

TRAFFIC IMPACT ANALYSIS

FOR

MILL CREEK SUBDIVISION

Placer County, California

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MILL CREEK SUBDIVISION
Placer County**

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**TRAFFIC IMPACT ANALYSIS FOR
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Placer County, CA

INTRODUCTION

This report documents **KD Anderson & Associates'** analysis of the traffic impacts associated with developing the **Mill Creek Subdivision** project in the Dry Creek / West Placer Community Plan (DCWPCP) area of Placer County. The proposed project will rezone about 110 acres located in western Placer County between the City of Roseville and Sacramento County. The project proposes construction of 308 single family residential units. The project will take access via PFE Road and N. Antelope Road.

Scope of Analysis

This analysis is intended to describe the traffic impacts of the project and to identify any circulation / roadway improvements needed to reduce project impacts to a level of insignificance. Toward this end, existing traffic conditions have been evaluated through observation of current weekday a.m. and p.m. peak hour traffic volumes and through review of daily traffic count information. Future background cumulative traffic conditions have been quantified using data developed for the Placer Vineyards Traffic Model to address the combined effect of other pending projects in the vicinity.

Based on direction from Placer County staff, this analysis focuses on traffic operations on PFE Road, Cook-Riolo Road and N. Antelope Road in the vicinity of the project site. Project impacts have been evaluated at the following existing locations and three project locations:

- Baseline Road / Walerga Road – Fiddymont Road
- Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd
- Cook Riolo Road / Vineyard Road
- Cook Riolo Road / Creekview Ranch School
- PFE Road / Watt Avenue
- PFE Road / Walerga Road
- PFE Road / Cook Riolo Road
- PFE Road / N. Antelope Road
- PFE Road / Project Access
- N. Antelope Road / North Project Access
- N. Antelope Road/ South Project Access

This analysis also focuses on the following roadway segments:

- PFE Road from Watt Avenue to Walerga Road
- PFE Road from Walerga Road to Oly Lane
- PFE Road from Oly Lane to Cook Riolo Road

- PFE Road from Cook Riolo Road to N. Antelope Road
- PFE Road from N. Antelope Road to Hilltop Road
- PFE Road from Hilltop Road to Foothill Blvd (Roseville)
- Cook Riolo Road from Baseline Road to Vineyard Road
- Cook Riolo Road from Vineyard Road to Creekview Ranch School
- Cook Riolo Road from Creekview Ranch School to PFE Road
- Cook Riolo Road south of PFE Road
- N. Antelope Road from PFE Road to Great Valley Drive
- N. Antelope Road from Great Valley Drive to Poker Lane (Sacramento County)

Project impacts have been quantified and assessed in a manner that is consistent with Placer County policy. Probable project trip generation has been estimated by applying appropriate trip generation rates to the project's land use inventory, and comparable estimates have been made of site development under the current zoning. The distribution of project trips was based on the projected traffic volumes obtained from the most recent Placer Vineyards Travel Demand Model. Utilizing the expected distribution, project trips were assigned to the study area street system via the access driveway identified in the proposed site plan. Finally, roadway and intersection Levels of Service were re-calculated for "plus project" conditions to determine the anticipated impacts of the proposed development on both existing and future traffic conditions.

While the proposed project lies within Placer County and will be processed through the County, portions of N. Antelope Road and PFE Road are under the jurisdiction of Sacramento County and the City of Roseville, respectively. Thus, the scope of this study also includes Level of Service standards of significance / evaluation methodologies accepted by Sacramento County and the City of Roseville.

Project Description

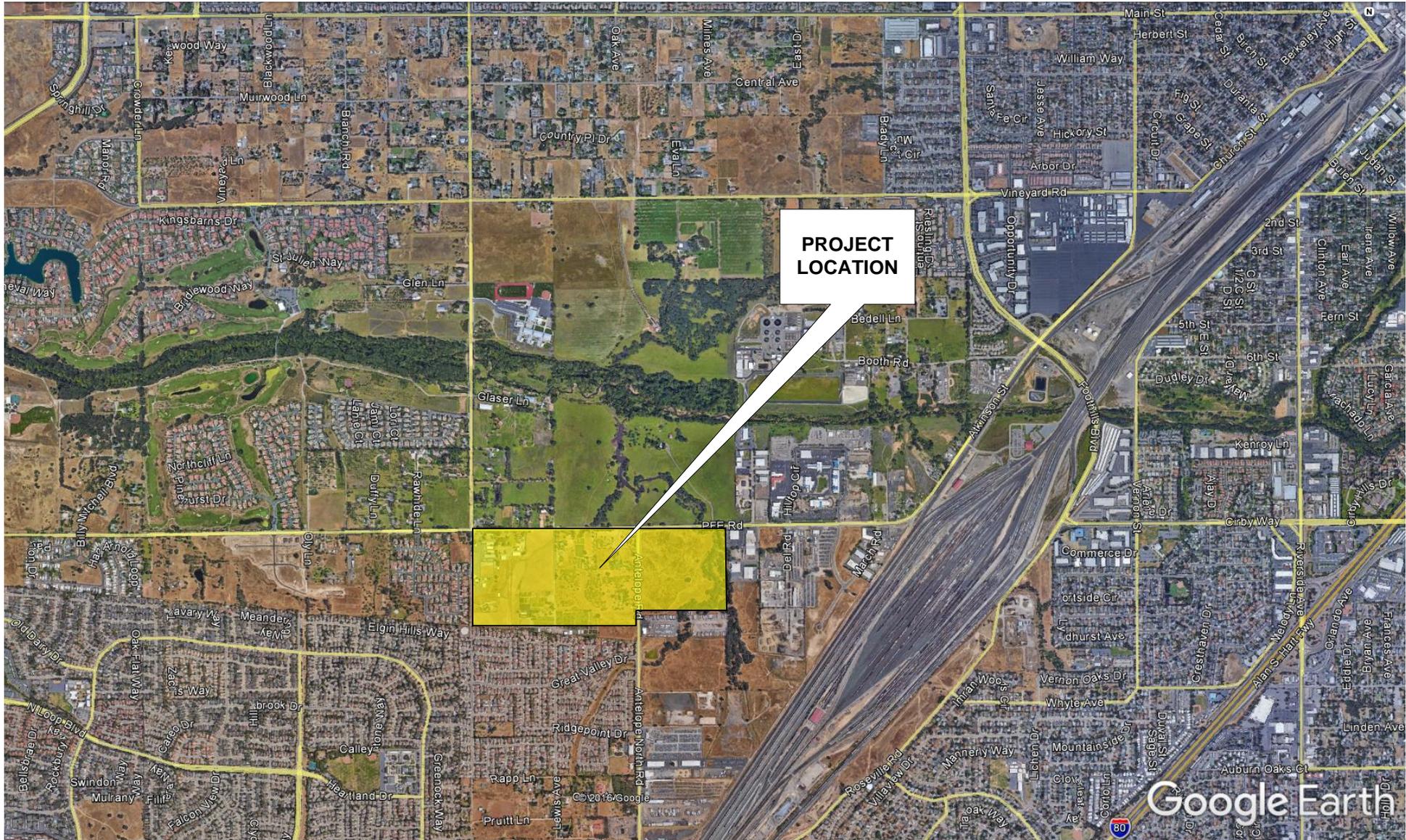
The Mill Creek Subdivision project is a single family residential development that is located in western Placer County between Sacramento County and the City of Roseville as shown in Figure 1. The approximate 110-acre site is currently zoned RS-AG-B20, OP-dc, INP-dc, IN-dc and O. The proposed zoning will be RS-AG-B-X-6,000 and O. The proposed project would create 308 single family residential lots.

The site lies east and west of N. Antelope Road, immediately south of PFE Road. Access to the west side of the site is proposed along PFE Road and N. Antelope Road while two access points along N. Antelope Road are proposed for the East Access as shown in Figure 2.

Land Use. As noted in the site plan (Figure 2) the proposed project include development of about 308 single family residences both east and west of N. Antelope Road.

Access. The site plan proposes access to PFE Road from the West Side of the project and access along N. Antelope Road from both the West Side and East Side. The northern access along N. Antelope Road will provide access for the East Side while the southern access will provide a new four-way intersection with full access for both the East Side and West Side neighborhoods.

The project would be accompanied by frontage improvements typically required under the Placer County General Plan and DCWP Community Plan. Improvements would include developing a four-lane roadway including bike lanes and a center turn lane along the North Antelope Road project frontage. Ultimately, PFE Road is identified as a four lane roadway with bike lanes and center turn lane east of North Antelope Road and a two lane roadway with possible center turn lane west of North Antelope Road. As noted in the DCWP Community Plan installation of a center turn lane shall be determined by Placer County. The project will install interim improvements that will yield a separate eastbound right turn lane on PFE Road approaching N. Antelope Road.



VICINITY MAP

EXISTING SETTING

Roadways / Intersections

Existing roadways serving this portion of Placer County are discussed below.

PFE Road is a major east-west level terrain and rolling terrain rural 2-lane highway. Between Watt Road and Cook Riolo Road the road is classified as a level terrain 2-lane highway while between Cook Riolo Road and Atkinson Street the road is classified as a rolling terrain rural 2-lane highway. Left turn lanes are provided at key intersections along PFE Road including the intersections of Walerga Road, Sword Dancer Drive, Billy Mitchell Blvd, Pinehurst Drive, Canopy Tree Street, N. Antelope Road and Hilltop Circle. The posted speed limit on PFE Road is 45 mph.

Cook Riolo Road is a north-south rolling terrain rural 2-lane highway between PFE Road. Left turn lanes are provided at the Creekview Ranch School Access. The posted speed limit on Cook Riolo Road is 35 mph. South of PFE Road Cook-Riolo Road is a 2-lane roadway ending at the Sacramento County line. The posted speed limit on this segment is 25 mph.

N. Antelope Road is a north-south, two-lane rural collector that connects PFE Road to Sacramento County. Between PFE Road and Poker Lane, N. Antelope Road is a two-lane roadway. There is no posted speed limit in Placer County, and therefore the speed limit is 55 mph under the maximum speed law in the California Vehicle Code.

The analysis considers these existing intersections in Placer County.

The **Cook Riolo Road / Vineyard Road intersection** is currently controlled by stop signs on all approaches. The intersection is a four-way way intersection. All approaches to the intersection are single lanes and there are no crosswalks at this intersection.

The **Cook Riolo Road / Creekview Ranch School (CRS) intersection** is controlled by an actuated traffic signal that operates with protected left turn movements on the north and south approaches and split phase movements along the east and west approaches. The northbound approach includes separate left, through and right turn lanes while the southbound approach includes a left turn lane and a through-right lane. The eastbound approach includes a single lane driveway while the westbound approach includes a through-left lane and a right turn lane. The northbound right turn lane includes an overlap phase with the westbound green phase. Crosswalks are striped across the north, east and west legs of the intersection.

The **PFE Road / Watt Avenue intersection** is currently controlled by stop signs on all approaches. The intersection is a tee intersection with a driveway on the west side creating a four-way intersection. All approaches to the intersection are single lanes. There are no crosswalks at this intersection.

The **PFE Road / Walerga Road intersection** is controlled by an actuated traffic signal that operates with protected left turn movements on all approaches. Each approach to the intersection

includes a left turn lane and a through-right lane. Crosswalks are striped across each leg of the intersection.

The **PFE Road / Cook Riolo Road intersection** is currently controlled by stop signs on all approaches. The intersection is a four-way intersection. All approaches to the intersection are single lanes and there are crosswalks across the south, east and west legs. A multi-use pathway is also present along the west side of Cook Riolo Road, from PFE Road to the CRS intersection.

The **PFE Road / N. Antelope Road intersection** is a tee intersection and is currently controlled by stop signs on all approaches. The northbound approach to the intersection is a single lane while the westbound approach includes a left turn lane and a through lane; the eastbound approach includes a right turn lane and a through lane. There are no crosswalks at this intersection.

The analysis addresses two intersections in Roseville.

The **Baseline Road / Walerga Road – Fiddymont Road intersection** is controlled by an actuated traffic signal that operates with protected left turn movements on all approaches. The north, south and westbound approaches include a left turn lane, two through lanes and a right turn lane. The eastbound approach includes a left turn lane, a through lane and a shared through-right lane. Crosswalks are striped across each leg of the intersection.

The **Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersection** is controlled by an actuated traffic signal that operates with protected left turn movements along the east and west approaches. The northbound and southbound approaches operate under a split phase configuration. The north and southbound approaches include a shared through-left lane and a right turn lane. The eastbound approach includes a left turn lane and a shared through-right lane while the westbound approach includes a left turn lane, two through lanes and a right turn lane. Crosswalks are striped across the south, east and north legs of the intersection.

Planned Improvements / Funding Sources

Placer County Traffic Impact Fee Program and CIP. In April 1996, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program, requiring new development within the County to mitigate impacts to the roadway system by paying traffic impact fees. The fees collected through this program, in addition to other funding sources, make it possible for the County to construct roads and other transportation facilities and improvements needed to accommodate new development. The fee was updated by Placer County in August 2017. The County's fee program and Capital Improvement Program is divided into eleven districts, and the Mill Creek Subdivision is included in the Dry Creek – West Placer Benefit District.

Other fee programs deal with specific areas of the County or are linked to particular development. For example Placer County and Roseville have adopted a specific City-County fee. The South Placer Regional Transportation Authority (SPRTA) SR 65 GPA fee addresses improvements to that highway.

Standards of Significance: Levels of Service - Methodology

To assess the quality of existing traffic conditions and provide a basis for analyzing project impacts, Levels of Service were calculated at study area intersections and project driveways. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening operating conditions, is assigned to an intersection or roadway segment. Table 1 presents general characteristics associated with each LOS grade.

**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. Volume / capacity (V/C) < 0.60	Little or no delay. Average Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. $0.60 \leq V/C < 0.70$	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. $0.70 \leq V/C < 0.80$	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. $0.80 \leq V/C < 0.90$	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). $0.90 \leq V/C < 1.00$	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. V/C > 1.00	Intersection often blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Sources: 2010 Highway Capacity Manual, and Transportation Research Board (TRB) Special Report 209. Transportation Research Board Circular No. 212, Interim Materials on Highway Capacity.

Standards of Significance and Levels of Service. Agencies adopt their own minimum LOS standards and standards of significance.

Placer County

Analysis Methodology at Signalized Intersections. The Level of Service at signalized intersections has been calculated using the methodology as presented in Transportation Research Board Circular No. 212, Interim Materials on Highway Capacity. This methodology was employed for the DCWPCP Circulation Element. Circular No. 212 compares a theoretical intersection capacity to the summation of critical volumes at an intersection to calculate a volume to capacity ratio. Volume to capacity ratio and Level of Service relationships are as presented in Table 1.

Analysis Methodology at Un-signalized Intersections. At un-signalized intersections the number of gaps in through traffic, gap acceptance time and corresponding length of delays for motorists waiting to turn are used for Level of Service analysis. Procedures used for calculating un-signalized intersection Level of Service are as presented the *Highway Capacity Manual*.

At un-signalized intersections controlled by side street stop signs HCM methodology identifies the average delay and Level of Service for all movements that must yield the right of way. Typically the “worst case” Level of Service is associated with side street traffic waiting to turn onto the major street. For environmental analysis Placer County also identifies the “overall average delay” experienced by those motorists who yield the right of way, and this is the measure used to determine the significance of impacts to un-signalized intersections in Placer County.

Analysis Methodology at Roundabouts. For intersections that have roundabouts identified as a future condition or as a mitigation, *SIDRA 7.0* was used to analyze the operating characteristics of the roundabout.

Placer County / Dry Creek – West Placer Community Plan Standards of Significance. Minimum acceptable Level of Service standards within this area of Placer County are defined by the Dry Creek – West Placer Community Plan (DCWPCP). The Placer County General Plan notes that the Level of Service (LOS) on major roadways (i.e., arterial and collector routes) and intersections shall be at Level of Service C or better during the a.m. and/or p.m. peak hour except at locations within ½ mile of a state highway. Policy in the DCWPCP identifies LOS D as the minimum in the community plan area but notes the following exceptions when the area street system is fully built out:

Roadway Segments

- Watt Avenue from Sacramento County Line to Baseline Road: LOS F
- PFE Road from Cook Riolo Road to N. Antelope Road: LOS F
- Cook Riolo Road from Vineyard Road to Baseline Road: LOS E
- Cook Riolo Road from PFE Road to Vineyard Road: LOS F
- North Antelope Road from PFE Road to Sacramento County Line: LOS E

Intersections

- Baseline Road / Walerga Road / Fiddymment Road: LOS F
- PFE Road / Walerga Road: LOS F
- PFE Road / Cook-Riolo Road: LOS F
- PFE Road / North Antelope Road: LOS F

Placer County has adopted methodologies for determining the significance of traffic impacts within the context of the Level of Service goals established by the General Plan and local community plans. These methodologies are noted below.

Signalized Intersections Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

- 1) *An intersection operating at or above the established Placer County policies without the project will decrease to an unacceptable LOS with the project; or*
- 2) *An intersection currently operating below the acceptable LOS established policy will experience an increase in V/C (volume to capacity) ratio of **0.05** (5%) or greater; or (Note: the DCWPCP Circulation Element Goal No. 6 accepts a 0.05 V/C ratio increase under cumulative conditions)*
- 3) *An intersection currently operating below the established acceptable LOS policy will experience an increase in overall average intersection delay of **4.0** seconds or greater.*

Un-signalized Intersection Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

- 1) *An all-way stop or side street controlled intersection which currently operates at or above the established Placer County policies without the project will deteriorate to an unacceptable LOS with the project and cause the intersection to meet MUTCD traffic signal warrant(s); or*
- 2) *An all-way stop or side street controlled intersection which currently operates below the established acceptable LOS policy and meets MUTCD signal warrant(s) will experience an overall increase of **2.5** seconds or more with the project. (Note: the DCWPCP Circulation Element Goal No. 6 accepts a 5.0 second increase under cumulative conditions)*

Roadway Segment Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

- 1) *A roadway segment operating at or above the established Placer County policy without the project will decrease to an unacceptable LOS with the project; or*
- 2) *A roadway segment currently operating below the applicable established policy will*

- experience an increase in V/C (volume to capacity) ratio of 0.05 or greater; or
- 3) A roadway segment currently operating below the established acceptable LOS Policy experiences an increase in ADT of 100 or more project generated trips, per lane.

Further consideration will be given in situations where the existing level of service is just above or at the approved minimum level of service and any increase in vehicle trips, or even daily fluctuations in traffic, will deteriorate the level of service to an unacceptable level. In such cases, it may be determined by the County that part (2) or (3) of the above exceptions is more applicable and should be used to analyze a proposed project's impacts.

The Placer County General Plan and DCWP present daily traffic volume levels that are to be indicative of Levels of Service on arterials streets. These volume thresholds are shown in Table 2.

**TABLE 2
EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE**

Roadway Capacity Class	Maximum Daily Traffic Volume Per Lane Level of Service				
	A	B	C	D	E
1. Freeway – Level Terrain	6,300	10,620	13,680	17,740	18,000
2. Freeway – Rolling Terrain	5,290	8,920	11,650	14,070	15,120
3. Freeway – Mountainous Terrain	3,400	5,740	7,490	9,040	9,720
4. Arterial – High Access Control	6,000	7,000	8,000	9,000	10,000
5. Arterial – Moderate Access Control	5,400	6,300	7,200	8,100	9,000
6. Arterial – Low Access Control	4,500	5,250	6,000	6,870	7,500
7. Rural 2-lane Highway – Level Terrain	1,500	2,950	4,800	7,750	12,500
8. Rural 2-lane highway – Rolling Terrain	800	2,100	3,800	5,700	10,500
9. Rural 2-lane highway – Mountainous Terrain	400	1,200	2,100	3,400	7,000
Source: Placer County General Plan FEIR					
Residential/Local	Guideline: 2,500 to 3,000				

City of Roseville

Analysis Methodology for Signalized Intersections. The HCM 2010 methodology was used to address the two intersections within the City of Roseville Sphere of Influence based on the City's Traffic Impact Analysis guidelines.

Standards of Significance. The City of Roseville standards were updated in 2016, and the following thresholds of significance have been used to determine whether implementing the proposed project would result in a significant transportation impact. These thresholds of significance are derived from questions posed in Appendix G of the CEQA Guidelines, thresholds of significance adopted by the City in applicable planning documents and previous environmental documents, and professional judgment. This analysis assumes LOS C is the City's minimum LOS goal. For purposes of this study, a significant impact would occur if the project would:

Roadway System.

1. Cause a signalized intersection in Roseville to be degraded as follows under existing conditions during the a.m. or p.m. peak hours:
 - * For intersections currently operating at LOS C or better: worsen operations to LOS D or worse.
 - * For intersections that currently operate at LOS D or E: cause operations to further worsen by one or more service levels.
 - * For intersections that currently operate at LOS F: cause intersection delay to worsen by 12.5 seconds or greater.
2. Cause the overall percentage of signalized intersections throughout the City of Roseville operating at LOS C or better during the a.m. and p.m. peak hours to fall below 70 percent.

Sacramento County

Roadway Segment Methodology. The Sacramento County Traffic Impact Analysis Guidelines present the Level of Service criteria for roadway segments based on daily traffic volume. Sacramento County thresholds make use of facility classifications that are based on the facility type and number of lanes on the facility. The classifications for each roadway that are contained in the Guidelines have been used for this analysis and are presented in Table 3. An impact is considered significant for roadways when the project causes the roadway to operate below the approved Level of Service thresholds. An impact is considered significant on roads that already exceed the standard if the v/c ratio for the roadway increases by more than 0.05.

**TABLE 3
SACRAMENTO COUNTY
LEVEL OF SERVICE DEFINITIONS – ROADWAYS**

Facility	# of Lanes	Maximum Volume for Given Service Level				
		A	B	C	D	E
Rural, 2-lane Hwy	2	2,400	4,800	7,900	13,500	22,900
Rural, 2-lane road, 24'-36' pavement, paved shoulders	2	2,200	4,300	7,100	12,200	20,000
Rural, 2-lane road, 24'-36' pavement, no shoulders	2	1,800	3,600	5,900	10,100	17,000
Arterial, low access control	2	9,000	10,500	12,000	13,500	15,000
	4	18,000	21,000	24,000	27,000	30,000
	6	27,000	31,500	36,000	40,500	45,000
Arterial, moderate access control	2	10,800	12,600	14,400	16,200	18,000
	4	21,600	25,200	28,800	32,400	36,000
	6	32,400	37,800	43,200	48,600	54,000
Arterial, high access control	2	12,000	14,000	16,000	18,000	20,000
	4	24,000	28,000	32,000	36,000	40,000
	6	36,000	42,000	48,000	54,000	60,000
Residential	2	600	1,200	2,000	3,000	4,500
Residential collector with frontage	2	1,600	3,200	4,800	6,400	8,000
Residential collector without frontage	2	6,000	7,000	8,000	9,000	10,000
<u>Facility Type</u>	<u>Stops / Mile</u>	<u>Driveway</u>	<u>Speed</u>			
Arterial, low access control	4+	Frequent	25-35 MPH			
Arterial, moderate access control	2-4	Limited	35-45 MPH			
Arterial, high access control	1-2	None	45-55 MPH			

Standards of Significance. Sacramento County considers LOS E as the minimum acceptable LOS in urban areas. Sacramento County recognizes a project-specific impact if the Project would meet any of the following criteria:

- result in a roadway segment operating at an acceptable V/C ratio to deteriorate to an unacceptable V/C ratio;
- increase the V/C ratio of a roadway segment by more than 0.05 that is operating at an unacceptable LOS without the project.

Other Evaluation Criteria

Traffic Signal Warrants. The extent to which a traffic signal may be justified is determined based on many factors. From the standpoint of traffic impact analysis, signal warrant criteria contained in the *California Manual of Uniform Traffic Control Devices (CMUTCD)* are employed in order to assess the relative impact of the additional traffic accompanying a development proposal. For this analysis, Warrant 3 (Peak Hour Traffic) has been employed.

Traffic signal warrant thresholds have been adopted for *urban* and *rural* conditions. The two are differentiated based on travel speed (i.e., 40 mph or less is urban) and population (i.e., 10,000 or more is urban). Based on the speeds along the roadways the rural criteria were used for this analysis.

Maximum Feasible Roadway Improvements

This traffic impact study identifies traffic operating conditions that would result from background development of land use not related to the proposed project, and would result from development of the proposed project. In some cases, this development would result in unacceptable LOS. If unacceptable LOS is forecasted, feasible mitigation measures needed to achieve acceptable LOS are identified.

For this traffic impact study, maximum feasible sizes of roadway facilities have been established. For intersections, the maximum feasible size is considered to be six approach lanes on each leg of an intersection. For example, two left-turn lanes, three through lanes, and a right-turn lane (a total of six lanes) is considered to be the maximum feasible size on an intersection approach. Existing land use development, physical or right-of-way constraints, and the relative benefits of additional roadway improvements in some cases result in a smaller approach being considered the maximum feasible size.

It is technically possible to construct roadway facilities larger than the maximum feasible sizes applied in this traffic impact study. However, for the following reasons, this traffic impact study considers these sizes to be not feasible.

- **Pedestrian Safety** – The amount of time required by pedestrians to walk across an intersection leg with more than seven approach lanes is considered excessive. The possibility of signal lights changing before pedestrians are able to exit the intersection is considered unacceptably high.
- **Vehicle Safety** – When a vehicle enters an intersection on the yellow light, the amount of time required for this subject vehicle to depart overly-large intersections is considered excessive. The possibility of other vehicles on conflicting movements entering the intersection before the subject vehicle has departed is considered unacceptably high.
- **Intersection Efficiency** – The timing of signal lights may be modified to provide protection for pedestrians and vehicles at overly-large intersections. However, the amount of time needed for pedestrians and vehicles to exit an overly-large intersection becomes excessive. This results in the intersection operating with an unacceptable degree of inefficiency.

Existing Levels of Service

Daily roadway 24 hr traffic counts were conducted between June 2015 and March 2017. Intersection turning movement counts were conducted between April 2016 and March 2017, with the exception of p.m. peak hour counts at the Cook Riolo Road / Creekview Ranch School

intersection which we collected in December 2017 when an athletic event occurred at the school. All count dates were reviewed and approved by County staff.

Existing Levels of Service based on Daily Traffic Volumes. Table 4 summarizes Levels of Service based on the current daily traffic volumes on study area roads with the existing roadway configuration. Applicable Level of Service thresholds and roadway classifications are presented. For this analysis, Level of Service D is the minimum acceptable condition with exceptions previously listed on pages 9 and 10. All segments currently operate within accepted Placer County DCWPCP minimum thresholds.

**TABLE 4
EXISTING ROADWAY SEGMENT LEVELS OF SERVICE**

Roadway	Segment	Classification	Lanes	ADT	LOS
1. PFE Rd	Watt Ave to Walerga Rd	Level Terrain Rural Highway	2	4,326	B
2. PFE Rd	Walerga Rd to Oly Ln	Level Terrain Rural Highway	2	5,543	B
3. PFE Rd	Oly Ln to Cook Riolo Rd	Level Terrain Rural Highway	2	5,636	B
4. PFE Rd	Cook Riolo Rd to N. Antelope Rd	Rolling Terrain Rural Highway	2	7,229	C
5. PFE Rd	N. Antelope Rd to Hilltop Rd	Rolling Terrain Rural Highway	2	8,720	D
6. Cook Riolo Rd	Baseline Rd to Vineyard Rd	Level Terrain Rural Highway	2	3,355	C
7. Cook Riolo Rd	Vineyard Rd to CRS	Rolling Terrain Rural Highway	2	4,347	D
8. Cook Riolo Rd	CRS to PFE Rd	Rolling Terrain Rural Highway	2	3,208	B
9. Cook Riolo Rd	south of PFE Rd	Level Terrain Rural Highway	2	401	A
10. N. Antelope Rd	from PFE Rd to Great Valley Dr	Rolling Terrain Rural Highway	2	7,388	C
11. N. Antelope Rd	Great Valley Dr to Poker Ln (Sacramento County)	Arterial (Low Access Control)	2	8,508	A
Bold indicates LOS threshold exceeded					

Intersection Levels of Service. Figure 3 presents the existing lane configurations at the study intersections along PFE Road, Cook Riolo Road and N. Antelope Road and the current traffic volumes at each study intersection. For this analysis, Level of Service D is the minimum acceptable condition within Placer County, with exceptions noted in DCWPCP. As noted in the Standards of Significance section a minimum intersection Level of Service “C” shall be the peak hour design objective for the City of Roseville after considering any improvements already planned by the City.

Existing Levels of Service at study intersections were then calculated, and the results are summarized in Table 5 for the a.m. and p.m. peak hours.

The ***PFE Road / Watt Avenue intersection*** operates at LOS F in the a.m. peak hour. This exceeds the County’s LOS D threshold. While major long term improvements are planned, to achieve minimum Placer County standards the intersection needs to be signalized with protected left turn movements along the north and southbound approaches added; with the east and west approaches operating under split phase conditions. This improvement would result in LOS B condition (0.650).

The ***PFE Road / Walerga Road intersection*** operates at LOS E. While LOS E exceeds the minimum LOS D standard, the DCWPCP ultimately accepts LOS F at this location. A four-lane Walerga Road would be needed to improve current conditions, and LOS B would result with this improvement.

The ***Cook Riolo Road / Creekview Ranch School intersection*** operates at LOS B in the a.m. peak hour and LOS B in the p.m. peak hour. Because the volume of traffic generated by the school is minimal during the p.m. peak hour compared to the a.m. peak hour, no further analysis of p.m. peak hour conditions was conducted at this location.

The City of Roseville’s ***Baseline Road / Walerga Road-Fiddymment Road intersection*** operates at LOS D in the a.m. peak hour and LOS E in the p.m. peak hour, both of which exceeds the City’s minimum LOS C goal.

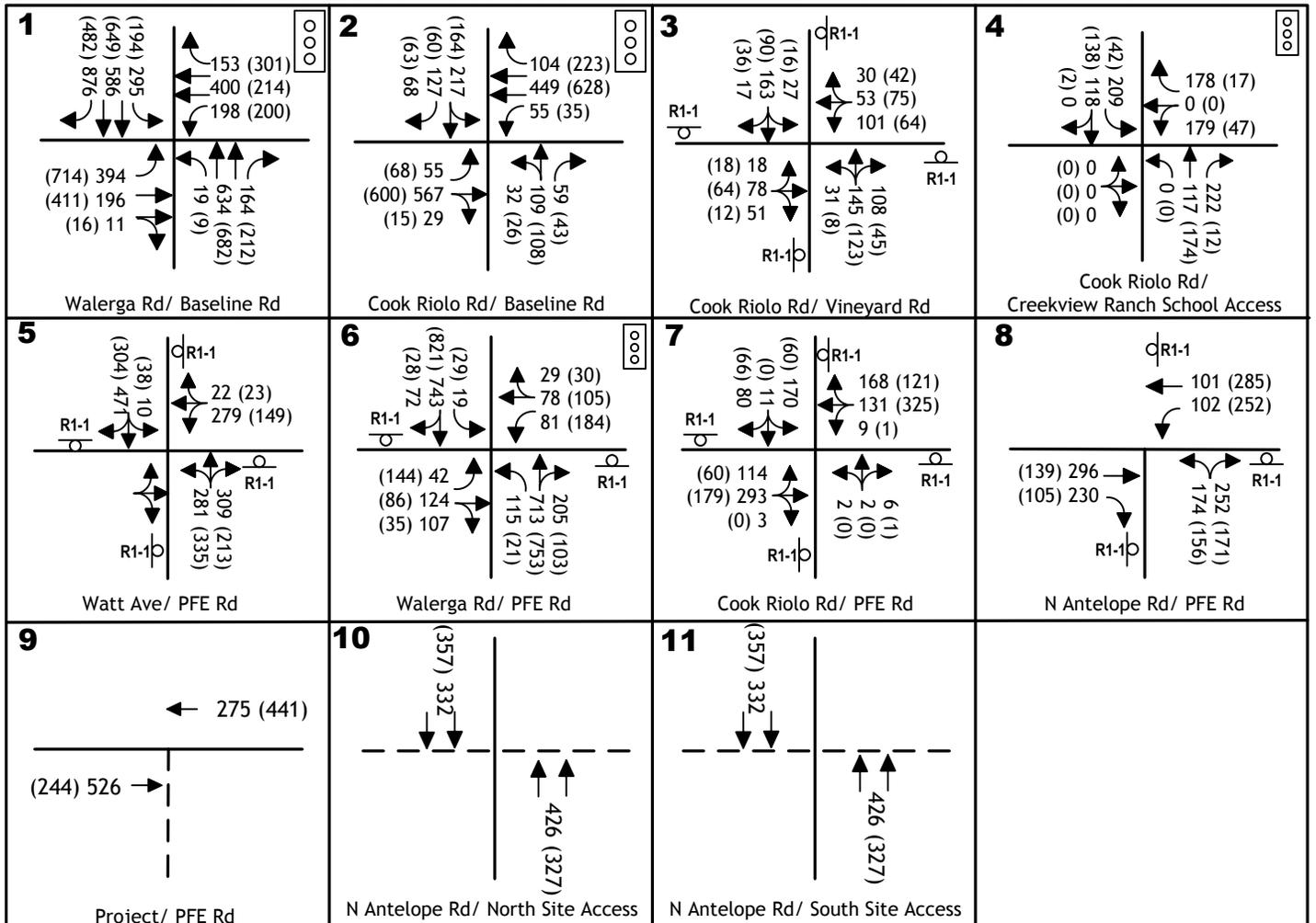
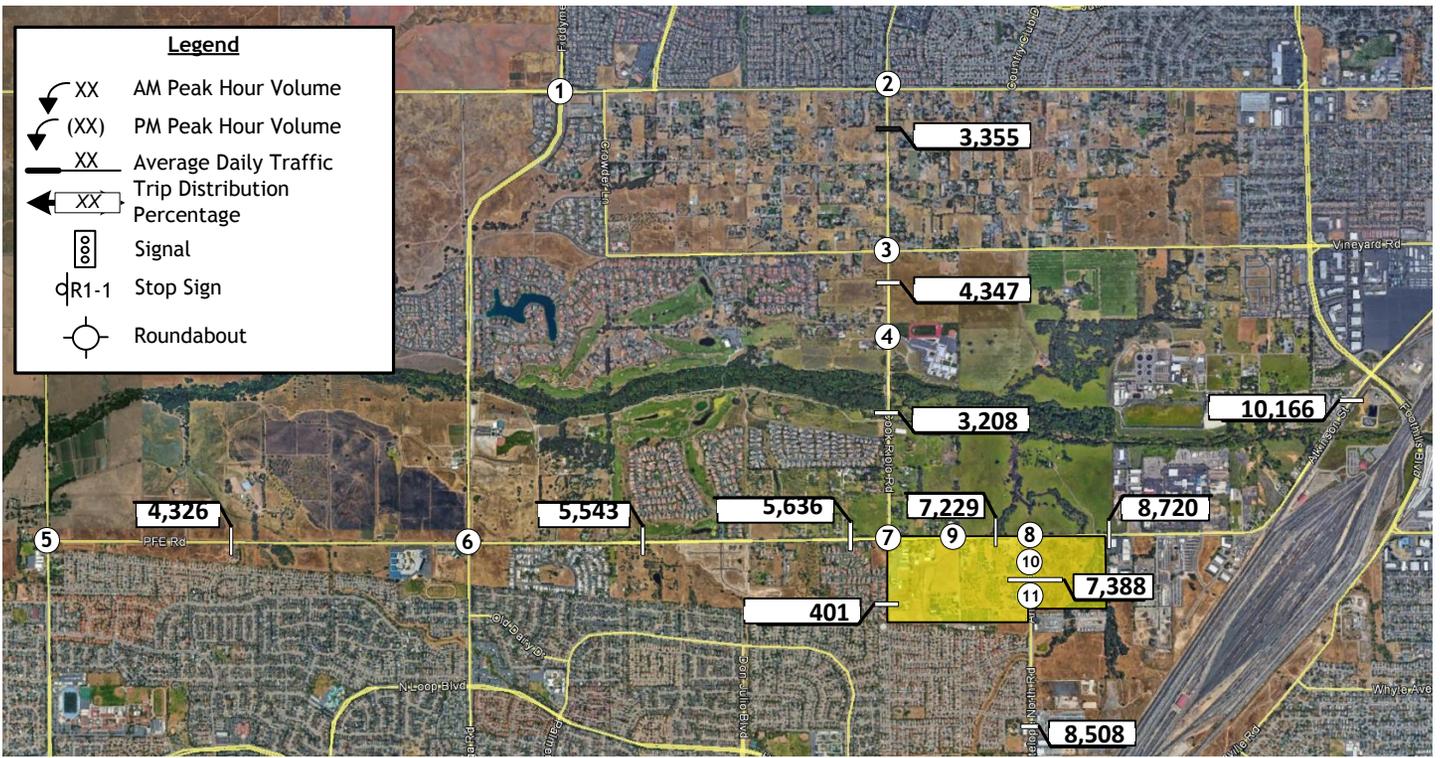
The City of Roseville’s ***Baseline Road / Cook Riolo Road – Woodcreek Oaks Blvd intersection*** operates at LOS D in the a.m. peak hour and LOS D in the p.m. peak hour, both of which exceeds the City’s minimum LOS C goal.

**TABLE 5
EXISTING INTERSECTION LEVELS OF SERVICE**

Intersection	Control	AM Peak Hour		PM Peak Hour		Peak Hour Warrant Met?
		LOS	Average Delay† or V/C ratio	LOS	Average Delay† or V/C ratio	
1. Baseline Rd / Walerga Rd – Fiddymment Rd	Signal	D	46.4	E	74.8	N/A
2. Baseline Rd / Cook-Riolo Rd – Woodcreek Oaks Blvd	Signal	D	42.5	D	38.4	N/A
3. Cook Riolo Road / Vineyard Road	AWS	B	14.9	A	9.2	No
4. Cook Riolo Road / CRS	Signal	B	0.669	A	0.193	No
5. PFE Road / Watt Avenue	AWS	F	82.5	C	18.9	Yes
6. PFE Road / Walerga Road	Signal	<i>E</i>	<i>0.966</i>	<i>E</i>	<i>0.962</i>	N/A
7. PFE Road / Cook Riolo Road	AWS	<i>C</i>	<i>19.1</i>	<i>B</i>	<i>11.7</i>	Yes
8. PFE Road / North Antelope Road	AWS	<i>C</i>	<i>18.0</i>	<i>B</i>	<i>14.0</i>	Yes

† average delay in seconds per vehicle **Bold** indicates min LOS threshold exceeded. Italicized values indicate locations with exceptions to the LOS D standard by the DCWPCP





EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

Existing Pedestrian, Bicycle and Transit Facilities

There are limited pedestrian, bicycle and transit facilities in the local study area as described below. The facilities appear to be limited to locations where frontage roadway improvements have been completed as a result of development.

Sidewalks and Paths. Sidewalks or pathways exist in several segments along PFE Road. Current locations include near:

- South side of PFE Road at Canopy Tree Street
- North and south sides of PFE Road at Pinehurst Drive / Rio Moon Drive intersection
- North side of PFE Road at Sword Dancer Drive

Along Cook-Riolo Road a multi-use pathway is available along the west side of the road for pedestrians and bicyclists from PFE Road to about halfway between Creekview Ranch School and Vineyard Road; sidewalk is also present along the school frontage.

Bicycles and Trails. Trails and bikeways are classified as follows:

- Class I Bikeway (Bike Path) provides a completely separated facility designed for the exclusive use of cycles and pedestrians.
- Class II Bikeway (Bike Lane) provides on-road striped lanes with signs and pavement markings and legends with restricted travel to motor vehicles and pedestrians. Through travel by motor vehicles or pedestrians is prohibited, but crossflows by pedestrians and motorists is permitted.
- Class III Bikeway (Bike Route) provides on-street routes designated by signs or permanent markings and shared with pedestrians and motorists.
- Class IV Bikeway (Separated Bikeway) is a bikeway for the exclusive use of bicycles similar to a Class II facility, but includes a separation between the bike facility and through vehicular traffic. Separation facilities may include flexible posts, inflexible physical barriers or on-street parking. Class IV facilities also allow for two-way bicycle traffic.

Bicycle facilities in the project area are limited to several segments along PFE Road that have been improved as part of development in the adjoining areas.

The *Placer County Regional Bikeway Plan (2002)* identifies Class II facilities along PFE Road from Walerga Road to the Roseville City Limits, and along Cook Riolo Road from PFE Road to Baseline Road. "A Class 1 facility will be constructed along Cook-Riolo Road on the east side from CRS to Baseline Road in the Spring and Summer of 2018.

Transit. Currently, there are no established transit routes along PFE Road, Cook Riolo Road or N. Antelope Road. The closest routes include the Sacramento RT Route 95 with stops located at the Roseville Road / Antelope Road intersection. This route operates Monday through Friday.

The closest Roseville Transit route is their 'D' route which transits Baseline Road, between Cook Riolo Road and Junction Blvd. There are no currently identified future transit routes along PFE Road or N. Antelope Road; however future routes are planned to serve Riolo Vineyard and Placer Vineyards to the west. Those routes could be extended to serve future growth in this area if demand warrants it.

PROJECT IMPACTS

The traffic impacts associated with the Mill Creek Subdivision project have been determined based on the projected change in operating Levels of Service accompanying the project. Project impacts have been quantified by estimating the number and directional distribution of project trips, superimposing those trips onto current traffic volumes and recalculating Levels of Service. These trip generation figures were compared to trip estimates associated with the current General Plan designations.

The development of this project will attract traffic to the project site. The amount of additional traffic on a particular section of the street network is dependent upon two factors:

- Trip Generation, the number of new trips generated by the project, and
- Trip Distribution and Assignment, the specific routes that the new traffic takes.

Trip Generation

Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends that the project creates.

The trip generation for this project was calculated using trip generation rates published in the *Trip Generation Manual* (Institute of Transportation Engineers, 9th Edition, 2012). Applicable rates are found in category 210 (Single Family Residential), as noted in Table 6. Application of this trip generation rate yields a total of 2,932 new daily trips, with 231 new trips expected in the a.m. peak hour and 308 new trips generated during the p.m. peak hour.

The site is currently designated for low density residential, commercial, industrial and open space land uses in the DCWPCP. Table 6 also presents trip generation rates for these uses. Under these assumptions the site would generate 11,009 daily trips, 770 a.m. peak hour trips and 1,200 p.m. peak hour trips. The proposed project will generate 8,077 fewer daily trips, 539 less a.m. peak hour trips and 892 less p.m. peak hour trips.

Similarly under current zoning the site is projected to generate 7,545 daily trips with 982 and 1,017 trips in the a.m. and p.m. peak hour respectively. The projected project will generate 4,613 fewer daily trips, 751 less a.m. peak hour trips and 709 less p.m. peak hour trips.

**TABLE 6
TRIP GENERATION**

Land Use	Unit Quantity	Size	Trips Per Unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Proposed Land Use Designations									
Single Family Residential East Village (LU 210)	Unit	93	9.52	25%	75%	0.75	63%	37%	1.00
Single Family Residential Central Village (LU 210)	Unit	121	9.52	25%	75%	0.75	63%	37%	1.00
Single Family Residential West Village (LU 210)	Unit	94	9.52	25%	75%	0.75	63%	37%	1.00
			885	17	52	70	59	34	93
			1,152	23	68	91	76	45	121
			895	18	53	71	59	35	94
Net New Trips			2,932	58	173	231	194	114	308
Current Community Plan Designations									
Low Density Residential (LU 210)	dwelling	73	9.52	25%	75%	0.75	63%	37%	1.00
Commercial (LU 820)	KSF	138.3	42.70	62%	38%	0.96	48%	52%	3.71
Industrial (LU 110)	KSF	632.5	6.97	88%	12%	0.92	12%	88%	0.97
			695	14	41	55	46	27	73
			5,905	82	51	133	246	267	513
			4,409	512	72	582	74	540	614
Current Community Plan Designations			11,009	608	164	770	366	834	1,200
Net Difference – Proposed Land Uses vs Current Land Uses			(8,077)	(550)	9	(539)	(172)	(720)	(892)
Current Zoning									
RS-AG-B-20 (LU 210)	dwelling	73	9.52	25%	75%	0.75	63%	37%	1.00
INP-DC (LUS 820)	KSF	632.5	6.97	88%	12%	0.92	12%	88%	0.97
OP-Dc	KSF	221.3	11.03	88%	12%	1.56	17%	83%	1.49
			695	14	53	55	46	27	73
			4,409	512	72	582	74	540	614
			2,441	304	41	345	56	274	330
Current Zoning			7,545	830	166	982	176	841	1,017
Proposed Land Use vs Current Zoning			(4,613)	(772)	7	(751)	18	(727)	(709)
Notes: - numbers may not add up due to rounding;									

Trip Distribution and Assignment

Distribution. The distribution of trips to and from the project site was determined by conducting a select zone analysis for the project site using the Placer Vineyards Traffic Model. Manual adjustments were made for the a.m. peak hour due to the projected traffic to the Creekview Ranch School along Cook Riolo Road. The trip distribution, which was approved by County staff, is shown in Table 7. Graphically, the project trip distribution pattern and project traffic is shown in Figure 4.

**TABLE 7
TRIP DISTRIBUTION**

Direction	Route	Percent of Total A.M. New Trips	Percent of Total P.M. New Trips
North	North via Watt Avenue	0%	4%
	Walerga Road beyond PFE	1%	1%
East	Baseline Road east of Cook Riolo Road	11%	15%
	Vineyard Road east of Cook Riolo Road	1%	1%
	Creekview Ranch School	24%	0%
	PFE Road beyond N. Antelope Road	22%	38%
West	Baseline Road west of Cook Riolo Road	1%	2%
	Internal to DCWPCP	2%	1%
	Vineyard Road west of Cook Riolo Road	2%	2%
South	Walerga Road beyond PFE Road	4%	3%
	N. Antelope Road beyond PFE Road	32%	33%
Total		100.00%	100.00%

Existing Plus Project Conditions

Traffic Volumes The impacts of developing the project uses on the project site have been identified by superimposing project traffic onto existing background conditions. Figure 5 displays the “Existing Plus Project” traffic volumes at each study intersection in both AM and PM peak hours.

