7.3	1.9	7.6	7.8
LnGrp Delay(d),s/veh	45.4	0.0	43.2	41.3	0.0	14.6	53.3	32.4	33.1	49.9	33.9	33.6
LnGrp LOS	D		D	D		B	D	C	C	D	C	C
Approach Vol, veh/h	255				487				757			
Approach Delay, s/veh	43.5				38.3				35.2			
Approach LOS	D				D				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	26.3	25.5	17.2	9.4	25.5	7.2	35.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.3	21.2	26.5	18.0	6.5	21.0	6.1	38.4				
Max Q Clear Time (g_c+I1), s	5.2	15.5	20.2	12.4	5.8	15.3	3.6	3.7				
Green Ext Time (p_c), s	0.0	2.1	0.8	0.3	0.0	2.1	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	36.8											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	449	133	419	939	65	109	246	130	63	640	79
Future Volume (veh/h)	117	449	133	419	939	65	109	246	130	63	640	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	121	463	137	432	968	67	112	254	134	65	660	81
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	153	607	271	475	1250	559	142	1031	461	84	916	410
Arrive On Green	0.09	0.17	0.17	0.27	0.35	0.35	0.08	0.29	0.29	0.05	0.26	0.26
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	121	463	137	432	968	67	112	254	134	65	660	81
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	5.4	10.1	6.4	19.1	19.7	2.3	5.0	4.4	5.3	2.9	13.8	3.2
Cycle Q Clear(g_c), s	5.4	10.1	6.4	19.1	19.7	2.3	5.0	4.4	5.3	2.9	13.8	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	153	607	271	475	1250	559	142	1031	461	84	916	410
V/C Ratio(X)	0.79	0.76	0.50	0.91	0.77	0.12	0.79	0.25	0.29	0.77	0.72	0.20
Avail Cap(c_a), veh/h	201	785	351	558	1497	670	164	1031	461	133	916	410
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	36.4	32.0	30.5	28.7	23.3	17.7	36.7	21.9	22.2	38.2	27.4	23.5
Incr Delay (d2), s/veh	14.6	3.3	1.5	17.2	2.2	0.1	19.9	0.6	1.6	13.9	4.9	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	3.3	5.2	2.9	11.6	9.9	1.0	3.2	2.2	2.5	1.8	7.3	1.5
LnGrp Delay(d),s/veh	50.9	35.3	31.9	45.9	25.5	17.8	56.6	22.5	23.8	52.1	32.2	24.6
LnGrp LOS	D	D	C	D	C	B	E	C	C	D	C	C
Approach Vol, veh/h	721				1467				500		806	
Approach Delay, s/veh	37.3				31.2				30.5		33.1	
Approach LOS	D				C				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	28.1	26.2	18.4	11.0	25.5	11.5	33.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	22.4	25.5	18.0	7.5	21.0	9.2	34.3					
Max Q Clear Time (g_c+14), s	7.3	21.1	12.1	7.0	15.8	7.4	21.7					
Green Ext Time (p_c), s	0.0	1.8	0.6	1.8	0.0	2.1	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay	32.8											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

8: Coffee Rd & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	479	112	234	1052	8	146	123	166	8	271	195
Future Volume (veh/h)	63	479	112	234	1052	8	146	123	166	8	271	195
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	69	526	123	257	1156	9	160	135	182	9	298	214
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	1647	737	440	1647	737	347	647	550	463	647	550
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	480	3539	1583	779	3539	1583	885	1863	1583	1058	1863	1583
Grp Volume(v), veh/h	69	526	123	257	1156	9	160	135	182	9	298	214
Grp Sat Flow(s),veh/h/ln	480	1770	1583	779	1770	1583	885	1863	1583	1058	1863	1583
Q Serve(g_s), s	6.4	4.5	2.2	14.9	12.5	0.1	8.2	2.5	4.1	0.3	6.0	4.9
Cycle Q Clear(g_c), s	18.9	4.5	2.2	19.3	12.5	0.1	14.2	2.5	4.1	2.7	6.0	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	249	1647	737	440	1647	737	347	647	550	463	647	550
V/C Ratio(X)	0.28	0.32	0.17	0.58	0.70	0.01	0.46	0.21	0.33	0.02	0.46	0.39
Avail Cap(c_a), veh/h	252	1671	748	445	1671	748	377	709	603	499	709	603
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	17.7	8.1	7.4	14.1	10.2	6.9	17.7	11.0	11.6	12.0	12.2	11.8
Incr Delay (d2), s/veh	0.6	0.1	0.1	1.9	1.3	0.0	1.0	0.2	0.3	0.0	0.5	0.4
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	0.9	2.2	0.9	3.4	6.2	0.1	2.1	1.3	1.8	0.1	3.2	2.2
LnGrp Delay(d),s/veh	18.3	8.2	7.6	16.1	11.5	6.9	18.7	11.2	11.9	12.0	12.7	12.3
LnGrp LOS	B	A	A	B	B	A	B	B	B	B	B	B
Approach Vol, veh/h	718		1422				477			521		
Approach Delay, s/veh	9.0		12.3				14.0			12.5		
Approach LOS	A		B				B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	21.2		26.9		21.2		26.9					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.3		22.7		18.3		22.7					
Max Q Clear Time (g_c+I1), s	16.2		20.9		8.0		21.3					
Green Ext Time (p_c), s	0.5		0.8		1.6		1.0					
Intersection Summary												
HCM 2010 Ctrl Delay	11.9											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Future Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	193	290	0	292	600	0	167	517	143	189	671	469
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	532	238	307	693	310	184	997	274	225	720	612
Arrive On Green	0.13	0.15	0.00	0.17	0.20	0.00	0.10	0.36	0.36	0.13	0.39	0.39
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2744	755	1774	1863	1583
Grp Volume(v), veh/h	193	290	0	292	600	0	167	333	327	189	671	469
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1729	1774	1863	1583
Q Serve(g_s), s	10.3	7.3	0.0	15.7	15.8	0.0	9.0	14.2	14.4	10.0	33.3	24.9
Cycle Q Clear(g_c), s	10.3	7.3	0.0	15.7	15.8	0.0	9.0	14.2	14.4	10.0	33.3	24.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	226	532	238	307	693	310	184	643	628	225	720	612
V/C Ratio(X)	0.85	0.54	0.00	0.95	0.87	0.00	0.91	0.52	0.52	0.84	0.93	0.77
Avail Cap(c_a), veh/h	259	660	295	307	755	338	184	643	628	342	720	612
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	37.9	0.0	39.5	37.6	0.0	42.8	24.1	24.1	41.2	28.4	25.8
Incr Delay (d2), s/veh	21.1	0.9	0.0	38.4	9.7	0.0	41.5	3.0	3.1	10.9	20.5	8.9
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	6.4	3.6	0.0	11.0	8.7	0.0	6.5	7.5	7.4	5.6	21.3	12.4
LnGrp Delay(d),s/veh	62.3	38.8	0.0	77.9	47.3	0.0	84.3	27.1	27.2	52.1	48.9	34.7
LnGrp LOS	E	D		E	D		F	C	C	D	D	C
Approach Vol, veh/h		483			892			827			1329	
Approach Delay, s/veh		48.2			57.3			38.7			44.4	
Approach LOS		D			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	39.6	21.2	19.0	14.5	41.8	16.8	23.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	18.6	28.7	16.7	18.0	10.0	37.3	14.1	20.6				
Max Q Clear Time (g_c+1/2C), s	11.0	16.4	17.7	9.3	11.0	35.3	12.3	17.8				
Green Ext Time (p_c), s	0.3	3.3	0.0	1.1	0.0	1.2	0.1	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			46.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

9: Oakdale Rd & Claribel Ave

AM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Future Volume (veh/h)	174	261	114	263	540	101	150	465	129	170	604	422
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	193	290	0	292	600	0	167	517	143	189	671	469
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	576	258	335	775	347	206	944	422	230	991	444
Arrive On Green	0.13	0.16	0.00	0.19	0.22	0.00	0.12	0.27	0.27	0.13	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	193	290	0	292	600	0	167	517	143	189	671	469
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.6	5.3	0.0	11.4	11.4	0.0	6.6	9.0	5.2	7.4	12.0	20.0
Cycle Q Clear(g_c), s	7.6	5.3	0.0	11.4	11.4	0.0	6.6	9.0	5.2	7.4	12.0	20.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	236	576	258	335	775	347	206	944	422	230	991	444
V/C Ratio(X)	0.82	0.50	0.00	0.87	0.77	0.00	0.81	0.55	0.34	0.82	0.68	1.06
Avail Cap(c_a), veh/h	303	892	399	360	1006	450	236	944	422	261	991	444
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	27.2	0.0	28.1	26.2	0.0	30.8	22.5	21.1	30.3	22.8	25.7
Incr Delay (d2), s/veh	12.9	0.7	0.0	19.3	2.8	0.0	16.9	2.3	2.2	17.0	3.7	58.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	2.7	0.0	7.4	5.8	0.0	4.2	4.7	2.5	4.7	6.4	15.9
LnGrp Delay(d),s/veh	43.0	27.9	0.0	47.4	29.1	0.0	47.7	24.8	23.3	47.3	26.5	84.4
LnGrp LOS	D	C		D	C		D	C	C	D	C	F
Approach Vol, veh/h	483				892				827		1329	
Approach Delay, s/veh	33.9				35.1				29.1		49.9	
Approach LOS	C				D				C		D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.7	23.5	18.0	16.1	12.8	24.5	14.0	20.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	19.0	14.5	18.0	9.5	20.0	12.2	20.3				
Max Q Clear Time (g_c+1.4), s	19.4	11.0	13.4	7.3	8.6	22.0	9.6	13.4				
Green Ext Time (p_c), s	0.1	2.5	0.1	1.3	0.0	0.0	0.1	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay	39.1											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	382	0	0	562	86	0	0	0	187	0	319
Future Volume (veh/h)	114	382	0	0	562	86	0	0	0	187	0	319
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	133	444	0	0	653	100				217	0	371
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86				0.86	0.86	0.86
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	172	935	0	0	930	142				520	0	464
Arrive On Green	0.10	0.50	0.00	0.00	0.30	0.30				0.29	0.00	0.29
Sat Flow, veh/h	1774	1863	0	0	3172	471				1774	0	1583
Grp Volume(v), veh/h	133	444	0	0	375	378				217	0	371
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1780				1774	0	1583
Q Serve(g_s), s	3.2	6.8	0.0	0.0	8.2	8.3				4.3	0.0	9.5
Cycle Q Clear(g_c), s	3.2	6.8	0.0	0.0	8.2	8.3				4.3	0.0	9.5
Prop In Lane	1.00		0.00	0.00		0.26				1.00		1.00
Lane Grp Cap(c), veh/h	172	935	0	0	535	538				520	0	464
V/C Ratio(X)	0.77	0.48	0.00	0.00	0.70	0.70				0.42	0.00	0.80
Avail Cap(c_a), veh/h	344	1338	0	0	746	751				789	0	704
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	7.1	0.0	0.0	13.6	13.6				12.5	0.0	14.3
Incr Delay (d2), s/veh	7.2	0.4	0.0	0.0	1.7	1.7				0.5	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.6	0.0	0.0	4.2	4.2				2.2	0.0	8.1
LnGrp Delay(d),s/veh	26.5	7.5	0.0	0.0	15.3	15.3				13.0	0.0	18.1
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		577			753						588	
Approach Delay, s/veh		11.9			15.3						16.3	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				26.5		17.4	8.8	17.8				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				31.5		19.5	8.5	18.5				
Max Q Clear Time (g_c+I1), s				8.8		11.5	5.2	10.3				
Green Ext Time (p_c), s				2.8		1.4	0.1	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay				14.6								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	324	201	35	430	47	161	235	15	65	319	46
Future Volume (veh/h)	35	324	201	35	430	47	161	235	15	65	319	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	338	209	36	448	49	168	245	16	68	332	48
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	583	684	66	517	56	211	543	35	97	398	57
Arrive On Green	0.04	0.31	0.31	0.04	0.31	0.31	0.12	0.31	0.31	0.05	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1774	1650	181	1774	1730	113	1774	1592	230
Grp Volume(v), veh/h	36	338	209	36	0	497	168	0	261	68	0	380
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1831	1774	0	1843	1774	0	1822
Q Serve(g_s), s	1.3	9.7	5.5	1.3	0.0	16.4	5.9	0.0	7.2	2.4	0.0	12.6
Cycle Q Clear(g_c), s	1.3	9.7	5.5	1.3	0.0	16.4	5.9	0.0	7.2	2.4	0.0	12.6
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.06	1.00		0.13
Lane Grp Cap(c), veh/h	66	583	684	66	0	573	211	0	578	97	0	455
V/C Ratio(X)	0.55	0.58	0.31	0.55	0.00	0.87	0.80	0.00	0.45	0.70	0.00	0.83
Avail Cap(c_a), veh/h	142	714	795	142	0	702	291	0	686	239	0	624
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	18.4	11.9	30.3	0.0	20.7	27.4	0.0	17.5	29.7	0.0	22.7
Incr Delay (d2), s/veh	7.0	0.9	0.3	7.0	0.0	9.6	10.2	0.0	0.6	8.7	0.0	7.1
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	0.7	5.1	2.4	0.7	0.0	9.8	3.5	0.0	3.7	1.4	0.0	7.2
LnGrp Delay(d),s/veh	37.3	19.4	12.1	37.3	0.0	30.3	37.6	0.0	18.1	38.4	0.0	29.8
LnGrp LOS	D	B	B	D		C	D		B	D		C
Approach Vol, veh/h	583			533			429			448		
Approach Delay, s/veh	17.9			30.8			25.7			31.1		
Approach LOS	B			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	24.6	6.9	24.5	12.1	20.5	6.9	24.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	8.6	23.8	5.1	24.5	10.5	21.9	5.1	24.5				
Max Q Clear Time (g_c+I), s	14.4	9.2	3.3	11.7	7.9	14.6	3.3	18.4				
Green Ext Time (p_c), s	0.0	1.2	0.0	2.3	0.1	1.3	0.0	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			26.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	328	101	3	339	2	97	59	1	5	79	99
Future Volume (veh/h)	24	328	101	3	339	2	97	59	1	5	79	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	27	364	0	3	377	0	108	66	0	6	88	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	623	0	168	403	0	457	166	0	190	410	0
Arrive On Green	0.36	0.36	0.00	0.36	0.22	0.00	0.23	0.23	0.00	0.23	0.23	0.00
Sat Flow, veh/h	61	1751	0	5	1854	0	817	720	0	58	1781	0
Grp Volume(v), veh/h	391	0	0	380	0	0	174	0	0	94	0	0
Grp Sat Flow(s),veh/h/ln	1812	0	0	1859	0	0	1537	0	0	1839	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	4.0	0.0	0.0	2.0	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.07		0.00	0.01		0.00	0.62		0.00	0.06		0.00
Lane Grp Cap(c), veh/h	821	0	0	828	0	0	622	0	0	600	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.46	0.00	0.00	0.28	0.00	0.00	0.16	0.00	0.00
Avail Cap(c_a), veh/h	2017	0	0	2087	0	0	1537	0	0	1728	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	0.0	8.2	0.0	0.0	7.2	0.0	0.0	6.8	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
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	1.9	0.0	0.0	1.8	0.0	0.0	0.9	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	8.6	0.0	0.0	7.4	0.0	0.0	6.9	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h		391			380			174			94	
Approach Delay, s/veh		6.1			8.6			7.4			6.9	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		9.5		12.2		9.5		12.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5		22.5		18.5		22.5				
Max Q Clear Time (g_c+I1), s		4.0		5.7		2.9		6.0				
Green Ext Time (p_c), s		0.7		2.0		0.3		1.8				
Intersection Summary												
HCM 2010 Ctrl Delay	7.3											
HCM 2010 LOS	A											

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	193	88	107	219	37	45	335	99	28	424	84
Future Volume (veh/h)	68	193	88	107	219	37	45	335	99	28	424	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	71	201	92	111	228	39	47	349	103	29	442	88
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	299	254	142	332	283	84	699	594	59	672	571
Arrive On Green	0.06	0.16	0.16	0.08	0.18	0.18	0.05	0.38	0.38	0.03	0.36	0.36
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	71	201	92	111	228	39	47	349	103	29	442	88
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	2.0	5.2	2.7	3.1	5.9	1.1	1.3	7.4	2.2	0.8	10.2	1.9
Cycle Q Clear(g_c), s	2.0	5.2	2.7	3.1	5.9	1.1	1.3	7.4	2.2	0.8	10.2	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	299	254	142	332	283	84	699	594	59	672	571
V/C Ratio(X)	0.65	0.67	0.36	0.78	0.69	0.14	0.56	0.50	0.17	0.50	0.66	0.15
Avail Cap(c_a), veh/h	173	654	556	190	672	571	173	699	594	173	672	571
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	23.5	20.2	19.2	23.2	19.7	17.7	23.9	12.3	10.7	24.4	13.7	11.1
Incr Delay (d2), s/veh	6.2	2.6	0.9	13.9	2.5	0.2	5.6	2.5	0.6	6.3	5.0	0.6
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	1.2	2.9	1.2	2.1	3.2	0.5	0.8	4.3	1.1	0.5	6.1	0.9
LnGrp Delay(d),s/veh	29.7	22.9	20.0	37.1	22.2	18.0	29.5	14.8	11.3	30.7	18.7	11.7
LnGrp LOS	C	C	C	D	C	B	C	B	B	C	B	B
Approach Vol, veh/h	364				378				499		559	
Approach Delay, s/veh	23.5				26.1				15.5		18.2	
Approach LOS	C				C				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.2	23.7	8.6	12.7	6.9	23.0	7.7	13.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	5.5	18.0	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I2), s	12.8	9.4	5.1	7.2	3.3	12.2	4.0	7.9				
Green Ext Time (p_c), s	0.0	1.5	0.0	1.0	0.0	1.4	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

AM PEAK EX+APPR+PROJECT
11/10/2017

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	31	227	467	703	915	79		
Future Volume (veh/h)	31	227	467	703	915	79		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	34	0	519	781	1017	88		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	47	503	517	1690	985	85		
Arrive On Green	0.03	0.00	0.29	0.91	0.58	0.58		
Sat Flow, veh/h	1774	1583	1774	1863	1691	146		
Grp Volume(v), veh/h	34	0	519	781	0	1105		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1837		
Q Serve(g_s), s	2.6	0.0	39.5	9.1	0.0	79.0		
Cycle Q Clear(g_c), s	2.6	0.0	39.5	9.1	0.0	79.0		
Prop In Lane	1.00	1.00	1.00			0.08		
Lane Grp Cap(c), veh/h	47	503	517	1690	0	1070		
V/C Ratio(X)	0.72	0.00	1.00	0.46	0.00	1.03		
Avail Cap(c_a), veh/h	235	671	517	1690	0	1070		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	65.5	0.0	48.1	1.0	0.0	28.3		
Incr Delay (d2), s/veh	18.4	0.0	40.7	0.2	0.0	36.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.5	0.0	25.1	4.6	0.0	50.6		
LnGrp Delay(d),s/veh	83.9	0.0	88.7	1.2	0.0	64.5		
LnGrp LOS	F		F	A		F		
Approach Vol, veh/h	34			1300	1105			
Approach Delay, s/veh	83.9			36.2	64.5			
Approach LOS	F			D	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		127.5		8.1	44.0	83.5		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		123.0		18.0	39.5	79.0		
Max Q Clear Time (g_c+l1), s		11.1		4.6	41.5	81.0		
Green Ext Time (p_c), s		7.3		0.0	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			49.7					
HCM 2010 LOS			D					
Notes								

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

AM PEAK EX+APPR+PROJECT

11/10/2017

	           											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	0	47	65	0	43	61	588	13	93	1059	52
Future Volume (veh/h)	12	0	47	65	0	43	61	588	13	93	1059	52
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				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
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	0	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h				76	0	50	71	684	15	108	1231	60
Adj No. of Lanes				2	0	1	1	2	1	1	2	0
Peak Hour Factor				0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %				2	0	2	2	2	2	2	2	2
Cap, veh/h				286	0	131	112	2003	896	140	2000	97
Arrive On Green				0.08	0.00	0.08	0.06	0.57	0.57	0.08	0.58	0.58
Sat Flow, veh/h				3442	0	1583	1774	3539	1583	1774	3436	167
Grp Volume(v), veh/h				76	0	50	71	684	15	108	634	657
Grp Sat Flow(s),veh/h/ln				1721	0	1583	1774	1770	1583	1774	1770	1833
Q Serve(g_s), s				1.0	0.0	1.5	1.9	5.2	0.2	3.0	11.6	11.6
Cycle Q Clear(g_c), s				1.0	0.0	1.5	1.9	5.2	0.2	3.0	11.6	11.6
Prop In Lane				1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h				286	0	131	112	2003	896	140	1030	1067
V/C Ratio(X)				0.27	0.00	0.38	0.64	0.34	0.02	0.77	0.61	0.62
Avail Cap(c_a), veh/h				347	0	159	182	2003	896	368	1030	1067
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh				21.3	0.0	21.6	22.7	5.8	4.7	22.4	6.7	6.8
Incr Delay (d2), s/veh				0.5	0.0	1.8	5.9	0.5	0.0	8.6	2.7	2.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.7	1.1	2.6	0.1	1.8	6.2	6.5
LnGrp Delay(d),s/veh				21.8	0.0	23.4	28.6	6.3	4.8	31.0	9.5	9.4
LnGrp LOS				C		C	C	A	A	C	A	A
Approach Vol, veh/h					126			770			1399	
Approach Delay, s/veh					22.4			8.3			11.1	
Approach LOS					C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	8.4	32.6			7.6	33.4		8.6				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.3	23.7			5.1	28.9		5.0				
Max Q Clear Time (g_c+1.5), s	15.0	7.2			3.9	13.6		3.5				
Green Ext Time (p_c), s	0.1	4.4			0.0	7.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				10.8								
HCM 2010 LOS				B								

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

EPAP + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	204	2.0	0.613	19.2	LOS C	2.7	69.8	0.71	0.79	28.5
8	T1	223	2.0	0.613	18.9	LOS C	2.7	69.8	0.70	0.78	28.3
18	R2	274	2.0	0.613	18.5	LOS C	2.7	67.5	0.69	0.77	29.0
Approach		701	2.0	0.613	18.9	LOS C	2.7	69.8	0.70	0.78	28.6
East: Sylvan Ave											
1	L2	317	2.0	0.697	18.5	LOS C	4.3	108.7	0.69	0.77	29.0
6	T1	607	2.0	0.697	18.3	LOS C	4.3	108.7	0.68	0.75	30.5
16	R2	139	2.0	0.697	18.1	LOS C	4.1	104.1	0.67	0.74	29.4
Approach		1063	2.0	0.697	18.3	LOS C	4.3	108.7	0.68	0.75	29.9
North: Roselle Ave											
7	L2	250	2.0	0.664	25.0	LOS C	2.9	74.6	0.80	0.91	26.3
4	T1	318	2.0	0.664	24.0	LOS C	2.9	74.6	0.78	0.89	27.0
14	R2	71	2.0	0.664	23.8	LOS C	2.9	72.7	0.78	0.88	27.2
Approach		639	2.0	0.664	24.4	LOS C	2.9	74.6	0.79	0.89	26.7
West: Sylvan Ave											
5	L2	78	2.0	0.688	22.8	LOS C	3.5	88.0	0.75	0.85	28.2
2	T1	567	2.0	0.688	22.4	LOS C	3.5	88.0	0.74	0.84	29.0
12	R2	147	2.0	0.688	22.0	LOS C	3.4	85.3	0.73	0.82	28.0
Approach		792	2.0	0.688	22.4	LOS C	3.5	88.0	0.74	0.83	28.8
All Vehicles		3196	2.0	0.697	20.6	LOS C	4.3	108.7	0.72	0.81	28.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\16 EPAPPP AM Roselle_Sylvan.sip7

HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	382	235	119	519	391	507	858	54	419	816	116
Future Volume (veh/h)	68	382	235	119	519	391	507	858	54	419	816	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	80	449	276	140	611	460	596	1009	64	493	960	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	836	374	181	836	374	769	2201	140	691	2305	1031
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.65	0.65	0.65	0.65	0.65	0.00
Sat Flow, veh/h	525	3539	1583	726	3539	1583	1130	3380	214	1016	3539	1583
Grp Volume(v), veh/h	80	449	276	140	611	460	596	528	545	493	960	0
Grp Sat Flow(s),veh/h/ln	525	1770	1583	726	1770	1583	565	1770	1825	508	1770	1583
Q Serve(g_s), s	6.2	8.9	12.9	10.0	12.7	18.9	41.7	11.9	11.9	37.5	10.4	0.0
Cycle Q Clear(g_c), s	18.9	8.9	12.9	18.9	12.7	18.9	52.1	11.9	11.9	49.4	10.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	130	836	374	181	836	374	769	1152	1188	691	2305	1031
V/C Ratio(X)	0.61	0.54	0.74	0.77	0.73	1.23	0.77	0.46	0.46	0.71	0.42	0.00
Avail Cap(c_a), veh/h	130	836	374	181	836	374	769	1152	1188	691	2305	1031
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	0.00
Uniform Delay (d), s/veh	38.4	26.7	28.3	36.7	28.2	30.5	19.4	6.9	6.9	19.2	6.7	0.0
Incr Delay (d2), s/veh	8.3	0.7	7.5	18.6	3.3	124.7	7.5	1.3	1.3	6.2	0.6	0.0
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	2.1	4.4	6.4	4.0	6.6	21.2	7.3	6.1	6.3	5.8	5.2	0.0
LnGrp Delay(d),s/veh	46.7	27.4	35.8	55.3	31.5	155.3	26.9	8.2	8.2	25.4	7.2	0.0
LnGrp LOS	D	C	D	E	C	F	C	A	A	C	A	
Approach Vol, veh/h		805			1211			1669			1453	
Approach Delay, s/veh		32.2			81.3			14.9			13.4	
Approach LOS		C			F			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		56.6		23.4		56.6		23.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		52.1		18.9		52.1		18.9				
Max Q Clear Time (g_c+I1), s		54.1		20.9		51.4		20.9				
Green Ext Time (p_c), s		0.0		0.0		0.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				32.8								
HCM 2010 LOS				C								

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

EPAP + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	378	2.0	0.445	9.8	LOS A	1.7	42.5	0.45	0.44	31.2
8	T1	359	2.0	0.442	9.9	LOS A	1.7	44.2	0.47	0.46	32.8
18	R2	10	2.0	0.442	9.9	LOS A	1.7	44.2	0.47	0.46	32.7
Approach		747	2.0	0.445	9.9	LOS A	1.7	44.2	0.46	0.45	32.0
East: Claratina Ave											
1	L2	18	2.0	0.519	15.1	LOS C	2.1	53.4	0.64	0.69	31.5
6	T1	561	2.0	0.519	14.8	LOS B	2.1	53.4	0.63	0.68	32.4
16	R2	49	2.0	0.519	14.5	LOS B	2.0	51.4	0.62	0.66	30.8
Approach		628	2.0	0.519	14.8	LOS B	2.1	53.4	0.63	0.68	32.2
North: Coffee Ave											
7	L2	30	2.0	0.609	19.8	LOS C	2.7	67.5	0.73	0.81	29.2
4	T1	536	2.0	0.609	19.4	LOS C	2.7	67.5	0.72	0.80	28.7
14	R2	99	2.0	0.609	19.0	LOS C	2.6	65.3	0.71	0.79	28.9
Approach		665	2.0	0.609	19.4	LOS C	2.7	67.5	0.72	0.80	28.8
West: Claratina Ave											
5	L2	82	2.0	0.389	10.2	LOS B	1.4	35.2	0.53	0.54	33.1
2	T1	260	2.0	0.389	10.2	LOS B	1.4	35.2	0.52	0.54	34.1
12	R2	218	2.0	0.389	10.0	LOS A	1.3	33.6	0.50	0.52	32.8
Approach		560	2.0	0.389	10.1	LOS B	1.4	35.2	0.52	0.53	33.4
All Vehicles		2600	2.0	0.609	13.5	LOS B	2.7	67.5	0.58	0.61	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

AM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	9	139	20	8	19	117	1047	12	18	938	105
Future Volume (veh/h)	111	9	139	20	8	19	117	1047	12	18	938	105
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	121	10	151	22	9	21	127	1138	13	20	1020	0
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	12	175	28	12	27	153	1263	14	35	2197	983
Arrive On Green	0.12	0.12	0.12	0.04	0.04	0.04	0.09	0.69	0.69	0.02	0.62	0.00
Sat Flow, veh/h	1774	99	1499	721	295	689	1774	1838	21	1774	3539	1583
Grp Volume(v), veh/h	121	0	161	52	0	0	127	0	1151	20	1020	0
Grp Sat Flow(s),veh/h/ln	1774	0	1598	1705	0	0	1774	0	1859	1774	1770	1583
Q Serve(g_s), s	8.5	0.0	13.0	4.0	0.0	0.0	9.3	0.0	67.0	1.5	20.2	0.0
Cycle Q Clear(g_c), s	8.5	0.0	13.0	4.0	0.0	0.0	9.3	0.0	67.0	1.5	20.2	0.0
Prop In Lane	1.00		0.94	0.42		0.40	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	208	0	187	67	0	0	153	0	1277	35	2197	983
V/C Ratio(X)	0.58	0.00	0.86	0.77	0.00	0.00	0.83	0.00	0.90	0.57	0.46	0.00
Avail Cap(c_a), veh/h	247	0	222	234	0	0	257	0	1277	69	2197	983
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.1	0.0	57.1	62.7	0.0	0.0	59.2	0.0	16.9	64.0	13.3	0.0
Incr Delay (d2), s/veh	2.6	0.0	24.4	17.0	0.0	0.0	11.0	0.0	10.4	13.9	0.7	0.0
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	4.3	0.0	7.0	2.2	0.0	0.0	5.0	0.0	37.6	0.9	10.0	0.0
LnGrp Delay(d),s/veh	57.7	0.0	81.4	79.6	0.0	0.0	70.2	0.0	27.3	77.9	14.0	0.0
LnGrp LOS	E		F	E			E		C	E	B	
Approach Vol, veh/h	282				52		1278				1040	
Approach Delay, s/veh	71.2				79.6		31.6				15.2	
Approach LOS	E				E		C				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	7.1	95.0			19.9	15.8	86.3	9.7				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	90.5				18.3	19.1	76.5	18.1				
Max Q Clear Time (g_c+I1), s	69.0				15.0	11.3	22.2	6.0				
Green Ext Time (p_c), s	0.0	9.8			0.4	0.2	8.3	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			30.3									
HCM 2010 LOS			C									

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	97	555	1030	44	13	251
Future Vol, veh/h	97	555	1030	44	13	251
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	603	1120	48	14	273
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1168	0	-	0	1656	584
Stage 1	-	-	-	-	1144	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	594	-	-	-	89	455
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	594	-	-	-	65	455
Mov Cap-2 Maneuver	-	-	-	-	65	-
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	567	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.9	0		26.6		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	594	-	-	-	65	455
HCM Lane V/C Ratio	0.177	-	-	-	0.217	0.6
HCM Control Delay (s)	12.4	1.2	-	-	75.2	24.1
HCM Lane LOS	B	A	-	-	F	C
HCM 95th %tile Q(veh)	0.6	-	-	-	0.7	3.8

HCM 2010 Signalized Intersection Summary
20: Claribel Ave & N-S Collector

AM PEAK EX+APPR+PROJ MITIGATION

11/10/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		 	 					
Traffic Volume (veh/h)	97	555	1030	44	13	251		
Future Volume (veh/h)	97	555	1030	44	13	251		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	105	603	1120	48	14	273		
Adj No. of Lanes	0	2	2	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	0	1780	1739	75	422	377		
Arrive On Green	0.00	0.50	0.50	0.50	0.24	0.24		
Sat Flow, veh/h	0	3632	3551	148	1774	1583		
Grp Volume(v), veh/h	0	603	573	595	14	273		
Grp Sat Flow(s),veh/h/ln	0	1770	1770	1837	1774	1583		
Q Serve(g_s), s	0.0	3.5	8.3	8.3	0.2	5.5		
Cycle Q Clear(g_c), s	0.0	3.5	8.3	8.3	0.2	5.5		
Prop In Lane	0.00			0.08	1.00	1.00		
Lane Grp Cap(c), veh/h	0	1780	890	924	422	377		
V/C Ratio(X)	0.00	0.34	0.64	0.64	0.03	0.72		
Avail Cap(c_a), veh/h	0	4739	1789	1856	996	889		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	5.2	6.3	6.3	10.2	12.2		
Incr Delay (d2), s/veh	0.0	0.1	0.8	0.8	0.0	2.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	1.7	4.2	4.3	0.1	4.9		
LnGrp Delay(d),s/veh	0.0	5.3	7.1	7.1	10.2	14.8		
LnGrp LOS		A	A	A	B	B		
Approach Vol, veh/h		603	1168		287			
Approach Delay, s/veh		5.3	7.1		14.6			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				22.0		12.8	0.0	22.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				46.5		19.5	6.9	35.1
Max Q Clear Time (g_c+I1), s				5.5		7.5	0.0	10.3
Green Ext Time (p_c), s				4.7		0.8	0.0	7.2
Intersection Summary								
HCM 2010 Ctrl Delay			7.6					
HCM 2010 LOS			A					

Intersection												
Int Delay, s/veh	22.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	773	177	69	508	0	82	0	108	0	0	0
Future Vol, veh/h	0	773	177	69	508	0	82	0	108	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	831	190	74	546	0	88	0	116	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	1021	0	0	1620	1620	926
Stage 1	-	-	-	-	-	-	926	926	-
Stage 2	-	-	-	-	-	-	694	694	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	680	-	0	113	103	326
Stage 1	0	-	-	-	-	0	386	347	-
Stage 2	0	-	-	-	-	0	496	444	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	680	-	-	101	0	326
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	0	-
Stage 1	-	-	-	-	-	-	344	0	-
Stage 2	-	-	-	-	-	-	496	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	199.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	166	-	-	680	-
HCM Lane V/C Ratio	1.231	-	-	0.109	-
HCM Control Delay (s)	199.9	-	-	10.9	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	11.5	-	-	0.4	-