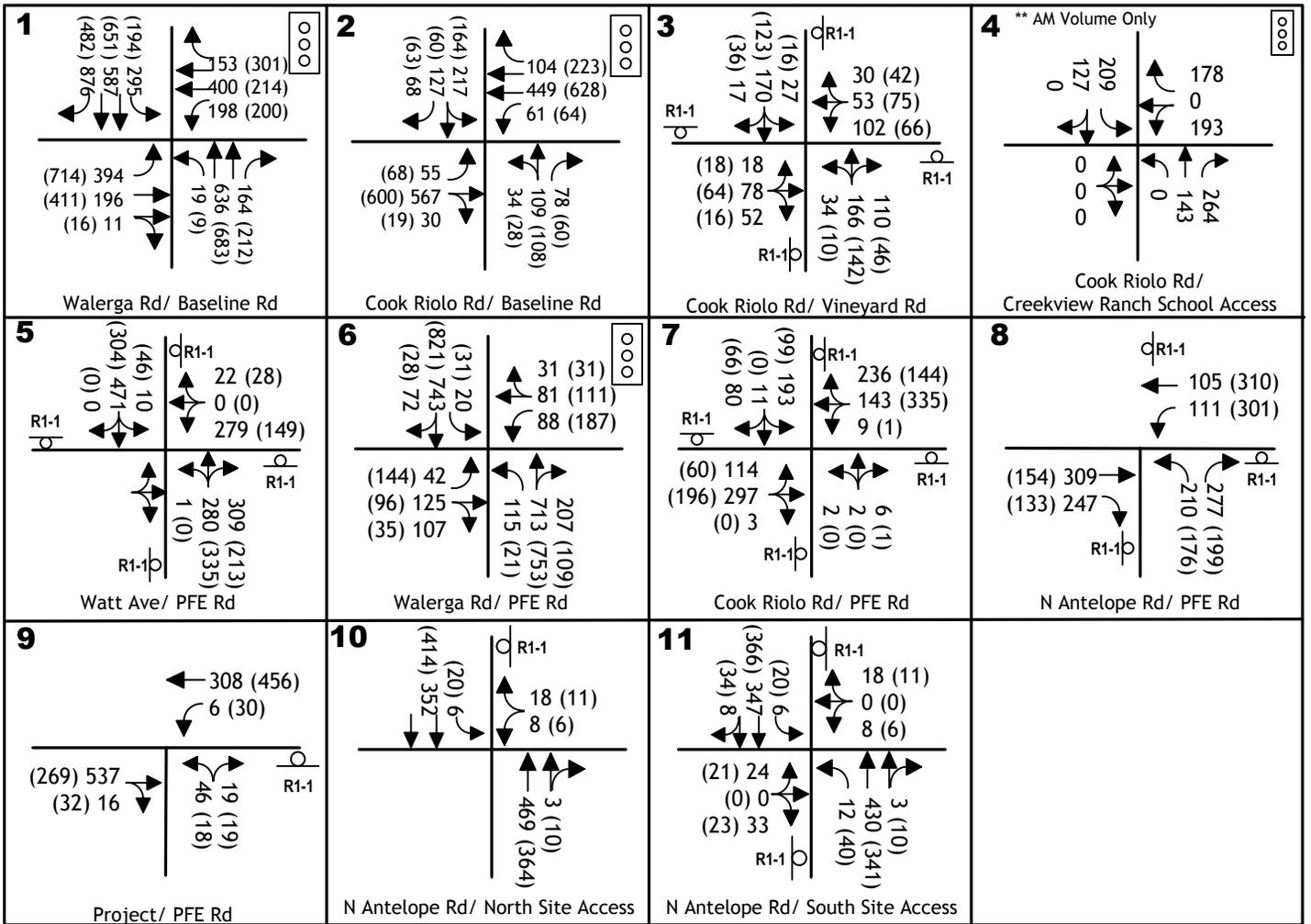
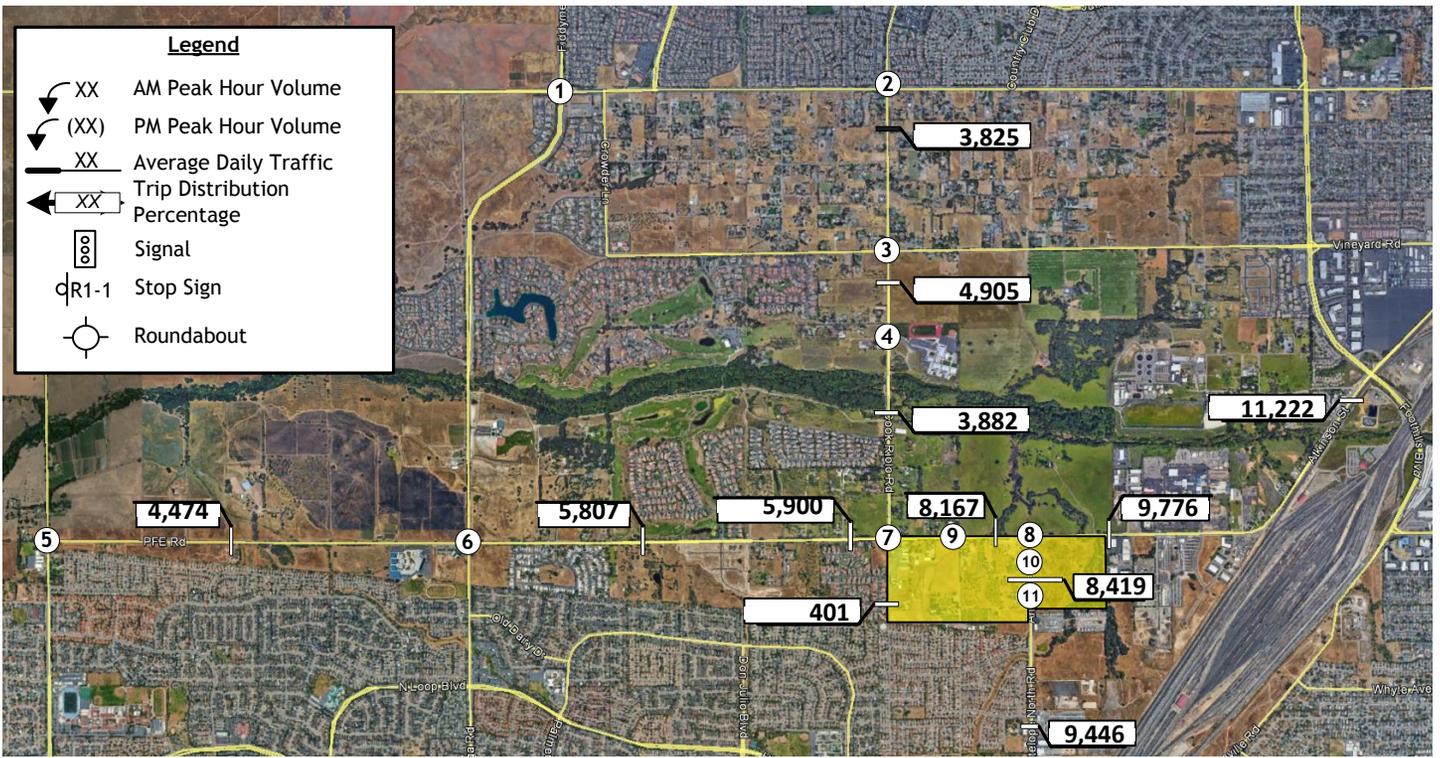
Circulation System Improvements. Figure 5 also presents the intersection geometry resulting from implementation of the project’s planned improvements along PFE Road and N. Antelope Road. PFE Road will be widened to include a 475 foot ± westbound left turn lane at the North Access intersection. A 4’ Class II bike lane will also be installed along the project frontage on both sides of PFE Road. The North Access intersection is assumed to be side-street stop controlled.

N. Antelope Road will be widened to its ultimate width along the project frontage. This includes two lanes in each direction, a two-way-left-turn lane, 4-foot Class II bike lanes and meandering sidewalk on both sides of the road. The project access intersections will be side street stop controlled. From the standpoint of Level of Service, N. Antelope Road within Placer County is assumed to be classified as an Arterial (Moderate Access Control) once the road is widened.

Intersection Levels of Service. Table 8 presents the Levels of Service under Existing plus Project conditions. Four intersections will operate below acceptable Level of Service thresholds. In Placer County the *PFE Road / Watt Avenue intersection* will continue to operate at LOS F conditions in the a.m. peak hour with the project; however the incremental change in v/c resulting from the project falls below the 2.5 second increment permitted by County guidelines, and the project’s impact is not significant. Similarly, the *PFE Road / Walerga Road intersection* will operate at LOS E with and without the project. Because the change in v/c ratio falls below the 4.0 second threshold allowed under Placer County methodology, the project’s impact is not significant. The project’s access intersections will operate at LOS C or better in both a.m. and p.m. peak periods.

The City of Roseville’s *Baseline Road / Walerga Road – Fiddymont* and *Road Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersections* will continue to operate at LOS D and LOS E as the case with current conditions. Because the project’s trips do not change the Level of Service the project’s impact is not significant under City of Roseville policy.

Roadway Segment Levels of Service. Table 9 compares roadway segment traffic volumes and Levels of Service with and without the proposed project. Development of the project will increase the volume of traffic along the study area roads. All roadway segments will continue to operate within accepted Placer County and Sacramento County minimum Level of Service thresholds.



EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

**TABLE 8
PEAK HOUR INTERSECTION LEVELS OF SERVICE
EXISTING PLUS PROJECT CONDITIONS**

Location	Control	AM Peak Hour				PM Peak Hour				Traffic Signal Warranted?
		Existing		Ex Plus Project		Existing		Ex Plus Project		
		LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	
1. Baseline Rd / Walerga Rd – Fiddymnt Rd	Signal	D	46.4	D	46.2	E	74.8	E	74.9	N/A
2. Baseline Rd / Cook-Riolo Rd–Woodcreek Oaks Blvd	Signal	D	42.5	D	43.7	D	38.4	D	41.7	N/A
3. Cook Riolo Road / Vineyard Road	AWS	B	14.9	C	16.4	A	9.2	A	9.6	No
4. Cook Riolo Road / CRS	Signal	B	0.669	C	0.730	A	0.193	N/S*		N/A
5. PFE Road / Watt Avenue	AWS	F	82.5	F	82.5	C	18.9	C	19.3	Yes
6. PFE Road / Walerga Road	Signal	E	0.966	E	0.975	E	0.962	E	0.979	N/A
	4 lanes	B	0.646	-		B	0.616	-		N/A
7. PFE Road / Cook Riolo Road	AWS	C	19.1	C	24.9	B	11.7	B	13.1	Yes
8. PFE Road / North Antelope Road	AWS	C	18.0	C	16.1	B	14.0	C	15.3	Yes
9. PFE Road / Project Access (Overall)* Northbound approach Westbound left turn	NB Stop	-		(C)	(20.3)	-		(B)	(11.1)	No
	C			21.4	B			13.7		
	A			8.7	A			7.9		
10. North Antelope Road / North Access (Overall)* Southbound Left turn Westbound approach	WB Stop	-		(B)	(10.5)	-		(A)	(9.3)	No
	A			8.5	A			8.2		
	B			11.0	B			10.7		
11. North Antelope Road / South Access (Overall)* Northbound Left turn Southbound Left turn Eastbound approach Westbound approach	EB/WB Stop	-		(B)	(11.9)	-		(B)	(10.6)	No
	A			8.1	A			8.3		
	A			8.3	A			8.1		
	B			13.0	B			14.3		
	B			12.2	B			12.4		

N/S* – not studied.
Bold indicates MIN LOS threshold exceeded **highlighted** values are a significant impact
* Overall Avg Delay = $\Sigma (\text{LOS} \times \text{Volume of each delayed movement}) / \Sigma \text{Volume of each delayed movement}$

**TABLE 9
EXISTING PLUS PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE**

Roadway	Location	Facility Classification	Standard		Existing Conditions (Existing + Project Conditions)			
			LOS	Daily Volume Threshold per Lane	Daily Volume	V/C Ratio	LOS	Change in V/C
1. PFE Rd	Watt Ave to Walerga Rd	Level Terrain Rural Highway	D	7,750	4,326 (4,474)	0.173 (0.179)	B B	0.006
2. PFE Rd	Walerga Rd to Oly Ln	Level Terrain Rural Highway	D	7,750	5,543 (5,807)	0.222 (0.232)	B B	0.010
3. PFE Rd	Oly Ln to Cook Riolo Rd	Level Terrain Rural Highway	D	7,750	5,636 (5,900)	0.225 (0.236)	B B	0.011
4. PFE Rd	Cook Riolo Rd to N. Antelope Rd	Rolling Terrain Rural Highway	D	5,700	7,229 (8,167)	0.344 (0.389)	C D	0.045
5. PFE Rd	N. Antelope Rd to Hilltop Rd	Rolling Terrain Rural Highway	D	5,700	8,720 (9,776)	0.415 (0.466)	D D	0.051
6. Cook Riolo Rd	Baseline Rd to Vineyard Rd	Level Terrain Rural Highway	D	7,750	3,355 (3,825)	0.134 (0.153)	B B	0.019
7. Cook Riolo Rd	Vineyard Rd to CRS	Rolling Terrain Rural Highway	D	5,700	4,347 (4,905)	0.207 (0.234)	C C	0.027
8. Cook Riolo Rd	CRS to PFE Rd	Rolling Terrain Rural Highway	D	5,700	3,208 (3,882)	0.153 (0.185)	B B	0.032
9. Cook Riolo Rd	south of PFE Rd	Level Terrain Rural Highway	D	7,750	401 (401)	0.016 (0.016)	A A	0.000
10. N. Antelope Rd	from PFE Rd to Great Valley Dr	Rolling Terrain Rural Highway	D	5,700	7,388 8,100*	0.352 (0.234)	C A	N/A
11. N. Antelope Rd	Great Valley Dr to Poker Ln (Sacramento County)	Arterial (Low Access Control)	E	15,000†	8,508 (9,446)	0.567 (0.630)	A B	0.063

xx – no project daily volumes (xx) – plus project daily volumes **bold** values exceed minimum LOS threshold **highlighted** values are a significant impact
 * = roadway widened as part of project, becomes Arterial – Moderate Access Control N/A – not applicable
 † = Arterial - low access control for 2 lane Sacramento County roadway

Evaluation of Gated Access

The project proposes gated access at the project entrances. While this feature does not normally affect the quality of traffic flow on the adjoining street system and does not alter Level of Service, safety issues could arise if traffic queued back from the gates.

Gate Operational Assumptions. Placer County has adopted a design standard for gated access to residential subdivisions (Plate 115). We expect that the gate would employ a system that will monitor the approach of residents using “proximity tags”, or an in-vehicle push button key to automatically open the gate as the resident’s vehicle arrives. Visitors would manually punch in a gate code.

The type of gate to be used at the entrance is assumed to be a metal swing gate. Metal swing gates or rolling gates are more aesthetically pleasing and are preferred for that reason.

Gate Evaluation Parameters. There are five key design features that will affect the adequacy of access design.

1. Available distance for storage for resident and visitor vehicles from the new gate back to the edge of travel way along PFE Road and North Antelope Road
2. Available storage for guest vehicles from the push button point back to the travel way
3. Length of time required for a resident to activate the gate and for the gate to open
4. Length of time required for the system to identify a visitor and to activate the gate
5. External factors that could create platoons of inbound traffic, such as adjoining signalized access

Storage Distance. The site plan shows that the median islands, where the push button for the gate actuation is located, are roughly 100 feet from N. Antelope Road and 70 feet from PFE Road. Assuming 25 feet per vehicle the N. Antelope Road gates could handle 4 waiting vehicles while the PFE Road gate could handle 3 waiting vehicles. The entrances appear to be wide enough to permit residents to bypass waiting visitor vehicles and travel directly to the gate.

Gate Activation and Opening Assumptions. The amount of time required for residents or visitors to activate the gate and for the gate to open has been determined from a review of available literature. A resident’s proximity tag or push button can be detected by the system as a vehicle approaches the gate. From that time a metal swing gates moves at 1.2 to 2.0 feet per second and requires 11 to 18 seconds to open a 14’-16’ swing gate, depending on the size of the operator mechanism. In pavement magnetic loop detectors prior to and after the gate ensure that the swing gate remains open for any following vehicles.

Visitors would input a code number to activate the gate but may be less familiar with its operation than residents. The additional time required for a visitor to activate the system but could add 5 to 10 seconds to the time expected for a resident.

Technical Approach. Vehicles are expected to generally arrive randomly and the number of vehicles queuing behind proposed gate can be based on the overall inbound traffic demand, the overall capacity flow rate through the gate and the passage time for subsequent vehicles following the first vehicle. For a combination of resident vehicles and an occasional visitor vehicle (i.e., 10% visitors), the average time needed for the system to detect a vehicle and fully open the gate would be no more than 20 seconds, which implies a capacity for 180 openings per hour. The probability of a queue of any length can be determined using standard queue theory, and in this case the length of queue occurring at the 95th percentile level is the determining factor.

The probability of queues at the access on North Antelope Road has been evaluated. The worst p.m. peak hour inbound traffic forecast along N. Antelope Road is 74 vehicles. Statistically, there is a 59% probability that a queue will not exist behind the gate at any time during the peak hour. There is an 83% probability of a queue of 1 vehicle or less, a 93% probability of a queue of 2 vehicles or less and a 97% probability of a queue of 3 vehicles or less. Thus the 95th percentile queue along N. Antelope Road is less than 3 vehicles. As a practical matter, there will be random occasions when multiple vehicles arrive at the same time. However, the plan indicates that a queue of 4 vehicles can be accommodated behind the gate. Therefore, the presence of the gates on the N. Antelope Road accesses for a project of this size does not pose an appreciable safety problem.

The probability of queue at the access on PFE Road has also been evaluated. The worst p.m. peak hour inbound traffic forecast along PFE Road is 62 vehicles. Statistically, there is a 66% probability that a queue will not exist behind the gate at any time during the peak hour. There is an 88% probability of a queue of 1 vehicle or less and a 96% probability of a queue of 2 vehicles or less. Thus the 95th percentile queue along PFE Road is less than 2 vehicles. Again, as a practical matter, there will be random occasions when multiple vehicles arrive at the same time. However, the plan indicates that a queue of 3 vehicles can be accommodated behind the gate. Therefore, the presence of the gate on the PFE Road access for a project of this size does not pose an appreciable safety problem.

CUMULATIVE IMPACTS

This section addresses cumulative impacts occurring as a result of future development in the South Placer area and regional traffic growth on major roads. The cumulative analysis compares conditions with the project with conditions occurring with no site development. The analysis does not compare project impacts with those accompanying development of land uses under the current land use designation in the DCWPCP.

Background Assumptions

Regional Traffic Growth. The impacts of the project were evaluated within the context of long term cumulative traffic conditions. As directed by County staff the regional traffic model last updated for the *Placer Vineyards Specific Plan EIR* was selected as the most valid source of future background traffic volumes in the study area. According to County staff this model reflects current land use assumptions for development in the DCWPCP area.

For this analysis the traffic model was modified to include the proposed project, and forecasts made with proposed site land uses represent the Cumulative Plus Project scenario. The Cumulative No Project condition was identified by manually subtracting the proposed project's trips from the Plus Project condition.

Figure 6 presents background long term Cumulative No Project traffic volumes at study intersections, while Figure 7 presents volumes with the proposed project.

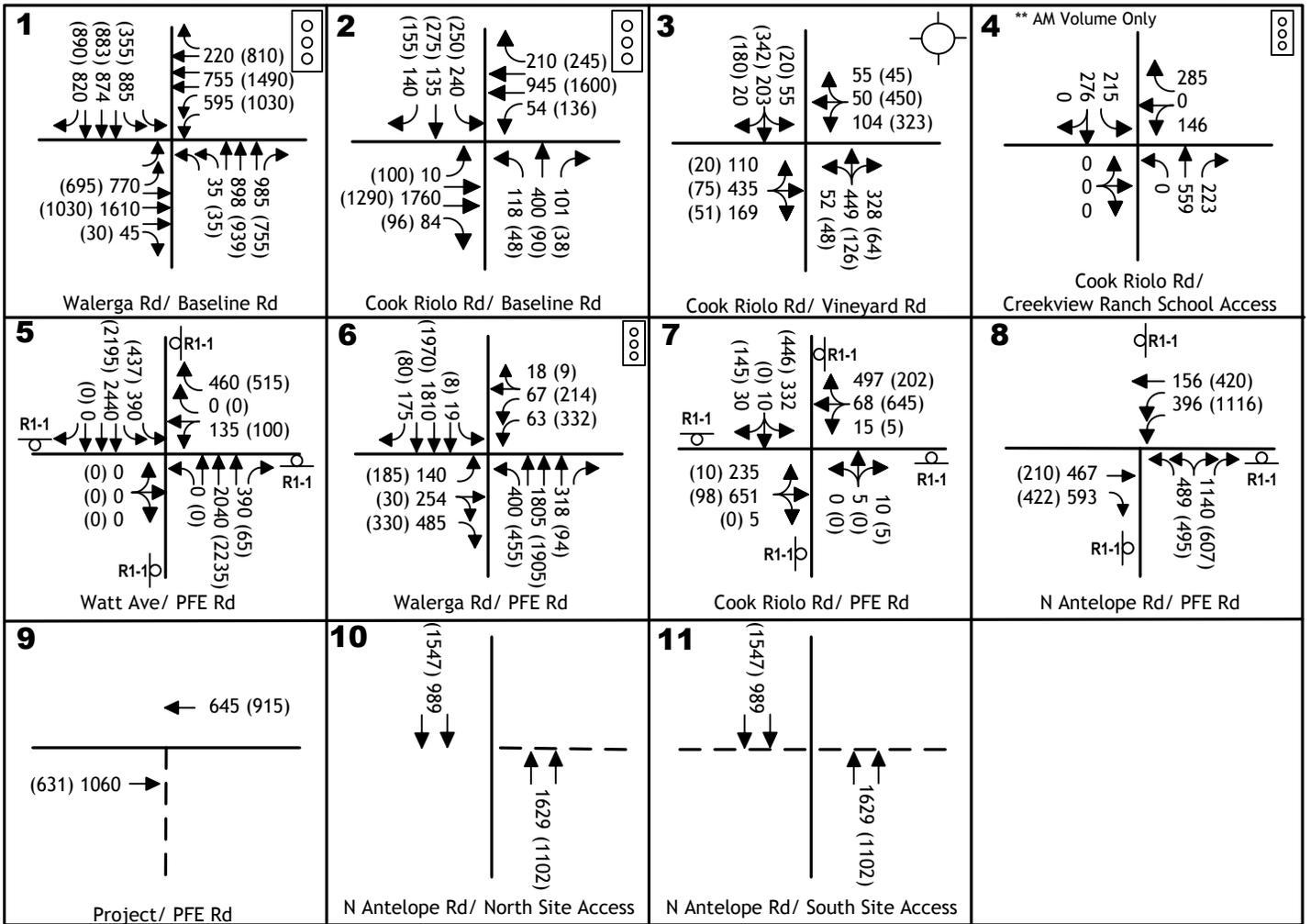
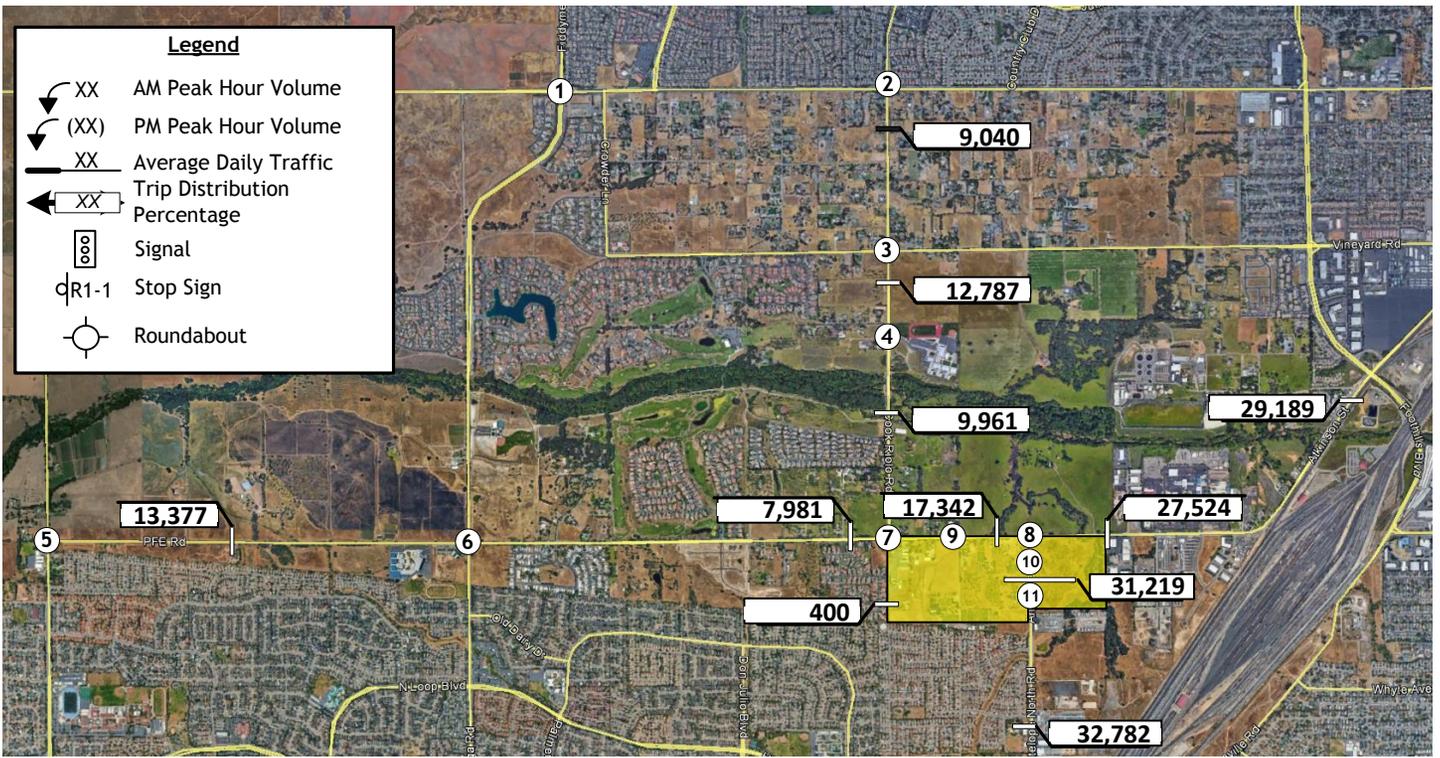
Roadway Conditions. Roadways in 2035 are generally projected to expand in the project area. Tables 10 and 11 identify the projected changes to intersection geometry and roadway segments identified by Placer County staff. The improvements leading to these geometries are included in adopted fee programs or are conditions of approval of approved projects and are therefore reasonably certain.

**TABLE 10
CUMULATIVE INTERSECTION GEOMETRY**

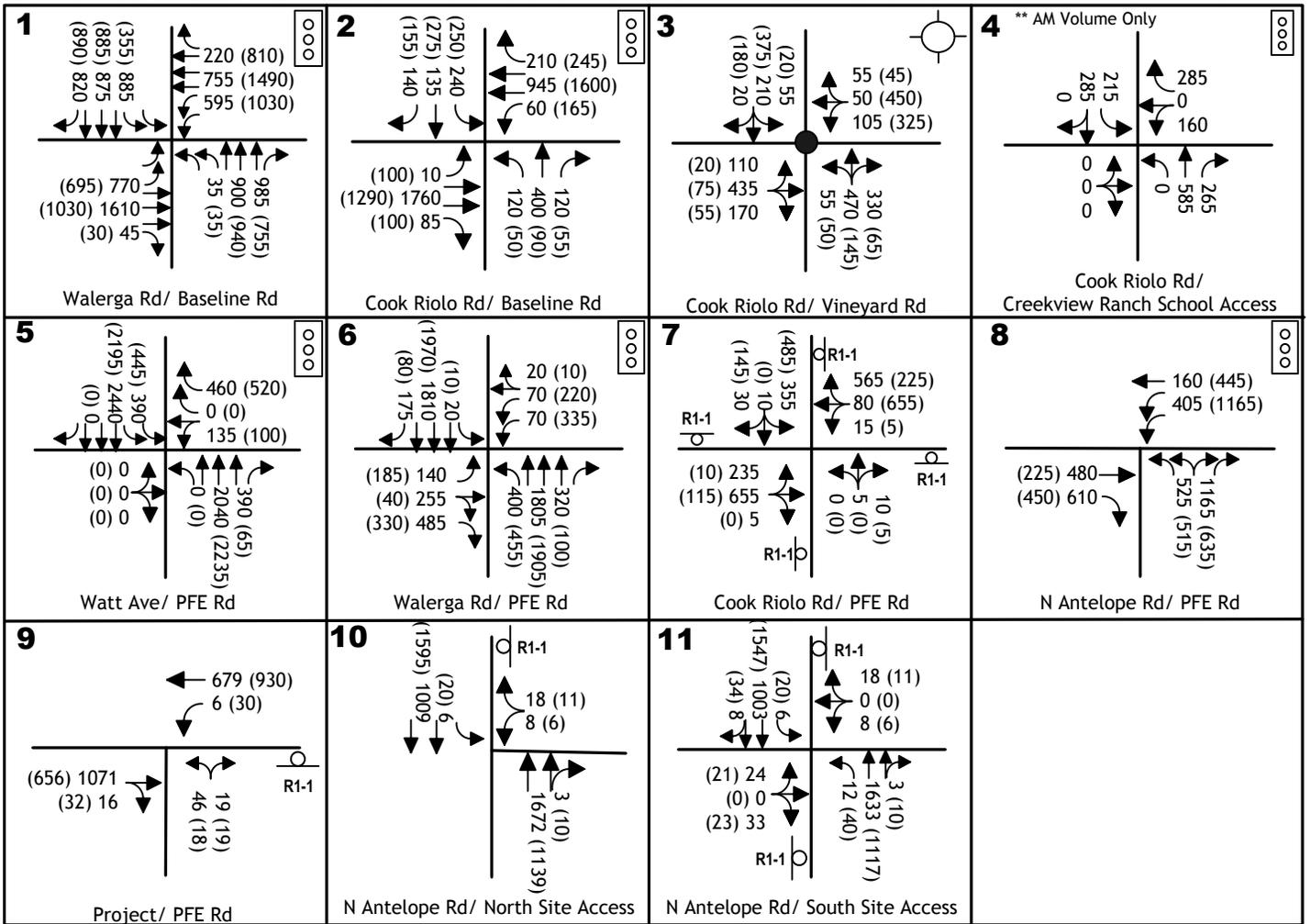
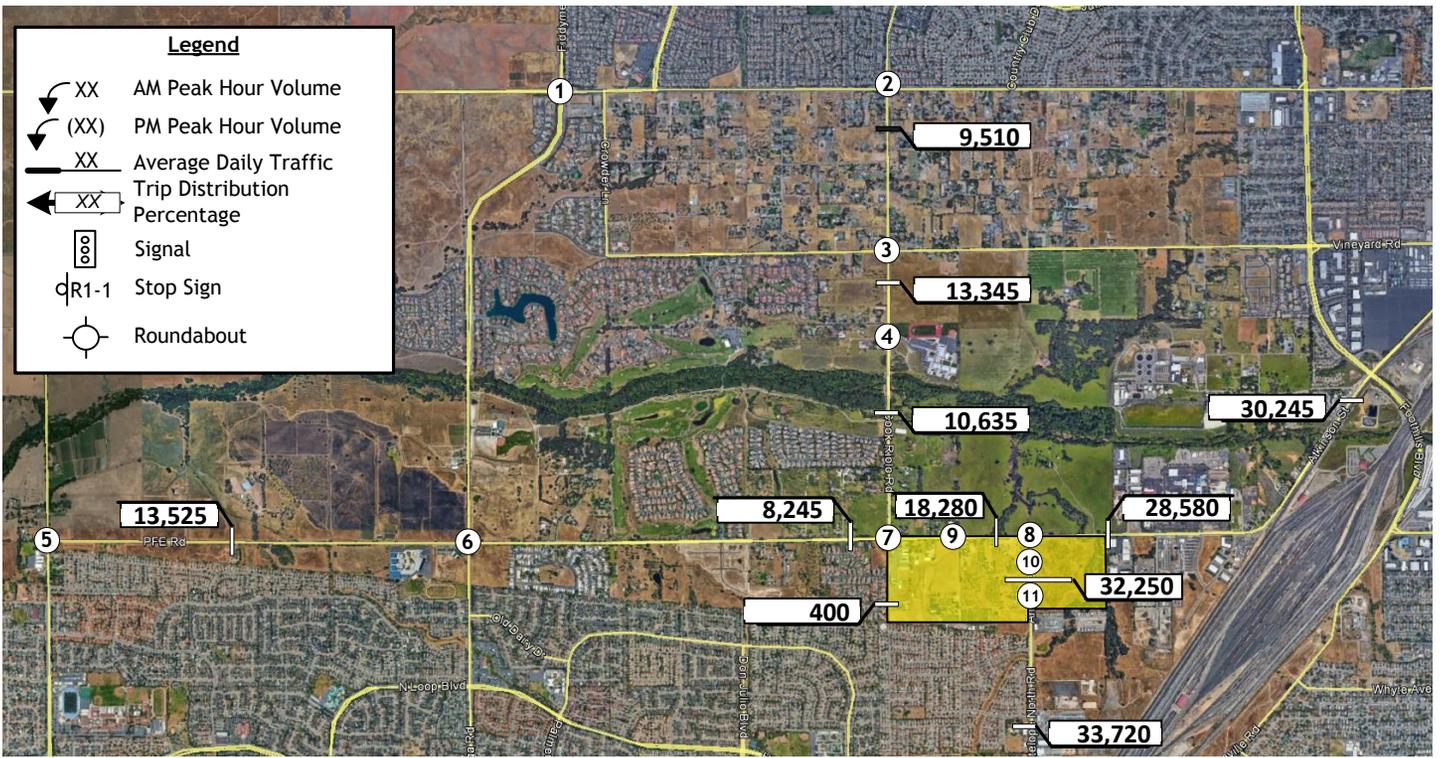
Intersection	Control	Northbound	Southbound	Eastbound	Westbound
1. Baseline Rd / Walerga Rd – Fiddymment Rd	Signal	2 left lanes 3 through lanes 1 right lane	2 left lanes 3 through lanes 1 right lane	2 left lanes 3 through lanes 1 right lane	2 left lanes 3 through lanes 1 right lane
2. Baseline Rd / Cook Riolo Rd – Woodcreek Oaks Blvd	Signal	1 left lane 1 through lane 1 right lane	1 left lane 1 through lane 1 right lane	1 left lane 2 through lanes 1 right lane	1 left lane 2 through lanes 1 right lane
3. Cook Riolo Rd / Vineyard Rd	Single lane Roundabout	1 lane	1 lane	1 lane	1 lane
4. Cook Riolo Rd / CRS	No Change to Existing Geometry				
5. PFE Rd / Watt Ave	Signal	1 left lane 3 through lanes 1 right lane	2 left lanes 3 through lanes 1 right lane	1 shared left-through-right lane	1 shared through-left lane 2 right turn lanes
6. PFE Road / Walerga Rd	Signal	1 left lane 3 through lanes 1 right lane	1 left lane 3 through lanes 1 right lane	1 left lane 1 shared through-right lane 1 right turn lane	2 left lanes 1 shared through-right lane
7. PFE Road / Cook Riolo Rd	No Change to Existing Geometry				
8. PFE Road / N. Antelope Rd	Signal	1 left turn lane 1 shared left-right lane 1 right turn lane	N/A	1 through lane 1 right turn lane	2 left turn lanes 1 through lane

**TABLE 11
CUMULATIVE ROADWAY GEOMETRY / CLASSIFICATION**

Roadway	Segment	Classification	Lanes
PFE Rd	Watt Avenue to Walerga Road	Arterial – Low Access Control	4
	Walerga Road to Cook Riolo Road	Arterial – Low Access Control	2
	Cook Riolo Road to N. Antelope Road	Arterial – Low Access Control	2
	N. Antelope Road to Hilltop Road	Arterial – Moderate Access Control	4
Cook Riolo Rd	Baseline Rd to Vineyard Road	Arterial – Low Access Control	2
	Vineyard Road to CRS	Arterial – Low Access Control	2
	CRS to PFE Road	Arterial – Low Access Control	2
	south of PFE Road	Level Terrain Rural Highway	2
N. Antelope Rd	PFE Road to Great Valley Drive	Arterial – Moderate Access Control	4
	Great Valley Drive to Poker Lane	Arterial – Moderate Access Control	4



CUMULATIVE TRAFFIC VOLUMES AND LANE CONFIGURATIONS



CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

Cumulative No Project Levels of Service

Intersection Level of Service. Table 12 identifies the long term cumulative Level of Service projected at study intersections under the No Project and Plus Project condition. Without the project five intersections are projected to operate with Level of Service which exceeds the County's minimum LOS threshold. Forecast Levels of Service are accepted at three of those locations by the DCWPCP. Two intersections are projected to operate below the City of Roseville's minimum LOS threshold.

The ***Cook-Riolo Road / Vineyard Road intersection*** is projected to operate at LOS F in the a.m. peak hour assuming a single-lane roundabout is installed as noted in Table 10, per "Cumulative Intersection Geometry". The minimum standard is LOS D. A two-lane roundabout would improve the Level of Service but is not consistent with the rural goals of the DCWPCP.

The ***PFE Road / Watt Avenue intersection*** is projected to operate at LOS E in the p.m. peak hour. No further improvements are feasible.

The ***PFE Road / Walerga Road, PFE Road / N. Antelope Road*** and ***PFE Road / Cook Riolo Road intersections*** are projected to operate at LOS F in both a.m. and p.m. peak hours, however, this condition is accepted by the DCWPCP. No improvements are identified at these intersections in the future conditions in adopted programs.

The City of Roseville's ***Baseline Road / Walerga Road – Fiddymont Road intersection*** will operate at LOS F with assumed improvements.

The ***Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersection*** in Roseville will operate at LOS F in the a.m. peak hour with assumed improvements.

Roadway Segment Levels of Service. Table 13 summarizes Levels of Service based on the projected daily traffic volumes on study area roads with the roadway configurations noted in Table 11. Three study roadway segments are projected to operate at LOS F.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F with and without the project. The DCWPCP accepts LOS F on this roadway.

**TABLE 12
PEAK HOUR INTERSECTION LEVELS OF SERVICE
CUMULATIVE PLUS PROJECT CONDITIONS**

Location	Control	AM Peak Hour				PM Peak Hour				Traffic Signal Warranted?
		Cumulative		Cum Plus Project		Cumulative		Cum Plus Project		
		LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	LOS	Average Delay or v/c ratio	
1. Baseline Rd / Walerga Rd – Fiddymnt Rd	Signal	F	183.0	F	183.0	F	114.6	F	114.6	N/A
2. Baseline Rd / Cook-Riolo Rd – Woodcreek Oaks Blvd	Signal	F	90.3	F	91.6	D	41.3	D	42.7	N/A
3. Cook Riolo Road / Vineyard Road	Roundabout	F	92.4	F	102.1	D	47.0	E	61.9	N/A
4. Cook Riolo Road / CRS	Signal	D	0.808	D	0.828	N/S				N/A
5. PFE Road / Watt Avenue	Signal	D	0.849	D	0.849	E	0.939	E	0.944	N/A
6. PFE Road / Walerga Road	Signal	F	1.156	F	1.161	F	1.201	F	1.209	N/A
7. PFE Road / Cook Riolo Road	AWS	F	222.1	F	249.5	F	179.3	F	204.6	Yes
8. PFE Road / North Antelope Road	Signal	F	1.050	F	1.076	F	1.042	F	1.095	N/A
	mitigated							E	0.923	
9. PFE Road / Project Access (Overall)* Northbound approach Westbound left turn	NB Stop			(C)	(22.1)			(B)	(14.8)	No
				C	23.1			C	19.2	
				B	11.2			A	9.3	
10. North Antelope Road / North Access Overall Southbound left turn Westbound approach	WB Stop			(D)	(25.9)			(C)	(15.9)	No
				C	16.0			B	22.8	
				D	28.2			C	20.7	
11. North Antelope Road / South Access (Overall)* Northbound left turn Southbound left turn Eastbound approach Westbound approach	EB/WB Stop			(C)	(24.0)			(D)	(33.6)	No
				B	10.8			C	16.2	
				C	15.6			B	11.6	
				C	23.2			F	64.3	
				D	33.8			D	26.5	

† average delay in seconds per vehicle ‡ meets volume and delay warrant in AM and PM peak hours Italicized indicates approved LOS F condition in DCWPCP
N/S = not studied **Bold** indicates LOS threshold exceeded **Highlighted** values are a significant impact
* Overall Avg Delay = $\Sigma (\text{LOS} \times \text{Volume of each delayed movement}) / \Sigma \text{Volume of each delayed movement}$

**TABLE 13
CUMULATIVE PLUS PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE**

Roadway	Location	Facility Classification	Standard		Cumulative Conditions (Cumulative + Project Conditions)			
			LOS	Daily Volume Threshold per Lane	Daily Volume	V/C Ratio	LOS	Change in V/C
1. PFE Rd	Watt Ave to Walerga Road	Low Access Arterial	D	6,870	13,377 (13,525)	0.446 (0.451)	A A	0.005
2. PFE Rd	Walerga Road to Cook Riolo Rd	Low Access Arterial	D	6,870	7,981 (8,245)	0.532 (0.550)	A A	0.018
3. PFE Rd	Cook Riolo Rd to N. Antelope Rd	Low Access Arterial	F	6,870	17,342 (18,280)	1.156 (1.219)	<i>F</i> <i>F</i>	0.063
4. PFE Rd	N. Antelope Rd to Hilltop Rd	Moderate Access Arterial	D	8,100	27,524 (28,580)	0.765 (0.794)	C C	0.029
5. Cook Riolo Rd	Baseline Rd to Vineyard Rd	Low Access Arterial	F	6,870	9,040 (9,510)	0.603 (0.634)	D D	0.031
6. Cook Riolo Rd	Vineyard Rd to CRS	Low Access Arterial	F	6,870	12,787 (13,345)	0.852 (.890)	D D	0.038
7. Cook Riolo Rd	CRS to PFE Road	Low Access Arterial	F	6,870	9,961 (10,635)	.664 (.709)	B C	0.045
8. Cook Riolo Rd	south of PFE Road	Level Terrain Rural Highway	D	7,750	400 (400)	0.016 (0.016)	A A	0.000
9. N. Antelope Rd	from PFE Rd to Great Valley Dr *	Arterial (Moderate Access Control)	E	36,000	31,219 (32,250)	0.867 (0.896)	D D	0.029
10. N. Antelope Rd	Great Valley Dr to Poker Ln (Sacramento County)	Arterial (Moderate Access Control)	E	36,000 †	32,782 (33,720)	0.911 (0.934)	D E	0.023

xx – no project values (xx) – plus project values **Bold** – exceeds min LOS threshold **Highlighted** is significant impact *Italicized* indicates accepted LOS F condition under DCWPCP *- roadway widened as part of project N/A – not applicable † - Arterial – 4-lane moderate access control

Cumulative Plus Project Conditions

Intersection Level of Service. Table 12 identifies the long term Cumulative plus Project Level of Service projected at the study intersections. The same five Placer County intersections projected to operate below the County's LOS D threshold will continue to do, and the same two intersections are projected to operate below the City of Roseville's minimum LOS threshold.

The ***Cook-Riolo Road / Vineyard Road intersection*** is projected to operate at LOS F in the a.m. and LOS E in the p.m. peak hours assuming a single-lane roundabout is installed. Because deficient conditions are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment exceeds the 5.0 second standard of the DCWPCP, and the project's impact is significant. Because no additional improvements are feasible, ***the impact is significant and unavoidable.***

The ***PFE Road / Watt Avenue intersection*** is projected to operate at LOS E in the p.m. peak hour. Because deficient conditions are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment is less than the 0.05 v/c standard, and the project's impact is not significant.

The ***PFE Road / Walerga Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour, although this condition is accepted by the DCWPCP. Because deficient conditions are projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment is less than the 0.05 v/c standard, and the project's impact is not significant.

The ***PFE Road / Cook Riolo Road intersection*** is also projected to operate at LOS F in both a.m. and p.m. peak hours, however, this condition is accepted by the DCWPCP. No improvements are identified at this intersection in the future conditions. Because LOS F is projected with and without the project, the significance of project impact is based on the incremental change in delay caused by the project. In this case the increment exceeds the DCWPCP's 5.0 second standard, and the project's impact is significant. Because no additional improvements are feasible, ***the impact is significant and unavoidable.***

The ***PFE Road / North Antelope Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour, although this condition is accepted by the DCWPCP. Because deficient conditions are projected with and without the project, the significance of project impact is based on the incremental change in v/c ratio caused by the project. In this case the increment is more than the 0.05 v/c standard, and the project's impact is significant.

At this location it would be possible to mitigate the project's impact. Adding a right turn overlap phase to the eastbound right turn lane will result in LOS E conditions, which satisfy the DCWPCP's LOS F requirement. With this improvement the project's impact is not significant.

The City of Roseville's ***Baseline Road / Walerga Road – Fiddymont Road intersection*** will operate at LOS F with and without the project. However, because the incremental change in

overall delay caused by the project is less than the 12.5 second increment allowed under City of Roseville policy, the project's impact is not significant, and no mitigation is required.

The **Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersections** will operate at LOS D - LOS F conditions with and without the project. Because the project's trips do not change the Level of Service, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

The eastbound approach of the **North Antelope Road / South Access intersection** is projected to operate at LOS F with a delay of 53.0 seconds. However, minimum standards apply to the overall average delay for the movements yielding right of way, which is LOS C (20.6 seconds). Therefore, the County's minimum LOS D standard is satisfied, and this is not considered a significant impact.

Roadway Segment Levels of Service. Table 13 summarizes Levels of Service based on the projected daily traffic volumes on study area roads with the roadway configurations noted in Table 11. Three study roadway segments are projected to operate at LOS F.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F with and without the project. While the DCWPCP accepts LOS F on this roadway, because the incremental change in v/c exceeds the 0.05 significance threshold and the incremental increase in volume exceeds the 100 daily vehicles per lane threshold allowed under County guidelines, the project's impact is significant. Because no feasible mitigation exists, the project's **impact is significant and unavoidable.**

Vehicle Miles of Travel (VMT)

This section discusses the effect of the project on "per capita" VMT in comparison to published regional averages. KDA estimated project-related VMT using the Placer Vineyards traffic model while isolating travel by land uses on the project site. The model results indicate that the project will generate 19,349 VMT under 2030 conditions. The "per capita" VMT was determined by dividing the total VMT by the anticipated 958 residents (based on a rate of 3.11 persons per household in the DCWPCP area). The per capita VMT for the project is 20.2 vehicle miles traveled per person.

The results have been compared to published estimates for regional per capita VMT. The SACOG 2016 Metropolitan Transportation Plan (MTP) indicates that regional per capita VMT averaged 24.5 in 2012 and is expected to be 24.2 in 2036¹. The project's rate is roughly 83% of the future regional average.

¹ 2016 Metropolitan Transportation Plan / Sustainable Communities Strategy, Chapter 5b.

IMPACTS / MITIGATIONS

Improvements required to mitigate identified deficiencies and reduce project impacts to a less than significant level are summarized in this section.

The Placer County Road Network Traffic Fee Program identifies intersection and roadway improvements needed within various districts in the County. Improvements are intended to be funded in part by the development fee, with State funding, local programs and developer frontage improvements intended to fund the balance of the improvement costs. The project site is located within the Dry Creek – West Placer Benefit District.

Existing Conditions

Intersections. Two intersections in Placer County operate with Levels of Service that exceed the LOS D standard.

The *PFE / Watt Avenue intersection* operates at LOS F in the a.m. peak hour. While major long term improvements are planned, to achieve minimum Placer County standards the intersection needs to be signalized with protected left turn movements along the north and southbound approaches added; with the east and west approaches operating under split phase conditions. This will result in LOS B condition (0.650).

The *PFE / Walerga Road intersection* operates at LOS E in the a.m. and p.m. peak hour. Long term improvements are planned at this intersection, and ultimately the DCWPCP accepts LOS F at this location. Widening Walerga Road to four lanes would yield LOS B today.

In Roseville the *Baseline Road / Walerga Road – Fiddymont Road intersection* operates at LOS D in the a.m. peak hour and LOS E in the p.m. peak hour, while the *Baseline Rd / Cook-Riolo Rd – Woodcreek Oaks Blvd intersection* operate at LOS D. Both intersections will be widened in the future.

Roadways. All roadway segments operate at acceptable Levels of Service.

Existing Plus Project Conditions

Intersections. Development of the proposed project will perpetuate existing conditions whereby one intersection is operating below Placer County LOS thresholds and two intersections are operating below City of Roseville thresholds.

The *PFE Road / Watt Avenue intersection* will operate at LOS F in the a.m. peak hour with the project, but the intersection will not experience an overall delay increase of 2.5 seconds. Therefore, this is not considered to be a significant impact, and no mitigation is required.

The ***PFE Road / Walerga Road intersection*** will continue to operate at LOS E. Because the incremental change in v/c caused by the project is less than the permitted 0.05 threshold, the project's impact is not significant and no mitigation is required.

The ***Baseline Road / Walerga Road – Fiddymont Road intersection*** will continue to operate at LOS D in the a.m. peak hour and LOS E in the p.m. peak hour. Because the project will not alter the existing LOS, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

The ***Baseline Rd / Cook-Riolo Rd – Woodcreek Oaks Blvd intersection*** will continue to operate at LOS D. Because the project will not alter the existing LOS, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

Roadway Segments. All roadway segments will continue to operate at acceptable Levels of Service. The project's impact is not significant, and no mitigation is required.

Cumulative Year 2035 No Project Conditions

Intersections. Background traffic volumes forecast for the Year 2035 indicate that the following intersections will operate at LOS E or LOS F conditions.

The ***Cook Riolo Road / Vineyard Road intersection*** will decline to LOS F conditions in the a.m. peak hour with a one-lane roundabout. While a two-lane roundabout would improve operations, no additional improvements are identified in the DCWPCP.

The ***PFE Road / Watt Avenue intersection*** will decline to LOS E conditions in the p.m. peak hour. No additional improvements are feasible or identified in the DCWPCP.

The ***PFE Road / Walerga Road intersection*** will operate at LOS F in the a.m. and p.m. peak hours. The maximum feasible improvements are assumed, and LOS F is accepted by the DCWPCP.

The ***PFE Road / Cook Riolo Road intersection*** will decline to LOS F conditions in the a.m. and p.m. peak hours with the assumed all-way stop. This is the maximum feasible improvement, and LOS F is accepted by the DCWPCP.

The ***PFE Road / N. Antelope Road*** will operate at LOS F in the a.m. and p.m. peak hour. LOS F is accepted by the DCWPCP.

In Roseville the ***Baseline Road / Walerga Road – Fiddymont Road intersection*** will operate at LOS F conditions. The improvements identified under Cumulative Intersection Geometry are the maximum feasible roadway improvements for the intersection. Therefore, no further improvements are considered feasible.

The ***Baseline Rd / Cook-Riolo Rd – Woodcreek Oaks Blvd intersection*** will operate at LOS E conditions in the a.m. peak hour, and there are no additional improvements identified.

Roadway Segments. Background traffic volumes forecast for the Year 2035 indicate that the following segment will operate at LOS F.

PFE Road, between Cook Riolo Road and N. Antelope Road will decline to LOS F conditions. This is within the DCWPCP significance thresholds which allow LOS F conditions along the segment.

Cumulative Year 2035 Plus Project Conditions

Intersections. Five intersections will operate at LOS F conditions.

The ***Cook Riolo Road / Vineyard Road intersection*** will operate with LOS F conditions in the a.m. and p.m. peak hours with and without the project. The significance of the project's impact is based on the incremental change in delay. Because the change caused by the project exceeds the DCWPCP's permissible increment of 5.0 seconds, the project's impact is significant. No additional improvements are identified in the existing fee program, and while a two-lane roundabout would achieve the minimum Level of Service, this level of improvement is not consistent with the DCWPCP. Therefore, ***this is a significant and unavoidable impact.***

The ***PFE Road / Watt Avenue intersection*** will operate at LOS E in the p.m. peak hour with and without the project, but the intersection will not experience an overall v/c increase of 0.05. Therefore, this is not considered to be a significant impact, and no mitigation is required.

The ***PFE Road / Cook Riolo Road intersection*** will operate at LOS F conditions in the a.m. and p.m. peak hours with and without the project. However, the DCWPCP accepts LOS F. In this case the significance of the project's impact is based on the incremental change in delay. Because the change caused by the project exceeds the DCWPCP's permissible increment of 5.0 seconds the project's impact is significant. Because no feasible mitigation is available, ***this is a significant and unavoidable impact.***

The ***PFE Road / Walerga Road intersection*** is projected to operate at LOS F in the a.m. and p.m. peak hour with and without the project, although this condition is accepted by the DCWPCP. Because the incremental change in v/c caused by the project is less than the 0.05 v/c standard, and the project's impact is not significant.

The ***PFE Road / North Antelope Road intersection*** will operate at LOS F in the p.m. peak hour and exceed the 0.05 incremental change in v/c ratio. Installation of an eastbound to southbound overlap phase at the traffic signal will improve the v/c ratio to 0.923, and LOS E condition. With this improvement, the project's impact is not significant.

The City of Roseville's ***Baseline Road / Walerga Road – Fiddymont Road intersection*** will operate at LOS F with and without the project. However, because the incremental change in overall delay caused by the project is less than the 12.5 second increment allowed under City of Roseville policy, the project's impact is not significant, and no mitigation is required.

The ***Baseline Road / Cook-Riolo Road – Woodcreek Oaks Blvd intersections*** will operate at LOS D – LOS E conditions with and without the project. Because the project's trips do not change the Level of Service, the project's impact is not significant under City of Roseville policy, and no mitigation is required.

Roadway Segments. Traffic volumes forecast for the Year 2035 indicate that the following roadway segment will operate at LOS F under Cumulative plus Project conditions.

PFE Road from Cook-Riolo Road to N. Antelope Road will operate at LOS F with and without the project. While the DCWPCP accepts LOS F on this roadway, because the incremental change in v/c exceeds the 0.05 threshold and incremental increase in volume exceeds the "100 daily vehicles per lane" threshold allowed under County guidelines, the project's impact is significant. Because no feasible mitigation exists, the project's ***impact is significant and unavoidable.***

REFERENCES

1. *North Roseville Specific Plan*, City of Roseville, August 1997, Amended, March 2008
2. *Sierra Vista Specific Plan*, City of Roseville, May 2010, Amended April 2016
3. *Dry Creek/West Placer Community Plan*, Placer County, July 2011
4. *Placer Vineyards Specific Plan*, Placer County, Amended, January 2015
5. City of Roseville *Traffic Impact Analysis* guidelines, January 2016
6. Transportation Research Board, *Highway Capacity Manual*, 2010
7. Caltrans *Highway Design Manual*, 2016
8. California *Manual of Uniform Traffic Control Devices*, 2014
9. Institute of Transportation Engineers. 2012. *Trip Generation*, 9th Edition. Washington, D.C.
10. Telephone and E-mail correspondence, Phillip Vassion, Placer County, January through August 2017
11. National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*, December 1982

APPENDIX

(under separate cover)

KDA

TECHNICAL APPENDIX

FOR

MILL CREEK SUBDIVISION TRAFFIC IMPACT ANALYSIS

Placer County, California

Prepared For:

Raney Planning & Management

1501 Sports Drive
Sacramento, CA 95834

Prepared By:

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April 27, 2018

Job No. 5765-17

KD Anderson & Associates, Inc.

Transportation Engineers

National Data and Surveying Services

5765-17

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

(323) 782-0090

info@ndsdata.com

File Name : 17-7118-001 Walerga Rd & PFE Rd
 Date : 3/1/2017

Unshifted Count = All Vehicles & Uturns

START TIME	Walerga Rd Southbound					PFE Rd Westbound					Walerga Rd Northbound					PFE Rd Eastbound					Total	Uturns Total
	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	5	202	22	0	229	20	19	5	0	44	23	137	41	0	201	11	24	10	0	45	519	0
7:15	7	221	22	0	250	18	23	6	0	47	28	179	47	0	254	7	33	26	0	66	617	0
7:30	4	155	14	0	173	18	24	9	0	51	45	177	63	0	285	11	34	41	0	86	595	0
7:45	3	165	14	0	182	25	12	9	0	46	19	220	54	0	293	13	33	30	0	76	597	0
Total	19	743	72	0	834	81	78	29	0	188	115	713	205	0	1033	42	124	107	0	273	2328	0
8:00	6	149	6	0	161	33	18	13	0	64	4	213	36	0	253	6	16	9	0	31	509	0
8:15	11	130	12	0	153	28	16	9	0	53	8	203	27	0	238	7	13	3	0	23	467	0
8:30	8	143	11	0	162	28	18	4	0	50	2	178	35	0	215	5	16	4	0	25	452	0
8:45	6	130	6	0	142	21	10	6	0	37	4	139	26	1	170	5	15	6	0	26	375	1
Total	31	552	35	0	618	110	62	32	0	204	18	733	124	1	876	23	60	22	0	105	1803	1
16:00	10	157	13	0	180	41	16	13	0	70	6	177	25	0	208	15	20	8	0	43	501	0
16:15	2	177	14	0	193	27	36	6	0	69	1	157	29	0	187	17	27	6	0	50	499	0
16:30	11	180	5	0	196	40	31	5	0	76	3	191	25	0	219	30	18	12	0	60	551	0
16:45	7	206	11	0	224	30	21	8	0	59	8	181	24	0	213	38	23	8	0	69	565	0
Total	30	720	43	0	793	138	104	32	0	274	18	706	103	0	827	100	88	34	0	222	2116	0
17:00	4	203	6	0	213	53	29	5	0	87	5	186	26	0	217	31	17	7	0	55	572	0
17:15	7	232	6	0	245	61	24	12	0	97	5	195	28	0	228	45	28	8	0	81	651	0
17:30	8	179	5	0	192	40	23	11	0	74	4	180	23	1	208	35	27	9	0	71	545	1
17:45	5	194	6	0	205	40	23	9	0	72	3	191	27	0	221	33	26	8	0	67	565	0
Total	24	808	23	0	855	194	99	37	0	330	17	752	104	1	874	144	98	32	0	274	2333	1
Grand Total	104	2823	173	0	3100	523	343	130	0	996	168	2904	536	2	3610	309	370	195	0	874	8580	2
Apprch %	3.4%	91.1%	5.6%	0.0%		52.5%	34.4%	13.1%	0.0%		4.7%	80.4%	14.8%	0.1%		35.4%	42.3%	22.3%	0.0%			
Total %	1.2%	32.9%	2.0%	0.0%	36.1%	6.1%	4.0%	1.5%	0.0%	11.6%	2.0%	33.8%	6.2%	0.0%	42.1%	3.6%	4.3%	2.3%	0.0%	10.2%	100.0%	

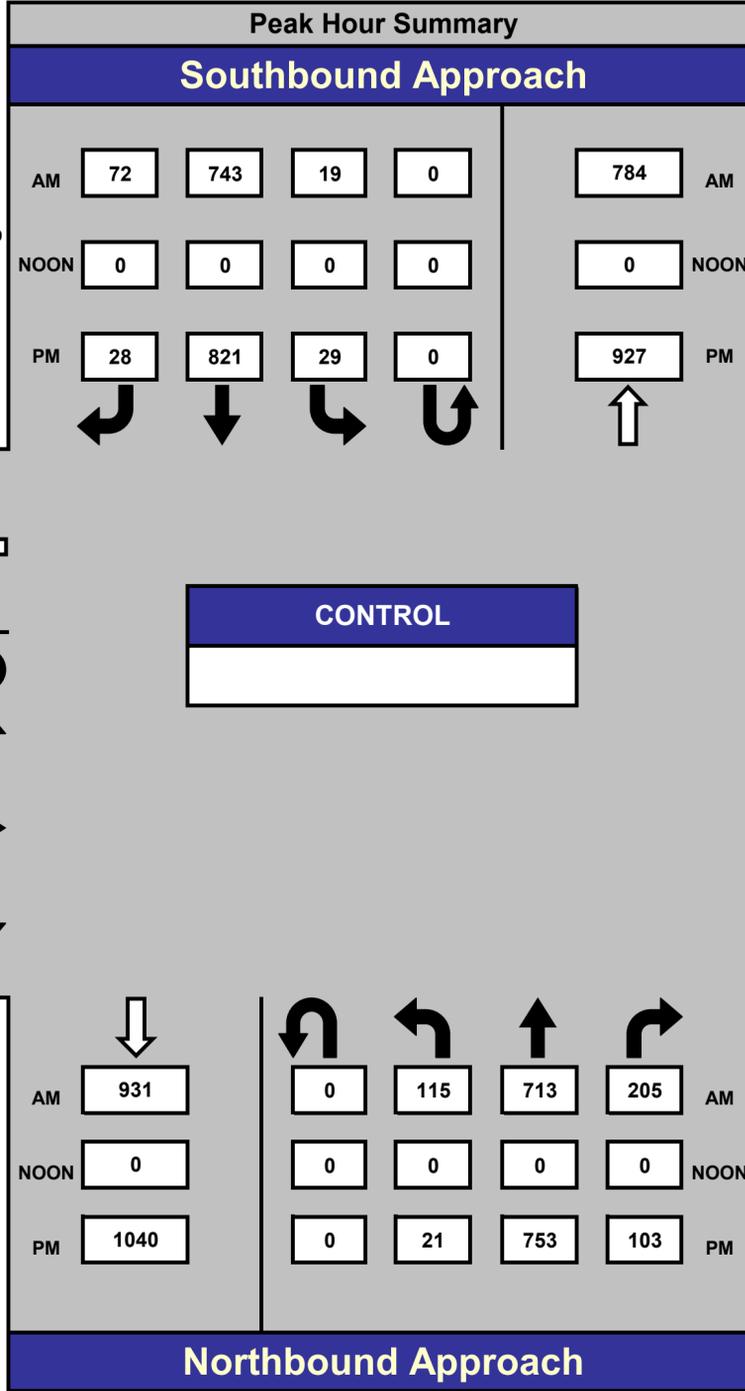
AM PEAK HOUR	Walerga Rd Southbound					PFE Rd Westbound					Walerga Rd Northbound					PFE Rd Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	5	202	22	0	229	20	19	5	0	44	23	137	41	0	201	11	24	10	0	45	519
7:15	7	221	22	0	250	18	23	6	0	47	28	179	47	0	254	7	33	26	0	66	617
7:30	4	155	14	0	173	18	24	9	0	51	45	177	63	0	285	11	34	41	0	86	595
7:45	3	165	14	0	182	25	12	9	0	46	19	220	54	0	293	13	33	30	0	76	597
Total Volume	19	743	72	0	834	81	78	29	0	188	115	713	205	0	1033	42	124	107	0	273	2328
% App Total	2.3%	89.1%	8.6%	0.0%		43.1%	41.5%	15.4%	0.0%		11.1%	69.0%	19.8%	0.0%		15.4%	45.4%	39.2%	0.0%		
PHF	.679	.840	.818	.000	.834	.810	.813	.806	.000	.922	.639	.810	.813	.000	.881	.808	.912	.652	.000	.794	.943

PM PEAK HOUR	Walerga Rd Southbound					PFE Rd Westbound					Walerga Rd Northbound					PFE Rd Eastbound					Total
	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	11	180	5	0	196	40	31	5	0	76	3	191	25	0	219	30	18	12	0	60	551
16:45	7	206	11	0	224	30	21	8	0	59	8	181	24	0	213	38	23	8	0	69	565
17:00	4	203	6	0	213	53	29	5	0	87	5	186	26	0	217	31	17	7	0	55	572
17:15	7	232	6	0	245	61	24	12	0	97	5	195	28	0	228	45	28	8	0	81	651
Total Volume	29	821	28	0	878	184	105	30	0	319	21	753	103	0	877	144	86	35	0	265	2339
% App Total	3.3%	93.5%	3.2%	0.0%		57.7%	32.9%	9.4%	0.0%		2.4%	85.9%	11.7%	0.0%		54.3%	32.5%	13.2%	0.0%		
PHF	.659	.885	.636	.000	.896	.754	.847	.625	.000	.822	.656	.965	.920	.000	.962	.800	.768	.729	.000	.818	.898

Walerga Rd & PFE Rd

Date: 3/1/2017
Day: Wednesday

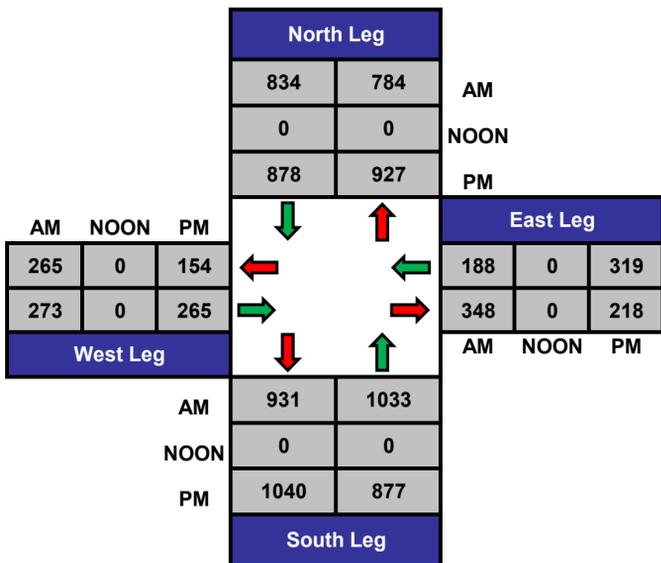
Project #: 17-7118-001
5765-17



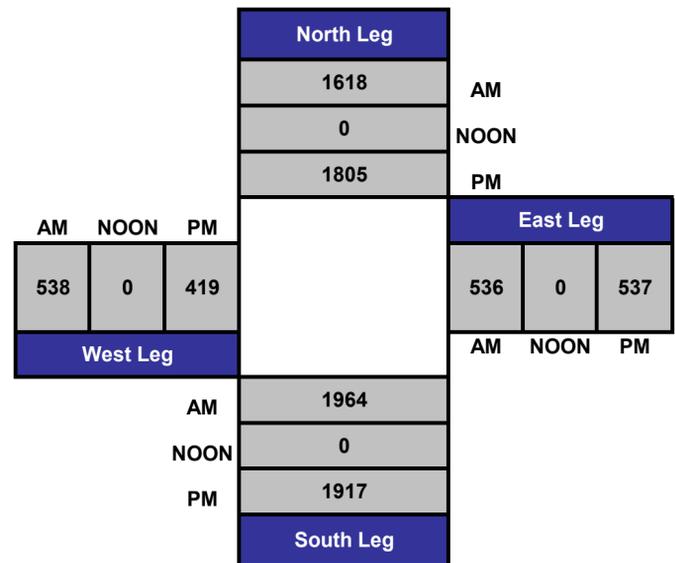
AM Peak Hour	07:00 - 08:00
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

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

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

N-S STREET: Watt Avenue

DATE: 4/12/16

LOCATION: Roseville

E-W STREET: PFE Road

DAY: TUESDAY

PROJECT#

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	1	75	40	2	114	0	0	1	0	48	0	7	288
7:15 AM	0	54	96	1	104	0	0	0	0	65	0	5	325
7:30 AM	0	79	112	4	121	0	0	0	0	88	0	7	411
7:45 AM	0	72	61	3	132	0	0	0	0	78	0	3	349
8:00 AM	0	59	20	1	77	0	2	0	0	33	0	1	193
8:15 AM	0	62	27	3	88	0	0	0	0	39	0	2	221
8:30 AM	0	49	25	0	64	0	0	0	0	30	0	0	168
8:45 AM	1	50	16	1	59	0	0	0	0	14	0	2	143
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	2	500	397	15	759	0	2	1	0	395	0	27	2098

AM Peak Hr Begins at: 700 AM

PEAK VOLUMES =	1	280	309	10	471	0	0	1	0	279	0	22	1373
PEAK HR. FACTOR:		0.772		0.891				0.250			0.792		0.835

CONTROL: 3-WAY STOP

Intersection Turning Movement

Prepared by:

N-S STREET: **Watt Avenue**

DATE: **4/12/16**

LOCATION: **Roseville**

E-W STREET: **PFE Road**

DAY: **TUESDAY**

PROJECT#

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	89	43	5	71	0	0	0	0	42	0	3	253
4:15 PM	1	65	29	4	73	0	0	0	1	32	0	4	209
4:30 PM	0	94	47	9	75	0	0	0	0	42	0	6	273
4:45 PM	0	85	38	6	73	0	0	0	0	29	0	3	234
5:00 PM	0	80	52	12	65	0	0	0	0	37	0	6	252
5:15 PM	0	80	51	6	97	0	0	0	0	38	0	8	280
5:30 PM	0	93	60	12	74	0	0	1	0	42	0	4	286
5:45 PM	0	82	50	8	68	0	0	0	0	32	0	5	245
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	668	370	62	596	0	0	1	1	294	0	39	2032

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	335	213	38	304	0	0	1	0	149	0	23	1063
PEAK HR. FACTOR:		0.895		0.830				0.250			0.935		0.929

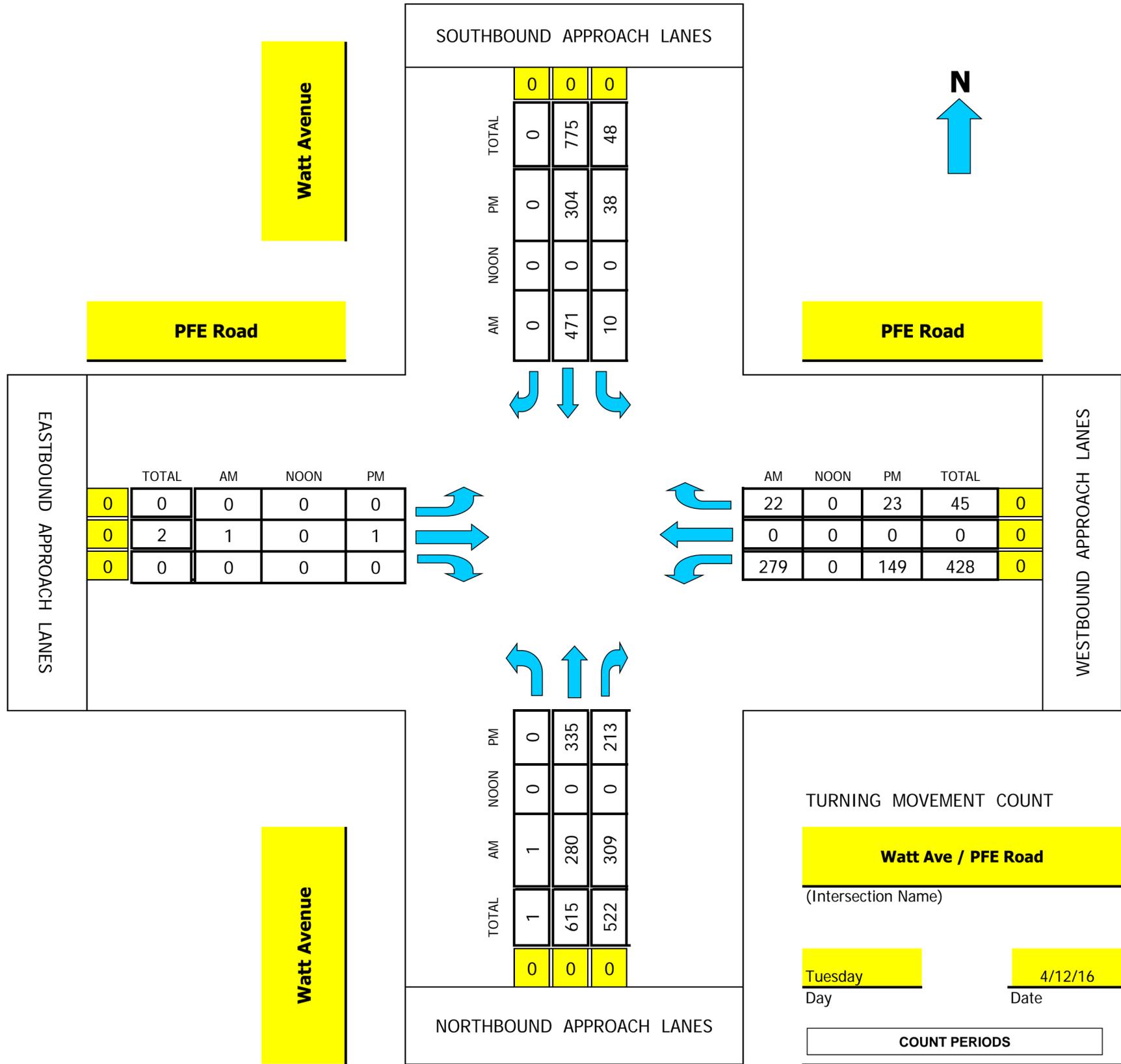
CONTROL:

Intersection Turning Movement

Prepared by:
KD Anderson Associates, Inc.

TMC Summary of Watt Avenue/PFE Road

Project #:



AM PEAK HOUR	<u>700 AM</u>
NOON PEAK HOUR	<u>0 AM</u>
PM PEAK HOUR	<u>500 PM</u>

Intersection Turning Movement

Prepared by:

N-S STREET: Cook Riolo Road

DATE: 4/6/16

LOCATION: Roseville

E-W STREET: Vineyard Road

DAY: WEDNESDAY

PROJECT#

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	0	0	0	0	0	0	0	0	0	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	6	17	15	6	18	2	6	28	7	11	14	6	136
7:15 AM	1	19	9	7	36	5	5	20	2	10	6	4	124
7:30 AM	5	24	17	8	37	4	5	18	13	22	10	8	171
7:45 AM	3	47	33	8	51	4	4	19	14	45	17	9	254
8:00 AM	22	55	49	4	39	4	4	21	22	24	20	9	273
8:15 AM	2	21	8	9	25	1	2	9	3	7	8	7	102
8:30 AM	0	19	9	8	20	2	4	20	6	9	7	4	108
8:45 AM	1	19	6	7	15	1	7	20	2	9	13	2	102
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	40	221	146	57	241	23	37	155	69	137	95	49	1270

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	31	145	108	27	163	17	18	78	51	101	53	30	822
PEAK HR. FACTOR:		0.563			0.821			0.782			0.648		0.753

CONTROL: 4-WAY STOP

Intersection Turning Movement

Prepared by:

N-S STREET: Cook Riolo Road

DATE: 4/6/16

LOCATION: Roseville

E-W STREET: Vineyard Road

DAY: WEDNESDAY

PROJECT#

LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	2	33	11	6	17	4	7	16	4	6	17	12	135
4:15 PM	4	27	8	6	16	6	3	19	3	10	24	8	134
4:30 PM	2	31	16	6	25	11	7	17	4	14	17	8	158
4:45 PM	5	39	10	2	19	7	3	15	2	16	21	11	150
5:00 PM	1	25	7	5	24	9	4	13	2	18	16	11	135
5:15 PM	0	28	12	3	22	9	4	19	4	16	21	12	150
5:30 PM	2	30	6	3	17	8	3	20	2	9	21	9	130
5:45 PM	3	23	9	8	32	6	3	13	4	15	23	9	148
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	19	236	79	39	172	60	34	132	25	104	160	80	1140

PM Peak Hr Begins at: 430 PM

PEAK VOLUMES =	8	123	45	16	90	36	18	64	12	64	75	42	593
PEAK HR. FACTOR:	0.815			0.845			0.839			0.923			0.938

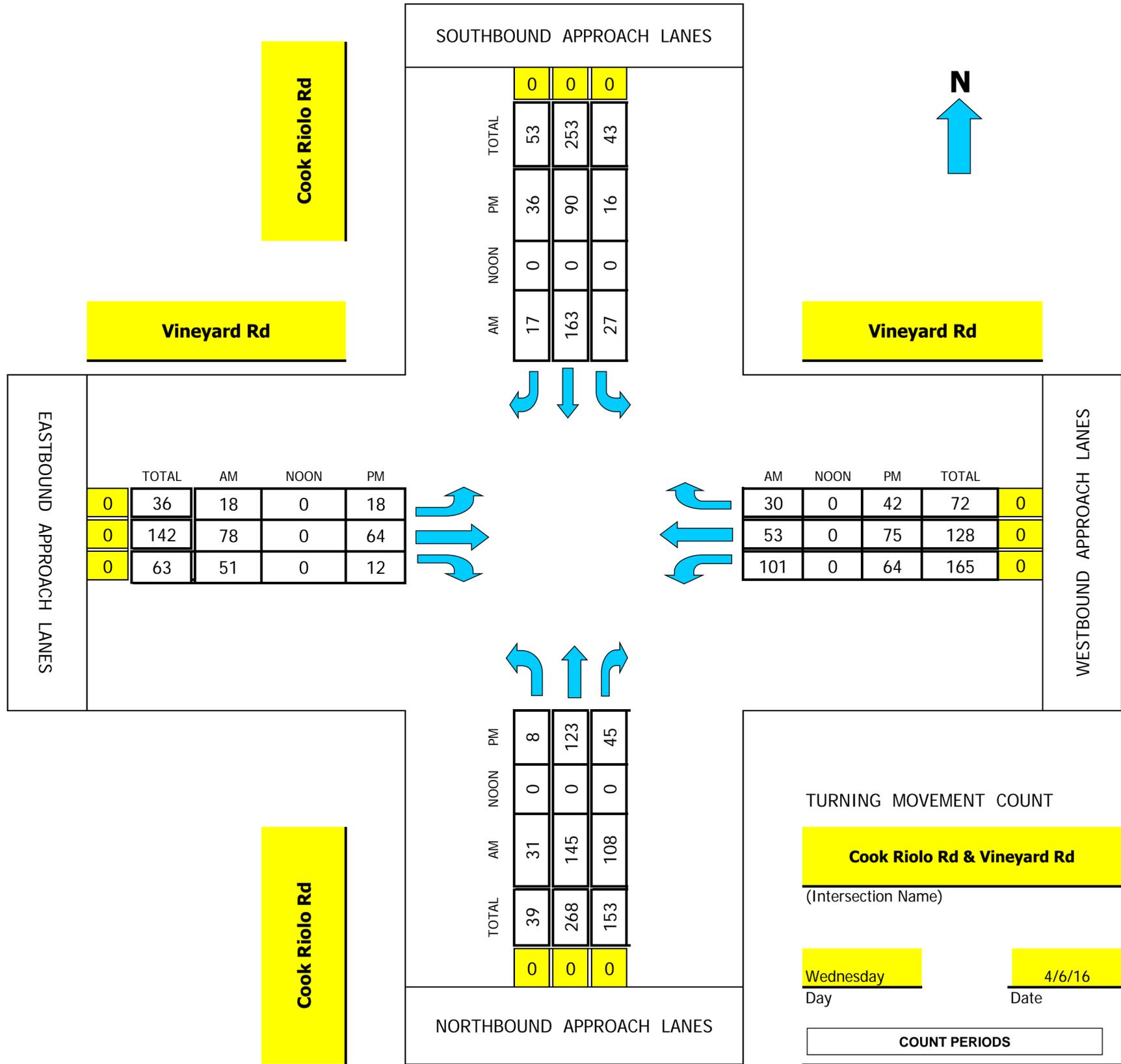
CONTROL:

Intersection Turning Movement

Prepared by:
KD Anderson Associates, Inc.

TMC Summary of Cook Riolo Rd/Vineyard Rd

Project #:



AM PEAK HOUR 715 AM

NOON PEAK HOUR 0 AM

PM PEAK HOUR 430 PM

Intersection Turning Movement

Prepared by:

N-S STREET: Cook Riolo Road

DATE: 4/7/16

LOCATION: Roseville

E-W STREET: PFE Road

DAY: THURSDAY

PROJECT#

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	2	4	35	3	11	6	79	3	6	24	15	188
7:15 AM	1	1	2	28	3	8	12	74	1	3	33	17	183
7:30 AM	1	0	2	26	4	12	34	83	0	1	31	31	225
7:45 AM	0	0	0	53	2	20	42	73	0	2	38	64	294
8:00 AM	0	1	2	63	2	40	26	63	2	3	29	56	287
8:15 AM	0	1	2	20	4	14	8	61	1	1	32	6	150
8:30 AM	0	1	1	20	3	3	6	44	0	2	18	10	108
8:45 AM	0	1	0	11	3	6	9	49	0	2	22	13	116
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	2	7	13	256	24	114	143	526	7	20	227	212	1551

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	2	2	6	170	11	80	114	293	3	9	131	168	989
PEAK HR. FACTOR:		0.625		0.621			0.876			0.740		0.841	

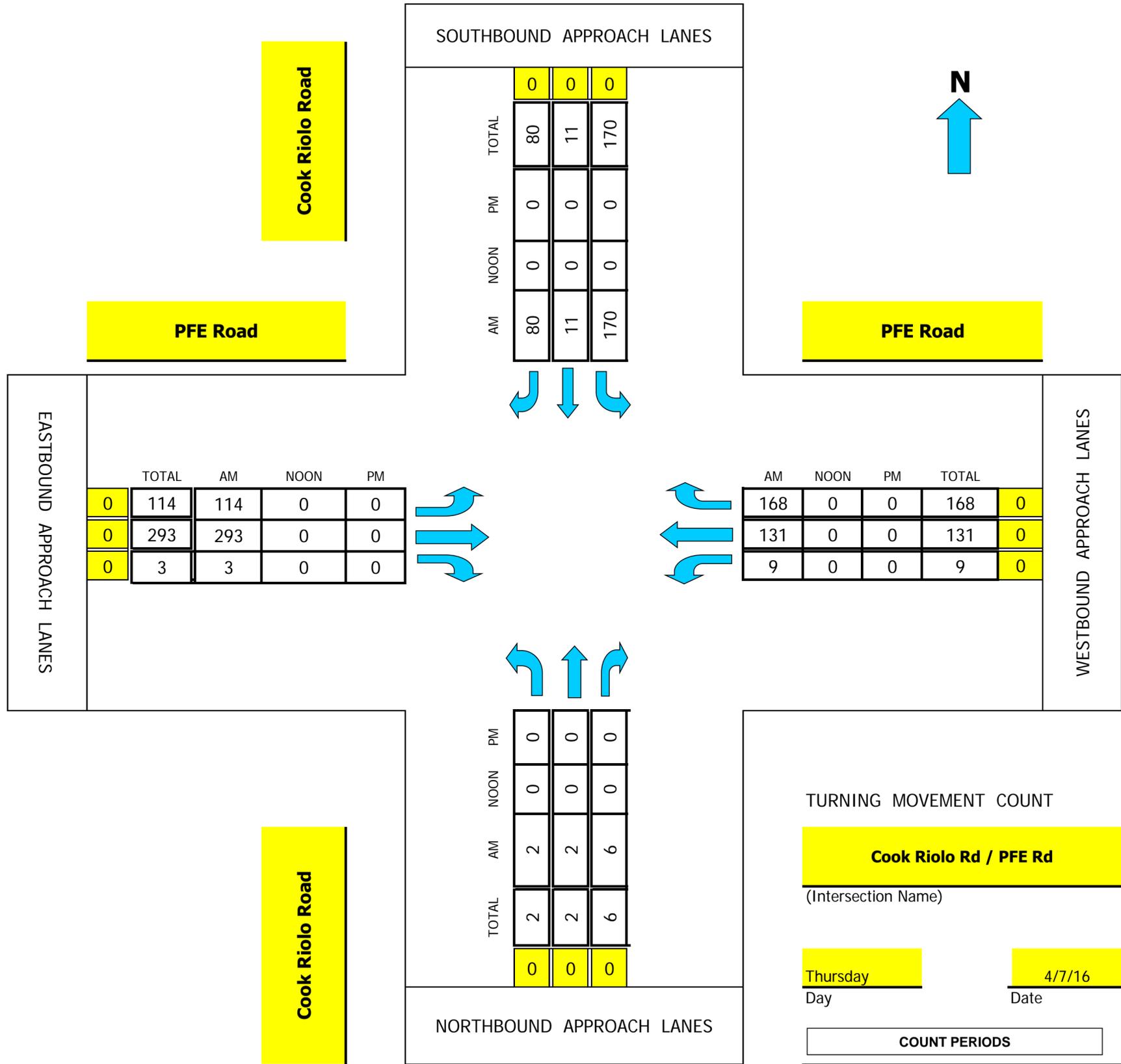
CONTROL: 4-WAY STOP

Intersection Turning Movement

Prepared by:
KD Anderson Associates, Inc.

TMC Summary of Cook Riolo Road/PFE Road

Project #:



AM PEAK HOUR	<u>715 AM</u>
NOON PEAK HOUR	<u>0 AM</u>
PM PEAK HOUR	<u>0 AM</u>

National Data and Surveying Services

5765-17

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

(323) 782-0090
info@ndsdata.com

File Name : 17-7118-002 Cook Riolo Rd & PFE Rd
 Date : 3/1/2017

Unshifted Count = All Vehicles & Uturns

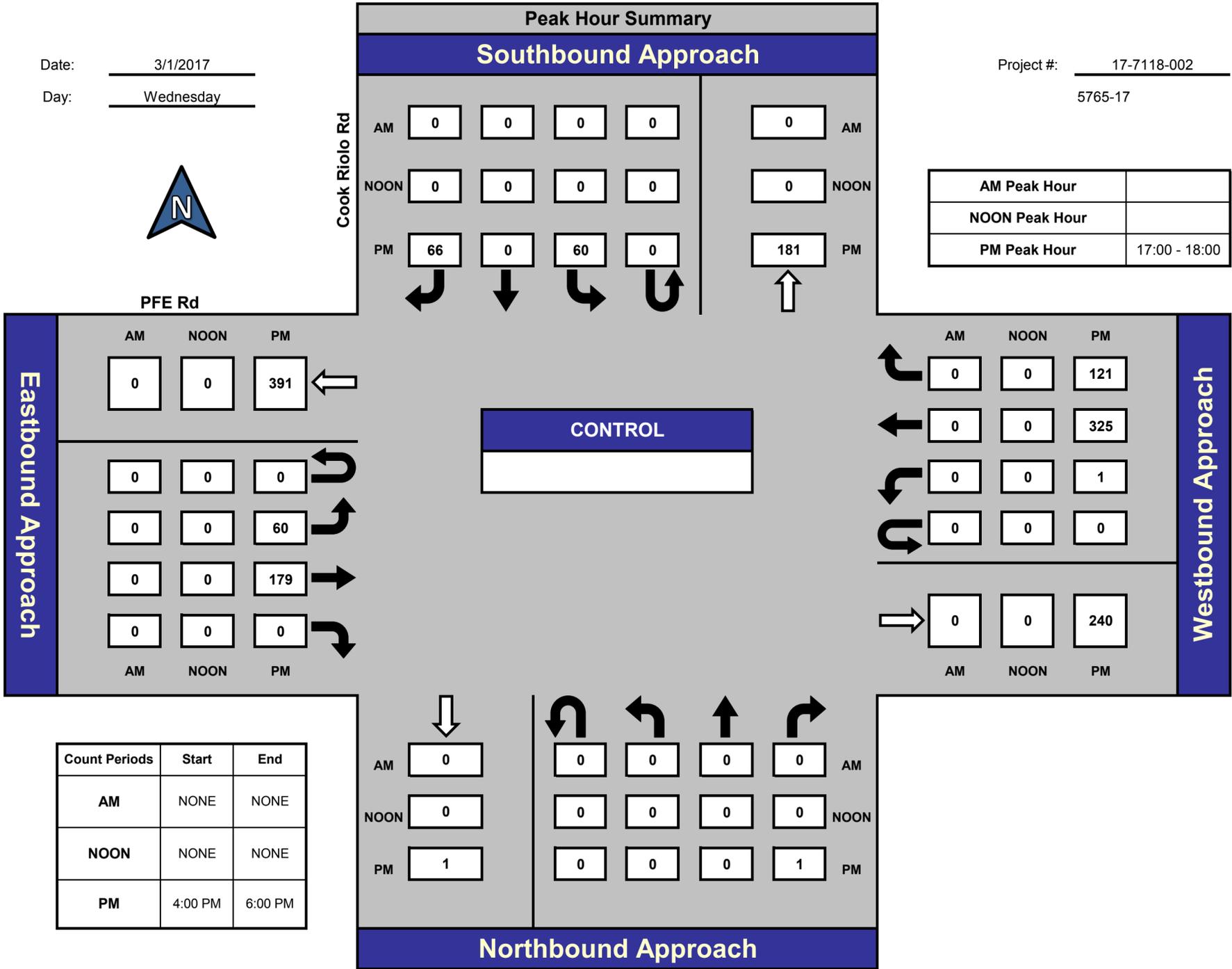
START TIME	Cook Riolo Rd Southbound					PFE Rd Westbound					Cook Riolo Rd Northbound					PFE Rd Eastbound					Total	Uturns Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL		
16:00	11	0	15	0	26	1	60	29	0	90	0	8	6	0	14	14	41	0	0	55	185	0
16:15	22	0	18	0	40	0	72	30	0	102	2	1	1	0	4	20	35	0	0	55	201	0
16:30	18	0	11	0	29	1	79	25	0	105	0	0	2	0	2	11	31	0	0	42	178	0
16:45	20	1	17	0	38	0	55	20	0	75	2	0	0	0	2	13	38	1	0	52	167	0
Total	71	1	61	0	133	2	266	104	0	372	4	9	9	0	22	58	145	1	0	204	731	0
17:00	15	0	19	0	34	0	96	34	0	130	0	0	0	0	0	10	35	0	0	45	209	0
17:15	11	0	13	0	24	1	83	29	0	113	0	0	1	0	1	16	46	0	0	62	200	0
17:30	23	0	13	0	36	0	72	30	0	102	0	0	0	0	0	19	49	0	0	68	206	0
17:45	11	0	21	0	32	0	74	28	0	102	0	0	0	0	0	15	49	0	0	64	198	0
Total	60	0	66	0	126	1	325	121	0	447	0	0	1	0	1	60	179	0	0	239	813	0
Grand Total	131	1	127	0	259	3	591	225	0	819	4	9	10	0	23	118	324	1	0	443	1544	0
Apprch %	50.6%	0.4%	49.0%	0.0%		0.4%	72.2%	27.5%	0.0%		17.4%	39.1%	43.5%	0.0%		26.6%	73.1%	0.2%	0.0%			
Total %	8.5%	0.1%	8.2%	0.0%	16.8%	0.2%	38.3%	14.6%	0.0%	53.0%	0.3%	0.6%	0.6%	0.0%	1.5%	7.6%	21.0%	0.1%	0.0%	28.7%	100.0%	

PM PEAK HOUR	Cook Riolo Rd Southbound					PFE Rd Westbound					Cook Riolo Rd Northbound					PFE Rd Eastbound					Total
	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	15	0	19	0	34	0	96	34	0	130	0	0	0	0	0	10	35	0	0	45	209
17:15	11	0	13	0	24	1	83	29	0	113	0	0	1	0	1	16	46	0	0	62	200
17:30	23	0	13	0	36	0	72	30	0	102	0	0	0	0	0	19	49	0	0	68	206
17:45	11	0	21	0	32	0	74	28	0	102	0	0	0	0	0	15	49	0	0	64	198
Total Volume	60	0	66	0	126	1	325	121	0	447	0	0	1	0	1	60	179	0	0	239	813
% App Total	47.6%	0.0%	52.4%	0.0%		0.2%	72.7%	27.1%	0.0%		0.0%	0.0%	100.0%	0.0%		25.1%	74.9%	0.0%	0.0%		
PHF	.652	.000	.786	.000	.875	.250	.846	.890	.000	.860	.000	.000	.250	.000	.250	.789	.913	.000	.000	.879	.972

Cook Riolo Rd & PFE Rd

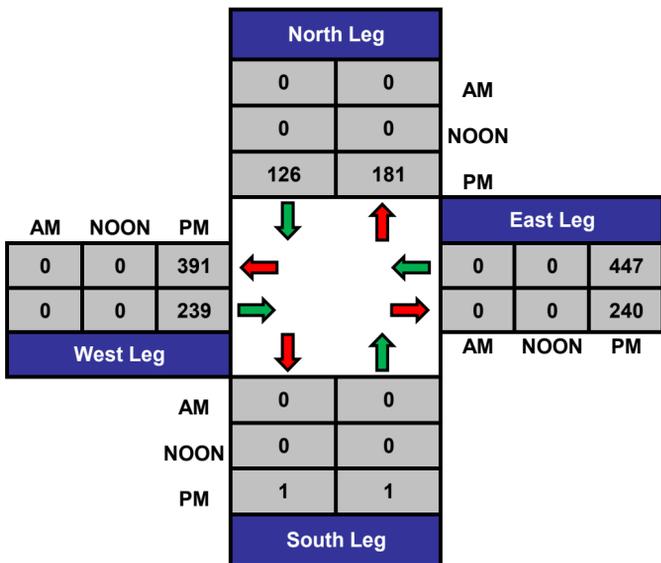
Date: 3/1/2017
Day: Wednesday

Project #: 17-7118-002
5765-17

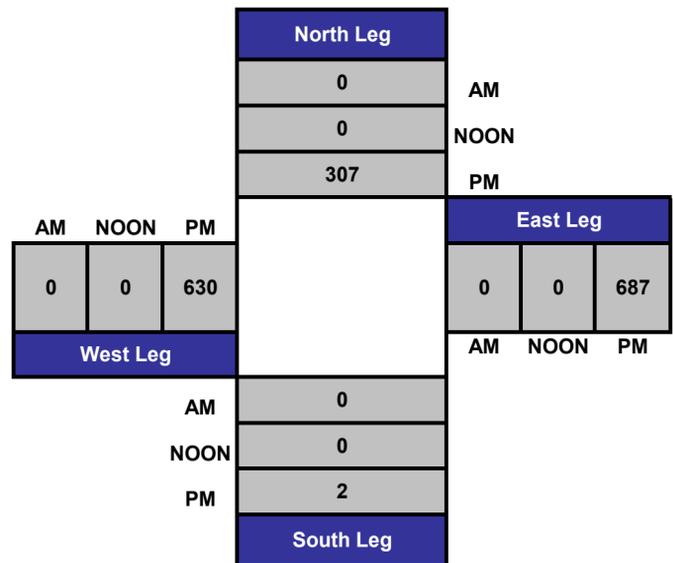


Count Periods	Start	End
AM	NONE	NONE
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

N-S STREET: Cook Riolo Road

DATE: 4/20/16

LOCATION: Roseville

E-W STREET: Creekview Ranch MS

DAY: WEDNESDAY

PROJECT#

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM		25	10	10	28					9		5	87
7:15 AM		32	10	25	35					8		4	114
7:30 AM		30	33	38	28					17		18	164
7:45 AM		31	91	76	27					55		68	348
8:00 AM		24	88	70	28					99		88	397
8:15 AM		26	14	9	24					17		14	104
8:30 AM		17	1	4	22					5		5	54
8:45 AM		25	3	2	24					1		1	56
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	210	250	234	216	0	0	0	0	211	0	203	1324

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	0	117	222	209	118	0	0	0	0	179	0	178	1023
PEAK HR. FACTOR:		0.695		0.794			0.000			0.477		0.644	

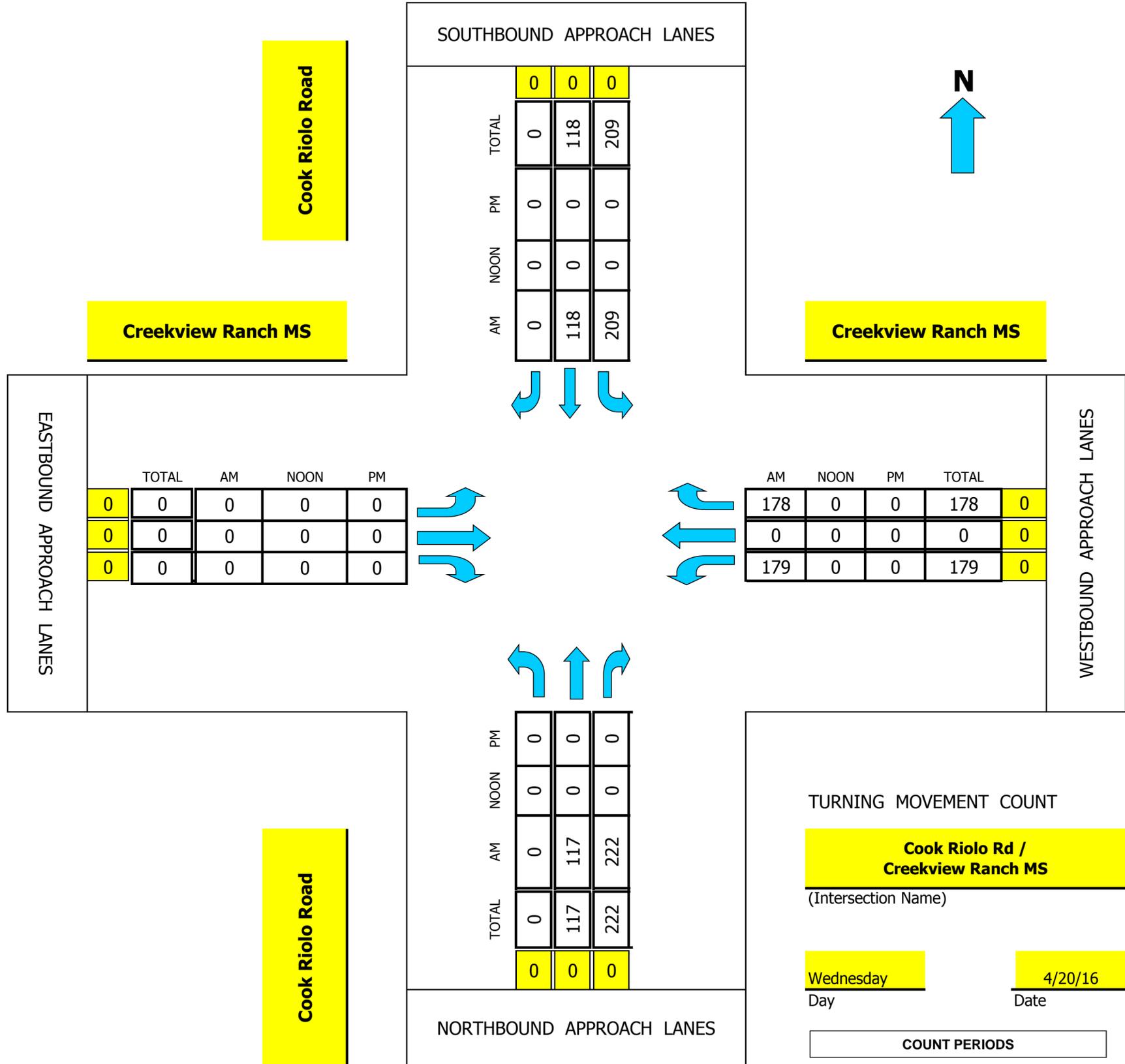
CONTROL:

Intersection Turning Movement

Prepared by:
KD Anderson Associates, Inc.