HCM 2010 Signalized Intersection Summary
1: Coffee Rd & Patterson Rd

PM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	773	177	69	508	0	82	0	108	0	0	0
Future Volume (veh/h)	0	773	177	69	508	0	82	0	108	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0	1900	1863	1900			
Adj Flow Rate, veh/h	0	831	190	74	546	0	88	0	116			
Adj No. of Lanes	0	1	0	1	1	0	0	1	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	2	2	2	2	0	0	2	0			
Cap, veh/h	0	902	206	95	1355	0	109	0	144			
Arrive On Green	0.00	0.61	0.61	0.05	0.73	0.00	0.15	0.00	0.15			
Sat Flow, veh/h	0	1468	336	1774	1863	0	716	0	944			
Grp Volume(v), veh/h	0	0	1021	74	546	0	204	0	0			
Grp Sat Flow(s),veh/h/ln	0	0	1804	1774	1863	0	1660	0	0			
Q Serve(g_s), s	0.0	0.0	37.8	3.1	8.5	0.0	8.9	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	0.0	37.8	3.1	8.5	0.0	8.9	0.0	0.0			
Prop In Lane	0.00		0.19	1.00		0.00	0.43		0.57			
Lane Grp Cap(c), veh/h	0	0	1108	95	1355	0	253	0	0			
V/C Ratio(X)	0.00	0.00	0.92	0.78	0.40	0.00	0.81	0.00	0.00			
Avail Cap(c_a), veh/h	0	0	1237	130	1525	0	431	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	0.0	12.9	35.1	3.9	0.0	30.7	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.0	10.7	18.6	0.2	0.0	5.9	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.0	21.7	2.0	4.3	0.0	4.5	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	0.0	23.5	53.7	4.1	0.0	36.7	0.0	0.0			
LnGrp LOS			C	D	A		D					
Approach Vol, veh/h		1021			620			204				
Approach Delay, s/veh		23.5			10.0			36.7				
Approach LOS		C			B			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4				8				
Phs Duration (G+Y+Rc), s		16.0	8.5	50.6				59.1				
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5				
Max Green Setting (Gmax), s		19.5	5.5	51.5				61.5				
Max Q Clear Time (g_c+I1), s		10.9	5.1	39.8				10.5				
Green Ext Time (p_c), s		0.7	0.0	6.3				4.2				
Intersection Summary												
HCM 2010 Ctrl Delay			20.5									
HCM 2010 LOS			C									

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

EPAP + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	89	2.0	0.340	10.6	LOS B	1.1	26.7	0.55	0.57	32.2
18	R2	117	2.0	0.340	10.6	LOS B	1.1	26.7	0.55	0.57	31.3
Approach		207	2.0	0.340	10.6	LOS B	1.1	26.7	0.55	0.57	31.7
East: Patterson Ave											
1	L2	75	2.0	0.562	10.1	LOS B	2.7	69.2	0.27	0.15	33.7
6	T1	552	2.0	0.562	10.1	LOS B	2.7	69.2	0.27	0.15	34.4
Approach		627	2.0	0.562	10.1	LOS B	2.7	69.2	0.27	0.15	34.3
West: Patterson Ave											
2	T1	840	2.0	0.893	26.3	LOS D	12.5	317.4	0.69	0.38	27.9
12	R2	192	2.0	0.893	26.3	LOS D	12.5	317.4	0.69	0.38	26.6
Approach		1033	2.0	0.893	26.3	LOS D	12.5	317.4	0.69	0.38	27.6
All Vehicles		1866	2.0	0.893	19.1	LOS C	12.5	317.4	0.53	0.32	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\1 EPAPPP PM Coffee_Patterson.sip7

HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	605	176	476	409	31	133	164	364	68	140	61
Future Volume (veh/h)	114	605	176	476	409	31	133	164	364	68	140	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	124	658	191	517	445	34	145	178	396	74	152	66
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	698	202	584	1129	86	179	545	732	95	457	388
Arrive On Green	0.09	0.26	0.26	0.17	0.34	0.34	0.10	0.29	0.29	0.05	0.25	0.25
Sat Flow, veh/h	1774	2708	786	3442	3334	254	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	124	430	419	517	236	243	145	178	396	74	152	66
Grp Sat Flow(s),veh/h/ln	1774	1770	1724	1721	1770	1818	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.4	18.9	19.0	11.7	8.1	8.1	6.4	5.9	14.3	3.3	5.3	2.6
Cycle Q Clear(g_c), s	5.4	18.9	19.0	11.7	8.1	8.1	6.4	5.9	14.3	3.3	5.3	2.6
Prop In Lane	1.00		0.46	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	456	444	584	599	616	179	545	732	95	457	388
V/C Ratio(X)	0.79	0.94	0.94	0.88	0.39	0.40	0.81	0.33	0.54	0.78	0.33	0.17
Avail Cap(c_a), veh/h	270	456	444	584	599	616	190	545	732	141	457	388
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	35.5	28.9	28.9	32.3	20.1	20.1	35.0	22.0	15.3	37.2	24.7	23.6
Incr Delay (d2), s/veh	8.4	28.1	28.8	15.0	0.4	0.4	21.5	1.6	2.9	15.0	2.0	0.9
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	3.0	12.8	12.5	6.8	4.0	4.1	4.2	3.3	6.7	2.0	3.0	1.2
LnGrp Delay(d),s/veh	43.9	57.0	57.8	47.3	20.5	20.5	56.6	23.6	18.2	52.2	26.6	24.6
LnGrp LOS	D	E	E	D	C	C	E	C	B	D	C	C
Approach Vol, veh/h	973				996		719				292	
Approach Delay, s/veh	55.7				34.4		27.3				32.6	
Approach LOS	E				C		C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	27.8	18.0	25.0	12.5	24.0	11.6	31.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.3	21.7	13.5	20.5	8.5	19.5	12.1	21.9				
Max Q Clear Time (g_c+I1), s	5.3	16.3	13.7	21.0	8.4	7.3	7.4	10.1				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.0	0.0	0.8	0.1	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay			39.5									
HCM 2010 LOS			D									

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	170	0	60	0	132	277	106	126	0
Future Vol, veh/h	0	0	0	170	0	60	0	132	277	106	126	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	181	0	64	0	140	295	113	134	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				648	648	288	-	0	0	435	0	0
Stage 1				288	288	-	-	-	-	-	-	-
Stage 2				360	360	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				435	389	751	0	-	-	1125	-	0
Stage 1				761	674	-	0	-	-	-	-	0
Stage 2				706	626	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				388	0	751	-	-	-	1125	-	-
Mov Cap-2 Maneuver				388	0	-	-	-	-	-	-	-
Stage 1				678	0	-	-	-	-	-	-	-
Stage 2				706	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				22.6			0			3.9		
HCM LOS				C								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	444	1125	-							
HCM Lane V/C Ratio	-	-	0.551	0.1	-							
HCM Control Delay (s)	-	-	22.6	8.6	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	3.3	0.3	-							

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	86	96	98	53	96	149	610	135	104	517	116
Future Volume (veh/h)	85	86	96	98	53	96	149	610	135	104	517	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	88	89	99	101	55	99	154	629	139	107	533	120
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	175	149	129	192	163	191	1491	329	138	718	162
Arrive On Green	0.06	0.09	0.09	0.07	0.10	0.10	0.11	0.52	0.52	0.08	0.49	0.49
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2884	636	1774	1473	332
Grp Volume(v), veh/h	88	89	99	101	55	99	154	386	382	107	0	653
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1750	1774	0	1804
Q Serve(g_s), s	3.7	3.4	4.6	4.2	2.1	4.5	6.4	10.2	10.2	4.5	0.0	22.0
Cycle Q Clear(g_c), s	3.7	3.4	4.6	4.2	2.1	4.5	6.4	10.2	10.2	4.5	0.0	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		0.18
Lane Grp Cap(c), veh/h	113	175	149	129	192	163	191	915	905	138	0	879
V/C Ratio(X)	0.78	0.51	0.66	0.78	0.29	0.61	0.81	0.42	0.42	0.78	0.00	0.74
Avail Cap(c_a), veh/h	162	444	377	176	459	390	228	915	905	282	0	879
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	0.00	1.00
Uniform Delay (d), s/veh	34.8	32.5	33.1	34.4	31.3	32.4	32.9	11.3	11.3	34.2	0.0	15.6
Incr Delay (d2), s/veh	14.0	2.3	5.0	14.4	0.8	3.6	16.4	1.4	1.4	8.9	0.0	5.6
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	2.2	1.9	2.2	2.6	1.1	2.1	4.0	5.3	5.3	2.5	0.0	12.3
LnGrp Delay(d),s/veh	48.8	34.8	38.1	48.8	32.1	36.0	49.3	12.7	12.7	43.1	0.0	21.2
LnGrp LOS	D	C	D	D	C	D	D	B	B	D		C
Approach Vol, veh/h		276			255			922			760	
Approach Delay, s/veh		40.4			40.2			18.8			24.3	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	43.5	10.0	11.6	12.6	41.3	9.3	12.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.0	34.5	7.5	18.0	9.7	36.8	6.9	18.6				
Max Q Clear Time (g_c+I1), s	6.5	12.2	6.2	6.6	8.4	24.0	5.7	6.5				
Green Ext Time (p_c), s	0.1	5.1	0.0	0.5	0.0	3.7	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			25.9									
HCM 2010 LOS			C									
Notes												

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	15	0	2	0	416	17	6	295	0
Future Vol, veh/h	0	0	0	15	0	2	0	416	17	6	295	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	17	0	2	0	462	19	7	328	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				814	814	472	-	0	0	481	0	0
Stage 1				472	472	-	-	-	-	-	-	-
Stage 2				342	342	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				347	312	592	0	-	-	1082	-	0
Stage 1				628	559	-	0	-	-	-	-	0
Stage 2				719	638	-	0	-	-	-	-	0
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver				344	0	592	-	-	-	1082	-	-
Mov Cap-2 Maneuver				344	0	-	-	-	-	-	-	-
Stage 1				623	0	-	-	-	-	-	-	-
Stage 2				719	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				15.5			0			0.2		
HCM LOS				C								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	362	1082	-							
HCM Lane V/C Ratio	-	-	0.052	0.006	-							
HCM Control Delay (s)	-	-	15.5	8.3	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	0.2	0	-							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

PM PEAK EX+APPR+PROJECT

11/10/2017

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	37	10	128	191	15	51	216	988	291	87	637	44				
Future Volume (veh/h)	37	10	128	191	15	51	216	988	291	87	637	44				
Number	7	4	14	3	8	18	5	2	12	1	6	16				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1900	1863	1863	1900				
Adj Flow Rate, veh/h	40	11	138	205	16	55	232	1062	313	94	685	47				
Adj No. of Lanes	1	0	1	1	0	1	1	2	0	1	2	0				
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	65	0	178	243	0	337	273	1233	360	120	1244	85				
Arrive On Green	0.04	0.11	0.11	0.14	0.21	0.21	0.15	0.46	0.46	0.07	0.37	0.37				
Sat Flow, veh/h	1774	0	1583	1774	0	1583	1774	2703	790	1774	3361	230				
Grp Volume(v), veh/h	40	0	138	205	0	55	232	692	683	94	360	372				
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1774	1770	1723	1774	1770	1822				
Q Serve(g_s), s	1.8	0.0	6.7	9.0	0.0	2.2	10.1	27.7	28.3	4.1	12.8	12.8				
Cycle Q Clear(g_c), s	1.8	0.0	6.7	9.0	0.0	2.2	10.1	27.7	28.3	4.1	12.8	12.8				
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.46	1.00		0.13				
Lane Grp Cap(c), veh/h	65	0	178	243	0	337	273	807	786	120	655	674				
V/C Ratio(X)	0.61	0.00	0.77	0.84	0.00	0.16	0.85	0.86	0.87	0.78	0.55	0.55				
Avail Cap(c_a), veh/h	141	0	359	261	0	467	324	807	786	136	655	674				
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	37.7	0.0	34.2	33.4	0.0	25.5	32.7	19.3	19.5	36.4	19.8	19.8				
Incr Delay (d2), s/veh	8.9	0.0	7.0	20.5	0.0	0.2	16.8	11.4	12.5	22.6	3.3	3.2				
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	1.0	0.0	3.3	5.8	0.0	1.0	6.2	16.0	16.0	2.8	6.8	7.0				
LnGrp Delay(d),s/veh	46.5	0.0	41.2	53.9	0.0	25.7	49.5	30.7	32.0	59.1	23.1	23.0				
LnGrp LOS	D		D	D		C	D	C	C	E	C	C				
Approach Vol, veh/h	178				260				1607							
Approach Delay, s/veh	42.4				47.9				34.0							
Approach LOS	D				D				C							
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2	3	4	5	6	7	8								
Phs Duration (G+Y+Rc), s	9.9	40.7	15.4	13.4	16.7	33.9	7.4	21.4								
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5								
Max Green Setting (Gmax), s	6.1	36.2	11.7	18.0	14.5	27.8	6.3	23.4								
Max Q Clear Time (g_c+I1), s	6.1	30.3	11.0	8.7	12.1	14.8	3.8	4.2								
Green Ext Time (p_c), s	0.0	4.1	0.0	0.2	0.2	3.8	0.0	0.1								
Intersection Summary																
HCM 2010 Ctrl Delay	33.8															
HCM 2010 LOS	C															
Notes																

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	1097	141	283	832	70	216	526	470	184	517	90
Future Volume (veh/h)	195	1097	141	283	832	70	216	526	470	184	517	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	214	1205	155	311	914	77	237	578	516	202	568	99
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	1207	540	314	1347	603	250	689	589	219	627	281
Arrive On Green	0.14	0.34	0.34	0.18	0.38	0.38	0.14	0.19	0.19	0.12	0.18	0.18
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	214	1205	155	311	914	77	237	578	516	202	568	99
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	13.0	37.4	7.9	19.2	23.7	3.5	14.6	17.3	21.4	12.4	17.3	6.0
Cycle Q Clear(g_c), s	13.0	37.4	7.9	19.2	23.7	3.5	14.6	17.3	21.4	12.4	17.3	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	244	1207	540	314	1347	603	250	689	589	219	627	281
V/C Ratio(X)	0.88	1.00	0.29	0.99	0.68	0.13	0.95	0.84	0.88	0.92	0.91	0.35
Avail Cap(c_a), veh/h	282	1207	540	314	1347	603	250	689	589	219	627	281
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	46.5	36.2	26.5	45.1	28.5	22.2	46.9	42.6	32.2	47.7	44.3	39.7
Incr Delay (d2), s/veh	23.0	25.6	0.3	47.6	1.4	0.1	42.7	11.8	16.7	39.6	19.0	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	7.9	22.5	3.5	13.6	11.8	1.5	10.1	9.6	17.2	8.5	10.1	2.9
LnGrp Delay(d),s/veh	69.5	61.8	26.8	92.7	29.8	22.3	89.6	54.4	48.9	87.3	63.3	43.2
LnGrp LOS	E	E	C	F	C	C	F	D	D	F	E	D
Approach Vol, veh/h	1574				1302				1331		869	
Approach Delay, s/veh	59.4				44.4				58.5		66.6	
Approach LOS	E				D				E		E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.1	25.9	24.0	42.0	20.0	24.0	19.6	46.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	13.6	21.4	19.5	37.5	15.5	19.5	17.5	39.5				
Max Q Clear Time (g_c+1/4), s	14.4	23.4	21.2	39.4	16.6	19.3	15.0	25.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.1	0.1	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay			56.6									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
8: Coffee Rd & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	1328	237	243	894	9	146	211	369	10	179	109
Future Volume (veh/h)	212	1328	237	243	894	9	146	211	369	10	179	109
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	226	1413	252	259	951	10	155	224	393	11	190	116
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	1417	634	216	1320	590	183	476	404	24	308	499
Arrive On Green	0.15	0.40	0.40	0.12	0.37	0.37	0.10	0.26	0.26	0.01	0.17	0.17
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	226	1413	252	259	951	10	155	224	393	11	190	116
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	10.7	34.3	9.8	10.5	19.9	0.3	7.4	8.8	21.2	0.5	8.2	4.7
Cycle Q Clear(g_c), s	10.7	34.3	9.8	10.5	19.9	0.3	7.4	8.8	21.2	0.5	8.2	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	1417	634	216	1320	590	183	476	404	24	308	499
V/C Ratio(X)	0.85	1.00	0.40	1.20	0.72	0.02	0.85	0.47	0.97	0.46	0.62	0.23
Avail Cap(c_a), veh/h	350	1417	634	216	1320	590	183	476	404	103	391	569
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	35.7	25.8	18.4	37.8	23.2	17.0	38.0	27.2	31.8	42.2	33.4	21.8
Incr Delay (d2), s/veh	14.4	23.2	0.4	125.0	1.9	0.0	28.9	0.7	37.3	13.3	2.0	0.2
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	6.3	21.2	4.3	12.6	10.0	0.2	5.1	4.6	13.4	0.3	4.3	2.1
LnGrp Delay(d),s/veh	50.1	48.9	18.8	162.8	25.1	17.1	66.8	27.9	69.1	55.5	35.4	22.1
LnGrp LOS	D	D	B	F	C	B	E	C	E	E	D	C
Approach Vol, veh/h	1891				1220				772		317	
Approach Delay, s/veh	45.1				54.3				56.7		31.2	
Approach LOS	D				D				E		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	26.5	15.0	39.0	13.4	18.8	17.4	36.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	22.0	10.5	34.5	8.9	18.1	17.0	28.0				
Max Q Clear Time (g_c+12, s)	12.5	23.2	12.5	36.3	9.4	10.2	12.7	21.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.7	0.2	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			48.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Future Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	493	651	0	309	483	0	174	819	253	202	562	304
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	448	789	353	329	552	247	179	829	256	205	607	516
Arrive On Green	0.25	0.22	0.00	0.19	0.16	0.00	0.10	0.31	0.31	0.12	0.33	0.33
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2665	823	1774	1863	1583
Grp Volume(v), veh/h	493	651	0	309	483	0	174	544	528	202	562	304
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1718	1774	1863	1583
Q Serve(g_s), s	27.5	19.1	0.0	18.7	14.5	0.0	10.7	33.3	33.4	12.4	31.8	17.5
Cycle Q Clear(g_c), s	27.5	19.1	0.0	18.7	14.5	0.0	10.7	33.3	33.4	12.4	31.8	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	448	789	353	329	552	247	179	550	534	205	607	516
V/C Ratio(X)	1.10	0.82	0.00	0.94	0.87	0.00	0.97	0.99	0.99	0.99	0.93	0.59
Avail Cap(c_a), veh/h	448	821	367	329	584	261	179	550	534	205	607	516
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	40.3	0.0	43.8	45.0	0.0	48.9	37.4	37.4	48.1	35.5	30.7
Incr Delay (d2), s/veh	73.0	6.7	0.0	34.3	13.4	0.0	58.9	35.6	36.3	58.4	22.3	4.9
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	22.5	10.0	0.0	12.3	8.1	0.0	8.1	21.8	21.2	9.4	20.0	8.3
LnGrp Delay(d),s/veh	113.8	47.0	0.0	78.1	58.3	0.0	107.7	72.9	73.7	106.5	57.8	35.6
LnGrp LOS	F	D		E	E		F	E	E	F	E	D
Approach Vol, veh/h	1144			792			1246			1068		
Approach Delay, s/veh	75.8			66.0			78.1			60.7		
Approach LOS	E			E			E			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	38.4	24.7	28.8	15.5	40.0	32.0	21.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.6	33.9	20.2	25.3	11.0	35.5	27.5	18.0				
Max Q Clear Time (g_c+1/4), s	14.4	35.4	20.7	21.1	12.7	33.8	29.5	16.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.9	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			70.9									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM PEAK EX+APPR+PROJ MITIGATION

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Future Volume (veh/h)	473	625	308	297	464	293	167	786	243	194	540	292
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	493	651	0	309	483	0	174	819	253	202	562	304
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	498	883	395	344	574	257	207	893	400	214	908	406
Arrive On Green	0.28	0.25	0.00	0.19	0.16	0.00	0.12	0.25	0.25	0.12	0.26	0.26
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	493	651	0	309	483	0	174	819	253	202	562	304
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	27.1	16.6	0.0	16.6	13.0	0.0	9.4	22.0	13.9	11.1	13.7	17.3
Cycle Q Clear(g_c), s	27.1	16.6	0.0	16.6	13.0	0.0	9.4	22.0	13.9	11.1	13.7	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	498	883	395	344	574	257	207	893	400	214	908	406
V/C Ratio(X)	0.99	0.74	0.00	0.90	0.84	0.00	0.84	0.92	0.63	0.94	0.62	0.75
Avail Cap(c_a), veh/h	498	883	395	401	651	291	245	893	400	214	908	406
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	33.8	0.0	38.5	39.8	0.0	42.4	35.6	32.6	42.7	32.2	33.5
Incr Delay (d2), s/veh	37.4	3.3	0.0	20.6	8.8	0.0	19.9	15.7	7.4	46.0	3.2	11.9
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	8.3	8.4	0.0	10.1	7.0	0.0	5.7	12.6	6.9	8.1	7.1	8.9
LnGrp Delay(d),s/veh	72.4	37.1	0.0	59.1	48.6	0.0	62.3	51.3	40.0	88.7	35.3	45.4
LnGrp LOS	E	D		E	D		E	D	D	F	D	D
Approach Vol, veh/h	1144				792				1246		1068	
Approach Delay, s/veh	52.3				52.7				50.5		48.3	
Approach LOS	D				D				D		D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	29.2	23.5	28.9	15.9	29.6	32.0	20.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	1.8	24.7	22.1	23.4	13.5	23.0	27.5	18.0				
Max Q Clear Time (g_c+11.3), s	1.8	24.0	18.6	18.6	11.4	19.3	29.1	15.0				
Green Ext Time (p_c), s	0.0	0.4	0.3	1.9	0.1	1.7	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			50.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary 10: Claribel Ave & Squire-Wells Way

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	619	0	0	719	146	0	0	0	155	0	178
Future Volume (veh/h)	261	619	0	0	719	146	0	0	0	155	0	178
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	275	652	0	0	757	154				163	0	187
Adj No. of Lanes	1	1	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	337	1168	0	0	988	201				306	0	273
Arrive On Green	0.19	0.63	0.00	0.00	0.34	0.34				0.17	0.00	0.17
Sat Flow, veh/h	1774	1863	0	0	3024	596				1774	0	1583
Grp Volume(v), veh/h	275	652	0	0	457	454				163	0	187
Grp Sat Flow(s),veh/h/ln	1774	1863	0	0	1770	1758				1774	0	1583
Q Serve(g_s), s	6.7	9.0	0.0	0.0	10.4	10.4				3.8	0.0	5.0
Cycle Q Clear(g_c), s	6.7	9.0	0.0	0.0	10.4	10.4				3.8	0.0	5.0
Prop In Lane	1.00		0.00	0.00		0.34				1.00		1.00
Lane Grp Cap(c), veh/h	337	1168	0	0	596	592				306	0	273
V/C Ratio(X)	0.82	0.56	0.00	0.00	0.77	0.77				0.53	0.00	0.69
Avail Cap(c_a), veh/h	407	1361	0	0	709	705				719	0	642
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	4.8	0.0	0.0	13.3	13.3				16.9	0.0	17.4
Incr Delay (d2), s/veh	10.3	0.4	0.0	0.0	4.2	4.2				1.4	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	4.7	0.0	0.0	5.6	5.6				1.9	0.0	4.4
LnGrp Delay(d),s/veh	27.8	5.2	0.0	0.0	17.5	17.5				18.4	0.0	20.5
LnGrp LOS	C	A			B	B				B		C
Approach Vol, veh/h		927			911						350	
Approach Delay, s/veh		11.9			17.5						19.5	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				32.7		12.2	13.0	19.6				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				32.8		18.2	10.3	18.0				
Max Q Clear Time (g_c+I1), s				11.0		7.0	8.7	12.4				
Green Ext Time (p_c), s				4.6		0.9	0.1	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				15.5								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	583	136	14	609	75	204	241	25	62	253	49
Future Volume (veh/h)	34	583	136	14	609	75	204	241	25	62	253	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	35	595	139	14	621	77	208	246	26	63	258	50
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	795	676	30	666	83	245	478	51	83	299	58
Arrive On Green	0.03	0.43	0.43	0.02	0.41	0.41	0.14	0.29	0.29	0.05	0.20	0.20
Sat Flow, veh/h	1774	1863	1583	1774	1626	202	1774	1657	175	1774	1517	294
Grp Volume(v), veh/h	35	595	139	14	0	698	208	0	272	63	0	308
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1827	1774	0	1832	1774	0	1811
Q Serve(g_s), s	1.6	21.9	4.5	0.6	0.0	29.7	9.3	0.0	10.1	2.9	0.0	13.4
Cycle Q Clear(g_c), s	1.6	21.9	4.5	0.6	0.0	29.7	9.3	0.0	10.1	2.9	0.0	13.4
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.10	1.00		0.16
Lane Grp Cap(c), veh/h	60	795	676	30	0	749	245	0	529	83	0	357
V/C Ratio(X)	0.59	0.75	0.21	0.47	0.00	0.93	0.85	0.00	0.51	0.76	0.00	0.86
Avail Cap(c_a), veh/h	111	814	692	109	0	797	259	0	569	133	0	434
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.8	19.6	14.7	39.7	0.0	22.9	34.3	0.0	24.2	38.4	0.0	31.6
Incr Delay (d2), s/veh	8.9	3.8	0.1	11.3	0.0	17.0	21.5	0.0	0.8	13.3	0.0	14.1
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	0.9	12.1	2.0	0.4	0.0	18.5	6.0	0.0	5.2	1.7	0.0	8.1
LnGrp Delay(d),s/veh	47.7	23.4	14.8	51.0	0.0	40.0	55.8	0.0	25.0	51.7	0.0	45.7
LnGrp LOS	D	C	B	D		D	E		C	D		D
Approach Vol, veh/h	769			712			480			371		
Approach Delay, s/veh	23.0			40.2			38.3			46.7		
Approach LOS	C			D			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	28.0	5.9	39.3	15.8	20.6	7.2	37.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	25.3	5.0	35.6	11.9	19.5	5.1	35.5					
Max Q Clear Time (g_c+I), s	12.1	2.6	23.9	11.3	15.4	3.6	31.7					
Green Ext Time (p_c), s	0.0	1.3	0.0	3.5	0.0	0.7	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			35.2									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	496	82	0	482	7	155	87	0	4	49	76
Future Volume (veh/h)	91	496	82	0	482	7	155	87	0	4	49	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	97	528	0	0	513	0	165	93	0	4	52	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	703	0	0	832	0	367	147	0	114	418	0
Arrive On Green	0.53	0.53	0.00	0.00	0.45	0.00	0.23	0.23	0.00	0.23	0.23	0.00
Sat Flow, veh/h	136	1335	0	0	1863	0	898	634	0	44	1800	0
Grp Volume(v), veh/h	625	0	0	0	513	0	258	0	0	56	0	0
Grp Sat Flow(s),veh/h/ln	1470	0	0	0	1863	0	1532	0	0	1844	0	0
Q Serve(g_s), s	5.0	0.0	0.0	0.0	7.9	0.0	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.9	0.0	0.0	0.0	7.9	0.0	5.7	0.0	0.0	0.9	0.0	0.0
Prop In Lane	0.16		0.00	0.00		0.00	0.64		0.00	0.07		0.00
Lane Grp Cap(c), veh/h	886	0	0	0	832	0	514	0	0	531	0	0
V/C Ratio(X)	0.71	0.00	0.00	0.00	0.62	0.00	0.50	0.00	0.00	0.11	0.00	0.00
Avail Cap(c_a), veh/h	1432	0	0	0	1472	0	908	0	0	1007	0	0
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	0.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	0.0	7.9	0.0	13.1	0.0	0.0	11.3	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.7	0.0	0.8	0.0	0.0	0.1	0.0	0.0
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	5.6	0.0	0.0	0.0	4.2	0.0	2.5	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	8.1	0.0	0.0	0.0	8.6	0.0	13.9	0.0	0.0	11.4	0.0	0.0
LnGrp LOS	A				A		B			B		
Approach Vol, veh/h	625			513			258			56		
Approach Delay, s/veh	8.1			8.6			13.9			11.4		
Approach LOS	A			A			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	13.2		24.2		13.2		24.2					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.5		32.5		18.5		32.5					
Max Q Clear Time (g_c+I1), s	7.7		15.9		2.9		10.9					
Green Ext Time (p_c), s	0.9		3.8		0.1		2.9					
Intersection Summary												
HCM 2010 Ctrl Delay			9.5									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	222	163	143	203	35	206	435	161	20	370	99
Future Volume (veh/h)	88	222	163	143	203	35	206	435	161	20	370	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	97	244	179	157	223	38	226	478	177	22	407	109
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	328	279	185	393	334	253	761	647	45	543	461
Arrive On Green	0.07	0.18	0.18	0.10	0.21	0.21	0.14	0.41	0.41	0.03	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	97	244	179	157	223	38	226	478	177	22	407	109
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.4	7.8	6.6	5.5	6.8	1.2	7.9	12.9	4.7	0.8	12.5	3.3
Cycle Q Clear(g_c), s	3.4	7.8	6.6	5.5	6.8	1.2	7.9	12.9	4.7	0.8	12.5	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	328	279	185	393	334	253	761	647	45	543	461
V/C Ratio(X)	0.78	0.74	0.64	0.85	0.57	0.11	0.89	0.63	0.27	0.49	0.75	0.24
Avail Cap(c_a), veh/h	183	531	451	185	534	454	253	761	647	141	543	461
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	28.9	24.6	24.1	27.8	22.3	20.1	26.6	14.8	12.4	30.4	20.3	17.0
Incr Delay (d2), s/veh	12.1	3.3	2.5	28.7	1.3	0.1	30.4	3.9	1.0	8.0	9.2	1.2
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	2.1	4.3	3.1	4.1	3.6	0.6	6.0	7.3	2.2	0.5	7.8	1.6
LnGrp Delay(d),s/veh	41.0	28.0	26.6	56.5	23.6	20.3	57.0	18.7	13.5	38.4	29.5	18.2
LnGrp LOS	D	C	C	E	C	C	E	B	B	D	C	B
Approach Vol, veh/h	520			418			881			538		
Approach Delay, s/veh	29.9			35.7			27.5			27.5		
Approach LOS	C			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	30.3	11.1	15.6	13.5	22.9	8.9	17.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (G_max), s	5.6	22.4	6.6	18.0	9.0	18.4	6.5	18.1				
Max Q Clear Time (g_c+I2), s	12.8	14.9	7.5	9.8	9.9	14.5	5.4	8.8				
Green Ext Time (p_c), s	0.0	2.0	0.0	1.3	0.0	1.0	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay	29.5											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

PM PEAK EX+APPR+PROJECT
11/10/2017

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	154	525	267	1038	991	149		
Future Volume (veh/h)	154	525	267	1038	991	149		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	160	0	278	1081	1032	155		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	183	163	296	1556	1009	152		
Arrive On Green	0.10	0.00	0.17	0.84	0.64	0.64		
Sat Flow, veh/h	1774	1583	1774	1863	1583	238		
Grp Volume(v), veh/h	160	0	278	1081	0	1187		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1863	0	1821		
Q Serve(g_s), s	13.0	0.0	22.7	33.4	0.0	93.5		
Cycle Q Clear(g_c), s	13.0	0.0	22.7	33.4	0.0	93.5		
Prop In Lane	1.00	1.00	1.00			0.13		
Lane Grp Cap(c), veh/h	183	163	296	1556	0	1161		
V/C Ratio(X)	0.87	0.00	0.94	0.69	0.00	1.02		
Avail Cap(c_a), veh/h	224	200	296	1556	0	1161		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	64.8	0.0	60.3	4.7	0.0	26.6		
Incr Delay (d2), s/veh	25.8	0.0	36.1	2.6	0.0	32.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.7	0.0	14.1	17.9	0.0	57.2		
LnGrp Delay(d),s/veh	90.6	0.0	96.4	7.3	0.0	58.8		
LnGrp LOS	F		F	A		F		
Approach Vol, veh/h	160			1359	1187			
Approach Delay, s/veh	90.6			25.5	58.8			
Approach LOS	F			C	E			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		127.0		19.6	29.0	98.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		122.5		18.5	24.5	93.5		
Max Q Clear Time (g_c+I1), s		35.4		15.0	24.7	95.5		
Green Ext Time (p_c), s		14.5		0.1	0.0	0.0		
Intersection Summary								
HCM 2010 Ctrl Delay			44.0					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	22	209	74	21	244	211	1189	71	201	715	42
Future Volume (veh/h)	45	22	209	74	21	244	211	1189	71	201	715	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	47	23	218	77	22	254	220	1239	74	209	745	44
Adj No. of Lanes	1	1	1	2	1	0	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	347	530	176	25	291	264	1411	631	247	1323	78
Arrive On Green	0.04	0.19	0.19	0.05	0.20	0.20	0.15	0.40	0.40	0.14	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	3442	128	1475	1774	3539	1583	1774	3396	201
Grp Volume(v), veh/h	47	23	218	77	0	276	220	1239	74	209	388	401
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	0	1602	1774	1770	1583	1774	1770	1827
Q Serve(g_s), s	2.1	0.8	8.5	1.7	0.0	13.4	9.7	26.0	2.4	9.2	13.8	13.8
Cycle Q Clear(g_c), s	2.1	0.8	8.5	1.7	0.0	13.4	9.7	26.0	2.4	9.2	13.8	13.8
Prop In Lane	1.00		1.00	1.00		0.92	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	72	347	530	176	0	316	264	1411	631	247	689	712
V/C Ratio(X)	0.65	0.07	0.41	0.44	0.00	0.87	0.83	0.88	0.12	0.84	0.56	0.56
Avail Cap(c_a), veh/h	210	513	671	232	0	359	409	1411	631	276	689	712
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	26.9	20.6	37.0	0.0	31.3	33.2	22.3	15.2	33.7	19.2	19.2
Incr Delay (d2), s/veh	9.7	0.1	0.5	1.7	0.0	18.8	8.5	8.0	0.4	19.2	3.3	3.2
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	1.2	0.4	3.8	0.9	0.0	7.6	5.3	14.1	1.1	5.8	7.3	7.5
LnGrp Delay(d),s/veh	47.6	27.0	21.1	38.7	0.0	50.1	41.7	30.3	15.6	52.9	22.5	22.4
LnGrp LOS	D	C	C	D		D	D	C	B	D	C	C
Approach Vol, veh/h	288			353			1533			998		
Approach Delay, s/veh	25.9			47.6			31.3			28.8		
Approach LOS	C			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	36.5	8.6	19.5	16.4	35.8	7.7	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.5	32.0	5.4	22.1	18.5	26.0	9.5	18.0				
Max Q Clear Time (g_c+111), s	11.2	28.0	3.7	10.5	11.7	15.8	4.1	15.4				
Green Ext Time (p_c), s	0.1	2.9	0.0	0.6	0.3	3.6	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay	31.8											
HCM 2010 LOS	C											
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

EPAP + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	189	2.0	0.540	16.1	LOS C	2.2	56.3	0.66	0.73	29.6
8	T1	352	2.0	0.540	15.7	LOS C	2.2	56.3	0.65	0.71	29.8
18	R2	92	2.0	0.540	15.5	LOS C	2.1	54.3	0.64	0.70	30.2
Approach		634	2.0	0.540	15.8	LOS C	2.2	56.3	0.65	0.71	29.8
East: Sylvan Ave											
1	L2	100	2.0	0.483	12.3	LOS B	2.0	50.1	0.58	0.61	32.2
6	T1	498	2.0	0.483	12.1	LOS B	2.0	50.1	0.56	0.59	33.4
16	R2	90	2.0	0.483	12.0	LOS B	1.9	47.9	0.55	0.58	31.9
Approach		688	2.0	0.483	12.1	LOS B	2.0	50.1	0.56	0.59	33.0
North: Roselle Ave											
7	L2	76	2.0	0.359	11.0	LOS B	1.2	30.3	0.57	0.59	32.2
4	T1	314	2.0	0.359	10.8	LOS B	1.2	30.3	0.55	0.57	32.0
14	R2	54	2.0	0.359	10.7	LOS B	1.1	29.1	0.54	0.56	32.3
Approach		445	2.0	0.359	10.8	LOS B	1.2	30.3	0.55	0.57	32.1
West: Sylvan Ave											
5	L2	57	2.0	0.726	19.8	LOS C	4.8	121.8	0.72	0.80	29.5
2	T1	727	2.0	0.726	19.7	LOS C	4.8	121.8	0.71	0.79	30.2
12	R2	338	2.0	0.726	19.4	LOS C	4.6	116.7	0.69	0.77	28.8
Approach		1122	2.0	0.726	19.6	LOS C	4.8	121.8	0.70	0.78	29.7
All Vehicles		2888	2.0	0.726	15.6	LOS C	4.8	121.8	0.64	0.69	30.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\4 EPAPPP\16 EPAPPP PM Roselle_Sylvan.sip7

HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	695	376	93	493	245	352	974	85	541	922	173
Future Volume (veh/h)	203	695	376	93	493	245	352	974	85	541	922	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	211	724	392	97	514	255	367	1015	89	564	960	0
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	967	433	139	967	433	712	1998	175	618	2147	961
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.61	0.61	0.61	0.61	0.61	0.00
Sat Flow, veh/h	697	3539	1583	503	3539	1583	1130	3293	289	987	3539	1583
Grp Volume(v), veh/h	211	724	392	97	514	255	367	545	559	564	960	0
Grp Sat Flow(s),veh/h/ln	697	1770	1583	503	1770	1583	565	1770	1812	493	1770	1583
Q Serve(g_s), s	11.2	14.0	17.9	6.5	9.3	10.5	19.5	13.1	13.2	32.3	11.0	0.0
Cycle Q Clear(g_c), s	20.5	14.0	17.9	20.5	9.3	10.5	30.4	13.1	13.2	45.5	11.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	200	967	433	139	967	433	712	1074	1099	618	2147	961
V/C Ratio(X)	1.05	0.75	0.91	0.70	0.53	0.59	0.52	0.51	0.51	0.91	0.45	0.00
Avail Cap(c_a), veh/h	200	967	433	139	967	433	712	1074	1099	618	2147	961
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	0.00
Uniform Delay (d), s/veh	34.6	24.9	26.3	36.0	23.2	23.6	16.2	8.4	8.4	25.3	8.0	0.0
Incr Delay (d2), s/veh	78.2	3.3	22.3	14.0	0.6	2.1	2.7	1.7	1.7	20.2	0.7	0.0
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	8.5	7.3	10.5	2.5	4.6	4.8	3.3	6.9	7.0	7.5	5.5	0.0
LnGrp Delay(d),s/veh	112.7	28.2	48.6	50.0	23.7	25.7	18.8	10.1	10.1	45.5	8.6	0.0
LnGrp LOS	F	C	D	D	C	C	B	B	B	D	A	
Approach Vol, veh/h	1327			866			1471			1524		
Approach Delay, s/veh	47.7			27.3			12.3			22.3		
Approach LOS	D			C			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	50.0		25.0		50.0		25.0					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	45.5		20.5		45.5		20.5					
Max Q Clear Time (g_c+I1), s	32.4		22.5		47.5		22.5					
Green Ext Time (p_c), s	8.7		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	26.8											
HCM 2010 LOS	C											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

EPAP + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	270	2.0	0.783	29.9	LOS D	4.7	119.0	0.81	0.97	25.1
8	T1	602	2.0	0.783	29.2	LOS D	4.7	119.0	0.80	0.95	25.5
18	R2	18	2.0	0.783	28.9	LOS D	4.6	115.6	0.80	0.95	25.7
Approach		890	2.0	0.783	29.4	LOS D	4.7	119.0	0.80	0.96	25.4
East: Claratina Ave											
1	L2	25	2.0	0.447	15.5	LOS C	1.6	39.6	0.69	0.74	31.2
6	T1	403	2.0	0.447	15.1	LOS C	1.6	39.6	0.68	0.73	32.2
16	R2	18	2.0	0.447	14.8	LOS B	1.5	38.3	0.67	0.71	30.7
Approach		447	2.0	0.447	15.1	LOS C	1.6	39.6	0.68	0.73	32.1
North: Coffee Ave											
7	L2	53	2.0	0.551	14.9	LOS B	2.4	61.3	0.63	0.69	31.0
4	T1	558	2.0	0.551	14.7	LOS B	2.4	61.3	0.62	0.68	30.5
14	R2	117	2.0	0.551	14.5	LOS B	2.3	58.9	0.61	0.66	30.6
Approach		728	2.0	0.551	14.7	LOS B	2.4	61.3	0.62	0.68	30.6
West: Claratina Ave											
5	L2	204	2.0	0.818	28.6	LOS D	6.2	157.7	0.82	0.97	26.1
2	T1	646	2.0	0.818	28.3	LOS D	6.2	157.7	0.81	0.96	26.9
12	R2	283	2.0	0.818	27.9	LOS D	6.0	152.1	0.80	0.94	26.0
Approach		1133	2.0	0.818	28.3	LOS D	6.2	157.7	0.81	0.95	26.5
All Vehicles		3198	2.0	0.818	23.6	LOS C	6.2	157.7	0.75	0.86	27.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

PM PEAK EX+APPR+PROJECT

11/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	8	173	20	5	26	143	1228	13	28	1448	112
Future Volume (veh/h)	150	8	173	20	5	26	143	1228	13	28	1448	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	158	8	182	21	5	27	151	1293	14	29	1524	0
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	9	202	27	6	35	176	1233	13	43	2108	943
Arrive On Green	0.13	0.13	0.13	0.04	0.04	0.04	0.10	0.67	0.67	0.02	0.60	0.00
Sat Flow, veh/h	1774	67	1526	665	158	855	1774	1839	20	1774	3539	1583
Grp Volume(v), veh/h	158	0	190	53	0	0	151	0	1307	29	1524	0
Grp Sat Flow(s),veh/h/ln	1774	0	1593	1679	0	0	1774	0	1859	1774	1770	1583
Q Serve(g_s), s	11.5	0.0	16.0	4.2	0.0	0.0	11.4	0.0	91.0	2.2	41.5	0.0
Cycle Q Clear(g_c), s	11.5	0.0	16.0	4.2	0.0	0.0	11.4	0.0	91.0	2.2	41.5	0.0
Prop In Lane	1.00		0.96	0.40		0.51	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	235	0	211	68	0	0	176	0	1246	43	2108	943
V/C Ratio(X)	0.67	0.00	0.90	0.78	0.00	0.00	0.86	0.00	1.05	0.67	0.72	0.00
Avail Cap(c_a), veh/h	235	0	211	222	0	0	221	0	1246	65	2108	943
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	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.1	0.0	58.0	64.5	0.0	0.0	60.2	0.0	22.4	65.7	19.5	0.0
Incr Delay (d2), s/veh	7.3	0.0	36.2	17.1	0.0	0.0	23.1	0.0	39.4	16.2	2.2	0.0
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	6.1	0.0	9.1	2.3	0.0	0.0	6.7	0.0	59.7	1.3	20.7	0.0
LnGrp Delay(d),s/veh	63.4	0.0	94.3	81.7	0.0	0.0	83.4	0.0	61.8	81.9	21.7	0.0
LnGrp LOS	E		F	F			F		F	F	C	
Approach Vol, veh/h	348				53		1458				1553	
Approach Delay, s/veh	80.3				81.7		64.0				22.8	
Approach LOS	F				F		E				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	7.8	95.5			22.5	17.9	85.4	10.0				
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	91.0			18.0	16.9	79.1	18.0				
Max Q Clear Time (g_c+I), s	14.2	93.0			18.0	13.4	43.5	6.2				
Green Ext Time (p_c), s	0.0	0.0			0.0	0.1	14.4	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	47.2											
HCM 2010 LOS	D											

Intersection						
Int Delay, s/veh	398.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	436	1270	879	39	116	267
Future Vol, veh/h	436	1270	879	39	116	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	1380	955	42	126	290
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	997	0	-	0	2614	499
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	1638	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	690	-	-	-	~ 20	517
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	144	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	690	-	-	-	~ 6	517
Mov Cap-2 Maneuver	-	-	-	-	~ 6	-
Stage 1	-	-	-	-	~ 102	-
Stage 2	-	-	-	-	144	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.3	0		\$ 3104.4		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	690	-	-	-	6	517
HCM Lane V/C Ratio	0.687	-	-	-	-21.014	0.561
HCM Control Delay (s)	20.9	-	-	-	\$ 10202.7	20.5
HCM Lane LOS	C	-	-	-	F	C
HCM 95th %tile Q(veh)	5.5	-	-	-	17.7	3.4
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 2010 Signalized Intersection Summary
20: Claribel Ave & N-S Collector

PM PEAK EX+APPR+PROJ MITIGATION

11/10/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	436	1270	879	39	116	267		
Future Volume (veh/h)	436	1270	879	39	116	267		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863		
Adj Flow Rate, veh/h	474	1380	955	42	126	290		
Adj No. of Lanes	1	2	2	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	523	2379	1102	48	375	334		
Arrive On Green	0.30	0.67	0.32	0.32	0.21	0.21		
Sat Flow, veh/h	1774	3632	3547	152	1774	1583		
Grp Volume(v), veh/h	474	1380	489	508	126	290		
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1836	1774	1583		
Q Serve(g_s), s	19.9	16.2	20.1	20.1	4.7	13.7		
Cycle Q Clear(g_c), s	19.9	16.2	20.1	20.1	4.7	13.7		
Prop In Lane	1.00			0.08	1.00	1.00		
Lane Grp Cap(c), veh/h	523	2379	565	586	375	334		
V/C Ratio(X)	0.91	0.58	0.87	0.87	0.34	0.87		
Avail Cap(c_a), veh/h	654	2771	630	653	471	420		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	26.2	6.8	24.8	24.8	25.9	29.4		
Incr Delay (d2), s/veh	14.1	0.2	11.3	11.0	0.5	14.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.8	7.7	11.6	11.9	2.3	12.5		
LnGrp Delay(d),s/veh	40.3	7.0	36.1	35.8	26.4	44.0		
LnGrp LOS	D	A	D	D	C	D		
Approach Vol, veh/h		1854	997		416			
Approach Delay, s/veh		15.5	35.9		38.6			
Approach LOS		B	D		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				56.4		20.8	27.3	29.2
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				60.5		20.5	28.5	27.5
Max Q Clear Time (g_c+I1), s				18.2		15.7	21.9	22.1
Green Ext Time (p_c), s				15.0		0.7	0.9	2.5
Intersection Summary								
HCM 2010 Ctrl Delay			24.7					
HCM 2010 LOS			C					

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑			↔				
Traffic Vol, veh/h	0	576	100	110	1018	0	49	0	105	0	0	0
Future Vol, veh/h	0	576	100	110	1018	0	49	0	105	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	606	105	116	1072	0	52	0	111	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	711	0	0	1427	1963	356
Stage 1	-	-	-	-	-	-	659	659	-
Stage 2	-	-	-	-	-	-	768	1304	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	884	-	0	126	62	640
Stage 1	0	-	-	-	-	0	476	459	-
Stage 2	0	-	-	-	-	0	418	229	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	884	-	-	109	0	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	0	-
Stage 1	-	-	-	-	-	-	414	0	-
Stage 2	-	-	-	-	-	-	418	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	42.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	251	-	-	884	-
HCM Lane V/C Ratio	0.646	-	-	0.131	-
HCM Control Delay (s)	42.2	-	-	9.7	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	4	-	-	0.5	-

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

Cumulative AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	53	2.0	0.236	7.8	LOS A	0.7	16.9	0.46	0.46	33.8
18	R2	114	2.0	0.236	7.8	LOS A	0.7	16.9	0.46	0.46	32.9
Approach		167	2.0	0.236	7.8	LOS A	0.7	16.9	0.46	0.46	33.2
East: Patterson Ave											
1	L2	120	2.0	1.026	51.8	LOS F	85.7	2176.9	1.00	0.61	20.9
6	T1	1107	2.0	1.026	51.8	LOS F	85.7	2176.9	1.00	0.61	21.2
Approach		1226	2.0	1.026	51.8	LOS F	85.7	2176.9	1.00	0.61	21.2
West: Patterson Ave											
2	T1	626	2.0	0.673	13.2	LOS B	4.0	102.6	0.39	0.25	33.2
12	R2	109	2.0	0.673	13.2	LOS B	4.0	102.6	0.39	0.25	31.5
Approach		735	2.0	0.673	13.2	LOS B	4.0	102.6	0.39	0.25	32.9
All Vehicles		2128	2.0	1.026	35.0	LOS D	85.7	2176.9	0.75	0.47	24.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	500	91	232	620	50	158	48	57	70	109	100
Future Volume (veh/h)	100	500	91	232	620	50	158	48	57	70	109	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	105	526	96	244	653	53	166	51	60	74	115	105
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	667	121	338	814	66	206	650	707	100	538	458
Arrive On Green	0.08	0.22	0.22	0.10	0.25	0.25	0.12	0.35	0.35	0.06	0.29	0.29
Sat Flow, veh/h	1774	2992	544	3442	3316	269	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	105	310	312	244	348	358	166	51	60	74	115	105
Grp Sat Flow(s),veh/h/ln	1774	1770	1767	1721	1770	1815	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.8	10.9	10.9	4.5	12.1	12.2	6.0	1.2	1.4	2.7	3.1	3.3
Cycle Q Clear(g_c), s	3.8	10.9	10.9	4.5	12.1	12.2	6.0	1.2	1.4	2.7	3.1	3.3
Prop In Lane	1.00		0.31	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	395	394	338	435	446	206	650	707	100	538	458
V/C Ratio(X)	0.78	0.79	0.79	0.72	0.80	0.80	0.81	0.08	0.08	0.74	0.21	0.23
Avail Cap(c_a), veh/h	148	484	484	340	511	525	229	650	707	194	538	458
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	29.9	24.1	24.1	28.8	23.3	23.3	28.3	14.3	10.5	30.5	17.7	17.8
Incr Delay (d2), s/veh	21.5	6.8	7.1	7.3	7.7	7.6	17.2	0.2	0.2	10.2	0.9	1.2
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	6.0	6.1	2.5	6.8	7.0	3.9	0.7	0.7	1.6	1.7	1.6
LnGrp Delay(d),s/veh	51.4	30.9	31.2	36.1	31.0	30.9	45.5	14.6	10.7	40.7	18.6	19.0
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	B	B
Approach Vol, veh/h		727			950			277			294	
Approach Delay, s/veh		34.0			32.3			32.3			24.3	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	27.4	10.9	19.2	12.1	23.5	9.5	20.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.2	20.3	6.5	18.0	8.5	19.0	5.5	19.0				
Max Q Clear Time (g_c+I1), s	4.7	3.4	6.5	12.9	8.0	5.3	5.8	14.2				
Green Ext Time (p_c), s	0.0	0.3	0.0	1.7	0.0	0.8	0.0	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay				31.8								
HCM 2010 LOS				C								

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	0	0	0	94	0	52	0	202	30	10	350	0
Future Vol, veh/h	0	0	0	94	0	52	0	202	30	10	350	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	99	0	55	0	213	32	11	368	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				619	619	229	-	0	0	245	0	0
Stage 1				229	229	-	-	-	-	-	-	-
Stage 2				390	390	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				452	404	810	0	-	-	1321	-	0
Stage 1				809	715	-	0	-	-	-	-	0
Stage 2				684	608	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				447	0	810	-	-	-	1321	-	-
Mov Cap-2 Maneuver				447	0	-	-	-	-	-	-	-
Stage 1				801	0	-	-	-	-	-	-	-
Stage 2				684	0	-	-	-	-	-	-	-
Approach				WB			NB			SB		
HCM Control Delay, s				14.5			0			0.2		
HCM LOS				B								
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT							
Capacity (veh/h)		-	-	532	1321	-						
HCM Lane V/C Ratio		-	-	0.289	0.008	-						
HCM Control Delay (s)		-	-	14.5	7.7	0						
HCM Lane LOS		-	-	B	A	A						
HCM 95th %tile Q(veh)		-	-	1.2	0	-						

HCM 2010 Signalized Intersection Summary

4: Oakdale Rd & Morrill Rd

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	19	7	36	53	85	15	118	29	45	283	44
Future Volume (veh/h)	15	19	7	36	53	85	15	118	29	45	283	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	20	7	38	56	89	16	124	31	47	298	46
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	36	185	158	74	226	192	36	1171	284	87	699	108
Arrive On Green	0.02	0.10	0.10	0.04	0.12	0.12	0.02	0.41	0.41	0.05	0.44	0.44
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2825	686	1774	1576	243
Grp Volume(v), veh/h	16	20	7	38	56	89	16	76	79	47	0	344
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1742	1774	0	1820
Q Serve(g_s), s	0.4	0.4	0.2	1.0	1.2	2.4	0.4	1.2	1.3	1.2	0.0	5.9
Cycle Q Clear(g_c), s	0.4	0.4	0.2	1.0	1.2	2.4	0.4	1.2	1.3	1.2	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		0.13
Lane Grp Cap(c), veh/h	36	185	158	74	226	192	36	734	722	87	0	807
V/C Ratio(X)	0.45	0.11	0.04	0.51	0.25	0.46	0.45	0.10	0.11	0.54	0.00	0.43
Avail Cap(c_a), veh/h	195	735	625	195	735	625	195	734	722	198	0	807
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	0.00	1.00
Uniform Delay (d), s/veh	22.1	18.7	18.6	21.4	18.1	18.6	22.1	8.2	8.2	21.2	0.0	8.7
Incr Delay (d2), s/veh	8.6	0.3	0.1	5.3	0.6	1.7	8.6	0.3	0.3	5.1	0.0	1.6
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	0.3	0.2	0.1	0.6	0.7	1.1	0.3	0.6	0.7	0.7	0.0	3.3
LnGrp Delay(d),s/veh	30.6	18.9	18.7	26.7	18.7	20.4	30.6	8.4	8.5	26.2	0.0	10.3
LnGrp LOS	C	B	B	C	B	C	C	A	A	C		B
Approach Vol, veh/h		43			183			171			391	
Approach Delay, s/veh		23.3			21.2			10.5			12.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	23.4	6.4	9.0	5.4	24.7	5.4	10.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	18.9	5.0	18.0	5.0	19.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	3.2	3.3	3.0	2.4	2.4	7.9	2.4	4.4				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.0	0.0	1.5	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			14.6									
HCM 2010 LOS			B									
Notes												

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	25	0	5	0	227	5	5	439	0
Future Vol, veh/h	0	0	0	25	0	5	0	227	5	5	439	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	26	0	5	0	239	5	5	462	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				714	714	242	-	0	0	244	0	0
Stage 1				242	242	-	-	-	-	-	-	-
Stage 2				472	472	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				398	357	797	0	-	-	1322	-	0
Stage 1				798	705	-	0	-	-	-	-	0
Stage 2				628	559	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				396	0	797	-	-	-	1322	-	-
Mov Cap-2 Maneuver				396	0	-	-	-	-	-	-	-
Stage 1				794	0	-	-	-	-	-	-	-
Stage 2				628	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				14			0			0.1		
HCM LOS				B								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	432	1322	-							
HCM Lane V/C Ratio	-	-	0.073	0.004	-							
HCM Control Delay (s)	-	-	14	7.7	0							
HCM Lane LOS	-	-	B	A	A							
HCM 95th %tile Q(veh)	-	-	0.2	0	-							

HCM 2010 Signalized Intersection Summary
6: Oakdale Rd & Crawford Rd

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	11	382	0	54	25	98	188	64	198	16
Future Volume (veh/h)	10	0	11	382	0	54	25	98	188	64	198	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	11	0	12	402	0	57	26	103	198	67	208	17
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	0	98	464	0	490	52	556	497	100	1132	92
Arrive On Green	0.01	0.00	0.06	0.26	0.00	0.31	0.03	0.31	0.31	0.06	0.34	0.34
Sat Flow, veh/h	1774	0	1583	1774	0	1583	1774	1770	1583	1774	3316	269
Grp Volume(v), veh/h	11	0	12	402	0	57	26	103	198	67	110	115
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1774	1770	1583	1774	1770	1815
Q Serve(g_s), s	0.4	0.0	0.4	12.7	0.0	1.5	0.9	2.5	5.8	2.2	2.6	2.6
Cycle Q Clear(g_c), s	0.4	0.0	0.4	12.7	0.0	1.5	0.9	2.5	5.8	2.2	2.6	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	25	0	98	464	0	490	52	556	497	100	604	620
V/C Ratio(X)	0.44	0.00	0.12	0.87	0.00	0.12	0.50	0.19	0.40	0.67	0.18	0.19
Avail Cap(c_a), veh/h	151	0	484	618	0	901	151	556	497	151	604	620
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	26.1	20.8	0.0	14.6	28.1	14.7	15.8	27.2	13.6	13.6
Incr Delay (d2), s/veh	11.9	0.0	0.6	9.8	0.0	0.1	7.2	0.7	2.4	7.4	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2	7.4	0.0	0.7	0.5	1.3	2.9	1.3	1.4	1.4
LnGrp Delay(d),s/veh	40.7	0.0	26.7	30.5	0.0	14.7	35.3	15.4	18.2	34.7	14.3	14.3
LnGrp LOS	D		C	C		B	D	B	B	C	B	B
Approach Vol, veh/h	23				459		327				292	
Approach Delay, s/veh	33.4				28.6		18.7				19.0	
Approach LOS	C				C		B				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	23.0	19.9	8.1	6.2	24.6	5.3	22.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	20.5	18.0	5.0	18.5	5.0	33.5				
Max Q Clear Time (g_c+I1), s	4.2	7.8	14.7	2.4	2.9	4.6	2.4	3.5				
Green Ext Time (p_c), s	0.0	1.3	0.7	0.0	0.0	1.0	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			23.2									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	700	150	173	1910	270	130	430	96	50	525	270
Future Volume (veh/h)	40	700	150	173	1910	270	130	430	96	50	525	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	42	737	0	182	2011	0	137	453	101	53	553	284
Adj No. of Lanes	2	0	1	2	0	1	1	3	2	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	0	0	308	0	0	175	2009	1101	91	1769	551
Arrive On Green	0.04	0.00	0.00	0.09	0.00	0.00	0.10	0.40	0.40	0.05	0.35	0.35
Sat Flow, veh/h	3442	42		3442	182		1774	5085	2787	1774	5085	1583
Grp Volume(v), veh/h	42	24.9		182	25.1		137	453	101	53	553	284
Grp Sat Flow(s),veh/h/ln	1721	C		1721	C		1774	1695	1393	1774	1695	1583
Q Serve(g_s), s	0.6			2.6			3.9	3.1	1.2	1.5	4.1	7.4
Cycle Q Clear(g_c), s	0.6			2.6			3.9	3.1	1.2	1.5	4.1	7.4
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	151			308			175	2009	1101	91	1769	551
V/C Ratio(X)	0.28			0.59			0.78	0.23	0.09	0.58	0.31	0.52
Avail Cap(c_a), veh/h	333			333			240	2009	1101	206	1769	551
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	23.9			22.6			22.8	10.4	9.8	24.0	12.3	13.4
Incr Delay (d2), s/veh	1.0			2.4			10.9	0.3	0.2	5.7	0.5	3.4
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3			1.3			2.4	1.5	0.5	0.9	2.0	3.7
LnGrp Delay(d),s/veh	24.9			25.1			33.6	10.7	10.0	29.7	12.8	16.8
LnGrp LOS	C			C			C	B	A	C	B	B
Approach Vol, veh/h							691			890		
Approach Delay, s/veh							15.1			15.1		
Approach LOS							B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7					
Phs Duration (G+Y+Rc), s	10.7	28.4	12.6		13.1	26.0	10.3					
Change Period (Y+Rc), s	8.0	8.0	8.0		8.0	8.0	8.0					
Max Green Setting (Gmax), s	19.0	19.0	5.0		7.0	18.0	5.0					
Max Q Clear Time (g_c+13), s	5.1	5.1	4.6		5.9	9.4	2.6					
Green Ext Time (p_c), s	0.0	2.9	0.0		0.0	3.1	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			16.3									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
8: Coffee Rd & Claribel Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	676	100	390	1577	50	440	248	310	30	316	336
Future Volume (veh/h)	75	676	100	390	1577	50	440	248	310	30	316	336
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	79	712	0	411	1660	0	463	261	326	32	333	354
Adj No. of Lanes	2	0	1	2	0	1	1	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	0	0	435	0	0	506	1932	1065	58	891	398
Arrive On Green	0.06	0.00	0.00	0.13	0.00	0.00	0.29	0.55	0.55	0.03	0.25	0.25
Sat Flow, veh/h	3442	79		3442	411		1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	79	34.0		411	60.6		463	261	326	32	333	354
Grp Sat Flow(s),veh/h/ln	1721	C		1721	E		1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.6			8.4			18.0	2.6	6.1	1.3	5.5	15.4
Cycle Q Clear(g_c), s	1.6			8.4			18.0	2.6	6.1	1.3	5.5	15.4
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191			435			506	1932	1065	58	891	398
V/C Ratio(X)	0.41			0.95			0.92	0.14	0.31	0.55	0.37	0.89
Avail Cap(c_a), veh/h	242			435			548	1932	1065	149	944	422
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	32.5			30.9			24.6	7.9	4.8	33.9	22.0	25.7
Incr Delay (d2), s/veh	1.4			29.7			19.3	0.0	0.2	7.8	0.3	19.4
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8			5.8			11.5	1.2	2.6	0.7	2.7	8.9
LnGrp Delay(d),s/veh	34.0			60.6			43.9	8.0	5.0	41.7	22.3	45.1
LnGrp LOS	C			E			D	A	A	D	C	D
Approach Vol, veh/h							1050				719	
Approach Delay, s/veh							22.9				34.4	
Approach LOS							C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7					
Phs Duration (G+Y+Rc), s	7.3	46.9	17.0		28.3	25.9	12.0					
Change Period (Y+Rc), s	5.0	8.0	8.0		8.0	8.0	8.0					
Max Green Setting (Gmax), s	6.0	38.0	9.0		22.0	19.0	5.0					
Max Q Clear Time (g_c+1/3), s	13.3	8.1	10.4		20.0	17.4	3.6					
Green Ext Time (p_c), s	0.0	2.6	0.0		0.3	0.6	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			33.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	43	99	390	25	53	79	155	235	19	448	99
Future Volume (veh/h)	89	43	99	390	25	53	79	155	235	19	448	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	94	45	0	411	26	0	83	163	247	20	472	104
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	272	122	469	966	432	110	603	540	42	1071	479
Arrive On Green	0.07	0.08	0.00	0.26	0.27	0.00	0.06	0.34	0.34	0.02	0.30	0.30
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1770	1583	1774	3539	1583
Grp Volume(v), veh/h	94	45	0	411	26	0	83	163	247	20	472	104
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.2	0.7	0.0	13.6	0.3	0.0	2.8	4.1	7.5	0.7	6.6	3.0
Cycle Q Clear(g_c), s	3.2	0.7	0.0	13.6	0.3	0.0	2.8	4.1	7.5	0.7	6.6	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	272	122	469	966	432	110	603	540	42	1071	479
V/C Ratio(X)	0.77	0.17	0.00	0.88	0.03	0.00	0.76	0.27	0.46	0.48	0.44	0.22
Avail Cap(c_a), veh/h	284	1042	466	595	1661	743	145	603	540	145	1071	479
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	26.4	0.0	21.5	16.3	0.0	28.2	14.6	15.7	29.5	17.2	15.9
Incr Delay (d2), s/veh	9.9	0.3	0.0	11.5	0.0	0.0	14.8	1.1	2.8	8.3	1.3	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	1.9	0.4	0.0	8.1	0.2	0.0	1.8	2.2	3.6	0.4	3.4	1.4
LnGrp Delay(d),s/veh	37.9	26.7	0.0	33.1	16.3	0.0	43.1	15.7	18.5	37.7	18.5	17.0
LnGrp LOS	D	C		C	B		D	B	B	D	B	B
Approach Vol, veh/h	139		437				493		596			
Approach Delay, s/veh	34.3		32.1				21.7		18.9			
Approach LOS	C		C				C		B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	25.3	20.7	9.2	8.3	23.0	8.7	21.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	20.5	18.0	5.0	18.5	9.8	28.7				
Max Q Clear Time (g_c+I12), s	12.5	9.5	15.6	2.7	4.8	8.6	5.2	2.3				
Green Ext Time (p_c), s	0.0	1.7	0.6	0.1	0.0	2.5	0.1	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			24.5									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary 10: Claribel Ave & Squire-Wells Way