TMC Summary of Cook Riolo Road/Creekview Ranch MS

Project #:



AM PEAK HOUR	<u>715 AM</u>
NOON PEAK HOUR	<u>0 AM</u>
PM PEAK HOUR	<u>0 AM</u>

National Data and Surveying Services

5765-17

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

(323) 782-0090

info@ndsdata.com

File Name : 17-7118-003 Antelope Rd & PFE Rd
 Date : 3/1/2017

Unshifted Count = All Vehicles & Uturns

START TIME	Antelope Rd Southbound					PFE Rd Westbound					Antelope Rd Northbound					PFE Rd Eastbound					Total	Uturns Total
	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	31	25	0	0	56	21	0	36	0	57	0	48	53	0	101	214	0
7:15	0	0	0	0	0	34	26	0	0	60	17	0	57	0	74	0	83	41	0	124	258	0
7:30	0	0	0	0	0	18	16	0	0	34	35	0	72	0	107	0	92	46	0	138	279	0
7:45	0	0	0	0	0	25	34	0	0	59	75	0	69	1	145	0	66	55	0	121	325	1
Total	0	0	0	0	0	108	101	0	0	209	148	0	234	1	383	0	289	195	0	484	1076	1
8:00	0	0	0	0	0	25	25	0	0	50	46	0	54	0	100	0	55	88	0	143	293	0
8:15	0	0	0	0	0	17	23	0	0	40	16	0	44	0	60	0	56	49	0	105	205	0
8:30	0	0	0	0	0	21	22	0	0	43	17	0	42	0	59	0	58	35	0	93	195	0
8:45	0	0	0	0	0	13	18	0	0	31	20	0	37	0	57	0	45	19	0	64	152	0
Total	0	0	0	0	0	76	88	0	0	164	99	0	177	0	276	0	214	191	0	405	845	0
16:00	0	0	0	0	0	55	50	0	0	105	38	0	33	0	71	0	35	26	0	61	237	0
16:15	0	0	0	0	0	53	70	0	0	123	40	0	38	0	78	0	32	26	0	58	259	0
16:30	0	0	0	0	0	67	65	0	0	132	33	0	41	0	74	0	23	27	0	50	256	0
16:45	0	0	0	0	0	60	54	0	0	114	31	0	37	0	68	0	35	22	0	57	239	0
Total	0	0	0	0	0	235	239	0	0	474	142	0	149	0	291	0	125	101	0	226	991	0
17:00	0	0	0	0	0	61	87	0	0	148	37	0	53	0	90	0	31	23	0	54	292	0
17:15	0	0	0	0	0	64	73	0	0	137	42	0	38	0	80	0	39	22	0	61	278	0
17:30	0	0	0	0	0	70	62	0	0	132	38	0	41	0	79	0	39	26	0	65	276	0
17:45	0	0	0	0	0	57	63	0	0	120	39	0	39	0	78	0	30	34	0	64	262	0
Total	0	0	0	0	0	252	285	0	0	537	156	0	171	0	327	0	139	105	0	244	1108	0
Grand Total	0	0	0	0	0	671	713	0	0	1384	545	0	731	1	1277	0	767	592	0	1359	4020	1
Apprch %	0.0%	0.0%	0.0%	0.0%		48.5%	51.5%	0.0%	0.0%		42.7%	0.0%	57.2%	0.1%		0.0%	56.4%	43.6%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	17.7%	0.0%	0.0%	34.4%	13.6%	0.0%	18.2%	0.0%	31.8%	0.0%	19.1%	14.7%	0.0%	33.8%	100.0%	

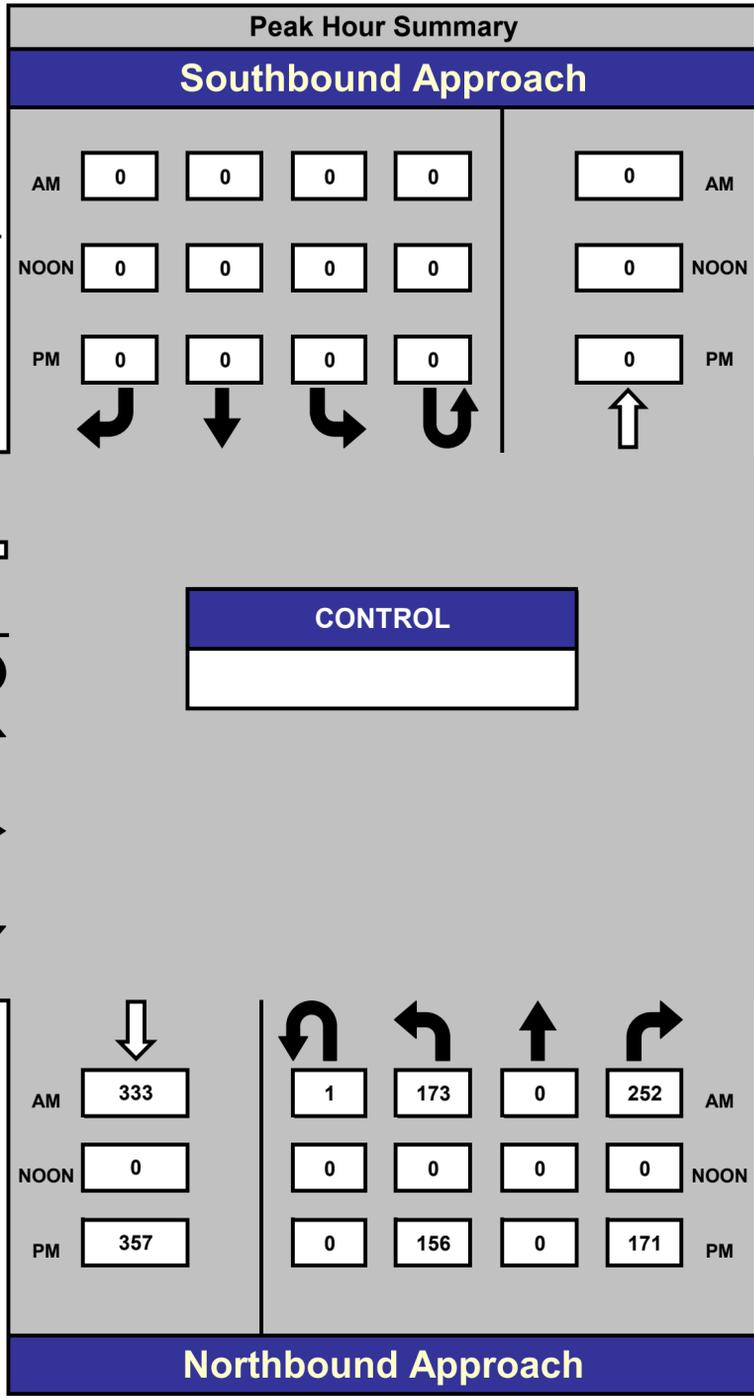
AM PEAK HOUR	Antelope Rd Southbound					PFE Rd Westbound					Antelope Rd Northbound					PFE Rd Eastbound					Total
	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	34	26	0	0	60	17	0	57	0	74	0	83	41	0	124	258
7:30	0	0	0	0	0	18	16	0	0	34	35	0	72	0	107	0	92	46	0	138	279
7:45	0	0	0	0	0	25	34	0	0	59	75	0	69	1	145	0	66	55	0	121	325
8:00	0	0	0	0	0	25	25	0	0	50	46	0	54	0	100	0	55	88	0	143	293
Total Volume	0	0	0	0	0	102	101	0	0	203	173	0	252	1	426	0	296	230	0	526	1155
% App Total	0.0%	0.0%	0.0%	0.0%		50.2%	49.8%	0.0%	0.0%		40.6%	0.0%	59.2%	0.2%		0.0%	56.3%	43.7%	0.0%		
PHF	.000	.000	.000	.000	.000	.750	.743	.000	.000	.846	.577	.000	.875	.250	.734	.000	.804	.653	.000	.920	.888

PM PEAK HOUR	Antelope Rd Southbound					PFE Rd Westbound					Antelope Rd Northbound					PFE Rd Eastbound					Total
	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	0	0	0	0	0	61	87	0	0	148	37	0	53	0	90	0	31	23	0	54	292
17:15	0	0	0	0	0	64	73	0	0	137	42	0	38	0	80	0	39	22	0	61	278
17:30	0	0	0	0	0	70	62	0	0	132	38	0	41	0	79	0	39	26	0	65	276
17:45	0	0	0	0	0	57	63	0	0	120	39	0	39	0	78	0	30	34	0	64	262
Total Volume	0	0	0	0	0	252	285	0	0	537	156	0	171	0	327	0	139	105	0	244	1108
% App Total	0.0%	0.0%	0.0%	0.0%		46.9%	53.1%	0.0%	0.0%		47.7%	0.0%	52.3%	0.0%		0.0%	57.0%	43.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.900	.819	.000	.000	.907	.929	.000	.807	.000	.908	.000	.891	.772	.000	.938	.949

Antelope Rd & PFE Rd

Date: 3/1/2017
Day: Wednesday

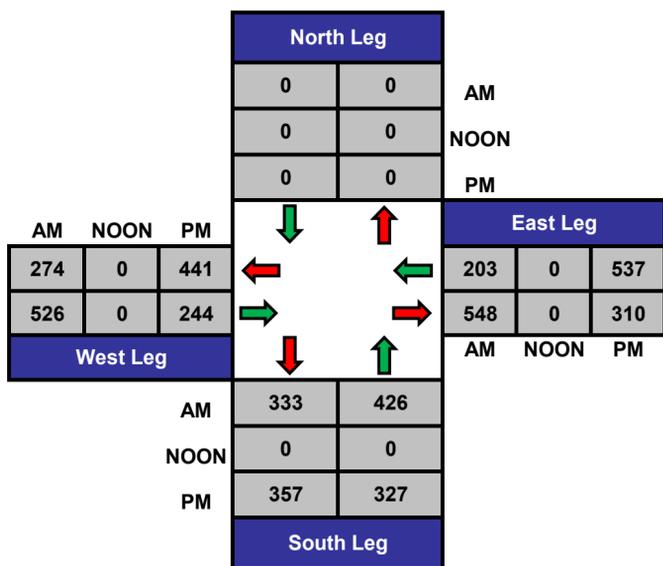
Project #: 17-7118-003
5765-01



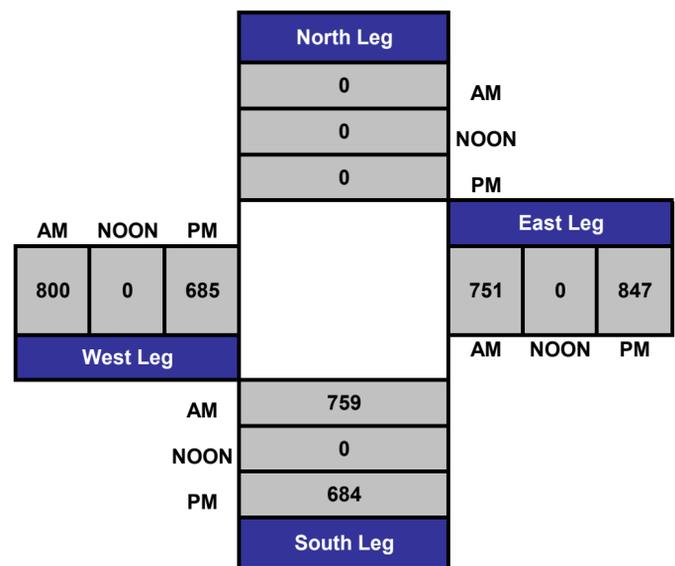
AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	17:00 - 18:00

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

Total Ins & Outs



Total Volume Per Leg



ALL TRAFFIC DATA

(916) 771-8700

orders@atdtraffic.com

File Name : 17-07602-001

Date : 08/23/2017

Unshifted Count = All Vehicles & Uturns

START TIME	Walerga Rd/Fiddymnt Rd Southbound					Baseline Rd Westbound					Walerga Rd/Fiddymnt Rd Northbound					Baseline Rd Eastbound					Total	Uturns Total
	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	101	165	228	0	494	44	91	30	0	165	4	132	36	0	172	81	36	2	0	119	950	0
7:15	65	160	236	0	461	52	106	38	0	196	6	138	51	0	195	95	40	3	0	138	990	0
7:30	68	138	195	0	401	57	113	43	0	213	2	146	49	0	197	99	56	3	0	158	969	0
7:45	61	123	217	0	401	45	90	42	0	177	7	218	28	0	253	119	64	3	0	186	1017	0
Total	295	586	876	0	1757	198	400	153	0	751	19	634	164	0	817	394	196	11	0	601	3926	0
8:00	58	117	179	0	354	30	73	70	0	173	4	178	32	0	214	84	39	2	0	125	866	0
8:15	101	146	179	0	426	39	76	52	0	167	10	166	47	0	223	107	59	3	0	169	985	0
8:30	56	108	131	0	295	41	60	34	0	135	5	139	34	0	178	93	54	3	0	150	758	0
8:45	85	137	139	0	361	31	51	27	0	109	3	143	23	0	169	75	31	2	0	108	747	0
Total	300	508	628	0	1436	141	260	183	0	584	22	626	136	0	784	359	183	10	0	552	3356	0
16:00	55	163	147	0	365	48	49	64	0	161	6	134	36	0	176	156	87	4	0	247	949	0
16:15	62	139	115	0	316	42	64	63	0	169	1	152	42	0	195	145	101	1	0	247	927	0
16:30	49	150	109	0	308	49	53	68	0	170	1	139	55	0	195	186	103	5	0	294	967	0
16:45	45	167	134	0	346	42	63	57	0	162	3	163	56	0	222	185	115	4	0	304	1034	0
Total	211	619	505	0	1335	181	229	252	0	662	11	588	189	0	788	672	406	14	0	1092	3877	0
17:00	56	148	119	0	323	53	45	68	0	166	3	157	39	0	199	162	99	6	0	267	955	0
17:15	48	170	124	0	342	50	51	86	0	187	0	182	54	0	236	181	98	2	0	281	1046	0
17:30	45	164	105	0	314	55	55	90	0	200	3	180	63	0	246	186	99	4	0	289	1049	0
17:45	60	163	101	0	324	47	65	70	0	182	2	144	54	0	200	196	106	5	0	307	1013	0
Total	209	645	449	0	1303	205	216	314	0	735	8	663	210	0	881	725	402	17	0	1144	4063	0
Grand Total	1015	2358	2458	0	5831	725	1105	902	0	2732	60	2511	699	0	3270	2150	1187	52	0	3389	15222	0
Apprch %	17.4%	40.4%	42.2%	0.0%		26.5%	40.4%	33.0%	0.0%		1.8%	76.8%	21.4%	0.0%		63.4%	35.0%	1.5%	0.0%			
Total %	6.7%	15.5%	16.1%	0.0%	38.3%	4.8%	7.3%	5.9%	0.0%	17.9%	0.4%	16.5%	4.6%	0.0%	21.5%	14.1%	7.8%	0.3%	0.0%	22.3%	100.0%	

AM PEAK HOUR	Walerga Rd/Fiddymnt Rd Southbound					Baseline Rd Westbound					Walerga Rd/Fiddymnt Rd Northbound					Baseline 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 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	101	165	228	0	494	44	91	30	0	165	4	132	36	0	172	81	36	2	0	119	950
7:15	65	160	236	0	461	52	106	38	0	196	6	138	51	0	195	95	40	3	0	138	990
7:30	68	138	195	0	401	57	113	43	0	213	2	146	49	0	197	99	56	3	0	158	969
7:45	61	123	217	0	401	45	90	42	0	177	7	218	28	0	253	119	64	3	0	186	1017
Total Volume	295	586	876	0	1757	198	400	153	0	751	19	634	164	0	817	394	196	11	0	601	3926
% App Total	16.8%	33.4%	49.9%	0.0%		26.4%	53.3%	20.4%	0.0%		2.3%	77.6%	20.1%	0.0%		65.6%	32.6%	1.8%	0.0%		
PHF	.730	.888	.928	.000	.889	.868	.885	.890	.000	.881	.679	.727	.804	.000	.807	.828	.766	.917	.000	.808	.965

PM PEAK HOUR	Walerga Rd/Fiddymnt Rd Southbound					Baseline Rd Westbound					Walerga Rd/Fiddymnt Rd Northbound					Baseline 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 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	45	167	134	0	346	42	63	57	0	162	3	163	56	0	222	185	115	4	0	304	1034
17:00	56	148	119	0	323	53	45	68	0	166	3	157	39	0	199	162	99	6	0	267	955
17:15	48	170	124	0	342	50	51	86	0	187	0	182	54	0	236	181	98	2	0	281	1046
17:30	45	164	105	0	314	55	55	90	0	200	3	180	63	0	246	186	99	4	0	289	1049
Total Volume	194	649	482	0	1325	200	214	301	0	715	9	682	212	0	903	714	411	16	0	1141	4084
% App Total	14.6%	49.0%	36.4%	0.0%		28.0%	29.9%	42.1%	0.0%		1.0%	75.5%	23.5%	0.0%		62.6%	36.0%	1.4%	0.0%		
PHF	.866	.954	.899	.000	.957	.909	.849	.836	.000	.894	.750	.937	.841	.000	.918	.960	.893	.667	.000	.938	.973

ALL TRAFFIC DATA

(916) 771-8700

orders@atdtraffic.com

File Name : 17-07602-001

Date : 08/23/2017

Bank 1 Count = Bikes & Peds

START TIME	Walerga Rd/Fiddymnt Rd Southbound					Baseline Rd Westbound					Walerga Rd/Fiddymnt Rd Northbound					Baseline Rd Eastbound					Total	Peds Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
7:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
7:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	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	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	0
17:00	1	1	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	1	0	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	4	0
Grand Total	1	1	0	0	2	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	8	0
Apprch %	50.0%	50.0%	0.0%			16.7%	0.0%	83.3%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
Total %	12.5%	12.5%	0.0%		25.0%	12.5%	0.0%	62.5%		75.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

AM PEAK HOUR	Walerga Rd/Fiddymnt Rd Southbound					Baseline Rd Westbound					Walerga Rd/Fiddymnt Rd Northbound					Baseline Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
% App Total	0.0%	0.0%	0.0%			50.0%	0.0%	50.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.250	.000	.250		.500	.000	.000	.000		.000	.000	.000	.000		.000	.500

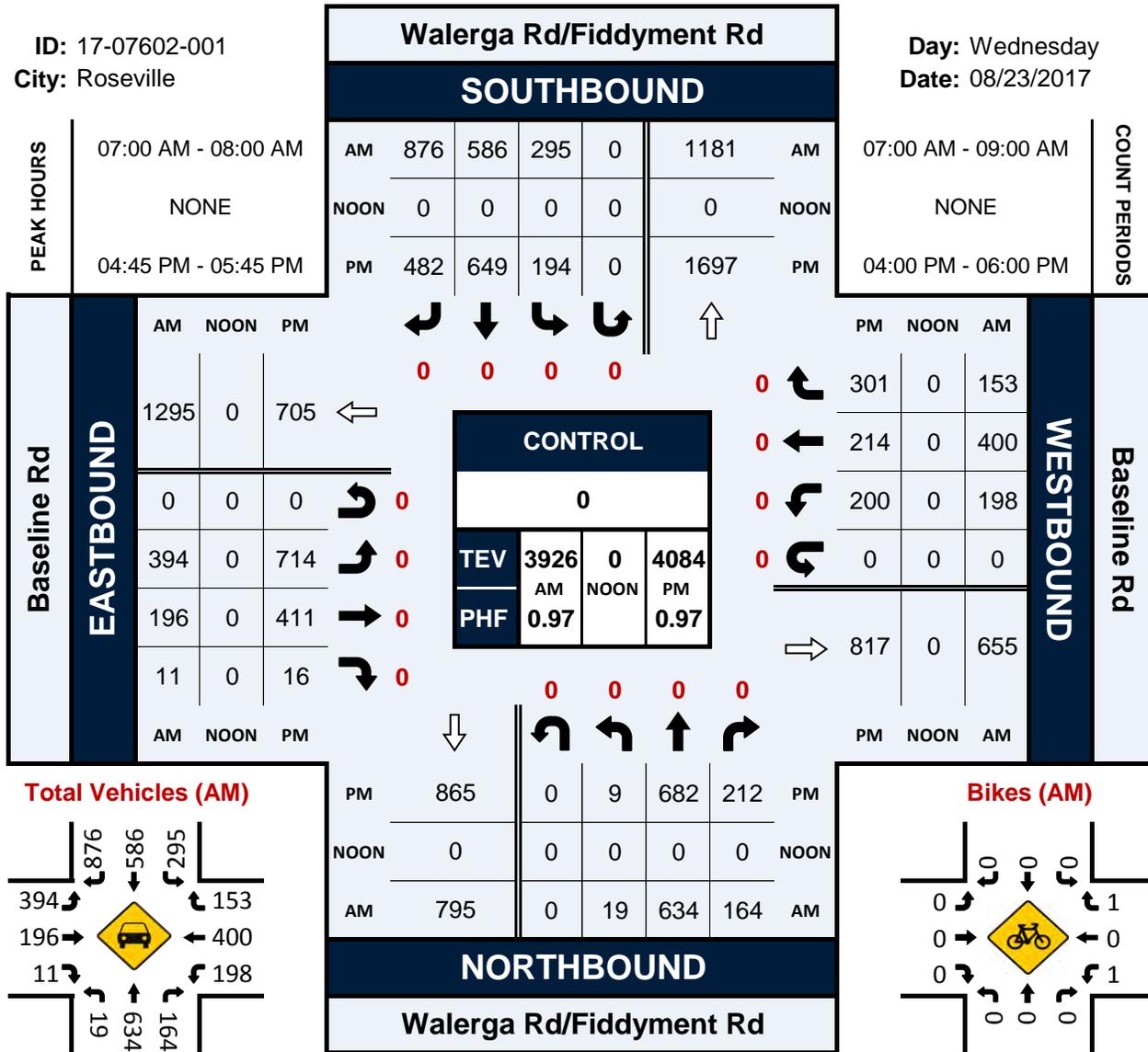
PM PEAK HOUR	Walerga Rd/Fiddymnt Rd Southbound					Baseline Rd Westbound					Walerga Rd/Fiddymnt Rd Northbound					Baseline Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	1	1	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	1	0	0	2	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	5
% App Total	50.0%	50.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.250	.000		.250	.000	.000	.750		.750	.000	.000	.000		.000	.000	.000	.000		.000	.417

Walerga Rd/Fiddymnt Rd & Baseline Rd

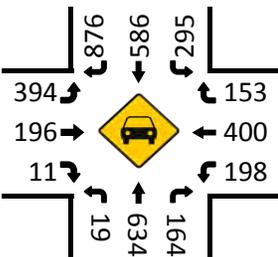
Peak Hour Turning Movement Count

ID: 17-07602-001
City: Roseville

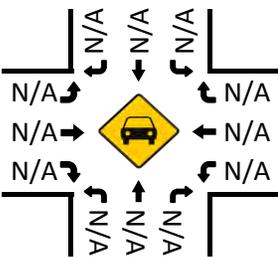
Day: Wednesday
Date: 08/23/2017



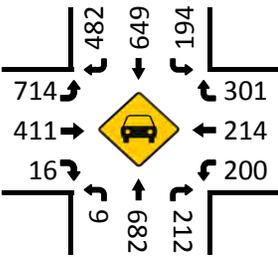
Total Vehicles (AM)



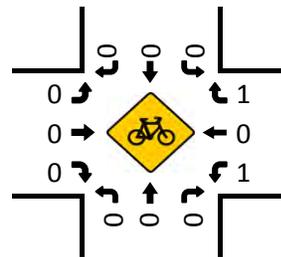
Total Vehicles (Noon)



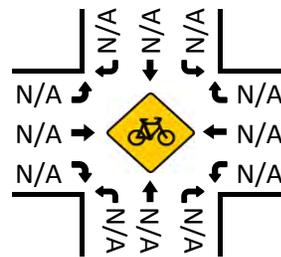
Total Vehicles (PM)



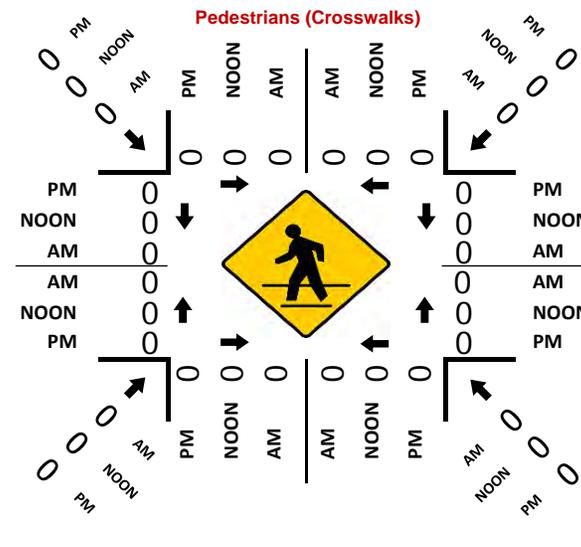
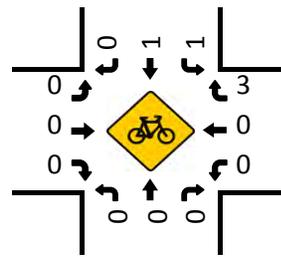
Bikes (AM)



Bikes (Noon)



Bikes (PM)



ALL TRAFFIC DATA

(916) 771-8700

orders@atdtraffic.com

File Name : 17-07602-002

Date : 08/23/2017

Unshifted Count = All Vehicles & Uturns

START TIME	Cook Riolo Rd/Woodcreek Oaks Blvd Southbound					Baseline Rd Westbound					Cook Riolo Rd/Woodcreek Oaks Blvd Northbound					Baseline Rd Eastbound					Total	Uturns Total
	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	44	17	14	0	75	8	84	26	0	118	7	19	8	0	34	10	159	5	0	174	401	0
7:15	56	36	11	0	103	13	115	43	0	171	5	28	6	0	39	21	149	1	0	171	484	0
7:30	63	36	31	0	130	16	115	31	0	162	9	21	21	0	51	11	149	11	0	171	514	0
7:45	59	38	12	0	109	17	117	20	0	154	4	24	12	0	40	12	125	6	0	143	446	0
Total	222	127	68	0	417	54	431	120	0	605	25	92	47	0	164	54	582	23	0	659	1845	0
8:00	39	17	14	0	70	9	102	10	0	121	14	36	20	0	70	11	144	11	0	166	427	0
8:15	43	13	8	0	64	7	98	24	0	129	5	19	6	0	30	9	163	4	0	176	399	0
8:30	62	18	10	0	90	5	75	23	0	103	4	17	8	0	29	16	138	8	0	162	384	0
8:45	55	23	3	0	81	7	69	39	0	115	4	20	9	0	33	11	138	6	0	155	384	0
Total	199	71	35	0	305	28	344	96	0	468	27	92	43	0	162	47	583	29	0	659	1594	0
16:00	28	16	12	0	56	5	140	46	0	191	7	18	6	0	31	15	129	4	0	148	426	0
16:15	37	19	19	0	75	10	136	51	0	197	8	26	19	0	53	14	137	5	0	156	481	0
16:30	41	13	9	0	63	14	135	54	0	203	6	17	15	0	38	16	132	6	0	154	458	0
16:45	28	10	18	0	56	9	150	57	0	216	7	24	16	0	47	21	170	4	0	195	514	0
Total	134	58	58	0	250	38	561	208	0	807	28	85	56	0	169	66	568	19	0	653	1879	0
17:00	41	16	12	0	69	8	149	44	0	201	5	36	8	0	49	18	144	2	0	164	483	0
17:15	53	15	22	0	90	11	161	64	0	236	7	26	9	0	42	10	161	5	0	176	544	0
17:30	42	19	11	0	72	7	168	58	0	233	7	22	10	0	39	19	125	4	0	148	492	0
17:45	40	21	13	0	74	10	169	57	0	236	10	20	5	0	35	19	138	3	0	160	505	0
Total	176	71	58	0	305	36	647	223	0	906	29	104	32	0	165	66	568	14	0	648	2024	0
Grand Total	731	327	219	0	1277	156	1983	647	0	2786	109	373	178	0	660	233	2301	85	0	2619	7342	0
Apprch %	57.2%	25.6%	17.1%	0.0%		5.6%	71.2%	23.2%	0.0%		16.5%	56.5%	27.0%	0.0%		8.9%	87.9%	3.2%	0.0%			
Total %	10.0%	4.5%	3.0%	0.0%	17.4%	2.1%	27.0%	8.8%	0.0%	37.9%	1.5%	5.1%	2.4%	0.0%	9.0%	3.2%	31.3%	1.2%	0.0%	35.7%	100.0%	

AM PEAK HOUR	Cook Riolo Rd/Woodcreek Oaks Blvd Southbound					Baseline Rd Westbound					Cook Riolo Rd/Woodcreek Oaks Blvd Northbound					Baseline 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	56	36	11	0	103	13	115	43	0	171	5	28	6	0	39	21	149	1	0	171	484
7:30	63	36	31	0	130	16	115	31	0	162	9	21	21	0	51	11	149	11	0	171	514
7:45	59	38	12	0	109	17	117	20	0	154	4	24	12	0	40	12	125	6	0	143	446
8:00	39	17	14	0	70	9	102	10	0	121	14	36	20	0	70	11	144	11	0	166	427
Total Volume	217	127	68	0	412	55	449	104	0	608	32	109	59	0	200	55	567	29	0	651	1871
% App Total	52.7%	30.8%	16.5%	0.0%		9.0%	73.8%	17.1%	0.0%		16.0%	54.5%	29.5%	0.0%		8.4%	87.1%	4.5%	0.0%		
PHF	.861	.836	.548	.000	.792	.809	.959	.605	.000	.889	.571	.757	.702	.000	.714	.655	.951	.659	.000	.952	.910

PM PEAK HOUR	Cook Riolo Rd/Woodcreek Oaks Blvd Southbound					Baseline Rd Westbound					Cook Riolo Rd/Woodcreek Oaks Blvd Northbound					Baseline 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 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	28	10	18	0	56	9	150	57	0	216	7	24	16	0	47	21	170	4	0	195	514
17:00	41	16	12	0	69	8	149	44	0	201	5	36	8	0	49	18	144	2	0	164	483
17:15	53	15	22	0	90	11	161	64	0	236	7	26	9	0	42	10	161	5	0	176	544
17:30	42	19	11	0	72	7	168	58	0	233	7	22	10	0	39	19	125	4	0	148	492
Total Volume	164	60	63	0	287	35	628	223	0	886	26	108	43	0	177	68	600	15	0	683	2033
% App Total	57.1%	20.9%	22.0%	0.0%		4.0%	70.9%	25.2%	0.0%		14.7%	61.0%	24.3%	0.0%		10.0%	87.8%	2.2%	0.0%		
PHF	.774	.789	.716	.000	.797	.795	.935	.871	.000	.939	.929	.750	.672	.000	.903	.810	.882	.750	.000	.876	.934

ALL TRAFFIC DATA

(916) 771-8700

orders@atdtraffic.com

File Name : 17-07602-002

Date : 08/23/2017

Bank 1 Count = Bikes & Peds

START TIME	Cook Riolo Rd/Woodcreek Oaks Blvd Southbound					Baseline Rd Westbound					Cook Riolo Rd/Woodcreek Oaks Blvd Northbound					Baseline Rd Eastbound					Total	Peds Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
7:00	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2	0
7:15	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	2	0	0	2	5	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
7:45	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	0	3	0	3	0	3	0	0	3	0	2	1	0	3	9	0
8:00	0	0	0	1	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	2	1
8:15	1	0	1	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	1	2	0	1	1	0	2	0	0	1	0	1	2	0	0	0	2	7	1
16:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	1	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	1
17:45	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	4	0
Total	0	0	1	1	1	1	3	0	0	4	0	1	0	0	1	0	0	0	1	0	6	2
Grand Total	2	0	2	3	4	1	5	4	0	10	0	4	1	0	5	2	2	1	1	5	24	4
Apprch %	50.0%	0.0%	50.0%			10.0%	50.0%	40.0%			0.0%	80.0%	20.0%			40.0%	40.0%	20.0%				
Total %	8.3%	0.0%	8.3%		16.7%	4.2%	20.8%	16.7%		41.7%	0.0%	16.7%	4.2%		20.8%	8.3%	8.3%	4.2%		20.8%	100.0%	

AM PEAK HOUR	Cook Riolo Rd/Woodcreek Oaks Blvd Southbound					Baseline Rd Westbound					Cook Riolo Rd/Woodcreek Oaks Blvd Northbound					Baseline Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	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	0	0	1	0	1	0	2	0	0	2	0	2	0	0	2	5
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
7:45	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
8:00	0	0	0	1	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	1	0	0	1	3	0	4	0	2	0	0	2	0	2	1	0	3	9
% App Total	0.0%	0.0%	0.0%			0.0%	25.0%	75.0%			0.0%	100.0%	0.0%			0.0%	66.7%	33.3%			
PHF	.000	.000	.000		.000	.000	.250	.750		.500	.000	.250	.000		.250	.000	.250	.250		.375	.450

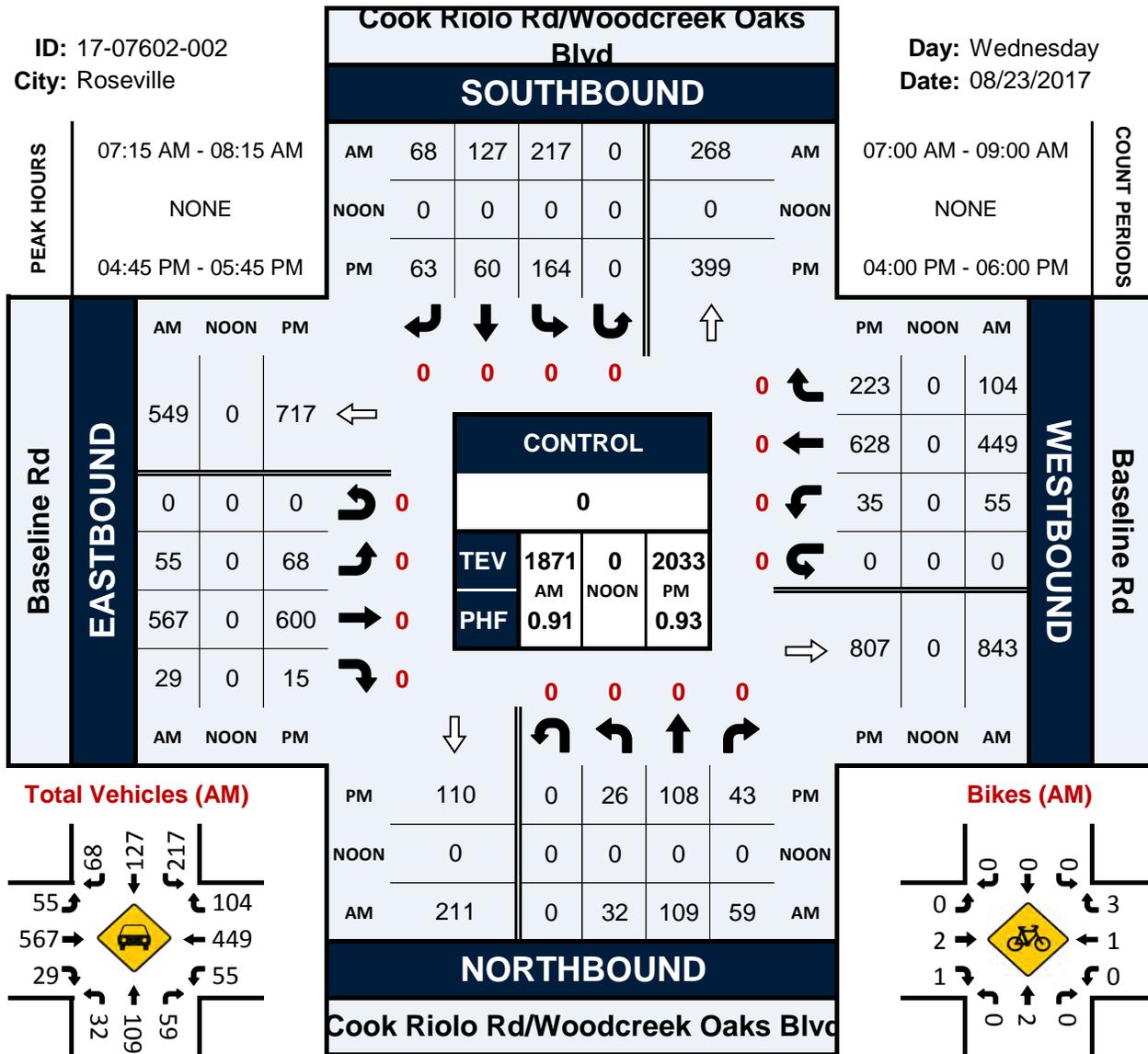
PM PEAK HOUR	Cook Riolo Rd/Woodcreek Oaks Blvd Southbound					Baseline Rd Westbound					Cook Riolo Rd/Woodcreek Oaks Blvd Northbound					Baseline Rd Eastbound					Total
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
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	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	1	1	1	1	1	0	0	2	0	0	0	0	0	0	0	0	1	0	3
% App Total	0.0%	0.0%	100.0%			50.0%	50.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.250		.250	.250	.250	.000		.500	.000	.000	.000		.000	.000	.000	.000		.000	.375

Cook Riolo Rd/Woodcreek Oaks Blvd & Baseline Rd

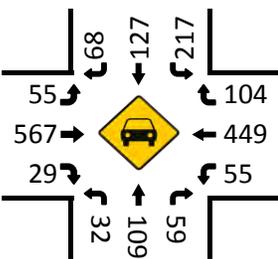
Peak Hour Turning Movement Count

ID: 17-07602-002
City: Roseville

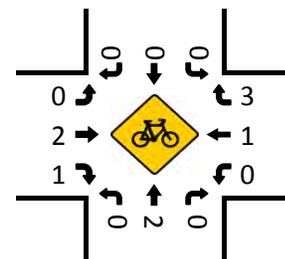
Day: Wednesday
Date: 08/23/2017



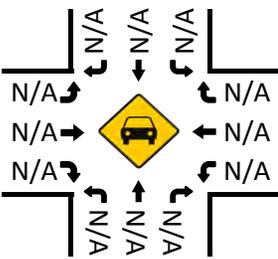
Total Vehicles (AM)



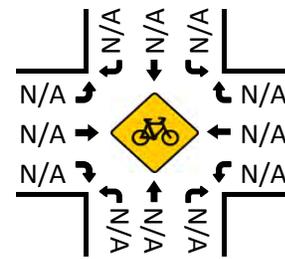
Bikes (AM)



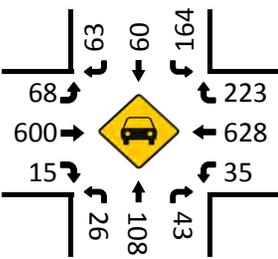
Total Vehicles (Noon)



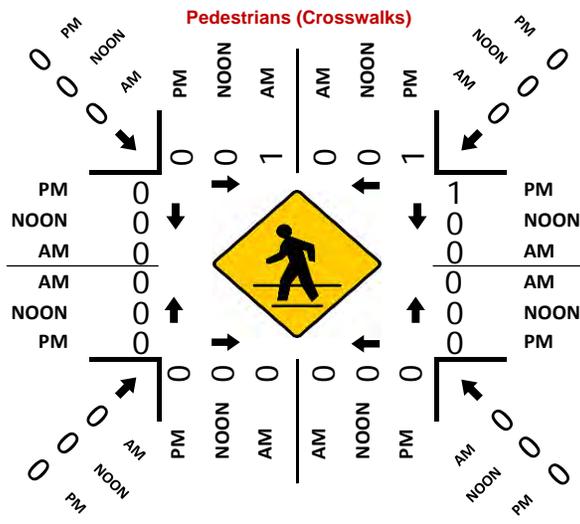
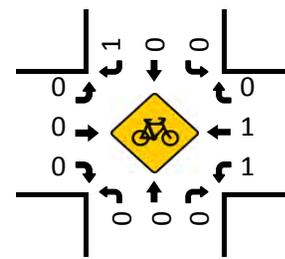
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



VOLUME

PFE Rd Bet. Watt Ave & Walerga Rd

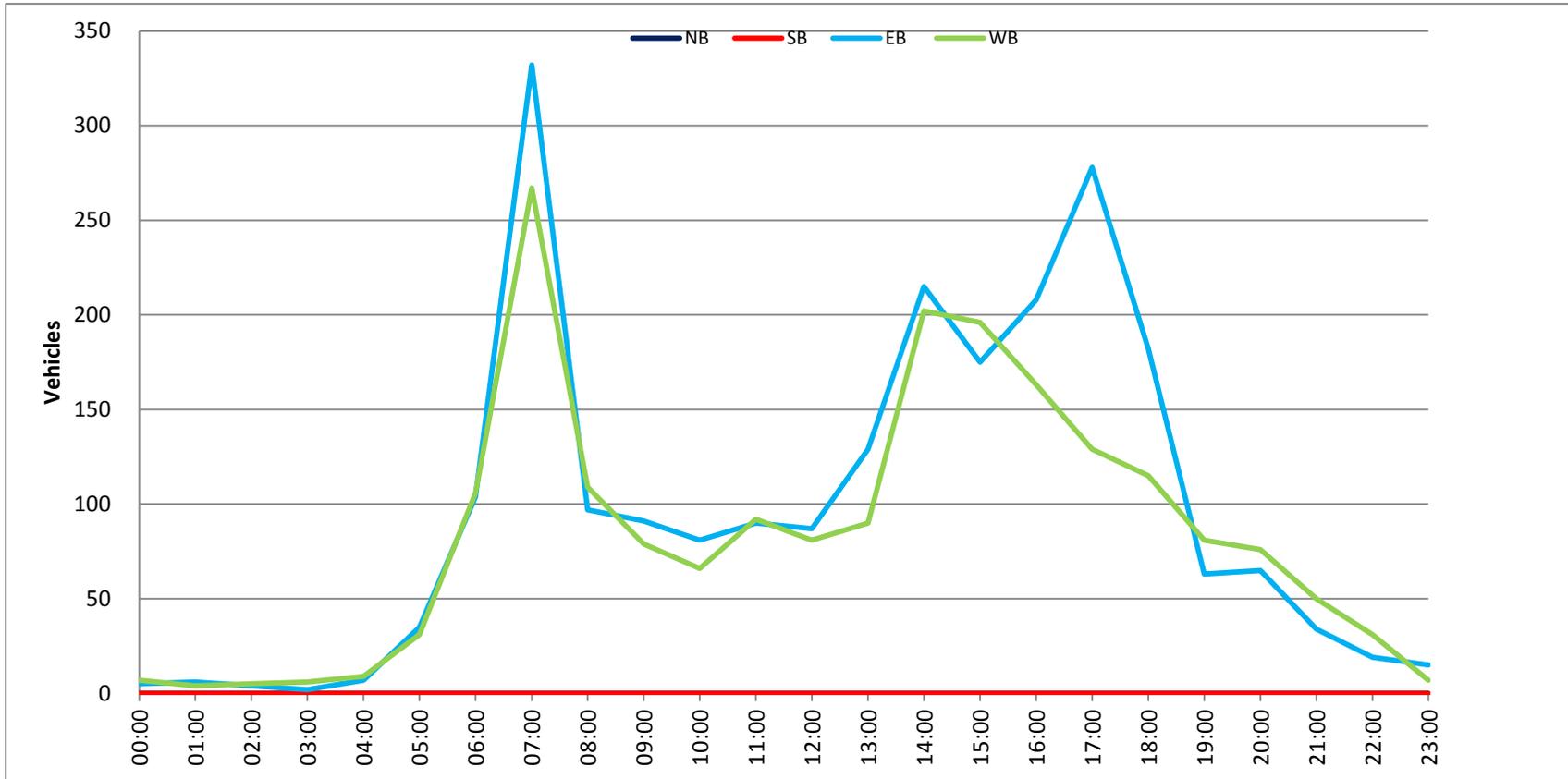
Day: Wednesday
Date: 3/1/2017

City: Roseville
Project #: CA17_7119_001 5765-17

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	2,324	2,002	4,326					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			1	1	2	12:00			28	22	50			
00:15			2	1	3	12:15			20	18	38			
00:30			2	3	5	12:30			15	17	32			
00:45			0	5	2	12:45			24	87	24	81	48	168
01:00			2	1	3	13:00			37	22	59			
01:15			2	1	3	13:15			30	22	52			
01:30			1	1	2	13:30			25	17	42			
01:45			1	6	1	13:45			37	129	29	90	66	219
02:00			1	1	2	14:00			50	28	78			
02:15			1	1	2	14:15			62	82	144			
02:30			1	3	4	14:30			48	54	102			
02:45			1	4	0	14:45			55	215	38	202	93	417
03:00			0	1	1	15:00			39	51	90			
03:15			0	1	1	15:15			46	46	92			
03:30			1	3	4	15:30			40	45	85			
03:45			1	2	1	15:45			50	175	54	196	104	371
04:00			1	2	3	16:00			39	34	73			
04:15			1	1	2	16:15			54	55	109			
04:30			3	4	7	16:30			61	38	99			
04:45			2	7	2	16:45			54	208	36	163	90	371
05:00			7	2	9	17:00			64	37	101			
05:15			6	4	10	17:15			71	31	102			
05:30			10	9	19	17:30			70	28	98			
05:45			12	35	16	17:45			73	278	33	129	106	407
06:00			19	14	33	18:00			58	34	92			
06:15			18	18	36	18:15			51	28	79			
06:30			30	37	67	18:30			32	30	62			
06:45			37	104	37	18:45			41	182	23	115	64	297
07:00			44	48	92	19:00			11	26	37			
07:15			86	74	160	19:15			26	18	44			
07:30			115	82	197	19:30			13	16	29			
07:45			87	332	63	19:45			13	63	21	81	34	144
08:00			25	28	53	20:00			23	16	39			
08:15			23	33	56	20:15			15	16	31			
08:30			24	30	54	20:30			12	31	43			
08:45			25	97	18	20:45			15	65	13	76	28	141
09:00			25	16	41	21:00			11	13	24			
09:15			24	18	42	21:15			13	14	27			
09:30			29	23	52	21:30			8	12	20			
09:45			13	91	22	21:45			2	34	11	50	13	84
10:00			16	14	30	22:00			3	12	15			
10:15			31	13	44	22:15			7	9	16			
10:30			14	18	32	22:30			7	6	13			
10:45			20	81	21	22:45			2	19	4	31	6	50
11:00			24	20	44	23:00			5	2	7			
11:15			20	28	48	23:15			2	3	5			
11:30			21	19	40	23:30			4	1	5			
11:45			25	90	25	23:45			4	15	1	7	5	22
TOTALS			854	781	1635	TOTALS			1470	1221	2691			
SPLIT %			52.2%	47.8%	37.8%	SPLIT %			54.6%	45.4%	62.2%			

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	2,324	2,002	4,326

AM Peak Hour	07:00	07:00	07:00	PM Peak Hour	17:00	14:15	14:15				
AM Pk Volume	332	267	599	PM Pk Volume	278	225	429				
Pk Hr Factor	0.722	0.814	0.760	Pk Hr Factor	0.952	0.686	0.745				
7 - 9 Volume	0	0	429	376	805	4 - 6 Volume	0	0	486	292	778
7 - 9 Peak Hour	07:00	07:00	07:00	4 - 6 Peak Hour	17:00	16:15	17:00				
7 - 9 Pk Volume	0	0	332	267	599	4 - 6 Pk Volume	0	0	278	166	407
Pk Hr Factor	0.000	0.000	0.722	0.814	0.760	Pk Hr Factor	0.000	0.000	0.952	0.755	0.960



VOLUME

PFE Rd Bet. Walerga Rd & Oly Ln

Day: Wednesday
Date: 3/1/2017

City: Roseville
Project #: CA17_7119_002 5765-17

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	2,780	2,763	5,543					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			6	5	11	12:00			32	29	61			
00:15			2	3	5	12:15			28	37	65			
00:30			3	3	6	12:30			36	31	67			
00:45			3	14	2	13	12:45		39	135	35	132	74	267
01:00			1	2	3	13:00			42	35	77			
01:15			2	1	3	13:15			42	36	78			
01:30			2	0	2	13:30			42	30	72			
01:45			1	6	1	4	13:45		57	183	33	134	90	317
02:00			1	0	1	14:00			45	26	71			
02:15			2	2	4	14:15			47	59	106			
02:30			1	2	3	14:30			48	77	125			
02:45			0	4	1	5	14:45		61	201	59	221	120	422
03:00			0	1	1	15:00			60	78	138			
03:15			0	1	1	15:15			58	60	118			
03:30			3	3	6	15:30			45	69	114			
03:45			1	4	1	6	15:45		51	214	68	275	119	489
04:00			4	1	5	16:00			38	67	105			
04:15			4	1	5	16:15			48	77	125			
04:30			9	3	12	16:30			48	68	116			
04:45			6	23	8	13	16:45		47	181	64	276	111	457
05:00			3	5	8	17:00			42	86	128			
05:15			11	3	14	17:15			54	87	141			
05:30			18	5	23	17:30			54	69	123			
05:45			25	57	11	24	17:45		47	197	60	302	107	499
06:00			22	17	39	18:00			46	73	119			
06:15			25	17	42	18:15			38	48	86			
06:30			57	26	83	18:30			40	56	96			
06:45			59	163	21	81	18:45		35	159	47	224	82	383
07:00			66	48	114	19:00			23	26	49			
07:15			82	33	115	19:15			21	29	50			
07:30			97	39	136	19:30			15	37	52			
07:45			94	339	39	159	19:45		17	76	26	118	43	194
08:00			66	63	129	20:00			20	28	48			
08:15			50	47	97	20:15			19	27	46			
08:30			56	34	90	20:30			19	30	49			
08:45			44	216	31	175	20:45		19	77	19	104	38	181
09:00			48	21	69	21:00			12	25	37			
09:15			44	25	69	21:15			15	19	34			
09:30			40	38	78	21:30			11	18	29			
09:45			34	166	39	123	21:45		3	41	9	71	12	112
10:00			30	18	48	22:00			7	7	14			
10:15			36	34	70	22:15			6	11	17			
10:30			36	28	64	22:30			9	11	20			
10:45			35	137	28	108	22:45		11	33	9	38	20	71
11:00			32	29	61	23:00			5	8	13			
11:15			32	32	64	23:15			4	9	13			
11:30			32	37	69	23:30			5	2	7			
11:45			42	138	38	136	23:45		2	16	2	21	4	37
TOTALS				1267	847	2114	TOTALS			1513	1916	3429		
SPLIT %				59.9%	40.1%	38.1%	SPLIT %			44.1%	55.9%	61.9%		