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	177	0	0	108	125	0	0	0	185	0	320
Future Volume (veh/h)	120	177	0	0	108	125	0	0	0	185	0	320
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	126	186	0	0	114	132				195	0	337
Adj No. of Lanes	1	2	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	188	1486	0	0	303	271				523	0	467
Arrive On Green	0.11	0.42	0.00	0.00	0.17	0.17				0.29	0.00	0.29
Sat Flow, veh/h	1774	3632	0	0	1863	1583				1774	0	1583
Grp Volume(v), veh/h	126	186	0	0	114	132				195	0	337
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1583				1774	0	1583
Q Serve(g_s), s	2.2	1.0	0.0	0.0	1.8	2.4				2.7	0.0	6.0
Cycle Q Clear(g_c), s	2.2	1.0	0.0	0.0	1.8	2.4				2.7	0.0	6.0
Prop In Lane	1.00		0.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	188	1486	0	0	303	271				523	0	467
V/C Ratio(X)	0.67	0.13	0.00	0.00	0.38	0.49				0.37	0.00	0.72
Avail Cap(c_a), veh/h	309	3143	0	0	1010	904				1013	0	904
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	5.6	0.0	0.0	11.6	11.8				8.8	0.0	10.0
Incr Delay (d2), s/veh	4.1	0.0	0.0	0.0	0.8	1.4				0.4	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.5	0.0	0.0	0.9	1.1				1.4	0.0	5.3
LnGrp Delay(d),s/veh	17.7	5.6	0.0	0.0	12.3	13.2				9.3	0.0	12.1
LnGrp LOS	B	A			B	B				A		B
Approach Vol, veh/h		312			246						532	
Approach Delay, s/veh		10.5			12.8						11.1	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				17.7		13.8	7.8	9.9				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				28.0		18.0	5.5	18.0				
Max Q Clear Time (g_c+I1), s				3.0		8.0	4.2	4.4				
Green Ext Time (p_c), s				1.1		1.4	0.0	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay				11.3								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	174	155	100	83	50	130	372	30	20	424	20
Future Volume (veh/h)	33	174	155	100	83	50	130	372	30	20	424	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	35	183	163	105	87	53	137	392	32	21	446	21
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	305	256	135	445	252	176	656	54	45	550	26
Arrive On Green	0.04	0.17	0.17	0.08	0.20	0.20	0.10	0.39	0.39	0.03	0.31	0.31
Sat Flow, veh/h	1774	1828	1533	1774	2179	1235	1774	1700	139	1774	1765	83
Grp Volume(v), veh/h	35	177	169	105	69	71	137	0	424	21	0	467
Grp Sat Flow(s),veh/h/ln	1774	1770	1592	1774	1770	1645	1774	0	1838	1774	0	1848
Q Serve(g_s), s	1.0	4.8	5.1	3.0	1.7	1.9	3.9	0.0	9.6	0.6	0.0	12.1
Cycle Q Clear(g_c), s	1.0	4.8	5.1	3.0	1.7	1.9	3.9	0.0	9.6	0.6	0.0	12.1
Prop In Lane	1.00		0.96	1.00		0.75	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	68	295	265	135	362	336	176	0	709	45	0	576
V/C Ratio(X)	0.52	0.60	0.64	0.78	0.19	0.21	0.78	0.00	0.60	0.47	0.00	0.81
Avail Cap(c_a), veh/h	191	613	552	222	644	598	290	0	973	171	0	854
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	20.0	20.2	23.6	17.1	17.2	22.8	0.0	12.7	25.0	0.0	16.5
Incr Delay (d2), s/veh	6.0	2.0	2.5	9.4	0.3	0.3	7.2	0.0	0.8	7.5	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.5	2.4	1.8	0.9	0.9	2.3	0.0	5.0	0.4	0.0	6.7
LnGrp Delay(d),s/veh	30.5	22.0	22.7	32.9	17.4	17.5	30.0	0.0	13.5	32.5	0.0	20.2
LnGrp LOS	C	C	C	C	B	B	C		B	C		C
Approach Vol, veh/h	381				245				561		488	
Approach Delay, s/veh	23.1				24.1				17.6		20.7	
Approach LOS	C				C				B		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	24.5	8.4	13.2	9.7	20.7	6.5	15.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.8	27.5	6.5	18.0	8.5	24.0	5.6	18.9				
Max Q Clear Time (g_c+I), s	12.6	11.6	5.0	7.1	5.9	14.1	3.0	3.9				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.5	0.1	2.1	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			20.7									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	150	40	5	76	5	50	20	5	5	40	108
Future Volume (veh/h)	34	150	40	5	76	5	50	20	5	5	40	108
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	36	158	0	5	80	0	53	21	0	5	42	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	318	0	218	73	0	601	180	0	250	490	0
Arrive On Green	0.21	0.21	0.00	0.21	0.04	0.00	0.28	0.28	0.00	0.28	0.28	0.00
Sat Flow, veh/h	254	1510	0	66	1766	0	894	637	0	92	1739	0
Grp Volume(v), veh/h	194	0	0	85	0	0	74	0	0	47	0	0
Grp Sat Flow(s),veh/h/ln	1764	0	0	1832	0	0	1531	0	0	1831	0	0
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.8	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.19		0.00	0.06		0.00	0.72		0.00	0.11		0.00
Lane Grp Cap(c), veh/h	612	0	0	601	0	0	780	0	0	741	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.14	0.00	0.00	0.09	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	2002	0	0	2054	0	0	1859	0	0	2058	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.2	0.0	0.0	8.4	0.0	0.0	4.8	0.0	0.0	4.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
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	0.9	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	6.5	0.0	0.0	8.5	0.0	0.0	4.8	0.0	0.0	4.7	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h	194				85				74		47	
Approach Delay, s/veh	6.5				8.5				4.8		4.7	
Approach LOS	A				A				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	9.5		8.2		9.5		8.2					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	2.5		3.7		2.3		3.0					
Green Ext Time (p_c), s	0.2		0.8		0.1		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		  	  		  	 		 	 	
Traffic Volume (veh/h)	405	1014	239	65	837	50	195	325	135	30	300	500
Future Volume (veh/h)	405	1014	239	65	837	50	195	325	135	30	300	500
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	426	1067	252	68	881	53	205	342	142	32	316	526
Adj No. of Lanes	2	3	1	3	3	1	3	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	518	1665	519	267	1171	365	362	1079	483	115	942	660
Arrive On Green	0.15	0.33	0.33	0.05	0.23	0.23	0.07	0.30	0.30	0.03	0.27	0.27
Sat Flow, veh/h	3442	5085	1583	5003	5085	1583	5003	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	426	1067	252	68	881	53	205	342	142	32	316	526
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1668	1695	1583	1668	1770	1583	1721	1770	1583
Q Serve(g_s), s	8.1	12.1	8.6	0.9	10.9	1.8	2.7	5.0	4.6	0.6	4.9	18.0
Cycle Q Clear(g_c), s	8.1	12.1	8.6	0.9	10.9	1.8	2.7	5.0	4.6	0.6	4.9	18.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	518	1665	519	267	1171	365	362	1079	483	115	942	660
V/C Ratio(X)	0.82	0.64	0.49	0.25	0.75	0.15	0.57	0.32	0.29	0.28	0.34	0.80
Avail Cap(c_a), veh/h	534	1729	538	370	1353	421	370	1079	483	254	942	660
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	27.9	19.4	18.2	30.7	24.2	20.7	30.4	18.1	18.0	31.9	20.0	17.2
Incr Delay (d2), s/veh	9.8	0.8	0.7	0.5	2.1	0.2	1.9	0.8	1.5	1.3	1.0	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	5.7	3.8	0.4	5.3	0.8	1.3	2.6	2.2	0.3	2.5	10.3
LnGrp Delay(d),s/veh	37.6	20.1	18.9	31.2	26.3	20.9	32.3	18.9	19.5	33.2	21.0	26.9
LnGrp LOS	D	C	B	C	C	C	C	B	B	C	C	C
Approach Vol, veh/h	1745				1002				689		874	
Approach Delay, s/veh	24.2				26.4				23.0		25.0	
Approach LOS	C				C				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	25.6	8.1	27.2	9.4	23.0	14.7	20.6				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	* 5				
Max Green Setting (Gmax), s	5.0	18.0	5.0	23.0	5.0	18.0	10.5	* 18				
Max Q Clear Time (g_c+I), s	12.6	7.0	2.9	14.1	4.7	20.0	10.1	12.9				
Green Ext Time (p_c), s	0.0	1.8	0.0	5.2	0.0	0.0	0.1	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			24.7									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	285	295	35	550	35	875	318	80	35	455	408
Future Volume (veh/h)	331	285	295	35	550	35	875	318	80	35	455	408
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	348	300	0	37	579	37	921	335	84	37	479	429
Adj No. of Lanes	2	2	1	2	2	1	2	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	455	1044	467	120	699	313	748	1779	796	608	813	573
Arrive On Green	0.13	0.29	0.00	0.03	0.20	0.20	0.22	0.50	0.50	0.23	0.23	0.23
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	3539	1583	1870	3539	1583
Grp Volume(v), veh/h	348	300	0	37	579	37	921	335	84	37	479	429
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1770	1583	935	1770	1583
Q Serve(g_s), s	7.9	5.3	0.0	0.8	12.6	1.5	17.5	4.2	2.2	1.3	9.7	18.5
Cycle Q Clear(g_c), s	7.9	5.3	0.0	0.8	12.6	1.5	17.5	4.2	2.2	1.3	9.7	18.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	455	1044	467	120	699	313	748	1779	796	608	813	573
V/C Ratio(X)	0.76	0.29	0.00	0.31	0.83	0.12	1.23	0.19	0.11	0.06	0.59	0.75
Avail Cap(c_a), veh/h	769	1362	609	214	791	354	748	1779	796	608	813	573
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	21.9	0.0	37.9	31.0	26.6	31.5	11.0	10.5	24.4	27.7	22.5
Incr Delay (d2), s/veh	2.7	0.2	0.0	1.4	6.6	0.2	116.0	0.2	0.3	0.2	3.1	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.6	0.0	0.4	6.8	0.7	20.2	2.1	1.0	0.3	5.1	9.7
LnGrp Delay(d),s/veh	36.4	22.0	0.0	39.4	37.7	26.7	147.5	11.2	10.8	24.6	30.8	31.2
LnGrp LOS	D	C		D	D	C	F	B	B	C	C	C
Approach Vol, veh/h		648			653			1340			945	
Approach Delay, s/veh		29.8			37.1			104.9			30.7	
Approach LOS		C			D			F			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		45.0	7.3	28.3	22.0	23.0	15.2	20.4				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		40.5	5.0	31.0	17.5	18.5	18.0	18.0				
Max Q Clear Time (g_c+I1), s		6.2	2.8	7.3	19.5	20.5	9.9	14.6				
Green Ext Time (p_c), s		2.6	0.0	1.9	0.0	0.0	0.8	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			59.4									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	65	0	38	18	354	25	73	481	0
Future Volume (veh/h)	0	0	0	65	0	38	18	354	25	73	481	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	0	0	68	0	40	19	373	26	77	506	0
Adj No. of Lanes	1	2	1	2	0	1	1	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	335	142	701	0	142	42	1692	757	130	1867	835
Arrive On Green	0.00	0.00	0.00	0.09	0.00	0.09	0.02	0.48	0.48	0.07	0.53	0.00
Sat Flow, veh/h	1362	3725	1583	3548	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	0	0	0	68	0	40	19	373	26	77	506	0
Grp Sat Flow(s),veh/h/ln	1362	1863	1583	1774	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.9	0.4	2.3	0.3	1.6	3.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.7	0.0	0.9	0.4	2.3	0.3	1.6	3.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	335	142	701	0	142	42	1692	757	130	1867	835
V/C Ratio(X)	0.00	0.00	0.00	0.10	0.00	0.28	0.45	0.22	0.03	0.59	0.27	0.00
Avail Cap(c_a), veh/h	720	1781	757	2079	0	757	236	1692	757	259	1867	835
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)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	15.9	0.0	16.0	18.1	5.7	5.2	16.9	4.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	1.1	7.2	0.3	0.1	4.2	0.4	0.0
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	0.0	0.0	0.0	0.3	0.0	0.4	0.3	1.2	0.2	0.9	1.5	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	16.0	0.0	17.1	25.3	6.0	5.3	21.1	5.3	0.0
LnGrp LOS				B		B	C	A	A	C	A	
Approach Vol, veh/h		0			108			418			583	
Approach Delay, s/veh		0.0			16.4			6.9			7.4	
Approach LOS					B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	22.5		7.9	5.4	24.4		7.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	18.0		18.0	5.0	18.5		18.0				
Max Q Clear Time (g_c+1/3), s	13.6	4.3		0.0	2.4	5.0		2.9				
Green Ext Time (p_c), s	0.0	2.1		0.0	0.0	2.8		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				8.0								
HCM 2010 LOS				A								
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Cumulative AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	179	2.0	1.156	123.8	LOS F	28.3	718.3	1.00	2.62	12.5
8	T1	311	2.0	1.156	123.8	LOS F	28.3	718.3	1.00	2.62	12.4
18	R2	533	2.0	1.178	129.4	LOS F	32.5	826.0	1.00	2.85	11.8
Approach		1023	2.0	1.178	126.7	LOS F	32.5	826.0	1.00	2.74	12.1
East: Sylvan Ave											
1	L2	348	2.0	0.793	24.9	LOS C	6.0	152.2	0.79	0.91	26.9
6	T1	591	2.0	0.793	24.6	LOS C	6.0	152.2	0.78	0.89	28.0
16	R2	242	2.0	0.793	24.4	LOS C	5.8	146.4	0.77	0.88	27.1
Approach		1182	2.0	0.793	24.6	LOS C	6.0	152.2	0.78	0.89	27.5
North: Roselle Ave											
7	L2	308	2.0	0.740	29.7	LOS D	3.7	94.8	0.83	0.97	24.9
4	T1	314	2.0	0.740	28.6	LOS D	3.7	94.8	0.81	0.95	25.6
14	R2	109	2.0	0.740	28.4	LOS D	3.6	92.4	0.81	0.95	25.8
Approach		730	2.0	0.740	29.0	LOS D	3.7	94.8	0.82	0.96	25.3
West: Sylvan Ave											
5	L2	114	2.0	0.996	66.3	LOS F	13.4	340.7	0.98	1.59	18.4
2	T1	834	2.0	0.996	65.5	LOS F	13.4	340.7	0.98	1.59	18.8
12	R2	130	2.0	0.996	64.7	LOS F	13.4	339.7	0.98	1.58	18.3
Approach		1078	2.0	0.996	65.5	LOS F	13.4	340.7	0.98	1.58	18.7
All Vehicles		4013	2.0	1.178	62.4	LOS F	32.5	826.0	0.90	1.56	18.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\5 Cum\16 Cum AM Roselle_Sylvan.sip7

HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			 		  			  		
Traffic Volume (veh/h)	52	650	295	180	540	313	670	932	120	285	517	53
Future Volume (veh/h)	52	650	295	180	540	313	670	932	120	285	517	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	55	684	311	189	568	329	705	981	126	300	544	0
Adj No. of Lanes	1	3	1	1	2	1	2	3	0	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	1021	657	208	967	611	736	1540	197	387	1200	373
Arrive On Green	0.04	0.20	0.20	0.12	0.27	0.27	0.21	0.34	0.34	0.11	0.24	0.00
Sat Flow, veh/h	1774	5085	1583	1774	3539	1583	3442	4565	585	3442	5085	1583
Grp Volume(v), veh/h	55	684	311	189	568	329	705	728	379	300	544	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1774	1770	1583	1721	1695	1760	1721	1695	1583
Q Serve(g_s), s	2.4	9.6	11.1	8.2	10.8	12.5	15.7	14.1	14.1	6.6	7.1	0.0
Cycle Q Clear(g_c), s	2.4	9.6	11.1	8.2	10.8	12.5	15.7	14.1	14.1	6.6	7.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	79	1021	657	208	967	611	736	1143	593	387	1200	373
V/C Ratio(X)	0.69	0.67	0.47	0.91	0.59	0.54	0.96	0.64	0.64	0.77	0.45	0.00
Avail Cap(c_a), veh/h	153	1180	706	208	967	611	736	1143	593	448	1200	373
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	0.00
Uniform Delay (d), s/veh	36.5	28.6	16.5	33.8	24.4	18.5	30.1	21.7	21.7	33.5	25.4	0.0
Incr Delay (d2), s/veh	10.3	1.2	0.5	38.1	0.9	0.9	23.2	2.7	5.2	7.2	1.2	0.0
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	1.4	4.6	4.9	6.2	5.3	5.6	9.8	7.0	7.7	3.5	3.5	0.0
LnGrp Delay(d),s/veh	46.8	29.8	17.1	71.9	25.3	19.4	53.3	24.4	26.9	40.6	26.6	0.0
LnGrp LOS	D	C	B	E	C	B	D	C	C	D	C	
Approach Vol, veh/h	1050					1086		1812		844		
Approach Delay, s/veh	26.9					31.6		36.2		31.6		
Approach LOS	C					C		D		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.2	30.7	13.6	20.1	21.1	22.8	8.0	25.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.1	24.8	9.1	18.0	16.6	18.3	6.7	20.4				
Max Q Clear Time (g_c+10, s)	10.6	16.1	10.2	13.1	17.7	9.1	4.4	14.5				
Green Ext Time (p_c), s	0.2	4.6	0.0	2.5	0.0	2.5	0.0	2.5				
Intersection Summary												
HCM 2010 Ctrl Delay			32.3									
HCM 2010 LOS			C									

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Cumulative AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	489	2.0	1.121	107.5	LOS F	26.4	670.5	1.00	2.46	13.6
8	T1	470	2.0	1.121	105.6	LOS F	27.3	693.8	1.00	2.51	13.7
18	R2	130	2.0	1.121	105.5	LOS F	27.3	693.8	1.00	2.51	13.8
Approach		1089	2.0	1.121	106.4	LOS F	27.3	693.8	1.00	2.48	13.7
East: Claratina Ave											
1	L2	129	2.0	2.019	485.2	LOS F	162.3	4122.8	1.00	6.05	4.2
6	T1	1732	2.0	2.019	484.6	LOS F	171.0	4342.4	1.00	6.20	4.2
16	R2	134	2.0	2.019	484.1	LOS F	171.0	4342.4	1.00	6.34	4.2
Approach		1995	2.0	2.019	484.6	LOS F	171.0	4342.4	1.00	6.20	4.2
North: Coffee Ave											
7	L2	59	2.0	1.327	192.3	LOS F	46.8	1189.2	1.00	3.51	9.1
4	T1	596	2.0	1.327	191.8	LOS F	49.6	1260.4	1.00	3.55	9.1
14	R2	423	2.0	1.327	189.9	LOS F	49.6	1260.4	1.00	3.67	9.0
Approach		1077	2.0	1.327	191.1	LOS F	49.6	1260.4	1.00	3.60	9.0
West: Claratina Ave											
5	L2	237	2.0	0.912	39.0	LOS E	10.3	262.3	0.94	1.20	23.4
2	T1	834	2.0	0.912	38.6	LOS E	10.3	262.3	0.93	1.18	24.0
12	R2	272	2.0	0.912	38.2	LOS E	10.0	253.7	0.92	1.17	23.3
Approach		1342	2.0	0.912	38.6	LOS E	10.3	262.3	0.93	1.18	23.7
All Vehicles		5503	2.0	2.019	243.5	LOS F	171.0	4342.4	0.98	3.73	7.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

AM PEAK CUMULATIVE NO PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	10	95	25	10	25	110	1398	15	25	725	125
Future Volume (veh/h)	175	10	95	25	10	25	110	1398	15	25	725	125
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	184	11	100	26	11	26	116	1472	16	26	763	0
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	22	198	158	42	99	148	2113	658	53	1839	573
Arrive On Green	0.14	0.14	0.14	0.09	0.08	0.08	0.08	0.42	0.42	0.03	0.36	0.00
Sat Flow, veh/h	1774	159	1448	1774	493	1165	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	184	0	111	26	0	37	116	1472	16	26	763	0
Grp Sat Flow(s),veh/h/ln	1774	0	1607	1774	0	1657	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.4	0.0	3.5	0.7	0.0	1.1	3.5	13.0	0.3	0.8	6.2	0.0
Cycle Q Clear(g_c), s	5.4	0.0	3.5	0.7	0.0	1.1	3.5	13.0	0.3	0.8	6.2	0.0
Prop In Lane	1.00		0.90	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	250	0	220	158	0	141	148	2113	658	53	1839	573
V/C Ratio(X)	0.73	0.00	0.50	0.16	0.00	0.26	0.78	0.70	0.02	0.49	0.41	0.00
Avail Cap(c_a), veh/h	583	0	528	583	0	545	201	2113	658	162	1839	573
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.5	0.0	21.9	23.0	0.0	23.5	24.6	13.2	9.4	26.2	13.1	0.0
Incr Delay (d2), s/veh	4.2	0.0	1.8	0.5	0.0	1.0	13.0	1.9	0.1	6.9	0.7	0.0
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	2.9	0.0	1.7	0.4	0.0	0.6	2.2	6.4	0.2	0.5	3.0	0.0
LnGrp Delay(d),s/veh	26.7	0.0	23.7	23.5	0.0	24.4	37.6	15.1	9.5	33.0	13.8	0.0
LnGrp LOS	C		C	C		C	D	B	A	C	B	
Approach Vol, veh/h	295				63		1604				789	
Approach Delay, s/veh	25.6				24.1		16.7				14.5	
Approach LOS	C				C		B				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	27.2	9.4	12.0	9.1	24.3	12.2	9.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	21.0	18.0	18.0	6.2	19.8	18.0	18.0				
Max Q Clear Time (g_c+I), s	12.8	15.0	2.7	5.5	5.5	8.2	7.4	3.1				
Green Ext Time (p_c), s	0.0	4.2	0.0	0.4	0.0	3.7	0.3	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			17.2									
HCM 2010 LOS			B									

HCM 2010 TWSC
1: Coffee Rd & Patterson Rd

10/31/2017

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱		↱	↑↑			↕				
Traffic Vol, veh/h	0	695	89	70	797	0	26	0	100	0	0	0
Future Vol, veh/h	0	695	89	70	797	0	26	0	100	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	732	94	74	839	0	27	0	105	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	-	0	0	826	0	0	1347	1766	413			
Stage 1	-	-	-	-	-	-	779	779	-			
Stage 2	-	-	-	-	-	-	568	987	-			
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	6.94			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-			
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	3.32			
Pot Cap-1 Maneuver	0	-	-	800	-	0	142	83	588			
Stage 1	0	-	-	-	-	0	413	404	-			
Stage 2	0	-	-	-	-	0	530	324	-			
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	800	-	-	129	0	588			
Mov Cap-2 Maneuver	-	-	-	-	-	-	129	0	-			
Stage 1	-	-	-	-	-	-	375	0	-			
Stage 2	-	-	-	-	-	-	530	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0			0.8			22.3					
HCM LOS	C											
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT							
Capacity (veh/h)	339	-	-	800	-							
HCM Lane V/C Ratio	0.391	-	-	0.092	-							
HCM Control Delay (s)	22.3	-	-	10	-							
HCM Lane LOS	C	-	-	A	-							
HCM 95th %tile Q(veh)	1.8	-	-	0.3	-							

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

Cumulative PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	28	2.0	0.212	8.1	LOS A	0.6	14.7	0.48	0.48	34.0
18	R2	109	2.0	0.212	8.1	LOS A	0.6	14.7	0.48	0.48	33.0
Approach		137	2.0	0.212	8.1	LOS A	0.6	14.7	0.48	0.48	33.2
East: Patterson Ave											
1	L2	76	2.0	0.768	15.7	LOS C	6.8	173.3	0.24	0.09	31.2
6	T1	866	2.0	0.768	15.7	LOS C	6.8	173.3	0.24	0.09	31.9
Approach		942	2.0	0.768	15.7	LOS C	6.8	173.3	0.24	0.09	31.8
West: Patterson Ave											
2	T1	755	2.0	0.743	15.3	LOS C	5.6	143.2	0.38	0.21	32.2
12	R2	97	2.0	0.743	15.3	LOS C	5.6	143.2	0.38	0.21	30.6
Approach		852	2.0	0.743	15.3	LOS C	5.6	143.2	0.38	0.21	32.0
All Vehicles		1932	2.0	0.768	15.0	LOS B	6.8	173.3	0.32	0.17	32.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary

2: Oakdale Rd & Patterson Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	685	180	347	450	50	197	92	73	60	93	50
Future Volume (veh/h)	110	685	180	347	450	50	197	92	73	60	93	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	116	721	189	365	474	53	207	97	77	63	98	53
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	746	196	413	980	109	237	632	727	84	470	400
Arrive On Green	0.08	0.27	0.27	0.12	0.31	0.31	0.13	0.34	0.34	0.05	0.25	0.25
Sat Flow, veh/h	1774	2776	728	3442	3212	358	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	116	460	450	365	260	267	207	97	77	63	98	53
Grp Sat Flow(s),veh/h/ln	1774	1770	1734	1721	1770	1800	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.1	20.5	20.5	8.4	9.6	9.7	9.2	2.9	2.2	2.8	3.3	2.1
Cycle Q Clear(g_c), s	5.1	20.5	20.5	8.4	9.6	9.7	9.2	2.9	2.2	2.8	3.3	2.1
Prop In Lane	1.00		0.42	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	476	466	413	540	549	237	632	727	84	470	400
V/C Ratio(X)	0.78	0.97	0.97	0.88	0.48	0.49	0.87	0.15	0.11	0.75	0.21	0.13
Avail Cap(c_a), veh/h	255	476	466	413	540	549	237	632	727	157	470	400
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	36.0	28.9	28.9	34.7	22.6	22.7	34.0	18.4	12.3	37.7	23.6	23.1
Incr Delay (d2), s/veh	8.7	32.6	33.1	19.7	0.7	0.7	27.9	0.5	0.3	12.8	1.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	14.3	14.0	5.1	4.8	4.9	6.3	1.6	1.0	1.7	1.8	1.0
LnGrp Delay(d),s/veh	44.7	61.5	62.0	54.3	23.3	23.3	61.9	18.9	12.6	50.5	24.6	23.8
LnGrp LOS	D	E	E	D	C	C	E	B	B	D	C	C
Approach Vol, veh/h	1026				892		381				214	
Approach Delay, s/veh	59.8				36.0		41.0				32.0	
Approach LOS	E				D		D				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	31.6	14.1	26.0	15.2	24.7	11.2	28.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.1	23.8	9.6	21.5	10.7	20.2	11.5	19.6				
Max Q Clear Time (g_c+I1), s	4.8	4.9	10.4	22.5	11.2	5.3	7.1	11.7				
Green Ext Time (p_c), s	0.0	0.7	0.0	0.0	0.0	0.5	0.1	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay	46.1											
HCM 2010 LOS	D											

HCM 2010 TWSC
3: Coffee Rd & Morrill Rd

10/31/2017

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↑			↑	
Traffic Vol, veh/h	0	0	0	65	0	18	0	428	93	28	280	0
Future Vol, veh/h	0	0	0	65	0	18	0	428	93	28	280	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	68	0	19	0	451	98	29	295	0
Major/Minor												
	Minor1			Major1			Major2					
Conflicting Flow All				853	853	500	-	0	0	549	0	0
Stage 1				500	500	-	-	-	-	-	-	-
Stage 2				353	353	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				330	296	571	0	-	-	1021	-	0
Stage 1				609	543	-	0	-	-	-	-	0
Stage 2				711	631	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				319	0	571	-	-	-	1021	-	-
Mov Cap-2 Maneuver				319	0	-	-	-	-	-	-	-
Stage 1				588	0	-	-	-	-	-	-	-
Stage 2				711	0	-	-	-	-	-	-	-
Approach												
	WB			NB			SB					
HCM Control Delay, s				18.5			0			0.8		
HCM LOS				C								
Minor Lane/Major Mvmt												
	NBT	NBRWBLn1	SBL	SBT								
Capacity (veh/h)	-	-	353	1021	-							
HCM Lane V/C Ratio	-	-	0.248	0.029	-							
HCM Control Delay (s)	-	-	18.5	8.6	0							
HCM Lane LOS	-	-	C	A	A							
HCM 95th %tile Q(veh)	-	-	1	0.1	-							

HCM 2010 Signalized Intersection Summary

4: Oakdale Rd & Morrill Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	85	20	56	47	95	9	335	97	110	415	25
Future Volume (veh/h)	32	85	20	56	47	95	9	335	97	110	415	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	89	21	59	49	100	9	353	102	116	437	26
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	190	161	101	224	191	21	1045	298	148	794	47
Arrive On Green	0.04	0.10	0.10	0.06	0.12	0.12	0.01	0.38	0.38	0.08	0.46	0.46
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2720	775	1774	1741	104
Grp Volume(v), veh/h	34	89	21	59	49	100	9	228	227	116	0	463
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1726	1774	0	1844
Q Serve(g_s), s	0.9	2.2	0.6	1.6	1.1	2.9	0.2	4.4	4.5	3.1	0.0	8.8
Cycle Q Clear(g_c), s	0.9	2.2	0.6	1.6	1.1	2.9	0.2	4.4	4.5	3.1	0.0	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		0.06
Lane Grp Cap(c), veh/h	67	190	161	101	224	191	21	680	663	148	0	841
V/C Ratio(X)	0.51	0.47	0.13	0.59	0.22	0.52	0.43	0.34	0.34	0.78	0.00	0.55
Avail Cap(c_a), veh/h	184	696	592	184	696	592	184	680	663	203	0	841
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	0.00	1.00
Uniform Delay (d), s/veh	22.7	20.4	19.7	22.2	19.1	19.9	23.6	10.5	10.5	21.6	0.0	9.5
Incr Delay (d2), s/veh	5.7	1.8	0.4	5.3	0.5	2.2	13.4	1.3	1.4	12.8	0.0	2.6
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	0.6	1.2	0.3	0.9	0.6	1.3	0.2	2.3	2.4	2.0	0.0	5.0
LnGrp Delay(d),s/veh	28.5	22.2	20.0	27.5	19.6	22.1	37.0	11.8	11.9	34.5	0.0	12.1
LnGrp LOS	C	C	C	C	B	C	D	B	B	C		B
Approach Vol, veh/h		144			208			464			579	
Approach Delay, s/veh		23.4			23.0			12.3			16.6	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	23.0	7.2	9.4	5.1	26.5	6.3	10.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	18.5	5.0	18.0	5.0	19.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.1	6.5	3.6	4.2	2.2	10.8	2.9	4.9				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.4	0.0	1.8	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			16.8									
HCM 2010 LOS			B									
Notes												

HCM 2010 TWSC
5: Coffee Rd & Crawford Rd

10/31/2017

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	20	0	5	0	519	20	10	335	0
Future Vol, veh/h	0	0	0	20	0	5	0	519	20	10	335	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	21	0	5	0	546	21	11	353	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				932	932	557	-	0	0	567	0	0
Stage 1				557	557	-	-	-	-	-	-	-
Stage 2				375	375	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				296	266	530	0	-	-	1005	-	0
Stage 1				574	512	-	0	-	-	-	-	0
Stage 2				695	617	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				292	0	530	-	-	-	1005	-	-
Mov Cap-2 Maneuver				292	0	-	-	-	-	-	-	-
Stage 1				566	0	-	-	-	-	-	-	-
Stage 2				695	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				17.2		0			0.2			
HCM LOS				C								
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT						
Capacity (veh/h)		-	-	321	1005	-						
HCM Lane V/C Ratio		-	-	0.082	0.01	-						
HCM Control Delay (s)		-	-	17.2	8.6	0						
HCM Lane LOS		-	-	C	A	A						
HCM 95th %tile Q(veh)		-	-	0.3	0	-						

HCM 2010 Signalized Intersection Summary

6: Oakdale Rd & Crawford Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	0	18	191	0	52	10	286	291	88	352	14
Future Volume (veh/h)	30	0	18	191	0	52	10	286	291	88	352	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	32	0	19	201	0	55	11	301	306	93	371	15
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	0	119	252	0	288	25	647	579	126	1465	59
Arrive On Green	0.04	0.00	0.08	0.14	0.00	0.18	0.01	0.37	0.37	0.07	0.42	0.42
Sat Flow, veh/h	1774	0	1583	1774	0	1583	1774	1770	1583	1774	3468	140
Grp Volume(v), veh/h	32	0	19	201	0	55	11	301	306	93	189	197
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1583	1774	1770	1583	1774	1770	1838
Q Serve(g_s), s	0.9	0.0	0.6	5.7	0.0	1.5	0.3	6.8	7.9	2.7	3.6	3.6
Cycle Q Clear(g_c), s	0.9	0.0	0.6	5.7	0.0	1.5	0.3	6.8	7.9	2.7	3.6	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	63	0	119	252	0	288	25	647	579	126	748	776
V/C Ratio(X)	0.51	0.00	0.16	0.80	0.00	0.19	0.44	0.47	0.53	0.74	0.25	0.25
Avail Cap(c_a), veh/h	188	0	548	324	0	670	171	647	579	188	748	776
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	22.5	21.6	0.0	18.0	25.4	12.6	13.0	23.7	9.7	9.7
Incr Delay (d2), s/veh	6.2	0.0	0.6	10.3	0.0	0.3	11.6	2.4	3.4	8.1	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	0.6	0.0	0.3	3.5	0.0	0.7	0.2	3.7	4.0	1.6	1.9	2.0
LnGrp Delay(d),s/veh	30.8	0.0	23.1	31.9	0.0	18.4	37.0	15.0	16.4	31.8	10.5	10.5
LnGrp LOS	C		C	C		B	D	B	B	C	B	B
Approach Vol, veh/h	51		256			618			479			
Approach Delay, s/veh	27.9		29.0			16.1			14.6			
Approach LOS	C		C			B			B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	23.5	11.9	8.4	5.2	26.5	6.4	13.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	19.0	9.5	18.0	5.0	19.5	5.5	22.0				
Max Q Clear Time (g_c+I1), s	14.5	9.9	7.7	2.6	2.3	5.6	2.9	3.5				
Green Ext Time (p_c), s	0.0	2.6	0.1	0.0	0.0	1.9	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay	18.4											
HCM 2010 LOS	B											
Notes												

HCM 2010 Signalized Intersection Summary

7: McHenry Ave & Kiernan Ave/Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	0	350	281	0	185	195	695	554	185	515	220
Future Volume (veh/h)	245	0	350	281	0	185	195	695	554	185	515	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	0	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	258	0	0	296	0	0	205	732	583	195	542	232
Adj No. of Lanes	2	0	1	2	0	1	1	3	2	1	3	1
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, %	2	0	2	2	0	2	2	2	2	2	2	2
Cap, veh/h	319	0	0	319	0	0	197	1789	980	197	1789	557
Arrive On Green	0.09	0.00	0.00	0.09	0.00	0.00	0.11	0.35	0.35	0.11	0.35	0.35
Sat Flow, veh/h	3442	258		3442	296		1774	5085	2787	1774	5085	1583
Grp Volume(v), veh/h	258	38.5		296	56.8		205	732	583	195	542	232
Grp Sat Flow(s),veh/h/ln	1721	D		1721	E		1774	1695	1393	1774	1695	1583
Q Serve(g_s), s	4.0			4.6			6.0	5.9	9.3	5.9	4.2	6.0
Cycle Q Clear(g_c), s	4.0			4.6			6.0	5.9	9.3	5.9	4.2	6.0
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	319			319			197	1789	980	197	1789	557
V/C Ratio(X)	0.81			0.93			1.04	0.41	0.59	0.99	0.30	0.42
Avail Cap(c_a), veh/h	319			319			197	1789	980	197	1789	557
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	24.0			24.3			24.0	13.2	14.3	24.0	12.7	13.3
Incr Delay (d2), s/veh	14.4			32.5			75.0	0.7	2.7	60.9	0.4	2.3
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5			3.6			7.0	2.8	3.8	6.2	2.0	2.9
LnGrp Delay(d),s/veh	38.5			56.8			99.0	13.9	17.0	84.8	13.1	15.6
LnGrp LOS	D			E			F	B	B	F	B	B
Approach Vol, veh/h							1520			969		
Approach Delay, s/veh							26.6			28.1		
Approach LOS							C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7					
Phs Duration (G+Y+Rc), s	4.0	27.0	13.0		14.0	27.0	13.0					
Change Period (Y+Rc), s	8.0	8.0	8.0		8.0	8.0	8.0					
Max Green Setting (Gmax), s	19.0	19.0	5.0		6.0	19.0	5.0					
Max Q Clear Time (g_c+I1), s	11.3	11.3	6.6		8.0	8.0	6.0					
Green Ext Time (p_c), s	0.0	4.4	0.0		0.0	3.4	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	31.0											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