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	2,780	2,763	5,543

AM Peak Hour			07:00	07:30	07:15	PM Peak Hour			14:30	16:45	16:45
AM Pk Volume			339	188	513	PM Pk Volume			227	306	503
Pk Hr Factor			0.874	0.746	0.943	Pk Hr Factor			0.930	0.879	0.892
7 - 9 Volume	0	0	555	334	889	4 - 6 Volume	0	0	378	578	956
7 - 9 Peak Hour			07:00	07:30	07:15	4 - 6 Peak Hour			16:45	16:45	16:45
7 - 9 Pk Volume	0	0	339	188	513	4 - 6 Pk Volume	0	0	197	306	503
Pk Hr Factor	0.000	0.000	0.874	0.746	0.943	Pk Hr Factor	0.000	0.000	0.912	0.879	0.892



VOLUME

PFE Rd Bet. Cook Riolo Rd & Antelope Rd

Day: Wednesday
Date: 3/1/2017

City: Roseville
Project #: CA17_7119_003 5765-17

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	3,657	3,572	7,229					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			7	7	14	12:00			39	39	78			
00:15			2	3	5	12:15			35	41	76			
00:30			1	5	6	12:30			35	54	89			
00:45			5	15	1	16	12:45		55	164	43	177	98	341
01:00			1	1	2	13:00			45	48	93			
01:15			1	1	2	13:15			72	35	107			
01:30			2	3	5	13:30			53	41	94			
01:45			1	5	2	7	13:45		51	221	65	189	116	410
02:00			1	1	2	14:00			57	49	106			
02:15			2	2	4	14:15			58	77	135			
02:30			1	1	2	14:30			86	80	166			
02:45			0	4	0	4	14:45		74	275	60	266	134	541
03:00			1	1	2	15:00			87	72	159			
03:15			0	2	2	15:15			65	78	143			
03:30			4	1	5	15:30			53	90	143			
03:45			1	6	3	7	15:45		56	261	90	330	146	591
04:00			5	1	6	16:00			56	83	139			
04:15			4	3	7	16:15			54	105	159			
04:30			12	1	13	16:30			50	100	150			
04:45			16	37	3	8	16:45		56	216	80	368	136	584
05:00			7	1	8	17:00			53	124	177			
05:15			14	1	15	17:15			60	116	176			
05:30			23	5	28	17:30			64	98	162			
05:45			37	81	8	15	17:45		58	235	98	436	156	671
06:00			35	12	47	18:00			52	92	144			
06:15			42	12	54	18:15			43	78	121			
06:30			79	27	106	18:30			47	60	107			
06:45			95	251	25	76	18:45		49	191	60	290	109	481
07:00			102	44	146	19:00			24	50	74			
07:15			124	42	166	19:15			19	43	62			
07:30			133	47	180	19:30			26	40	66			
07:45			110	469	104	237	19:45		19	88	36	169	55	257
08:00			135	72	207	20:00			24	49	73			
08:15			106	40	146	20:15			13	45	58			
08:30			90	38	128	20:30			21	30	51			
08:45			63	394	40	190	20:45		20	78	30	154	50	232
09:00			61	32	93	21:00			15	32	47			
09:15			58	21	79	21:15			8	31	39			
09:30			64	44	108	21:30			12	28	40			
09:45			56	239	38	135	21:45		6	41	17	108	23	149
10:00			46	34	80	22:00			5	11	16			
10:15			43	46	89	22:15			9	9	18			
10:30			48	36	84	22:30			9	16	25			
10:45			42	179	38	154	22:45		9	32	10	46	19	78
11:00			36	32	68	23:00			4	16	20			
11:15			37	36	73	23:15			5	10	15			
11:30			42	52	94	23:30			7	3	10			
11:45			42	157	38	158	23:45		2	18	3	32	5	50
TOTALS			1837	1007	2844	TOTALS			1820	2565	4385			
SPLIT %			64.6%	35.4%	39.3%	SPLIT %			41.5%	58.5%	60.7%			

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	3,657	3,572	7,229

AM Peak Hour	07:15	07:15	07:15	PM Peak Hour	14:30	17:00	17:00
AM Pk Volume	502	265	767	PM Pk Volume	312	436	671
Pk Hr Factor	0.930	0.637	0.896	Pk Hr Factor	0.897	0.879	0.948
7 - 9 Volume	0	0	863	4 - 6 Volume	0	0	1255
7 - 9 Peak Hour	07:15	07:15	07:15	4 - 6 Peak Hour	17:00	17:00	17:00
7 - 9 Pk Volume	0	0	502	4 - 6 Pk Volume	0	0	671
Pk Hr Factor	0.000	0.000	0.930	Pk Hr Factor	0.000	0.000	0.948



VOLUME

PFE Rd Bet. Antelope Rd & Hilltop Cir

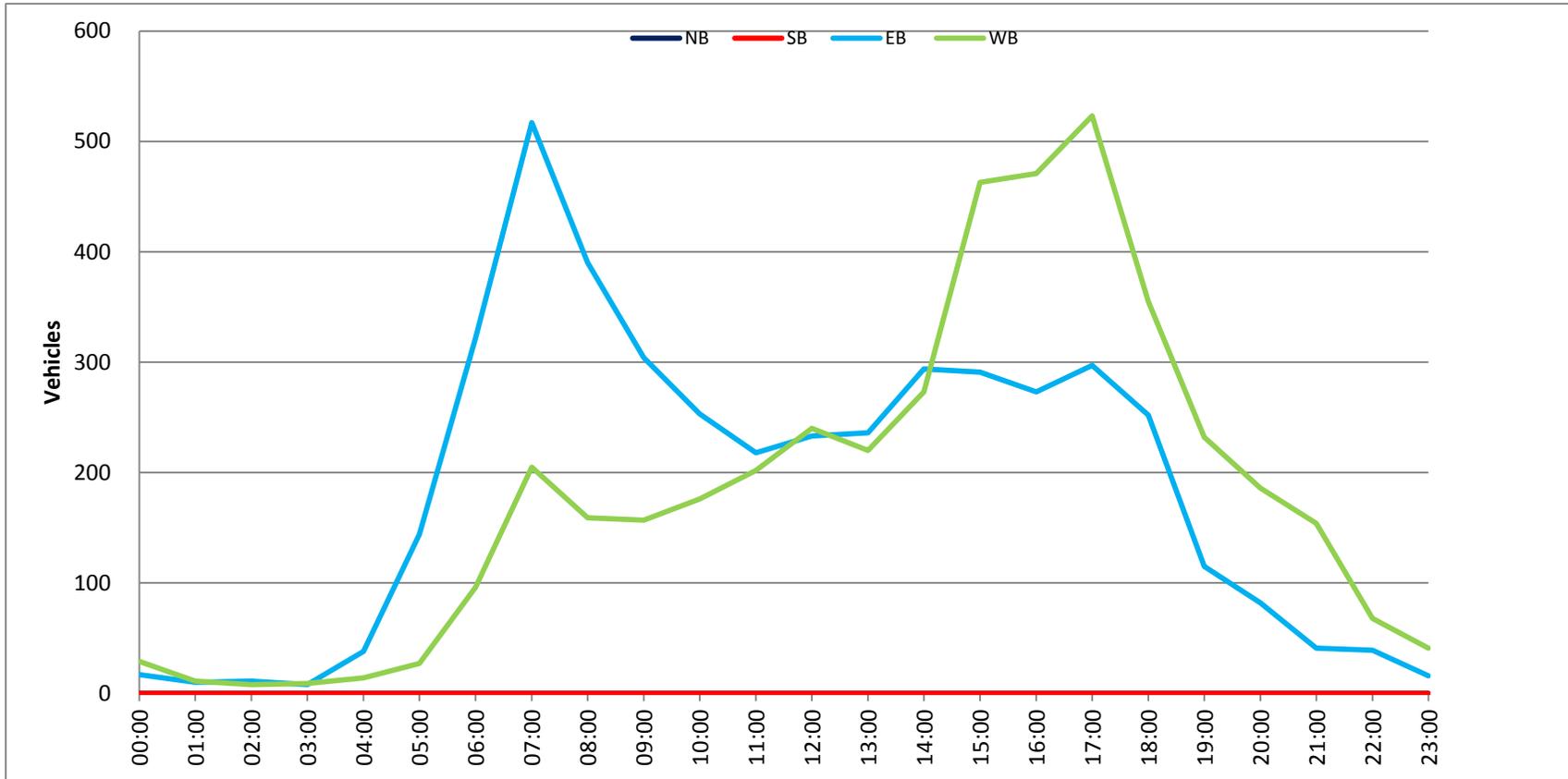
Day: Wednesday
Date: 3/1/2017

City: Roseville
Project #: CA17_7119_004 5765-17

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	4,401	4,319	8,720					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			8	10	18	12:00			64	53	117			
00:15			2	5	7	12:15			45	57	102			
00:30			3	9	12	12:30			51	71	122			
00:45			4	17	5	29	12:45		73	233	59	240	132	473
01:00			1	3	4	13:00			52	61	113			
01:15			3	1	4	13:15			69	48	117			
01:30			4	5	9	13:30			59	43	102			
01:45			2	10	2	11	13:45		56	236	68	220	124	456
02:00			4	2	6	14:00			64	48	112			
02:15			3	4	7	14:15			64	64	128			
02:30			2	1	3	14:30			83	74	157			
02:45			2	11	1	8	14:45		83	294	87	273	170	567
03:00			1	5	6	15:00			90	105	195			
03:15			1	2	3	15:15			74	108	182			
03:30			4	1	5	15:30			66	128	194			
03:45			2	8	1	9	15:45		61	291	122	463	183	754
04:00			5	4	9	16:00			67	103	170			
04:15			4	3	7	16:15			70	120	190			
04:30			13	1	14	16:30			61	130	191			
04:45			16	38	6	14	16:45		75	273	118	471	193	744
05:00			16	4	20	17:00			81	141	222			
05:15			18	4	22	17:15			73	130	203			
05:30			35	9	44	17:30			78	129	207			
05:45			75	144	10	27	17:45		65	297	123	523	188	820
06:00			55	15	70	18:00			68	116	184			
06:15			70	9	79	18:15			66	88	154			
06:30			88	32	120	18:30			57	75	132			
06:45			109	322	40	96	18:45		61	252	76	355	137	607
07:00			87	52	139	19:00			32	66	98			
07:15			132	58	190	19:15			23	67	90			
07:30			164	30	194	19:30			35	49	84			
07:45			134	517	65	205	19:45		25	115	50	232	75	347
08:00			107	49	156	20:00			22	60	82			
08:15			99	37	136	20:15			24	51	75			
08:30			100	43	143	20:30			15	32	47			
08:45			84	390	30	159	20:45		21	82	43	186	64	268
09:00			75	38	113	21:00			12	47	59			
09:15			72	41	113	21:15			16	46	62			
09:30			78	39	117	21:30			8	34	42			
09:45			79	304	39	157	21:45		5	41	27	154	32	195
10:00			65	42	107	22:00			5	18	23			
10:15			58	47	105	22:15			12	21	33			
10:30			58	40	98	22:30			13	21	34			
10:45			72	253	47	176	22:45		9	39	8	68	17	107
11:00			47	43	90	23:00			7	17	24			
11:15			50	53	103	23:15			3	12	15			
11:30			56	49	105	23:30			5	5	10			
11:45			65	218	57	202	23:45		1	16	7	41	8	57
TOTALS			2232	1093	3325	TOTALS			2169	3226	5395			
SPLIT %			67.1%	32.9%	38.1%	SPLIT %			40.2%	59.8%	61.9%			

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	4,401	4,319	8,720

AM Peak Hour	07:15	11:45	07:15	PM Peak Hour	14:30	17:00	16:45				
AM Pk Volume	537	238	739	PM Pk Volume	330	523	825				
Pk Hr Factor	0.819	0.838	0.928	Pk Hr Factor	0.917	0.927	0.929				
7 - 9 Volume	0	0	907	364	1271	4 - 6 Volume	0	0	570	994	1564
7 - 9 Peak Hour	07:15	07:00	07:15	4 - 6 Peak Hour	16:45	17:00	16:45				
7 - 9 Pk Volume	0	0	537	205	739	4 - 6 Pk Volume	0	0	307	523	825
Pk Hr Factor	0.000	0.000	0.819	0.788	0.928	Pk Hr Factor	0.000	0.000	0.948	0.927	0.929



VOLUME

Antelope Rd Bet. PFE Rd & Great Valley Dr

Day: Wednesday
Date: 3/1/2017

City: Roseville
Project #: CA17_7119_005 5765-17

DAILY TOTALS					NB	SB	EB	WB	Total		
					3,680	3,708	0	0	7,388		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	9	11			20	12:00	47	42			89
00:15	4	5			9	12:15	43	46			89
00:30	2	5			7	12:30	48	46			94
00:45	2	17	6	27	8	12:45	50	188	47	181	97
01:00	1	3			4	13:00	40	50			90
01:15	4	1			5	13:15	36	53			89
01:30	1	2			3	13:30	56	44			100
01:45	1	7	1	7	2	13:45	54	186	52	199	106
02:00	3	1			4	14:00	53	57			110
02:15	2	3			5	14:15	76	51			127
02:30	2	2			4	14:30	89	90			179
02:45	2	9	1	7	3	14:45	68	286	84	282	152
03:00	1	5			6	15:00	60	83			143
03:15	1	2			3	15:15	67	87			154
03:30	2	2			4	15:30	62	82			144
03:45	3	7	1	10	4	15:45	62	251	89	341	151
04:00	3	5			8	16:00	67	77			144
04:15	3	4			7	16:15	76	73			149
04:30	7	5			12	16:30	71	90			161
04:45	7	20	11	25	18	16:45	64	278	82	322	146
05:00	9	4			13	17:00	91	80			171
05:15	12	11			23	17:15	80	85			165
05:30	21	10			31	17:30	70	96			166
05:45	49	91	14	39	63	17:45	72	313	85	346	157
06:00	37	19			56	18:00	83	80			163
06:15	59	31			90	18:15	65	58			123
06:30	50	46			96	18:30	56	56			112
06:45	72	218	65	161	137	18:45	56	260	64	258	120
07:00	56	78			134	19:00	38	45			83
07:15	74	77			151	19:15	26	44			70
07:30	103	59			162	19:30	36	39			75
07:45	141	374	74	288	215	19:45	31	131	35	163	66
08:00	92	112			204	20:00	23	39			62
08:15	56	66			122	20:15	30	24			54
08:30	57	56			113	20:30	21	29			50
08:45	58	263	26	260	84	20:45	19	93	33	125	52
09:00	47	44			91	21:00	14	33			47
09:15	47	45			92	21:15	20	28			48
09:30	56	44			100	21:30	13	24			37
09:45	54	204	34	167	88	21:45	10	57	19	104	29
10:00	53	42			95	22:00	8	15			23
10:15	44	31			75	22:15	6	16			22
10:30	43	37			80	22:30	12	12			24
10:45	53	193	37	147	90	22:45	7	33	9	52	16
11:00	35	39			74	23:00	13	10			23
11:15	45	46			91	23:15	5	10			15
11:30	50	33			83	23:30	2	7			9
11:45	48	178	45	163	93	23:45	3	23	7	34	10
TOTALS	1581	1301			2882	TOTALS	2099	2407			4506
SPLIT %	54.9%	45.1%			39.0%	SPLIT %	46.6%	53.4%			61.0%

DAILY TOTALS					NB	SB	EB	WB	Total
					3,680	3,708	0	0	7,388

AM Peak Hour	07:15	07:15			07:15	PM Peak Hour	17:00	17:00			17:00
AM Pk Volume	410	322			732	PM Pk Volume	313	346			659
Pk Hr Factor	0.727	0.719			0.851	Pk Hr Factor	0.860	0.901			0.963
7 - 9 Volume	637	548	0	0	1185	4 - 6 Volume	591	668	0	0	1259
7 - 9 Peak Hour	07:15	07:15			07:15	4 - 6 Peak Hour	17:00	17:00			17:00
7 - 9 Pk Volume	410	322	0	0	732	4 - 6 Pk Volume	313	346	0	0	659
Pk Hr Factor	0.727	0.719	0.000	0.000	0.851	Pk Hr Factor	0.860	0.901	0.000	0.000	0.963



VOLUME

Antelope Rd Bet. Great Valley Dr & Poker Ln

Day: Wednesday
Date: 3/1/2017

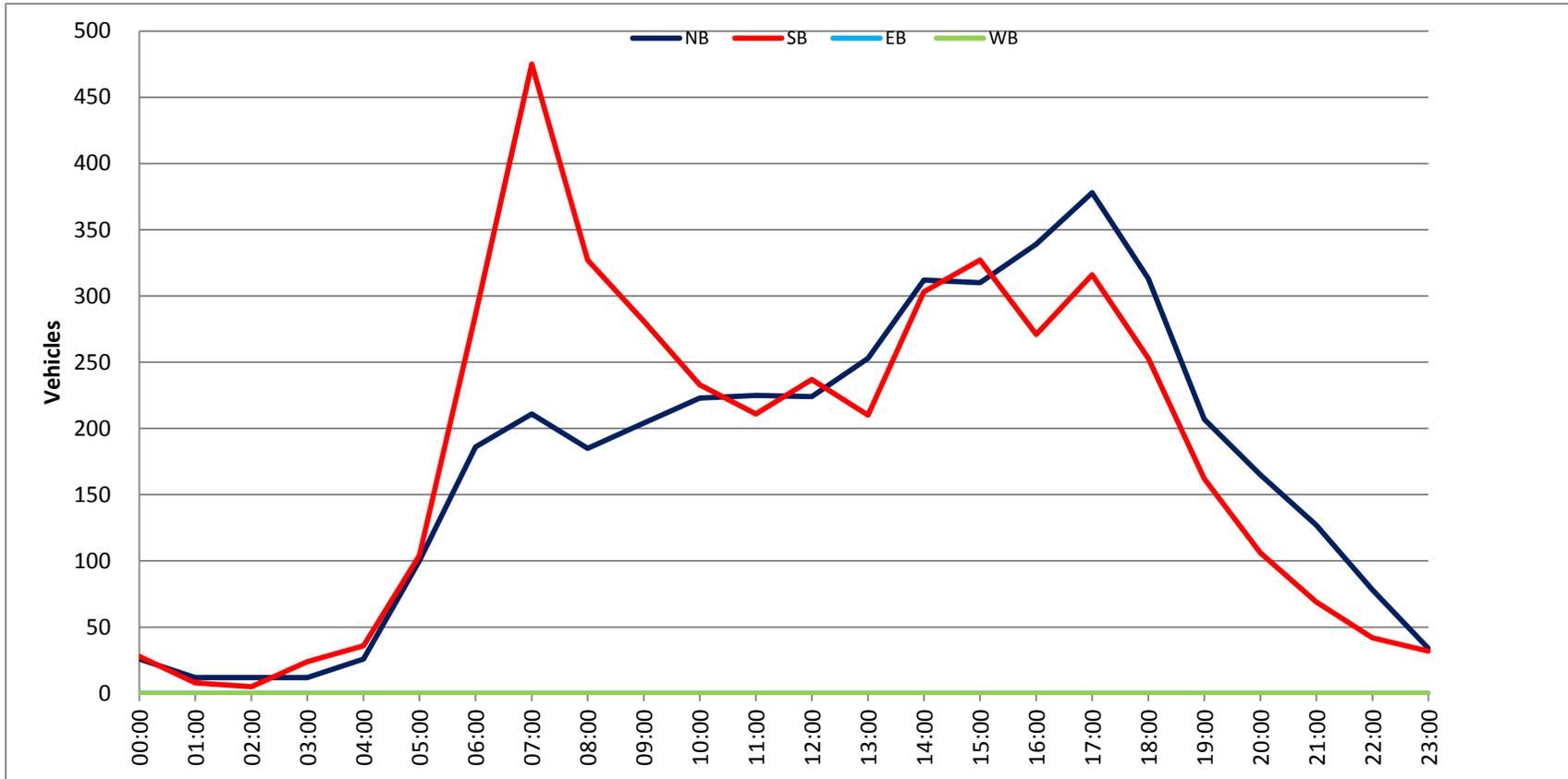
City: Roseville
Project #: CA17_7119_006 5765-17

DAILY TOTALS					NB	SB	EB	WB	Total
					4,162	4,346	0	0	8,508

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00	12	6			18	12:00	57	62			119	
00:15	7	10			17	12:15	63	41			104	
00:30	4	5			9	12:30	55	71			126	
00:45	3	26	7	28	10	12:45	49	224	63	237	112	461
01:00	2	1			3	13:00	63	59			122	
01:15	5	1			6	13:15	52	56			108	
01:30	3	5			8	13:30	70	42			112	
01:45	2	12	1	8	3	13:45	68	253	53	210	121	463
02:00	4	1			5	14:00	75	76			151	
02:15	4	2			6	14:15	74	68			142	
02:30	2	2			4	14:30	90	74			164	
02:45	2	12	0	5	2	14:45	73	312	85	303	158	615
03:00	3	8			11	15:00	68	96			164	
03:15	2	4			6	15:15	72	84			156	
03:30	3	5			8	15:30	79	70			149	
03:45	4	12	7	24	11	15:45	91	310	77	327	168	637
04:00	5	6			11	16:00	82	82			164	
04:15	1	9			10	16:15	77	63			140	
04:30	7	5			12	16:30	85	61			146	
04:45	13	26	16	36	29	16:45	95	339	65	271	160	610
05:00	18	18			36	17:00	96	87			183	
05:15	23	18			41	17:15	87	76			163	
05:30	22	29			51	17:30	93	77			170	
05:45	37	100	39	104	76	17:45	102	378	76	316	178	694
06:00	24	46			70	18:00	82	70			152	
06:15	47	81			128	18:15	91	66			157	
06:30	43	66			109	18:30	76	53			129	
06:45	72	186	93	286	165	18:45	64	313	64	253	128	566
07:00	34	145			179	19:00	71	45			116	
07:15	45	115			160	19:15	37	48			85	
07:30	50	115			165	19:30	38	37			75	
07:45	82	211	100	475	182	19:45	61	207	32	162	93	369
08:00	45	107			152	20:00	39	34			73	
08:15	50	76			126	20:15	47	23			70	
08:30	42	83			125	20:30	42	25			67	
08:45	48	185	61	327	109	20:45	37	165	24	106	61	271
09:00	50	58			108	21:00	32	23			55	
09:15	46	69			115	21:15	40	13			53	
09:30	36	90			126	21:30	29	23			52	
09:45	72	204	64	281	136	21:45	26	127	10	69	36	196
10:00	63	69			132	22:00	15	17			32	
10:15	49	68			117	22:15	22	11			33	
10:30	60	48			108	22:30	19	5			24	
10:45	51	223	48	233	99	22:45	22	78	9	42	31	120
11:00	54	65			119	23:00	14	8			22	
11:15	55	42			97	23:15	7	8			15	
11:30	72	51			123	23:30	4	10			14	
11:45	44	225	53	211	97	23:45	9	34	6	32	15	66
TOTALS	1422	2018			3440	TOTALS	2740	2328			5068	
SPLIT %	41.3%	58.7%			40.4%	SPLIT %	54.1%	45.9%			59.6%	

DAILY TOTALS					NB	SB	EB	WB	Total
					4,162	4,346	0	0	8,508

AM Peak Hour	09:45	07:00			07:00	PM Peak Hour	17:00	14:30			17:00
AM Pk Volume	244	475			686	PM Pk Volume	378	339			694
Pk Hr Factor	0.847	0.819			0.942	Pk Hr Factor	0.926	0.883			0.948
7 - 9 Volume	396	802	0	0	1198	4 - 6 Volume	717	587	0	0	1304
7 - 9 Peak Hour	07:30	07:00			07:00	4 - 6 Peak Hour	17:00	17:00			17:00
7 - 9 Pk Volume	227	475	0	0	686	4 - 6 Pk Volume	378	316	0	0	694
Pk Hr Factor	0.692	0.819	0.000	0.000	0.942	Pk Hr Factor	0.926	0.908	0.000	0.000	0.948



VOLUME

PFE Rd Bet. Oly Ln & Cook Riolo Rd

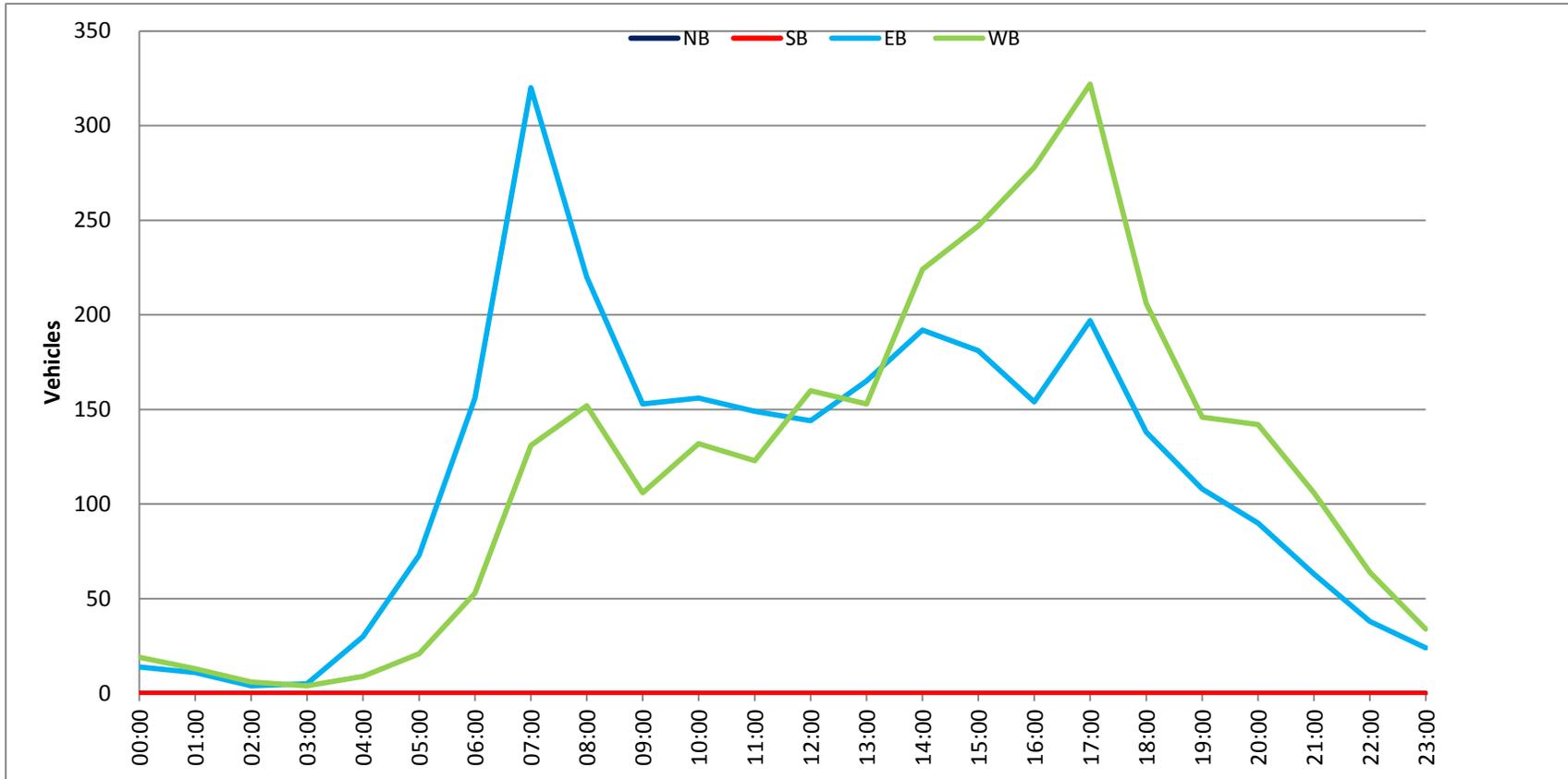
Day: Wednesday
Date: 6/1/2016

City: Roseville
Project #: 16-7394-001

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	2,785	2,851	5,636					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			5	7	12	12:00			31	41	72			
00:15			4	6	10	12:15			34	34	68			
00:30			1	5	6	12:30			38	40	78			
00:45			4	14	1	12:45			41	144	45	160	86	304
01:00			2	4	6	13:00			43	48	91			
01:15			2	1	3	13:15			41	38	79			
01:30			0	5	5	13:30			34	36	70			
01:45			7	11	3	13:45			47	165	31	153	78	318
02:00			2	0	2	14:00			44	43	87			
02:15			1	2	3	14:15			50	47	97			
02:30			0	1	1	14:30			54	73	127			
02:45			1	4	3	14:45			44	192	61	224	105	416
03:00			1	0	1	15:00			41	61	102			
03:15			1	0	1	15:15			52	59	111			
03:30			1	2	3	15:30			36	71	107			
03:45			2	5	2	15:45			52	181	56	247	108	428
04:00			4	1	5	16:00			28	65	93			
04:15			6	3	9	16:15			44	64	108			
04:30			6	1	7	16:30			44	81	125			
04:45			14	30	4	16:45			38	154	68	278	106	432
05:00			9	4	13	17:00			51	77	128			
05:15			11	5	16	17:15			58	91	149			
05:30			23	2	25	17:30			50	88	138			
05:45			30	73	10	17:45			38	197	66	322	104	519
06:00			26	18	44	18:00			37	62	99			
06:15			32	5	37	18:15			44	68	112			
06:30			49	10	59	18:30			33	36	69			
06:45			49	156	20	18:45			24	138	40	206	64	344
07:00			68	27	95	19:00			27	33	60			
07:15			75	17	92	19:15			18	43	61			
07:30			88	40	128	19:30			45	30	75			
07:45			89	320	47	19:45			18	108	40	146	58	254
08:00			86	61	147	20:00			22	44	66			
08:15			43	28	71	20:15			21	32	53			
08:30			47	33	80	20:30			33	34	67			
08:45			44	220	30	20:45			14	90	32	142	46	232
09:00			37	28	65	21:00			17	29	46			
09:15			46	25	71	21:15			18	24	42			
09:30			32	32	64	21:30			20	26	46			
09:45			38	153	21	21:45			8	63	27	106	35	169
10:00			40	27	67	22:00			10	11	21			
10:15			42	31	73	22:15			10	13	23			
10:30			29	41	70	22:30			11	22	33			
10:45			45	156	33	22:45			7	38	18	64	25	102
11:00			34	35	69	23:00			8	6	14			
11:15			41	24	65	23:15			8	14	22			
11:30			40	29	69	23:30			2	11	13			
11:45			34	149	35	23:45			6	24	3	34	9	58
TOTALS			1291	769	2060	TOTALS			1494	2082	3576			
SPLIT %			62.7%	37.3%	36.6%	SPLIT %			41.8%	58.2%	63.4%			

DAILY TOTALS					NB	SB	EB	WB	Total
					0	0	2,785	2,851	5,636

AM Peak Hour	07:15	07:30	07:15	PM Peak Hour	16:45	16:45	16:45				
AM Pk Volume	338	176	503	PM Pk Volume	197	324	521				
Pk Hr Factor	0.949	0.721	0.855	Pk Hr Factor	0.849	0.890	0.874				
7 - 9 Volume	0	0	540	283	823	4 - 6 Volume	0	0	351	600	951
7 - 9 Peak Hour	07:15	07:30	07:15	4 - 6 Peak Hour	16:45	16:45	16:45				
7 - 9 Pk Volume	0	0	338	176	503	4 - 6 Pk Volume	0	0	197	324	521
Pk Hr Factor	0.000	0.000	0.949	0.721	0.855	Pk Hr Factor	0.000	0.000	0.849	0.890	0.874



VOLUME

Cook Riolo Rd S/O PFE Rd

Day: Wednesday
Date: 6/1/2016

City: Roseville
Project #: 16-7394-003

DAILY TOTALS					NB	SB	EB	WB	Total		
					202	199	0	0	401		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	0	0			0	12:00	5	4			9
00:15	0	0			0	12:15	8	3			11
00:30	0	0			0	12:30	2	3			5
00:45	0	0			0	12:45	7	22	5	15	12
01:00	0	0			0	13:00	3	3			6
01:15	0	0			0	13:15	1	11			12
01:30	0	0			0	13:30	4	6			10
01:45	0	0			0	13:45	8	16	5	25	13
02:00	0	0			0	14:00	5	5			10
02:15	0	0			0	14:15	4	6			10
02:30	0	0			0	14:30	3	2			5
02:45	0	0			0	14:45	3	15	7	20	10
03:00	0	0			0	15:00	11	3			14
03:15	0	0			0	15:15	5	5			10
03:30	0	0			0	15:30	8	2			10
03:45	0	0			0	15:45	7	31	5	15	12
04:00	0	0			0	16:00	15	1			16
04:15	0	0			0	16:15	8	1			9
04:30	0	0			0	16:30	3	2			5
04:45	1	1	1	1	2	16:45	4	30	0	4	4
05:00	0	0			0	17:00	3	1			4
05:15	0	0			0	17:15	1	0			1
05:30	0	2			2	17:30	3	1			4
05:45	0	2	4		2	17:45	0	7	0	2	0
06:00	0	1			1	18:00	4	1			5
06:15	2	5			7	18:15	2	0			2
06:30	1	6			7	18:30	1	0			1
06:45	2	5	4	16	6	18:45	0	7	0	1	0
07:00	3	10			13	19:00	2	0			2
07:15	4	6			10	19:15	0	0			0
07:30	2	4			6	19:30	1	1			2
07:45	0	9	5	25	5	19:45	0	3	1	2	1
08:00	3	9			12	20:00	0	0			0
08:15	1	5			6	20:15	2	2			4
08:30	4	4			8	20:30	1	1			2
08:45	2	10	11	29	13	20:45	0	3	0	3	0
09:00	1	4			5	21:00	0	0			0
09:15	5	2			7	21:15	0	0			0
09:30	2	6			8	21:30	0	0			0
09:45	3	11	1	13	4	21:45	0	0			0
10:00	4	1			5	22:00	0	0			0
10:15	4	4			8	22:15	0	0			0
10:30	8	5			13	22:30	0	0			0
10:45	4	20	3	13	7	22:45	0	0			0
11:00	4	4			8	23:00	0	0			0
11:15	1	3			4	23:15	0	0			0
11:30	2	2			4	23:30	0	0			0
11:45	5	12	2	11	7	23:45	0	0			0
TOTALS	68	112			180	TOTALS	134	87			221
SPLIT %	37.8%	62.2%			44.9%	SPLIT %	60.6%	39.4%			55.1%

DAILY TOTALS					NB	SB	EB	WB	Total
					202	199	0	0	401
AM Peak Hour	10:00	08:00			08:00	PM Peak Hour	15:30	13:15	15:15
AM Pk Volume	20	29			39	PM Pk Volume	38	27	48
Pk Hr Factor	0.625	0.659			0.750	Pk Hr Factor	0.633	0.614	0.750
7 - 9 Volume	19	54	0	0	73	4 - 6 Volume	37	6	43
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:00	16:00	16:00
7 - 9 Pk Volume	10	29	0	0	39	4 - 6 Pk Volume	30	4	34
Pk Hr Factor	0.625	0.659	0.000	0.000	0.750	Pk Hr Factor	0.500	0.500	0.531

Prepared by NDS/ATD

Project #: 16-7394-003

City: Roseville

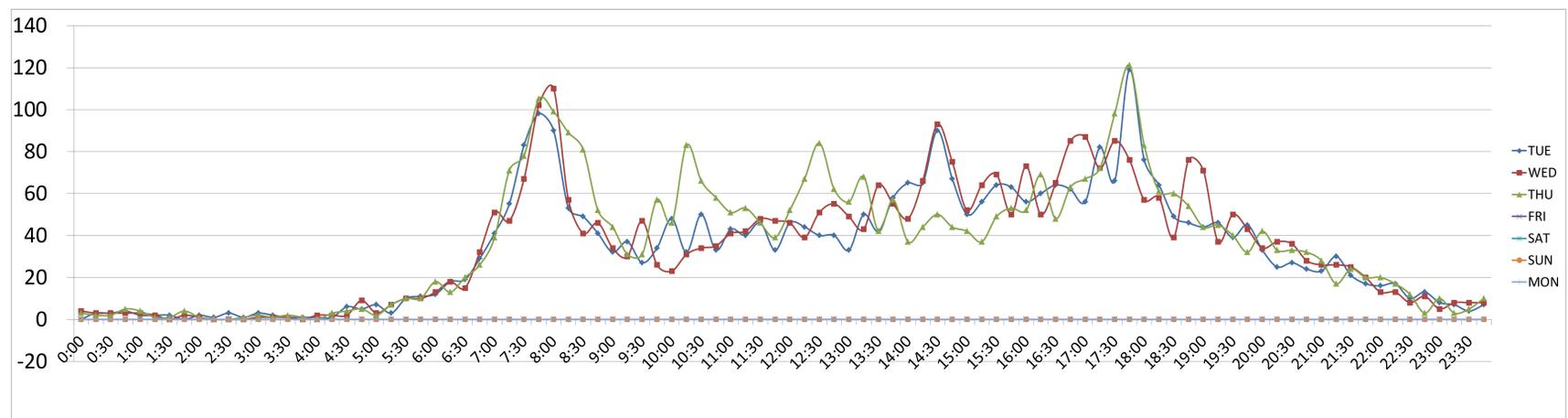
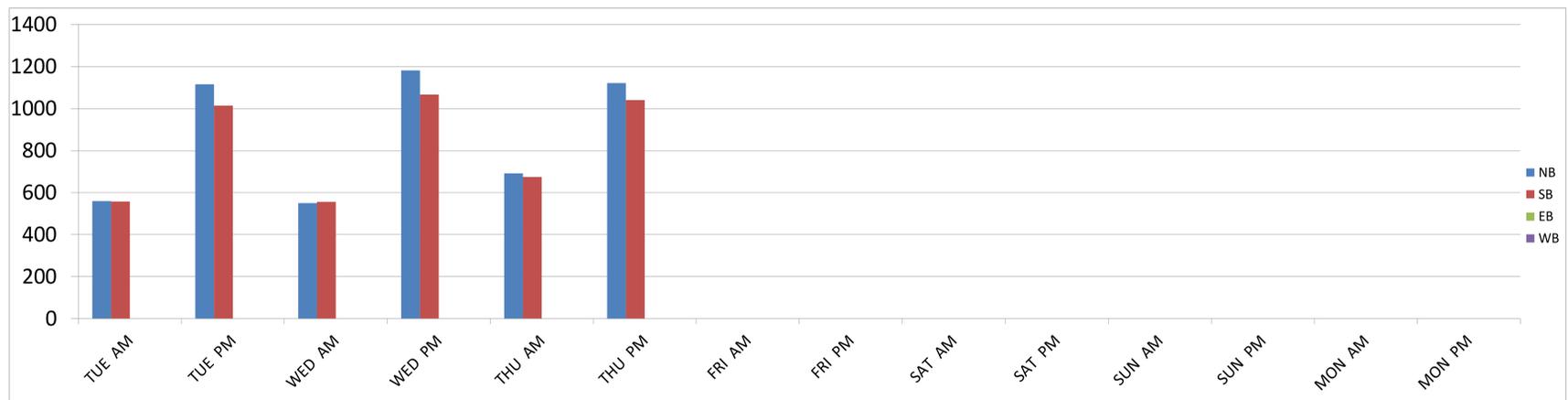
Location: Cook Riolo Rd S/O PFE Rd

Date: 6/1/2016



Average Daily Traffic Volumes
Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 001	GPS COORDINATES:	38.749258, -121.337006
ON STREET:	Cook-Riolo Road	START DATE:	Tuesday, June 02, 2015
CROSS STREETS:	0.18 miles south of Baseline Road	VICINITY:	Placer County



QUALITY TRAFFIC DATA, LLC
9701 W Pico Blvd, Suite 205, Los Angeles, CA, 90035
Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 001	GPS COORDINATES:	38.749258, -121.337006
ON STREET:	Cook-Riolo Road	START DATE:	Tuesday, June 02, 2015
CROSS STREETS:	0.18 miles south of Baseline Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	0	0			12:00	28	18		
00:15	1	2			12:15	27	17		
00:30	1	2			12:30	24	16		
00:45	2	4	2	6	12:45	22	101	18	69
01:00	0	2			13:00	14	19		
01:15	1	1			13:15	19	31		
01:30	1	1			13:30	22	20		
01:45	0	2	0	4	13:45	24	79	34	104
02:00	1	1			14:00	33	32		
02:15	0	1			14:15	24	41		
02:30	2	1			14:30	58	32		
02:45	1	4	0	3	14:45	44	159	23	128
03:00	0	3			15:00	26	24		
03:15	2	0			15:15	30	26		
03:30	0	1			15:30	34	30		
03:45	0	2	1	5	15:45	36	126	27	107
04:00	1	0			16:00	31	25		
04:15	1	0			16:15	32	28		
04:30	4	2			16:30	40	24		
04:45	2	8	3	5	16:45	35	138	27	104
05:00	3	4			17:00	32	24		
05:15	2	1			17:15	46	36		
05:30	5	5			17:30	33	33		
05:45	5	15	6	16	17:45	67	178	52	145
06:00	6	6			18:00	41	35		
06:15	6	12			18:15	35	29		
06:30	4	15			18:30	31	18		
06:45	18	34	11	44	18:45	27	134	19	101
07:00	20	21			19:00	20	24		
07:15	25	30			19:15	21	25		
07:30	36	47			19:30	25	14		
07:45	54	135	44	142	19:45	20	86	25	88
08:00	53	37			20:00	14	19		
08:15	31	22			20:15	9	16		
08:30	18	31			20:30	14	13		
08:45	21	123	20	110	20:45	4	41	20	68
09:00	15	17			21:00	11	12		
09:15	16	21			21:15	11	19		
09:30	16	11			21:30	10	11		
09:45	21	68	13	62	21:45	9	41	8	50
10:00	30	18			22:00	4	12		
10:15	21	11			22:15	9	8		
10:30	25	25			22:30	4	6		
10:45	19	95	14	68	22:45	5	22	8	34
11:00	21	22			23:00	4	4		
11:15	20	20			23:15	2	5		
11:30	14	32			23:30	2	2		
11:45	15	70	18	92	23:45	2	10	5	16
TOTALS:	560	557		1117	TOTALS:	1115	1014		2129

SPLIT	50.1%	49.9%	34.4%	SPLIT	52.4%	47.6%	65.6%
PEAK HOUR	07:30	07:15	07:15	PEAK HOUR	17:15	17:15	17:15
PH VOLUME	174	158	326	PH VOLUME	187	156	343
PHF	0.81	0.84	0.83	PHF	0.79	0.75	0.72

DAY'S TOTAL					
	NB	SB	EB	WB	TOTAL
	1675	1571			3246



QUALITY TRAFFIC DATA, LLC

9701 W Pico Blvd, Suite 205, Los Angeles, CA, 90035

Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 001	GPS COORDINATES:	38.749258, -121.337006
ON STREET:	Cook-Riolo Road	START DATE:	Wednesday, June 03, 2015
CROSS STREETS:	0.18 miles south of Baseline Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	2	2			12:00	23	23		
00:15	2	1			12:15	24	15		
00:30	1	2			12:30	29	22		
00:45	1	6	2	7	12:45	26	102	29	89
01:00	0	3			13:00	21	28		
01:15	0	2			13:15	22	21		
01:30	0	0			13:30	29	35		
01:45	1	1	1	6	13:45	38	110	17	101
02:00	1	0			14:00	30	18		
02:15	0	0			14:15	38	28		
02:30	0	0			14:30	64	29		
02:45	0	1	0	0	14:45	41	173	34	109
03:00	1	0			15:00	28	24		
03:15	0	1			15:15	33	31		
03:30	1	0			15:30	32	37		
03:45	0	2	0	1	15:45	26	119	24	116
04:00	1	1			16:00	42	31		
04:15	0	2			16:15	26	24		
04:30	1	1			16:30	33	32		
04:45	4	6	5	9	16:45	43	144	42	129
05:00	2	1			17:00	54	33		
05:15	2	5			17:15	32	40		
05:30	7	3			17:30	37	48		
05:45	7	18	3	12	17:45	35	158	41	162
06:00	9	4			18:00	35	22		
06:15	6	12			18:15	37	21		
06:30	4	11			18:30	22	17		
06:45	15	34	17	44	18:45	46	140	30	90
07:00	25	26			19:00	54	17		
07:15	20	27			19:15	16	21		
07:30	32	35			19:30	26	24		
07:45	49	126	53	141	19:45	14	110	29	91
08:00	66	44			20:00	15	19		
08:15	33	24			20:15	22	15		
08:30	20	21			20:30	17	19		
08:45	27	146	19	108	20:45	7	61	21	74
09:00	21	13			21:00	10	16		
09:15	15	15			21:15	17	9		
09:30	22	25			21:30	4	21		
09:45	11	69	15	68	21:45	5	36	15	61
10:00	11	12			22:00	6	7		
10:15	9	22			22:15	4	9		
10:30	12	22			22:30	4	4		
10:45	18	50	17	73	22:45	6	20	5	25
11:00	23	18			23:00	1	4		
11:15	17	25			23:15	3	5		
11:30	24	24			23:30	3	5		
11:45	28	92	19	86	23:45	2	9	6	20
TOTALS:	551	555		1106	TOTALS:	1182	1067		2249

SPLIT	49.8%	50.2%	33.0%	SPLIT	52.6%	47.4%	67.0%
PEAK HOUR	07:30	07:15	07:30	PEAK HOUR	14:00	16:45	16:45
PH VOLUME	180	159	336	PH VOLUME	173	163	329
PHF	0.68	0.75	0.76	PHF	0.77	0.85	0.95

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
1733	1622			3355



QUALITY TRAFFIC DATA, LLC

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Average Daily Traffic Volumes

Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 001	GPS COORDINATES:	38.749258, -121.337006
ON STREET:	Cook-Riolo Road	START DATE:	Thursday, June 04, 2015
CROSS STREETS:	0.18 miles south of Baseline Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	1	2			12:00	31	21		
00:15	1	1			12:15	27	40		
00:30	1	1			12:30	56	28		
00:45	3	6	2	6	12:45	38	152	24	113
01:00	1	3			13:00	34	22		
01:15	1	0			13:15	42	26		
01:30	1	0			13:30	18	24		
01:45	2	5	2	5	13:45	24	118	33	105
02:00	1	0			14:00	17	20		
02:15	0	0			14:15	18	26		
02:30	0	0			14:30	26	24		
02:45	0	1	1	1	14:45	23	84	21	91
03:00	2	0			15:00	22	20		
03:15	1	0			15:15	15	22		
03:30	1	1			15:30	23	26		
03:45	0	4	1	2	15:45	27	87	26	94
04:00	0	0			16:00	26	26		
04:15	2	1			16:15	38	31		
04:30	3	1			16:30	29	19		
04:45	1	6	4	6	16:45	37	130	26	102
05:00	1	1			17:00	38	29		
05:15	2	5			17:15	50	22		
05:30	3	7			17:30	61	37		
05:45	6	12	4	17	17:45	61	210	60	148
06:00	9	9			18:00	33	50		
06:15	6	7			18:15	27	34		
06:30	6	14			18:30	34	26		
06:45	7	28	19	49	18:45	31	125	23	133
07:00	19	20			19:00	16	28		
07:15	35	36			19:15	26	19		
07:30	29	49			19:30	17	23		
07:45	46	129	59	164	19:45	16	75	16	86
08:00	38	61			20:00	18	24		
08:15	37	52			20:15	15	18		
08:30	25	56			20:30	16	17		
08:45	17	117	35	204	20:45	14	63	18	77
09:00	20	24			21:00	12	16		
09:15	17	14			21:15	8	9		
09:30	20	11			21:30	11	13		
09:45	34	91	23	72	21:45	5	36	15	53
10:00	36	10			22:00	11	9		
10:15	72	11			22:15	10	7		
10:30	47	19			22:30	5	7		
10:45	37	192	21	61	22:45	2	28	1	24
11:00	33	18			23:00	4	6		
11:15	27	26			23:15	1	2		
11:30	24	22			23:30	1	4		
11:45	17	101	22	88	23:45	7	13	3	15
TOTALS:	692	675		1367	TOTALS:	1121	1041		2162

SPLIT	50.6%	49.4%	38.7%	SPLIT	51.9%	48.1%	61.3%
PEAK HOUR	10:00	07:45	07:45	PEAK HOUR	17:00	17:30	17:15
PH VOLUME	192	228	374	PH VOLUME	210	181	374
PHF	0.67	0.93	0.89	PHF	0.86	0.75	0.77

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
1813	1716			3529



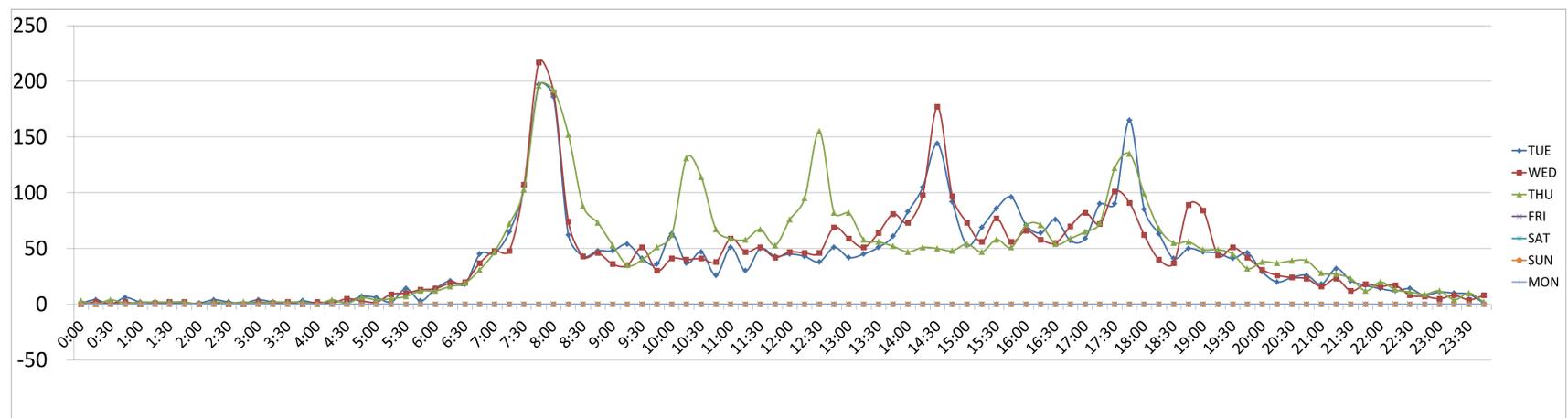
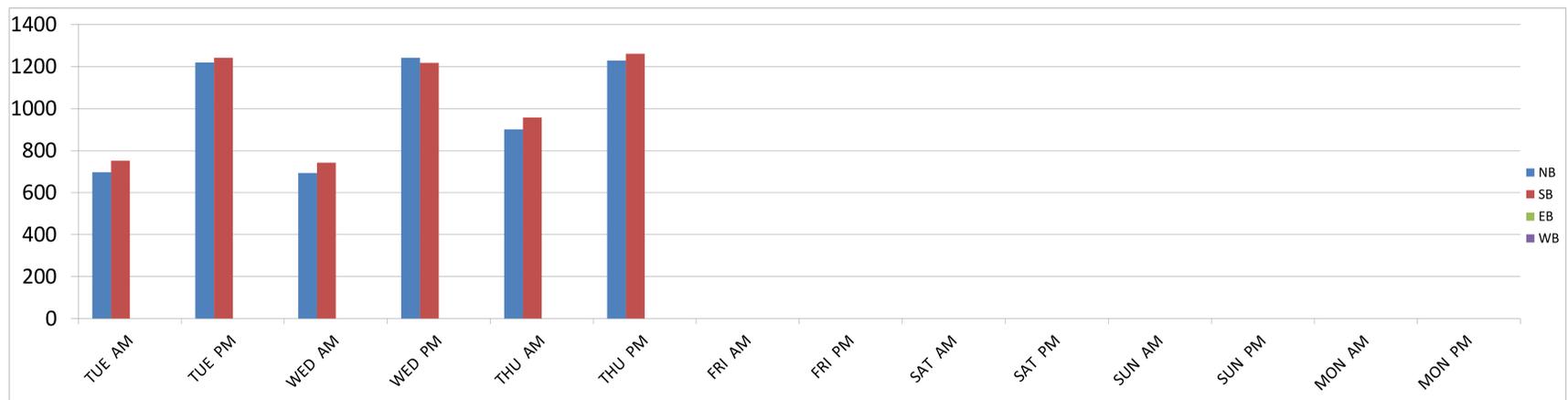
QUALITY TRAFFIC DATA, LLC

9701 W Pico Blvd, Suite 205, Los Angeles, CA, 90035

Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes
Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 003	GPS COORDINATES:	38.741787, -121.336967
ON STREET:	Cook-Riolo Road	START DATE:	Tuesday, June 02, 2015
CROSS STREETS:	½ way between Creekview Ranch school entrance and Vineyard	VICINITY:	Placer County




QUALITY TRAFFIC DATA, LLC
 9701 W Pico Blvd, Suite 205, Los Angeles, CA, 90035
 Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 003	GPS COORDINATES:	38.741787, -121.336967
ON STREET:	Cook-Riolo Road	START DATE:	Tuesday, June 02, 2015
CROSS STREETS:	½ way between Creekview Ranch school entrance and Vineyard Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	1	0			12:00	24	21		
00:15	2	2			12:15	21	22		
00:30	0	0			12:30	23	15		
00:45	3	6	3	5	12:45	26	94	25	83
01:00	0	2			13:00	21	21		
01:15	2	0			13:15	20	25		
01:30	0	1			13:30	22	29		
01:45	1	3	0	3	13:45	20	83	41	116
02:00	0	1			14:00	31	52		
02:15	2	2			14:15	51	54		
02:30	1	1			14:30	95	49		
02:45	0	3	1	5	14:45	52	229	40	195
03:00	0	4			15:00	27	26		
03:15	1	1			15:15	37	32		
03:30	0	0			15:30	39	47		
03:45	2	3	1	6	15:45	59	162	37	142
04:00	0	1			16:00	33	38		
04:15	1	2			16:15	38	26		
04:30	2	0			16:30	37	39		
04:45	3	6	4	7	16:45	31	139	26	129
05:00	2	4			17:00	31	28		
05:15	2	0			17:15	49	41		
05:30	8	6			17:30	38	52		
05:45	0	12	3	13	17:45	92	210	73	194
06:00	7	7			18:00	42	43		
06:15	9	12			18:15	28	35		
06:30	10	8			18:30	24	17		
06:45	18	44	27	54	18:45	25	119	25	120
07:00	18	28			19:00	19	28		
07:15	23	42			19:15	20	26		
07:30	45	61			19:30	18	23		
07:45	88	174	109	240	19:45	19	76	27	104
08:00	103	83			20:00	9	20		
08:15	33	29			20:15	10	10		
08:30	14	29			20:30	10	14		
08:45	25	175	23	164	20:45	5	34	21	65
09:00	21	27			21:00	8	10		
09:15	19	35			21:15	13	19		
09:30	19	22			21:30	11	10		
09:45	23	82	13	97	21:45	9	41	8	47
10:00	45	18			22:00	5	9		
10:15	23	14			22:15	5	7		
10:30	22	25			22:30	5	9		
10:45	17	107	9	66	22:45	3	18	5	30
11:00	27	24			23:00	4	7		
11:15	15	15			23:15	4	6		
11:30	21	29			23:30	5	4		
11:45	19	82	24	92	23:45	1	14	0	17
TOTALS:	697	752		1449	TOTALS:	1219	1242		2461

SPLIT	48.1%	51.9%	37.1%	SPLIT	49.5%	50.5%	62.9%
PEAK HOUR	07:30	07:15	07:15	PEAK HOUR	14:00	17:15	17:15
PH VOLUME	269	295	554	PH VOLUME	229	209	430
PHF	0.65	0.68	0.70	PHF	0.72	0.72	0.65

DAY'S TOTAL				
	NB	SB	EB	WB
	1916	1994		TOTAL
				3910



QUALITY TRAFFIC DATA, LLC

9701 W Pico Blvd, Suite 205, Los Angeles, CA, 90035

Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 003	GPS COORDINATES:	38.741787, -121.336967
ON STREET:	Cook-Riolo Road	START DATE:	Wednesday, June 03, 2015
CROSS STREETS:	½ way between Creekview Ranch school entrance and Vineyard Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	0	0			12:00	24	23		
00:15	2	0			12:15	22	24		
00:30	1	0			12:30	18	28		
00:45	1	4	1	1	12:45	27	91	42	117
01:00	0	0			13:00	26	33		
01:15	0	1			13:15	21	30		
01:30	0	2			13:30	27	37		
01:45	0	0	2	5	13:45	51	125	30	130
02:00	0	0			14:00	26	47		
02:15	0	1			14:15	57	41		
02:30	0	0			14:30	116	61		
02:45	0	0	0	1	14:45	55	254	42	191
03:00	2	0			15:00	36	37		
03:15	0	1			15:15	29	27		
03:30	2	0			15:30	39	38		
03:45	0	4	0	1	15:45	27	131	29	131
04:00	1	1			16:00	45	21		
04:15	0	1			16:15	34	24		
04:30	4	1			16:30	28	27		
04:45	1	6	2	5	16:45	32	139	38	110
05:00	1	1			17:00	40	42		
05:15	3	6			17:15	29	43		
05:30	5	5			17:30	32	69		
05:45	8	17	5	17	17:45	32	133	59	213
06:00	8	6			18:00	40	22		
06:15	6	13			18:15	19	21		
06:30	9	11			18:30	19	18		
06:45	19	42	18	48	18:45	65	143	24	85
07:00	23	25			19:00	59	25		
07:15	17	31			19:15	22	22		
07:30	41	66			19:30	29	22		
07:45	99	180	118	240	19:45	17	127	25	94
08:00	101	89			20:00	13	18		
08:15	37	37			20:15	15	11		
08:30	25	18			20:30	12	12		
08:45	26	189	20	164	20:45	7	47	16	57
09:00	22	14			21:00	7	9		
09:15	19	16			21:15	11	12		
09:30	18	33			21:30	3	9		
09:45	18	77	12	75	21:45	4	25	14	44
10:00	18	23			22:00	7	9		
10:15	14	26			22:15	6	11		
10:30	16	25			22:30	3	5		
10:45	27	75	11	85	22:45	4	20	3	28
11:00	25	34			23:00	1	4		
11:15	26	21			23:15	3	5		
11:30	25	26			23:30	1	3		
11:45	23	99	19	100	23:45	2	7	6	18
TOTALS:	693	742		1435	TOTALS:	1242	1218		2460

SPLIT	48.3%	51.7%	36.8%	SPLIT	50.5%	49.5%	63.2%
PEAK HOUR	07:30	07:30	07:30	PEAK HOUR	14:15	17:00	14:00
PH VOLUME	278	310	588	PH VOLUME	264	213	445
PHF	0.69	0.66	0.68	PHF	0.61	0.77	0.63

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
1935	1960			3895



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Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 003	GPS COORDINATES:	38.741787, -121.336967
ON STREET:	Cook-Riolo Road	START DATE:	Thursday, June 04, 2015
CROSS STREETS:	½ way between Creekview Ranch school entrance and Vineyard Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	1	2			12:00	39	37		
00:15	0	0			12:15	32	63		
00:30	4	0			12:30	109	46		
00:45	1	6	0	2	12:45	51	231	31	177
01:00	1	1			13:00	52	30		
01:15	1	1			13:15	32	26		
01:30	2	0			13:30	23	33		
01:45	2	6	0	2	13:45	28	135	24	113
02:00	0	0			14:00	21	26		
02:15	1	1			14:15	15	36		
02:30	0	1			14:30	25	25		
02:45	1	2	1	3	14:45	24	85	24	111
03:00	1	0			15:00	26	28		
03:15	1	1			15:15	23	24		
03:30	2	0			15:30	31	27		
03:45	1	5	1	2	15:45	22	102	29	108
04:00	0	0			16:00	37	34		
04:15	2	2			16:15	40	31		
04:30	1	0			16:30	29	25		
04:45	3	6	3	5	16:45	42	148	17	107
05:00	2	2			17:00	31	34		
05:15	0	5			17:15	46	27		
05:30	2	5			17:30	77	45		
05:45	6	10	6	18	17:45	61	215	74	180
06:00	6	6			18:00	34	65		
06:15	8	8			18:15	26	42		
06:30	7	12			18:30	22	33		
06:45	9	30	22	48	18:45	34	116	22	162
07:00	19	28			19:00	18	31		
07:15	29	43			19:15	14	35		
07:30	39	64			19:30	17	28		
07:45	63	150	133	268	19:45	10	59	22	116
08:00	76	116			20:00	20	18		
08:15	58	94			20:15	16	21		
08:30	22	66			20:30	16	23		
08:45	20	176	53	329	20:45	14	66	25	87
09:00	21	32			21:00	10	18		
09:15	15	20			21:15	11	16		
09:30	22	18			21:30	11	12		
09:45	32	90	19	89	21:45	3	35	9	55
10:00	48	14			22:00	11	9		
10:15	112	19			22:15	7	6		
10:30	101	13			22:30	2	9		
10:45	46	307	21	67	22:45	4	24	5	29
11:00	29	30			23:00	6	6		
11:15	33	25			23:15	2	2		
11:30	31	36			23:30	3	7		
11:45	19	112	34	125	23:45	1	12	1	16
TOTALS:	900	958		1858	TOTALS:	1228	1261		2489

SPLIT	48.4%	51.6%	42.7%	SPLIT	49.3%	50.7%	57.3%
PEAK HOUR	10:00	07:45	07:30	PEAK HOUR	12:15	17:30	17:15
PH VOLUME	307	409	643	PH VOLUME	244	226	429
PHF	0.69	0.77	0.82	PHF	0.56	0.76	0.79

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
2128	2219			4347



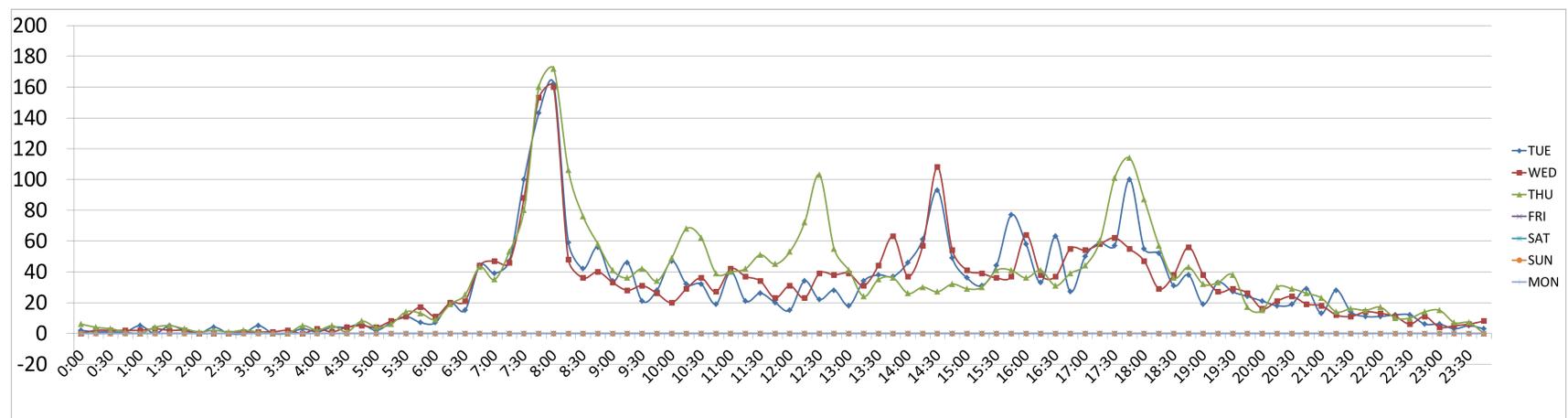
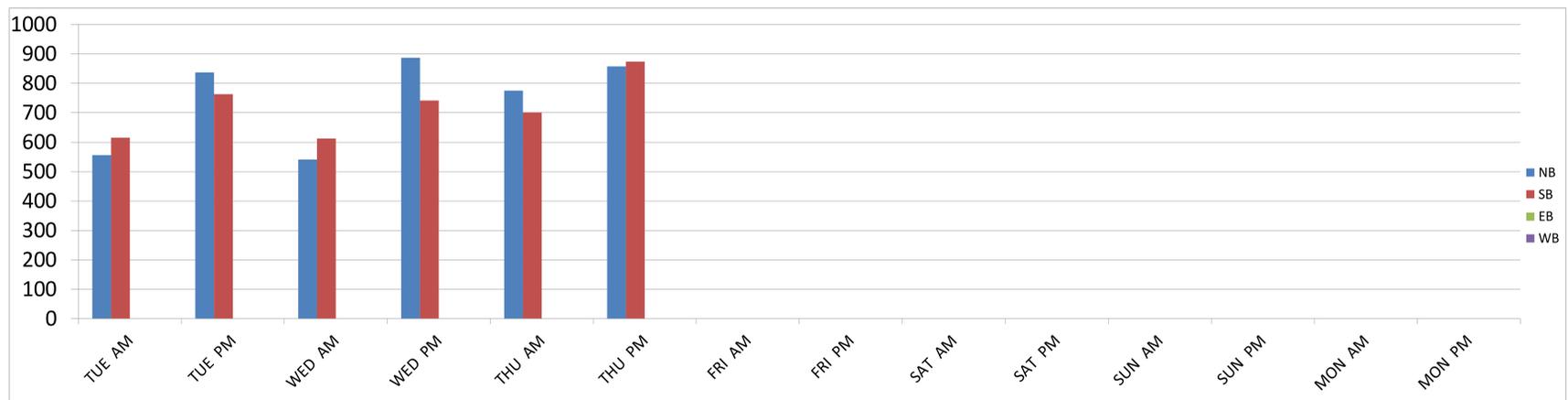
QUALITY TRAFFIC DATA, LLC

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Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes
Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 002	GPS COORDINATES:	38.730503, -121.336870
ON STREET:	Cook-Riolo Road	START DATE:	Tuesday, June 02, 2015
CROSS STREETS:	½ way between PFE Road and speed hump north of PFE Roa	VICINITY:	Placer County



QUALITY TRAFFIC DATA, LLC
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Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 002	GPS COORDINATES:	38.730503, -121.336870
ON STREET:	Cook-Riolo Road	START DATE:	Tuesday, June 02, 2015
CROSS STREETS:	½ way between PFE Road and speed hump north of PFE Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	2	0			12:00	7	8		
00:15	1	0			12:15	21	13		
00:30	1	0			12:30	14	8		
00:45	0	4	1	1	12:45	15	57	13	42
01:00	2	3			13:00	9	9		
01:15	0	0			13:15	11	23		
01:30	4	1			13:30	22	16		
01:45	2	8	0	4	13:45	22	64	15	63
02:00	0	0			14:00	23	23		
02:15	2	2			14:15	23	38		
02:30	0	0			14:30	38	55		
02:45	0	2	0	2	14:45	22	106	27	143
03:00	0	5			15:00	17	19		
03:15	0	0			15:15	18	13		
03:30	0	0			15:30	32	12		
03:45	2	2	1	6	15:45	31	98	46	90
04:00	0	1			16:00	22	36		
04:15	0	4			16:15	24	9		
04:30	1	3			16:30	31	32		
04:45	2	3	4	12	16:45	12	89	15	92
05:00	0	2			17:00	34	16		
05:15	3	4			17:15	45	14		
05:30	4	7			17:30	43	14		
05:45	1	8	6	19	17:45	54	176	46	90
06:00	2	5			18:00	25	30		
06:15	6	14			18:15	27	25		
06:30	4	11			18:30	12	19		
06:45	10	22	34	64	18:45	23	87	15	89
07:00	13	26			19:00	8	11		
07:15	20	27			19:15	17	16		
07:30	47	53			19:30	15	12		
07:45	100	180	43	149	19:45	12	52	12	51
08:00	72	90			20:00	14	7		
08:15	25	34			20:15	12	6		
08:30	17	25			20:30	10	9		
08:45	29	143	27	176	20:45	12	48	17	39
09:00	22	12			21:00	8	5		
09:15	21	25			21:15	14	14		
09:30	12	9			21:30	6	8		
09:45	16	71	12	58	21:45	5	33	6	33
10:00	16	31			22:00	4	7		
10:15	15	17			22:15	8	4		
10:30	18	14			22:30	5	7		
10:45	8	57	11	73	22:45	2	19	4	22
11:00	21	19			23:00	2	4		
11:15	15	6			23:15	1	2		
11:30	11	15			23:30	2	3		
11:45	9	56	11	57	23:45	3	8	0	9
TOTALS:	556	615		1171	TOTALS:	837	763		1600

SPLIT	47.5%	52.5%	42.3%	SPLIT	52.3%	47.7%	57.7%
PEAK HOUR	07:30	07:30	07:30	PEAK HOUR	17:00	14:00	17:15
PH VOLUME	244	220	464	PH VOLUME	176	143	271
PHF	0.61	0.61	0.72	PHF	0.92	0.65	0.68

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
1393	1378			2771



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Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 002	GPS COORDINATES:	38.730503, -121.336870
ON STREET:	Cook-Riolo Road	START DATE:	Wednesday, June 03, 2015
CROSS STREETS:	½ way between PFE Road and speed hump north of PFE Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	0	0			12:00	13	18		
00:15	2	0			12:15	11	12		
00:30	2	0			12:30	25	14		
00:45	1	5	1	1	12:45	24	73	14	58
01:00	2	0			13:00	20	19		
01:15	2	1			13:15	13	18		
01:30	0	2			13:30	15	29		
01:45	0	4	2	5	13:45	34	82	29	95
02:00	0	0			14:00	26	11		
02:15	0	0			14:15	38	19		
02:30	0	0			14:30	44	64		
02:45	0	0	1	1	14:45	26	134	28	122
03:00	1	0			15:00	19	22		
03:15	0	1			15:15	16	23		
03:30	2	0			15:30	22	14		
03:45	0	3	0	1	15:45	24	81	13	72
04:00	1	2			16:00	44	20		
04:15	0	1			16:15	25	13		
04:30	1	3			16:30	20	17		
04:45	0	2	5	11	16:45	27	116	28	78
05:00	0	4			17:00	33	21		
05:15	1	7			17:15	41	17		
05:30	4	7			17:30	42	20		
05:45	8	13	9	27	17:45	38	154	17	75
06:00	4	7			18:00	41	6		
06:15	4	16			18:15	23	6		
06:30	4	17			18:30	21	17		
06:45	19	31	25	65	18:45	26	111	30	59
07:00	18	29			19:00	12	26		
07:15	15	31			19:15	16	11		
07:30	52	36			19:30	16	13		
07:45	90	175	63	159	19:45	11	55	15	65
08:00	67	93			20:00	5	11		
08:15	16	32			20:15	7	14		
08:30	18	18			20:30	13	11		
08:45	16	117	24	167	20:45	6	31	13	49
09:00	16	17			21:00	8	10		
09:15	14	14			21:15	3	9		
09:30	12	19			21:30	4	7		
09:45	17	59	9	59	21:45	5	20	9	35
10:00	11	9			22:00	7	6		
10:15	15	14			22:15	5	6		
10:30	20	16			22:30	1	5		
10:45	19	65	8	47	22:45	7	20	4	21
11:00	17	25			23:00	2	2		
11:15	23	14			23:15	4	1		
11:30	17	17			23:30	2	4		
11:45	10	67	13	69	23:45	2	10	6	13
TOTALS:	541	612		1153	TOTALS:	887	742		1629

SPLIT	46.9%	53.1%	41.4%	SPLIT	54.5%	45.5%	58.6%
PEAK HOUR	07:30	07:30	07:30	PEAK HOUR	17:15	14:30	13:45
PH VOLUME	225	224	449	PH VOLUME	162	137	265
PHF	0.63	0.60	0.70	PHF	0.95	0.54	0.61

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
1428	1354			2782



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Average Daily Traffic Volumes Quality Traffic Data, LLC

QTD PROJ/LOC #:	2015196 - 002	GPS COORDINATES:	38.730503, -121.336870
ON STREET:	Cook-Riolo Road	START DATE:	Thursday, June 04, 2015
CROSS STREETS:	½ way between PFE Road and speed hump north of PFE Road	VICINITY:	Placer County

AM COUNTS					PM COUNTS				
	NB	SB	EB	WB		NB	SB	EB	WB
00:00	3	3			12:00	37	16		
00:15	4	0			12:15	44	28		
00:30	3	0			12:30	33	70		
00:45	1	11	0	3	12:45	23	137	32	146
01:00	0	0			13:00	19	22		
01:15	3	1			13:15	10	14		
01:30	4	1			13:30	15	20		
01:45	2	9	1	3	13:45	20	64	16	72
02:00	0	1			14:00	10	16		
02:15	1	1			14:15	16	14		
02:30	0	1			14:30	13	14		
02:45	1	2	1	4	14:45	16	55	16	60
03:00	0	1			15:00	16	13		
03:15	0	0			15:15	16	14		
03:30	0	0			15:30	25	16		
03:45	3	3	2	3	15:45	16	73	25	68
04:00	0	2			16:00	21	15		
04:15	3	2			16:15	26	15		
04:30	0	1			16:30	15	16		
04:45	2	5	6	11	16:45	19	81	20	66
05:00	2	2			17:00	15	29		
05:15	1	5			17:15	39	21		
05:30	4	10			17:30	64	37		
05:45	4	11	9	26	17:45	55	173	59	146
06:00	1	8			18:00	34	53		
06:15	8	11			18:15	28	29		
06:30	6	19			18:30	20	16		
06:45	8	23	35	73	18:45	30	112	13	111
07:00	11	24			19:00	12	20		
07:15	23	30			19:15	12	21		
07:30	47	33			19:30	21	17		
07:45	106	187	54	141	19:45	5	50	12	70
08:00	102	70			20:00	6	9		
08:15	60	46			20:15	15	15		
08:30	54	22			20:30	15	14		
08:45	35	251	23	161	20:45	12	48	14	52
09:00	27	14			21:00	9	14		
09:15	18	18			21:15	5	9		
09:30	28	14			21:30	8	8		
09:45	18	91	16	62	21:45	6	28	9	40
10:00	19	30			22:00	10	7		
10:15	14	54			22:15	3	7		
10:30	16	46			22:30	4	6		
10:45	18	67	21	151	22:45	7	24	7	27
11:00	23	17			23:00	4	11		
11:15	31	11			23:15	5	2		
11:30	33	18			23:30	4	3		
11:45	28	115	17	63	23:45	0	13	0	16
TOTALS:	775	701		1476	TOTALS:	858	874		1732

SPLIT	52.5%	47.5%	46.0%	SPLIT	49.5%	50.5%	54.0%
PEAK HOUR	07:45	07:30	07:30	PEAK HOUR	17:15	17:30	17:15
PH VOLUME	322	203	518	PH VOLUME	192	178	362
PHF	0.76	0.73	0.75	PHF	0.83	0.75	0.79

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
1633	1575			3208



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Existing AM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #4 Cook Riolo / CRS

Cycle (sec): 100 Critical Vol./Cap.(X): 0.669
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 69 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	0	0	1	0	0	1

Volume Module:

Base Vol:	0	117	222	209	118	0	0	0	0	179	0	178
Growth 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
Initial Bse:	0	117	222	209	118	0	0	0	0	179	0	178
User 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
PHF Adj:	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
PHF Volume:	0	183	347	327	184	0	0	0	0	280	0	278
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	183	347	327	184	0	0	0	0	280	0	278
PCE 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
MLF 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
FinalVolume:	0	183	347	327	184	0	0	0	0	280	0	278

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Final Sat.:	1425	1425	1425	1425	1425	0	0	1425	0	1425	0	1425

Capacity Analysis Module:

Vol/Sat:	0.00	0.13	0.24	0.23	0.13	0.00	0.00	0.00	0.00	0.20	0.00	0.20
Crit Volume:			347	327				0		280		
Crit Moves:			****	****						****		

Existing AM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 0.966
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	115	713	205	19	743	72	42	124	107	81	78	29
Growth 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
Initial Bse:	115	713	205	19	743	72	42	124	107	81	78	29
User 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
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	122	759	218	20	790	77	45	132	114	86	83	31
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	759	218	20	790	77	45	132	114	86	83	31
PCE 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
MLF 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
FinalVolume:	122	759	218	20	790	77	45	132	114	86	83	31

Saturation Flow Module:

Sat/Lane:	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.78	0.22	1.00	0.91	0.09	1.00	0.54	0.46	1.00	0.73	0.27
Final Sat.:	1375	1068	307	1375	1254	121	1375	738	637	1375	1002	373

Capacity Analysis Module:

Vol/Sat:	0.09	0.71	0.71	0.01	0.63	0.63	0.03	0.18	0.18	0.06	0.08	0.08
Crit Volume:	977			20			246			86		
Crit Moves:	****			****			****			****		

Intersection	
Intersection Delay, s/veh	14.9
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	18	78	51	0	101	53	30	0	31	145	108
Future Vol, veh/h	0	18	78	51	0	101	53	30	0	31	145	108
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	24	104	68	0	135	71	40	0	41	193	144
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	12.5	14.1	17
HCM LOS	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	12%	55%	13%
Vol Thru, %	51%	53%	29%	79%
Vol Right, %	38%	35%	16%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	284	147	184	207
LT Vol	31	18	101	27
Through Vol	145	78	53	163
RT Vol	108	51	30	17
Lane Flow Rate	379	196	245	276
Geometry Grp	1	1	1	1
Degree of Util (X)	0.6	0.341	0.431	0.465
Departure Headway (Hd)	5.707	6.267	6.33	6.068
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	632	572	569	593
Service Time	3.745	4.316	4.375	4.109
HCM Lane V/C Ratio	0.6	0.343	0.431	0.465
HCM Control Delay	17	12.5	14.1	14.3
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	4	1.5	2.2	2.5

Intersection

Intersection Delay, s/veh
 Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	27	163	17
Future Vol, veh/h	0	27	163	17
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	36	217	23
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	14.3
HCM LOS	B

Intersection

Intersection Delay, s/veh 82.5

Intersection LOS F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	0	1	0	0	279	0	22	0	1	280	309	0	10	471	0
Future Vol, veh/h	0	0	1	0	0	279	0	22	0	1	280	309	0	10	471	0
Peak Hour Factor	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	332	0	26	0	1	333	368	0	12	561	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.5	27.2	123.2	67.2
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	93%	2%
Vol Thru, %	47%	100%	0%	98%
Vol Right, %	52%	0%	7%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	590	1	301	481
LT Vol	1	0	279	10
Through Vol	280	1	0	471
RT Vol	309	0	22	0
Lane Flow Rate	702	1	358	573
Geometry Grp	1	1	1	1
Degree of Util (X)	1.189	0.003	0.712	1.01
Departure Headway (Hd)	6.093	9.51	7.572	6.703
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	597	379	480	544
Service Time	4.172	7.51	5.572	4.703
HCM Lane V/C Ratio	1.176	0.003	0.746	1.053
HCM Control Delay	123.2	12.5	27.2	67.2
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	24.4	0	5.6	14.6

Intersection

Intersection Delay, s/veh 19.1
Intersection LOS C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	114	293	3	0	9	131	168	0	2	2	6	0	170	11	80
Future Vol, veh/h	0	114	293	3	0	9	131	168	0	2	2	6	0	170	11	80
Peak Hour Factor	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	136	349	4	0	11	156	200	0	2	2	7	0	202	13	95
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	24.2	15.1	10	16
HCM LOS	C	C	A	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	28%	3%	65%
Vol Thru, %	20%	71%	43%	4%
Vol Right, %	60%	1%	55%	31%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	410	308	261
LT Vol	2	114	9	170
Through Vol	2	293	131	11
RT Vol	6	3	168	80
Lane Flow Rate	12	488	367	311
Geometry Grp	1	1	1	1
Degree of Util (X)	0.023	0.758	0.553	0.529
Departure Headway (Hd)	6.841	5.592	5.428	6.126
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	526	644	660	584
Service Time	4.841	3.66	3.504	4.202
HCM Lane V/C Ratio	0.023	0.758	0.556	0.533
HCM Control Delay	10	24.2	15.1	16
HCM Lane LOS	A	C	C	C
HCM 95th-tile Q	0.1	6.9	3.4	3.1

Intersection

Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations		↑	↑		↑	↑		↑	
Traffic Vol, veh/h	0	296	230	0	102	101	0	174	252
Future Vol, veh/h	0	296	230	0	102	101	0	174	252
Peak Hour Factor	0.92	0.89	0.89	0.92	0.89	0.89	0.92	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	333	258	0	115	113	0	196	283
Number of Lanes	0	1	1	0	1	1	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	15.7	12.1	23.7
HCM LOS	C	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	41%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%
Vol Right, %	59%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	426	296	230	102	101
LT Vol	174	0	0	102	0
Through Vol	0	296	0	0	101
RT Vol	252	0	230	0	0
Lane Flow Rate	479	333	258	115	113
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.749	0.594	0.41	0.236	0.217
Departure Headway (Hd)	5.636	6.43	5.716	7.406	6.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	641	559	628	482	519
Service Time	3.689	4.192	3.477	5.183	4.669
HCM Lane V/C Ratio	0.747	0.596	0.411	0.239	0.218
HCM Control Delay	23.7	18.2	12.4	12.5	11.6
HCM Lane LOS	C	C	B	B	B
HCM 95th-tile Q	6.7	3.9	2	0.9	0.8

HCM 2010 Signalized Intersection Summary
1: Walerga Rd & Baseline Rd

Existing AM
10/13/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	196	11	198	400	153	19	634	164	295	586	876
Future Volume (veh/h)	394	196	11	198	400	153	19	634	164	295	586	876
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	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	428	213	12	215	435	123	21	689	91	321	637	952
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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	456	925	52	249	548	245	53	804	360	328	1353	1012
Arrive On Green	0.26	0.27	0.27	0.14	0.15	0.15	0.03	0.23	0.23	0.18	0.38	0.38
Sat Flow, veh/h	1774	3408	191	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	428	110	115	215	435	123	21	689	91	321	637	952
Grp Sat Flow(s),veh/h/ln	1774	1770	1829	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	26.8	5.5	5.6	13.5	13.5	8.1	1.3	21.2	5.4	20.5	15.4	43.4
Cycle Q Clear(g_c), s	26.8	5.5	5.6	13.5	13.5	8.1	1.3	21.2	5.4	20.5	15.4	43.4
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	456	480	496	249	548	245	53	804	360	328	1353	1012
V/C Ratio(X)	0.94	0.23	0.23	0.86	0.79	0.50	0.40	0.86	0.25	0.98	0.47	0.94
Avail Cap(c_a), veh/h	484	480	496	484	748	334	250	1059	474	328	1353	1012
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	41.3	32.2	32.2	47.7	46.2	44.0	54.1	42.1	36.0	46.1	26.4	18.6
Incr Delay (d2), s/veh	25.7	0.2	0.2	8.6	4.1	1.6	4.7	5.6	0.4	43.8	0.3	16.0
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	16.5	2.7	2.8	7.2	6.9	3.7	0.7	11.0	2.4	14.0	7.6	31.2
LnGrp Delay(d),s/veh	67.0	32.4	32.4	56.3	50.4	45.6	58.8	47.7	36.4	89.9	26.7	34.6
LnGrp LOS	E	C	C	E	D	D	E	D	D	F	C	C
Approach Vol, veh/h		653			773			801			1910	
Approach Delay, s/veh		55.1			51.3			46.7			41.2	
Approach LOS		E			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	25.0	31.8	20.0	36.8	7.4	49.4	33.2	23.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	21.0	34.0	31.0	24.0	16.0	34.0	31.0	24.0				
Max Q Clear Time (g_c+I1), s	22.5	23.2	15.5	7.6	3.3	45.4	28.8	15.5				
Green Ext Time (p_c), s	0.0	2.6	0.5	4.3	0.0	0.0	0.3	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay			46.4									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
2: Cook-Riolo Rd & Baseline Rd

Existing AM
10/13/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	567	29	55	449	104	32	109	59	217	127	68
Future Volume (veh/h)	55	567	29	55	449	104	32	109	59	217	127	68
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	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	60	616	32	60	488	0	35	118	64	236	138	74
Adj No. of Lanes	1	1	0	1	2	1	0	1	1	0	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	77	644	33	77	1379	617	47	160	247	259	151	429
Arrive On Green	0.04	0.37	0.37	0.04	0.39	0.00	0.11	0.11	0.11	0.23	0.23	0.23
Sat Flow, veh/h	1774	1755	91	1774	3539	1583	421	1420	1583	1139	666	1583
Grp Volume(v), veh/h	60	0	648	60	488	0	153	0	64	374	0	74
Grp Sat Flow(s),veh/h/ln	1774	0	1847	1774	1770	1583	1842	0	1583	1806	0	1583
Q Serve(g_s), s	2.9	0.0	29.7	2.9	8.5	0.0	7.0	0.0	3.1	17.5	0.0	3.1
Cycle Q Clear(g_c), s	2.9	0.0	29.7	2.9	8.5	0.0	7.0	0.0	3.1	17.5	0.0	3.1
Prop In Lane	1.00		0.05	1.00		1.00	0.23		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	77	0	677	77	1379	617	208	0	247	411	0	429
V/C Ratio(X)	0.78	0.00	0.96	0.78	0.35	0.00	0.74	0.00	0.26	0.91	0.00	0.17
Avail Cap(c_a), veh/h	163	0	681	82	1379	617	509	0	506	422	0	439
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.1	0.0	26.8	41.1	18.8	0.0	37.3	0.0	32.2	32.7	0.0	24.2
Incr Delay (d2), s/veh	15.4	0.0	24.2	36.0	0.2	0.0	5.0	0.0	0.6	23.3	0.0	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	1.7	0.0	19.7	2.2	4.2	0.0	3.8	0.0	1.4	11.4	0.0	1.4
LnGrp Delay(d),s/veh	56.5	0.0	51.0	77.1	18.9	0.0	42.3	0.0	32.8	56.0	0.0	24.4
LnGrp LOS	E		D	E	B		D		C	E		C
Approach Vol, veh/h		708			548			217			448	
Approach Delay, s/veh		51.5			25.3			39.5			50.7	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		13.8	9.8	37.8		25.4	7.8	39.8				
Change Period (Y+Rc), s		4.0	6.0	* 6		5.7	4.0	6.0				
Max Green Setting (Gmax), s		24.0	4.0	* 32		20.3	8.0	28.0				
Max Q Clear Time (g_c+I1), s		9.0	4.9	31.7		19.5	4.9	10.5				
Green Ext Time (p_c), s		0.9	0.0	0.1		0.2	0.0	7.5				
Intersection Summary												
HCM 2010 Ctrl Delay			42.5									
HCM 2010 LOS			D									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Existing PM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #4 Cook Riolo / CRS

Cycle (sec): 100 Critical Vol./Cap.(X): 0.234
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 30 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	0	0	1	0	0	1

Volume Module:

Base Vol:	0	174	12	42	138	2	0	0	0	17	0	47
Growth 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
Initial Bse:	0	174	12	42	138	2	0	0	0	17	0	47
User 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
PHF Adj:	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
PHF Volume:	0	220	15	53	175	3	0	0	0	22	0	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	220	15	53	175	3	0	0	0	22	0	59
PCE 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
MLF 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
FinalVolume:	0	220	15	53	175	3	0	0	0	22	0	59

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.99	0.01	0.00	1.00	0.00	1.00	0.00	1.00
Final Sat.:	1425	1425	1425	1425	1405	20	0	1425	0	1425	0	1425

Capacity Analysis Module:

Vol/Sat:	0.00	0.15	0.01	0.04	0.12	0.12	0.00	0.00	0.00	0.02	0.00	0.04
Crit Volume:		220		53			0					59
Crit Moves:	****			****						****		

Existing PM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 0.962
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	21	753	103	29	821	28	144	86	35	184	105	30
Growth 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
Initial Bse:	21	753	103	29	821	28	144	86	35	184	105	30
User 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
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	23	837	114	32	912	31	160	96	39	204	117	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	23	837	114	32	912	31	160	96	39	204	117	33
PCE 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
MLF 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
FinalVolume:	23	837	114	32	912	31	160	96	39	204	117	33

Saturation Flow Module:

Sat/Lane:	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.88	0.12	1.00	0.97	0.03	1.00	0.71	0.29	1.00	0.78	0.22
Final Sat.:	1375	1210	165	1375	1330	45	1375	977	398	1375	1069	306

Capacity Analysis Module:

Vol/Sat:	0.02	0.69	0.69	0.02	0.69	0.69	0.12	0.10	0.10	0.15	0.11	0.11
Crit Volume:	951			32			134			204		
Crit Moves:	****			****			****			****		

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	18	64	12	0	64	75	42	0	8	123	45
Future Vol, veh/h	0	18	64	12	0	64	75	42	0	8	123	45
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	19	68	13	0	68	80	45	0	9	131	48
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.8	9.5	9.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	19%	35%	11%
Vol Thru, %	70%	68%	41%	63%
Vol Right, %	26%	13%	23%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	176	94	181	142
LT Vol	8	18	64	16
Through Vol	123	64	75	90
RT Vol	45	12	42	36
Lane Flow Rate	187	100	193	151
Geometry Grp	1	1	1	1
Degree of Util (X)	0.244	0.137	0.256	0.199
Departure Headway (Hd)	4.686	4.939	4.789	4.745
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	762	721	745	752
Service Time	2.741	3.005	2.847	2.803
HCM Lane V/C Ratio	0.245	0.139	0.259	0.201
HCM Control Delay	9.3	8.8	9.5	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1	0.5	1	0.7

Intersection

Intersection Delay, s/veh
 Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	16	90	36
Future Vol, veh/h	0	16	90	36
Peak Hour Factor	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	17	96	38
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	9
HCM LOS	A

Intersection

Intersection Delay, s/veh 18.9

Intersection LOS C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	0	1	0	0	149	0	23	0	0	335	213	0	38	304	0
Future Vol, veh/h	0	0	1	0	0	149	0	23	0	0	335	213	0	38	304	0
Peak Hour Factor	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	160	0	25	0	0	360	229	0	41	327	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.9	12.4	23.6	14.6
HCM LOS	A	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	87%	11%
Vol Thru, %	61%	100%	0%	89%
Vol Right, %	39%	0%	13%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	548	1	172	342
LT Vol	0	0	149	38
Through Vol	335	1	0	304
RT Vol	213	0	23	0
Lane Flow Rate	589	1	185	368
Geometry Grp	1	1	1	1
Degree of Util (X)	0.791	0.002	0.324	0.544
Departure Headway (Hd)	4.835	6.775	6.308	5.33
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	748	526	570	677
Service Time	2.868	4.847	4.353	3.367
HCM Lane V/C Ratio	0.787	0.002	0.325	0.544
HCM Control Delay	23.6	9.9	12.4	14.6
HCM Lane LOS	C	A	B	B
HCM 95th-tile Q	8	0	1.4	3.3

Intersection

Intersection Delay, s/veh 11.7

Intersection LOS B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	60	179	0	0	1	325	121	0	0	0	1	0	60	0	66
Future Vol, veh/h	0	60	179	0	0	1	325	121	0	0	0	1	0	60	0	66
Peak Hour Factor	0.92	0.97	0.97	0.97	0.92	0.97	0.97	0.97	0.92	0.97	0.97	0.97	0.92	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	62	185	0	0	1	335	125	0	0	0	1	0	62	0	68
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.3	13	8.2	9.6
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	0%	48%
Vol Thru, %	0%	75%	73%	0%
Vol Right, %	100%	0%	27%	52%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	239	447	126
LT Vol	0	60	1	60
Through Vol	0	179	325	0
RT Vol	1	0	121	66
Lane Flow Rate	1	246	461	130
Geometry Grp	1	1	1	1
Degree of Util (X)	0.001	0.33	0.564	0.19
Departure Headway (Hd)	5.115	4.82	4.403	5.264
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	690	742	816	677
Service Time	3.214	2.876	2.448	3.337
HCM Lane V/C Ratio	0.001	0.332	0.565	0.192
HCM Control Delay	8.2	10.3	13	9.6
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0	1.4	3.6	0.7

Intersection

Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations		↑	↑		↓	↑		↓	
Traffic Vol, veh/h	0	139	105	0	252	285	0	156	171
Future Vol, veh/h	0	139	105	0	252	285	0	156	171
Peak Hour Factor	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	146	111	0	265	300	0	164	180
Number of Lanes	0	1	1	0	1	1	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	10.7	14.7	15.2
HCM LOS	B	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	48%	0%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	100%
Vol Right, %	52%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	327	139	105	252	285
LT Vol	156	0	0	252	0
Through Vol	0	139	0	0	285
RT Vol	171	0	105	0	0
Lane Flow Rate	344	146	111	265	300
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.54	0.26	0.175	0.477	0.497
Departure Headway (Hd)	5.648	6.406	5.693	6.475	5.967
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	637	560	629	557	603
Service Time	3.688	4.156	3.442	4.215	3.706
HCM Lane V/C Ratio	0.54	0.261	0.176	0.476	0.498
HCM Control Delay	15.2	11.4	9.7	15	14.5
HCM Lane LOS	C	B	A	B	B
HCM 95th-tile Q	3.2	1	0.6	2.6	2.8

HCM 2010 Signalized Intersection Summary
1: Walerga Rd & Baseline Rd

Existing PM
10/13/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	714	411	16	200	214	301	9	682	212	194	649	482
Future Volume (veh/h)	714	411	16	200	214	301	9	682	212	194	649	482
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	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	776	447	17	217	233	245	10	741	176	211	705	524
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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	760	1361	52	243	354	158	29	758	339	203	1106	1173
Arrive On Green	0.43	0.39	0.39	0.14	0.10	0.10	0.02	0.21	0.21	0.11	0.31	0.31
Sat Flow, veh/h	1774	3477	132	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	776	227	237	217	233	245	10	741	176	211	705	524
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	60.0	12.5	12.6	16.8	8.9	14.0	0.8	29.1	13.8	16.0	23.9	17.9
Cycle Q Clear(g_c), s	60.0	12.5	12.6	16.8	8.9	14.0	0.8	29.1	13.8	16.0	23.9	17.9
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	760	693	720	243	354	158	29	758	339	203	1106	1173
V/C Ratio(X)	1.02	0.33	0.33	0.89	0.66	1.55	0.35	0.98	0.52	1.04	0.64	0.45
Avail Cap(c_a), veh/h	760	693	720	342	354	158	89	758	339	203	1106	1173
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	40.0	29.7	29.8	59.4	60.7	63.0	68.1	54.7	48.6	62.0	41.3	7.0
Incr Delay (d2), s/veh	37.9	0.3	0.3	18.7	4.4	275.1	7.1	27.0	1.4	74.3	1.2	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	37.4	6.2	6.4	9.5	4.6	18.2	0.4	17.0	6.1	12.0	11.9	7.8
LnGrp Delay(d),s/veh	77.9	30.0	30.0	78.1	65.1	338.1	75.3	81.6	50.0	136.3	42.5	7.3
LnGrp LOS	F	C	C	E	E	F	E	F	D	F	D	A
Approach Vol, veh/h		1240			695			927			1440	
Approach Delay, s/veh		60.0			165.4			75.6			43.5	
Approach LOS		E			F			E			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	20.0	36.0	23.2	60.8	6.3	49.7	64.0	20.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	16.0	30.0	27.0	47.0	7.0	39.0	60.0	14.0				
Max Q Clear Time (g_c+I1), s	18.0	31.1	18.8	14.6	2.8	25.9	62.0	16.0				
Green Ext Time (p_c), s	0.0	0.0	0.4	5.8	0.0	9.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			74.8									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
 2: Cook-Riolo Rd & Baseline Rd

Existing PM
 10/13/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	600	15	35	628	223	26	108	43	164	60	63
Future Volume (veh/h)	68	600	15	35	628	223	26	108	43	164	60	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	1900	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	74	652	16	38	683	0	28	117	47	178	65	68
Adj No. of Lanes	1	1	0	1	2	1	0	1	1	0	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	94	744	18	53	1474	659	45	188	248	158	58	274
Arrive On Green	0.05	0.41	0.41	0.03	0.42	0.00	0.13	0.13	0.13	0.12	0.12	0.12
Sat Flow, veh/h	1774	1810	44	1774	3539	1583	356	1489	1583	1316	481	1583
Grp Volume(v), veh/h	74	0	668	38	683	0	145	0	47	243	0	68
Grp Sat Flow(s),veh/h/ln	1774	0	1855	1774	1770	1583	1845	0	1583	1797	0	1583
Q Serve(g_s), s	2.9	0.0	23.0	1.5	9.7	0.0	5.2	0.0	1.8	8.3	0.0	2.6
Cycle Q Clear(g_c), s	2.9	0.0	23.0	1.5	9.7	0.0	5.2	0.0	1.8	8.3	0.0	2.6
Prop In Lane	1.00		0.02	1.00		1.00	0.19		1.00	0.73		1.00
Lane Grp Cap(c), veh/h	94	0	762	53	1474	659	234	0	248	215	0	274
V/C Ratio(X)	0.78	0.00	0.88	0.72	0.46	0.00	0.62	0.00	0.19	1.13	0.00	0.25
Avail Cap(c_a), veh/h	102	0	803	102	1531	685	612	0	573	215	0	274
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.4	0.0	18.8	33.3	14.6	0.0	28.7	0.0	25.4	30.5	0.0	24.8
Incr Delay (d2), s/veh	29.9	0.0	10.4	16.3	0.2	0.0	2.7	0.0	0.4	100.6	0.0	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	2.2	0.0	13.9	1.0	4.7	0.0	2.8	0.0	0.8	10.1	0.0	1.2
LnGrp Delay(d),s/veh	62.4	0.0	29.2	49.7	14.9	0.0	31.4	0.0	25.8	131.1	0.0	25.2
LnGrp LOS	E		C	D	B		C		C	F		C
Approach Vol, veh/h		742			721			192			311	
Approach Delay, s/veh		32.5			16.7			30.0			108.0	
Approach LOS		C			B			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.8	8.1	34.5		14.0	7.7	34.9				
Change Period (Y+Rc), s		4.0	6.0	* 6		5.7	4.0	6.0				
Max Green Setting (Gmax), s		23.0	4.0	* 30		8.3	4.0	30.0				
Max Q Clear Time (g_c+I1), s		7.2	3.5	25.0		10.3	4.9	11.7				
Green Ext Time (p_c), s		0.8	0.0	3.5		0.0	0.0	9.2				
Intersection Summary												
HCM 2010 Ctrl Delay			38.4									
HCM 2010 LOS			D									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Existing plus Project AM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #4 Cook Riolo / CRS

Cycle (sec): 100 Critical Vol./Cap.(X): 0.730
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 85 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	0	0	1	0	0	1

Volume Module:

Base Vol:	0	117	222	209	118	0	0	0	0	179	0	178
Growth 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
Initial Bse:	0	117	222	209	118	0	0	0	0	179	0	178
Added Vol:	0	26	42	0	9	0	0	0	0	14	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	143	264	209	127	0	0	0	0	193	0	178
User 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
PHF Adj:	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
PHF Volume:	0	223	413	327	198	0	0	0	0	302	0	278
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	223	413	327	198	0	0	0	0	302	0	278
PCE 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
MLF 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
FinalVolume:	0	223	413	327	198	0	0	0	0	302	0	278

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Final Sat.:	1425	1425	1425	1425	1425	0	0	1425	0	1425	0	1425

Capacity Analysis Module:

Vol/Sat:	0.00	0.16	0.29	0.23	0.14	0.00	0.00	0.00	0.00	0.21	0.00	0.20
Crit Volume:			413	327				0		302		
Crit Moves:			****	****						****		

Existing plus Project AM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 0.975
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement, Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 13 rows of data including Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns representing saturation flow values and 5 rows of data including Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns representing capacity analysis values and 4 rows of data including Vol/Sat, Crit Volume, and Crit Moves.