8: Coffee Rd & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱		↰	↰↱		↰	↰	↰↱	↰	↰	↰↱	↰
Traffic Volume (veh/h)	308	0	225	290	0	35	275	126	400	35	248	220
Future Volume (veh/h)	308	0	225	290	0	35	275	126	400	35	248	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	0	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	324	0	0	305	0	0	289	133	421	37	261	232
Adj No. of Lanes	2	0	1	2	0	1	1	2	1	1	2	1
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, %	2	0	2	2	0	2	2	2	2	2	2	2
Cap, veh/h	451	0	0	433	0	0	351	1488	865	71	723	323
Arrive On Green	0.13	0.00	0.00	0.13	0.00	0.00	0.20	0.42	0.42	0.04	0.20	0.20
Sat Flow, veh/h	3442	324		3442	305		1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	324	25.2		305	24.7		289	133	421	37	261	232
Grp Sat Flow(s),veh/h/ln	1721	C		1721	C		1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.6			4.4			8.0	1.2	8.4	1.1	3.3	7.0
Cycle Q Clear(g_c), s	4.6			4.4			8.0	1.2	8.4	1.1	3.3	7.0
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	451			433			351	1488	865	71	723	323
V/C Ratio(X)	0.72			0.70			0.82	0.09	0.49	0.52	0.36	0.72
Avail Cap(c_a), veh/h	536			536			483	1997	1092	207	1239	554
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	21.4			21.6			19.8	9.0	7.2	24.2	17.6	19.1
Incr Delay (d2), s/veh	3.8			3.2			8.0	0.0	0.4	5.8	0.3	3.0
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4			2.3			4.7	0.6	3.8	0.6	1.6	3.3
LnGrp Delay(d),s/veh	25.2			24.7			27.8	9.0	7.6	30.0	17.9	22.1
LnGrp LOS	C			C			C	A	A	C	B	C
Approach Vol, veh/h							843				530	
Approach Delay, s/veh							14.8				20.6	
Approach LOS							B				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7					
Phs Duration (G+Y+Rc), s	7.1	29.6	14.5		18.2	18.5	14.7					
Change Period (Y+Rc), s	5.0	8.0	8.0		8.0	8.0	8.0					
Max Green Setting (Gmax), s	6.0	29.0	8.0		14.0	18.0	8.0					
Max Q Clear Time (g_c+13), s	13.1	10.4	6.4		10.0	9.0	6.6					
Green Ext Time (p_c), s	0.0	2.0	0.2		0.3	1.5	0.2					
Intersection Summary												
HCM 2010 Ctrl Delay			19.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

9: Oakdale Rd & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	138	62	435	84	37	185	367	450	33	394	45
Future Volume (veh/h)	84	138	62	435	84	37	185	367	450	33	394	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	88	145	0	458	88	0	195	386	474	35	415	47
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	267	119	507	1051	470	236	628	562	62	910	407
Arrive On Green	0.06	0.08	0.00	0.29	0.30	0.00	0.13	0.36	0.36	0.03	0.26	0.26
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1770	1583	1774	3539	1583
Grp Volume(v), veh/h	88	145	0	458	88	0	195	386	474	35	415	47
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.5	2.9	0.0	18.0	1.3	0.0	7.7	13.0	19.9	1.4	7.1	1.6
Cycle Q Clear(g_c), s	3.5	2.9	0.0	18.0	1.3	0.0	7.7	13.0	19.9	1.4	7.1	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	114	267	119	507	1051	470	236	628	562	62	910	407
V/C Ratio(X)	0.77	0.54	0.00	0.90	0.08	0.00	0.83	0.61	0.84	0.57	0.46	0.12
Avail Cap(c_a), veh/h	248	881	394	601	1585	709	267	628	562	125	910	407
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	32.2	0.0	24.9	18.3	0.0	30.6	19.2	21.5	34.4	22.6	20.6
Incr Delay (d2), s/veh	10.5	1.7	0.0	15.4	0.0	0.0	17.2	4.4	14.3	7.8	1.6	0.6
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	2.1	1.5	0.0	10.9	0.6	0.0	4.9	7.1	10.9	0.8	3.7	0.8
LnGrp Delay(d),s/veh	43.9	34.0	0.0	40.3	18.4	0.0	47.8	23.7	35.8	42.2	24.3	21.1
LnGrp LOS	D	C		D	B		D	C	D	D	C	C
Approach Vol, veh/h	233				546		1055				497	
Approach Delay, s/veh	37.7				36.7		33.6				25.2	
Approach LOS	D				D		C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	30.2	25.2	10.0	14.1	23.1	9.1	26.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	24.4	24.5	18.0	10.9	18.6	10.1	32.4				
Max Q Clear Time (g_c+I1), s	13.4	21.9	20.0	4.9	9.7	9.1	5.5	3.3				
Green Ext Time (p_c), s	0.0	1.3	0.7	0.6	0.1	2.0	0.1	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			32.9									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	361	0	0	386	150	0	0	0	150	0	180
Future Volume (veh/h)	260	361	0	0	386	150	0	0	0	150	0	180
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	274	380	0	0	406	158				158	0	189
Adj No. of Lanes	1	2	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	346	2051	0	0	664	256				323	0	288
Arrive On Green	0.19	0.58	0.00	0.00	0.27	0.27				0.18	0.00	0.18
Sat Flow, veh/h	1774	3632	0	0	2594	962				1774	0	1583
Grp Volume(v), veh/h	274	380	0	0	286	278				158	0	189
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1693				1774	0	1583
Q Serve(g_s), s	5.6	1.9	0.0	0.0	5.3	5.4				3.0	0.0	4.2
Cycle Q Clear(g_c), s	5.6	1.9	0.0	0.0	5.3	5.4				3.0	0.0	4.2
Prop In Lane	1.00		0.00	0.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	346	2051	0	0	470	450				323	0	288
V/C Ratio(X)	0.79	0.19	0.00	0.00	0.61	0.62				0.49	0.00	0.66
Avail Cap(c_a), veh/h	493	3094	0	0	844	807				846	0	755
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	3.7	0.0	0.0	12.1	12.2				13.9	0.0	14.3
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.0	1.3	1.4				1.1	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.9	0.0	0.0	2.7	2.7				1.6	0.0	3.8
LnGrp Delay(d),s/veh	20.2	3.8	0.0	0.0	13.4	13.6				15.0	0.0	16.9
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		654			564						347	
Approach Delay, s/veh		10.6			13.5						16.0	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				26.4		11.4	11.9	14.5				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				33.0		18.0	10.5	18.0				
Max Q Clear Time (g_c+I1), s				3.9		6.2	7.6	7.4				
Green Ext Time (p_c), s				2.6		0.9	0.2	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

11: Roselle Ave & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	410	77	140	399	25	95	486	45	45	406	32
Future Volume (veh/h)	29	410	77	140	399	25	95	486	45	45	406	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	31	432	81	147	420	26	100	512	47	47	427	34
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	598	111	186	921	57	128	592	54	80	554	44
Arrive On Green	0.03	0.20	0.20	0.10	0.27	0.27	0.07	0.35	0.35	0.05	0.33	0.33
Sat Flow, veh/h	1774	2980	555	1774	3386	209	1774	1681	154	1774	1703	136
Grp Volume(v), veh/h	31	255	258	147	219	227	100	0	559	47	0	461
Grp Sat Flow(s),veh/h/ln	1774	1770	1765	1774	1770	1826	1774	0	1836	1774	0	1839
Q Serve(g_s), s	1.0	8.2	8.3	4.9	6.2	6.3	3.4	0.0	17.2	1.6	0.0	13.7
Cycle Q Clear(g_c), s	1.0	8.2	8.3	4.9	6.2	6.3	3.4	0.0	17.2	1.6	0.0	13.7
Prop In Lane	1.00		0.31	1.00		0.11	1.00		0.08	1.00		0.07
Lane Grp Cap(c), veh/h	60	355	354	186	481	496	128	0	646	80	0	598
V/C Ratio(X)	0.52	0.72	0.73	0.79	0.45	0.46	0.78	0.00	0.87	0.59	0.00	0.77
Avail Cap(c_a), veh/h	164	526	525	220	582	600	161	0	801	149	0	790
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	22.6	22.6	26.5	18.3	18.3	27.6	0.0	18.3	28.3	0.0	18.4
Incr Delay (d2), s/veh	6.9	2.7	2.9	15.2	0.7	0.7	17.4	0.0	8.3	6.7	0.0	3.4
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	0.6	4.2	4.3	3.2	3.1	3.2	2.3	0.0	10.2	0.9	0.0	7.5
LnGrp Delay(d),s/veh	35.6	25.3	25.5	41.7	19.0	19.0	45.0	0.0	26.6	35.0	0.0	21.8
LnGrp LOS	D	C	C	D	B	B	D		C	D		C
Approach Vol, veh/h	544				593		659				508	
Approach Delay, s/veh	26.0				24.6		29.4				23.0	
Approach LOS	C				C		C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	25.8	10.8	16.7	8.9	24.2	6.5	21.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	26.4	7.5	18.0	5.5	26.0	5.6	19.9				
Max Q Clear Time (g_c+I1), s	13.6	19.2	6.9	10.3	5.4	15.7	3.0	8.3				
Green Ext Time (p_c), s	0.0	2.1	0.0	1.9	0.0	2.1	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			25.9									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

12: Terminal Ave & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	372	25	5	415	40	50	40	5	35	10	99
Future Volume (veh/h)	99	372	25	5	415	40	50	40	5	35	10	99
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	104	392	0	5	437	0	53	42	0	37	11	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	615	0	152	551	0	370	201	0	472	107	0
Arrive On Green	0.42	0.42	0.00	0.42	0.30	0.00	0.21	0.21	0.00	0.21	0.21	0.00
Sat Flow, veh/h	235	1459	0	6	1851	0	668	973	0	1011	517	0
Grp Volume(v), veh/h	496	0	0	442	0	0	95	0	0	48	0	0
Grp Sat Flow(s),veh/h/ln	1695	0	0	1857	0	0	1641	0	0	1528	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	4.8	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0
Prop In Lane	0.21		0.00	0.01		0.00	0.56		0.00	0.77		0.00
Lane Grp Cap(c), veh/h	895	0	0	934	0	0	570	0	0	579	0	0
V/C Ratio(X)	0.55	0.00	0.00	0.47	0.00	0.00	0.17	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	2001	0	0	2251	0	0	1447	0	0	1387	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.5	0.0	0.0	7.7	0.0	0.0	8.0	0.0	0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
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	2.6	0.0	0.0	2.1	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	8.0	0.0	0.0	8.2	0.0	0.0	7.9	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h	496				442				95		48	
Approach Delay, s/veh	6.1				8.0				8.2		7.9	
Approach LOS	A				A				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	9.5		14.7		9.5		14.7					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.5		27.5		18.5		27.5					
Max Q Clear Time (g_c+I1), s	3.0		7.2		2.5		6.8					
Green Ext Time (p_c), s	0.3		3.0		0.1		2.4					
Intersection Summary												
HCM 2010 Ctrl Delay			7.1									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary

13: Claus Rd & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	1085	180	435	947	40	216	360	230	65	425	444
Future Volume (veh/h)	500	1085	180	435	947	40	216	360	230	65	425	444
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	526	1142	189	458	997	42	227	379	242	68	447	467
Adj No. of Lanes	2	3	1	3	3	1	3	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	471	1353	421	570	1236	385	360	1038	464	181	970	651
Arrive On Green	0.14	0.27	0.27	0.11	0.24	0.24	0.07	0.29	0.29	0.05	0.27	0.27
Sat Flow, veh/h	3442	5085	1583	5003	5085	1583	5003	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	526	1142	189	458	997	42	227	379	242	68	447	467
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1668	1695	1583	1668	1770	1583	1721	1770	1583
Q Serve(g_s), s	9.5	14.7	6.9	6.2	12.8	1.4	3.1	5.9	8.8	1.3	7.3	17.1
Cycle Q Clear(g_c), s	9.5	14.7	6.9	6.2	12.8	1.4	3.1	5.9	8.8	1.3	7.3	17.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	471	1353	421	570	1236	385	360	1038	464	181	970	651
V/C Ratio(X)	1.12	0.84	0.45	0.80	0.81	0.11	0.63	0.37	0.52	0.38	0.46	0.72
Avail Cap(c_a), veh/h	471	1401	436	570	1320	411	361	1038	464	248	970	651
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	29.9	24.1	21.2	30.0	24.7	20.4	31.3	19.4	20.4	31.7	20.9	17.1
Incr Delay (d2), s/veh	77.0	4.8	0.7	8.2	3.6	0.1	3.5	1.0	4.1	1.3	1.6	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	7.5	3.1	3.3	6.4	0.6	1.5	3.0	4.4	0.7	3.8	8.6
LnGrp Delay(d),s/veh	106.9	28.9	22.0	38.2	28.3	20.5	34.8	20.4	24.6	33.0	22.5	23.7
LnGrp LOS	F	C	C	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h	1857				1497				848		982	
Approach Delay, s/veh	50.3				31.1				25.4		23.8	
Approach LOS	D				C				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	25.3	12.4	23.5	9.5	24.0	14.0	21.9				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	* 5				
Max Green Setting (Gmax), s	5.0	19.0	7.9	19.1	5.0	19.0	9.5	* 18				
Max Q Clear Time (g_c+I1), s	13.3	10.8	8.2	16.7	5.1	19.1	11.5	14.8				
Green Ext Time (p_c), s	0.0	1.9	0.0	1.7	0.0	0.0	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay	35.7											
HCM 2010 LOS	D											
Notes												

HCM 2010 Signalized Intersection Summary

14: Oakdale Rd & Claratina Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	825	1000	55	565	45	595	600	105	45	459	276
Future Volume (veh/h)	280	825	1000	55	565	45	595	600	105	45	459	276
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	295	868	0	58	595	47	626	632	111	47	483	291
Adj No. of Lanes	2	2	1	2	2	1	2	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1072	480	153	821	367	703	1732	775	494	817	548
Arrive On Green	0.12	0.30	0.00	0.04	0.23	0.23	0.20	0.49	0.49	0.23	0.23	0.23
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	3539	1583	1385	3539	1583
Grp Volume(v), veh/h	295	868	0	58	595	47	626	632	111	47	483	291
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1770	1583	692	1770	1583
Q Serve(g_s), s	6.9	18.7	0.0	1.4	12.8	1.9	14.6	9.2	3.2	2.2	10.1	12.2
Cycle Q Clear(g_c), s	6.9	18.7	0.0	1.4	12.8	1.9	14.6	9.2	3.2	2.2	10.1	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	1072	480	153	821	367	703	1732	775	494	817	548
V/C Ratio(X)	0.74	0.81	0.00	0.38	0.72	0.13	0.89	0.36	0.14	0.10	0.59	0.53
Avail Cap(c_a), veh/h	749	1326	593	208	821	367	728	1732	775	494	817	548
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	0.00	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	26.6	0.0	38.4	29.3	25.2	32.0	13.1	11.6	25.3	28.3	21.7
Incr Delay (d2), s/veh	2.8	3.2	0.0	1.5	3.2	0.2	12.9	0.6	0.4	0.4	3.1	3.6
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	3.4	9.6	0.0	0.7	6.6	0.9	8.2	4.6	1.5	0.5	5.3	5.8
LnGrp Delay(d),s/veh	38.2	29.8	0.0	40.0	32.5	25.3	44.9	13.7	12.0	25.7	31.5	25.3
LnGrp LOS	D	C		D	C	C	D	B	B	C	C	C
Approach Vol, veh/h	1163		700			1369			821			
Approach Delay, s/veh	31.9		32.7			27.8			29.0			
Approach LOS	C		C			C			C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	45.0		8.2	29.6	21.4	23.6	14.1	23.7				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	40.5		5.0	31.0	17.5	18.5	18.0	18.0				
Max Q Clear Time (g_c+I1), s	11.2		3.4	20.7	16.6	14.2	8.9	14.8				
Green Ext Time (p_c), s	5.2		0.0	4.3	0.3	1.9	0.7	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			30.1									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

15: Oakdale Rd & Riverbank Center Access

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	75	0	183	20	393	75	164	397	0
Future Volume (veh/h)	0	0	0	75	0	183	20	393	75	164	397	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	0	0	79	0	193	21	414	79	173	418	0
Adj No. of Lanes	1	2	1	2	0	1	1	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	583	248	783	0	248	43	1793	802	218	2142	958
Arrive On Green	0.00	0.00	0.00	0.16	0.00	0.16	0.02	0.51	0.51	0.12	0.61	0.00
Sat Flow, veh/h	1185	3725	1583	3548	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	0	0	0	79	0	193	21	414	79	173	418	0
Grp Sat Flow(s),veh/h/ln	1185	1863	1583	1774	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	1.2	0.0	7.4	0.7	4.1	1.6	6.0	3.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.2	0.0	7.4	0.7	4.1	1.6	6.0	3.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	114	583	248	783	0	248	43	1793	802	218	2142	958
V/C Ratio(X)	0.00	0.00	0.00	0.10	0.00	0.78	0.49	0.23	0.10	0.79	0.20	0.00
Avail Cap(c_a), veh/h	266	1062	451	1239	0	451	520	1793	802	351	2142	958
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)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	23.0	0.0	25.6	30.4	8.7	8.1	26.9	5.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	5.2	8.2	0.3	0.2	6.4	0.2	0.0
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	0.0	0.0	0.0	0.6	0.0	3.6	0.5	2.1	0.8	3.3	1.7	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	23.0	0.0	30.8	38.6	9.0	8.3	33.3	5.8	0.0
LnGrp LOS				C		C	D	A	A	C	A	
Approach Vol, veh/h		0			272			514			591	
Approach Delay, s/veh		0.0			28.6			10.1			13.8	
Approach LOS					C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	2.3	36.5		14.4	6.0	42.7		14.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.5	32.0		18.0	18.5	26.0		18.0				
Max Q Clear Time (g_c+I), s	10.0	6.1		0.0	2.7	5.3		9.4				
Green Ext Time (p_c), s	0.2	3.1		0.0	0.0	2.7		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			15.4									
HCM 2010 LOS			B									
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Cumulative PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	136	2.0	0.585	20.4	LOS C	2.4	60.4	0.76	0.84	28.2
8	T1	252	2.0	0.585	20.1	LOS C	2.4	60.4	0.75	0.83	28.1
18	R2	190	2.0	0.585	19.5	LOS C	2.3	58.7	0.74	0.81	28.6
Approach		578	2.0	0.585	20.0	LOS C	2.4	60.4	0.75	0.83	28.3
East: Sylvan Ave											
1	L2	332	2.0	1.014	57.7	LOS F	24.3	617.3	1.00	1.62	19.6
6	T1	1005	2.0	1.014	57.4	LOS F	24.3	617.3	1.00	1.61	20.0
16	R2	334	2.0	1.014	57.1	LOS F	24.0	609.6	1.00	1.60	19.5
Approach		1671	2.0	1.014	57.4	LOS F	24.3	617.3	1.00	1.61	19.8
North: Roselle Ave											
7	L2	314	2.0	1.226	155.5	LOS F	32.3	821.5	1.00	2.88	10.7
4	T1	527	2.0	1.226	153.3	LOS F	34.3	870.2	1.00	2.97	10.7
14	R2	87	2.0	1.226	152.6	LOS F	34.3	870.2	1.00	3.00	10.7
Approach		928	2.0	1.226	153.9	LOS F	34.3	870.2	1.00	2.94	10.7
West: Sylvan Ave											
5	L2	54	2.0	1.148	114.4	LOS F	32.6	827.3	1.00	2.55	13.3
2	T1	913	2.0	1.148	113.7	LOS F	33.7	855.4	1.00	2.58	13.5
12	R2	239	2.0	1.148	112.7	LOS F	33.7	855.4	1.00	2.61	13.2
Approach		1207	2.0	1.148	113.5	LOS F	33.7	855.4	1.00	2.58	13.4
All Vehicles		4384	2.0	1.226	88.3	LOS F	34.3	870.2	0.97	2.06	15.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\5 Cum\16 Cum PM Roselle_Sylvan.sip7

HCM 2010 Signalized Intersection Summary

16: Roselle Ave & Sylvan Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		EBT			EBT			EBT			EBT	
Traffic Volume (veh/h)	50	840	220	305	925	307	125	232	175	289	485	80
Future Volume (veh/h)	50	840	220	305	925	307	125	232	175	289	485	80
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	53	884	0	321	974	0	132	244	0	304	511	0
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	1532	0	0	1532	0	0	977	0	0	977	0
Arrive On Green	0.00	0.43	0.00	0.00	0.43	0.00	0.00	0.28	0.00	0.00	0.28	0.00
Sat Flow, veh/h	0	3632	0	0	3632	0	0	3632	0	0	3632	0
Grp Volume(v), veh/h	0	884	0	0	974	0	0	244	0	0	511	0
Grp Sat Flow(s), veh/h/ln	0	1770	0	0	1770	0	0	1770	0	0	1770	0
Q Serve(g_s), s	0.0	5.8	0.0	0.0	6.7	0.0	0.0	1.7	0.0	0.0	3.8	0.0
Cycle Q Clear(g_c), s	0.0	5.8	0.0	0.0	6.7	0.0	0.0	1.7	0.0	0.0	3.8	0.0
Prop In Lane	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	1532	0	0	1532	0	0	977	0	0	977	0
V/C Ratio(X)	0.00	0.58	0.00	0.00	0.64	0.00	0.00	0.25	0.00	0.00	0.52	0.00
Avail Cap(c_a), veh/h	0	2119	0	0	2119	0	0	2119	0	0	2119	0
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)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	6.6	0.0	0.0	6.9	0.0	0.0	8.7	0.0	0.0	9.5	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.4	0.0
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	0.0	2.9	0.0	0.0	3.2	0.0	0.0	0.8	0.0	0.0	1.9	0.0
LnGrp Delay(d),s/veh	0.0	7.0	0.0	0.0	7.3	0.0	0.0	8.8	0.0	0.0	9.9	0.0
LnGrp LOS		A			A			A			A	
Approach Vol, veh/h		884			974			244			511	
Approach Delay, s/veh		7.0			7.3			8.8			9.9	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	0.0	13.0	0.0	17.9	0.0	13.0	0.0	17.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I1), s	3.7	0.0	0.0	7.8	0.0	5.8	0.0	8.7				
Green Ext Time (p_c), s	0.0	1.3	0.0	4.5	0.0	2.8	0.0	4.7				
Intersection Summary												
HCM 2010 Ctrl Delay				7.8								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary

17: Oakdale Rd & Sylvan Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	690	515	345	775	277	445	697	180	456	848	54
Future Volume (veh/h)	60	690	515	345	775	277	445	697	180	456	848	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	63	726	542	363	816	292	468	734	189	480	893	0
Adj No. of Lanes	1	3	1	1	2	1	2	3	0	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	1017	556	384	1313	840	520	906	231	548	1181	368
Arrive On Green	0.05	0.20	0.20	0.22	0.37	0.37	0.15	0.22	0.22	0.16	0.23	0.00
Sat Flow, veh/h	1774	5085	1583	1774	3539	1583	3442	4042	1029	3442	5085	1583
Grp Volume(v), veh/h	63	726	542	363	816	292	468	614	309	480	893	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1774	1770	1583	1721	1695	1681	1721	1695	1583
Q Serve(g_s), s	3.2	12.0	18.0	18.1	17.0	9.6	12.0	15.5	15.7	12.3	14.7	0.0
Cycle Q Clear(g_c), s	3.2	12.0	18.0	18.1	17.0	9.6	12.0	15.5	15.7	12.3	14.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	81	1017	556	384	1313	840	520	760	377	548	1181	368
V/C Ratio(X)	0.78	0.71	0.97	0.94	0.62	0.35	0.90	0.81	0.82	0.88	0.76	0.00
Avail Cap(c_a), veh/h	116	1017	556	384	1313	840	520	760	377	554	1181	368
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	0.00
Uniform Delay (d), s/veh	42.5	33.6	28.8	34.7	23.1	12.2	37.5	33.1	33.2	37.0	32.2	0.0
Incr Delay (d2), s/veh	18.7	2.4	31.7	31.9	0.9	0.2	18.6	9.0	17.7	14.6	4.5	0.0
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	2.0	5.8	18.1	12.3	8.4	4.2	7.1	8.2	9.1	6.9	7.4	0.0
LnGrp Delay(d),s/veh	61.2	36.0	60.5	66.6	24.0	12.4	56.1	42.1	50.9	51.6	36.7	0.0
LnGrp LOS	E	D	E	E	C	B	E	D	D	D	D	
Approach Vol, veh/h	1331			1471			1391			1373		
Approach Delay, s/veh	47.2			32.2			48.8			41.9		
Approach LOS	D			C			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.8	24.7	24.0	22.5	18.1	25.4	8.6	37.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	14.5	20.0	19.5	18.0	13.6	20.9	5.9	31.6				
Max Q Clear Time (g_c+14), s	14.3	17.7	20.1	20.0	14.0	16.7	5.2	19.0				
Green Ext Time (p_c), s	0.1	1.3	0.0	0.0	0.0	2.2	0.0	5.5				
Intersection Summary												
HCM 2010 Ctrl Delay	42.3											
HCM 2010 LOS	D											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Cumulative PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	348	2.0	1.254	165.8	LOS F	35.5	901.2	1.00	3.03	10.2
8	T1	397	2.0	1.254	163.8	LOS F	37.6	956.0	1.00	3.13	10.2
18	R2	207	2.0	1.254	163.0	LOS F	37.6	956.0	1.00	3.16	10.2
Approach		951	2.0	1.254	164.3	LOS F	37.6	956.0	1.00	3.10	10.2
East: Claratina Ave											
1	L2	221	2.0	1.299	168.9	LOS F	62.6	1590.3	1.00	3.60	10.1
6	T1	1150	2.0	1.299	168.3	LOS F	64.9	1647.5	1.00	3.66	10.2
16	R2	152	2.0	1.299	167.8	LOS F	64.9	1647.5	1.00	3.71	10.0
Approach		1523	2.0	1.299	168.3	LOS F	64.9	1647.5	1.00	3.66	10.1
North: Coffee Ave											
7	L2	66	2.0	0.705	31.3	LOS D	3.1	78.5	0.85	0.99	25.3
4	T1	216	2.0	0.705	31.3	LOS D	3.1	78.5	0.85	0.99	24.8
14	R2	374	2.0	0.872	48.1	LOS E	5.3	134.7	0.92	1.19	20.9
Approach		657	2.0	0.872	40.9	LOS E	5.3	134.7	0.89	1.10	22.5
West: Claratina Ave											
5	L2	480	2.0	1.787	373.3	LOS F	220.2	5592.9	1.00	6.09	5.3
2	T1	1995	2.0	1.787	373.2	LOS F	224.8	5709.6	1.00	6.15	5.3
12	R2	511	2.0	1.787	373.0	LOS F	224.8	5709.6	1.00	6.20	5.2
Approach		2986	2.0	1.787	373.2	LOS F	224.8	5709.6	1.00	6.15	5.3
All Vehicles		6116	2.0	1.787	254.0	LOS F	224.8	5709.6	0.99	4.51	7.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection				
Intersection Delay, s/veh 1894.4				
Intersection LOS F				
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	2892	1475	921	635
Demand Flow Rate, veh/h	2950	1504	940	647
Vehicles Circulating, veh/h	496	1210	2510	1698
Vehicles Exiting, veh/h	1849	2240	936	1016
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	1496.5	1588.4	4245.3	1005.8
Approach LOS	F	F	F	F
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	2950	1504	940	647
Cap Entry Lane, veh/h	688	337	92	207
Entry HV Adj Factor	0.980	0.981	0.980	0.981
Flow Entry, veh/h	2892	1475	921	635
Cap Entry, veh/h	675	330	90	203
V/C Ratio	4.287	4.464	10.236	3.128
Control Delay, s/veh	1496.5	1588.4	4245.3	1005.8
LOS	F	F	F	F
95th %tile Queue, veh	281	147	107	58

HCM 2010 Signalized Intersection Summary

19: Oakdale Rd & Mable Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	10	130	40	10	40	125	1305	50	50	1814	170
Future Volume (veh/h)	150	10	130	40	10	40	125	1305	50	50	1814	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	158	11	137	42	11	42	132	1374	53	53	1909	0
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	14	180	114	24	91	165	2737	852	78	2487	774
Arrive On Green	0.12	0.12	0.12	0.06	0.07	0.07	0.09	0.54	0.54	0.04	0.49	0.00
Sat Flow, veh/h	1774	119	1482	1774	339	1295	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	158	0	148	42	0	53	132	1374	53	53	1909	0
Grp Sat Flow(s),veh/h/ln	1774	0	1601	1774	0	1634	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	6.7	0.0	6.9	1.8	0.0	2.4	5.6	13.2	1.2	2.3	23.8	0.0
Cycle Q Clear(g_c), s	6.7	0.0	6.9	1.8	0.0	2.4	5.6	13.2	1.2	2.3	23.8	0.0
Prop In Lane	1.00		0.93	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	0	194	114	0	114	165	2737	852	78	2487	774
V/C Ratio(X)	0.77	0.00	0.76	0.37	0.00	0.46	0.80	0.50	0.06	0.68	0.77	0.00
Avail Cap(c_a), veh/h	412	0	372	412	0	380	185	2737	852	167	2487	774
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.3	0.0	33.0	34.8	0.0	34.6	34.4	11.3	8.5	36.5	16.2	0.0
Incr Delay (d2), s/veh	6.0	0.0	6.1	2.0	0.0	2.9	19.5	0.7	0.1	9.9	2.3	0.0
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	3.6	0.0	3.4	0.9	0.0	1.2	3.6	6.3	0.6	1.3	11.5	0.0
LnGrp Delay(d),s/veh	39.3	0.0	39.0	36.7	0.0	37.5	54.0	12.0	8.7	46.5	18.5	0.0
LnGrp LOS	D		D	D		D	D	B	A	D	B	
Approach Vol, veh/h	306			95			1559			1962		
Approach Delay, s/veh	39.2			37.2			15.4			19.3		
Approach LOS	D			D			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	46.2	9.5	13.9	11.7	42.4	13.5	9.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.7	18.0	18.0	8.1	37.9	18.0	18.0					
Max Q Clear Time (g_c+I14), s	15.2	3.8	8.9	7.6	25.8	8.7	4.4					
Green Ext Time (p_c), s	0.0	10.2	0.1	0.5	0.0	9.0	0.3	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	19.7											
HCM 2010 LOS	B											

HCM 2010 TWSC
1: Coffee Rd & Patterson Rd

10/31/2017

Intersection												
Int Delay, s/veh	62.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑			↔				
Traffic Vol, veh/h	0	580	145	110	1030	0	170	0	105	0	0	0
Future Vol, veh/h	0	580	145	110	1030	0	170	0	105	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	611	153	116	1084	0	179	0	111	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	764	0	0	1462	2004	382
Stage 1	-	-	-	-	-	-	688	688	-
Stage 2	-	-	-	-	-	-	774	1316	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	845	-	0	~ 120	59	616
Stage 1	0	-	-	-	-	0	460	445	-
Stage 2	0	-	-	-	-	0	415	226	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	845	-	-	~ 104	0	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 104	0	-
Stage 1	-	-	-	-	-	-	397	0	-
Stage 2	-	-	-	-	-	-	415	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	\$ 480.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	152	-	-	845	-
HCM Lane V/C Ratio	1.904	-	-	0.137	-
HCM Control Delay (s)	\$ 480.6	-	-	9.9	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	22.1	-	-	0.5	-

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

MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

Cumulative + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	185	2.0	0.423	10.9	LOS B	1.5	38.2	0.53	0.56	31.6
18	R2	114	2.0	0.423	10.9	LOS B	1.5	38.2	0.53	0.56	30.8
Approach		299	2.0	0.423	10.9	LOS B	1.5	38.2	0.53	0.56	31.3
East: Patterson Ave											
1	L2	120	2.0	1.186	110.2	LOS F	88.9	2258.4	1.00	2.29	13.6
6	T1	1120	2.0	1.186	110.2	LOS F	88.9	2258.4	1.00	2.29	13.8
Approach		1239	2.0	1.186	110.2	LOS F	88.9	2258.4	1.00	2.29	13.8
West: Patterson Ave											
2	T1	630	2.0	0.709	14.2	LOS B	4.7	119.8	0.39	0.24	32.7
12	R2	158	2.0	0.709	14.2	LOS B	4.7	119.8	0.39	0.24	31.0
Approach		788	2.0	0.709	14.2	LOS B	4.7	119.8	0.39	0.24	32.4
All Vehicles		2326	2.0	1.186	64.9	LOS F	88.9	2258.4	0.73	1.38	18.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY



Site: 1 [Coffee Ave and Patterson Ave]

MITIG8 Cumulative + Project AM
added second lane all approaches
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	185	2.0	0.262	8.2	LOS A	0.7	19.0	0.47	0.47	31.9
18	R2	114	2.0	0.167	7.1	LOS A	0.5	11.9	0.46	0.46	33.9
Approach		299	2.0	0.262	7.8	LOS A	0.7	19.0	0.46	0.46	32.6
East: Sylvan Ave											
1	L2	120	2.0	0.613	12.1	LOS B	3.4	85.9	0.45	0.35	32.5
6	T1	1120	2.0	0.613	12.1	LOS B	3.4	85.9	0.43	0.34	33.5
Approach		1239	2.0	0.613	12.1	LOS B	3.4	85.9	0.44	0.34	33.4
West: Sylvan Ave											
2	T1	630	2.0	0.372	7.3	LOS A	1.4	35.5	0.24	0.15	36.3
12	R2	158	2.0	0.372	7.3	LOS A	1.3	33.3	0.23	0.14	34.2
Approach		788	2.0	0.372	7.3	LOS A	1.4	35.5	0.24	0.15	35.9
All Vehicles		2326	2.0	0.613	9.9	LOS A	3.4	85.9	0.37	0.29	34.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection SummaryAM PEAK CUMULATIVE+PROJECT MITIGATION

1: Coffee Rd & Patterson Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	580	145	110	1030	0	170	0	105	0	0	0
Future Volume (veh/h)	0	580	145	110	1030	0	170	0	105	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0	1863	0	1863			
Adj Flow Rate, veh/h	0	644	161	122	1144	0	189	0	117			
Adj No. of Lanes	0	1	1	1	1	0	1	0	1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2			
Cap, veh/h	0	998	848	157	1305	0	260	0	232			
Arrive On Green	0.00	0.54	0.54	0.09	0.70	0.00	0.15	0.00	0.15			
Sat Flow, veh/h	0	1863	1583	1774	1863	0	1774	0	1583			
Grp Volume(v), veh/h	0	644	161	122	1144	0	189	0	117			
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	0	1774	0	1583			
Q Serve(g_s), s	0.0	14.4	3.1	4.0	28.0	0.0	6.0	0.0	4.0			
Cycle Q Clear(g_c), s	0.0	14.4	3.1	4.0	28.0	0.0	6.0	0.0	4.0			
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	998	848	157	1305	0	260	0	232			
V/C Ratio(X)	0.00	0.65	0.19	0.78	0.88	0.00	0.73	0.00	0.50			
Avail Cap(c_a), veh/h	0	1248	1060	259	1662	0	558	0	498			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.7	7.1	26.2	6.8	0.0	24.0	0.0	23.1			
Incr Delay (d2), s/veh	0.0	0.8	0.1	8.0	4.6	0.0	3.9	0.0	1.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	7.6	1.3	2.3	15.7	0.0	3.2	0.0	1.8			
LnGrp Delay(d),s/veh	0.0	10.5	7.2	34.2	11.5	0.0	27.8	0.0	24.8			
LnGrp LOS		B	A	C	B		C		C			
Approach Vol, veh/h		805			1266			306				
Approach Delay, s/veh		9.8			13.7			26.7				
Approach LOS		A			B			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4				8				
Phs Duration (G+Y+Rc), s		13.1	9.7	36.0				45.7				
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5				
Max Green Setting (Gmax), s		18.5	8.6	39.4				52.5				
Max Q Clear Time (g_c+I1), s		8.0	6.0	16.4				30.0				
Green Ext Time (p_c), s		0.7	0.1	5.2				11.2				
Intersection Summary												
HCM 2010 Ctrl Delay			14.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

2: Oakdale Rd & Patterson Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	550	95	275	620	50	160	60	155	70	115	105
Future Volume (veh/h)	100	550	95	275	620	50	160	60	155	70	115	105
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	105	579	100	289	653	53	168	63	163	74	121	111
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	704	121	350	860	70	199	641	706	98	536	455
Arrive On Green	0.08	0.23	0.23	0.10	0.26	0.26	0.11	0.34	0.34	0.06	0.29	0.29
Sat Flow, veh/h	1774	3020	520	3442	3316	269	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	105	339	340	289	348	358	168	63	163	74	121	111
Grp Sat Flow(s),veh/h/ln	1774	1770	1771	1721	1770	1815	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	3.9	12.3	12.4	5.6	12.3	12.3	6.3	1.6	4.3	2.8	3.4	3.6
Cycle Q Clear(g_c), s	3.9	12.3	12.4	5.6	12.3	12.3	6.3	1.6	4.3	2.8	3.4	3.6
Prop In Lane	1.00		0.29	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	413	413	350	459	471	199	641	706	98	536	455
V/C Ratio(X)	0.78	0.82	0.82	0.83	0.76	0.76	0.84	0.10	0.23	0.75	0.23	0.24
Avail Cap(c_a), veh/h	160	470	470	350	491	503	199	641	706	188	536	455
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	30.8	24.7	24.7	29.9	23.2	23.2	29.5	15.1	11.6	31.6	18.4	18.5
Incr Delay (d2), s/veh	18.9	10.0	10.3	14.8	6.3	6.3	26.9	0.3	0.8	10.9	1.0	1.3
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	2.6	7.2	7.2	3.4	6.8	7.0	4.6	0.9	2.0	1.7	1.9	1.7
LnGrp Delay(d),s/veh	49.7	34.6	35.0	44.7	29.5	29.4	56.5	15.4	12.4	42.5	19.4	19.8
LnGrp LOS	D	C	C	D	C	C	E	B	B	D	B	B
Approach Vol, veh/h		784			995			394			306	
Approach Delay, s/veh		36.8			33.9			31.7			25.1	
Approach LOS		D			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	27.8	11.4	20.3	12.1	24.0	9.6	22.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.2	19.9	6.9	18.0	7.6	19.5	6.1	18.8				
Max Q Clear Time (g_c+I1), s	4.8	6.3	7.6	14.4	8.3	5.6	5.9	14.3				
Green Ext Time (p_c), s	0.0	0.7	0.0	1.4	0.0	0.8	0.0	1.8				
Intersection Summary												
HCM 2010 Ctrl Delay				33.4								
HCM 2010 LOS				C								

Intersection												
Int Delay, s/veh	14.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	225	0	125	0	250	75	35	370	0
Future Vol, veh/h	0	0	0	225	0	125	0	250	75	35	370	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	237	0	132	0	263	79	37	389	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				766	766	303	-	0	0	342	0	0
Stage 1				303	303	-	-	-	-	-	-	-
Stage 2				463	463	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				371	333	737	0	-	-	1217	-	0
Stage 1				749	664	-	0	-	-	-	-	0
Stage 2				634	564	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				357	0	737	-	-	-	1217	-	-
Mov Cap-2 Maneuver				357	0	-	-	-	-	-	-	-
Stage 1				720	0	-	-	-	-	-	-	-
Stage 2				634	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				43.7		0			0.7			
HCM LOS				E								
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT						
Capacity (veh/h)		-	-	438	1217	-						
HCM Lane V/C Ratio		-	-	0.841	0.03	-						
HCM Control Delay (s)		-	-	43.7	8.1	0						
HCM Lane LOS		-	-	E	A	A						
HCM 95th %tile Q(veh)		-	-	8.2	0.1	-						

HCM 2010 Signalized Intersection Summary

4: Oakdale Rd & Morrill Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	25	150	40	55	85	65	165	35	45	310	70
Future Volume (veh/h)	90	25	150	40	55	85	65	165	35	45	310	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	26	158	42	58	89	68	174	37	47	326	74
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	270	229	79	214	182	110	1147	239	86	558	127
Arrive On Green	0.07	0.14	0.14	0.04	0.12	0.12	0.06	0.39	0.39	0.05	0.38	0.38
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2918	607	1774	1470	334
Grp Volume(v), veh/h	95	26	158	42	58	89	68	104	107	47	0	400
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1756	1774	0	1804
Q Serve(g_s), s	2.6	0.6	4.6	1.1	1.4	2.6	1.8	1.8	1.9	1.3	0.0	8.6
Cycle Q Clear(g_c), s	2.6	0.6	4.6	1.1	1.4	2.6	1.8	1.8	1.9	1.3	0.0	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.35	1.00		0.19
Lane Grp Cap(c), veh/h	132	270	229	79	214	182	110	696	690	86	0	685
V/C Ratio(X)	0.72	0.10	0.69	0.53	0.27	0.49	0.62	0.15	0.16	0.55	0.00	0.58
Avail Cap(c_a), veh/h	200	707	601	182	688	585	182	696	690	182	0	685
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	0.00	1.00
Uniform Delay (d), s/veh	22.1	18.1	19.8	22.8	19.7	20.2	22.3	9.5	9.6	22.7	0.0	12.0
Incr Delay (d2), s/veh	7.2	0.2	3.7	5.5	0.7	2.0	5.6	0.5	0.5	5.4	0.0	3.6
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	1.5	0.3	2.2	0.7	0.7	1.2	1.1	1.0	1.0	0.7	0.0	4.9
LnGrp Delay(d),s/veh	29.3	18.2	23.5	28.2	20.4	22.2	27.9	10.0	10.0	28.0	0.0	15.7
LnGrp LOS	C	B	C	C	C	C	C	A	B	C		B
Approach Vol, veh/h		279			189			279			447	
Approach Delay, s/veh		25.0			23.0			14.4			17.0	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	23.7	6.7	11.6	7.5	23.0	8.1	10.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	5.0	18.5	5.0	18.5	5.5	18.0				
Max Q Clear Time (g_c+I1), s	3.3	3.9	3.1	6.6	3.8	10.6	4.6	4.6				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.5	0.0	1.5	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			19.2									
HCM 2010 LOS			B									
Notes												

Intersection						
Int Delay, s/veh	6.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	150	55	270	55	25	590
Future Vol, veh/h	150	55	270	55	25	590
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	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	158	58	284	58	26	621
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	986	313	0	0	342	0
Stage 1	313	-	-	-	-	-
Stage 2	673	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	275	727	-	-	1217	-
Stage 1	741	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	266	727	-	-	1217	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	36.4	0		0.3		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		321	1217	
HCM Lane V/C Ratio	-	-		0.672	0.022	
HCM Control Delay (s)	-	-		36.4	8	
HCM Lane LOS	-	-		E	A	
HCM 95th %tile Q(veh)	-	-		4.6	0.1	

HCM 2010 Signalized Intersection Summary
32: Coffee Rd & Crawford Rd Revised

AM PEAK CUMULATIVE+PROJECT

11/01/2017

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	150	55	270	55	25	590		
Future Volume (veh/h)	150	55	270	55	25	590		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1900	1863	1863		
Adj Flow Rate, veh/h	163	60	293	60	27	641		
Adj No. of Lanes	0	0	1	0	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	211	78	745	152	57	1172		
Arrive On Green	0.17	0.17	0.50	0.50	0.03	0.63		
Sat Flow, veh/h	1251	460	1501	307	1774	1863		
Grp Volume(v), veh/h	224	0	0	353	27	641		
Grp Sat Flow(s),veh/h/ln	1719	0	0	1808	1774	1863		
Q Serve(g_s), s	5.5	0.0	0.0	5.4	0.7	8.7		
Cycle Q Clear(g_c), s	5.5	0.0	0.0	5.4	0.7	8.7		
Prop In Lane	0.73	0.27		0.17	1.00			
Lane Grp Cap(c), veh/h	290	0	0	897	57	1172		
V/C Ratio(X)	0.77	0.00	0.00	0.39	0.48	0.55		
Avail Cap(c_a), veh/h	695	0	0	897	199	1172		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.7	0.0	0.0	7.0	21.2	4.7		
Incr Delay (d2), s/veh	4.4	0.0	0.0	1.3	6.1	1.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	3.0	0.4	4.9		
LnGrp Delay(d),s/veh	22.0	0.0	0.0	8.3	27.3	6.5		
LnGrp LOS	C			A	C	A		
Approach Vol, veh/h	224		353			668		
Approach Delay, s/veh	22.0		8.3			7.3		
Approach LOS	C		A			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.9	26.6				32.5		12.0
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0		18.0
Max Q Clear Time (g_c+I1), s	2.7	7.4				10.7		7.5
Green Ext Time (p_c), s	0.0	1.6				4.1		0.5
Intersection Summary								
HCM 2010 Ctrl Delay			10.3					
HCM 2010 LOS			B					
Notes								

HCM 2010 Signalized Intersection Summary

6: Oakdale Rd & Crawford Rd

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	30	235	385	40	55	95	175	190	70	405	25
Future Volume (veh/h)	35	30	235	385	40	55	95	175	190	70	405	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	37	32	247	405	42	58	100	184	200	74	426	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	37	285	442	293	405	127	468	419	95	835	51
Arrive On Green	0.04	0.20	0.20	0.25	0.41	0.41	0.07	0.26	0.26	0.05	0.25	0.25
Sat Flow, veh/h	1774	185	1426	1774	710	980	1774	1770	1583	1774	3390	206
Grp Volume(v), veh/h	37	0	279	405	0	100	100	184	200	74	222	230
Grp Sat Flow(s),veh/h/ln	1774	0	1611	1774	0	1690	1774	1770	1583	1774	1770	1826
Q Serve(g_s), s	1.6	0.0	12.9	17.1	0.0	2.8	4.3	6.6	8.2	3.2	8.3	8.4
Cycle Q Clear(g_c), s	1.6	0.0	12.9	17.1	0.0	2.8	4.3	6.6	8.2	3.2	8.3	8.4
Prop In Lane	1.00		0.89	1.00		0.58	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	63	0	322	442	0	698	127	468	419	95	436	450
V/C Ratio(X)	0.59	0.00	0.87	0.92	0.00	0.14	0.79	0.39	0.48	0.78	0.51	0.51
Avail Cap(c_a), veh/h	136	0	376	449	0	698	127	468	419	115	436	450
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	29.9	28.2	0.0	14.1	35.2	23.3	23.9	36.0	25.0	25.0
Incr Delay (d2), s/veh	8.4	0.0	16.9	23.5	0.0	0.1	27.8	2.5	3.9	24.1	4.2	4.1
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	0.9	0.0	7.2	11.2	0.0	1.4	3.1	3.5	4.0	2.2	4.6	4.7
LnGrp Delay(d),s/veh	45.0	0.0	46.7	51.7	0.0	14.2	63.0	25.7	27.7	60.1	29.2	29.2
LnGrp LOS	D		D	D		B	E	C	C	E	C	C
Approach Vol, veh/h	316					505		484		526		
Approach Delay, s/veh	46.5					44.2		34.3		33.5		
Approach LOS	D					D		C		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	24.9	23.7	19.9	10.0	23.5	7.2	36.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	19.5	19.5	18.0	5.5	19.0	5.9	31.6				
Max Q Clear Time (g_c+I), s	11.2	10.2	19.1	14.9	6.3	10.4	3.6	4.8				
Green Ext Time (p_c), s	0.0	1.6	0.1	0.5	0.0	1.7	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			38.9									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary

7: McHenry Ave & Kiernan Ave/Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	150	315	0	270	130	430	145	50	525	270
Future Volume (veh/h)	40	0	150	315	0	270	130	430	145	50	525	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	0	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	42	0	0	332	0	0	137	453	153	53	553	284
Adj No. of Lanes	2	0	1	2	0	1	1	3	1	1	3	1
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, %	2	0	2	2	0	2	2	2	2	2	2	2
Cap, veh/h	149	0	0	444	0	0	164	1909	594	90	1696	528
Arrive On Green	0.04	0.00	0.00	0.13	0.00	0.00	0.09	0.38	0.38	0.05	0.33	0.33
Sat Flow, veh/h	3442	42		3442	332		1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	42	26.0		332	29.4		137	453	153	53	553	284
Grp Sat Flow(s),veh/h/ln	1721	C		1721	C		1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.6			5.0			4.1	3.3	3.6	1.6	4.4	7.9
Cycle Q Clear(g_c), s	0.6			5.0			4.1	3.3	3.6	1.6	4.4	7.9
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149			444			164	1909	594	90	1696	528
V/C Ratio(X)	0.28			0.75			0.83	0.24	0.26	0.59	0.33	0.54
Avail Cap(c_a), veh/h	319			446			164	1909	594	164	1696	528
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	25.0			22.7			24.1	11.6	11.7	25.1	13.4	14.6
Incr Delay (d2), s/veh	1.0			6.8			29.2	0.3	1.0	6.0	0.5	3.9
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3			2.8			3.3	1.6	1.7	0.9	2.1	4.0
LnGrp Delay(d),s/veh	26.0			29.4			53.2	11.9	12.7	31.0	14.0	18.5
LnGrp LOS	C			C			D	B	B	C	B	B
Approach Vol, veh/h							743			890		
Approach Delay, s/veh							19.7			16.4		
Approach LOS							B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7					
Phs Duration (G+Y+Rc), s	10.7	28.3	15.0		13.0	26.0	10.3					
Change Period (Y+Rc), s	8.0	8.0	8.0		8.0	8.0	8.0					
Max Green Setting (Gmax), s	5.0	18.0	7.0		5.0	18.0	5.0					
Max Q Clear Time (g_c+I13.6), s	5.6	5.6	7.0		6.1	9.9	2.6					
Green Ext Time (p_c), s	0.0	2.9	0.0		0.0	3.0	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			20.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

8: Coffee Rd & Claribel Ave

10/31/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	170	0	100	390	0	50	440	290	310	30	400	585	
Future Volume (veh/h)	170	0	100	390	0	50	440	290	310	30	400	585	
Number	7	4	14	3	8	18	5	2	12	1	6	16	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	0	1863	1863	1863	1863	1863	1863	1863	
Adj Flow Rate, veh/h	179	0	0	411	0	0	463	305	326	32	421	616	
Adj No. of Lanes	2	0	1	2	0	1	1	2	1	1	2	1	
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, %	2	0	2	2	0	2	2	2	2	2	2	2	
Cap, veh/h	269	0	0	426	0	0	504	1962	1074	58	926	538	
Arrive On Green	0.08	0.00	0.00	0.12	0.00	0.00	0.28	0.55	0.55	0.03	0.26	0.26	
Sat Flow, veh/h	3442	179		3442	411		1774	3539	1583	1774	3539	1583	
Grp Volume(v), veh/h	179	35.4		411	65.9		463	305	326	32	421	616	
Grp Sat Flow(s),veh/h/ln	1721	D		1721	E		1774	1770	1583	1774	1770	1583	
Q Serve(g_s), s	3.7			8.6			18.4	3.1	6.1	1.3	7.2	19.0	
Cycle Q Clear(g_c), s	3.7			8.6			18.4	3.1	6.1	1.3	7.2	19.0	
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	269			426			504	1962	1074	58	926	538	
V/C Ratio(X)	0.67			0.96			0.92	0.16	0.30	0.55	0.45	1.15	
Avail Cap(c_a), veh/h	426			426			537	1962	1074	147	926	538	
HCM Platoon Ratio	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	
Uniform Delay (d), s/veh	32.6			31.7			25.2	7.9	4.7	34.6	22.5	24.0	
Incr Delay (d2), s/veh	2.8			34.2			20.3	0.0	0.2	7.9	0.3	85.6	
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.8			6.1			11.8	1.5	2.6	0.8	3.6	23.5	
LnGrp Delay(d),s/veh	35.4			65.9			45.5	7.9	4.9	42.5	22.8	109.6	
LnGrp LOS	D			E			D	A	A	D	C	F	
Approach Vol, veh/h									1094				1069
Approach Delay, s/veh									22.9				73.4
Approach LOS									C				E
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	1	2	3		5	6	7						
Phs Duration (G+Y+Rc), s	7.4	48.3	17.0		28.6	27.0	13.7						
Change Period (Y+Rc), s	5.0	8.0	8.0		8.0	8.0	8.0						
Max Green Setting (Gmax), s	6.0	38.0	9.0		22.0	19.0	9.0						
Max Q Clear Time (g_c+I13), s	13.3	8.1	10.6		20.4	21.0	5.7						
Green Ext Time (p_c), s	0.0	2.8	0.0		0.3	0.0	0.2						
Intersection Summary													
HCM 2010 Ctrl Delay			49.8										
HCM 2010 LOS			D										

HCM 2010 Signalized Intersection Summary

9: Oakdale Rd & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	50	145	350	35	85	145	340	235	100	810	100
Future Volume (veh/h)	90	50	145	350	35	85	145	340	235	100	810	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	95	53	0	368	37	0	153	358	247	105	853	105
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	242	108	417	828	371	191	744	505	135	1191	533
Arrive On Green	0.07	0.07	0.00	0.23	0.23	0.00	0.11	0.37	0.37	0.08	0.34	0.34
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2020	1371	1774	3539	1583
Grp Volume(v), veh/h	95	53	0	368	37	0	153	313	292	105	853	105
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1621	1774	1770	1583
Q Serve(g_s), s	3.8	1.0	0.0	14.3	0.6	0.0	6.0	9.7	9.9	4.1	15.0	3.4
Cycle Q Clear(g_c), s	3.8	1.0	0.0	14.3	0.6	0.0	6.0	9.7	9.9	4.1	15.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		1.00
Lane Grp Cap(c), veh/h	123	242	108	417	828	371	191	652	597	135	1191	533
V/C Ratio(X)	0.77	0.22	0.00	0.88	0.04	0.00	0.80	0.48	0.49	0.78	0.72	0.20
Avail Cap(c_a), veh/h	259	894	400	510	1395	624	236	652	597	216	1191	533
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.6	31.4	0.0	26.3	21.1	0.0	31.1	17.3	17.4	32.3	20.7	16.8
Incr Delay (d2), s/veh	9.8	0.5	0.0	14.4	0.0	0.0	14.6	2.5	2.9	9.3	3.7	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	2.2	0.5	0.0	8.6	0.3	0.0	3.7	5.2	4.9	2.4	8.0	1.6
LnGrp Delay(d),s/veh	42.4	31.9	0.0	40.7	21.2	0.0	45.7	19.8	20.2	41.6	24.4	17.6
LnGrp LOS	D	C		D	C		D	B	C	D	C	B
Approach Vol, veh/h	148		405			758			1063			
Approach Delay, s/veh	38.7		38.9			25.2			25.4			
Approach LOS	D		D			C			C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	30.8	21.3	9.4	12.2	28.5	9.4	21.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	24.8	24.8	20.5	18.0	9.5	24.0	10.4	28.1				
Max Q Clear Time (g_c+I), s	11.9	11.9	16.3	3.0	8.0	17.0	5.8	2.6				
Green Ext Time (p_c), s	0.1	3.2	0.5	0.2	0.1	3.4	0.1	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			28.5									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	265	0	0	150	125	0	0	0	185	0	320
Future Volume (veh/h)	120	265	0	0	150	125	0	0	0	185	0	320
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	126	279	0	0	158	132				195	0	337
Adj No. of Lanes	1	2	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	186	1515	0	0	347	271				520	0	464
Arrive On Green	0.10	0.43	0.00	0.00	0.18	0.18				0.29	0.00	0.29
Sat Flow, veh/h	1774	3632	0	0	1986	1479				1774	0	1583
Grp Volume(v), veh/h	126	279	0	0	147	143				195	0	337
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1602				1774	0	1583
Q Serve(g_s), s	2.2	1.6	0.0	0.0	2.4	2.6				2.8	0.0	6.2
Cycle Q Clear(g_c), s	2.2	1.6	0.0	0.0	2.4	2.6				2.8	0.0	6.2
Prop In Lane	1.00		0.00	0.00		0.92				1.00		1.00
Lane Grp Cap(c), veh/h	186	1515	0	0	325	294				520	0	464
V/C Ratio(X)	0.68	0.18	0.00	0.00	0.45	0.49				0.38	0.00	0.73
Avail Cap(c_a), veh/h	303	3074	0	0	988	894				990	0	884
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	5.7	0.0	0.0	11.7	11.8				9.1	0.0	10.2
Incr Delay (d2), s/veh	4.3	0.1	0.0	0.0	1.0	1.2				0.4	0.0	2.2
Initial Q Delay(d3),s/veh	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	0.7	0.0	0.0	1.2	1.2				1.4	0.0	5.4
LnGrp Delay(d),s/veh	18.2	5.8	0.0	0.0	12.7	13.0				9.5	0.0	12.4
LnGrp LOS	B	A			B	B				A		B
Approach Vol, veh/h		405			290						532	
Approach Delay, s/veh		9.6			12.9						11.4	
Approach LOS		A			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				18.3		13.9	7.9	10.4				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				28.0		18.0	5.5	18.0				
Max Q Clear Time (g_c+I1), s				3.6		8.2	4.2	4.6				
Green Ext Time (p_c), s				1.8		1.4	0.0	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay				11.1								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary

11: Roselle Ave & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	180	230	100	90	50	160	380	30	20	445	25
Future Volume (veh/h)	40	180	230	100	90	50	160	380	30	20	445	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	42	189	242	105	95	53	168	400	32	21	468	26
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	354	317	135	528	276	211	700	56	43	554	31
Arrive On Green	0.04	0.20	0.20	0.08	0.23	0.23	0.12	0.41	0.41	0.02	0.32	0.32
Sat Flow, veh/h	1774	1770	1583	1774	2249	1176	1774	1703	136	1774	1748	97
Grp Volume(v), veh/h	42	189	242	105	73	75	168	0	432	21	0	494
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1655	1774	0	1839	1774	0	1846
Q Serve(g_s), s	1.5	6.0	9.0	3.6	2.1	2.3	5.8	0.0	11.3	0.7	0.0	15.6
Cycle Q Clear(g_c), s	1.5	6.0	9.0	3.6	2.1	2.3	5.8	0.0	11.3	0.7	0.0	15.6
Prop In Lane	1.00		1.00	1.00		0.71	1.00		0.07	1.00		0.05
Lane Grp Cap(c), veh/h	73	354	317	135	415	388	211	0	756	43	0	584
V/C Ratio(X)	0.57	0.53	0.76	0.78	0.18	0.19	0.79	0.00	0.57	0.48	0.00	0.85
Avail Cap(c_a), veh/h	168	510	456	185	527	493	298	0	957	142	0	798
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	22.4	23.6	28.4	19.1	19.2	26.8	0.0	14.1	30.1	0.0	19.9
Incr Delay (d2), s/veh	6.8	1.2	4.6	13.6	0.2	0.2	9.4	0.0	0.7	8.1	0.0	6.2
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	0.9	3.0	4.3	2.3	1.0	1.1	3.4	0.0	5.8	0.5	0.0	8.8
LnGrp Delay(d),s/veh	36.2	23.6	28.2	41.9	19.3	19.4	36.2	0.0	14.8	38.2	0.0	26.2
LnGrp LOS	D	C	C	D	B	B	D		B	D		C
Approach Vol, veh/h		473			253			600			515	
Approach Delay, s/veh		27.1			28.7			20.8			26.6	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	30.2	9.2	17.0	11.9	24.3	7.1	19.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	32.5	6.5	18.0	10.5	27.0	5.9	18.6				
Max Q Clear Time (g_c+I12), s	12.5	13.3	5.6	11.0	7.8	17.6	3.5	4.3				
Green Ext Time (p_c), s	0.0	2.6	0.0	1.5	0.1	2.2	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				25.1								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary

12: Terminal Ave & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	155	40	5	80	5	50	20	5	5	40	110
Future Volume (veh/h)	35	155	40	5	80	5	50	20	5	5	40	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	37	163	0	5	84	0	53	21	0	5	42	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	323	0	216	80	0	598	179	0	250	488	0
Arrive On Green	0.21	0.21	0.00	0.21	0.05	0.00	0.28	0.28	0.00	0.28	0.28	0.00
Sat Flow, veh/h	251	1511	0	62	1771	0	894	637	0	92	1739	0
Grp Volume(v), veh/h	200	0	0	89	0	0	74	0	0	47	0	0
Grp Sat Flow(s),veh/h/ln	1762	0	0	1833	0	0	1531	0	0	1831	0	0
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.8	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.18		0.00	0.06		0.00	0.72		0.00	0.11		0.00
Lane Grp Cap(c), veh/h	616	0	0	605	0	0	777	0	0	738	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.15	0.00	0.00	0.10	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	1994	0	0	2048	0	0	1852	0	0	2050	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.2	0.0	0.0	8.4	0.0	0.0	4.8	0.0	0.0	4.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
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	0.9	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	6.5	0.0	0.0	8.5	0.0	0.0	4.8	0.0	0.0	4.8	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h	200				89				74		47	
Approach Delay, s/veh	6.5				8.5				4.8		4.8	
Approach LOS	A				A				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	9.5		8.3		9.5		8.3					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.0		18.0		18.0		18.0					
Max Q Clear Time (g_c+I1), s	2.5		3.7		2.3		3.0					
Green Ext Time (p_c), s	0.2		0.8		0.1		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary

13: Claus Rd & Claribel Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	1065	295	65	865	50	215	325	135	30	300	500
Future Volume (veh/h)	405	1065	295	65	865	50	215	325	135	30	300	500
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	426	1121	311	68	911	53	226	342	142	32	316	526
Adj No. of Lanes	2	3	1	3	3	1	3	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1683	524	266	1189	370	362	1074	481	115	936	657
Arrive On Green	0.15	0.33	0.33	0.05	0.23	0.23	0.07	0.30	0.30	0.03	0.26	0.26
Sat Flow, veh/h	3442	5085	1583	5003	5085	1583	5003	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	426	1121	311	68	911	53	226	342	142	32	316	526
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1668	1695	1583	1668	1770	1583	1721	1770	1583
Q Serve(g_s), s	8.2	12.9	11.1	0.9	11.4	1.8	3.0	5.1	4.7	0.6	4.9	18.0
Cycle Q Clear(g_c), s	8.2	12.9	11.1	0.9	11.4	1.8	3.0	5.1	4.7	0.6	4.9	18.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	517	1683	524	266	1189	370	362	1074	481	115	936	657
V/C Ratio(X)	0.82	0.67	0.59	0.26	0.77	0.14	0.62	0.32	0.30	0.28	0.34	0.80
Avail Cap(c_a), veh/h	531	1718	535	367	1345	419	367	1074	481	253	936	657
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	28.0	19.5	19.0	30.9	24.3	20.7	30.7	18.3	18.1	32.1	20.2	17.5
Incr Delay (d2), s/veh	10.0	1.0	1.7	0.5	2.4	0.2	3.2	0.8	1.6	1.3	1.0	9.9
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	4.6	6.2	5.0	0.4	5.6	0.8	1.5	2.6	2.2	0.3	2.5	10.4
LnGrp Delay(d),s/veh	38.0	20.5	20.7	31.4	26.7	20.9	33.9	19.1	19.7	33.4	21.2	27.4
LnGrp LOS	D	C	C	C	C	C	C	B	B	C	C	C
Approach Vol, veh/h	1858				1032				710		874	
Approach Delay, s/veh	24.5				26.8				23.9		25.4	
Approach LOS	C				C				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	25.7	8.1	27.5	9.4	23.0	14.7	20.9				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	* 5				
Max Green Setting (Gmax), s	5.0	18.0	5.0	23.0	5.0	18.0	10.5	* 18				
Max Q Clear Time (g_c+I), s	12.6	7.1	2.9	14.9	5.0	20.0	10.2	13.4				
Green Ext Time (p_c), s	0.0	1.8	0.0	5.2	0.0	0.0	0.1	2.5				
Intersection Summary												
HCM 2010 Ctrl Delay			25.1									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary

14: Oakdale Rd & Claratina Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖↗	↑↑	↖	↖↗	↑↑	↖	↖↗	↑↑	↖
Traffic Volume (veh/h)	385	285	295	35	550	35	875	400	80	35	600	460
Future Volume (veh/h)	385	285	295	35	550	35	875	400	80	35	600	460
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	405	300	0	37	579	37	921	421	84	37	632	484
Adj No. of Lanes	2	2	1	2	2	1	2	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	510	1095	490	119	693	310	732	1741	779	563	795	591
Arrive On Green	0.15	0.31	0.00	0.03	0.20	0.20	0.21	0.49	0.49	0.22	0.22	0.22
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	3539	1583	1727	3539	1583
Grp Volume(v), veh/h	405	300	0	37	579	37	921	421	84	37	632	484
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1770	1583	864	1770	1583
Q Serve(g_s), s	9.4	5.3	0.0	0.9	12.9	1.6	17.5	5.6	2.3	1.4	13.9	18.5
Cycle Q Clear(g_c), s	9.4	5.3	0.0	0.9	12.9	1.6	17.5	5.6	2.3	1.4	13.9	18.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	510	1095	490	119	693	310	732	1741	779	563	795	591
V/C Ratio(X)	0.79	0.27	0.00	0.31	0.84	0.12	1.26	0.24	0.11	0.07	0.79	0.82
Avail Cap(c_a), veh/h	753	1333	596	209	774	346	732	1741	779	563	795	591
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	21.5	0.0	38.8	31.8	27.3	32.4	12.1	11.2	25.3	30.1	23.3
Incr Delay (d2), s/veh	3.6	0.1	0.0	1.5	7.3	0.2	127.4	0.3	0.3	0.2	8.1	12.1
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	4.7	2.6	0.0	0.4	7.1	0.7	21.2	2.8	1.1	0.4	7.6	11.9
LnGrp Delay(d),s/veh	37.5	21.6	0.0	40.2	39.1	27.4	159.8	12.4	11.5	25.5	38.2	35.4
LnGrp LOS	D	C		D	D	C	F	B	B	C	D	D
Approach Vol, veh/h		705			653			1426			1153	
Approach Delay, s/veh		30.7			38.5			107.5			36.6	
Approach LOS		C			D			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		45.0	7.4	30.0	22.0	23.0	16.7	20.6				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		40.5	5.0	31.0	17.5	18.5	18.0	18.0				
Max Q Clear Time (g_c+I1), s		7.6	2.9	7.3	19.5	20.5	11.4	14.9				
Green Ext Time (p_c), s		3.3	0.0	1.9	0.0	0.0	0.8	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			61.5									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary