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	18	78	52	0	102	53	30	0	34	166	110
Future Vol, veh/h	0	18	78	52	0	102	53	30	0	34	166	110
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	24	104	69	0	136	71	40	0	45	221	147
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	13.1	14.8	19.8
HCM LOS	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	12%	55%	13%
Vol Thru, %	54%	53%	29%	79%
Vol Right, %	35%	35%	16%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	310	148	185	214
LT Vol	34	18	102	27
Through Vol	166	78	53	170
RT Vol	110	52	30	17
Lane Flow Rate	413	197	247	285
Geometry Grp	1	1	1	1
Degree of Util (X)	0.667	0.354	0.447	0.492
Departure Headway (Hd)	5.806	6.463	6.519	6.204
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	620	555	550	579
Service Time	3.857	4.527	4.578	4.262
HCM Lane V/C Ratio	0.666	0.355	0.449	0.492
HCM Control Delay	19.8	13.1	14.8	15.2
HCM Lane LOS	C	B	B	C
HCM 95th-tile Q	5	1.6	2.3	2.7

Intersection

Intersection Delay, s/veh
 Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	27	170	17
Future Vol, veh/h	0	27	170	17
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	36	227	23
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	15.2
HCM LOS	C

Intersection

Intersection Delay, s/veh 82.5

Intersection LOS F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	0	1	0	0	279	0	22	0	1	280	309	0	10	471	0
Future Vol, veh/h	0	0	1	0	0	279	0	22	0	1	280	309	0	10	471	0
Peak Hour Factor	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	332	0	26	0	1	333	368	0	12	561	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.5	27.2	123.2	67.2
HCM LOS	B	D	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	93%	2%
Vol Thru, %	47%	100%	0%	98%
Vol Right, %	52%	0%	7%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	590	1	301	481
LT Vol	1	0	279	10
Through Vol	280	1	0	471
RT Vol	309	0	22	0
Lane Flow Rate	702	1	358	573
Geometry Grp	1	1	1	1
Degree of Util (X)	1.189	0.003	0.712	1.01
Departure Headway (Hd)	6.093	9.51	7.572	6.703
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	597	379	480	544
Service Time	4.172	7.51	5.572	4.703
HCM Lane V/C Ratio	1.176	0.003	0.746	1.053
HCM Control Delay	123.2	12.5	27.2	67.2
HCM Lane LOS	F	B	D	F
HCM 95th-tile Q	24.4	0	5.6	14.6

Intersection																
Intersection Delay, s/veh 24.9																
Intersection LOS C																

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	114	297	3	0	9	143	236	0	2	2	6	0	193	11	80
Future Vol, veh/h	0	114	297	3	0	9	143	236	0	2	2	6	0	193	11	80
Peak Hour Factor	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.92	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	136	354	4	0	11	170	281	0	2	2	7	0	230	13	95
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	31.1	22.7	10.7	19.5
HCM LOS	D	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	28%	2%	68%
Vol Thru, %	20%	72%	37%	4%
Vol Right, %	60%	1%	61%	28%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	414	388	284
LT Vol	2	114	9	193
Through Vol	2	297	143	11
RT Vol	6	3	236	80
Lane Flow Rate	12	493	462	338
Geometry Grp	1	1	1	1
Degree of Util (X)	0.025	0.823	0.731	0.614
Departure Headway (Hd)	7.437	6.013	5.697	6.541
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	479	601	633	551
Service Time	5.516	4.052	3.736	4.584
HCM Lane V/C Ratio	0.025	0.82	0.73	0.613
HCM Control Delay	10.7	31.1	22.7	19.5
HCM Lane LOS	B	D	C	C
HCM 95th-tile Q	0.1	8.5	6.3	4.1

Intersection

Intersection Delay, s/veh 16.1
Intersection LOS C

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations		↑	↑		↑	↑		↑	↑
Traffic Vol, veh/h	0	309	247	0	111	105	0	210	277
Future Vol, veh/h	0	309	247	0	111	105	0	210	277
Peak Hour Factor	0.92	0.89	0.89	0.92	0.89	0.89	0.92	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	347	278	0	125	118	0	236	311
Number of Lanes	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	17.4	12.6	16.1
HCM LOS	C	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	0%	100%	0%	0%	100%
Vol Right, %	0%	100%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	277	309	247	111	105
LT Vol	210	0	0	0	111	0
Through Vol	0	0	309	0	0	105
RT Vol	0	277	0	247	0	0
Lane Flow Rate	236	311	347	278	125	118
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.48	0.528	0.638	0.455	0.264	0.233
Departure Headway (Hd)	7.329	6.112	6.617	5.903	7.624	7.111
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	491	588	545	608	469	503
Service Time	5.093	3.875	4.383	3.668	5.406	4.893
HCM Lane V/C Ratio	0.481	0.529	0.637	0.457	0.267	0.235
HCM Control Delay	16.7	15.6	20.4	13.6	13.1	12.1
HCM Lane LOS	C	C	C	B	B	B
HCM 95th-tile Q	2.6	3.1	4.5	2.4	1.1	0.9

Intersection

Int Delay, s/veh 1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↓	↑	↓	
Traffic Vol, veh/h	537	16	6	308	46	19
Future Vol, veh/h	537	16	6	308	46	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	530	-	-	-
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	584	17	7	335	50	21

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	584
Stage 1	-	-	584
Stage 2	-	-	348
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	6.12
Critical Hdwy Stg 2	-	-	6.12
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	991
Stage 1	-	-	498
Stage 2	-	-	668
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	991
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	498
Stage 2	-	-	663

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	991	-
HCM Lane V/C Ratio	0.244	-	-	0.007	-
HCM Control Delay (s)	21.4	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑		↑	↑↑
Traffic Vol, veh/h	8	18	469	3	6	352
Future Vol, veh/h	8	18	469	3	6	352
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	-	-	-	300	-
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	9	20	510	3	7	383

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	715	257	0	0	513	0
Stage 1	511	-	-	-	-	-
Stage 2	204	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	365	742	-	-	1049	-
Stage 1	567	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	363	742	-	-	1049	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	567	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	11		0		0.1
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 624	1049	-
HCM Lane V/C Ratio	-	- 0.045	0.006	-
HCM Control Delay (s)	-	- 11	8.5	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0.1	0	-

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Vol, veh/h	24	0	33	8	0	18	12	430	3	6	347	8
Future Vol, veh/h	24	0	33	8	0	18	12	430	3	6	347	8
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									
Storage Length	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	36	9	0	20	13	467	3	7	377	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	655	892	193	697	894	235	386	0	0	471	0	0
Stage 1	395	395	-	495	495	-	-	-	-	-	-	-
Stage 2	260	497	-	202	399	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	351	280	816	328	279	767	1169	-	-	1087	-	-
Stage 1	602	603	-	525	544	-	-	-	-	-	-	-
Stage 2	722	543	-	781	601	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	337	275	816	309	274	767	1169	-	-	1087	-	-
Mov Cap-2 Maneuver	337	275	-	309	274	-	-	-	-	-	-	-
Stage 1	595	599	-	519	538	-	-	-	-	-	-	-
Stage 2	696	537	-	742	597	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	12.2	0.2	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	510	527	1087	-
HCM Lane V/C Ratio	0.011	-	-	0.121	0.054	0.006	-
HCM Control Delay (s)	8.1	-	-	13	12.2	8.3	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-

HCM 2010 Signalized Intersection Summary
 1: Walerga Rd & Baseline Rd

Existing plus Project AM
 10/13/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	196	11	198	400	153	19	636	164	295	587	876
Future Volume (veh/h)	394	196	11	198	400	153	19	636	164	295	587	876
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	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	428	213	12	215	435	123	21	691	91	321	638	952
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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	456	924	52	249	548	245	49	806	360	328	1361	1016
Arrive On Green	0.26	0.27	0.27	0.14	0.15	0.15	0.03	0.23	0.23	0.18	0.38	0.38
Sat Flow, veh/h	1774	3408	191	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	428	110	115	215	435	123	21	691	91	321	638	952
Grp Sat Flow(s),veh/h/ln	1774	1770	1829	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	26.9	5.5	5.6	13.5	13.5	8.1	1.3	21.3	5.4	20.5	15.4	43.7
Cycle Q Clear(g_c), s	26.9	5.5	5.6	13.5	13.5	8.1	1.3	21.3	5.4	20.5	15.4	43.7
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	456	480	496	249	548	245	49	806	360	328	1361	1016
V/C Ratio(X)	0.94	0.23	0.23	0.86	0.79	0.50	0.43	0.86	0.25	0.98	0.47	0.94
Avail Cap(c_a), veh/h	484	480	496	484	747	334	250	1058	473	328	1361	1016
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	41.4	32.2	32.2	47.8	46.3	44.0	54.4	42.1	36.0	46.1	26.3	18.3
Incr Delay (d2), s/veh	25.8	0.2	0.2	8.6	4.2	1.6	5.8	5.6	0.4	44.1	0.3	15.4
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	16.5	2.7	2.8	7.2	6.9	3.7	0.7	11.0	2.4	14.0	7.6	30.7
LnGrp Delay(d),s/veh	67.1	32.4	32.5	56.4	50.5	45.6	60.2	47.8	36.3	90.3	26.5	33.8
LnGrp LOS	E	C	C	E	D	D	E	D	D	F	C	C
Approach Vol, veh/h		653			773			803			1911	
Approach Delay, s/veh		55.2			51.3			46.8			40.8	
Approach LOS		E			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	25.0	31.9	20.0	36.8	7.2	49.7	33.2	23.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	21.0	34.0	31.0	24.0	16.0	34.0	31.0	24.0				
Max Q Clear Time (g_c+I1), s	22.5	23.3	15.5	7.6	3.3	45.7	28.9	15.5				
Green Ext Time (p_c), s	0.0	2.6	0.5	4.3	0.0	0.0	0.3	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			46.2									
HCM 2010 LOS			D									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	567	30	61	449	104	34	109	78	217	127	68
Future Volume (veh/h)	55	567	30	61	449	104	34	109	78	217	127	68
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	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	60	616	33	66	488	0	37	118	85	236	138	74
Adj No. of Lanes	1	1	0	1	2	1	0	1	1	0	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	77	640	34	81	1381	618	50	161	254	258	151	428
Arrive On Green	0.04	0.37	0.37	0.05	0.39	0.00	0.11	0.11	0.11	0.23	0.23	0.23
Sat Flow, veh/h	1774	1752	94	1774	3539	1583	439	1401	1583	1139	666	1583
Grp Volume(v), veh/h	60	0	649	66	488	0	155	0	85	374	0	74
Grp Sat Flow(s),veh/h/ln	1774	0	1846	1774	1770	1583	1841	0	1583	1806	0	1583
Q Serve(g_s), s	2.9	0.0	30.1	3.2	8.5	0.0	7.1	0.0	4.2	17.7	0.0	3.1
Cycle Q Clear(g_c), s	2.9	0.0	30.1	3.2	8.5	0.0	7.1	0.0	4.2	17.7	0.0	3.1
Prop In Lane	1.00		0.05	1.00		1.00	0.24		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	77	0	674	81	1381	618	211	0	254	409	0	428
V/C Ratio(X)	0.78	0.00	0.96	0.81	0.35	0.00	0.73	0.00	0.34	0.91	0.00	0.17
Avail Cap(c_a), veh/h	162	0	674	81	1381	618	504	0	506	418	0	436
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.5	0.0	27.2	41.4	18.9	0.0	37.5	0.0	32.6	33.0	0.0	24.5
Incr Delay (d2), s/veh	15.4	0.0	25.6	45.0	0.2	0.0	4.9	0.0	0.8	23.9	0.0	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	1.8	0.0	20.1	2.6	4.2	0.0	3.9	0.0	1.9	11.6	0.0	1.4
LnGrp Delay(d),s/veh	56.8	0.0	52.8	86.5	19.0	0.0	42.4	0.0	33.4	57.0	0.0	24.7
LnGrp LOS	E		D	F	B		D		C	E		C
Approach Vol, veh/h		709			554			240			448	
Approach Delay, s/veh		53.1			27.1			39.2			51.6	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		14.0	10.0	38.0		25.6	7.8	40.2				
Change Period (Y+Rc), s		4.0	6.0	* 6		5.7	4.0	6.0				
Max Green Setting (Gmax), s		24.0	4.0	* 32		20.3	8.0	28.0				
Max Q Clear Time (g_c+I1), s		9.1	5.2	32.1		19.7	4.9	10.5				
Green Ext Time (p_c), s		0.9	0.0	0.0		0.2	0.0	7.5				
Intersection Summary												
HCM 2010 Ctrl Delay			43.7									
HCM 2010 LOS			D									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Existing plus Project PM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

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*****
Intersection #6 PFE / Walerga
*****
Cycle (sec):          100          Critical Vol./Cap.(X):          0.979
Loss Time (sec):      0            Average Delay (sec/veh):        xxxxxx
Optimal Cycle:        180          Level Of Service:              E
*****
Approach:             North Bound   South Bound   East Bound   West Bound
Movement:             L - T - R    L - T - R    L - T - R    L - T - R
-----|-----|-----|-----|
Control:              Protected   Protected   Protected   Protected
Rights:               Include     Include     Include     Include
Min. Green:           0 0 0       0 0 0       0 0 0       0 0 0
Y+R:                  4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes:                1 0 0 1 0   1 0 0 1 0   1 0 0 1 0   1 0 0 1 0
-----|-----|-----|-----|
Volume Module:
Base Vol:             21 753 103   29 821 28 144 86 35 184 105 30
Growth 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
Initial Bse:          21 753 103   29 821 28 144 86 35 184 105 30
Added Vol:            0 0 6       2 0 0       0 10 0       3 6 1
PasserByVol:         0 0 0       0 0 0       0 0 0       0 0 0
Initial Fut:          21 753 109   31 821 28 144 96 35 187 111 31
User 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
PHF Adj:              0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90
PHF Volume:           23 837 121   34 912 31 160 107 39 208 123 34
Reduct Vol:           0 0 0       0 0 0       0 0 0       0 0 0
Reduced Vol:          23 837 121   34 912 31 160 107 39 208 123 34
PCE 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
MLF 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
FinalVolume:          23 837 121   34 912 31 160 107 39 208 123 34
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:             1375 1375 1375 1375 1375 1375 1375 1375 1375 1375 1375 1375
Adjustment:           1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:                1.00 0.87 0.13 1.00 0.97 0.03 1.00 0.73 0.27 1.00 0.78 0.22
Final Sat.:           1375 1201 174 1375 1330 45 1375 1008 367 1375 1075 300
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:              0.02 0.70 0.70 0.03 0.69 0.69 0.12 0.11 0.11 0.15 0.11 0.11
Crit Volume:          958          34          146 208
Crit Moves:           ****          ****          ****  ****
*****

```

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			↕				↕				↕	
Traffic Vol, veh/h	0	18	64	16	0	66	75	42	0	10	142	46
Future Vol, veh/h	0	18	64	16	0	66	75	42	0	10	142	46
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	19	68	17	0	70	80	45	0	11	151	49
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.1	9.9	9.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	18%	36%	9%
Vol Thru, %	72%	65%	41%	70%
Vol Right, %	23%	16%	23%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	198	98	183	175
LT Vol	10	18	66	16
Through Vol	142	64	75	123
RT Vol	46	16	42	36
Lane Flow Rate	211	104	195	186
Geometry Grp	1	1	1	1
Degree of Util (X)	0.28	0.147	0.268	0.25
Departure Headway (Hd)	4.781	5.079	4.95	4.834
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	746	699	718	735
Service Time	2.853	3.166	3.025	2.909
HCM Lane V/C Ratio	0.283	0.149	0.272	0.253
HCM Control Delay	9.7	9.1	9.9	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.5	1.1	1

Intersection

Intersection Delay, s/veh
 Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations			↕	
Traffic Vol, veh/h	0	16	123	36
Future Vol, veh/h	0	16	123	36
Peak Hour Factor	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	17	131	38
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	9.5
HCM LOS	A

Intersection																
Intersection Delay, s/veh 19.3																
Intersection LOS C																

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	0	1	0	0	149	0	28	0	0	335	213	0	46	304	0
Future Vol, veh/h	0	0	1	0	0	149	0	28	0	0	335	213	0	46	304	0
Peak Hour Factor	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	0	0	160	0	30	0	0	360	229	0	49	327	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.9	12.5	24.2	15
HCM LOS	A	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	84%	13%
Vol Thru, %	61%	100%	0%	87%
Vol Right, %	39%	0%	16%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	548	1	177	350
LT Vol	0	0	149	46
Through Vol	335	1	0	304
RT Vol	213	0	28	0
Lane Flow Rate	589	1	190	376
Geometry Grp	1	1	1	1
Degree of Util (X)	0.797	0.002	0.334	0.56
Departure Headway (Hd)	4.87	6.827	6.317	5.36
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	742	521	569	674
Service Time	2.905	4.905	4.365	3.4
HCM Lane V/C Ratio	0.794	0.002	0.334	0.558
HCM Control Delay	24.2	9.9	12.5	15
HCM Lane LOS	C	A	B	B
HCM 95th-tile Q	8.2	0	1.5	3.5

Intersection

Intersection Delay, s/veh 13.1
Intersection LOS B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	60	196	0	0	1	335	144	0	0	0	1	0	99	0	66
Future Vol, veh/h	0	60	196	0	0	1	335	144	0	0	0	1	0	99	0	66
Peak Hour Factor	0.92	0.97	0.97	0.97	0.92	0.97	0.97	0.97	0.92	0.97	0.97	0.97	0.92	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	62	202	0	0	1	345	148	0	0	0	1	0	102	0	68
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11	15	8.5	10.6
HCM LOS	B	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	23%	0%	60%
Vol Thru, %	0%	77%	70%	0%
Vol Right, %	100%	0%	30%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	256	480	165
LT Vol	0	60	1	99
Through Vol	0	196	335	0
RT Vol	1	0	144	66
Lane Flow Rate	1	264	495	170
Geometry Grp	1	1	1	1
Degree of Util (X)	0.002	0.367	0.625	0.265
Departure Headway (Hd)	5.495	5.001	4.545	5.602
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	654	710	787	645
Service Time	3.502	3.098	2.625	3.602
HCM Lane V/C Ratio	0.002	0.372	0.629	0.264
HCM Control Delay	8.5	11	15	10.6
HCM Lane LOS	A	B	B	B
HCM 95th-tile Q	0	1.7	4.5	1.1

Intersection

Intersection Delay, s/veh 15.3
Intersection LOS C

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations		↑	↑		↑	↑		↑	↑
Traffic Vol, veh/h	0	154	133	0	301	310	0	176	199
Future Vol, veh/h	0	154	133	0	301	310	0	176	199
Peak Hour Factor	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	162	140	0	317	326	0	185	209
Number of Lanes	0	1	1	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	11.7	18	13.6
HCM LOS	B	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	0%	100%	0%	0%	100%
Vol Right, %	0%	100%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	176	199	154	133	301	310
LT Vol	176	0	0	0	301	0
Through Vol	0	0	154	0	0	310
RT Vol	0	199	0	133	0	0
Lane Flow Rate	185	209	162	140	317	326
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.383	0.362	0.305	0.235	0.596	0.568
Departure Headway (Hd)	7.445	6.227	6.769	6.054	6.771	6.263
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	482	576	528	591	532	574
Service Time	5.206	3.987	4.538	3.822	4.527	4.018
HCM Lane V/C Ratio	0.384	0.363	0.307	0.237	0.596	0.568
HCM Control Delay	14.8	12.5	12.5	10.7	19.1	17
HCM Lane LOS	B	B	B	B	C	C
HCM 95th-tile Q	1.8	1.6	1.3	0.9	3.9	3.5

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	
Traffic Vol, veh/h	269	32	30	456	18	19
Future Vol, veh/h	269	32	30	456	18	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	530	-	-	-
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	292	35	33	496	20	21

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	292	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	1270	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1270	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	454	-	-	1270	-
HCM Lane V/C Ratio	0.089	-	-	0.026	-
HCM Control Delay (s)	13.7	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑		↑	↑↑
Traffic Vol, veh/h	6	11	364	10	20	414
Future Vol, veh/h	6	11	364	10	20	414
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	-	-	-	300	-
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	7	12	396	11	22	450

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	669	203	0	0	407	0
Stage 1	401	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	391	804	-	-	1148	-
Stage 1	645	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	384	804	-	-	1148	-
Mov Cap-2 Maneuver	488	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	739	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	10.7		0		0.4
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 654	1148	-
HCM Lane V/C Ratio	-	- 0.028	0.019	-
HCM Control Delay (s)	-	- 10.7	8.2	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0.1	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	21	0	23	6	0	11	40	341	10	20	366	34
Future Vol, veh/h	21	0	23	6	0	11	40	341	10	20	366	34
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	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	0	25	7	0	12	43	371	11	22	398	37
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	732	928	217	705	941	191	435	0	0	382	0	0
Stage 1	460	460	-	463	463	-	-	-	-	-	-	-
Stage 2	272	468	-	242	478	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	309	266	787	323	262	818	1121	-	-	1173	-	-
Stage 1	551	564	-	548	562	-	-	-	-	-	-	-
Stage 2	711	560	-	740	554	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	291	251	787	299	247	818	1121	-	-	1173	-	-
Mov Cap-2 Maneuver	291	251	-	299	247	-	-	-	-	-	-	-
Stage 1	530	553	-	527	540	-	-	-	-	-	-	-
Stage 2	674	539	-	703	544	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.3			12.4			0.9			0.4		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1121	-	-	434	507	1173	-	-				
HCM Lane V/C Ratio	0.039	-	-	0.11	0.036	0.019	-	-				
HCM Control Delay (s)	8.3	-	-	14.3	12.4	8.1	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0.1	-	-				

HCM 2010 Signalized Intersection Summary
 1: Walerga Rd & Baseline Rd

Existing plus Project PM
 10/13/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	714	411	16	200	214	301	9	683	212	194	651	482
Future Volume (veh/h)	714	411	16	200	214	301	9	683	212	194	651	482
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	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	776	447	17	217	233	245	10	742	176	211	708	524
Adj No. of Lanes	1	2	0	1	2	1	1	2	1	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	760	1361	52	243	354	158	27	758	339	203	1110	1175
Arrive On Green	0.43	0.39	0.39	0.14	0.10	0.10	0.01	0.21	0.21	0.11	0.31	0.31
Sat Flow, veh/h	1774	3477	132	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	776	227	237	217	233	245	10	742	176	211	708	524
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	60.0	12.5	12.6	16.8	8.9	14.0	0.8	29.2	13.8	16.0	24.0	17.9
Cycle Q Clear(g_c), s	60.0	12.5	12.6	16.8	8.9	14.0	0.8	29.2	13.8	16.0	24.0	17.9
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	760	693	720	243	354	158	27	758	339	203	1110	1175
V/C Ratio(X)	1.02	0.33	0.33	0.89	0.66	1.55	0.38	0.98	0.52	1.04	0.64	0.45
Avail Cap(c_a), veh/h	760	693	720	342	354	158	89	758	339	203	1110	1175
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	40.0	29.7	29.8	59.4	60.7	63.0	68.3	54.7	48.6	62.0	41.2	7.0
Incr Delay (d2), s/veh	37.9	0.3	0.3	18.7	4.4	275.1	8.6	27.3	1.4	74.3	1.2	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	37.4	6.2	6.4	9.5	4.6	18.2	0.4	17.1	6.1	12.0	11.9	7.8
LnGrp Delay(d),s/veh	77.9	30.0	30.0	78.1	65.1	338.1	76.9	82.0	50.0	136.3	42.5	7.2
LnGrp LOS	F	C	C	E	E	F	E	F	D	F	D	A
Approach Vol, veh/h		1240			695			928			1443	
Approach Delay, s/veh		60.0			165.4			75.8			43.4	
Approach LOS		E			F			E			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	20.0	36.0	23.2	60.8	6.1	49.9	64.0	20.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	16.0	30.0	27.0	47.0	7.0	39.0	60.0	14.0				
Max Q Clear Time (g_c+I1), s	18.0	31.2	18.8	14.6	2.8	26.0	62.0	16.0				
Green Ext Time (p_c), s	0.0	0.0	0.4	5.8	0.0	9.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				74.9								
HCM 2010 LOS				E								

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	600	19	64	628	223	28	108	60	164	60	63
Future Volume (veh/h)	68	600	19	64	628	223	28	108	60	164	60	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	1900	1863	1863	1863	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	74	652	21	70	683	0	30	117	65	178	65	68
Adj No. of Lanes	1	1	0	1	2	1	0	1	1	0	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	94	723	23	89	1514	677	47	183	277	154	56	269
Arrive On Green	0.05	0.40	0.40	0.05	0.43	0.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1774	1795	58	1774	3539	1583	376	1468	1583	1316	481	1583
Grp Volume(v), veh/h	74	0	673	70	683	0	147	0	65	243	0	68
Grp Sat Flow(s),veh/h/ln	1774	0	1853	1774	1770	1583	1844	0	1583	1797	0	1583
Q Serve(g_s), s	2.9	0.0	24.2	2.8	9.7	0.0	5.4	0.0	2.5	8.3	0.0	2.6
Cycle Q Clear(g_c), s	2.9	0.0	24.2	2.8	9.7	0.0	5.4	0.0	2.5	8.3	0.0	2.6
Prop In Lane	1.00		0.03	1.00		1.00	0.20		1.00	0.73		1.00
Lane Grp Cap(c), veh/h	94	0	746	89	1514	677	230	0	277	210	0	269
V/C Ratio(X)	0.78	0.00	0.90	0.78	0.45	0.00	0.64	0.00	0.23	1.16	0.00	0.25
Avail Cap(c_a), veh/h	100	0	782	100	1514	677	597	0	592	210	0	269
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.2	0.0	19.9	33.3	14.4	0.0	29.6	0.0	25.2	31.4	0.0	25.6
Incr Delay (d2), s/veh	31.0	0.0	13.4	29.8	0.2	0.0	2.9	0.0	0.4	111.0	0.0	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	2.3	0.0	15.1	2.1	4.8	0.0	2.9	0.0	1.1	10.6	0.0	1.2
LnGrp Delay(d),s/veh	64.2	0.0	33.3	63.2	14.6	0.0	32.5	0.0	25.6	142.4	0.0	26.0
LnGrp LOS	E		C	E	B		C		C	F		C
Approach Vol, veh/h		747			753			212			311	
Approach Delay, s/veh		36.3			19.1			30.4			116.9	
Approach LOS		D			B			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.9	9.6	34.6		14.0	7.8	36.4				
Change Period (Y+Rc), s		4.0	6.0	* 6		5.7	4.0	6.0				
Max Green Setting (Gmax), s		23.0	4.0	* 30		8.3	4.0	30.0				
Max Q Clear Time (g_c+I1), s		7.4	4.8	26.2		10.3	4.9	11.7				
Green Ext Time (p_c), s		0.8	0.0	2.4		0.0	0.0	9.2				
Intersection Summary												
HCM 2010 Ctrl Delay			41.7									
HCM 2010 LOS			D									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Cumulative AM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #4 Cook Riolo / CRS

Cycle (sec): 100 Critical Vol./Cap.(X): 0.808
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 119 Level Of Service: D

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Movement, Control, Rights, Min. Green, Y+R, and Lanes.

Volume Module: Table with 12 columns representing different volume categories and 12 rows of data including Base Vol, Growth Adj, Initial Bse, etc.

Saturation Flow Module: Table with 12 columns representing saturation flow and 4 rows of data including Sat/Lane, Adjustment, Lanes, and Final Sat.

Capacity Analysis Module: Table with 12 columns representing capacity analysis and 4 rows of data including Vol/Sat, Crit Volume, and Crit Moves.

Cumulative AM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #5 PFE / Watt

Cycle (sec): 100 Critical Vol./Cap.(X): 0.849
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 151 Level Of Service: D

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	2	0	3	0	1	0	0	1!	0	0	0	1	0	0	2

Volume Module:

Base Vol:	0	2040	390	390	2440	0	0	0	0	135	0	460
Growth 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
Initial Bse:	0	2040	390	390	2440	0	0	0	0	135	0	460
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	2040	390	390	2440	0	0	0	0	135	0	460
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	2217	424	424	2652	0	0	0	0	147	0	500
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2217	424	424	2652	0	0	0	0	147	0	500
PCE 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
MLF Adj:	1.00	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02
FinalVolume:	0	2217	424	432	2652	0	0	0	0	147	0	510

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	2.00	3.00	1.00	0.00	1.00	0.00	1.00	0.00	2.00
Final Sat.:	1425	4275	1425	2850	4275	1425	0	1425	0	1425	0	2850

Capacity Analysis Module:

Vol/Sat:	0.00	0.52	0.30	0.15	0.62	0.00	0.00	0.00	0.00	0.10	0.00	0.18
Crit Volume:	739			216			0			255		
Crit Moves:	***			***						***		

Cumulative AM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 1.156
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	0	1	1	2	0	0	1	0

Volume Module:

Base Vol:	400	1805	320	20	1810	175	140	255	485	70	70	20
Growth 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
Initial Bse:	400	1805	320	20	1810	175	140	255	485	70	70	20
Added Vol:	0	0	-2	-1	0	0	0	-1	0	-7	-3	-2
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	400	1805	318	19	1810	175	140	254	485	63	67	18
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	435	1962	346	21	1967	190	152	276	527	68	73	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	435	1962	346	21	1967	190	152	276	527	68	73	20
PCE 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
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.02	1.00	1.00
FinalVolume:	435	1962	346	21	1967	190	152	276	538	70	73	20

Saturation Flow Module:

Sat/Lane:	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.68	1.32	2.00	0.79	0.21
Final Sat.:	1375	4125	1375	1375	4125	1375	1375	933	1817	2750	1084	291

Capacity Analysis Module:

Vol/Sat:	0.32	0.48	0.25	0.02	0.48	0.14	0.11	0.30	0.30	0.03	0.07	0.07
Crit Volume:	435			656			407			92		
Crit Moves:	****			****			****			****		

Cumulative AM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #8 PFE / N. Antelope

Cycle (sec): 100 Critical Vol./Cap.(X): 1.050
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	0	0	0	1	1	2	0	0

Volume Module:

Base Vol:	525	0	1165	0	0	0	0	480	610	405	160	0
Growth 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
Initial Bse:	525	0	1165	0	0	0	0	480	610	405	160	0
Added Vol:	-36	0	-25	0	0	0	0	-13	-17	-9	-4	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	489	0	1140	0	0	0	0	467	593	396	156	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	532	0	1239	0	0	0	0	508	645	430	170	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	532	0	1239	0	0	0	0	508	645	430	170	0
PCE 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
MLF Adj:	1.02	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00
FinalVolume:	542	0	1264	0	0	0	0	508	645	439	170	0

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	2.00	1.00	0.00
Final Sat.:	1425	0	2850	0	0	0	0	1425	1425	2850	1425	0

Capacity Analysis Module:

Vol/Sat:	0.38	0.00	0.44	0.00	0.00	0.00	0.00	0.36	0.45	0.15	0.12	0.00
Crit Volume:			632	0					645	220		
Crit Moves:			****						****	****		

Intersection	
Intersection Delay, s/veh	222
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	235	651	5	15	68	497	0	5	10	332	10	30
Future Vol, veh/h	235	651	5	15	68	497	0	5	10	332	10	30
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	255	708	5	16	74	540	0	5	11	361	11	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	387.7	89.8	14.5	39.6
HCM LOS	F	F	B	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	26%	3%	89%
Vol Thru, %	33%	73%	12%	3%
Vol Right, %	67%	1%	86%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	891	580	372
LT Vol	0	235	15	332
Through Vol	5	651	68	10
RT Vol	10	5	497	30
Lane Flow Rate	16	968	630	404
Geometry Grp	1	1	1	1
Degree of Util (X)	0.039	1.806	1.078	0.815
Departure Headway (Hd)	11.043	6.971	7.291	8.536
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	326	533	504	429
Service Time	9.043	4.971	5.291	6.536
HCM Lane V/C Ratio	0.049	1.816	1.25	0.942
HCM Control Delay	14.5	387.7	89.8	39.6
HCM Lane LOS	B	F	F	E
HCM 95th-tile Q	0.1	58.1	16.7	7.5

MOVEMENT SUMMARY

 Site: 3 [Cook Riolo Road / Vineyard Road]

2035 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: Cook Riolo Rd											
3	L2	57	3.0	1.386	202.1	LOS F	102.1	2613.4	1.00	3.70	8.6
8	T1	488	3.0	1.386	202.1	LOS F	102.1	2613.4	1.00	3.70	8.6
18	R2	357	3.0	1.386	202.1	LOS F	102.1	2613.4	1.00	3.70	8.6
Approach		901	3.0	1.386	202.1	LOS F	102.1	2613.4	1.00	3.70	8.6
East: Vineyard Rd											
1	L2	113	3.0	0.288	7.8	LOS A	1.9	49.0	0.73	0.62	32.5
6	T1	54	3.0	0.288	7.8	LOS A	1.9	49.0	0.73	0.62	32.4
16	R2	60	3.0	0.288	7.8	LOS A	1.9	49.0	0.73	0.62	31.5
Approach		227	3.0	0.288	7.8	LOS A	1.9	49.0	0.73	0.62	32.2
North: Cook Riolo Rd											
7	L2	60	3.0	0.280	6.0	LOS A	1.8	45.8	0.48	0.32	34.2
4	T1	221	3.0	0.280	6.0	LOS A	1.8	45.8	0.48	0.32	34.1
14	R2	22	3.0	0.280	6.0	LOS A	1.8	45.8	0.48	0.32	33.1
Approach		302	3.0	0.280	6.0	LOS A	1.8	45.8	0.48	0.32	34.1
West: Vineyard Rd											
5	L2	120	3.0	0.829	23.5	LOS C	19.5	499.7	0.99	1.31	27.1
2	T1	473	3.0	0.829	23.5	LOS C	19.5	499.7	0.99	1.31	27.1
12	R2	184	3.0	0.829	23.5	LOS C	19.5	499.7	0.99	1.31	26.5
Approach		776	3.0	0.829	23.5	LOS C	19.5	499.7	0.99	1.31	26.9
All Vehicles		2207	3.0	1.386	92.4	LOS F	102.1	2613.4	0.90	2.08	14.8

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: SIDRA Roundabout LOS.

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: SIDRA Standard.

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

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

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

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HCM 2010 Signalized Intersection Summary
1: Walerga Rd & Baseline Rd

Cumulative AM
01/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	770	1610	45	595	755	220	34	899	985	885	875	820
Future Volume (veh/h)	770	1610	45	595	755	220	34	899	985	885	875	820
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	837	1750	49	647	821	239	37	977	1071	962	951	891
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	2	3	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	522	1543	480	380	1333	677	92	1438	622	570	2144	908
Arrive On Green	0.15	0.30	0.30	0.11	0.26	0.26	0.03	0.28	0.28	0.17	0.42	0.42
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	837	1750	49	647	821	239	37	977	1071	962	951	891
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	22.0	44.0	3.2	16.0	20.6	14.8	1.5	24.7	41.0	24.0	19.3	61.1
Cycle Q Clear(g_c), s	22.0	44.0	3.2	16.0	20.6	14.8	1.5	24.7	41.0	24.0	19.3	61.1
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	522	1543	480	380	1333	677	92	1438	622	570	2144	908
V/C Ratio(X)	1.60	1.13	0.10	1.70	0.62	0.35	0.40	0.68	1.72	1.69	0.44	0.98
Avail Cap(c_a), veh/h	522	1543	480	380	1333	677	285	1438	622	570	2144	908
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	61.5	50.5	36.3	64.5	47.1	28.0	69.4	46.2	44.0	60.5	29.8	30.2
Incr Delay (d2), s/veh	280.2	69.0	0.1	327.7	0.9	0.3	2.8	1.3	331.1	317.5	0.1	25.3
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	30.8	30.4	1.4	24.9	9.8	6.5	0.8	11.8	82.1	36.5	9.0	41.0
LnGrp Delay(d),s/veh	341.7	119.5	36.4	392.2	47.9	28.3	72.2	47.5	375.1	378.0	30.0	55.5
LnGrp LOS	F	F	D	F	D	C	E	D	F	F	C	E
Approach Vol, veh/h		2636			1707			2085			2804	
Approach Delay, s/veh		188.5			175.7			216.2			157.5	
Approach LOS		F			F			F			F	
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	28.0	47.0	20.0	50.0	7.9	67.1	26.0	44.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	24.0	41.0	16.0	44.0	12.0	53.0	22.0	38.0				
Max Q Clear Time (g_c+I1), s	26.0	43.0	18.0	46.0	3.5	63.1	24.0	22.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			183.0									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary
2: Cook Riolo Rd & Baseline Rd

Cumulative AM
01/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1760	84	54	945	210	118	400	101	240	135	140
Future Volume (veh/h)	10	1760	84	54	945	210	118	400	101	240	135	140
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	11	1913	91	59	1027	228	128	435	110	261	147	152
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	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	22	1736	776	76	1842	824	154	545	244	274	786	351
Arrive On Green	0.01	0.49	0.49	0.04	0.52	0.52	0.09	0.15	0.15	0.15	0.22	0.22
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	11	1913	91	59	1027	228	128	435	110	261	147	152
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.8	65.0	4.1	4.4	26.0	10.7	9.4	15.7	8.4	19.3	4.5	11.0
Cycle Q Clear(g_c), s	0.8	65.0	4.1	4.4	26.0	10.7	9.4	15.7	8.4	19.3	4.5	11.0
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	22	1736	776	76	1842	824	154	545	244	274	786	351
V/C Ratio(X)	0.49	1.10	0.12	0.78	0.56	0.28	0.83	0.80	0.45	0.95	0.19	0.43
Avail Cap(c_a), veh/h	67	1736	776	100	1842	824	257	828	370	274	862	386
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	65.0	33.8	18.3	62.8	21.5	17.8	59.6	54.1	51.0	55.5	41.9	44.4
Incr Delay (d2), s/veh	15.9	55.3	0.1	24.1	0.4	0.2	11.0	3.2	1.3	41.1	0.1	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	0.5	44.9	1.8	2.7	12.8	4.7	5.1	7.9	3.8	12.6	2.2	4.9
LnGrp Delay(d),s/veh	80.9	89.1	18.3	86.9	21.9	18.0	70.6	57.3	52.3	96.7	42.0	45.2
LnGrp LOS	F	F	B	F	C	B	E	E	D	F	D	D
Approach Vol, veh/h		2015			1314			673			560	
Approach Delay, s/veh		85.9			24.1			59.0			68.3	
Approach LOS		F			C			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	25.0	26.4	10.1	71.0	16.0	35.4	6.2	75.0				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	20.5	31.0	7.5	65.0	19.2	32.3	5.0	67.5				
Max Q Clear Time (g_c+I1), s	21.3	17.7	6.4	67.0	11.4	13.0	2.8	28.0				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.2	1.3	0.0	10.6				
Intersection Summary												
HCM 2010 Ctrl Delay			62.0									
HCM 2010 LOS			E									

Cumulative PM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #5 PFE / Watt

Cycle (sec): 100 Critical Vol./Cap.(X): 0.939
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	2	0	3	0	1	0	0	1!	0	0	0	1	0	0	2

Volume Module:

Base Vol:	0	2235	65	445	2195	0	0	0	0	100	0	520
Growth 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
Initial Bse:	0	2235	65	445	2195	0	0	0	0	100	0	520
Added Vol:	0	0	0	-8	0	0	0	0	0	0	0	-5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	2235	65	437	2195	0	0	0	0	100	0	515
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	2429	71	475	2386	0	0	0	0	109	0	560
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2429	71	475	2386	0	0	0	0	109	0	560
PCE 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
MLF Adj:	1.00	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02
FinalVolume:	0	2429	71	485	2386	0	0	0	0	109	0	571

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	2.00	3.00	1.00	0.00	1.00	0.00	1.00	0.00	2.00
Final Sat.:	1425	4275	1425	2850	4275	1425	0	1425	0	1425	0	2850

Capacity Analysis Module:

Vol/Sat:	0.00	0.57	0.05	0.17	0.56	0.00	0.00	0.00	0.00	0.08	0.00	0.20
Crit Volume:	810			242			0			285		
Crit Moves:	***			***						***		

Cumulative PM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 1.201
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	0	1	1	2	0	0	1	0

Volume Module:

Base Vol:	455	1905	100	10	1970	80	185	40	330	335	220	10
Growth 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
Initial Bse:	455	1905	100	10	1970	80	185	40	330	335	220	10
Added Vol:	0	0	-6	-2	0	0	0	-10	0	-3	-6	-1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	455	1905	94	8	1970	80	185	30	330	332	214	9
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	495	2071	102	9	2141	87	201	33	359	361	233	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	495	2071	102	9	2141	87	201	33	359	361	233	10
PCE 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
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.02	1.00	1.00
FinalVolume:	495	2071	102	9	2141	87	201	33	366	368	233	10

Saturation Flow Module:

Sat/Lane:	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.16	1.84	2.00	0.96	0.04
Final Sat.:	1375	4125	1375	1375	4125	1375	1375	225	2525	2750	1320	55

Capacity Analysis Module:

Vol/Sat:	0.36	0.50	0.07	0.01	0.52	0.06	0.15	0.14	0.14	0.13	0.18	0.18
Crit Volume:	495				714		201			242		
Crit Moves:	****				****		****			****		

Cumulative PM

Level Of Service Computation Report
Circular 212 Planning Method (Future Volume Alternative)

Intersection #8 PFE / N. Antelope

Cycle (sec): 100 Critical Vol./Cap.(X): 1.042
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	0	0	0	0	1	2	0	0

Volume Module:

Base Vol:	515	0	635	0	0	0	0	225	450	1165	445	0
Growth 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
Initial Bse:	515	0	635	0	0	0	0	225	450	1165	445	0
Added Vol:	-20	0	-28	0	0	0	0	-15	-28	-49	-25	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	495	0	607	0	0	0	0	210	422	1116	420	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	538	0	660	0	0	0	0	228	459	1213	457	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	538	0	660	0	0	0	0	228	459	1213	457	0
PCE 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
MLF Adj:	1.02	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00
FinalVolume:	549	0	673	0	0	0	0	228	459	1237	457	0

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.34	0.01	1.65	0.00	0.00	0.00	0.00	1.00	1.00	2.00	1.00	0.00
Final Sat.:	1920	0	2355	0	0	0	0	1425	1425	2850	1425	0

Capacity Analysis Module:

Vol/Sat:	0.29	0.00	0.29	0.00	0.00	0.00	0.00	0.16	0.32	0.43	0.32	0.00
Crit Volume:			407	0					459	619		
Crit Moves:			****						****	****		

Intersection	
Intersection Delay, s/veh	179.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	98	0	5	645	202	0	0	5	446	0	145
Future Vol, veh/h	10	98	0	5	645	202	0	0	5	446	0	145
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	107	0	5	701	220	0	0	5	485	0	158
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.5	262.4	11.7	91.1
HCM LOS	B	F	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	1%	75%
Vol Thru, %	0%	91%	76%	0%
Vol Right, %	100%	0%	24%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	108	852	591
LT Vol	0	10	5	446
Through Vol	0	98	645	0
RT Vol	5	0	202	145
Lane Flow Rate	5	117	926	642
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.231	1.525	1.084
Departure Headway (Hd)	8.604	8.107	6.232	7.157
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	418	446	593	514
Service Time	6.604	6.107	4.232	5.157
HCM Lane V/C Ratio	0.012	0.262	1.562	1.249
HCM Control Delay	11.7	13.5	262.4	91.1
HCM Lane LOS	B	B	F	F
HCM 95th-tile Q	0	0.9	45.2	17.2

MOVEMENT SUMMARY

 Site: 3 [Cook Riolo Road / Vineyard Road]

2035 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	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cook Riolo Rd											
3	L2	52	3.0	0.209	4.7	LOS A	1.3	33.7	0.35	0.19	34.8
8	T1	137	3.0	0.209	4.7	LOS A	1.3	33.7	0.35	0.19	34.7
18	R2	70	3.0	0.209	4.7	LOS A	1.3	33.7	0.35	0.19	33.7
Approach		259	3.0	0.209	4.7	LOS A	1.3	33.7	0.35	0.19	34.5
East: Vineyard Rd											
1	L2	351	3.0	0.724	13.8	LOS B	11.1	284.6	0.74	0.62	30.2
6	T1	489	3.0	0.724	13.8	LOS B	11.1	284.6	0.74	0.62	30.1
16	R2	49	3.0	0.724	13.8	LOS B	11.1	284.6	0.74	0.62	29.4
Approach		889	3.0	0.724	13.8	LOS B	11.1	284.6	0.74	0.62	30.1
North: Cook Riolo Rd											
7	L2	22	3.0	1.179	126.3	LOS F	49.1	1256.7	1.00	2.55	12.2
4	T1	372	3.0	1.179	126.3	LOS F	49.1	1256.7	1.00	2.55	12.2
14	R2	196	3.0	1.179	126.3	LOS F	49.1	1256.7	1.00	2.55	12.0
Approach		589	3.0	1.179	126.3	LOS F	49.1	1256.7	1.00	2.55	12.1
West: Vineyard Rd											
5	L2	22	3.0	0.228	7.9	LOS A	1.4	37.1	0.77	0.68	33.4
2	T1	82	3.0	0.228	7.9	LOS A	1.4	37.1	0.77	0.68	33.3
12	R2	55	3.0	0.228	7.9	LOS A	1.4	37.1	0.77	0.68	32.4
Approach		159	3.0	0.228	7.9	LOS A	1.4	37.1	0.77	0.68	33.0
All Vehicles		1896	3.0	1.179	47.0	LOS D	49.1	1256.7	0.77	1.16	21.0

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: SIDRA Roundabout LOS.

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: SIDRA Standard.

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

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

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

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HCM 2010 Signalized Intersection Summary
 1: Walerga Rd & Baseline Rd

Cumulative PM
 01/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	695	1030	30	1030	1490	810	34	939	755	355	884	890
Future Volume (veh/h)	695	1030	30	1030	1490	810	34	939	755	355	884	890
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	755	1120	33	1120	1620	880	37	1021	821	386	961	967
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	2	3	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	691	1288	401	815	1471	632	90	1322	786	379	1748	862
Arrive On Green	0.20	0.25	0.25	0.24	0.29	0.29	0.03	0.26	0.26	0.11	0.34	0.34
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	755	1120	33	1120	1620	880	37	1021	821	386	961	967
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	30.1	31.6	2.4	35.5	43.4	43.4	1.6	27.9	39.0	16.5	22.9	51.6
Cycle Q Clear(g_c), s	30.1	31.6	2.4	35.5	43.4	43.4	1.6	27.9	39.0	16.5	22.9	51.6
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	691	1288	401	815	1471	632	90	1322	786	379	1748	862
V/C Ratio(X)	1.09	0.87	0.08	1.38	1.10	1.39	0.41	0.77	1.04	1.02	0.55	1.12
Avail Cap(c_a), veh/h	691	1288	401	815	1471	632	115	1322	786	379	1748	862
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	60.0	53.6	42.7	57.2	53.3	45.0	71.9	51.4	37.8	66.8	39.8	34.2
Incr Delay (d2), s/veh	62.5	6.6	0.1	176.5	56.2	185.9	3.0	2.9	44.2	51.3	0.4	69.9
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	20.3	15.6	1.1	36.8	28.0	58.8	0.8	13.4	42.1	10.5	10.8	52.2
LnGrp Delay(d),s/veh	122.4	60.3	42.8	233.8	109.5	230.9	74.9	54.3	81.9	118.1	40.2	104.0
LnGrp LOS	F	E	D	F	F	F	E	D	F	F	D	F
Approach Vol, veh/h		1908			3620			1879			2314	
Approach Delay, s/veh		84.6			177.5			66.8			79.9	
Approach LOS		F			F			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	21.0	45.0	40.0	44.0	8.4	57.6	34.6	49.4				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	16.5	39.0	35.5	38.0	5.0	50.5	30.1	43.4				
Max Q Clear Time (g_c+I1), s	18.5	41.0	37.5	33.6	3.6	53.6	32.1	45.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			114.6									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary
2: Cook-Riolo Rd & Baseline Rd

Cumulative PM
01/09/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1290	96	136	1600	245	48	90	38	250	275	155
Future Volume (veh/h)	100	1290	96	136	1600	245	48	90	38	250	275	155
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	109	1402	104	148	1739	266	52	98	41	272	299	168
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	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	133	1814	811	176	1899	850	67	172	77	299	635	284
Arrive On Green	0.07	0.51	0.51	0.10	0.54	0.54	0.04	0.05	0.05	0.17	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	109	1402	104	148	1739	266	52	98	41	272	299	168
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.4	39.3	4.2	10.1	54.9	11.5	3.6	3.3	3.1	18.5	9.3	12.0
Cycle Q Clear(g_c), s	7.4	39.3	4.2	10.1	54.9	11.5	3.6	3.3	3.1	18.5	9.3	12.0
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	133	1814	811	176	1899	850	67	172	77	299	635	284
V/C Ratio(X)	0.82	0.77	0.13	0.84	0.92	0.31	0.77	0.57	0.53	0.91	0.47	0.59
Avail Cap(c_a), veh/h	134	1814	811	260	1961	877	220	819	366	337	1053	471
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	55.9	24.2	15.6	54.3	25.9	15.8	58.5	57.1	57.0	50.1	45.1	46.2
Incr Delay (d2), s/veh	31.2	2.1	0.1	14.7	7.1	0.2	16.7	2.9	5.6	25.7	0.5	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	4.8	19.6	1.9	5.6	28.4	5.1	2.1	1.7	1.5	11.2	4.6	5.4
LnGrp Delay(d),s/veh	87.2	26.3	15.7	69.0	33.0	16.1	75.2	60.1	62.6	75.8	45.7	48.2
LnGrp LOS	F	C	B	E	C	B	E	E	E	E	D	D
Approach Vol, veh/h		1615			2153			191			739	
Approach Delay, s/veh		29.7			33.4			64.7			57.3	
Approach LOS		C			C			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	25.2	12.0	16.7	68.9	9.2	28.0	13.7	71.9				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	23.3	28.4	18.0	59.3	15.2	36.5	9.3	68.0				
Max Q Clear Time (g_c+I1), s	20.5	5.3	12.1	41.3	5.6	14.0	9.4	56.9				
Green Ext Time (p_c), s	0.2	0.6	0.2	10.5	0.1	2.5	0.0	8.9				
Intersection Summary												
HCM 2010 Ctrl Delay			37.2									
HCM 2010 LOS			D									

Cumulative plus Project AM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #4 Cook Riolo / CRS

Cycle (sec): 100 Critical Vol./Cap.(X): 0.828
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 132 Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	1	0	0	0	1	0	0	1

Volume Module:

Base Vol:	0	585	265	215	285	0	0	0	0	160	0	285
Growth 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
Initial Bse:	0	585	265	215	285	0	0	0	0	160	0	285
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	636	288	234	310	0	0	0	0	174	0	310
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	636	288	234	310	0	0	0	0	174	0	310
PCE 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
MLF 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
FinalVolume:	0	636	288	234	310	0	0	0	0	174	0	310

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Final Sat.:	1425	1425	1425	1425	1425	0	0	1425	0	1425	0	1425

Capacity Analysis Module:

Vol/Sat:	0.00	0.45	0.20	0.16	0.22	0.00	0.00	0.00	0.00	0.12	0.00	0.22
Crit Volume:		636		234				0				310
Crit Moves:		****		****								****

Cumulative plus Project AM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #5 PFE / Watt

Cycle (sec): 100 Critical Vol./Cap.(X): 0.849
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 151 Level Of Service: D

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	2	0	3	0	1	0	0	1!	0	0	0	1	0	0	2

Volume Module:

Base Vol:	0	2040	390	390	2440	0	0	0	0	135	0	460
Growth 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
Initial Bse:	0	2040	390	390	2440	0	0	0	0	135	0	460
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	2217	424	424	2652	0	0	0	0	147	0	500
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2217	424	424	2652	0	0	0	0	147	0	500
PCE 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
MLF Adj:	1.00	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02
FinalVolume:	0	2217	424	432	2652	0	0	0	0	147	0	510

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	2.00	3.00	1.00	0.00	1.00	0.00	1.00	0.00	2.00
Final Sat.:	1425	4275	1425	2850	4275	1425	0	1425	0	1425	0	2850

Capacity Analysis Module:

Vol/Sat:	0.00	0.52	0.30	0.15	0.62	0.00	0.00	0.00	0.00	0.10	0.00	0.18
Crit Volume:		739		216				0				255
Crit Moves:		****		****								****

Cumulative plus Project AM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 1.161
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	1	0	0	1	1	2

Volume Module:

Base Vol:	400	1805	320	20	1810	175	140	255	485	70	70	20
Growth 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
Initial Bse:	400	1805	320	20	1810	175	140	255	485	70	70	20
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	435	1962	348	22	1967	190	152	277	527	76	76	22
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	435	1962	348	22	1967	190	152	277	527	76	76	22
PCE 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
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.02	1.00	1.00
FinalVolume:	435	1962	348	22	1967	190	152	277	538	78	76	22

Saturation Flow Module:

Sat/Lane:	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.68	1.32	2.00	0.78	0.22
Final Sat.:	1375	4125	1375	1375	4125	1375	1375	935	1815	2750	1069	306

Capacity Analysis Module:

Vol/Sat:	0.32	0.48	0.25	0.02	0.48	0.14	0.11	0.30	0.30	0.03	0.07	0.07
Crit Volume:	435			656			407			98		
Crit Moves:	****			****			****			****		

Cumulative plus Project AM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #8 PFE / N. Antelope

Cycle (sec): 100 Critical Vol./Cap.(X): 1.076
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	0	0	0	0	1	2	0	0

Volume Module:

Base Vol:	525	0	1165	0	0	0	0	480	610	405	160	0
Growth 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
Initial Bse:	525	0	1165	0	0	0	0	480	610	405	160	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	571	0	1266	0	0	0	0	522	663	440	174	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	571	0	1266	0	0	0	0	522	663	440	174	0
PCE 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
MLF Adj:	1.02	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00
FinalVolume:	582	0	1292	0	0	0	0	522	663	449	174	0

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	2.00	1.00	0.00
Final Sat.:	1425	0	2850	0	0	0	0	1425	1425	2850	1425	0

Capacity Analysis Module:

Vol/Sat:	0.41	0.00	0.45	0.00	0.00	0.00	0.00	0.37	0.47	0.16	0.12	0.00
Crit Volume:	646			0			663			225		
Crit Moves:	****						****			****		

Intersection	
Intersection Delay, s/veh	249.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	235	655	5	15	80	565	0	5	10	355	10	30
Future Vol, veh/h	235	655	5	15	80	565	0	5	10	355	10	30
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	255	712	5	16	87	614	0	5	11	386	11	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	411.7	156.2	15.3	47
HCM LOS	F	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	26%	2%	90%
Vol Thru, %	33%	73%	12%	3%
Vol Right, %	67%	1%	86%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	895	660	395
LT Vol	0	235	15	355
Through Vol	5	655	80	10
RT Vol	10	5	565	30
Lane Flow Rate	16	973	717	429
Geometry Grp	1	1	1	1
Degree of Util (X)	0.04	1.858	1.259	0.864
Departure Headway (Hd)	11.833	7.322	7.496	8.75
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	304	506	488	416
Service Time	9.833	5.322	5.496	6.75
HCM Lane V/C Ratio	0.053	1.923	1.469	1.031
HCM Control Delay	15.3	411.7	156.2	47
HCM Lane LOS	C	F	F	E
HCM 95th-tile Q	0.1	58.6	24.7	8.6

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	1071	16	6	679	46	19
Future Vol, veh/h	1071	16	6	679	46	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	530	-	150	0
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1164	17	7	738	50	21

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1181	0	1916	1164
Stage 1	-	-	-	-	1164	-
Stage 2	-	-	-	-	752	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	591	-	74	237
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	466	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	591	-	73	237
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	293	-
Stage 2	-	-	-	-	466	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	23.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	242	237	-	-	591	-
HCM Lane V/C Ratio	0.207	0.087	-	-	0.011	-
HCM Control Delay (s)	23.7	21.6	-	-	11.2	-
HCM Lane LOS	C	C	-	-	B	-
HCM 95th %tile Q(veh)	0.8	0.3	-	-	0	-

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↓		↔	↑↑
Traffic Vol, veh/h	8	18	1672	3	6	1009
Future Vol, veh/h	8	18	1672	3	6	1009
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	-	-	-	300	-
Veh in Median Storage, #	2	-	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	9	20	1817	3	7	1097

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2382	910	0	0	1820
Stage 1	1819	-	-	-	-
Stage 2	563	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22
Pot Cap-1 Maneuver	29	277	-	-	333
Stage 1	114	-	-	-	-
Stage 2	534	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	28	277	-	-	333
Mov Cap-2 Maneuver	104	-	-	-	-
Stage 1	112	-	-	-	-
Stage 2	534	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.2	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	183	333
HCM Lane V/C Ratio	-	-	0.154	0.02
HCM Control Delay (s)	-	-	28.2	16
HCM Lane LOS	-	-	D	C
HCM 95th %tile Q(veh)	-	-	0.5	0.1

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	24	0	33	8	0	18	12	1633	3	6	1003	8
Future Vol, veh/h	24	0	33	8	0	18	12	1633	3	6	1003	8
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									
Storage Length	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	36	9	0	20	13	1775	3	7	1090	9

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2023	2913	550	2362	2916	889	1099	0	0	1778	0	0
Stage 1	1109	1109	-	1803	1803	-	-	-	-	-	-	-
Stage 2	914	1804	-	559	1113	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	34	15	479	19	15	286	631	-	-	346	-	-
Stage 1	223	283	-	82	130	-	-	-	-	-	-	-
Stage 2	294	130	-	481	282	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	31	14	479	17	14	286	631	-	-	346	-	-
Mov Cap-2 Maneuver	159	103	-	75	107	-	-	-	-	-	-	-
Stage 1	218	277	-	80	127	-	-	-	-	-	-	-
Stage 2	268	127	-	436	276	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.2		33.8		0.1		0.1	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	631	-	-	259	153	346	-
HCM Lane V/C Ratio	0.021	-	-	0.239	0.185	0.019	-
HCM Control Delay (s)	10.8	-	-	23.2	33.8	15.6	-
HCM Lane LOS	B	-	-	C	D	C	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.7	0.1	-

MOVEMENT SUMMARY

Site: 3 [Cook Riolo Road / Vineyard Road]

2035 plus 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: Cook Riolo Rd											
3	L2	60	3.0	1.433	222.3	LOS F	111.4	2852.4	1.00	3.88	8.0
8	T1	511	3.0	1.433	222.3	LOS F	111.4	2852.4	1.00	3.88	8.0
18	R2	359	3.0	1.433	222.3	LOS F	111.4	2852.4	1.00	3.88	8.0
Approach		929	3.0	1.433	222.3	LOS F	111.4	2852.4	1.00	3.88	8.0
East: Vineyard Rd											
1	L2	114	3.0	0.291	7.9	LOS A	1.9	49.6	0.74	0.63	32.4
6	T1	54	3.0	0.291	7.9	LOS A	1.9	49.6	0.74	0.63	32.4
16	R2	60	3.0	0.291	7.9	LOS A	1.9	49.6	0.74	0.63	31.5
Approach		228	3.0	0.291	7.9	LOS A	1.9	49.6	0.74	0.63	32.1
North: Cook Riolo Rd											
7	L2	60	3.0	0.287	6.1	LOS A	1.8	47.4	0.49	0.32	34.1
4	T1	228	3.0	0.287	6.1	LOS A	1.8	47.4	0.49	0.32	34.1
14	R2	22	3.0	0.287	6.1	LOS A	1.8	47.4	0.49	0.32	33.1
Approach		310	3.0	0.287	6.1	LOS A	1.8	47.4	0.49	0.32	34.0
West: Vineyard Rd											
5	L2	120	3.0	0.836	24.3	LOS C	20.1	514.3	1.00	1.34	26.9
2	T1	473	3.0	0.836	24.3	LOS C	20.1	514.3	1.00	1.34	26.8
12	R2	185	3.0	0.836	24.3	LOS C	20.1	514.3	1.00	1.34	26.2
Approach		777	3.0	0.836	24.3	LOS C	20.1	514.3	1.00	1.34	26.7
All Vehicles		2245	3.0	1.433	102.1	LOS F	111.4	2852.4	0.90	2.18	13.9

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: SIDRA Roundabout LOS.

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: SIDRA Standard.

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

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

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

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HCM 2010 Signalized Intersection Summary
1: Walerga Rd & Baseline Rd

Cumulative plus Project AM
01/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	770	1610	45	595	755	220	35	900	985	885	875	820
Future Volume (veh/h)	770	1610	45	595	755	220	35	900	985	885	875	820
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	837	1750	49	647	821	239	38	978	1071	962	951	891
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	2	3	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	522	1543	480	380	1333	677	93	1438	622	570	2142	907
Arrive On Green	0.15	0.30	0.30	0.11	0.26	0.26	0.03	0.28	0.28	0.17	0.42	0.42
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	837	1750	49	647	821	239	38	978	1071	962	951	891
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	22.0	44.0	3.2	16.0	20.6	14.8	1.6	24.8	41.0	24.0	19.3	61.1
Cycle Q Clear(g_c), s	22.0	44.0	3.2	16.0	20.6	14.8	1.6	24.8	41.0	24.0	19.3	61.1
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	522	1543	480	380	1333	677	93	1438	622	570	2142	907
V/C Ratio(X)	1.60	1.13	0.10	1.70	0.62	0.35	0.41	0.68	1.72	1.69	0.44	0.98
Avail Cap(c_a), veh/h	522	1543	480	380	1333	677	285	1438	622	570	2142	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	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	61.5	50.5	36.3	64.5	47.1	28.0	69.4	46.2	44.0	60.5	29.9	30.2
Incr Delay (d2), s/veh	280.2	69.0	0.1	327.7	0.9	0.3	2.9	1.3	331.1	317.5	0.1	25.4
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	30.8	30.4	1.4	24.9	9.8	6.5	0.8	11.8	82.1	36.5	9.1	41.0
LnGrp Delay(d),s/veh	341.7	119.5	36.4	392.2	47.9	28.3	72.3	47.5	375.1	378.0	30.0	55.7
LnGrp LOS	F	F	D	F	D	C	E	D	F	F	C	E
Approach Vol, veh/h		2636			1707			2087			2804	
Approach Delay, s/veh		188.5			175.7			216.1			157.6	
Approach LOS		F			F			F			F	
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	28.0	47.0	20.0	50.0	7.9	67.1	26.0	44.0				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	24.0	41.0	16.0	44.0	12.0	53.0	22.0	38.0				
Max Q Clear Time (g_c+I1), s	26.0	43.0	18.0	46.0	3.6	63.1	24.0	22.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			183.0									
HCM 2010 LOS			F									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1760	85	60	945	210	120	400	120	240	135	140
Future Volume (veh/h)	10	1760	85	60	945	210	120	400	120	240	135	140
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	11	1913	92	65	1027	228	130	435	130	261	147	152
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	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	22	1726	772	83	1847	826	156	546	244	273	780	349
Arrive On Green	0.01	0.49	0.49	0.05	0.52	0.52	0.09	0.15	0.15	0.15	0.22	0.22
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	11	1913	92	65	1027	228	130	435	130	261	147	152
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.8	65.0	4.2	4.8	26.0	10.7	9.6	15.8	10.1	19.5	4.5	11.0
Cycle Q Clear(g_c), s	0.8	65.0	4.2	4.8	26.0	10.7	9.6	15.8	10.1	19.5	4.5	11.0
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	22	1726	772	83	1847	826	156	546	244	273	780	349
V/C Ratio(X)	0.49	1.11	0.12	0.78	0.56	0.28	0.84	0.80	0.53	0.96	0.19	0.44
Avail Cap(c_a), veh/h	67	1726	772	100	1847	826	256	823	368	273	858	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	65.4	34.1	18.6	62.9	21.5	17.8	59.8	54.4	51.9	55.9	42.3	44.8
Incr Delay (d2), s/veh	15.9	57.7	0.1	27.9	0.4	0.2	11.6	3.3	1.8	42.5	0.1	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	0.5	45.5	1.9	3.0	12.8	4.7	5.2	8.0	4.5	12.8	2.2	4.9
LnGrp Delay(d),s/veh	81.3	91.8	18.6	90.7	21.8	18.0	71.5	57.6	53.7	98.5	42.4	45.7
LnGrp LOS	F	F	B	F	C	B	E	E	D	F	D	D
Approach Vol, veh/h		2016			1320			695			560	
Approach Delay, s/veh		88.4			24.6			59.5			69.4	
Approach LOS		F			C			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	25.0	26.5	10.7	71.0	16.2	35.4	6.2	75.5				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	20.5	31.0	7.5	65.0	19.2	32.3	5.0	67.5				
Max Q Clear Time (g_c+I1), s	21.5	17.8	6.8	67.0	11.6	13.0	2.8	28.0				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.2	1.3	0.0	10.6				
Intersection Summary												
HCM 2010 Ctrl Delay			63.4									
HCM 2010 LOS			E									

Cumulative plus Project PM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #5 PFE / Watt

Cycle (sec): 100 Critical Vol./Cap.(X): 0.944
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	2	0	3	0	1	0	0	1!	0	0	0	1	0	0	2

Volume Module:

Base Vol:	0	2235	65	445	2195	0	0	0	0	100	0	520
Growth 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
Initial Bse:	0	2235	65	445	2195	0	0	0	0	100	0	520
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	2429	71	484	2386	0	0	0	0	109	0	565
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2429	71	484	2386	0	0	0	0	109	0	565
PCE 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
MLF Adj:	1.00	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02
FinalVolume:	0	2429	71	493	2386	0	0	0	0	109	0	577

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	2.00	3.00	1.00	0.00	1.00	0.00	1.00	0.00	2.00
Final Sat.:	1425	4275	1425	2850	4275	1425	0	1425	0	1425	0	2850

Capacity Analysis Module:

Vol/Sat:	0.00	0.57	0.05	0.17	0.56	0.00	0.00	0.00	0.00	0.08	0.00	0.20
Crit Volume:		810		247				0				288
Crit Moves:		****		****								****

Cumulative plus Project PM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #6 PFE / Walerga

Cycle (sec): 100 Critical Vol./Cap.(X): 1.209
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Split Phase				Split Phase							
Rights:	Include																			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	0	1	1	2	0	0	1	0

Volume Module:

Base Vol:	455	1905	100	10	1970	80	185	40	330	335	220	10
Growth 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
Initial Bse:	455	1905	100	10	1970	80	185	40	330	335	220	10
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	495	2071	109	11	2141	87	201	43	359	364	239	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	495	2071	109	11	2141	87	201	43	359	364	239	11
PCE 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
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.02	1.00	1.00
FinalVolume:	495	2071	109	11	2141	87	201	43	366	371	239	11

Saturation Flow Module:

Sat/Lane:	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	0.21	1.79	2.00	0.96	0.04
Final Sat.:	1375	4125	1375	1375	4125	1375	1375	292	2458	2750	1315	60

Capacity Analysis Module:

Vol/Sat:	0.36	0.50	0.08	0.01	0.52	0.06	0.15	0.15	0.15	0.14	0.18	0.18
Crit Volume:	495			714			205			250		
Crit Moves:	****			****			****			****		

Cumulative plus Project PM

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #8 PFE / N. Antelope

Cycle (sec): 100 Critical Vol./Cap.(X): 1.095
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0	0	0	0	0	1	2	0	0

Volume Module:

Base Vol:	515	0	635	0	0	0	0	225	450	1165	445	0
Growth 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
Initial Bse:	515	0	635	0	0	0	0	225	450	1165	445	0
User 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
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	560	0	690	0	0	0	0	245	489	1266	484	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	560	0	690	0	0	0	0	245	489	1266	484	0
PCE 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
MLF Adj:	1.02	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00
FinalVolume:	571	0	704	0	0	0	0	245	489	1292	484	0

Saturation Flow Module:

Sat/Lane:	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.34	0.00	1.66	0.00	0.00	0.00	0.00	1.00	1.00	2.00	1.00	0.00
Final Sat.:	1914	0	2361	0	0	0	0	1425	1425	2850	1425	0

Capacity Analysis Module:

Vol/Sat:	0.30	0.00	0.30	0.00	0.00	0.00	0.00	0.17	0.34	0.45	0.34	0.00
Crit Volume:			425	0					489	646		
Crit Moves:			****						****	****		

Intersection	
Intersection Delay, s/veh	204.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	115	0	5	655	225	0	0	5	485	0	145
Future Vol, veh/h	10	115	0	5	655	225	0	0	5	485	0	145
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	125	0	5	712	245	0	0	5	527	0	158
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.5	292.6	12.1	120.1
HCM LOS	B	F	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	8%	1%	77%
Vol Thru, %	0%	92%	74%	0%
Vol Right, %	100%	0%	25%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	125	885	630
LT Vol	0	10	5	485
Through Vol	0	115	655	0
RT Vol	5	0	225	145
Lane Flow Rate	5	136	962	685
Geometry Grp	1	1	1	1
Degree of Util (X)	0.011	0.267	1.593	1.166
Departure Headway (Hd)	9.049	8.417	6.441	7.326
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	398	429	577	500
Service Time	7.049	6.417	4.441	5.326
HCM Lane V/C Ratio	0.013	0.317	1.667	1.37
HCM Control Delay	12.1	14.5	292.6	120.1
HCM Lane LOS	B	B	F	F
HCM 95th-tile Q	0	1.1	48.3	20.6

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	656	32	30	930	18	19
Future Vol, veh/h	656	32	30	930	18	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	530	-	150	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	713	35	33	1011	20	21

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	748	0	1790
Stage 1	-	-	-	-	713
Stage 2	-	-	-	-	1077
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	861	-	89
Stage 1	-	-	-	-	486
Stage 2	-	-	-	-	327
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	861	-	86
Mov Cap-2 Maneuver	-	-	-	-	201
Stage 1	-	-	-	-	468
Stage 2	-	-	-	-	327

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	201	432	-	-	861	-
HCM Lane V/C Ratio	0.097	0.048	-	-	0.038	-
HCM Control Delay (s)	24.8	13.8	-	-	9.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↓		↔	↑↑
Traffic Vol, veh/h	6	11	1139	10	20	1595
Future Vol, veh/h	6	11	1139	10	20	1595
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	-	-	-	300	-
Veh in Median Storage, #	1	-	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	7	12	1238	11	22	1734

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2155	625	0	0	1249
Stage 1	1244	-	-	-	-
Stage 2	911	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22
Pot Cap-1 Maneuver	41	428	-	-	553
Stage 1	235	-	-	-	-
Stage 2	352	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	39	428	-	-	553
Mov Cap-2 Maneuver	140	-	-	-	-
Stage 1	226	-	-	-	-
Stage 2	352	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	248	553
HCM Lane V/C Ratio	-	-	0.075	0.039
HCM Control Delay (s)	-	-	20.7	11.8
HCM Lane LOS	-	-	C	B
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	21	0	23	6	0	11	40	1117	10	20	1547	34
Future Vol, veh/h	21	0	23	6	0	11	40	1117	10	20	1547	34
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									
Storage Length	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	0	25	7	0	12	43	1214	11	22	1682	37

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2438	3056	860	2191	3069	613	1719	0	0	1225	0	0
Stage 1	1745	1745	-	1306	1306	-	-	-	-	-	-	-
Stage 2	693	1311	-	885	1763	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 16	12	299	25	12	435	364	-	-	565	-	-
Stage 1	90	139	-	169	228	-	-	-	-	-	-	-
Stage 2	400	227	-	306	136	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 14	10	299	20	10	435	364	-	-	565	-	-
Mov Cap-2 Maneuver	62	74	-	91	60	-	-	-	-	-	-	-
Stage 1	79	134	-	149	201	-	-	-	-	-	-	-
Stage 2	343	200	-	269	131	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	64.3		26.5		0.6		0.1	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	364	-	-	106	186	565	-
HCM Lane V/C Ratio	0.119	-	-	0.451	0.099	0.038	-
HCM Control Delay (s)	16.2	-	-	64.3	26.5	11.6	-
HCM Lane LOS	C	-	-	F	D	B	-
HCM 95th %tile Q(veh)	0.4	-	-	1.9	0.3	0.1	-

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

MOVEMENT SUMMARY

 Site: 3 [Cook Riolo Road / Vineyard Road]

2035 plus 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	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cook Riolo Rd											
3	L2	54	3.0	0.226	4.9	LOS A	1.5	37.2	0.36	0.19	34.8
8	T1	158	3.0	0.226	4.9	LOS A	1.5	37.2	0.36	0.19	34.7
18	R2	71	3.0	0.226	4.9	LOS A	1.5	37.2	0.36	0.19	33.7
Approach		283	3.0	0.226	4.9	LOS A	1.5	37.2	0.36	0.19	34.5
East: Vineyard Rd											
1	L2	353	3.0	0.746	15.0	LOS B	13.8	354.3	0.79	0.74	29.7
6	T1	489	3.0	0.746	15.0	LOS B	13.8	354.3	0.79	0.74	29.7
16	R2	49	3.0	0.746	15.0	LOS B	13.8	354.3	0.79	0.74	28.9
Approach		891	3.0	0.746	15.0	LOS B	13.8	354.3	0.79	0.74	29.6
North: Cook Riolo Rd											
7	L2	22	3.0	1.286	168.5	LOS F	63.6	1627.4	1.00	2.91	9.9
4	T1	408	3.0	1.286	168.5	LOS F	63.6	1627.4	1.00	2.91	9.9
14	R2	196	3.0	1.286	168.5	LOS F	63.6	1627.4	1.00	2.91	9.8
Approach		625	3.0	1.286	168.5	LOS F	63.6	1627.4	1.00	2.91	9.9
West: Vineyard Rd											
5	L2	22	3.0	0.235	8.0	LOS A	1.5	38.3	0.77	0.69	33.3
2	T1	82	3.0	0.235	8.0	LOS A	1.5	38.3	0.77	0.69	33.3
12	R2	60	3.0	0.235	8.0	LOS A	1.5	38.3	0.77	0.69	32.3
Approach		163	3.0	0.235	8.0	LOS A	1.5	38.3	0.77	0.69	32.9
All Vehicles		1962	3.0	1.286	61.9	LOS E	63.6	1627.4	0.79	1.35	18.5

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: SIDRA Roundabout LOS.

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: SIDRA Standard.

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

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

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

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Project: C:\Users\JDF\KDA\Reports\Placer County\Mill Creek\SIDRA\1_2018 UPDATE\2035PP PM 1-3-18.sip7

HCM 2010 Signalized Intersection Summary
1: Walerga Rd & Baseline Rd

Cumulative plus Project PM
01/09/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	695	1030	30	1030	1490	810	35	940	755	355	885	890
Future Volume (veh/h)	695	1030	30	1030	1490	810	35	940	755	355	885	890
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	755	1120	33	1120	1620	880	38	1022	821	386	962	967
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	2	3	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	691	1288	401	815	1471	632	91	1322	786	379	1747	862
Arrive On Green	0.20	0.25	0.25	0.24	0.29	0.29	0.03	0.26	0.26	0.11	0.34	0.34
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	3442	5085	1583
Grp Volume(v), veh/h	755	1120	33	1120	1620	880	38	1022	821	386	962	967
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1721	1695	1583
Q Serve(g_s), s	30.1	31.6	2.4	35.5	43.4	43.4	1.6	27.9	39.0	16.5	23.0	51.5
Cycle Q Clear(g_c), s	30.1	31.6	2.4	35.5	43.4	43.4	1.6	27.9	39.0	16.5	23.0	51.5
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	691	1288	401	815	1471	632	91	1322	786	379	1747	862
V/C Ratio(X)	1.09	0.87	0.08	1.38	1.10	1.39	0.42	0.77	1.04	1.02	0.55	1.12
Avail Cap(c_a), veh/h	691	1288	401	815	1471	632	115	1322	786	379	1747	862
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	60.0	53.6	42.7	57.2	53.3	45.0	71.9	51.4	37.8	66.8	39.9	34.2
Incr Delay (d2), s/veh	62.5	6.6	0.1	176.5	56.2	185.9	3.0	2.9	44.2	51.3	0.4	70.1
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	20.3	15.6	1.1	36.8	28.0	58.8	0.8	13.4	42.1	10.5	10.8	52.3
LnGrp Delay(d),s/veh	122.4	60.3	42.8	233.8	109.5	230.9	74.9	54.3	81.9	118.1	40.2	104.3
LnGrp LOS	F	E	D	F	F	F	E	D	F	F	D	F
Approach Vol, veh/h		1908			3620			1881			2315	
Approach Delay, s/veh		84.6			177.5			66.8			80.0	
Approach LOS		F			F			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	21.0	45.0	40.0	44.0	8.5	57.5	34.6	49.4				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	16.5	39.0	35.5	38.0	5.0	50.5	30.1	43.4				
Max Q Clear Time (g_c+I1), s	18.5	41.0	37.5	33.6	3.6	53.5	32.1	45.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			114.6									
HCM 2010 LOS			F									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1290	100	165	1600	245	50	90	55	250	275	155
Future Volume (veh/h)	100	1290	100	165	1600	245	50	90	55	250	275	155
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	109	1402	109	179	1739	266	54	98	60	272	299	168
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	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	132	1730	774	206	1878	840	70	208	93	298	664	297
Arrive On Green	0.07	0.49	0.49	0.12	0.53	0.53	0.04	0.06	0.06	0.17	0.19	0.19
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	109	1402	109	179	1739	266	54	98	60	272	299	168
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	41.9	4.7	12.4	56.7	11.8	3.8	3.4	4.6	18.8	9.4	12.1
Cycle Q Clear(g_c), s	7.6	41.9	4.7	12.4	56.7	11.8	3.8	3.4	4.6	18.8	9.4	12.1
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	132	1730	774	206	1878	840	70	208	93	298	664	297
V/C Ratio(X)	0.83	0.81	0.14	0.87	0.93	0.32	0.77	0.47	0.65	0.91	0.45	0.57
Avail Cap(c_a), veh/h	132	1730	774	255	1925	861	216	804	360	331	1033	462
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	57.1	27.0	17.5	54.3	27.1	16.5	59.5	57.0	57.6	51.1	45.1	46.2
Incr Delay (d2), s/veh	33.1	3.0	0.1	22.2	8.2	0.2	16.2	1.7	7.3	26.8	0.5	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	21.2	2.1	7.3	29.7	5.2	2.2	1.7	2.2	11.4	4.6	5.4
LnGrp Delay(d),s/veh	90.2	30.1	17.6	76.6	35.2	16.8	75.7	58.6	64.9	77.9	45.6	47.9
LnGrp LOS	F	C	B	E	D	B	E	E	E	E	D	D
Approach Vol, veh/h		1620			2184			212			739	
Approach Delay, s/veh		33.3			36.4			64.7			58.0	
Approach LOS		C			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	25.5	13.3	19.0	67.1	9.4	29.4	13.8	72.4				
Change Period (Y+Rc), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0				
Max Green Setting (Gmax), s	23.3	28.4	18.0	59.3	15.2	36.5	9.3	68.0				
Max Q Clear Time (g_c+I1), s	20.8	6.6	14.4	43.9	5.8	14.1	9.6	58.7				
Green Ext Time (p_c), s	0.2	0.7	0.2	9.4	0.1	2.5	0.0	7.7				
Intersection Summary												
HCM 2010 Ctrl Delay			39.9									
HCM 2010 LOS			D									

MITIG8 Cumulative PM
Added EB to SB OLA

Level Of Service Computation Report
Circular 212 Planning Method (Base Volume Alternative)

Intersection #8 PFE / N. Antelope

Cycle (sec): 100 Critical Vol./Cap.(X): 0.923
Loss Time (sec): 0 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 180 Level Of Service: E

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Ovl Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0
Y+R: 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0
Lanes: 1 0 1! 0 1 0 0 0 0 0 0 0 1 0 1 2 0 1 0 0
Volume Module:
Base Vol: 515 0 635 0 0 0 0 225 450 1165 445 0
Growth 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
Initial Bse: 515 0 635 0 0 0 0 225 450 1165 445 0
User 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
PHF Adj: 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
PHF Volume: 560 0 690 0 0 0 0 245 489 1266 484 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 560 0 690 0 0 0 0 245 489 1266 484 0
PCE 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
MLF Adj: 1.02 1.00 1.02 1.00 1.00 1.00 1.00 1.00 1.00 1.02 1.00 1.00
FinalVolume: 571 0 704 0 0 0 0 245 489 1292 484 0
Saturation Flow Module:
Sat/Lane: 1425 1425 1425 1425 1425 1425 1425 1425 1425 1425 1425 1425
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 1.34 0.00 1.66 0.00 0.00 0.00 0.00 1.00 1.00 2.00 1.00 0.00
Final Sat.: 1914 0 2361 0 0 0 0 1425 1425 2850 1425 0
Capacity Analysis Module:
Vol/Sat: 0.30 0.00 0.30 0.00 0.00 0.00 0.00 0.17 0.34 0.45 0.34 0.00
Crit Volume: 425 0 245 646
Crit Moves: **** **** ****

Existing AM

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 3 Cook Riolo / Vineyard	No	No
# 5 PFE / Watt	Yes	Yes
# 7 PFE / Cook Riolo	Yes	Yes
# 8 PFE / N. Antelope	Yes	Yes
# 9 PFE / Project Access	No / No	No / No
# 10 N. Antelope / North Project Access	No / No	No / No
# 11 N. Antelope / South Project Access	No / No	No / No

Existing AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #3 Cook Riolo / Vineyard

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	31	145	108			27	163	17			18	78	51			101	53	30		

Major Street Volume: 491
Minor Approach Volume: 184
Minor Approach Volume Threshold: 212

SIGNAL WARRANT DISCLAIMER

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Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #3 Cook Riolo / Vineyard

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	34	166	110			27	170	17			18	78	52			102	53	30		

Major Street Volume: 524

Minor Approach Volume: 185

Minor Approach Volume Threshold: 202

SIGNAL WARRANT DISCLAIMER

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Existing AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 PFE / Watt

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1!	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1!	0	0
Initial Vol:	1	280	309			10	471	0			0	0	1	0	0	279	0	22		

Major Street Volume: 1071

Minor Approach Volume: 301

Minor Approach Volume Threshold: 83

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 PFE / Watt

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1!	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1!	0	0
Initial Vol:	1	280	309			10	471	0			0	0	1	0	0	279	0	22		

Major Street Volume: 1071

Minor Approach Volume: 301

Minor Approach Volume Threshold: 83

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 PFE / Cook Riolo

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1!	0	0	0	1!	0	0	0	1!	0	0	0	1!	0
Initial Vol:	2		2	6	170		11	80	114		293	3	9		131	168

Major Street Volume: 718
 Minor Approach Volume: 261
 Minor Approach Volume Threshold: 149

SIGNAL WARRANT DISCLAIMER

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Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 PFE / Cook Riolo

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1!	0	0	0	1!	0	0	0	1!	0	0	0	1!	0
Initial Vol:	2		2	6	193		11	80	114		297	3	9		143	236

Major Street Volume: 802
 Minor Approach Volume: 284
 Minor Approach Volume Threshold: 131

SIGNAL WARRANT DISCLAIMER

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Existing AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #8 PFE / N. Antelope

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
Initial Vol:	174		0	252	0	0		0	0	296		230	102	101		0

Major Street Volume: 729

Minor Approach Volume: 426

Minor Approach Volume Threshold: 195

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #8 PFE / N. Antelope

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	210		0		277	0		0		0	0		309		247	111		105		0

Major Street Volume: 772
 Minor Approach Volume: 487
 Minor Approach Volume Threshold: 181

SIGNAL WARRANT DISCLAIMER

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Existing plus Project AM

Peak Hour Delay Signal Warrant Report

Intersection #9 PFE / Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	46		0		19	0		0		0	0		537		16	6		308		0
ApproachDel:	16.7				xxxxxx				xxxxxx				xxxxxx							

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=65]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=932]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #9 PFE / Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	46		0		19	0		0		0	0		537		16	6		308		0

Major Street Volume: 867
 Minor Approach Volume: 65
 Minor Approach Volume Threshold: 155

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project AM

Peak Hour Delay Signal Warrant Report

Intersection #10 N. Antelope / North Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	469		3		6	352		0		0	0		0		8	0		18	
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				11.3							

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=26]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=856]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 N. Antelope / North Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	469			3	6	352			0	0	0			0	8	0			18

Major Street Volume: 830
 Minor Approach Volume: 26
 Minor Approach Volume Threshold: 165

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project AM

Peak Hour Delay Signal Warrant Report

Intersection #11 N. Antelope / South Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	12	430		3		6	347		8		24	0		33		8	0		18	
ApproachDel:	xxxxxx				xxxxxx				12.3				11.7							

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=57]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=889]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=26]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=889]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Existing plus Project AM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #11 N. Antelope / South Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	12	430		3		6	347		8		24	0		33		8	0		18	

Major Street Volume: 806
 Minor Approach Volume: 57
 Minor Approach Volume Threshold: 172

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing PM

Signal Warrant Summary Report

Intersection	Base Met [Del / Vol]	Future Met [Del / Vol]
# 3 Cook Riolo / Vineyard	No	No
# 5 PFE / Watt	Yes	Yes
# 7 PFE / Cook Riolo	No	Yes
# 8 PFE / N. Antelope	Yes	Yes
# 9 PFE / Project Access	No / No	No / No
# 10 N. Antelope / North Project Access	No / No	No / No
# 11 N. Antelope / South Project Access	No / No	No / No

Existing PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #3 Cook Riolo / Vineyard

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1!	0	0	0	1!	0	0	0	1!	0	0	0	1!	0
Initial Vol:	8	123	45		16	90	36		18	64	12		64	75	42	

Major Street Volume: 318

Minor Approach Volume: 181

Minor Approach Volume Threshold: 285

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #3 Cook Riolo / Vineyard

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	10	142	46			16	123	36			18	64	16			66	75	42		

Major Street Volume: 373

Minor Approach Volume: 183

Minor Approach Volume Threshold: 258

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 PFE / Watt

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0
Initial Vol:	0	335	213			38	304	0			0	0	1	0	0	149	0	23		

Major Street Volume: 890
 Minor Approach Volume: 172
 Minor Approach Volume Threshold: 114

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #5 PFE / Watt

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0
Initial Vol:	0	335	213			46	304	0			0	0	1	0	0	149	0	28		

Major Street Volume: 898
 Minor Approach Volume: 177
 Minor Approach Volume Threshold: 112

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 PFE / Cook Riolo

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0
Initial Vol:	0		0		1	60		0		66	60	179			0	1	325			121

Major Street Volume: 686

Minor Approach Volume: 126

Minor Approach Volume Threshold: 157

SIGNAL WARRANT DISCLAIMER

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Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #7 PFE / Cook Riolo

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0
Initial Vol:	0		0		1	99		0		66	60	196			0	1	335			144

Major Street Volume: 736

Minor Approach Volume: 165

Minor Approach Volume Threshold: 145

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #8 PFE / N. Antelope

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	156		0		171	0		0		0	0		139		105	252		285		0

Major Street Volume: 781
 Minor Approach Volume: 327
 Minor Approach Volume Threshold: 179

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #8 PFE / N. Antelope

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
Initial Vol:	176		0	199	0	0		0	0	154		133	301	310		0

Major Street Volume: 898

Minor Approach Volume: 375

Minor Approach Volume Threshold: 147

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Delay Signal Warrant Report

Intersection #9 PFE / Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	18		0		19	0		0		0	0		269		32	30		456		0
ApproachDel:	12.9				xxxxxx				xxxxxx				xxxxxx							

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=37]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=824]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #9 PFE / Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	18		0		19	0		0		0	0		269		32	30		456		0

Major Street Volume: 787
 Minor Approach Volume: 37
 Minor Approach Volume Threshold: 177

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Delay Signal Warrant Report

Intersection #10 N. Antelope / North Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	0
Initial Vol:	0	364		10		20	414		0		0	0		0		6	0		11	
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				11.0							

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=17]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=825]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #10 N. Antelope / North Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	364		10		20	414		0		0	0		0		6	0		11	

Major Street Volume: 808

Minor Approach Volume: 17

Minor Approach Volume Threshold: 171

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Delay Signal Warrant Report

Intersection #11 N. Antelope / South Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	40	341	10			20	366	34			21	0	23			6	0	11		
ApproachDel:	xxxxxx				xxxxxx				13.3				11.8							

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=44]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=872]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=17]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=872]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Existing plus Project PM

Peak Hour Volume Signal Warrant Report [Rural]

Intersection #11 N. Antelope / South Project Access

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	40	341		10		20	366		34		21	0		23		6	0		11	

Major Street Volume: 811
 Minor Approach Volume: 44
 Minor Approach Volume Threshold: 170

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Cumulative AM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 PFE / Cook Riolo

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1!	0	0	0	1!	0	0	0	1!	0	0	0	1!	0
Initial Vol:	5		5		437		15		85		390		586		5	

Major Street Volume: 1566
 Minor Approach Volume: 537
 Minor Approach Volume Threshold: 100 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Cumulative PM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 PFE / Cook Riolo

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0
Initial Vol:	0		0		5	451		0		310	55	158			0	5	590			342

Major Street Volume: 1150

Minor Approach Volume: 761

Minor Approach Volume Threshold: 182

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Cumulative plus AM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 PFE / Cook Riolo

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	1!	0	0	0	1!	0	0	0	1!	0	0	0	1!	0
Initial Vol:	5		5		460		15		85		390		590		5	

Major Street Volume: 1650
 Minor Approach Volume: 560
 Minor Approach Volume Threshold: 86 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Cumulative plus AM

Peak Hour Delay Signal Warrant Report

Intersection #9 PFE / Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	46		0		19	0		0		0	0		1095		16	6		695		0
ApproachDel:	77.9				xxxxxx				xxxxxx				xxxxxx							

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=1.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=65]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=1877]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Cumulative plus AM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 PFE / Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	46		0		19	0		0		0	0		1095		16	6		695		0

Major Street Volume: 1812
 Minor Approach Volume: 65
 Minor Approach Volume Threshold: 80 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Cumulative plus AM

Peak Hour Delay Signal Warrant Report

Intersection #10 N. Antelope / North Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	0
Initial Vol:	0	1665		3		6	956		0		0	0		0		8	0		18	
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				50.9							

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=26]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2656]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Cumulative plus AM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 N. Antelope / North Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	1665			3	6	956			0	0	0			0	8	0			18

Major Street Volume: 2630

Minor Approach Volume: 26

Minor Approach Volume Threshold: -48 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Cumulative plus AM

Peak Hour Delay Signal Warrant Report

Intersection #11 N. Antelope / South Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	12	1626			3	6	950			8	24	0			33	8	0			18
ApproachDel:	xxxxxx				xxxxxx				81.1				81.4							

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=1.3]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=57]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=2688]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.6]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=26]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=2688]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Cumulative plus AM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 N. Antelope / South Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	12	16	26		3	6	950		8		24		0		33	8		0		18

Major Street Volume: 2605

Minor Approach Volume: 57

Minor Approach Volume Threshold: -45 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Cumulative plus PM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #7 PFE / Cook Riolo

Base Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign							
Lanes:	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0
Initial Vol:	0		0		5	490		0		310	55	175			0	5	600			365

Major Street Volume: 1200

Minor Approach Volume: 800

Minor Approach Volume Threshold: 171

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Cumulative plus PM

Peak Hour Delay Signal Warrant Report

Intersection #9 PFE / Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled							
Lanes:	0	0	1!	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0
Initial Vol:	18		0		19	0		0		0	0		725		32	30		970		0
ApproachDel:	35.5				xxxxxx				xxxxxx				xxxxxx							

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=37]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=1794]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Cumulative plus PM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #9 PFE / Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	R	L	-	T	R	L	-	T	R	L	-	T	R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Lanes:	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
Initial Vol:	18		0	19	0		0	0	0		725	32	30		970	0

Major Street Volume: 1757
 Minor Approach Volume: 37
 Minor Approach Volume Threshold: 91 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Cumulative plus PM

Peak Hour Delay Signal Warrant Report

Intersection #10 N. Antelope / North Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	0
Initial Vol:	0 1080 10				20 1590 0				0 0 0 0				6 0 11							
ApproachDel:	xxxxxx				xxxxxx				xxxxxx				35.0							

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=17]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2717]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Cumulative plus PM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #10 N. Antelope / North Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1!	0	0
Initial Vol:	0	1080		10		20	1590		0		0	0		0		6	0		11	

Major Street Volume: 2700

Minor Approach Volume: 17

Minor Approach Volume Threshold: -57 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Cumulative plus PM

Peak Hour Delay Signal Warrant Report

Intersection #11 N. Antelope / South Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	40	1058		10		20	1542		34		21	0		23		6	0		11	
ApproachDel:	xxxxxx				xxxxxx				284.0				58.7							

Approach[eastbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=3.5]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=44]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=2765]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=17]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=2765]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Cumulative plus PM

Peak Hour Volume Signal Warrant Report [Urban]

Intersection #11 N. Antelope / South Project Access

Base Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign							
Lanes:	1	0	1	1	0	1	0	1	1	0	0	0	1!	0	0	0	0	1!	0	0
Initial Vol:	40	1058		10	20	1542	34			21	0	23			6	0	11			

Major Street Volume: 2704

Minor Approach Volume: 44

Minor Approach Volume Threshold: -58 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

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Fair Share - Cook Riolo / Vineyard Intersection										
		cum+proj	cum	exis						
		2355	2320	822						
	AM						CPP	C	E	
		2.28%				25	60	25	60	17 30
						355	40	348	40	163 53
						75	115	75	114	27 101
						115	350	115	47	18 31
						380	600	380	579	78 145
						190	50	189	348	51 108
							2355		2320	822
		cum+proj	cum	exis						
		2090	2029	593						
	PM						CPP	C	E	
		4.07%				130	265	130	265	36 42
						530	230	497	230	90 75
						50	320	50	318	16 64
						40	10	40	8	18 8
AVG		3.18%				60	375	60	356	64 123
						20	60	16	59	12 45
							2090		2029	593

Fair Share - PFE / Cook Riolo Intersection										
		cum+proj	cum	exis						
		2225	2098	989						
	AM						CPP	C	E	
		10.28%					85	560	85	492
							15	100	15	88
							460	5	437	5
							390	5	390	5
							590	5	566	5
							5	5	5	5
							2225		2098	989
		cum+proj	cum	exis						
		2005	1916	813						
	PM						CPP	C	E	
		7.47%					310	365	310	342
							0	600	0	590
							490	5	451	5
							55	0	55	0
AVG		8.87%					175	0	158	0
							0	5	0	5
							2005		1916	813

Fair Share - Baseline / Cook Riolo Intersection										
		cum+proj	cum	exis						
		4460	4432	1871						
	AM					CPP	C	E		
		1.08%				135	220	135	220	68 104
						220	905	220	905	127 449
						265	95	265	89	217 55
						10	135	10	133	55 32
						1710	490	1710	490	567 109
						125	150	124	131	29 59
						4460		4432		1871
		cum+proj	cum	exis						
		4600	4548	2033						
	PM					CPP	C	E		
		2.03%				145	255	145	255	63 223
						345	1560	345	1560	60 628
						255	220	255	191	164 35
						95	85	95	83	68 26
AVG		1.55%				1260	165	1260	165	600 108
						115	100	111	83	15 43
						4600		4548		2033