15: Oakdale Rd & Riverbank Center Access

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	5	70	65	5	45	100	390	25	95	875	55
Future Volume (veh/h)	25	5	70	65	5	45	100	390	25	95	875	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	26	5	74	72	0	47	105	411	26	100	921	58
Adj No. of Lanes	2	1	1	2	0	1	1	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	163	138	223	0	190	135	1480	662	133	1474	659
Arrive On Green	0.03	0.09	0.09	0.06	0.00	0.12	0.08	0.42	0.42	0.07	0.42	0.42
Sat Flow, veh/h	3548	1863	1583	3548	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	26	5	74	72	0	47	105	411	26	100	921	58
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.4	0.1	2.3	1.0	0.0	1.4	2.9	3.9	0.5	2.8	10.4	1.1
Cycle Q Clear(g_c), s	0.4	0.1	2.3	1.0	0.0	1.4	2.9	3.9	0.5	2.8	10.4	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	163	138	223	0	190	135	1480	662	133	1474	659
V/C Ratio(X)	0.24	0.03	0.54	0.32	0.00	0.25	0.78	0.28	0.04	0.75	0.62	0.09
Avail Cap(c_a), veh/h	352	665	565	352	0	565	264	1480	662	313	1474	659
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	21.1	22.0	22.6	0.0	20.1	22.9	9.7	8.7	22.9	11.6	8.9
Incr Delay (d2), s/veh	1.2	0.1	3.2	0.8	0.0	0.7	9.1	0.5	0.1	8.4	2.0	0.3
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	0.2	0.1	1.1	0.5	0.0	0.6	1.8	2.0	0.2	1.7	5.4	0.5
LnGrp Delay(d),s/veh	25.0	21.1	25.2	23.4	0.0	20.8	31.9	10.1	8.8	31.3	13.6	9.2
LnGrp LOS	C	C	C	C		C	C	B	A	C	B	A
Approach Vol, veh/h	105			119			542			1079		
Approach Delay, s/veh	25.0			22.4			14.3			15.0		
Approach LOS	C			C			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	25.6	7.7	8.9	8.4	25.5	6.0	10.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	19.6	19.6	5.0	18.0	7.5	21.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	14.8	5.9	3.0	4.3	4.9	12.4	2.4	3.4				
Green Ext Time (p_c), s	0.1	2.3	0.0	0.2	0.1	4.2	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	15.8											
HCM 2010 LOS	B											
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Cumulative + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	179	2.0	1.253	162.3	LOS F	38.6	979.7	1.00	3.14	10.4
8	T1	326	2.0	1.253	162.2	LOS F	40.7	1034.3	1.00	3.15	10.3
18	R2	533	2.0	1.253	159.8	LOS F	40.7	1034.3	1.00	3.27	10.2
Approach		1038	2.0	1.253	161.0	LOS F	40.7	1034.3	1.00	3.21	10.2
East: Sylvan Ave											
1	L2	348	2.0	0.800	25.1	LOS D	6.2	158.7	0.80	0.92	26.8
6	T1	603	2.0	0.800	24.8	LOS C	6.2	158.7	0.78	0.90	27.9
16	R2	261	2.0	0.800	24.6	LOS C	6.0	152.5	0.78	0.89	27.1
Approach		1212	2.0	0.800	24.9	LOS C	6.2	158.7	0.79	0.90	27.4
North: Roselle Ave											
7	L2	348	2.0	0.699	25.5	LOS D	3.2	81.6	0.79	0.90	25.9
4	T1	234	2.0	0.699	26.6	LOS D	3.3	83.8	0.81	0.93	26.3
14	R2	109	2.0	0.699	26.7	LOS D	3.3	83.8	0.81	0.93	26.3
Approach		690	2.0	0.699	26.0	LOS D	3.3	83.8	0.80	0.92	26.1
West: Sylvan Ave											
5	L2	114	2.0	0.999	66.0	LOS F	14.1	357.6	0.98	1.61	18.4
2	T1	870	2.0	0.999	65.2	LOS F	14.1	357.6	0.98	1.60	18.8
12	R2	130	2.0	0.999	64.5	LOS F	14.0	356.5	0.98	1.60	18.4
Approach		1114	2.0	0.999	65.2	LOS F	14.1	357.6	0.98	1.60	18.7
All Vehicles		4054	2.0	1.253	71.0	LOS F	40.7	1034.3	0.90	1.69	17.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary

17: Oakdale Rd & Sylvan Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	55	650	295	180	540	345	670	980	120	365	580	55
Future Volume (veh/h)	55	650	295	180	540	345	670	980	120	365	580	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	58	684	311	189	568	363	705	1032	126	384	611	0
Adj No. of Lanes	1	3	1	1	2	1	2	3	0	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	1068	332	226	1039	465	799	1457	178	466	1121	349
Arrive On Green	0.04	0.21	0.21	0.13	0.29	0.29	0.23	0.32	0.32	0.14	0.22	0.00
Sat Flow, veh/h	1774	5085	1583	1774	3539	1583	3442	4594	560	3442	5085	1583
Grp Volume(v), veh/h	58	684	311	189	568	363	705	761	397	384	611	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1774	1770	1583	1721	1695	1764	1721	1695	1583
Q Serve(g_s), s	2.8	10.5	16.6	8.9	11.6	18.0	17.0	16.9	17.0	9.3	9.1	0.0
Cycle Q Clear(g_c), s	2.8	10.5	16.6	8.9	11.6	18.0	17.0	16.9	17.0	9.3	9.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	77	1068	332	226	1039	465	799	1076	560	466	1121	349
V/C Ratio(X)	0.75	0.64	0.94	0.84	0.55	0.78	0.88	0.71	0.71	0.82	0.54	0.00
Avail Cap(c_a), veh/h	149	1068	332	279	1039	465	887	1076	560	534	1121	349
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	0.00
Uniform Delay (d), s/veh	40.5	30.9	33.3	36.5	25.5	27.7	31.8	25.8	25.8	36.1	29.6	0.0
Incr Delay (d2), s/veh	13.4	1.3	33.0	16.4	0.6	8.3	9.7	3.9	7.4	9.1	1.9	0.0
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	1.6	5.1	10.3	5.4	5.7	8.9	9.1	8.5	9.4	5.0	4.4	0.0
LnGrp Delay(d),s/veh	53.9	32.2	66.3	52.9	26.1	36.1	41.5	29.7	33.2	45.1	31.5	0.0
LnGrp LOS	D	C	E	D	C	D	D	C	C	D	C	
Approach Vol, veh/h	1053				1120				1863		995	
Approach Delay, s/veh	43.5				33.9				34.9		36.8	
Approach LOS	D				C				C		D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.1	31.7	15.4	22.5	24.4	23.4	8.2	29.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	13.3	27.2	13.5	18.0	22.1	18.4	7.2	24.3				
Max Q Clear Time (g_c+M1), s	13.3	19.0	10.9	18.6	19.0	11.1	4.8	20.0				
Green Ext Time (p_c), s	0.3	4.6	0.1	0.0	1.0	2.4	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay	36.8											
HCM 2010 LOS	D											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Cumulative + Project AM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	489	2.0	1.185	131.2	LOS F	34.7	880.8	1.00	2.89	12.0
8	T1	500	2.0	1.185	129.4	LOS F	36.2	918.7	1.00	2.96	12.0
18	R2	141	2.0	1.185	129.2	LOS F	36.2	918.7	1.00	2.97	12.0
Approach		1130	2.0	1.185	130.1	LOS F	36.2	918.7	1.00	2.93	12.0
East: Claratina Ave											
1	L2	136	2.0	2.045	496.9	LOS F	167.4	4251.5	1.00	6.13	4.1
6	T1	1761	2.0	2.045	496.3	LOS F	176.2	4476.5	1.00	6.28	4.1
16	R2	136	2.0	2.045	495.8	LOS F	176.2	4476.5	1.00	6.42	4.1
Approach		2033	2.0	2.045	496.3	LOS F	176.2	4476.5	1.00	6.28	4.1
North: Coffee Ave											
7	L2	60	2.0	1.408	224.8	LOS F	57.5	1459.3	1.00	3.93	8.1
4	T1	641	2.0	1.408	224.3	LOS F	61.0	1548.4	1.00	3.97	8.0
14	R2	457	2.0	1.408	222.6	LOS F	61.0	1548.4	1.00	4.12	8.0
Approach		1158	2.0	1.408	223.7	LOS F	61.0	1548.4	1.00	4.03	8.0
West: Claratina Ave											
5	L2	250	2.0	0.935	43.2	LOS E	11.8	300.7	0.97	1.29	22.4
2	T1	848	2.0	0.935	42.8	LOS E	11.8	300.7	0.96	1.27	23.0
12	R2	272	2.0	0.935	42.4	LOS E	11.5	291.8	0.96	1.26	22.3
Approach		1370	2.0	0.935	42.8	LOS E	11.8	300.7	0.96	1.27	22.7
All Vehicles		5690	2.0	2.045	259.0	LOS F	176.2	4476.5	0.99	3.95	7.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary

19: Oakdale Rd & Mable Ave

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	10	95	25	10	25	110	1480	15	25	870	125
Future Volume (veh/h)	175	10	95	25	10	25	110	1480	15	25	870	125
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	184	11	100	26	11	26	116	1558	16	26	916	0
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	22	198	158	42	99	148	2113	658	53	1839	573
Arrive On Green	0.14	0.14	0.14	0.09	0.08	0.08	0.08	0.42	0.42	0.03	0.36	0.00
Sat Flow, veh/h	1774	159	1448	1774	493	1165	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	184	0	111	26	0	37	116	1558	16	26	916	0
Grp Sat Flow(s),veh/h/ln	1774	0	1607	1774	0	1657	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.4	0.0	3.5	0.7	0.0	1.1	3.5	14.1	0.3	0.8	7.7	0.0
Cycle Q Clear(g_c), s	5.4	0.0	3.5	0.7	0.0	1.1	3.5	14.1	0.3	0.8	7.7	0.0
Prop In Lane	1.00		0.90	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	250	0	220	158	0	141	148	2113	658	53	1839	573
V/C Ratio(X)	0.73	0.00	0.50	0.16	0.00	0.26	0.78	0.74	0.02	0.49	0.50	0.00
Avail Cap(c_a), veh/h	583	0	528	583	0	545	201	2113	658	162	1839	573
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.5	0.0	21.9	23.0	0.0	23.5	24.6	13.5	9.4	26.2	13.6	0.0
Incr Delay (d2), s/veh	4.2	0.0	1.8	0.5	0.0	1.0	13.0	2.3	0.1	6.9	1.0	0.0
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	2.9	0.0	1.7	0.4	0.0	0.6	2.2	7.0	0.2	0.5	3.7	0.0
LnGrp Delay(d),s/veh	26.7	0.0	23.7	23.5	0.0	24.4	37.6	15.8	9.5	33.0	14.6	0.0
LnGrp LOS	C		C	C		C	D	B	A	C	B	
Approach Vol, veh/h	295					63		1690		942		
Approach Delay, s/veh	25.6					24.1		17.3		15.1		
Approach LOS	C					C		B		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	27.2	9.4	12.0	9.1	24.3	12.2	9.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	21.0	18.0	18.0	6.2	19.8	18.0	18.0				
Max Q Clear Time (g_c+I2), s	12.8	16.1	2.7	5.5	5.5	9.7	7.4	3.1				
Green Ext Time (p_c), s	0.0	3.6	0.0	0.4	0.0	4.1	0.3	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	17.5											
HCM 2010 LOS	B											

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	220	170	50	15	100
Future Vol, veh/h	50	220	170	50	15	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	239	185	54	16	109
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	239	0	-	0	440	120
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1325	-	-	-	545	909
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1325	-	-	-	523	909
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	788	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.5	0		9.8		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1325	-	-	-	523	909
HCM Lane V/C Ratio	0.041	-	-	-	0.031	0.12
HCM Control Delay (s)	7.8	-	-	-	12.1	9.5
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.4

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	50	220	170	50	15	100		
Future Volume (veh/h)	50	220	170	50	15	100		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	53	232	179	53	16	105		
Adj No. of Lanes	1	2	2	1	1	1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	100	1066	455	204	827	738		
Arrive On Green	0.06	0.30	0.13	0.13	0.47	0.47		
Sat Flow, veh/h	1774	3632	3632	1583	1774	1583		
Grp Volume(v), veh/h	53	232	179	53	16	105		
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1583	1774	1583		
Q Serve(g_s), s	1.1	1.9	1.8	1.2	0.2	1.5		
Cycle Q Clear(g_c), s	1.1	1.9	1.8	1.2	0.2	1.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	100	1066	455	204	827	738		
V/C Ratio(X)	0.53	0.22	0.39	0.26	0.02	0.14		
Avail Cap(c_a), veh/h	344	7145	6046	2705	827	738		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.7	10.1	15.5	15.2	5.6	5.9		
Incr Delay (d2), s/veh	4.4	0.1	0.6	0.7	0.0	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.7	0.9	0.9	0.5	0.1	1.8		
LnGrp Delay(d),s/veh	22.1	10.2	16.0	15.9	5.6	6.3		
LnGrp LOS	C	B	B	B	A	A		
Approach Vol, veh/h		285	232		121			
Approach Delay, s/veh		12.4	16.0		6.2			
Approach LOS		B	B		A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				16.1		22.5	6.7	9.5
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				78.0		18.0	7.5	66.0
Max Q Clear Time (g_c+I1), s				3.9		3.5	3.1	3.8
Green Ext Time (p_c), s				1.7		0.3	0.0	1.2
Intersection Summary								
HCM 2010 Ctrl Delay	12.5							
HCM 2010 LOS	B							

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑			↔				
Traffic Vol, veh/h	0	700	175	70	800	0	80	0	100	0	0	0
Future Vol, veh/h	0	700	175	70	800	0	80	0	100	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	737	184	74	842	0	84	0	105	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	-	0	0	921	0	0	1398	1819	461
Stage 1	-	-	-	-	-	-	829	829	-
Stage 2	-	-	-	-	-	-	569	990	-
Critical Hdwy	-	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	737	-	0	132	77	547
Stage 1	0	-	-	-	-	0	389	383	-
Stage 2	0	-	-	-	-	0	530	323	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	737	-	-	119	0	547
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	0	-
Stage 1	-	-	-	-	-	-	350	0	-
Stage 2	-	-	-	-	-	-	530	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	85.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	737	-
HCM Lane V/C Ratio	0.898	-	-	0.1	-
HCM Control Delay (s)	85.3	-	-	10.4	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	7.2	-	-	0.3	-

MOVEMENT SUMMARY

Site: 1 [Coffee Ave and Patterson Ave]

Cumulative + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	87	2.0	0.304	9.5	LOS A	0.9	23.0	0.52	0.53	32.6
18	R2	109	2.0	0.304	9.5	LOS A	0.9	23.0	0.52	0.53	31.8
Approach		196	2.0	0.304	9.5	LOS A	0.9	23.0	0.52	0.53	32.2
East: Patterson Ave											
1	L2	76	2.0	0.832	20.6	LOS C	8.4	214.0	0.55	0.32	29.2
6	T1	870	2.0	0.832	20.6	LOS C	8.4	214.0	0.55	0.32	29.8
Approach		946	2.0	0.832	20.6	LOS C	8.4	214.0	0.55	0.32	29.8
West: Patterson Ave											
2	T1	761	2.0	0.826	20.0	LOS C	8.4	212.9	0.51	0.28	30.2
12	R2	190	2.0	0.826	20.0	LOS C	8.4	212.9	0.51	0.28	28.7
Approach		951	2.0	0.826	20.0	LOS C	8.4	212.9	0.51	0.28	29.9
All Vehicles		2092	2.0	0.832	19.3	LOS C	8.4	214.0	0.53	0.32	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\JDF\KDA\Reports\Stanislaus County\Riverbank\Crossroads West\SIDRA\6 CPP\1 CPP PM Coffee_Patterson.sip7

HCM 2010 Signalized Intersection Summary
1: Coffee Rd & Patterson Rd

PM PEAK CUM+PROJECT MITIGATION

11/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	700	175	70	800	0	80	0	100	0	0	0
Future Volume (veh/h)	0	700	175	70	800	0	80	0	100	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0	1863	0	1863			
Adj Flow Rate, veh/h	0	737	184	74	842	0	84	0	105			
Adj No. of Lanes	0	1	1	1	1	0	1	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2			
Cap, veh/h	0	923	785	123	1255	0	192	0	171			
Arrive On Green	0.00	0.50	0.50	0.07	0.67	0.00	0.11	0.00	0.11			
Sat Flow, veh/h	0	1863	1583	1774	1863	0	1774	0	1583			
Grp Volume(v), veh/h	0	737	184	74	842	0	84	0	105			
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	0	1774	0	1583			
Q Serve(g_s), s	0.0	13.6	2.7	1.7	11.1	0.0	1.8	0.0	2.6			
Cycle Q Clear(g_c), s	0.0	13.6	2.7	1.7	11.1	0.0	1.8	0.0	2.6			
Prop In Lane	0.00		1.00	1.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	923	785	123	1255	0	192	0	171			
V/C Ratio(X)	0.00	0.80	0.23	0.60	0.67	0.00	0.44	0.00	0.61			
Avail Cap(c_a), veh/h	0	1285	1092	215	1713	0	773	0	690			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	8.7	5.9	18.7	4.0	0.0	17.2	0.0	17.6			
Incr Delay (d2), s/veh	0.0	2.5	0.2	4.7	0.6	0.0	1.6	0.0	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			
%ile BackOfQ(50%),veh/ln	0.0	7.4	1.2	1.0	5.6	0.0	1.0	0.0	1.3			
LnGrp Delay(d),s/veh	0.0	11.2	6.1	23.3	4.6	0.0	18.8	0.0	21.1			
LnGrp LOS		B	A	C	A		B		C			
Approach Vol, veh/h		921			916			189				
Approach Delay, s/veh		10.2			6.1			20.1				
Approach LOS		B			A			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4				8				
Phs Duration (G+Y+Rc), s		9.0	7.4	25.0				32.3				
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5				
Max Green Setting (Gmax), s		18.0	5.0	28.5				38.0				
Max Q Clear Time (g_c+I1), s		4.6	3.7	15.6				13.1				
Green Ext Time (p_c), s		0.4	0.0	4.8				7.0				
Intersection Summary												
HCM 2010 Ctrl Delay			9.3									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
2: Oakdale Rd & Patterson Rd

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	685	185	465	450	50	200	130	145	60	140	50
Future Volume (veh/h)	110	685	185	465	450	50	200	130	145	60	140	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	116	721	195	489	474	53	211	137	153	63	147	53
Adj No. of Lanes	1	2	0	2	2	0	1	1	1	1	1	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	706	191	512	1032	115	226	602	747	84	452	384
Arrive On Green	0.08	0.26	0.26	0.15	0.32	0.32	0.13	0.32	0.32	0.05	0.24	0.24
Sat Flow, veh/h	1774	2756	745	3442	3212	358	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	116	463	453	489	260	267	211	137	153	63	147	53
Grp Sat Flow(s),veh/h/ln	1774	1770	1731	1721	1770	1800	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	5.1	20.5	20.5	11.3	9.4	9.4	9.4	4.3	4.5	2.8	5.2	2.1
Cycle Q Clear(g_c), s	5.1	20.5	20.5	11.3	9.4	9.4	9.4	4.3	4.5	2.8	5.2	2.1
Prop In Lane	1.00		0.43	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	148	453	444	512	569	579	226	602	747	84	452	384
V/C Ratio(X)	0.78	1.02	1.02	0.96	0.46	0.46	0.93	0.23	0.20	0.75	0.33	0.14
Avail Cap(c_a), veh/h	262	453	444	512	569	579	226	602	747	157	452	384
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	35.9	29.8	29.8	33.8	21.6	21.6	34.6	19.8	12.4	37.7	24.9	23.7
Incr Delay (d2), s/veh	8.7	47.7	48.2	28.7	0.6	0.6	41.6	0.9	0.6	12.8	1.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	16.0	15.7	7.4	4.6	4.8	7.2	2.4	2.1	1.7	2.9	1.0
LnGrp Delay(d),s/veh	44.6	77.4	78.0	62.5	22.2	22.2	76.2	20.7	13.0	50.5	26.8	24.5
LnGrp LOS	D	F	F	E	C	C	E	C	B	D	C	C
Approach Vol, veh/h	1032		1016				501		263			
Approach Delay, s/veh	74.0		41.6				41.7		32.0			
Approach LOS	E		D				D		C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	30.3	16.4	25.0	14.7	23.9	11.2	30.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.1	22.5	11.9	20.5	10.2	19.4	11.8	20.6				
Max Q Clear Time (g_c+I1), s	4.8	6.5	13.3	22.5	11.4	7.2	7.1	11.4				
Green Ext Time (p_c), s	0.0	1.1	0.0	0.0	0.0	0.7	0.1	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay			52.6									
HCM 2010 LOS			D									

Intersection												
Int Delay, s/veh	14.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	165	0	45	0	455	265	75	320	0
Future Vol, veh/h	0	0	0	165	0	45	0	455	265	75	320	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	174	0	47	0	479	279	79	337	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				1114	1114	619	-	0	0	758	0	0
Stage 1				619	619	-	-	-	-	-	-	-
Stage 2				495	495	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				230	208	489	0	-	-	853	-	0
Stage 1				537	480	-	0	-	-	-	-	0
Stage 2				613	546	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				204	0	489	-	-	-	853	-	-
Mov Cap-2 Maneuver				204	0	-	-	-	-	-	-	-
Stage 1				476	0	-	-	-	-	-	-	-
Stage 2				613	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				90.9		0			1.8			
HCM LOS				F								
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT						
Capacity (veh/h)		-	-	233	853	-						
HCM Lane V/C Ratio		-	-	0.949	0.093	-						
HCM Control Delay (s)		-	-	90.9	9.7	0						
HCM Lane LOS		-	-	F	A	A						
HCM 95th %tile Q(veh)		-	-	8.4	0.3	-						

HCM 2010 Signalized Intersection Summary
4: Oakdale Rd & Morrill Rd

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	90	120	75	55	95	175	395	115	110	495	115
Future Volume (veh/h)	85	90	120	75	55	95	175	395	115	110	495	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	89	95	126	79	58	100	184	416	121	116	521	121
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	207	176	101	194	165	223	1390	400	149	688	160
Arrive On Green	0.06	0.11	0.11	0.06	0.10	0.10	0.13	0.51	0.51	0.08	0.47	0.47
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2713	781	1774	1463	340
Grp Volume(v), veh/h	89	95	126	79	58	100	184	270	267	116	0	642
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1725	1774	0	1803
Q Serve(g_s), s	3.8	3.7	5.9	3.4	2.2	4.6	7.7	6.7	6.8	4.9	0.0	22.4
Cycle Q Clear(g_c), s	3.8	3.7	5.9	3.4	2.2	4.6	7.7	6.7	6.8	4.9	0.0	22.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		0.19
Lane Grp Cap(c), veh/h	114	207	176	101	194	165	223	907	884	149	0	848
V/C Ratio(X)	0.78	0.46	0.71	0.78	0.30	0.61	0.82	0.30	0.30	0.78	0.00	0.76
Avail Cap(c_a), veh/h	151	463	393	128	438	372	267	907	884	290	0	848
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	0.00	1.00
Uniform Delay (d), s/veh	35.3	31.8	32.8	35.6	31.7	32.8	32.6	10.7	10.8	34.3	0.0	16.7
Incr Delay (d2), s/veh	17.1	1.6	5.3	21.1	0.9	3.6	16.1	0.8	0.9	8.5	0.0	6.3
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	2.4	2.0	2.8	2.2	1.2	2.2	4.8	3.4	3.5	2.7	0.0	12.5
LnGrp Delay(d),s/veh	52.4	33.4	38.1	56.7	32.5	36.3	48.8	11.6	11.6	42.8	0.0	22.9
LnGrp LOS	D	C	D	E	C	D	D	B	B	D		C
Approach Vol, veh/h		310			237			721			758	
Approach Delay, s/veh		40.8			42.2			21.1			26.0	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	43.7	8.9	13.0	14.1	40.5	9.4	12.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.5	35.0	5.5	19.0	11.5	36.0	6.5	18.0				
Max Q Clear Time (g_c+I1), s	6.9	8.8	5.4	7.9	9.7	24.4	5.8	6.6				
Green Ext Time (p_c), s	0.1	3.5	0.0	0.6	0.1	3.5	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			28.4									
HCM 2010 LOS			C									
Notes												

Intersection												
Int Delay, s/veh	12.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	120	0	35	0	685	185	45	440	0
Future Vol, veh/h	0	0	0	120	0	35	0	685	185	45	440	0
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	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	126	0	37	0	721	195	47	463	0
Major/Minor				Minor1		Major1			Major2			
Conflicting Flow All				1376	1376	819	-	0	0	916	0	0
Stage 1				819	819	-	-	-	-	-	-	-
Stage 2				557	557	-	-	-	-	-	-	-
Critical Hdwy				6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1				5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy				3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver				160	145	375	0	-	-	745	-	0
Stage 1				433	389	-	0	-	-	-	-	0
Stage 2				574	512	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver				146	0	375	-	-	-	745	-	-
Mov Cap-2 Maneuver				146	0	-	-	-	-	-	-	-
Stage 1				396	0	-	-	-	-	-	-	-
Stage 2				574	0	-	-	-	-	-	-	-
Approach				WB		NB			SB			
HCM Control Delay, s				115		0			0.9			
HCM LOS				F								
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT							
Capacity (veh/h)		-	-	169	745							
HCM Lane V/C Ratio		-	-	0.965	0.064							
HCM Control Delay (s)		-	-	115	10.2							
HCM Lane LOS		-	-	F	B	A						
HCM 95th %tile Q(veh)		-	-	7.5	0.2							

HCM 2010 Signalized Intersection Summary
32: Coffee Rd & Crawford Rd Revised

PM PEAK CUM+PROJECT MITIGATION

11/01/2017

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	120	35	685	185	45	440		
Future Volume (veh/h)	120	35	685	185	45	440		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1900	1863	1900	1863	1863		
Adj Flow Rate, veh/h	126	37	721	195	47	463		
Adj No. of Lanes	0	0	1	0	1	1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	163	48	832	225	82	1334		
Arrive On Green	0.12	0.12	0.59	0.59	0.05	0.72		
Sat Flow, veh/h	1327	390	1413	382	1774	1863		
Grp Volume(v), veh/h	164	0	0	916	47	463		
Grp Sat Flow(s),veh/h/ln	1728	0	0	1795	1774	1863		
Q Serve(g_s), s	5.1	0.0	0.0	23.9	1.4	5.2		
Cycle Q Clear(g_c), s	5.1	0.0	0.0	23.9	1.4	5.2		
Prop In Lane	0.77	0.23		0.21	1.00			
Lane Grp Cap(c), veh/h	212	0	0	1057	82	1334		
V/C Ratio(X)	0.77	0.00	0.00	0.87	0.57	0.35		
Avail Cap(c_a), veh/h	560	0	0	1391	162	1764		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	23.7	0.0	0.0	9.6	26.1	3.0		
Incr Delay (d2), s/veh	5.9	0.0	0.0	4.7	6.1	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	12.8	0.8	2.6		
LnGrp Delay(d),s/veh	29.6	0.0	0.0	14.4	32.2	3.2		
LnGrp LOS	C			B	C	A		
Approach Vol, veh/h	164		916			510		
Approach Delay, s/veh	29.6		14.4			5.8		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.1	37.4				44.5		11.4
Change Period (Y+Rc), s	4.5	4.5				4.5		4.5
Max Green Setting (Gmax), s	5.1	43.3				52.9		18.1
Max Q Clear Time (g_c+I1), s	3.4	25.9				7.2		7.1
Green Ext Time (p_c), s	0.0	7.0				3.3		0.3
Intersection Summary								
HCM 2010 Ctrl Delay			13.2					
HCM 2010 LOS			B					
Notes								

HCM 2010 Signalized Intersection Summary

6: Oakdale Rd & Crawford Rd

PM PEAK CUMULATIVE+PROJECT

10/31/2017

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	40	40	140	195	30	55	235	590	295	90	550	50				
Future Volume (veh/h)	40	40	140	195	30	55	235	590	295	90	550	50				
Number	7	4	14	3	8	18	5	2	12	1	6	16				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900				
Adj Flow Rate, veh/h	42	42	147	205	32	58	247	621	311	95	579	53				
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0				
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, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	71	54	190	249	148	269	293	860	431	122	918	84				
Arrive On Green	0.04	0.15	0.15	0.14	0.25	0.25	0.17	0.38	0.38	0.07	0.28	0.28				
Sat Flow, veh/h	1774	364	1274	1774	595	1078	1774	2286	1145	1774	3280	300				
Grp Volume(v), veh/h	42	0	189	205	0	90	247	481	451	95	312	320				
Grp Sat Flow(s),veh/h/ln	1774	0	1638	1774	0	1673	1774	1770	1661	1774	1770	1810				
Q Serve(g_s), s	1.6	0.0	7.5	7.6	0.0	2.9	9.2	15.8	15.8	3.6	10.5	10.5				
Cycle Q Clear(g_c), s	1.6	0.0	7.5	7.6	0.0	2.9	9.2	15.8	15.8	3.6	10.5	10.5				
Prop In Lane	1.00		0.78	1.00		0.64	1.00		0.69	1.00		0.17				
Lane Grp Cap(c), veh/h	71	0	245	249	0	417	293	666	625	122	495	506				
V/C Ratio(X)	0.59	0.00	0.77	0.82	0.00	0.22	0.84	0.72	0.72	0.78	0.63	0.63				
Avail Cap(c_a), veh/h	162	0	434	300	0	574	353	666	625	185	495	506				
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	32.0	0.0	27.8	28.4	0.0	20.2	27.5	18.1	18.1	31.1	21.4	21.4				
Incr Delay (d2), s/veh	7.5	0.0	5.1	14.3	0.0	0.3	14.4	6.7	7.1	11.0	6.0	5.9				
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	0.9	0.0	3.8	4.7	0.0	1.4	5.6	8.8	8.4	2.1	5.9	6.1				
LnGrp Delay(d),s/veh	39.5	0.0	32.9	42.7	0.0	20.5	41.9	24.8	25.2	42.1	27.4	27.3				
LnGrp LOS	D		C	D		C	D	C	C	D	C	C				
Approach Vol, veh/h	231					295		1179		727						
Approach Delay, s/veh	34.1					35.9		28.5		29.3						
Approach LOS	C					D		C		C						
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2	3	4	5	6	7	8								
Phs Duration (G+Y+Rc), s	9.2	30.1	14.0	14.7	15.7	23.5	7.2	21.4								
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5								
Max Green Setting (Gmax), s	25.4	11.5	18.0	13.5	19.0	6.2	23.3									
Max Q Clear Time (g_c+1.5, s)	17.8	9.6	9.5	11.2	12.5	3.6	4.9									
Green Ext Time (p_c), s	0.0	3.6	0.1	0.6	0.2	2.1	0.0	0.4								
Intersection Summary																
HCM 2010 Ctrl Delay	30.2															
HCM 2010 LOS	C															
Notes																

HCM 2010 Signalized Intersection Summary
7: McHenry Ave & Kiernan Ave/Claribel Ave

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	0	350	405	0	185	195	695	725	185	515	220
Future Volume (veh/h)	245	0	350	405	0	185	195	695	725	185	515	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	0	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	258	0	0	426	0	0	205	732	763	195	542	232
Adj No. of Lanes	2	0	1	2	0	1	1	3	2	1	3	1
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, %	2	0	2	2	0	2	2	2	2	2	2	2
Cap, veh/h	376	0	0	539	0	0	251	1607	881	241	1577	491
Arrive On Green	0.11	0.00	0.00	0.16	0.00	0.00	0.14	0.32	0.32	0.14	0.31	0.31
Sat Flow, veh/h	3442	258		3442	426		1774	5085	2787	1774	5085	1583
Grp Volume(v), veh/h	258	28.5		426	30.9		205	732	763	195	542	232
Grp Sat Flow(s),veh/h/ln	1721	C		1721	C		1774	1695	1393	1774	1695	1583
Q Serve(g_s), s	4.4			7.3			6.9	7.0	15.8	6.5	5.0	7.3
Cycle Q Clear(g_c), s	4.4			7.3			6.9	7.0	15.8	6.5	5.0	7.3
Prop In Lane	1.00			1.00			1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376			539			251	1607	881	241	1577	491
V/C Ratio(X)	0.69			0.79			0.82	0.46	0.87	0.81	0.34	0.47
Avail Cap(c_a), veh/h	618			618			290	1607	881	290	1577	491
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	26.3			24.9			25.5	16.7	19.7	25.7	16.3	17.1
Incr Delay (d2), s/veh	2.2			6.1			14.7	0.9	11.2	13.5	0.6	3.2
Initial Q Delay(d3),s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2			3.9			4.4	3.4	7.4	4.1	2.4	3.6
LnGrp Delay(d),s/veh	28.5			30.9			40.3	17.7	30.9	39.2	16.9	20.3
LnGrp LOS	C			C			D	B	C	D	B	C
Approach Vol, veh/h							1700			969		
Approach Delay, s/veh							26.3			22.2		
Approach LOS							C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3		5	6	7					
Phs Duration (G+Y+Rc), s	16.3	27.4	17.6		16.7	27.0	14.7					
Change Period (Y+Rc), s	8.0	8.0	8.0		8.0	8.0	8.0					
Max Green Setting (Gmax), s	10.0	19.0	11.0		10.0	19.0	11.0					
Max Q Clear Time (g_c+10), s	10.5	17.8	9.3		8.9	9.3	6.4					
Green Ext Time (p_c), s	0.1	0.9	0.3		0.1	3.2	0.4					
Intersection Summary												
HCM 2010 Ctrl Delay			25.9									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

8: Coffee Rd & Claribel Ave

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	650	2160	225	290	1475	35	275	345	400	35	405	465
Future Volume (veh/h)	650	2160	225	290	1475	35	275	345	400	35	405	465
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	684	2274	0	305	1553	0	289	363	421	37	426	489
Adj No. of Lanes	2	0	1	2	0	1	1	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	786	0	2	414	0	2	331	1567	891	64	888	759
Arrive On Green	0.23	0.00	0.00	0.12	0.00	0.00	0.19	0.44	0.44	0.04	0.25	0.25
Sat Flow, veh/h	3442	0	1583	3442	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	684	0	0	305	0	0	289	363	421	37	426	489
Grp Sat Flow(s),veh/h/ln	1721	0	1583	1721	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	13.7	0.0	0.0	6.1	0.0	0.0	11.4	4.6	11.4	1.5	7.4	16.7
Cycle Q Clear(g_c), s	13.7	0.0	0.0	6.1	0.0	0.0	11.4	4.6	11.4	1.5	7.4	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	786	0	2	414	0	2	331	1567	891	64	888	759
V/C Ratio(X)	0.87	0.00	0.00	0.74	0.00	0.00	0.87	0.23	0.47	0.57	0.48	0.64
Avail Cap(c_a), veh/h	863	0	485	671	0	397	346	1567	891	148	888	759
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	0.0	30.5	0.0	0.0	28.4	12.4	9.3	34.0	22.9	14.1
Incr Delay (d2), s/veh	9.0	0.0	0.0	2.6	0.0	0.0	20.5	0.1	0.4	7.8	0.4	1.9
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	7.4	0.0	0.0	3.1	0.0	0.0	7.4	2.2	5.1	0.9	3.7	7.6
LnGrp Delay(d),s/veh	35.6	0.0	0.0	33.1	0.0	0.0	48.9	12.5	9.7	41.8	23.3	16.0
LnGrp LOS	D			C			D	B	A	D	C	B
Approach Vol, veh/h	684				305		1073				952	
Approach Delay, s/veh	35.6				33.1		21.2				20.3	
Approach LOS	D				C		C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	39.8	16.6	7.8	21.4	26.0	24.4	0.0				
Change Period (Y+Rc), s	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0				
Max Green Setting (Gmax), s	6.0	29.0	14.0	22.0	14.0	18.0	18.0	18.0				
Max Q Clear Time (g_c+I1), s	13.5	13.4	8.1	0.0	13.4	18.7	15.7	0.0				
Green Ext Time (p_c), s	0.0	3.1	0.5	0.0	0.1	0.0	0.7	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			25.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	150	295	435	100	165	405	880	450	125	790	50
Future Volume (veh/h)	90	150	295	435	100	165	405	880	450	125	790	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	95	158	0	458	105	0	426	926	474	132	832	53
Adj No. of Lanes	1	2	1	1	2	1	1	2	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	225	101	479	946	423	448	1002	505	156	972	435
Arrive On Green	0.07	0.06	0.00	0.27	0.27	0.00	0.25	0.44	0.44	0.09	0.27	0.27
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	2281	1149	1774	3539	1583
Grp Volume(v), veh/h	95	158	0	458	105	0	426	715	685	132	832	53
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1660	1774	1770	1583
Q Serve(g_s), s	6.9	5.7	0.0	32.9	2.9	0.0	30.6	49.3	51.1	9.5	28.9	3.3
Cycle Q Clear(g_c), s	6.9	5.7	0.0	32.9	2.9	0.0	30.6	49.3	51.1	9.5	28.9	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	118	225	101	479	946	423	448	778	729	156	972	435
V/C Ratio(X)	0.80	0.70	0.00	0.96	0.11	0.00	0.95	0.92	0.94	0.85	0.86	0.12
Avail Cap(c_a), veh/h	205	491	220	485	1050	470	458	778	729	157	972	435
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.7	59.5	0.0	46.6	35.9	0.0	47.7	34.2	34.7	58.3	44.6	35.3
Incr Delay (d2), s/veh	11.8	3.9	0.0	29.6	0.1	0.0	29.5	17.7	21.4	32.3	9.6	0.6
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	3.7	2.9	0.0	20.1	1.4	0.0	18.7	27.9	27.7	6.1	15.4	1.5
LnGrp Delay(d),s/veh	71.5	63.5	0.0	76.2	35.9	0.0	77.1	51.9	56.1	90.6	54.2	35.9
LnGrp LOS	E	E		E	D		E	D	E	F	D	D
Approach Vol, veh/h	253					563		1826		1017		
Approach Delay, s/veh	66.5					68.7		59.4		58.0		
Approach LOS	E					E		E		E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	61.5	39.6	12.8	37.3	40.1	13.2	39.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	1.5	57.0	35.5	18.0	33.5	35.0	15.0	38.5				
Max Q Clear Time (g_c+M1), s	1.5	53.1	34.9	7.7	32.6	30.9	8.9	4.9				
Green Ext Time (p_c), s	0.0	2.9	0.1	0.6	0.1	2.1	0.1	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			60.9									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
9: Oakdale Rd & Claribel Ave

PM PEAK CUM+PROJECT MITIGATION

11/01/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	150	295	435	100	165	405	880	450	125	790	50
Future Volume (veh/h)	90	150	295	435	100	165	405	880	450	125	790	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	95	158	0	458	105	0	426	926	474	132	832	53
Adj No. of Lanes	1	2	1	2	1	1	2	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	282	126	563	324	275	528	1472	658	167	1262	565
Arrive On Green	0.07	0.08	0.00	0.16	0.17	0.00	0.15	0.42	0.42	0.09	0.36	0.36
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	95	158	0	458	105	0	426	926	474	132	832	53
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.8	3.1	0.0	9.4	3.6	0.0	8.7	15.1	18.2	5.3	14.4	1.6
Cycle Q Clear(g_c), s	3.8	3.1	0.0	9.4	3.6	0.0	8.7	15.1	18.2	5.3	14.4	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	282	126	563	324	275	528	1472	658	167	1262	565
V/C Ratio(X)	0.77	0.56	0.00	0.81	0.32	0.00	0.81	0.63	0.72	0.79	0.66	0.09
Avail Cap(c_a), veh/h	253	874	391	684	565	480	637	1472	658	231	1262	565
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	32.3	0.0	29.4	26.4	0.0	29.8	16.9	17.8	32.3	19.7	15.6
Incr Delay (d2), s/veh	9.9	1.7	0.0	6.2	0.6	0.0	6.4	2.0	6.7	11.8	2.7	0.3
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	2.2	1.6	0.0	4.9	1.9	0.0	4.6	7.7	9.1	3.2	7.5	0.8
LnGrp Delay(d),s/veh	43.2	34.1	0.0	35.7	26.9	0.0	36.2	18.9	24.4	44.2	22.4	15.9
LnGrp LOS	D	C		D	C		D	B	C	D	C	B
Approach Vol, veh/h		253			563			1826			1017	
Approach Delay, s/veh		37.5			34.0			24.4			24.9	
Approach LOS		D			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	34.8	16.4	10.3	15.7	30.5	9.5	17.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	30.0	14.5	18.0	13.5	26.0	10.4	22.1				
Max Q Clear Time (g_c+I1), s	7.3	20.2	11.4	5.1	10.7	16.4	5.8	5.6				
Green Ext Time (p_c), s	0.1	5.6	0.6	0.7	0.5	4.1	0.1	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				26.9								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary

10: Claribel Ave & Squire-Wells Way

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	465	0	0	520	150	0	0	0	150	0	180
Future Volume (veh/h)	260	465	0	0	520	150	0	0	0	150	0	180
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900				1863	0	1863
Adj Flow Rate, veh/h	274	489	0	0	547	158				158	0	189
Adj No. of Lanes	1	2	0	0	2	0				1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2				2	0	2
Cap, veh/h	342	2129	0	0	810	233				316	0	282
Arrive On Green	0.19	0.60	0.00	0.00	0.30	0.30				0.18	0.00	0.18
Sat Flow, veh/h	1774	3632	0	0	2807	781				1774	0	1583
Grp Volume(v), veh/h	274	489	0	0	356	349				158	0	189
Grp Sat Flow(s),veh/h/ln	1774	1770	0	0	1770	1725				1774	0	1583
Q Serve(g_s), s	6.0	2.6	0.0	0.0	7.2	7.3				3.3	0.0	4.5
Cycle Q Clear(g_c), s	6.0	2.6	0.0	0.0	7.2	7.3				3.3	0.0	4.5
Prop In Lane	1.00		0.00	0.00		0.45				1.00		1.00
Lane Grp Cap(c), veh/h	342	2129	0	0	529	515				316	0	282
V/C Ratio(X)	0.80	0.23	0.00	0.00	0.67	0.68				0.50	0.00	0.67
Avail Cap(c_a), veh/h	456	2862	0	0	781	761				783	0	698
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	3.8	0.0	0.0	12.6	12.6				15.1	0.0	15.7
Incr Delay (d2), s/veh	7.4	0.1	0.0	0.0	1.5	1.6				1.2	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	1.2	0.0	0.0	3.7	3.6				1.7	0.0	4.1
LnGrp Delay(d),s/veh	23.1	3.8	0.0	0.0	14.1	14.1				16.4	0.0	18.4
LnGrp LOS	C	A			B	B				B		B
Approach Vol, veh/h		763			705						347	
Approach Delay, s/veh		10.7			14.1						17.5	
Approach LOS		B			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs				4		6	7	8				
Phs Duration (G+Y+Rc), s				29.0		11.8	12.4	16.7				
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s				33.0		18.0	10.5	18.0				
Max Q Clear Time (g_c+I1), s				4.6		6.5	8.0	9.3				
Green Ext Time (p_c), s				3.5		0.9	0.2	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay				13.3								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
11: Roselle Ave & Claribel Ave

PM PEAK CUMULATIVE+PROJECT
10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	415	170	140	405	25	225	500	45	45	415	40
Future Volume (veh/h)	35	415	170	140	405	25	225	500	45	45	415	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	37	437	179	147	426	26	237	526	47	47	437	42
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	525	213	182	951	58	277	680	61	74	483	46
Arrive On Green	0.04	0.21	0.21	0.10	0.28	0.28	0.16	0.40	0.40	0.04	0.29	0.29
Sat Flow, veh/h	1774	2458	998	1774	3390	206	1774	1686	151	1774	1674	161
Grp Volume(v), veh/h	37	313	303	147	222	230	237	0	573	47	0	479
Grp Sat Flow(s),veh/h/ln	1774	1770	1687	1774	1770	1826	1774	0	1836	1774	0	1834
Q Serve(g_s), s	1.5	12.7	12.9	6.1	7.8	7.8	9.8	0.0	20.4	2.0	0.0	18.9
Cycle Q Clear(g_c), s	1.5	12.7	12.9	6.1	7.8	7.8	9.8	0.0	20.4	2.0	0.0	18.9
Prop In Lane	1.00		0.59	1.00		0.11	1.00		0.08	1.00		0.09
Lane Grp Cap(c), veh/h	63	378	360	182	496	512	277	0	740	74	0	529
V/C Ratio(X)	0.58	0.83	0.84	0.81	0.45	0.45	0.85	0.00	0.77	0.64	0.00	0.91
Avail Cap(c_a), veh/h	139	423	403	186	496	512	294	0	756	120	0	575
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	28.3	28.4	33.1	22.3	22.3	30.9	0.0	19.5	35.5	0.0	25.8
Incr Delay (d2), s/veh	8.2	11.9	13.5	22.1	0.6	0.6	20.3	0.0	4.9	8.8	0.0	17.1
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	0.9	7.4	7.4	4.1	3.8	4.0	6.4	0.0	11.2	1.1	0.0	12.1
LnGrp Delay(d),s/veh	44.0	40.2	41.8	55.2	22.9	22.9	51.2	0.0	24.4	44.3	0.0	42.9
LnGrp LOS	D	D	D	E	C	C	D		C	D		D
Approach Vol, veh/h		653			599			810			526	
Approach Delay, s/veh		41.2			30.8			32.3			43.0	
Approach LOS		D			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	34.9	12.2	20.6	16.3	26.2	7.2	25.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	31.0	7.9	18.0	12.5	23.6	5.9	20.0				
Max Q Clear Time (g_c+14), s	14.0	22.4	8.1	14.9	11.8	20.9	3.5	9.8				
Green Ext Time (p_c), s	0.0	2.5	0.0	1.1	0.1	0.8	0.0	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay			36.4									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
12: Terminal Ave & Claribel Ave

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	380	25	5	420	40	50	40	5	35	10	100
Future Volume (veh/h)	100	380	25	5	420	40	50	40	5	35	10	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	105	400	0	5	442	0	53	42	0	37	11	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	623	0	151	563	0	367	199	0	468	106	0
Arrive On Green	0.43	0.43	0.00	0.43	0.30	0.00	0.20	0.20	0.00	0.20	0.20	0.00
Sat Flow, veh/h	233	1461	0	6	1851	0	669	971	0	1012	517	0
Grp Volume(v), veh/h	505	0	0	447	0	0	95	0	0	48	0	0
Grp Sat Flow(s),veh/h/ln	1694	0	0	1857	0	0	1640	0	0	1529	0	0
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	4.9	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0
Prop In Lane	0.21		0.00	0.01		0.00	0.56		0.00	0.77		0.00
Lane Grp Cap(c), veh/h	901	0	0	942	0	0	565	0	0	574	0	0
V/C Ratio(X)	0.56	0.00	0.00	0.47	0.00	0.00	0.17	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1984	0	0	2231	0	0	1434	0	0	1375	0	0
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	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.5	0.0	0.0	7.6	0.0	0.0	8.1	0.0	0.0	7.9	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
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	2.7	0.0	0.0	2.1	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	0.0	8.0	0.0	0.0	8.3	0.0	0.0	8.0	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h	505				447				95		48	
Approach Delay, s/veh	6.1				8.0				8.3		8.0	
Approach LOS	A				A				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	9.5		14.9		9.5		14.9					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	18.5		27.5		18.5		27.5					
Max Q Clear Time (g_c+I1), s	3.0		7.3		2.5		6.9					
Green Ext Time (p_c), s	0.3		3.1		0.1		2.4					
Intersection Summary												
HCM 2010 Ctrl Delay			7.1									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary
13: Claus Rd & Claribel Ave

PM PEAK CUMULATIVE+PROJECT
10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	500	1125	290	435	985	40	380	360	230	65	425	445
Future Volume (veh/h)	500	1125	290	435	985	40	380	360	230	65	425	445
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	526	1184	305	458	1037	42	400	379	242	68	447	468
Adj No. of Lanes	2	3	1	3	3	1	3	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	470	1403	437	532	1249	389	395	1034	463	181	941	637
Arrive On Green	0.14	0.28	0.28	0.11	0.25	0.25	0.08	0.29	0.29	0.05	0.27	0.27
Sat Flow, veh/h	3442	5085	1583	5003	5085	1583	5003	3539	1583	3442	3539	1583
Grp Volume(v), veh/h	526	1184	305	458	1037	42	400	379	242	68	447	468
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1668	1695	1583	1668	1770	1583	1721	1770	1583
Q Serve(g_s), s	9.5	15.3	12.0	6.3	13.4	1.4	5.5	5.9	8.9	1.3	7.4	17.5
Cycle Q Clear(g_c), s	9.5	15.3	12.0	6.3	13.4	1.4	5.5	5.9	8.9	1.3	7.4	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	470	1403	437	532	1249	389	395	1034	463	181	941	637
V/C Ratio(X)	1.12	0.84	0.70	0.86	0.83	0.11	1.01	0.37	0.52	0.38	0.48	0.73
Avail Cap(c_a), veh/h	470	1432	446	532	1315	409	395	1034	463	247	941	637
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	30.0	23.8	22.6	30.6	24.9	20.3	32.0	19.5	20.6	31.9	21.5	17.6
Incr Delay (d2), s/veh	78.5	4.7	4.7	13.5	4.4	0.1	48.3	1.0	4.2	1.3	1.7	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	7.7	5.8	3.5	6.8	0.6	4.3	3.0	4.4	0.7	3.8	8.9
LnGrp Delay(d),s/veh	108.5	28.5	27.3	44.1	29.3	20.5	80.4	20.5	24.8	33.2	23.2	25.0
LnGrp LOS	F	C	C	D	C	C	F	C	C	C	C	C
Approach Vol, veh/h	2015			1537			1021			983		
Approach Delay, s/veh	49.2			33.5			45.0			24.7		
Approach LOS	D			C			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	25.3	11.9	24.2	10.0	23.5	14.0	22.1				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	* 5				
Max Green Setting (Gmax), s	5.0	19.0	7.4	19.6	5.5	18.5	9.5	* 18				
Max Q Clear Time (g_c+I), s	13.3	10.9	8.3	17.3	7.5	19.5	11.5	15.4				
Green Ext Time (p_c), s	0.0	1.9	0.0	1.8	0.0	0.0	0.0	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay	39.8											
HCM 2010 LOS	D											
Notes												

HCM 2010 Signalized Intersection Summary
14: Oakdale Rd & Claratina Ave

PM PEAK CUMULATIVE+PROJECT
10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	825	1000	55	565	45	595	790	105	45	625	385
Future Volume (veh/h)	400	825	1000	55	565	45	595	790	105	45	625	385
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	421	868	0	58	595	47	626	832	111	47	658	405
Adj No. of Lanes	2	2	1	2	2	1	2	2	1	2	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	524	1084	485	153	702	314	702	1723	771	436	810	604
Arrive On Green	0.15	0.31	0.00	0.04	0.20	0.20	0.20	0.49	0.49	0.23	0.23	0.23
Sat Flow, veh/h	3442	3539	1583	3442	3539	1583	3442	3539	1583	1148	3539	1583
Grp Volume(v), veh/h	421	868	0	58	595	47	626	832	111	47	658	405
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1770	1583	574	1770	1583
Q Serve(g_s), s	9.8	18.7	0.0	1.4	13.5	2.0	14.7	13.1	3.2	2.7	14.6	17.7
Cycle Q Clear(g_c), s	9.8	18.7	0.0	1.4	13.5	2.0	14.7	13.1	3.2	2.7	14.6	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	524	1084	485	153	702	314	702	1723	771	436	810	604
V/C Ratio(X)	0.80	0.80	0.00	0.38	0.85	0.15	0.89	0.48	0.14	0.11	0.81	0.67
Avail Cap(c_a), veh/h	745	1319	590	207	766	343	724	1723	771	436	810	604
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	26.5	0.0	38.6	32.1	27.5	32.2	14.3	11.8	25.8	30.4	21.4
Incr Delay (d2), s/veh	4.2	3.0	0.0	1.6	8.3	0.2	13.1	1.0	0.4	0.5	8.7	5.8
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	5.0	9.6	0.0	0.7	7.3	0.9	8.2	6.6	1.5	0.5	8.1	8.7
LnGrp Delay(d),s/veh	38.3	29.5	0.0	40.2	40.4	27.8	45.4	15.3	12.2	26.3	39.1	27.2
LnGrp LOS	D	C		D	D	C	D	B	B	C	D	C
Approach Vol, veh/h	1289				700		1569				1110	
Approach Delay, s/veh	32.4				39.5		27.1				34.2	
Approach LOS	C				D		C				C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	45.0		8.2	30.0	21.5	23.5	17.2	21.0				
Change Period (Y+Rc), s	4.5		4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	40.5		5.0	31.0	17.5	18.5	18.0	18.0				
Max Q Clear Time (g_c+I1), s	15.1		3.4	20.7	16.7	19.7	11.8	15.5				
Green Ext Time (p_c), s	6.8		0.0	4.3	0.2	0.0	0.8	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			32.1									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
15: Oakdale Rd & Riverbank Center Access

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	25	305	75	25	245	330	730	75	200	585	100
Future Volume (veh/h)	145	25	305	75	25	245	330	730	75	200	585	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	153	26	321	52	63	258	347	768	79	211	616	105
Adj No. of Lanes	2	1	1	1	1	1	1	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	423	360	79	382	325	393	1211	542	254	933	417
Arrive On Green	0.07	0.23	0.23	0.04	0.21	0.21	0.22	0.34	0.34	0.14	0.26	0.26
Sat Flow, veh/h	3548	1863	1583	1774	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	153	26	321	52	63	258	347	768	79	211	616	105
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	3.1	0.8	14.5	2.1	2.1	11.4	14.0	13.5	2.6	8.6	11.5	3.9
Cycle Q Clear(g_c), s	3.1	0.8	14.5	2.1	2.1	11.4	14.0	13.5	2.6	8.6	11.5	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	423	360	79	382	325	393	1211	542	254	933	417
V/C Ratio(X)	0.65	0.06	0.89	0.66	0.16	0.79	0.88	0.63	0.15	0.83	0.66	0.25
Avail Cap(c_a), veh/h	264	466	396	120	453	385	468	1211	542	317	933	417
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	33.7	22.4	27.7	34.8	24.2	27.9	27.9	20.4	16.8	30.8	24.3	21.5
Incr Delay (d2), s/veh	4.7	0.1	20.5	9.1	0.2	9.3	15.9	2.5	0.6	14.2	3.7	1.4
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	1.7	0.4	8.4	1.2	1.1	5.8	8.6	6.9	1.2	5.2	6.0	1.8
LnGrp Delay(d),s/veh	38.4	22.5	48.2	43.9	24.4	37.2	43.7	23.0	17.4	45.0	27.9	22.9
LnGrp LOS	D	C	D	D	C	D	D	C	B	D	C	C
Approach Vol, veh/h	500			373			1194			932		
Approach Delay, s/veh	43.8			36.0			28.6			31.2		
Approach LOS	D			D			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.1	29.8	7.8	21.3	20.9	24.0	9.4	19.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	13.2	25.3	5.0	18.5	19.5	19.0	5.5	18.0				
Max Q Clear Time (g_c+110), s	110.6	15.5	4.1	16.5	16.0	13.5	5.1	13.4				
Green Ext Time (p_c), s	0.2	3.9	0.0	0.3	0.4	2.1	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay	32.9											
HCM 2010 LOS	C											
Notes												

MOVEMENT SUMMARY

 **Site: 16 [Sylvan Ave and Roselle Ave]**

Cumulative + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Roselle Ave											
3	L2	136	2.0	0.678	25.5	LOS D	3.1	78.1	0.80	0.91	26.7
8	T1	337	2.0	0.678	25.0	LOS C	3.1	78.1	0.79	0.90	26.6
18	R2	190	2.0	0.678	24.3	LOS C	3.0	76.0	0.78	0.89	27.0
Approach		663	2.0	0.678	24.9	LOS C	3.1	78.1	0.79	0.90	26.7
East: Sylvan Ave											
1	L2	332	2.0	1.117	91.5	LOS F	41.8	1061.5	1.00	2.41	15.2
6	T1	1005	2.0	1.117	91.1	LOS F	42.2	1073.0	1.00	2.41	15.5
16	R2	380	2.0	1.117	90.8	LOS F	42.2	1073.0	1.00	2.42	15.1
Approach		1717	2.0	1.117	91.1	LOS F	42.2	1073.0	1.00	2.41	15.3
North: Roselle Ave											
7	L2	364	2.0	1.262	165.5	LOS F	39.5	1004.4	1.00	3.19	10.2
4	T1	592	2.0	1.262	163.7	LOS F	41.8	1060.8	1.00	3.29	10.2
14	R2	87	2.0	1.262	163.1	LOS F	41.8	1060.8	1.00	3.32	10.2
Approach		1043	2.0	1.262	164.3	LOS F	41.8	1060.8	1.00	3.26	10.2
West: Sylvan Ave											
5	L2	54	2.0	1.189	130.4	LOS F	37.4	950.6	1.00	2.80	12.2
2	T1	913	2.0	1.189	129.7	LOS F	38.9	988.4	1.00	2.83	12.3
12	R2	239	2.0	1.189	128.7	LOS F	38.9	988.4	1.00	2.87	12.1
Approach		1207	2.0	1.189	129.5	LOS F	38.9	988.4	1.00	2.84	12.2
All Vehicles		4630	2.0	1.262	108.1	LOS F	42.2	1073.0	0.97	2.50	13.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
16: Roselle Ave & Sylvan Ave

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		EBT			EBT			EBT			EBT	
Traffic Volume (veh/h)	50	840	220	305	925	350	125	310	175	335	545	80
Future Volume (veh/h)	50	840	220	305	925	350	125	310	175	335	545	80
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	53	884	0	321	974	0	132	326	0	353	574	0
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	1503	0	0	1503	0	0	1042	0	0	1042	0
Arrive On Green	0.00	0.42	0.00	0.00	0.42	0.00	0.00	0.29	0.00	0.00	0.29	0.00
Sat Flow, veh/h	0	3632	0	0	3632	0	0	3632	0	0	3632	0
Grp Volume(v), veh/h	0	884	0	0	974	0	0	326	0	0	574	0
Grp Sat Flow(s), veh/h/ln	0	1770	0	0	1770	0	0	1770	0	0	1770	0
Q Serve(g_s), s	0.0	6.1	0.0	0.0	7.0	0.0	0.0	2.3	0.0	0.0	4.4	0.0
Cycle Q Clear(g_c), s	0.0	6.1	0.0	0.0	7.0	0.0	0.0	2.3	0.0	0.0	4.4	0.0
Prop In Lane	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	0	1503	0	0	1503	0	0	1042	0	0	1042	0
V/C Ratio(X)	0.00	0.59	0.00	0.00	0.65	0.00	0.00	0.31	0.00	0.00	0.55	0.00
Avail Cap(c_a), veh/h	0	2044	0	0	2044	0	0	2044	0	0	2044	0
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)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	7.1	0.0	0.0	7.3	0.0	0.0	8.8	0.0	0.0	9.5	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.5	0.0
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	0.0	3.0	0.0	0.0	3.5	0.0	0.0	1.1	0.0	0.0	2.1	0.0
LnGrp Delay(d),s/veh	0.0	7.4	0.0	0.0	7.8	0.0	0.0	9.0	0.0	0.0	10.0	0.0
LnGrp LOS		A			A			A			A	
Approach Vol, veh/h		884			974			326			574	
Approach Delay, s/veh		7.4			7.8			9.0			10.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	0.0	13.9	0.0	18.1	0.0	13.9	0.0	18.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	18.5	5.0	18.5	5.0	18.5	5.0	18.5				
Max Q Clear Time (g_c+I1), s	4.3	4.3	0.0	8.1	0.0	6.4	0.0	9.0				
Green Ext Time (p_c), s	0.0	1.7	0.0	4.4	0.0	3.1	0.0	4.6				
Intersection Summary												
HCM 2010 Ctrl Delay				8.3								
HCM 2010 LOS				A								

HCM 2010 Signalized Intersection Summary
17: Oakdale Rd & Sylvan Ave

PM PEAK CUMULATIVE+PROJECT

10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	690	515	345	775	300	445	860	180	480	985	60
Future Volume (veh/h)	65	690	515	345	775	300	445	860	180	480	985	60
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	68	726	542	363	816	316	468	905	189	505	1037	0
Adj No. of Lanes	1	3	1	2	2	1	2	3	0	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	1066	588	442	1022	729	556	1196	249	590	1490	464
Arrive On Green	0.05	0.21	0.21	0.13	0.29	0.29	0.16	0.28	0.28	0.17	0.29	0.00
Sat Flow, veh/h	1774	5085	1583	3442	3539	1583	3442	4220	878	3442	5085	1583
Grp Volume(v), veh/h	68	726	542	363	816	316	468	726	368	505	1037	0
Grp Sat Flow(s),veh/h/ln	1774	1695	1583	1721	1770	1583	1721	1695	1708	1721	1695	1583
Q Serve(g_s), s	3.3	11.4	18.2	8.9	18.5	11.7	11.5	17.0	17.1	12.4	15.7	0.0
Cycle Q Clear(g_c), s	3.3	11.4	18.2	8.9	18.5	11.7	11.5	17.0	17.1	12.4	15.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.51	1.00		1.00
Lane Grp Cap(c), veh/h	87	1066	588	442	1022	729	556	961	484	590	1490	464
V/C Ratio(X)	0.78	0.68	0.92	0.82	0.80	0.43	0.84	0.76	0.76	0.86	0.70	0.00
Avail Cap(c_a), veh/h	125	1066	588	495	1022	729	654	961	484	662	1490	464
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	0.00
Uniform Delay (d), s/veh	40.8	31.6	26.1	36.9	28.5	15.8	35.3	28.4	28.4	34.9	27.3	0.0
Incr Delay (d2), s/veh	17.8	1.8	20.2	9.7	4.5	0.4	8.5	5.5	10.7	9.9	2.7	0.0
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	2.0	5.5	15.6	4.8	9.7	5.2	6.1	8.7	9.5	6.7	7.7	0.0
LnGrp Delay(d),s/veh	58.6	33.4	46.3	46.6	33.1	16.2	43.8	33.9	39.1	44.9	30.0	0.0
LnGrp LOS	E	C	D	D	C	B	D	C	D	D	C	
Approach Vol, veh/h	1336			1495			1562			1542		
Approach Delay, s/veh	39.9			32.8			38.1			34.8		
Approach LOS	D			C			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.4	29.1	15.7	22.7	18.5	29.9	8.8	29.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	16.3	24.6	12.5	18.2	16.5	24.8	6.1	24.6				
Max Q Clear Time (g_c+14.4), s	19.1	19.1	10.9	20.2	13.5	17.7	5.3	20.5				
Green Ext Time (p_c), s	0.5	3.2	0.2	0.0	0.6	3.9	0.0	2.4				
Intersection Summary												
HCM 2010 Ctrl Delay	36.3											
HCM 2010 LOS	D											

MOVEMENT SUMMARY

 **Site: 18 [Coffee Ave and Claratina Ave]**

Cumulative + Project PM
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Coffee Ave											
3	L2	348	2.0	1.378	213.8	LOS F	52.1	1323.7	1.00	3.73	8.4
8	T1	527	2.0	1.378	212.2	LOS F	55.4	1406.3	1.00	3.85	8.4
18	R2	223	2.0	1.378	211.4	LOS F	55.4	1406.3	1.00	3.91	8.4
Approach		1098	2.0	1.378	212.6	LOS F	55.4	1406.3	1.00	3.83	8.4
East: Claratina Ave											
1	L2	239	2.0	1.467	240.5	LOS F	88.8	2255.8	1.00	4.46	7.7
6	T1	1250	2.0	1.467	239.9	LOS F	92.5	2350.2	1.00	4.54	7.7
16	R2	158	2.0	1.467	239.4	LOS F	92.5	2350.2	1.00	4.62	7.6
Approach		1647	2.0	1.467	239.9	LOS F	92.5	2350.2	1.00	4.54	7.7
North: Coffee Ave											
7	L2	71	2.0	0.897	53.3	LOS F	6.2	156.3	0.93	1.26	20.4
4	T1	304	2.0	0.897	53.3	LOS F	6.2	156.3	0.93	1.26	20.1
14	R2	435	2.0	0.975	67.0	LOS F	9.6	243.1	0.97	1.52	17.7
Approach		810	2.0	0.975	60.7	LOS F	9.6	243.1	0.95	1.40	18.8
West: Claratina Ave											
5	L2	576	2.0	2.046	489.3	LOS F	268.0	6807.1	1.00	6.98	4.2
2	T1	2109	2.0	2.046	489.1	LOS F	275.0	6983.8	1.00	7.07	4.2
12	R2	511	2.0	2.046	488.9	LOS F	275.0	6983.8	1.00	7.14	4.1
Approach		3196	2.0	2.046	489.1	LOS F	275.0	6983.8	1.00	7.06	4.2
All Vehicles		6750	2.0	2.046	331.9	LOS F	275.0	6983.8	0.99	5.24	5.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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HCM 2010 Signalized Intersection Summary
19: Oakdale Rd & Mable Ave

PM PEAK CUMULATIVE+PROJECT
10/31/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	10	130	40	10	40	125	1495	50	50	1980	170
Future Volume (veh/h)	150	10	130	40	10	40	125	1495	50	50	1980	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	158	11	137	42	11	42	132	1574	53	53	2084	0
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	14	180	113	24	90	165	2748	856	78	2498	778
Arrive On Green	0.12	0.12	0.12	0.06	0.07	0.07	0.09	0.54	0.54	0.04	0.49	0.00
Sat Flow, veh/h	1774	119	1482	1774	339	1295	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	158	0	148	42	0	53	132	1574	53	53	2084	0
Grp Sat Flow(s),veh/h/ln	1774	0	1601	1774	0	1634	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	6.7	0.0	7.0	1.8	0.0	2.4	5.7	16.1	1.2	2.3	27.5	0.0
Cycle Q Clear(g_c), s	6.7	0.0	7.0	1.8	0.0	2.4	5.7	16.1	1.2	2.3	27.5	0.0
Prop In Lane	1.00		0.93	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	0	194	113	0	114	165	2748	856	78	2498	778
V/C Ratio(X)	0.77	0.00	0.76	0.37	0.00	0.47	0.80	0.57	0.06	0.68	0.83	0.00
Avail Cap(c_a), veh/h	410	0	370	410	0	377	175	2748	856	118	2498	778
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.5	0.0	33.2	35.0	0.0	34.9	34.7	11.9	8.5	36.7	17.1	0.0
Incr Delay (d2), s/veh	6.1	0.0	6.1	2.0	0.0	2.9	21.7	0.9	0.1	10.1	3.5	0.0
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	3.6	0.0	3.4	0.9	0.0	1.2	3.8	7.7	0.6	1.3	13.5	0.0
LnGrp Delay(d),s/veh	39.6	0.0	39.3	37.0	0.0	37.8	56.3	12.8	8.7	46.8	20.6	0.0
LnGrp LOS	D		D	D		D	E	B	A	D	C	
Approach Vol, veh/h	306					95		1759		2137		
Approach Delay, s/veh	39.4					37.5		15.9		21.2		
Approach LOS	D					D		B		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	46.6	9.5	13.9	11.7	42.8	13.5	9.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.2	40.8	18.0	18.0	7.7	38.3	18.0	18.0				
Max Q Clear Time (g_c+I), s	14.3	18.1	3.8	9.0	7.7	29.5	8.7	4.4				
Green Ext Time (p_c), s	0.0	11.8	0.1	0.5	0.0	7.3	0.3	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	20.7											
HCM 2010 LOS	C											

Intersection						
Int Delay, s/veh	14.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	240	215	345	60	155	125
Future Vol, veh/h	240	215	345	60	155	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	226	363	63	163	132
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	426	0	-	0	982	182
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	619	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1130	-	-	-	246	829
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	499	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1130	-	-	-	191	829
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	499	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.8	0		50.1		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1130	-	-	-	191	829
HCM Lane V/C Ratio	0.224	-	-	-	0.854	0.159
HCM Control Delay (s)	9.1	-	-	-	82.3	10.2
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.9	-	-	-	6.3	0.6